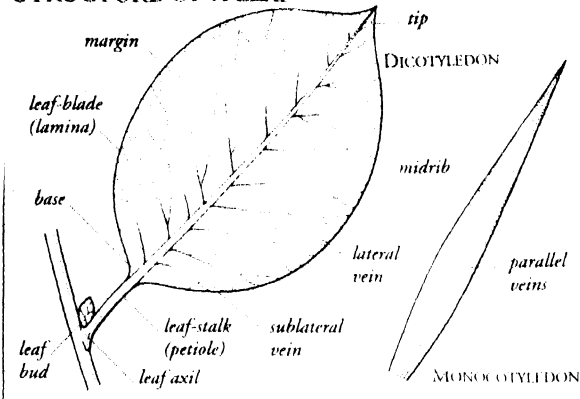




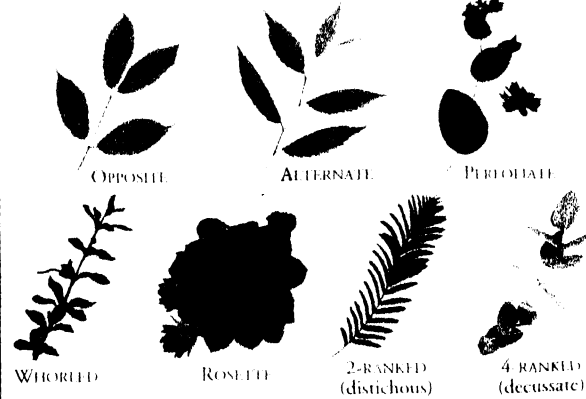


# VISUAL GLOSSARY: LEAVES

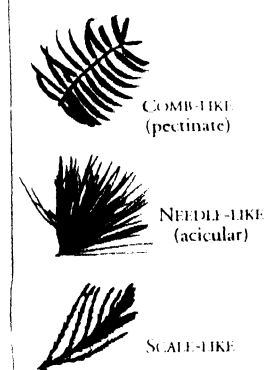
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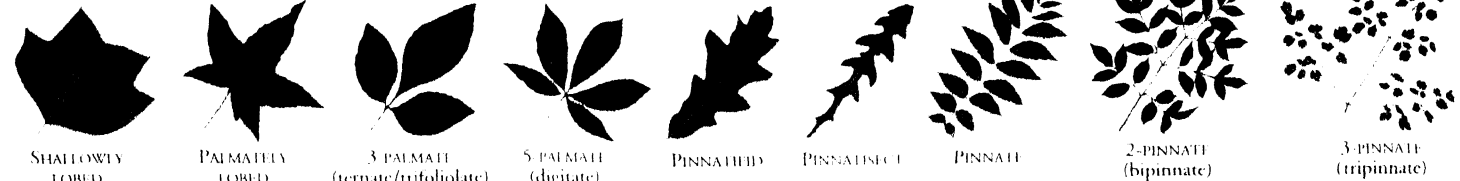
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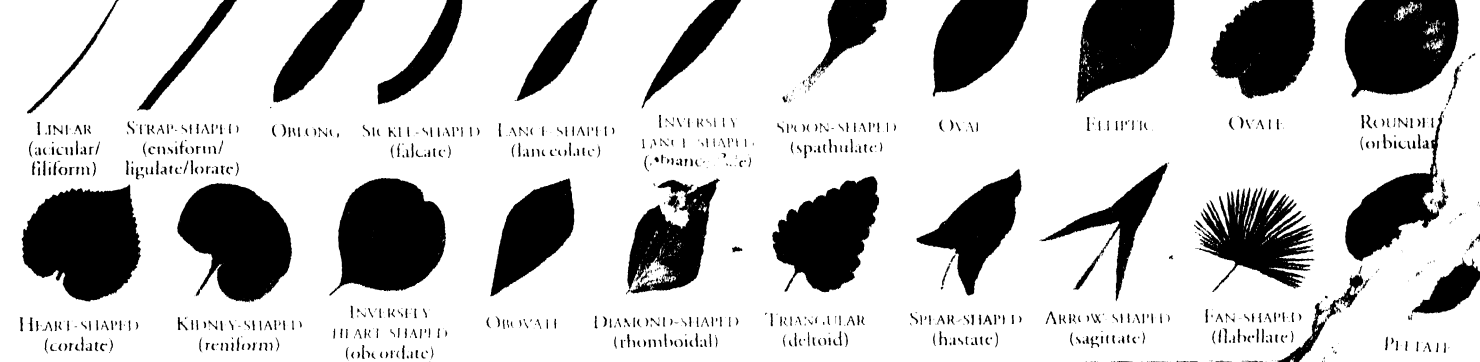
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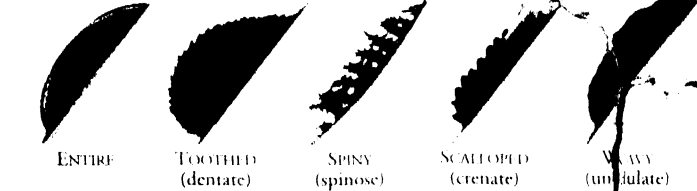
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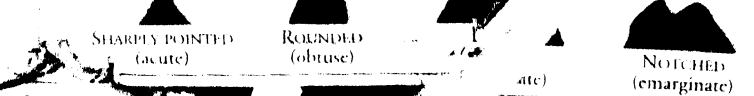
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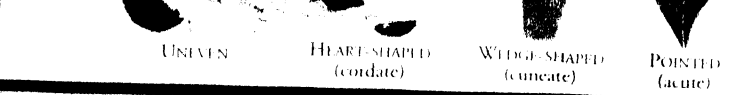
## MARGINS



## TIPS



## BASES



## KEY TO SYMBOLS

MISCELLANEOUS	PLANT DIMENSIONS	TREE SHAPES		
Cross-reference	Typical height	Rounded to broadly spreading	Broadly conical	Small weeping
Plant is pictured (on same page as entry or facing page)	Typical spread	Rounded to broadly columnar	Narrowly conical	Single-stemmed palm, cycad, or similar tree
Plant has received the RHS Award of Garden Merit	Typical height and spread (if the same)	Broadly columnar	Narrowly conical (flame-shaped)	Multi-stemmed palm, cycad, or similar tree
HARDINESS RATINGS				
Frost tender: plant may be damaged by temperatures below 5°C (41°F)	Half hardy: plant can withstand temperatures down to 0°C (32°F)	Frost hardy: plant can withstand temperatures down to -5°C (23°F)	Fully hardy: plant can withstand temperatures down to -15°C (5°F)	



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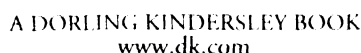
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— CHRISTOPHER BRICKELL —  
*Editor-in-Chief*



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## IMPORTANT NOTICE

This encyclopedia follows Royal Horticultural Society guidelines on potentially hazardous plants, although the properties of many garden plants have yet to be fully evaluated. Where a plant is known to have potentially harmful properties, a warning has been included in the appropriate alphabetical entry. However, any plant substance has the potential to cause an allergic reaction in some people, so due caution should be exercised when handling plants.

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Frontispiece: *Dahlia* 'Wootton Impact'

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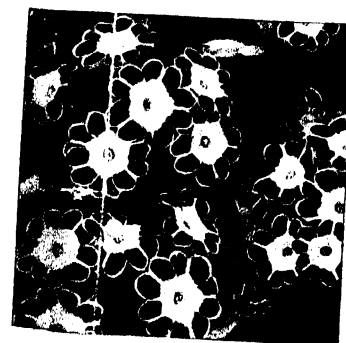
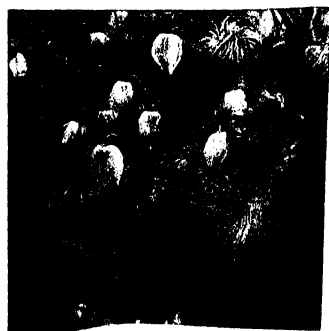
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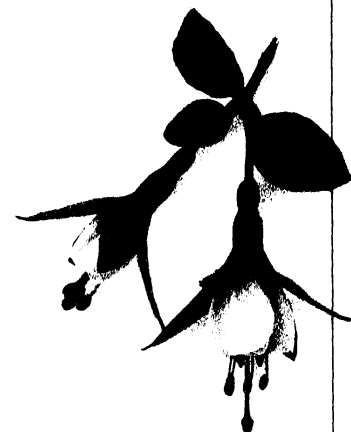
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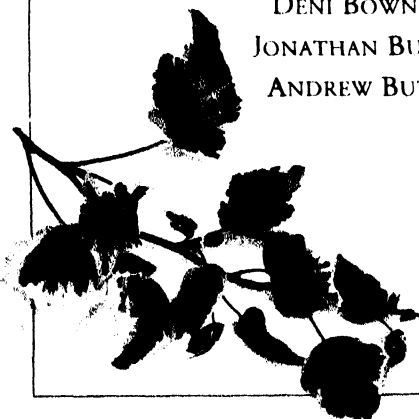
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# FOREWORD

**T**HE FOURTH IN A SERIES of encyclopedias published by Dorling Kindersley in association with the Royal Horticultural Society, *The RHS A-Z Encyclopedia of Garden Plants* is the third on which I have acted as Editor-in-Chief. It is, I believe, a unique work, being extremely comprehensive in its coverage and authoritative in its approach, but nonetheless accessible to all gardeners. Complementary to the remarkably successful *RHS Gardeners' Encyclopedia of Plants & Flowers*, in which some 8,000 plants are arranged by plant type, this new encyclopedia provides detailed descriptions of over 15,000 ornamental garden plants in alphabetical order, using the most up-to-date botanical names, and with thousands of synonyms and common names exhaustively cross-referenced throughout. With more than 6,000 colour photographs closely integrated with the text profiles, it is undoubtedly a landmark in contemporary garden reference.

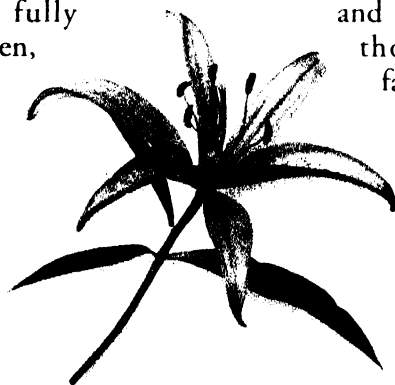
Great care has been taken in the preparation of this encyclopedia to include as broad a range of ornamental plants as possible, satisfying not only traditional tastes but also inspiring new ideas and approaches. To that end, many half-hardy and tender plants are featured, from delicate orchids to exotic palms and tree ferns, together with some of the most outstanding recent introductions – many bearing the Royal Horticultural Society's own Award of Garden Merit. The selection of species and cultivars in each category, from annuals to garden trees, was made in each case by a gardener or horticulturist with current and direct experience of those plants. In short, therefore, all of the plants presented here, although very varied in origin, type, and habit, and with a wide range of cultivation requirements, are fully deserving of their place in any garden, greenhouse, conservatory, or home.

Equally as important as the range of plants covered is the depth, consistency, and accuracy with which they are described. Drawing on the combined contributions of over 40 of the most distinguished plant men and plantswomen worldwide, every plant is described in clear and precise terms, with information necessary for identification and comparison, including diagnostic measurements where appropriate, uniformly presented. Concise introductions to each genus provide background detail on native habitat, hardiness, ornamental features, and where to grow in the garden, and offer unambiguous advice on cultivation, pruning, propagation, and pests and diseases. The entire text has been painstakingly formatted and verified by a dedicated team at both Dorling Kindersley and the Royal Horticultural Society, and its accessibility and authority are further enhanced by the thorough introduction and glossary, the illustrated plant anatomy key on the inside front cover, and of course by the superb pictures, the work of some of our finest gardening photographers.

Immense patience and meticulous attention to detail have been required from all involved, and I am very grateful for the untiring efforts of Jonathan Metcalf, the Managing Editor, and his team, without whom work of this magnitude and complexity would not have been achieved.

*The RHS A-Z Encyclopedia of Garden Plants* continues the very long tradition of the Royal Horticultural Society in producing publications of excellence to help, advise, and instruct gardeners, not only in the UK but also in many other parts of the world. It will, I hope, inspire new generations to cultivate some of the vast range of ornamental plants now available to us, and serve as a reliable and comprehensive source of reference to those already practised in this most fascinating of arts, gardening.

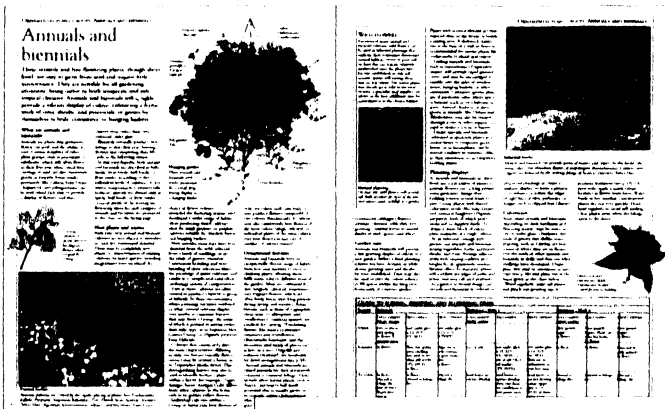
CHRISTOPHER BRICKELL  
Editor-in-Chief



# How to use the encyclopedia

The encyclopedia is arranged in three main sections: an introduction to gardening; the A-Z plant directory itself, in which over 15,000 garden plants are listed by their current botanical names, within genus entries; and a full glossary. An index of topics found in the introduction appears on p.1080, and both endpapers feature a visual key to terms and concepts used in the

plant entries. Common names and synonyms are cross-referenced in alphabetical order throughout the plant directory. Many plants listed have received the Royal Horticultural Society's prestigious Award of Garden Merit (AGM), which recognizes plants of outstanding quality, both in appearance and all-round garden performance, whether grown outdoors or under glass.



## Introduction

Illustrated features outline the key elements of gardening, including plant classification and anatomy, outdoor and under-glass cultivation, propagation, and pruning, and provide a concise introduction to each of the major ornamental plant categories, from trees to tender ferns.

## PAGE HEADINGS

Left-hand headings name the genus described on the page (either continued from the previous page or a new entry); right-hand headings name the last genus on the page.

## PHOTOGRAPHS

Plant portraits appear in alphabetical order within the genus text, and illustrate different growth habits and ornamental features, as appropriate.

## ARTWORKS

Distinctive or complex features of larger genera, such as variations in flower and leaf form, are illustrated and labelled for clearer understanding.

**CLOSE-UP DETAIL**  
Inset photographs show ornamental features with greater clarity.

**MARGINAL MARKERS**  
Coloured tabs move down the margin with the alphabet, for quick location of the letter required.

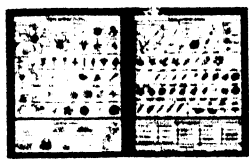
**A-Z plant directory**  
All plants are arranged in alphabetical order within a genus entry, which consists of a short introduction followed by individual plant descriptions. Pictures appear within their relevant text; common names and synonyms are cross-referenced.

## FEATURE PANELS

Close-up views of leaves or flowers may be grouped within major genera, allowing differences in form, colour, or markings to be seen clearly. Panels read alphabetically from left to right.

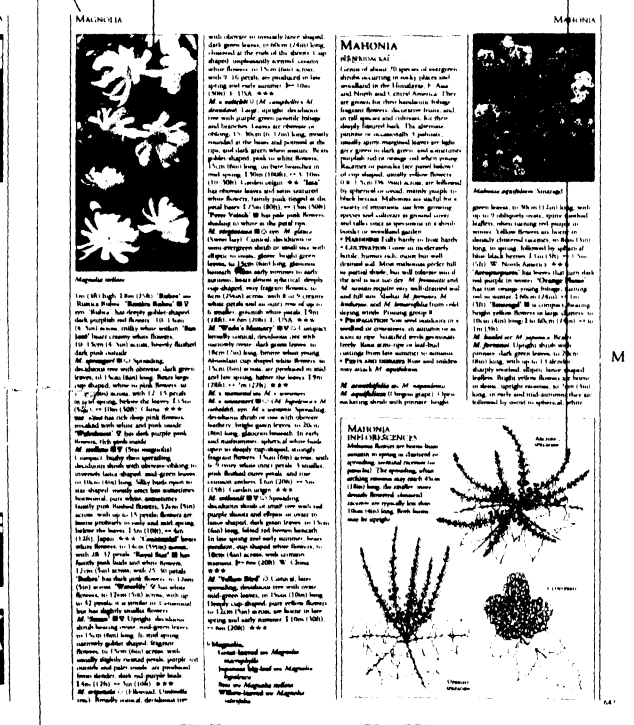
## Endpapers

Quick-reference, visual glossaries to terms and concepts used in the plant entries appear on both front and back endpapers.



## Glossary

All horticultural and botanical terms used in the encyclopedia, as well as other terms used in gardening, are defined here. Some are cross-referenced to related topics in the glossary and the introduction.



## THE GENUS ENTRY

All plants in the A-Z directory are described within a genus entry, the genus being a grouping of one or more species with similar characteristics (see p.11). Each entry includes an introduction to the entire genus, outlining its composition and extent, and the salient features of plants within it. Where information is common to all plants in the genus, it may be presented here but omitted from each individual plant entry. Sections on hardiness, cultivation, propagation, and pests and diseases appear

after the introduction, the advice given being applicable to all cultivated plants in the genus. Individual plant entries follow, under their own bold headings. Variants and cultivars of a species are presented under the main plant entry; only characteristics that distinguish them from the species are described. In all entries, perennials are assumed to be deciduous, and leaves simple and mid-green, unless otherwise stated. All measurements are rounded, for ease of use.

## CROSS-REFERENCES

Common names are cross-referenced in alphabetical order, between genus entries; they are prefaced by the ▷ symbol. Many are inverted (e.g. Mulberry, Red) for more logical access. Synonyms may be cross-referenced between genera, as for common names, or within a genus entry. Cross-references to synonyms of variants and cultivars within a species are included where appropriate.

## GARDEN USE

Suitable sites for planting are suggested, either in the garden or, where applicable, under glass (see p.24 for definitions of the various greenhouse categories). Additional information on subjects such as attractiveness to wildlife, herbal uses, or potentially harmful qualities may also be included.

## HARDINESS

The resistance to cold of all cultivated plants in the genus is defined here, sometimes as a range (see also pp.18-19).

## PROPAGATION

Precise details of propagation techniques set out the most appropriate ways of increasing stock, including any special requirements.

## SYMBOLS

Located after the plant name, symbols indicate that the plant is pictured on that page or the facing page (□), or that it has received the RHS Award of Garden Merit (☞). A range of symbols, such as △, are used to indicate the habits of trees, palms, cycads, and tree-like shrubs (see key right).

## INDIVIDUAL PLANT ENTRY

Each entry begins with the botanical name, in bold type, with the genus name abbreviated. Most entries include a description of habit, leaf and flower characteristics, and other ornamental features, such as fruits, as appropriate.

## GEOGRAPHICAL ORIGIN

The country or region from which the plant originates appears after the plant dimensions. "Garden origin" indicates that an interspecific hybrid has been artificially selected, rather than occurring naturally in the wild.

## VARIANTS AND CULTIVARS

Subspecies, forma, varieties, and cultivar descriptions follow on from the main plant entry. Their names appear in bold type, without the generic name or species epithet, and with "subsp.", "f.", and "var." disregarded for purposes of alphabetization. Only those characteristics that distinguish them from the species are described, including height and spread, hardiness, and geographical origin.

## PICTURE CAPTION

Plants are identified by their full botanical names.

▷ **Hyssop** see *Hyssopus*, *H. officinalis*  
**Anise** see *Agastache foeniculum*

## HYSSOPUS

Hyssop

LABIATAE/LAMIACEAE

Genus of about 5 often variable species of aromatic herbaceous perennials and evergreen or semi-evergreen shrubs, occurring in dry, sandy, and rocky sites from the Mediterranean to C. Asia. The linear to lance-shaped, ovate, or oblong leaves are mid- or blue-green. Tubular, violet-blue to pink flowers are borne in whorls on narrow, spike-like, terminal inflorescences. *H. officinalis* and its cultivars are grown for their aromatic foliage and flowers, and are excellent for a rock garden or herb garden. They are also suitable for low hedging, and for growing at the base of a warm, sunny wall or in containers. The flowers are attractive to bees and butterflies; the foliage has culinary and medicinal uses.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained, neutral to alkaline soil in full sun. Pruning group 10, in mid-spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root soft-wood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***H. officinalis*** □ (Hyssop). Dwarf, semi-evergreen, aromatic shrub with erect shoots and linear to narrowly lance-shaped, or oblong, mid-green leaves, to 5cm (2in) long. Slender spikes of whorled, funnel-shaped, 2-lipped, dark blue flowers, 1.5cm (½in) long, are produced from midsummer to early autumn. ↑60cm (24in), ↔1m (3ft). S. Europe. \*\*\* **f. *albus*** has white flowers. **subsp. *aristatus*** has a dense, upright habit, and produces bright green leaves. **f. *roseus*** has pink flowers.



*Hyssopus officinalis*

## GENUS HEADING

The botanical genus name is followed by any common names or synonyms for the genus. Synonyms only apply where one genus has been completely "sunk" into another.

## FAMILY NAME

The botanical family to which the genus belongs appears after the genus heading. Where opinion differs, more than one name may be listed, in alphabetical order.

## GENUS INTRODUCTION

A broad description of the genus includes the number of species, plant categories, native habitat, geographical origin, and main characteristics of plants in the genus.

## CULTIVATION

Care requirements are given for all cultivated plants in the genus. Pruning advice (for woody plants) refers to one of the 13 groups described on pp.26-27. For tender plants, suggestions for growing both outdoors and "under glass" (which may be in a greenhouse, alpine house, conservatory, or indoors) are included.

## PESTS AND DISEASES

The pests, diseases, and disorders most likely to afflict plants in the genus are listed. "Trouble free" means the genus has no specific problems.

## ALTERNATIVE NAMES

Common names and synonyms are listed directly after the plant name and any symbols. Parents of hybrids, where known, appear in parentheses. Synonyms are prefaced by "syn."

## HEIGHT AND SPREAD

Unless otherwise specified, height (↑) and spread (↔) are for typical mature plants, cultivated in an appropriate site. Where height and spread are the same, only one measurement is given, after the combined symbol (↑↔). Where appropriate, height is of the plant in flower. Container-grown plants may be smaller than the dimensions given. For bulbous plants, ↔ can be used as a guide to planting distance. Height is not given for floating or submerged aquatic plants; spread is not given for climbers.

## HARDINESS RATING

Each full plant description is accompanied by a hardiness rating (see key right). A minimum temperature for successful cultivation is also given for tender plants; individual plants may be able to withstand temperatures slightly lower than this, depending on local conditions and the maturity and health of the plant. Entry for tender orchids include both a minimum and a maximum temperature that will be tolerated. See also pp.18-19.

## HAZARDOUS PLANTS

The majority of garden plants are safe to grow and handle. However, any plant substance is capable of causing an allergic reaction in some people, either through contact or ingestion, so care should always be taken. Warnings are included in the encyclopedia for plants known to have potentially harmful properties, but many plants have yet to be scientifically screened.

Children and animals are most at risk, as they are often attracted to brightly coloured fruits and seed pods, which may cause stomach upset if ingested. Gardeners may also come into contact with plants whose foliage or sap may irritate skin, aggravate allergies, or cause photodermatitis (severe sensitivity to sunlight). The reaction is not always immediate, and may include itching, redness, or blistering.

If an adverse reaction to a plant occurs, seek immediate medical help, and take a sample of the plant for examination. Do not force the affected person to vomit.

## KEY TO SYMBOLS

▷ Cross-reference

☞ Plant has received the RHS Award of Garden Merit

□ Plant is pictured (on same page as entry or facing page)

## HARDINESS RATINGS

☞ Frost tender: plant may be damaged by temperatures below 4°C (41°F). The minimum temperature (min.) for cultivation appears after the symbol

\* Half hardy: plant can withstand temperatures down to 0°C (32°F)

\*\* Frost hardy: plant can withstand temperatures down to -5°C (23°F)

\*\*\* Fully hardy: plant can withstand temperatures down to -15°C (5°F)

## PLANT DIMENSIONS

↑ Typical height

↔ Typical spread

↑↔ Typical height and spread (if the same)

## TREE SHAPES

○ Rounded to broadly spreading

□ Rounded to broadly columnar

□ Broadly columnar

□ Narrowly columnar

△ Broadly conical

△ Narrowly conical

△ Narrowly conical (flame-shaped)

○ Large weeping

○ Small weeping

↑ Single-stemmed palm, cycad, or similar tree

\* Multi-stemmed palm, cycad, or similar tree

# BOTANY FOR THE GARDENER

## The plant kingdom

Plants constitute one of the five kingdoms that are used to classify all living organisms. The plant kingdom, Plantae, is divided into progressively smaller groups according to shared botanical characteristics, usually represented as a family tree. The first, most basic division is between vascular and non-vascular plants. It is the vascular plants that are of interest to gardeners.

### Non-vascular and vascular

Primitive, non-vascular plants, such as fungi, liverworts, and mosses, lack conductive tissue for the circulation of water and nutrients, and are thus confined to a moist environment. Widespread in the wild, their small size and relatively dull appearance render them of limited value in gardens. Vascular plants, on the other hand, which include both flowering and non-flowering plants, are very diverse, the adaptability of their root and shoot systems (see pp.12-13) having enabled them to thrive in many habitats. Although some, such as ferns, reproduce by means of spores, like non-vascular plants, the vast majority (over 250,000 species) reproduce by means of seeds.

### Seed-bearing plants

Vascular plants that bear seed are divided into gymnosperms (literally "naked seed") and angiosperms ("covered seed"). Gymnosperms produce seed that is only partly enclosed by tissues from the parent plant. Conifers, which

normally bear seed on the scales of cones, form the largest family, containing some 550 species. Many, such as cedars (*Cedrus*) and yews (*Taxus*), are very tolerant of heat, cold, or drought, and are therefore of great horticultural importance. Other gymnosperms in cultivation include cycads and ginkgos.

Angiosperms (usually referred to as flowering plants) produce seed in an ovary – a protective chamber that forms part of the fruit when seeds ripen, and often aids in their dispersal (see pp.13, 16). Flowering plants consist of 300 families, containing some 250,000 species. They are further defined as monocotyledons or dicotyledons, according to their seed-leaves (cotyledons) and other differences in their anatomy and growth patterns (see panel below).

### Life-span

Flowering plants can also be categorized by life-span as annuals, biennials, or perennials. Annuals complete their life-cycle within a single season of growth. Biennials



### Natural diversity, artificial selection

*The ability of vascular plants to adapt to different habitats has brought about a vast range of flowering plants. In this water garden, naturally occurring iris species grow alongside cultivars artificially selected by plant breeders.*

live for two seasons, most producing only foliage and amassing food reserves in the first year, then flowering, fruiting, and dying in the next. Perennials thrive for several or many seasons, most flowering annually, once established.

In cultivation, some perennials that bloom most vigorously in their first year are treated as annuals or biennials, and are uprooted after flowering. Tender perennials may also be grown for a season, then discarded in autumn in frost-prone climates. Herbaceous, or soft-stemmed perennials die back to ground level each autumn, then become dormant before producing new shoots in spring. Woody perennials, largely trees and shrubs, may also lose their foliage and become dormant, but they retain their stems, which resume growth with the new season.

### Species, hybrids, and cultivars

In the wild, species are more or less uniform in habit, foliage, flowers, and fruit. Any variation is part of an evolutionary process, and botanists apply subdivisions within a species (subspecies, varieties, and forms) to recognize such differences. A subspecies is a "mini-species" with distinct morphological or genetic variation, and sometimes distinct

geographical distribution; a variety is a wild variety, and its differences from the species are less clear cut; a form is used for colour variants or similar minor differences. All remain more or less stable in the wild, but when grown together in cultivation they may hybridize and the distinctions become blurred.

This variation is exploited by gardeners who select (recognize and name) an individual plant, and



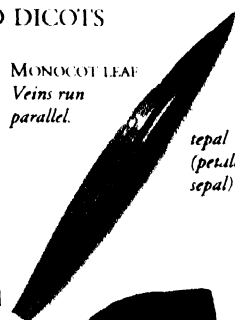
### Monocarpic plants

*Monocarpic plants, like *Cardiocrinum giganteum* var. *yunnanense*, grow for a number of years, flower once, then die.*

### MONOCOTS AND DICOTS

All flowering plants are classified either as monocotyledons or dicotyledons (known as monocots and dicots). Monocots have a single seed-leaf (cotyledon), leaves with veins that run parallel to their length, slender, non-woody stems (except in palms), and flower parts arranged in threes. Their modified sepals resemble petals. Dicots have 2 seed-leaves, a network of veins on their foliage, thick or woody stems, and flower parts (enclosed in leaf-like sepals) arranged in multiples of 4, 5, 7, or more. See also pp.14-16.

MONOCOT LEAF  
Veins run parallel.



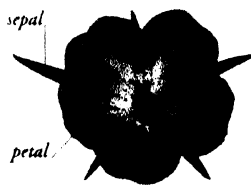
DICOT LEAF  
Veins form a network.



tepals (petaloid sepals)



MONOCOT FLOWER  
Sepals resemble petals; both are termed tepals.



DICOT FLOWER  
Petals differ from sepals.

## PLANT CLASSIFICATION AND NOMENCLATURE

In this encyclopedia, all plants are listed by their up-to-date botanical names (except for a few genera, such as *Chrysanthemum*, where an older name has been preserved for the benefit of gardeners). Botanical names are preferred to common names, as they are recognized internationally and apply to one plant only. They may refer to the person who first collected the plant or to a salient characteristic (e.g. *Gilia tricolor*, named after Felipe Gil, a Spanish botanist, and the Latin for 3-coloured, referring to the flowers).

The basic unit of plant classification is the species, denoted by a binomial (see right). Naturally occurring variants of a species – subspecies, varieties, or forma – are given an additional epithet prefixed by "subsp.", "var.", or "f.". Artificially selected cultivars of a species are given a vernacular name, often by the grower, which appears in single quotation marks after the species name, for example *Calluna vulgaris* 'Firefly'. Some cultivars are also registered with trademark names, which are often used commercially instead of the true cultivar names. Sexual hybrids are denoted by a multiplication sign (for example, *Rosa* × *odorata*), and graft hybrids by a plus sign (+ *Laburnocytisus adamii*). In this encyclopedia, parents of hybrids, where known, are given in brackets after the plant name.

Botanical names do occasionally change, mainly when research reveals a misidentification or an older name that takes precedence, or when plant groups are reclassified. When this occurs, the superseded names become synonyms. In this encyclopedia, these are given directly after the plant name and are cross-referenced. A name appended with "of gardens" indicates that the name is commonly used but misapplied.

propagate it to maintain it. If several species of one genus are cultivated together, they may hybridize, giving rise to offspring sharing characters of both parents, for example *Camellia* × *williamsii* (*C. japonica* × *C. saluenensis*). Seedlings from these crosses may vary, and may be selected and given cultivar names, such as *C. × williamsii* 'Mary Christian'. If the resulting hybrids are fertile, several generations of plants may be produced. In time, the parentage of the offspring becomes obscured, reflected in the style of name chosen, for example *C. 'Leonard Messel'*. Although most are the result of hybridizing in cultivation, interspecific hybrids may also occur in the wild.

Closely related genera can also hybridize in cultivation; for example, *Cupressus* and *Chamaecyparis* have crossed to produce the intergeneric hybrid × *Cupressocyparis*. This name applies to all hybrids between the two genera, and individual cultivars may be selected, propagated, and

### Family

Group of one or more genera that share a set of underlying features. Family names usually end in -aceae. The limits of families are often controversial and unclear.

### Genus (pl. genera)

Group of one or more plants that share a wide range of characteristics. Names are printed in *italic type* with an initial capital letter. Hybrid genera are denoted by a multiplication sign before the genus.

### Species

Group of plants that are capable of breeding together to produce offspring similar to themselves. Species are given a two-part name, or binomial, printed in *italic type*: the first part, with an initial capital letter, is the genus; the second part is the species epithet, which distinguishes it from other species in the genus.

### Subspecies

Naturally occurring, distinct variant of a species, often an isolated population. Indicated by "subsp." in *roman type*, followed by the subspecific epithet in *italic type*.

### Varietas (variety) and forma (form)

Minor subdivisions of a species, differing slightly in their botanical structure. Indicated by "var." or "f." in *roman type*, followed by the variety or form epithets in *italic type*.

### Cultivars

Selected or artificially raised, distinct variants of species, subspecies, varieties, forma, or hybrids. Denoted by a vernacular name in *roman type* within single quotation marks, e.g. *Calluna vulgaris* 'Firefly'. If the parentage is obscure or complex, the vernacular name may directly follow the generic name, e.g. *Rosa* 'Goldfinch'.

named. A further category is the graft hybrid, which involves two or more genera or species being grafted together to produce a plant composed of the tissue of the parent plants. Only a few examples are known, such as + *Laburnocytisus adamii*.

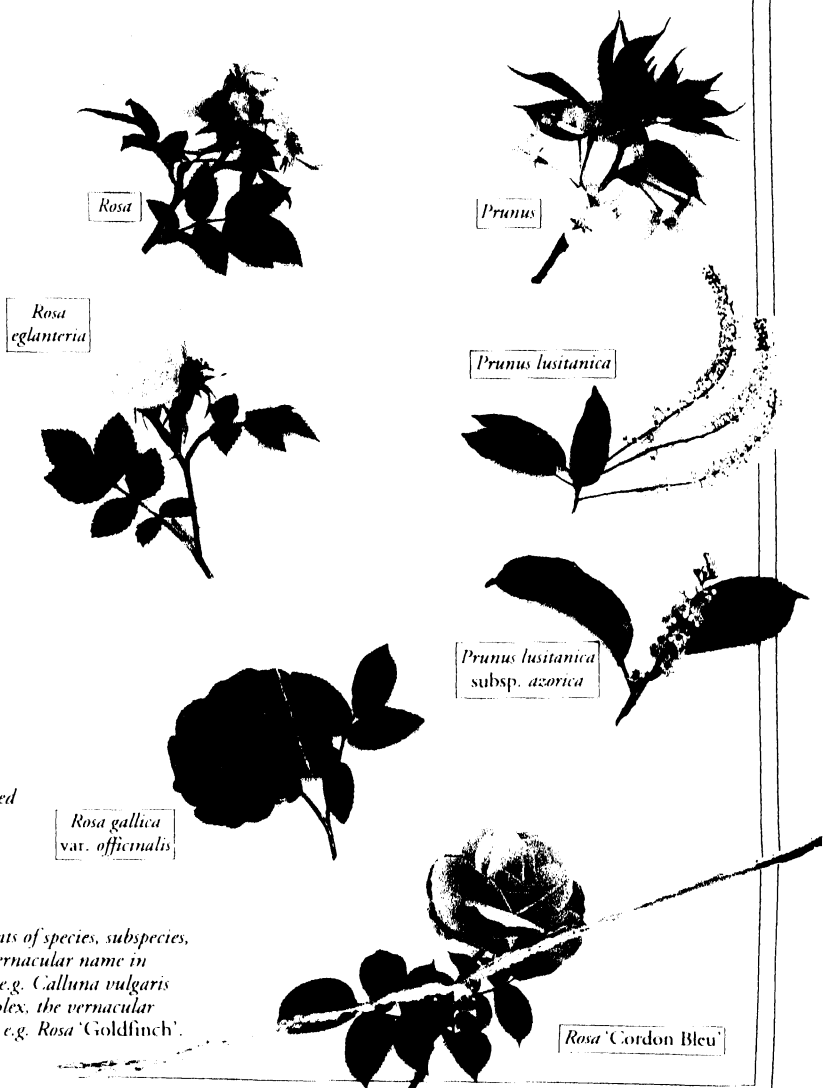
A cultivar is any artificially raised or selected plant (the name being a contraction of cultivated variety) that is clearly distinct, uniform, and stable in its characteristics, and able to be maintained by propagation. Some cultivars are increased vegetatively (asexually, also referred to as cloning) from an individual plant, and are maintained by this method. Other cultivars are raised from seed (normally sexually); these are usually annuals, but may also be herbaceous perennials, and their characteristics can only be maintained by removing all plants not true to type. If rigorous selection is not carried out, plants sold under those cultivar names may not have the expected characteristics.

Sports are mutations resulting from genetic change, which produce shoots or flowers differing from those of the parent plant. If a mutation is propagated vegetatively, it may be named as a cultivar and maintained – many variegated plants occur in this way. Not all sports are stable; some often revert to the parent's characteristics.

### Groups, Grexes, and Series

Hybridization and subsequent selection has produced many cultivars with similar characteristics. For convenience, these are often classified in named cultivar Groups that denote their similarities, for example *Tulipa* Lily-flowered Group. Some Groups may at first not contain any named cultivars; these may be included at a later date once selected. In orchid nomenclature, the term Grex is used as an equivalent of Group but is based on known parentage, whereas the parentage in Groups may not be certain. Commercially, the terms

## Rosaceae



Series and Group are used interchangeably. Series are often based on breeding lines that give a high degree of consistency in their offspring, often coming almost true. A Series usually includes a number of cultivars differing only in one characteristic, such as flower colour. In some cases a Series may be deliberately constituted as a mixture of cultivars, so that it provides a range of flowers of different colours but of the same character – often for use in bedding schemes.

mutant  
yellow petals

### SPORT

A sport is a genetic mutation, often of flower colour, as seen in the ray-florets of this chrysanthemum.



# The life of a plant

Flowering plants have evolved a range of strategies and structures that enable them to survive and reproduce in diverse habitats. Knowing how plants function and understanding their life-cycle are a vital part of raising and maintaining healthy specimens, and successfully increasing stocks, whether from seed or by other means.

## Seeds, shoots, and roots

Seeds are a plant's essential agent of reproduction. Each seed contains the embryo of a new plant, and is genetically programmed to start into growth only when conditions are absolutely right. In temperate climates, for example, the soft growth of many flowering plants is unable to withstand severe winter cold. The seeds of plants from such areas remain dormant in the soil until spring, when they germinate, triggered mainly by water intake, but also by factors such as rising temperatures of air and soil, higher levels of light and humidity, and increasing day length.

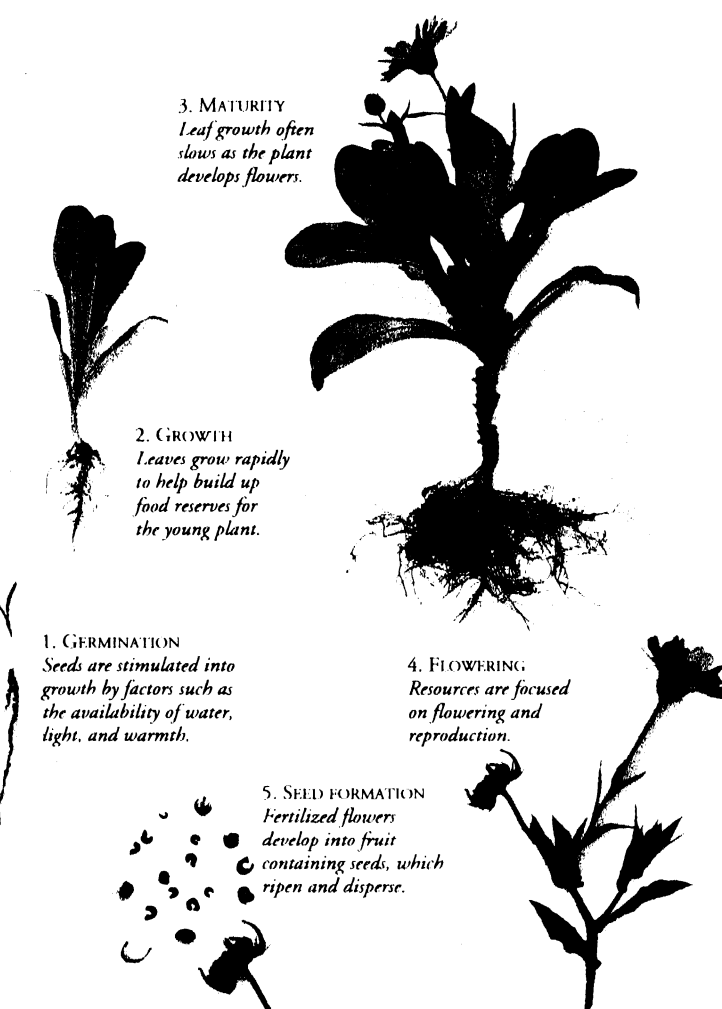
Some seeds, such as those of many alpine plants, must experience a period of cold before they will germinate. In cultivation, dormancy may be broken by stratification, which involves the intake of water by the seed, followed by a period of cold: the seeds must be sown outdoors in autumn, then exposed to winter frost; or kept warm and moist for a few days and then placed in a refrigerator for 3–18 weeks. For tough-coated seeds, dormancy may be broken by scarification: nicking or abrading the outer casing to encourage the seed to absorb water (see also p.28).

Successful germination is usually indicated by the emergence of seed-leaves (cotyledons) – a single leaf in monocotyledons, a pair of leaves in

## Life-cycle of a flowering plant

*The life-cycle of an angiosperm has several phases, often regulated by seasonal variations such as water availability, air temperature, and day length. Germination is followed by a period of growth. The mature plant then flowers and sets seed. With annuals and biennials, this cycle occurs once; with most perennials, growth and flowering recurs for many years.*

dicotyledons. These first leaves and a stem rapidly develop into the mature shoot system. Its initial function is to gather energy from sunlight, which is essential for photosynthesis. During this process, the plant uses a complex series of chemical reactions to produce sugar, in the form of glucose, from carbon dioxide and water. Glucose provides the plant with energy for growth, but it is also a component in the manufacture of more complex substances. One of these is cellulose, a tough, fibrous material that gives strength and flexibility to cell walls. Another is starch, which is stored in the cells to provide a supply of energy later on. Once a plant has reached maturity, the resources of the shoot system are concentrated on forming the structures involved in reproduction: flowers, followed by fruits, which contain seeds for regeneration (see pp.16–17).



Hidden below ground, the root system also makes an essential contribution to a plant's health and vigour, not only anchoring the plant but also absorbing a constant supply of moisture and nutrients from the soil. Some plants develop a tap root system with one main root; others form a widespread, fibrous root system in which there is no main, or tap root. Microscopic root hairs fan out from the root tips, vastly increasing the surface area of each root, and therefore the amount of water and nutrients it can take up.

For a healthy root system, always prepare the ground thoroughly before sowing or planting: loose, well-aerated soil allows roots to spread widely in their search for food and water.

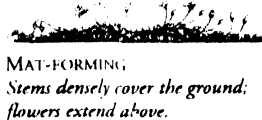
After it has entered through the roots, water is drawn up through the plant in a process known as transpiration, carrying minerals to the leaves where oxygen and water evaporate through stomata (microscopic pores) in the leaf surface. Most moisture leaves the plant in this manner, although some is used

## GROWTH HABITS

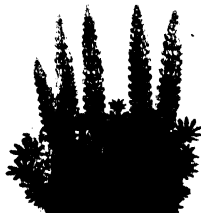
As with other organisms, the way a plant grows – whether it is stemless, or climbing, or clump-forming, for example – is genetically determined, laid down in a blueprint carried in every cell. How well individual plants grow varies with availability of light, exposure to wind, and competition for food and space with other plants.



**SPREADING**  
Stems extend horizontally then ascend, forming a densely packed mass.



**MAT-FORMING**  
Stems densely cover the ground; flowers extend above.



**CLUMP-FORMING**  
Flower stems and leaf-stalks arise at ground level to form a dense mass.



**PROSTRATE AND TRAILING**  
Stems spread out on the ground; flowers are borne close to foliage.



**STEMLESS**  
Flower stems and leaf-stalks arise at ground level.



**CUSHION- OR MOUND-FORMING**  
Tightly packed stems form a low clump; flowers are close to foliage.



**ERECT**  
Upright stems stand vertical, supporting leaves and flowers.

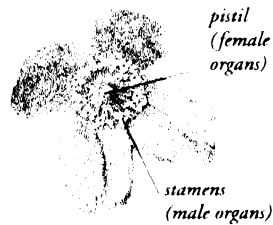


**CLIMBING AND SCANDENT**  
Long, flexible stems are supported by other plants or structures.

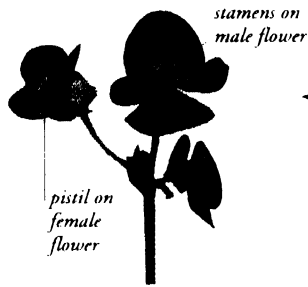


## MALE AND FEMALE

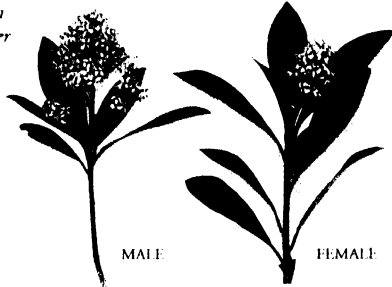
Most plants have bisexual (hermaphrodite) flowers, containing both male and female reproductive organs. These may pollinate themselves or be pollinated by another plant of the same species. Other plants produce unisexual flowers: on a monoecious plant, male and female flowers are borne separately; on a dioecious plant, the flowers are either all male or all female, so both male and female plants must be grown to produce fruit. A few species are polygamous, with both bisexual and unisexual flowers.



**BISexual (HERMAPHRODITE) PLANTS**  
Each flower contains both male and female organs. It may pollinate itself, or be pollinated by another plant of the species.



**MONOECIOUS PLANTS**  
Flowers are either male or female, but are borne on the same plant.



**DIOECIOUS PLANTS**  
Male and female flowers form on separate plants; both are needed for fertilization.

as a raw material in photosynthesis. The movement of water through a plant also keeps its cells turgid (swollen), enabling the stem to stay upright. When water is in short supply, the stem quickly loses its rigidity (wilts) and the plant may die, particularly if transpiration is increased by hot, dry, frosty, or windy weather. In cultivation, therefore, provide plants – especially those that are grown under glass or in containers outdoors – with a regular supply of water, and food in the form of fertilizers. Too much water, however, may inhibit growth by waterlogging the soil or compost, so that oxygen intake is impossible and the roots die or rot. On the

other hand, an excess of nutrients, mainly nitrogen, may encourage the strong growth of lush foliage at the expense of flower production.

### Modified shoots

Many plants have evolved modified shoot and root systems in response to the conditions in their native environments. Above ground, the winding tendrils of climbing plants are stems or leaves that have become adapted for grasping a support

#### TAP ROOTS

As a young plant develops, its tap root grows downwards before branching, anchoring the plant to the ground and holding top-growth stable against wind-rock.

in the upward quest for light. Thorns are modified branches that deter plant-eating animals. In plants that live in arid conditions, such as cacti, leaves are often reduced to spines to minimize water loss, while the swollen, succulent stems perform photosynthesis and store water. Similarly, the trunk of the tropical baobab tree (*Adansonia digitata*) swells with water-filled tissue, permitting vital functions and growth to continue even during long periods of sparse rainfall.

In some plants, a significant part of the shoot system develops below ground. Subterranean stems include swollen structures such as bulbs, corms, tubers, and rhizomes, which act as food stores. They also increase in number, by producing offsets or bulbils for example. Such plants offer a simple means of propagation, since when dormant they may be lifted, divided, and replanted.

Unlike other swollen stems, rhizomes grow horizontally, often close to or at the surface of the soil. Adventitious roots arise at the nodes along the length of the rhizome, rather than from its base as with a conventional stem. The rhizomes of some perennials, such as certain irises, have a relatively slow growth rate. In others, however, such as the bamboo *Yushania anceps*, the rhizomes spread very vigorously, rapidly defeating more delicate competitors for available space, light, moisture, and nutrients. A knowledge of such growth habits is indispensable for gardeners, to avoid any one plant becoming dominant or invasive.

## FRUITS

Fruits are formed from the ovaries of flowering plants. They protect the seeds, and often aid their dispersal. Soft, fleshy fruits are eaten by animals and birds, which disperse the seeds in the process; dry pods or capsules split open when ripe to scatter the seeds.

The cones of many conifers and other gymnosperms are not true fruits, as they are not formed by the ovaries. However, conifers such as yews (*Taxus*) do produce soft, berry-like structures, but the flesh (the aril) is produced on the seed itself, rather than by the ovary of the parent plant.



**BERRY**  
Non-splitting fruit with one to numerous seeds surrounded by soft flesh. Many soft, fleshy fruits are loosely referred to as berries.



**STONE-FRUIT (drupe)**  
Non-splitting fruit with soft flesh surrounding one or several hard seeds (stones).



**POME**  
Non-splitting fruit with firm flesh surrounding chambers containing seeds.



**NUT**  
Non-splitting fruit with a hard casing surrounding a softer seed (kernel).



**CAPSULE**  
Dry fruit that normally splits open when ripe to disperse seeds.



**CONE**  
Not a true fruit. Woody scales part to release seeds when conditions are favourable.



**POD (legume)**  
Usually firm or dry fruit that splits along 2 sides when ripe to release seeds.

## Alternative root systems

In the same way that shoots may sometimes develop below ground, so roots may grow above it. Climbing plants such as ivies (*Hedera*) have adventitious, aerial roots arising from their stems. These roots cling to any surface, and penetrate the smallest cracks and crevices, where they expand until the plant is securely attached to its support. Many low-growing plants of spreading habit, such as periwinkles (*Vinca*), produce adventitious roots from nodes on the stems. In cultivation, this is encouraged by layering (pinning stems down to root in the soil) for the purposes of propagation.

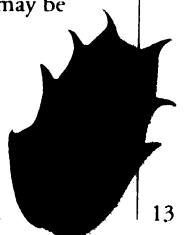
Aerial roots are also produced by epiphytic plants, which lodge on other plants and derive moisture and nutrients from the atmosphere, rather than from the soil. In tropical rainforest, epiphytes are often found in the higher branches of trees, where they benefit from increased levels of light near the upper canopy. In such plants, the root system is highly specialized for a

permanent existence above ground. The plant is held secure by a network of generally thickened roots, which wrap themselves around twigs and branches in similar fashion to tendrils, and are able to take up rainwater.

A number of trees, such as screw pines (*Pandanus*) and banyans (*Ficus microcarpa*, *F. benghalensis*), develop additional roots above ground to support them when mature. Stilt roots, for example, are adventitious roots that arise from the trunk, whereas wide-spreading buttress roots are either outgrowths of the trunk or fused, adventitious, aerial roots, forming flanges that provide the tree with extra support; both are commonly found on trees in tropical rainforest, where the soil is relatively shallow, or may be heavily saturated.

#### PHYLLOCLADE

The modified stems of some succulents, known as phylloclades, perform similar functions to leaves.



# Leaves

Leaves fuel the growth of a plant by utilizing solar energy to manufacture food. They also control the passage of water through the plant, which gives it rigidity. The enormous diversity of leaf shapes, sizes, forms, and arrangements, as illustrated here, is the result of plants adapting to conditions in a vast range of habitats.

## Structure and function

The basic component of a leaf is the blade (lamina). Simple leaves consist of one continuous blade, while compound leaves are divided into separate leaflets (see Lobing and division, right). Most leaves are attached to the stem by a slender stalk (petiole), but some, as in the case of many monocotyledons, are stalkless (sessile). The leaves (fronds) of ferns often have numerous divisions, and uncurl as they grow. Reproductive, spore-bearing structures usually form on their undersides (see p.51). Some flowering plants have modified leaves, such as the tendrils of climbers (see p.13).

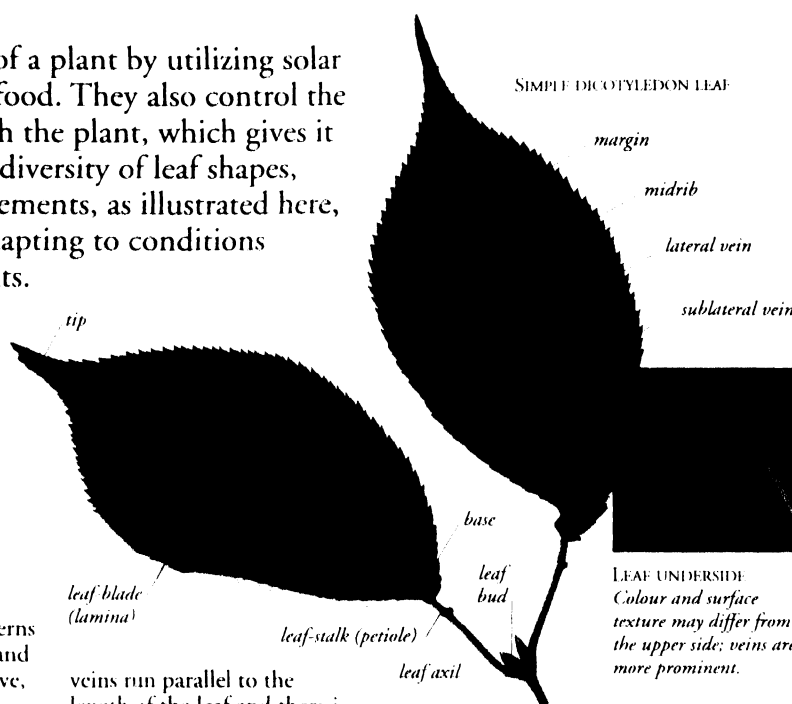
The veins on a leaf are extensions of the food and watering tissue (xylem and phloem) of the stem. The leaves of dicotyledons usually have a primary vein (midrib), with a subsidiary network of veins fanning out from it. In monocotyledons, the

veins run parallel to the length of the leaf and there is often no distinct midrib (see p.10).

The greatest division within leaf types lies between deciduous and evergreen foliage in trees and shrubs. Evergreen leaves are shed and replaced throughout the year, while deciduous leaves are all replaced annually, mostly falling in autumn to minimize moisture loss in winter.

A leaf's main functions are photosynthesis and transpiration (see

SIMPLE DICOTYLEDON LEAF



## Leaf structure

Although some are divided into separate leaflets, the leaves of most dicotyledons and virtually all monocotyledons consist of a single, flat leaf-blade.

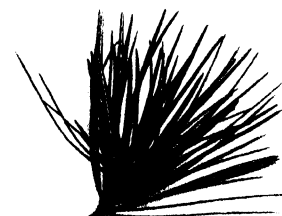
pp.12-13). The first relies heavily on the presence of chlorophyll (the pigment that makes most leaves green), and the second on stomata (minute pores) on the leaf surface.

## CONIFER LEAVES

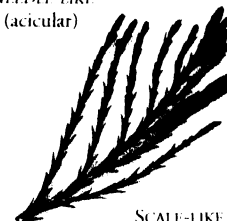
Most coniferous trees and shrubs have linear leaves, which are often needle-like or scale-like, and covered in a thick, waxy outer layer. These factors help to reduce moisture loss, especially useful in winter when roots cannot take up water from frozen soil. Leaves may be arranged singly, in pairs on either side of the stem (pectinate), or in whorls.



COMB-LIKE (pectinate)



NEEDLE-LIKE (acicular)



SCALE-LIKE

## COLOUR AND TEXTURE

Leaf colour, which may be affected by surface texture, normally changes in deciduous plants as the leaf ages, due to the breakdown of pigments, especially chlorophyll. In variegated leaves, pigments are unevenly dispersed, usually due to a mutation.



GLAUCOUS



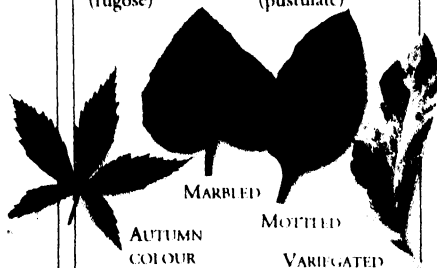
WHITE-MEALY (farinose)



CORRUGATED (rugose)



WARTY (pustulate)



AUTUMN COLOUR

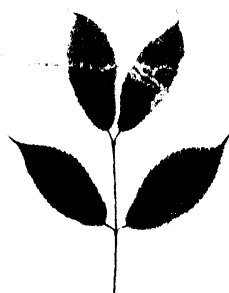
MOTTLED

VARIEGATED

## LEAF ARRANGEMENTS

The leaves of plants are arranged in a variety of ways to ensure maximum exposure to sunlight in different environments. In some cases, the leaf arrangement may help collect rain-water. Members of a genus or family often have a common arrangement.

In some species, leaves are densely packed at each leaf node (joint with the stem), forming a rosette or whorl. In others, leaves are borne individually or in pairs, separated by a length of bare stem (internode), as in opposite, alternate, and perfoliate arrangements. Some leaves are spirally arranged around the stem.



OPPOSITE  
Leaves arranged in pairs on the same plane.



ALTERNATE  
Leaves arranged singly on alternate sides of stem.



PERFOLIATE  
Leaves arranged singly or in pairs, bases surrounding stem.



ROSETTE  
Leaves densely packed, radiating from single point on stem or from base of plant.



WHORLED  
Leaves in groups of 3 or more around stem.



2-RANKED (distichous)  
Leaves arranged on stem in 2 flattened, opposite ranks.

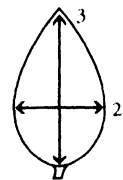


4-RANKED (decussate)  
Leaves arranged in pairs at alternate right-angles.



# SHAPE

Leaf shape may not be consistent within a species: in some, it depends on a leaf's position on the stem; in others, on whether plants are juvenile or adult. Certain aquatic plants produce one type of leaf under water, another type above the surface. This panel illustrates leaf shapes and terms, and characteristic length to width ratios.

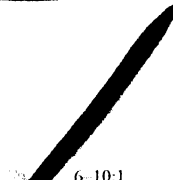


RATIO EXAMPLE:  
Length:width  
here is 3:2.



12:1

LINEAR  
(acicular/filiform)



6-10:1

STRAP-SHAPED  
(ensiform/ligulate/  
lorate)



2-4:1

OBLONG

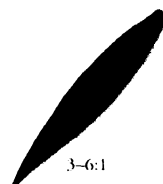


SICKLE-SHAPED  
(falcate)



3-6:1

LANCE-SHAPED  
(lanceolate)

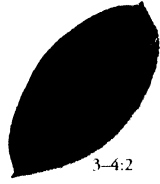


3-6:1

INVERSELY  
LANCE-SHAPED  
(oblancoate)



SPOON-SHAPED  
(spatulate)



3-4:2

OVAL



2:1

ELLIPTIC



3:2

OVATE



6:5-6

ROUNDED  
(orbicular)



HEART-SHAPED  
(cordate)



KIDNEY-SHAPED  
(reniform)



INVERSELY HEART-  
SHAPED (obcordate)



3-4:2

OBOVATE



DIAMOND-SHAPED  
(rhomboidal)



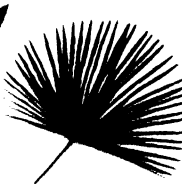
TRIANGULAR  
(deltoid)



SPEAR-SHAPED  
(hastate)



ARROW-  
SHAPED (sagittate)



FAN-SHAPED  
(flabellate)



PELTATE

# LOBING AND DIVISION

Simple leaves consist of one blade with a continuous surface. This, however, does not preclude them from being lobed to very varying degrees. Shallowly lobed and pinnatifid leaves have lobes cut no deeper than halfway to the midrib. Palmately lobed and pinnatisect leaves have deeper, more distinct lobes.

Compound leaves have blades that are fully divided into leaflets. In palmate leaves, leaflets arise from a single point at the top of the leaf-stalk. In pinnate leaves, the leaflets arise on both sides of a main axis. The leaflets may be stalkless, and may themselves be subdivided. Two features can help to show that compound leaves are single entities, whatever their size or complexity: in many cases, they are shed as a single unit, and while buds form in the axil of a compound leaf, they do not occur in the axils of individual leaflets.



SHALLOWLY LOBED  
With shallowly cut lobes.



PALMATELY LOBED  
With deeply cut lobes.



3-PALMATE/TERNATE  
(trifoliate) With 3 leaflets.



5-PALMATE  
(digitate) With 5 leaflets.



9-PALMATE  
With 9 leaflets.



PINNATIFID  
Pairs of shallowly cut lobes  
on each side of midrib.



PINNATISECT  
Pairs of deeply cut lobes  
on each side of midrib.



PINNATE  
Fully divided into leaflets  
along a single axis.



2-PINNATE (bipinnate)  
Each division divided  
along 2 axes.



3-PINNATE (tripinnate)  
Each division divided  
along 3 axes.

# TIPS AND BASES

The tips and bases of leaves vary greatly. The leaves of monocotyledons are often linear, with rounded or pointed tips. Leaves of dicotyledons display greater diversity of tip and base shapes, including lobed bases that meet the leaf-stalk, and narrow "drip tips", which channel rainwater away from the plant. In a decurrent leaf, the leaf-stalk, and sometimes the base of the leaf-blade, is joined to the stem below the node. Some leaf bases partly sheathe the stem.

## TIPS



SHARPLY POINTED  
(acute)



ROUNDED  
(obtus)

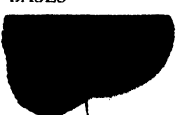


BLUNT  
(truncate)



NOTCHED  
(emarginate)

## BASES



UNEVEN



HEART-SHAPED  
(cordate)



WEDGE-SHAPED  
(cuneate)



POINTED  
(acute)

# MARGINS

Most monocotyledons have leaves with smooth margins, without indentations (entire). Many dicotyledons have more complex leaf margins: they may have sharply pointed teeth, or be scalloped, lobed, or deeply incised, as if cut or torn. Most leaves have flat blades, but in some the margins are wavy, or tightly rolled inwards or outwards. Ciliate leaves have marginal hairs.



ENTIRE



SCALLOPED  
(crenate)



FINELY TOOTHED  
(serrate)



TOOTHED  
(dentate)



WAVY  
(undulate)



SPINY  
(spinose)

# Flowers

Flowers are unique structures that house the reproductive organs of angiosperm plants. Although all flowers share similar underlying features, which enable them to produce seed, they have evolved an enormous variety of shapes, sizes, colours, and fragrances. In cultivation, this diversity has been further enhanced by selective breeding.

## Structure and function

All parts of a flower arise from the enlarged or elongated tip of a stem (the receptacle). Most flowers consist of a whorl of colourful petals (the corolla), surrounded by an outer whorl of leaf-like, often green sepals (the calyx). In most monocotyledons, the sepals look like the petals, and the two alternate around the rim of the flower; both are then known as tepals (or perianth segments in some genera).

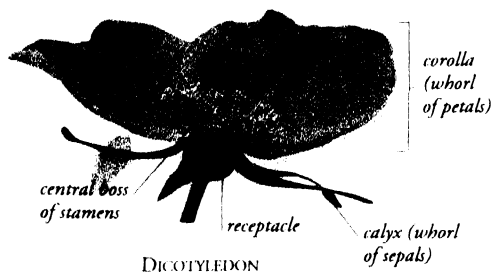
At the centre of a bisexual flower, male reproductive organs (stamens) surround the female part or parts (carpels – collectively known as pistils). Each stamen consists of a pollen-producing anther at the end of a slender stalk (filament). Flowers may have one or more carpels: each carpel has a stigma, which receives the pollen, connected by a stalk (style) to an ovary containing one or more ovules. Once the ovules have been fertilized by pollen, they develop into seeds, which contain food to sustain the embryo plant until its shoot and root systems can fuel growth.

Although many plants are able to pollinate themselves, most have mechanisms that encourage cross-pollination – the transfer of pollen from one plant to another. This increases the genetic diversity of the seeds, improving seedlings' chances of survival. In cultivation, cross-pollination is used to produce plants with new or improved traits (see p.11).



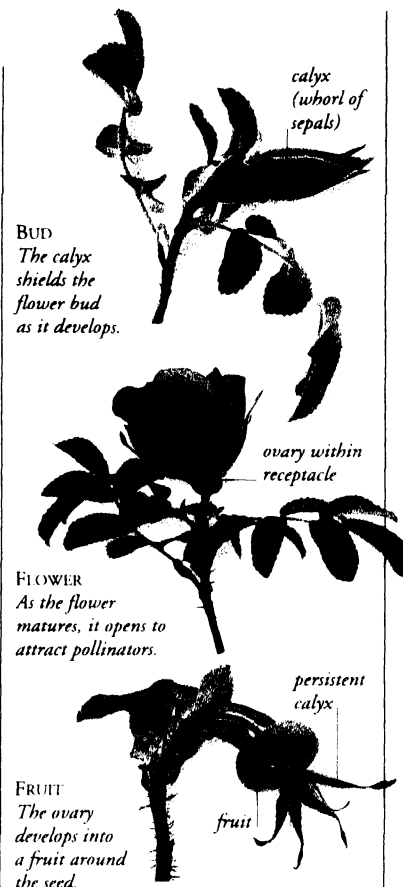
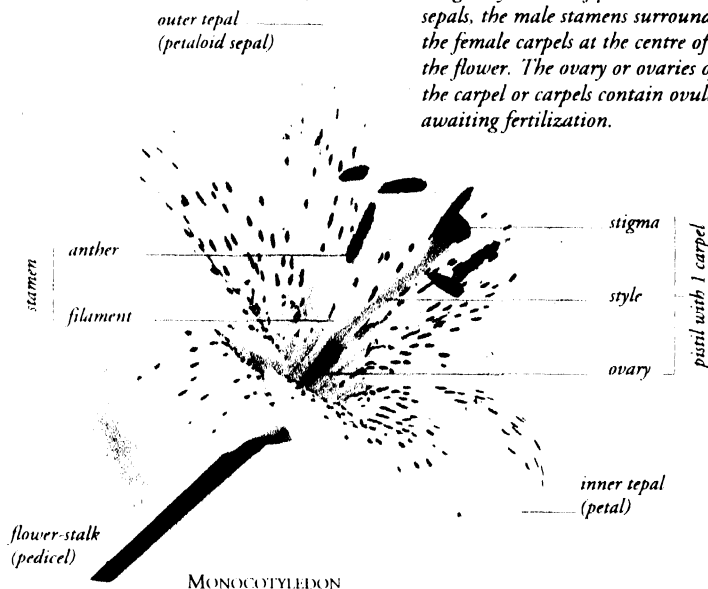
## Ornamental attractions

Many insect-pollinated flowers, such as *Lonicera periclymenum* 'Serotina', have a sweet fragrance and attractive form that make them a popular choice among gardeners.



## The parts of a flower

Ringed by whorls of petals and sepals, the male stamens surround the female carpels at the centre of the flower. The ovary or ovaries of the carpel or carpels contain ovules awaiting fertilization.

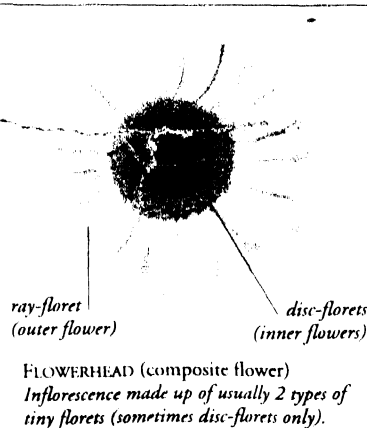


## Life-cycle of a flower

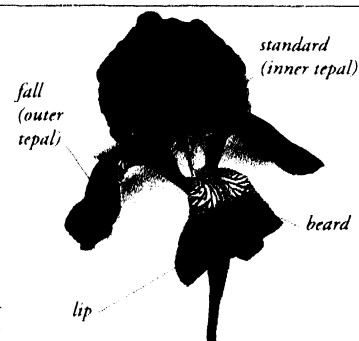
The calyx protects the developing flower bud, which eventually matures to reveal its reproductive organs. Once ovules are fertilized by pollen, the ovary develops into a fruit containing one or more seeds capable of germination into new plants.

## DIFFERENT STRUCTURES

Flowers have evolved innumerable forms in order to facilitate pollination – by insects and other animals, wind, and, more rarely, by water. Flowers that are pollinated by insects or other animals are typically brightly coloured and sweetly scented, often containing sugar-rich nectar. Some have specialized forms to encourage a particular pollinator: the flowers of certain orchids, for example, resemble female insects, which attract the males. Wind-pollinated flowers tend to be smaller and less conspicuous, although in plants such as grasses, they are often crowded into attractive inflorescences.



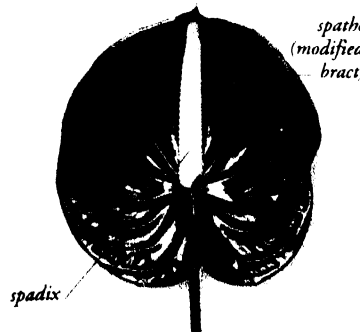
**FLOWERHEAD (composite flower)**  
Inflorescence made up of usually 2 types of tiny florets (sometimes disc-florets only).



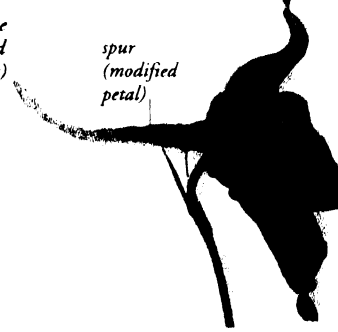
**IRIS FLOWER**  
Flower with very distinct tepals (perianth segments) and parts in threes.



**BRACE**  
Modified leaves forming an involucre that surrounds the base of a flower or flowerhead.



**SPATHE**  
Modified, hood-like bract surrounding a spike of tiny flowers (spadix).



**SPURRED FLOWER**  
Flower with a petal modified to form a hollow projection, often containing nectar.

## INFLORESCENCES

Some plants bear solitary flowers, each on its own stem. In many others, flowers are grouped into inflorescences. The type of inflorescence may be identified by the way the flowers are arranged on the stem (the arrows in the diagrams indicate that the main axis may extend further). Some compound flowerheads resemble a single flower.



TERMINAL  
Borne at the  
end of a stem.



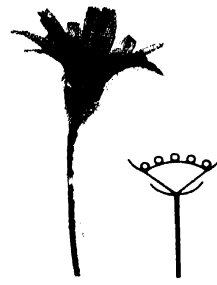
AXILLARY  
Borne from  
a leaf axil.



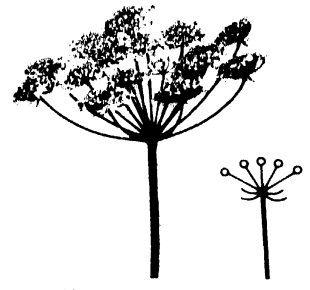
SOLITARY  
Flowers are borne  
singly on a stem.



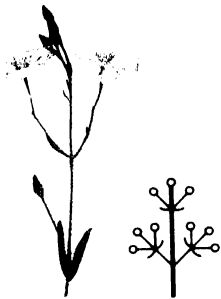
CLUSTER  
Several stalked flowers arise  
from a single point on a stem.



FLOWERHEAD (capitulum)  
Stalkless florets are densely  
packed on a disc-like pad.



UMBEL  
Stalked flowers radiate from a  
single point at the top of a stem.



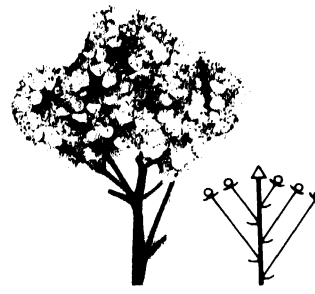
CYME  
A flower terminates each  
branch, the oldest in the centre.



SPIKE  
Stalkless flowers radiate  
from an unbranched stem.



RACEME  
Stalked flowers radiate  
from an unbranched stem.



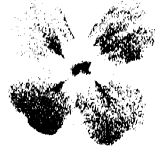
CORYMB  
Flat-topped or domed, the stalked  
flowers alternating on the stem.



PANICLE  
Branched raceme (or sometimes  
cyme or corymb) of stalked flowers.

## SHAPE

Flower shapes are divided into 2 types: either regular or radially symmetrical and rounded in outline; or long, and irregular or symmetrical along one axis only. Petals may be separate (free) or partly fused, forming a funnel-shaped or tubular flower. In composite flowers, the florets may be elongated, but the flowerhead is usually rounded.



CROSS-SHAPED  
(cruciform)



STAR-SHAPED  
(stellate)



SAUCER-SHAPED



CUP-SHAPED



BELL-SHAPED  
(campanulate)



TUBULAR



FUNNEL-SHAPED



SAVERFORM



TRUMPET-SHAPED



ROSETTE



POMPON



PEA-LIKE



PITCHER-SHAPED



SLEEPER-SHAPED

## PETAL ARRANGEMENTS

Virtually all flowers in the wild have a single whorl of petals. A few may have more, but this is much more common in cultivation. Semi-double flowers have

2 or 3 rows of petals; double flowers have many rows and few or no stamens; fully double flowers have a dense dome of petals and few or no stamens.



RECURVED PETALS



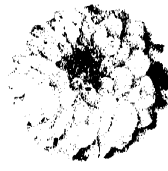
REFLEXED PETALS



SINGLE



SEMI-DOUBLE



DOUBLE



FULLY DOUBLE

## HABITS

The habit of a flower or inflorescence describes its orientation on its stalk when mature. In some plants, this changes as the flower develops.



ERECT



HORIZONTAL



NODDING



PENDENT

## FLOWER COLOUR

The colours and markings of flowers originally evolved to attract pollinators; in cultivation, many have been modified to extend their decorative value.



SELF-COLOURED



BICOLOURED



PICOTEE



STRIPED

# CULTIVATION

## Hardiness

Every plant is hardy in its natural habitat, since it has adapted to the distinctive conditions that exist there. The concept of hardiness therefore applies only to cultivated plants, which almost invariably live in an alien environment. In simple terms, hardiness is the capacity of a plant to withstand prevailing climatic conditions all year round. In cold areas, it is generally used to refer to tolerance of low temperatures; in hot climates, it is sometimes used to describe resistance to such stresses as drought and extreme heat.

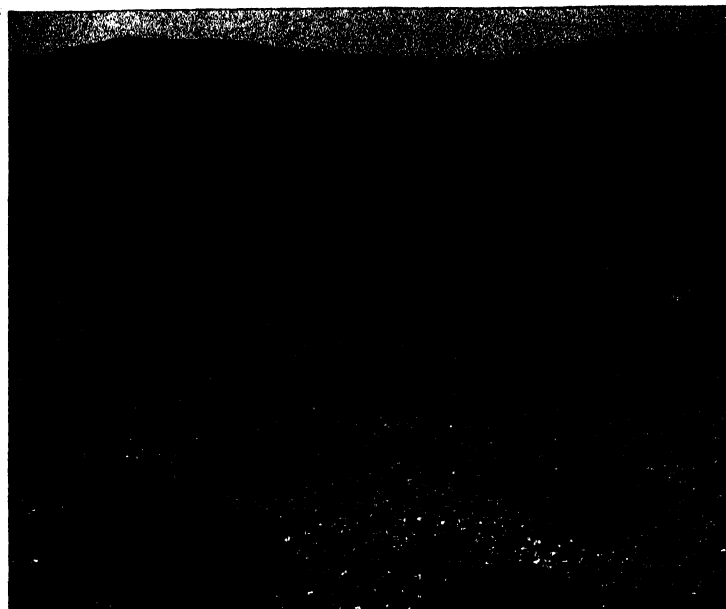
### Factors affecting hardiness

The ability of an individual plant to withstand severe conditions depends on a number of factors. In general, plants become increasingly hardy as they mature. The chief determinant of hardiness, however, is the degree of similarity between conditions in the garden and those in the plant's natural habitat, especially soil type and fertility, drainage, soil and air temperature, and levels of humidity, light, and rainfall. It is best, therefore, to select the right plant for the site, rather than to try to tailor the site to the plant's needs. Fortunately for gardeners, most plants readily acclimatize to new circumstances, although some will only thrive in their indigenous surroundings.

### Adaptations for survival

Plants in the wild have developed a number of strategies to enable them to survive severe conditions. Many hardy plants become dormant in

winter, restricting their growing period to those seasons when conditions of light, moisture, and temperature are favourable. Annuals complete their life-cycle in a single season, leaving dormant seed to germinate the following spring. The top-growth of many perennials dies down in autumn; the roots, safely insulated below ground, store food in order to permit rapid growth when favourable conditions return. Woody, deciduous plants protect themselves by shedding their leaves, the parts most vulnerable to winter cold, in autumn; their buds remain dormant until triggered into growth by increasing warmth and light in spring. Many hardy evergreens produce small, waxy leaves with a reduced surface area, which is often leathery or covered with an insulating layer of hairs to minimize the drying effects of strong winds. These plants often root deeply to levels where the soil will not freeze. They may also



### Hardiness and exposure

The plateau grasslands of South Africa (including Namaqualand, above) are divided into low veldt, middle veldt, and high veldt. Plants occurring at different altitudes are adapted to withstand different degrees of cold and exposure to wind.

adopt a ground-hugging habit, or produce aromatic oils that help to conserve water and act in a similar way to antifreeze.

### The effects of habitat

An understanding of a plant's natural habitat provides valuable clues to its needs in cultivation. For example, alpine plants that live in scree and at high altitudes develop deep root systems that extend widely to take up moisture and the available nutrients. Beneath the rocks, the roots are insulated from extremes of both cold and heat. During winter, the top-growth is maintained at temperatures near freezing point by a blanket of dry snow. Snow melt in spring triggers a short but intense period of growth; many alpine plants bloom early so that they may set seed and become dormant before the snows return. In cultivation, therefore, alpine plants need a very free-draining, low-nutrient soil, a cool, deep root run, and shelter from high winter rainfall.

At another extreme, plants native to hot, desert-like areas are adapted to store moisture in succulent tissue, safeguarded against desiccation and the sun's heat by spines, hairs, or tough, waxy skin. In the dry season, succulents may lose up to 70 per cent of their water content, and may even experience severe cold. After the rains, plants swell and burst into bloom. When cultivated in a cool,

wet climate, most succulents need the warmth of a heated greenhouse or must be grown as houseplants, with little or no watering outside their natural period of growth.

### The effects of climate

The difference between continental and maritime (coastal) climates is a significant factor affecting plant hardiness. In continental interiors, most rainfall occurs in summer, and winters are relatively dry and often extremely cold. Seasonal differences are clearly defined: a large, sustained rise in temperature in spring is followed by a long, hot summer. These conditions are ideal for plant growth, maturing of flower buds, and ripening of woody growth.



### Alpine dweller

Alpines, such as *Allium campanulatum*, occur at high altitudes, often under snow in winter; they are usually hardy, but seldom tolerate high winter rainfall.



IN ARID AREAS, cacti such as *Rebutia pygmaea* are resistant to cold, but may require frost protection in wetter climates.

## AVERAGE MINIMUM WINTER TEMPERATURES IN EUROPE

0 300 Kilometres  
0 200 Miles



AVERAGE MINIMUM TEMPERATURE	HARDINESS RATINGS USED IN ENCYCLOPEDIA
5°C (41°F)	● FROST TENDER
0°C (32°F)	* HALF HARDY
-5°C (23°F)	** FROST HARDY
-10°C (14°F)	
-15°C (5°F)	*** FULLY HARDY

### Using the temperature map to determine plant hardiness

The coloured bands on the map of Europe above indicate average minimum winter temperatures. To establish whether a plant in this encyclopedia will be likely to grow in a chosen region (and therefore whether it may safely be grown outdoors all year round), compare its hardiness rating with the prevailing minimum winter temperature.

Ripening encourages internal cell walls to become firm and tough, yet flexible, ensuring that the plant is better able to withstand severe winter cold and periods of freezing that follow.

In maritime climates, rainfall is more evenly distributed throughout the year, and temperature extremes are modified by the presence of vast bodies of water. The fluctuation of temperatures in summer may prevent adequate ripening, leaving growth soft and more susceptible to cold damage. Persistent rainfall in winter may cause the roots of dormant or semi-dormant plants to rot. In spring, unusually mild weather induces premature growth, which tends to be extremely vulnerable to damage, even in light frost. For this reason, in a maritime climate, plants that are fully hardy

in the extremes of a continental winter may not grow to their full stature, or may fail to thrive at all.

### Hardiness in cultivation

Plants exposed to temperatures below their normal tolerances may experience impairment of their physiological processes. In severe cases, this can lead to injuries, such as damage to shoots, stems, and leaves, or even to plant death. Some of these injuries may be avoided by identifying and improving those conditions that cause stress to plants grown beyond their prescribed limits of hardiness.

Perhaps the most vital factor, certainly for evergreen plants, is protection against cold, drying winds; these increase the rate of transpiration from leaf surfaces, causing moisture to be lost more

quickly than it can be replaced from the soil, especially in a dry or frosty spell. Protect plants, especially young specimens, with a wind-filtering hedge or belt of trees, or more locally with fine-grade netting.

Frost damage to roots may often be avoided by growing plants in deep, crumbly, easily worked, well-drained soil, into which roots may penetrate easily, and by applying a thick, dry winter mulch, which will also protect dormant roots from excessive moisture in winter.

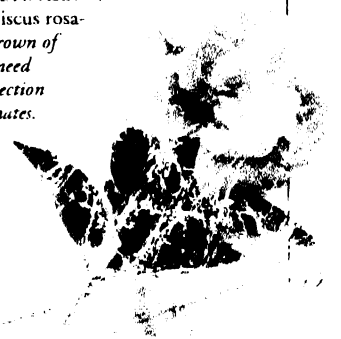
Promote ripening of wood by positioning plants in a warm, sunny site (providing they are tolerant of full sun). A warm wall retains and reflects the sun's heat in summer, and so enhances ripening. In winter, the few added degrees of warmth may make the difference between success and failure.

### Hardiness ratings

All plants in this encyclopedia are assigned one of 4 hardiness ratings, according to the lowest temperature they are likely to withstand (see key

to map above). For example, a plant that is rated as frost hardy will withstand temperatures to -5°C (23°F). For plants rated as frost tender, a minimum temperature for successful cultivation is also given. In some cases, a hardiness rating is qualified by the word "borderline", which means that the plant requires conditions 2-3°C (4-5°F) warmer than the minimum for the given category. Bear in mind, however, that the hardiness ratings are guidelines only, and, as discussed above many other factors affect a plant's overall hardiness.

FROST-TENDER PLANTS, such as *Hibiscus rosa-sinensis* 'Crown of Bohemia', need winter protection in cold climates.



# The garden environment

All gardens contain a unique combination of light levels, exposure to wind and cold, soil type, and drainage. Understanding the prevailing conditions in a region and their small-scale variations in the garden is an important first step in devising a planting scheme, as plants from similar natural habitats can then be used. By combining the advice presented here with good design practice, it is possible to develop an attractive garden using plants that will thrive in the sites chosen.

## SUNLIGHT AND GROWTH

All plants need light. It is the source of energy for photosynthesis, which fuels their growth. Heat from sunlight also warms the air and soil, and increases humidity through the evaporation of water. The rate of plant growth is largely dependent on the amount of light received, and therefore on day length and the extent of the growing season (determined, in turn, by latitude and altitude).

PELAGONIUM 'POLKA' thrives in sunny sites.

Individual plants vary in their need for and response to sunlight. Those that need full sun grow pale and elongated (etiolated) in poor light. Conversely, the foliage of plants that are adapted to shaded conditions in their natural habitat will often scorch in strong sunlight.

In cold areas, plants from warm climates require a site in full sun, such as the base of a sunny wall. Summer warmth helps to increase a plant's food store, and ripens the shoots of woody plants, as well as roots, corms, bulbs, and tubers below ground. Plants with fully ripened tissue are also better able to withstand winter cold.

## FULL SUN

A warm, sunny border in the lee of a wall or fence is suitable for many plants. Tender plants need to be sheltered from frost and rain. The right place for half-hardy annuals is at the limit of their hardiness. The wall or fence provides shelter from frost and rain.

N

by inc...

Main...

with a...

## WATER IN THE SOIL

Rainfall is the main source of water for plants grown outdoors, and is vital for plant growth. Rain drains through the soil, where it is absorbed by plant root hairs, along with essential minerals. In order to be able to take up water and nutrients readily, most plants require an aerated soil that is moist but nonetheless well-drained. Waterlogged soil lacks oxygen, and is normally fatal to plants, as the roots will rot if deprived of oxygen. These conditions are, however, ideal for cultivating plants that thrive in the saturated soil of such habitats as bogs, marshland, streambanks, and riversides.

## DAMP SOIL

Low-lying, damp soil is ideal for a bog garden; the overflow from an adjacent pond will top up moisture levels.

## WATER SOURCE

Installing a pond or other water feature provides a suitable site for aquatic plants, and attracts wildlife, such as birds, frogs, and insects, to the garden.

## DRY AREAS

A small number of dry sites in a garden are growing plants native to regions with low rainfall, such as deserts, scrub, and grassland. Such plants are adapted to survive drought conditions, maintaining their physiological processes and continuing to grow normally despite the lack of water. Alternatively, increasing organic matter in the soil will improve its ability to hold moisture. Mulching will also help to reduce the amount of water

that is lost from the soil surface. Only a few plants will thrive in permanently dry areas, such as at the base of a wall or fence; most must be planted at least 45cm (18in) away.

ERYNGIUM GIGANTUM 'SILVER GHOST' is drought-tolerant.

## PARTIAL SHADE

Many plants, including shrubs, climbers, bulbs, and ground-cover plants, either tolerate or prefer partial shade.

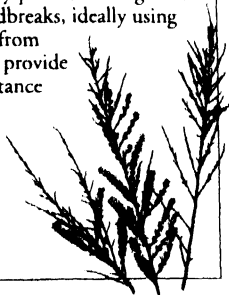
## SHELTER FROM THE WIND

The movement of air over leaf surfaces increases the rate of transpiration and flow of water through a plant. If water loss is greater than uptake, however, the plant suffers leaf scorch and desiccation and, in extreme cases, will die. These effects are most severe in winter, particularly with evergreens, as water lost from the leaves cannot be replaced when the soil is frozen.

In coastal or exposed areas, strong, persistent winds may stunt the top-

growth of woody plants, making them lop-sided. Windbreaks, ideally using trees or hedges from maritime areas, provide shelter for a distance equal to up to 5 times their own height.

TAMARIX  
TETRANDRA  
is wind-resistant.



WIND BARRIER  
A hedge filters wind more effectively than a solid wall, which often creates turbulence on the leeward side.

POOR SOIL  
Soil that is low in nutrients is ideal for a patch of wild-flower meadow.

## COLD PROTECTION

Ground frost occurs when cold air sinks, causing soil temperature to fall below 0°C (32°F). A frost pocket forms if cold air is trapped at the bottom of a valley or hollow, or against a solid barrier such as a wall. Shrinkage of soil in heavy frosts may lead to damage to plant roots from desiccation. Even hardy plants may be vulnerable to frost damage, especially once new growth has developed in spring. Mulch plants deeply to combat the worst effects of frost.

Avoid planting in frost pockets, or use only fully hardy plants, ideally with top-growth emerging in late spring, when the risk of severe frosts has passed.

FROST  
In frost pockets, such as at the base of a slope, provide protection or use only fully hardy plants.



HELLEBORUS ORIENTALIS  
is a frost-tolerant perennial.

## DAPPLED SHADE

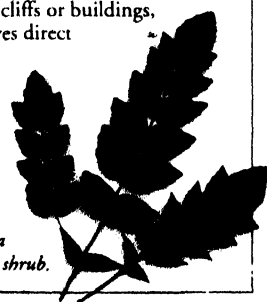
Woodland plants and many spring-flowering bulbs are excellent for growing in the shade of a tree.

## SHADY SITES

Shaded areas of the garden are often regarded as problematic, since many plants thrive only in full sun. These sites are, however, ideal for plants that occur naturally in shaded habitats, such as woodland, the bases of cliffs, or the bottoms of ravines, and which are tolerant of lower light levels. There are several different degrees of shade. Light dappled shade is similar to that found in hedgerows and green woodland, where patterns of shade and sunlight shift over the course of a day; plants may receive direct sunlight, but for short periods only. Partial shade describes a site where shade is more

or less constant throughout the day, as found beneath a canopy of deciduous trees. A deeply shaded site, such as beneath evergreen trees and shrubs, or between cliffs or buildings, never receives direct sunlight.

MAHONIA  
NERVOSA is a  
shade-loving shrub.



## SOIL TYPES

Soils may be divided into mineral and organic types (although all have both mineral and organic components). Mineral soils, derived from weathered rock, are classified according to the size and composition of their particles.

Clay soils have tiny particles, and are often very fertile. They are also heavy to dig, may become waterlogged after rainfall, and warm up slowly in spring. They are easily compacted when wet, and prone to surface-capping (baking hard), reducing the amount of air available to roots and seeds.

Silty soils are moderately fertile and hold less water than clay soils, but are also prone to compaction and capping.

Calcareous (chalky) soils are shallow, free-draining, moderately fertile, and alkaline (see panel below).

Sandy soils contain particles up to 1,000 times larger than those of clay soils. They are light, free-draining, and easily worked, and warm up rapidly in spring, but are often of low fertility because nutrients are quickly leached away as water drains through the soil.

Loam soils are the best mineral soils for most purposes, as they have a balanced mix of particle sizes, and combine good drainage and moisture-retention with high fertility.

Organic soils, particularly those that contain peat, are formed by the decay of organic matter, and are low in nutrients. They are suitable for plants from acid habitats. A number of peat substitutes are available, based on such materials as leaf mould or coconut fibre, rather than natural peat.

## Identifying soil type

The easiest way to identify the soil type in a garden is to examine its colour and texture. Soil pH (see panel below) may be measured using an electronic meter or a soil testing kit. The local geology, and the kind of weeds and other plants growing in a garden, will also provide further information on soil type.



SANDY SOIL  
Light and free-draining, but often of low fertility.



PEATY SOIL  
Acid, of low fertility, moist, but often poorly drained.



CLAY SOIL  
Fertile, but heavy and prone to waterlogging.



CALCAREOUS SOIL  
Alkaline, usually all we



loam is very fertile, but prone to compaction.

## IMPROVING THE SOIL

Few gardens have the fertile, well-drained, loamy soil that is ideal for most plants, but there are several ways in which soil can be improved.

Incorporating organic matter, such as garden compost or manure, increases the humus content of soil, improving its structure. The addition of humus to clay and silty soils draws the fine particles together into larger, crumb-like structures, and improves the flow of air and water between them. If the soil is usually waterlogged, it may be necessary to install drainage pipes. Adding humus to sandy soils increases their ability to hold both moisture and nutrients.

Soil fertility may be improved by applying fertilizer, either in liquid form, or as solid slow-release pellets or concentrated granules.

The acidity or alkalinity of the soil is also important when considering what plants to grow. It is measured on the pH scale, which is numbered 1 to 14: acid soils have a pH value below 7, and alkaline soils a pH value above 7; neutral soils are pH7. Adding lime will reduce acidity; incorporating

organic matter will lower alkalinity to some extent. In the long term, however, it is better to select plants that thrive in a given soil type, rather than trying to change its pH radically. Many plants prefer neutral to slightly acid soil. Others, such as heathers (*Calluna* and *Erica*), prefer acid conditions, and will thrive in peaty soil; those needing alkaline conditions flourish in limestone-rich, chalk soils.



Forking in organic matter  
Improve soil structure by adding liberal quantities of organic matter, such as well-rotted manure or garden compost.



# Outdoor cultivation

For successful outdoor cultivation, preparation is as important as routine maintenance. Wherever possible, select plants whose natural habitats are similar to the proposed planting site (see pp.20–21). Next, choose robust specimens that are free of pests and diseases. Finally, prepare the site carefully and plant out at the most favourable time of year.

## Choosing the right plant

When planning a garden, bear in mind the characteristics of the site. Try to find a plant from a similar habitat, although the match need not be exact, since most plants will tolerate a range of conditions. Information on natural habitats is contained in the introduction to each genus in this encyclopedia.

It is important to acquire robust, well-grown plants. When buying plants, inspect for signs of pests or diseases, such as discoloured foliage or dieback (see pp.30–31). Take particular care over selecting plants that will have a long lifetime in the garden. With herbaceous perennials, look for vigorous top-growth, with strong, emergent shoots or plump, healthy buds, and an even network of established roots. Ensure that the potting compost is moist; a layer of moss or liverwort suggests a plant has been in its container for some time and may suffer from nutrient deficiency and waterlogging.

When buying a tree or shrub, make sure that it has a balanced framework of top-growth

proportion to the size of its root ball. Shrubs and trees are available either bare-rooted or root-balled (with a ball of soil around the roots, wrapped in netting or hessian) in the dormant season, or in containers at any time of year. Select bare-rooted plants with well-developed, fibrous roots that show no signs of desiccation. With root-balled plants, check that the root ball is firm and evenly moist, with the wrapping intact. As with perennials, when buying container-grown shrubs or trees, avoid plants with roots that are tightly coiled or that protrude from the base of the container. Plants with restricted roots will probably have suffered nutrient deficiency, and will establish poorly and slowly at best.

## Soil preparation and planting

Careful preparation of the planting site is critical for vigorous, healthy growth. First clear the site of all weeds. Next, prepare the site by digging deeply or using a powered cultivator, and incorporating well-rotted organic matter to improve



### A well-maintained and healthy border

*For flourishing, vigorous growth, provide plants with well-cultivated soil and good drainage. Allow plenty of space for each plant to develop, and keep free from weeds. Many plants will flower freely over a long period if they are regularly dead-headed.*

soil structure and fertility (see p.21). If possible, prepare the ground a season before planting.

Autumn or spring is the best time to plant herbaceous perennials. An autumn planting enables roots to become established while the soil is still warm. Those herbaceous plants, including certain *Kniphofia* species and cacti, that are intolerant of cold and wet when not established, are better planted in spring.

Bare-rooted and root-balled trees and shrubs should be planted as soon as possible after purchase, in mild winter weather; do not plant in wet or frozen soil, as roots will not become established, and are likely to suffer frost damage.

Although container-grown plants may be planted at any time of year, spring and summer plantings need extra care, especially with watering; growth will be checked and the plant may die if the soil is allowed to dry out. Most trees and shrubs are best planted in autumn, at the start of the dormant season. Some, including certain evergreens, will establish better if planted in spring, although they should be watered well, particularly in dry weather.

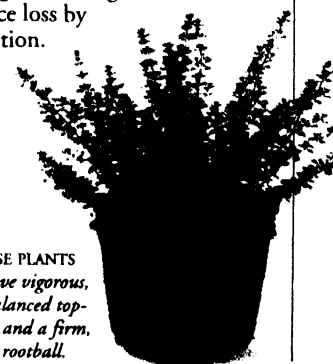
## Watering

An adequate supply of water is essential for plant growth. For most plants grown in the open, rainfall is the main source of water. However, due to the unreliability of rainfall in most areas, some form of artificial

watering is usually required. The amount needed varies between plants, and also between sites, depending in part on soil type and structure (see p.21). Bear in mind that too much water can cause as much damage to plants as too little.

Most plants require more water when in active growth than at other times of the year. Plants that have a dormant period (such as some bulbs) should be kept moist, but no more, when dormant. Newly planted or transplanted plants should be watered until they have become established, unless rainfall has been sufficient.

Always water thoroughly, so that water is available deep in the soil; it is better to water infrequently in large quantities than to apply a little often. Try to deliver water directly to individual plants at ground level, and to avoid forming puddles at the soil surface. Water in the early morning or evening to reduce loss by evaporation.



*CHOOSE PLANTS that have vigorous, well-balanced top-growth and a firm, fibrous rootball.*

## CONTAINER GARDENING

Use plants grown in containers to decorate paved areas such as patios and courtyards, or as focal points in other areas of a garden. In frost-prone areas, many tender plants can be displayed in containers outdoors in summer, and moved under glass in winter.



In mixed plantings, it is important to group plants that grow at a similar rate and require similar conditions. Set containers in position before planting up, as they may be too heavy to move afterwards. Plants may need watering twice daily in hot spells. If grown in a container for more than one season, plants should be top-dressed in spring by replacing the upper layer of compost with new compost.

For permanent plantings, use fertile, loam-based potting compost, such as J1 No.2 or No.3. Loamless composts, lightweight in structure as well as being clean to use, are most suitable for short-term plantings, especially for hanging baskets. Most loamless composts now contain slow-release fertilizer; if not, apply fertilizer regularly in the growing season. Do not allow the compost to dry out.

*MIXED CONTAINER PLANTINGS can provide a succession of ornamental features, with evergreen leaves providing prolonged interest, and acting as a foil to the flowers.*



### Staking

After planting, young trees usually require support for 1 or 2 years, until strong, anchoring roots are established. For most, a short stake is best, as it permits movement of the trunk, encouraging root establishment and stem growth. Stake trees with slender or flexible stems, or ones over 4m (12ft) tall, as high as the crown in the first year; reduce the height of the stake in the second year; remove it in the third.

Some perennials also need staking to prevent lax stems from overhanging other plants, as well as to protect them from wind damage.



#### Short stake

*Insert the stake before planting, with 60cm (24in) below ground and 50cm (20in) above. Secure stem with a tie and spacer, to avoid stem constriction.*



#### Single stake

*Insert a single cane to two-thirds of the mature height of a tall, single-stemmed plant, when it is 20cm (8in) high. Tie the stem to the stake using soft twine.*



#### Ring stake

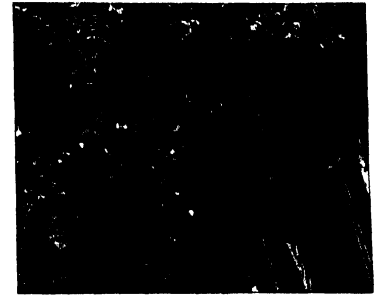
*Use ring stakes for clump-forming plants of medium size; link stakes together for taller plants. Set stakes in place early in the season, and raise as the plants grow.*

### Mulching

Mulching soil has three purposes. It helps to prevent the germination of weed seeds, minimizes evaporation of water from the soil surface, and keeps plant roots cooler in summer and warmer in winter. Organic mulches, such as garden compost or well-rotted farmyard manure, also improve soil structure and fertility.

There are 2 main types of mulch: continuous sheet mulches and loose mulches consisting of material such as garden compost or farmyard manure, bark chips, cocoa shells, coarse grit, or gravel. In areas with severe winter cold, apply a deep, dry mulch of bracken litter, leaf mould, ash, or straw to protect roots and dormant buds from freezing.

Mulches should be applied annually in spring or autumn, to soil that is moist but not waterlogged; never mulch very cold or frozen soil. For effective control of weeds, lay the mulch at least 5–8cm (2–3in) deep. To provide adequate winter protection for the roots of plants growing at the limits of their hardiness, the mulch should be 10–15cm (4–6in) deep. A mulch should not be applied too close to the crown of a plant, since this will encourage rot and attract pests that damage new top-growth.



#### Sheet mulches

*Black plastic or woven-fibre sheeting, disguised with a material such as bark chips, controls weeds over a large area and may raise soil temperature slightly.*



#### Loose mulches

*Applying a loose mulch to soil regulates its temperature, improves moisture-retention, and discourages the growth of weeds.*

### Routine garden maintenance

A number of routine operations should be carried out during the growing season. For some plants, both thinning (cutting out weak shoots early in the year in order to encourage healthy development of the rest) and stopping increase the number and quality of flowers in certain perennials. Dead-heading prolongs flowering and prevents self-seeding. Cutting back dead, diseased, damaged, and flowered shoots and clearing residual weed growth in autumn help to maintain good hygiene, reduce risk of disease, and prevent rotting in winter, when plants are most vulnerable.



#### Stopping

*As plants reach one-third of their final height, pinch out 2.5–5cm (1–2in) from the stem tip, to encourage shorter, sturdier stems and formation of flower buds in the upper leaf axils.*



#### Dead-heading

*Removing dead or fading flowers diverts energy into growth, improving flowering potential for the following season. Break stems cleanly using finger and thumb, or use secateurs for tougher stems.*



#### Preventing seed formation

*Remove flowered stems, especially of short-lived perennials, before they seed. As well as helping to prolong the plant's life, this also reduces the chance of unwanted, self-sown seedlings.*

### Winter protection

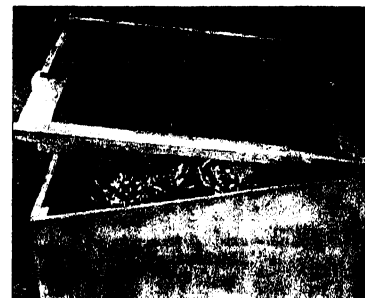
Small plants, particularly immature ones, should be protected from excessive winter rain, frost, or snow in a cold or heated frame. Cloches or, where practical, propped panes of glass may be used to shelter mature plants.

Protect larger shrubs growing at the limits of their climatic tolerance by packing them with straw and wrapping them loosely in hessian or horticultural fleece. Frost-tender, wall-trained shrubs and climbers are best covered with screens of fleece or fine netting, stretched over a framework of laths or canes. See also Mulching, above.



#### Barn cloche

*A barn cloche is useful for protecting young seedlings, frost-tender to frost-hardy perennials, and small shrubs. Close the ends with sheets of glass or plastic to protect plants from cold winds.*



#### Cold frame

*Use a cold frame to overwinter autumn-sown seedlings, and to protect alpinists and other plants from excess moisture in winter and summer. It is also ideal for hardening off young plants in spring.*



#### Tunnel cloche

*A tunnel cloche made of horticultural fleece protects autumn-sown annuals and biennials from severe frosts. It will also allow air to circulate and water to penetrate.*

# Care under glass

Cultivation under glass, whether in a greenhouse or conservatory, or as houseplants, greatly extends the range of plants that can be grown, especially in cool climates. In greenhouses in particular, the environment should be regulated to suit specific plants, using one of four distinct regimes (see panel below right).

## Environments under glass

As a rule, plants that are grown as houseplants must be able to tolerate less than ideal light levels, as well as the dry air associated with central heating. Conservatories provide good levels of light but may become too hot and dry in summer for some plants, as they often lack good ventilation or any means of shading or increasing humidity, and may be too cold in winter if unheated.

Conditions in a greenhouse are easier to control. Ventilation and temperature can be adjusted in most, and humidity increased by damping down or using a hand-held sprayer. Shade may be provided with green shade netting or a shade

wash. Alpine plants are best grown in a type of unheated greenhouse known as an alpine house, which is designed to provide a level of ventilation 2 or 3 times greater than in a standard greenhouse (see p.41).

With all plants grown under glass, the need for light, moisture, and nutrients varies from season to season, according to whether the plant is in growth or dormant.

In this encyclopedia, it is assumed that plants grown under glass are in containers, unless otherwise stated.

## Light levels

A number of different light levels may be provided under glass. Plants described as needing full light must have the maximum possible level of light all day; for those needing full light with shade from hot sun, use screens or blinds to protect them from scorching in midday summer sun. Bright filtered light is achieved using screens, blinds, or a shade wash. Bright indirect light, such as that found near a well-lit window, is suitable for plants that require good light but not direct sun. Place plants that prefer low light beneath staging or green shade netting in a greenhouse; as houseplants, they should be sited away from windows.

## Watering and feeding

When in growth, some plants need to be watered freely, which means that the potting compost should be kept evenly moist but not waterlogged. Others need only moderate watering: allow the compost to dry out partially before



## Regulating the greenhouse environment

*A greenhouse offers the most versatile means of maintaining a controlled growing environment, especially with regard to temperature, ventilation, and humidity. Areas may also be sectioned off to enable a range of regimes to be set up.*

## POTTING COMPOSTS

Container plants require potting compost that is moist but well drained, with good aeration, and a structure that will withstand heavy watering. In the long-term, most plants are best grown in loam-based composts, which are less prone to saturation than loam-free mediums, do not dry out as rapidly, and are easier to re-wet if they become dry. John Innes loam-based composts are standardized mixes, each one suitable for a specific range of plants.

### JOHN INNES No.1 (JI No.1)

Suitable for seedlings, short-term, and annual houseplants. Ingredients (by volume): 7 parts sterilized loam; 3 parts peat (or substitute); 2 parts sand. To each cubic metre (or cubic yard) is added 600g (1lb) ground limestone; 1.2kg (2lb) hoof and horn; 1.2kg (2lb) superphosphate; and 600g (1lb) potassium sulphate.

### JOHN INNES No.2 (JI No.2)

Suitable for larger, established plants. Ingredients as for No.1, but with double the quantity of fertilizer.

### JOHN INNES No.3 (JI No.3)

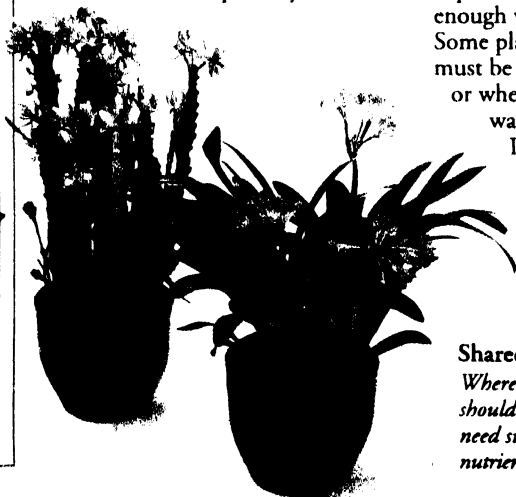
Suitable for long-term, established plants. Ingredients as for No.1, but with triple the quantity of fertilizer.

### LOAMLESS POTTING COMPOST

Suitable for most short-term plants. Contains 1 part sand; 3 parts coarse peat or substitute; variable nutrients.

### ERUCACIOUS POTTING COMPOST

Suitable for plants that dislike alkaline soil; lime-free with pH6.5 or below.



GREENHOUSE ENVIRONMENTS			
TEMPERATURE REGIME	VENTILATION	HUMIDITY	SHADING
COLD Unheated; no min. temp.	Ventilate in summer to lower temperature, and in winter to prevent damp, stagnant conditions.	Natural levels of humidity are adequate.	Admit full light in winter; shade vulnerable plants in summer.
COOL Day: 5–10°C (41–50°F) Night: 2°C (36°F)	Ventilate in summer to lower temperature, and in winter to disperse heater fumes and water vapour.	Damp down in summer to keep cool, with low humidity.	Admit full light in winter; shade vulnerable plants in summer.
TEMPERATE Day: 10–13°C (50–55°F) Night: 7°C (45°F)	Ventilate in summer to lower temperature, and in winter to disperse heater fumes and water vapour.	Damp down in summer to keep cool, with moderate humidity.	Admit full light in winter; shade vulnerable plants in summer.
WARM Day: 13–18°C (55–64°F) or above Night: 13°C (55°F)	Ventilate in summer and as needed in winter to lower temperature and prevent stagnant conditions.	Provide high humidity in summer; reduce in winter.	Admit full light in winter; shade vulnerable plants in summer.

watering again. To water sparingly, allow the compost to dry almost completely between applications. When plants cease active growth, they need less water; most should be kept moist so the compost has just enough water to avoid desiccation. Some plants, such as many cacti, must be kept totally dry in winter, or when dormant; resume watering as growth restarts.

Plants in containers are restricted in their quest for nutrients, and usually need fertilizer in the growing season. Most conveniently applied in

liquid form, a proprietary balanced fertilizer contains the nutrients needed for plant growth – nitrogen, phosphate, and potassium (NPK) – and a full range of trace elements.

## Ventilation and humidity

Good ventilation serves to control temperature, maintains a flow of fresh air, and moderates levels of atmospheric humidity. Ventilation is particularly necessary with high humidity, to avoid stagnant air in which fungal diseases thrive. In this encyclopedia, low humidity is defined as less than 50% relative humidity (RH) – a percentage of saturation of the air. Moderate humidity is 51–60% RH, and high humidity 61% RH and above. If damping down is impractical, humidity may be increased locally by grouping plants on trays of moist gravel or expanded clay granules.

## Shared needs

*Where possible, plants under glass should be grouped with others that need similar levels of warmth, light, nutrients, water, and humidity.*

# Pruning

Woody plants are pruned for a number of reasons: to maintain good health, by removing dead, diseased or damaged wood; to encourage the formation of vigorous and bushy growth; to produce plants that have a sound structure when mature; and to shape and direct growth so that plants display their decorative features to optimum effect. Regular pruning also improves the supply of strong, young growth, which normally produces flowers and fruit in greater abundance and of better quality than does old or moribund wood.

## Principles of pruning

Before making any cuts, assess the overall shape of the plant. Never cut indiscriminately. Begin by removing any wood that is dead, diseased, or damaged, as this helps to promote plant hygiene and good health. The timing and nature of subsequent pruning depend on the age and type of flowering wood, and also on an individual species' vigour and ability to produce new growth in response to pruning. Follow one of the 13 regimes set out on pp.26–27, as recommended in the introduction to each genus of woody plants.

Provided that a plant is healthy, has adequate nutrients, and tolerates drastic pruning, the harder a shoot is pruned, the more vigorously it will grow. Conversely, light pruning results in limited regrowth.

Woody plants that flower before midsummer usually bloom on the previous year's growth. They are therefore normally pruned after flowering, so that new growth has a full season in which to ripen before blooming the following year. Most plants that bloom after midsummer flower on the current season's growth; these are pruned in winter or spring, then flower later in the season on new growth. However, pruning in spring (when the sap is rising) should be avoided for plants that "bleed" (leak sap) when cut. Pruning of evergreens is best carried out in mid-spring, so that resultant young shoots will develop after the danger of hard frosts has passed.

## Formative pruning

The aim of formative pruning is to produce a balanced framework of sturdy, well-spaced branches that permits maximum light and air to reach the entire plant. Most evergreen trees and shrubs require little formative pruning, but may need light shaping after planting in spring, to ensure balanced growth. Formative pruning of deciduous species should be carried out in the dormant season, either at or soon after planting. For the vast majority

of woody plants, formative pruning follows the procedure illustrated (centre right). If a young shrub does not have a balanced framework, cut it back hard, then select 4 or 5 of the strongest, most evenly spaced branches from the resulting growth to form the new framework, and cut out the rest. Some plants (mainly those assigned pruning group 1) need only minimal pruning; these include slow-growing shrubs with an intricate, ornamental branch structure whose appearance is easily spoiled by cutting back.

## Restrictive pruning

It is best to select plants whose natural size suits an allotted area in a garden, rather than to prune to restrict size. Under glass, however, such pruning is often unavoidable. Follow the principles outlined above with regard to timing, referring also to the pruning group. However, the pruning should be more severe than usual, and in many cases needs to be performed every year. Aim to reduce the previous season's growth by one- to two-thirds of its length after flowering, retaining only the strongest shoots to maintain a well-spaced and open framework.

## Renovation (renewal) pruning

Some old or overgrown shrubs – such as those that produce new shoots from the base or from old wood – may be rejuvenated by hard pruning. Renovate deciduous shrubs after flowering or when dormant, and evergreen shrubs in mid-spring. For drastic renovation in a single operation, cut back all main stems to 30–45cm (12–18in) above the ground. Select the strongest 3 or 4 shoots that then sprout from each stem to produce a new framework and cut out the rest. However, for all but the most resilient shrubs, it is best to stagger pruning over 2 or 3 years, as illustrated (bottom right). After both types, mulch the soil to a depth of 5–10cm (2–4in), apply a slow-release, balanced fertilizer, and keep the plant well watered.

## PRUNING CUTS

Different techniques are used to prune plants depending on whether buds are alternately or oppositely arranged (see right). Keep tools clean and blades sharp so that they do not produce a ragged cut that is slow to heal. Use secateurs to sever small branches up to about 1cm (½in) in diameter. For larger branches, use loppers or a pruning saw to avoid crushing plant tissue.



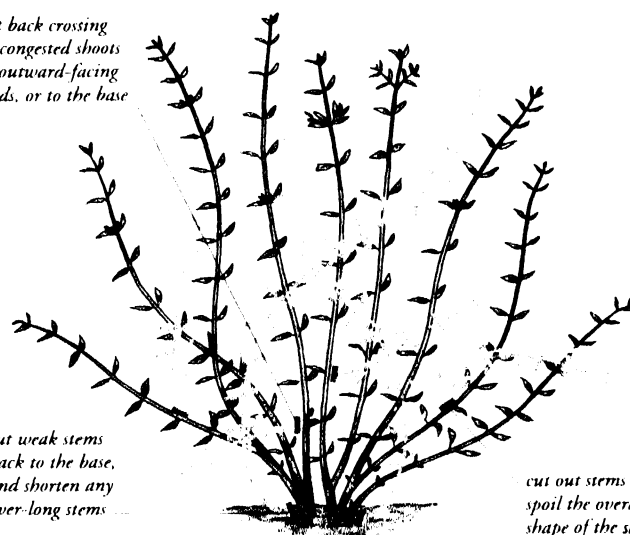
### Alternate buds

For plants with alternate buds, angle the cut away from and just above an outward-facing bud.

### Opposite buds

For plants with opposite buds, cut straight across immediately above a strong pair of buds.

cut back crossing or congested shoots to outward-facing buds, or to the base



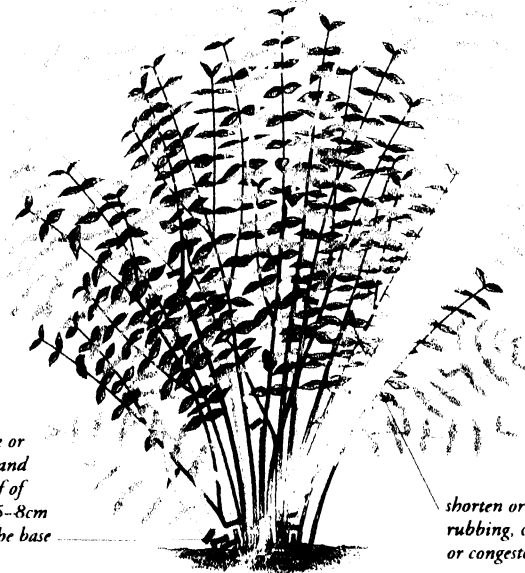
cut weak stems back to the base, and shorten any over-long stems

cut out stems that spoil the overall shape of the shrub

## Formative pruning

Formative pruning aims to produce a balanced framework of strong, evenly spaced stems. After planting, remove dead, diseased, and damaged wood. Cut out or shorten crossing, rubbing, or congested stems. Cut all weak growth back to the base.

cut back oldest stems by half to strong buds



cut out weak or dead wood, and cut back half of all stems to 5–8cm (2–3in) of the base

shorten or cut out rubbing, crossing, or congested stems

## Gradual renovation

To renovate a woody plant, remove dead wood and cut back up to one-third of the oldest stems close to the base. Of those that then remain, shorten the oldest. Repeat the following year, cutting back the remaining old main stems.

# Pruning groups

In this encyclopedia, all woody plants that require pruning are assigned one of the groups outlined here (see relevant genus cultivation notes). An individual species may be assigned a different group to the genus as a whole, or may be assigned more than one group if it can be grown in a variety of ways. As all woody plants require routine removal of dead, diseased, and damaged

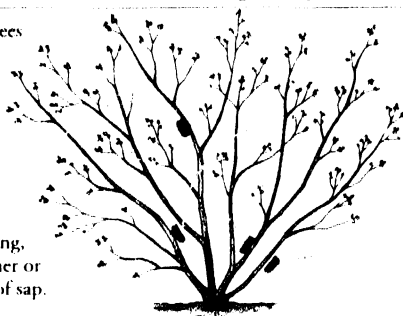
wood, this is not stated for each group. In groups 10–13, the correct time to prune depends on the type of flowering wood: plants that flower on the previous year's growth usually bloom between early spring and early summer; those that bloom on the current year's growth usually flower after midsummer. In the illustrations below, red cut marks show where to prune.

## GROUP 1 e.g. *Acer palmatum*, *Hamamelis*, some *Magnolia* species

**TYPE** Evergreen and deciduous trees and some deciduous shrubs that flower on previous or current year's growth and need minimal pruning.

**ACTION** Remove wayward or crossing shoots to maintain permanent, healthy framework.

**WHEN** In late winter or early spring, when dormant; some in late summer or early autumn to prevent bleeding of sap.

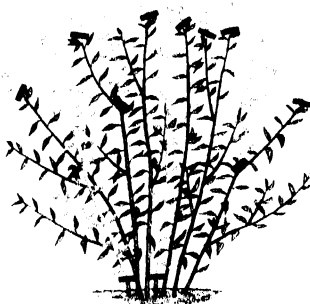


## GROUP 3 e.g. *Cytisus scoparius* and hybrids, *Kerria*

**TYPE** Deciduous shrubs that flower in spring or early summer on previous year's growth, and produce new growth at or near ground level.

**ACTION** Cut back flowered shoots to young sideshoots or to strong buds low down on branch framework, to encourage strong new growth.

**WHEN** Annually, after flowering.

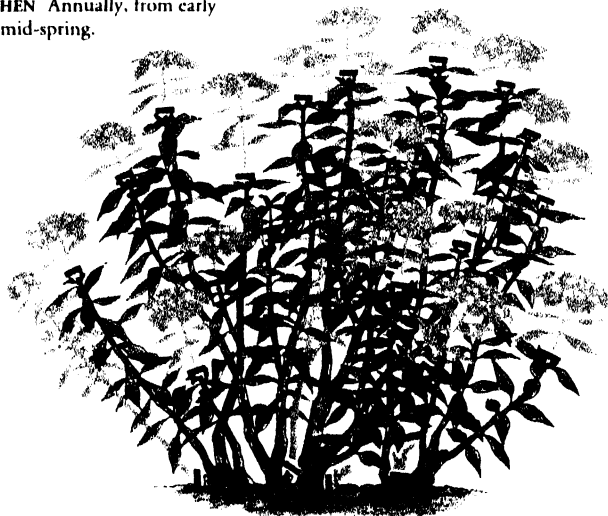


## GROUP 4 e.g. *Hydrangea macrophylla*

**TYPE** Deciduous shrubs that flower in mid- to late summer or autumn on previous year's growth.

**ACTION** Trim off last season's flowerheads to the first bud or pair of buds beneath each flowerhead. With established plants, cut back about one-third to one-quarter of the oldest flowered shoots to the base, to promote replacement growth.

**WHEN** Annually, from early to mid-spring.

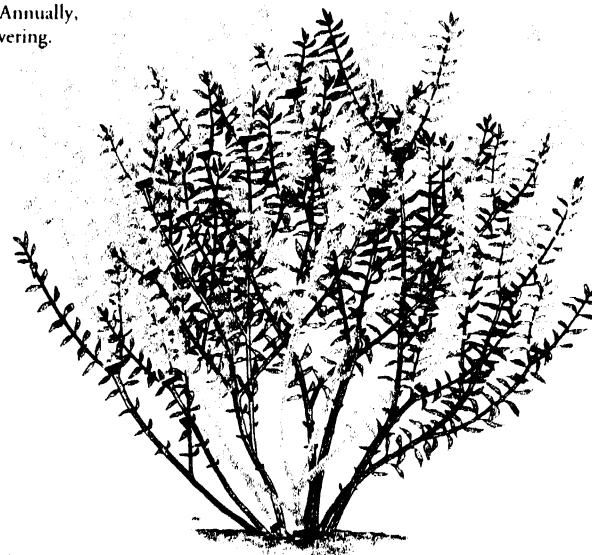


## GROUP 2 e.g. *Buddleja alternifolia*, *Deutzia*, *Forsythia*, *Philadelphus*

**TYPE** Deciduous shrubs (and a few trees) that flower in spring or early summer on previous year's growth.

**ACTION** Cut back flowered shoots to strong buds or young lower or basal growth. On established plants, cut back about one-quarter to one-fifth of old shoots to the base, to promote replacement growth.

**WHEN** Annually, after flowering.



## GROUP 5 e.g. *Prunus triloba*

**TYPE** Deciduous shrubs that flower between late winter and early spring on previous year's growth.

**ACTION** Cut back all stems to strong buds or to developing shoots close to the base of the plant, to promote replacement growth.

**WHEN** Annually, after flowering.

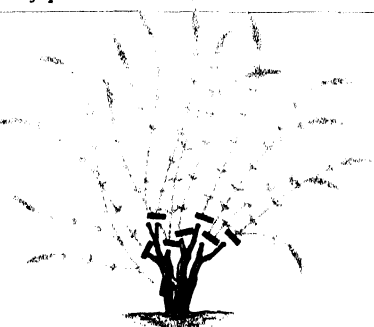


## GROUP 6 e.g. *Buddleja davidii*, *Caryopteris*, *Perovskia*

**TYPE** Deciduous shrubs that flower in mid- to late summer or autumn on current year's growth.

**ACTION** Cut back to low permanent framework. For subshrubs, and for drastic renovation, cut back all flowered stems close to the base.

**WHEN** Annually, as buds begin to swell in early spring.



**GROUP 7** e.g. *Cornus alba*, *Cotinus*, some *Eucalyptus* species, *Sambucus*

**TYPE** Deciduous trees and shrubs that, when pruned hard, produce colourful winter stems, or large or brightly hued foliage, as ornamental features. Plants that flower on previous year's wood do not bloom if pruned this way.

**ACTION** Cut back stems to within 2 or 3 buds of the base (suckering species close to base), or to permanent framework. Feed or apply well-rotted farmyard manure, and mulch to compensate for loss of vigorous wood.

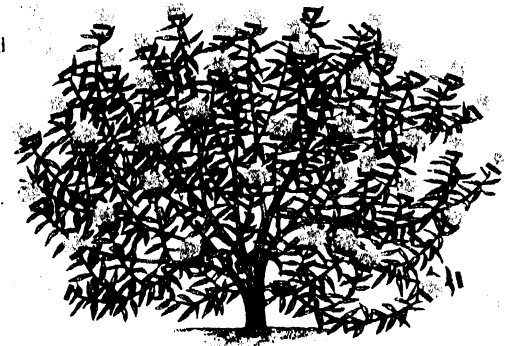
**WHEN** Annually, in early spring.

**GROUP 8** e.g. *Camellia*, *Rhododendron*

**TYPE** Evergreen shrubs that flower between winter and early summer on previous or current year's growth, and need minimal pruning.

**ACTION** Trim or lightly cut back shoots that spoil symmetry. Dead-head regularly if practical (unless fruit are required).

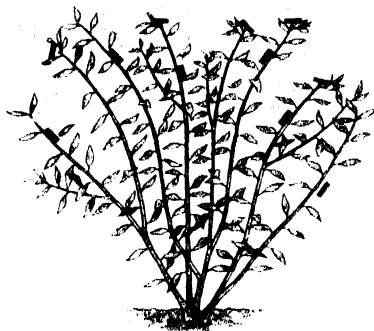
**WHEN** Annually, after flowering. Remove dead and damaged growth in mid-spring.

**GROUP 9** e.g. *Eucryphia*, *Prunus laurocerasus*, *P. lusitanica*

**TYPE** Evergreen shrubs that flower between midsummer and late autumn on previous or current year's growth, or that bear insignificant flowers, and that need minimal pruning.

**ACTION** Trim or lightly cut back shoots that spoil symmetry. Shrubs grown for foliage often tolerate harder pruning. Dead-head regularly if practical (unless fruit are required).

**WHEN** Annually, or as necessary, from mid- to late spring.

**GROUP 10** e.g. *Bouvardia*, *Calluna*, *Erica*, *Lavandula*

**TYPE** Evergreen shrubs that flower on previous year's growth in spring or early summer, or on current year's growth in late summer or autumn. (Tree heathers require only minimal pruning.)

**ACTION** Cut back flowered shoots to within 1.5–2.5cm (½–1in) of previous year's growth.

**WHEN** Annually:

- after flowering, if flowering on previous year's growth.
- in early or mid-spring, if flowering on current year's growth.

**GROUP 11** e.g. *Akebia*, *Clematis montana*, *Fallopia baldschuanica*

**TYPE** Vigorous, deciduous and evergreen climbers that flower on previous or current year's growth, and need no regular pruning.

**ACTION** Trim to fit available space; carry out renovation pruning as needed (see p.25).

**WHEN** Annually, or as needed:

- after flowering, if flowering on previous year's growth.
- in late winter or spring, if flowering on current year's growth.

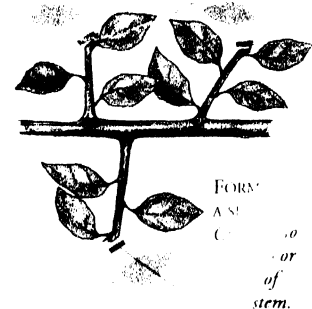
**GROUP 12** e.g. *Bougainvillea*, *Solanum crispum*

**TYPE** Less vigorous, deciduous and evergreen climbers that flower on previous or current year's growth. (For *Wisteria*, see cultivation notes in genus introduction.)

**ACTION** "Spur prune" by cutting back side shoots to within 3 or 4 buds of permanent framework. Thin out overcrowded shoots.

**WHEN** Annually:

- after flowering, if flowering on previous year's growth.
- in late winter or early spring, if flowering on current year's growth.

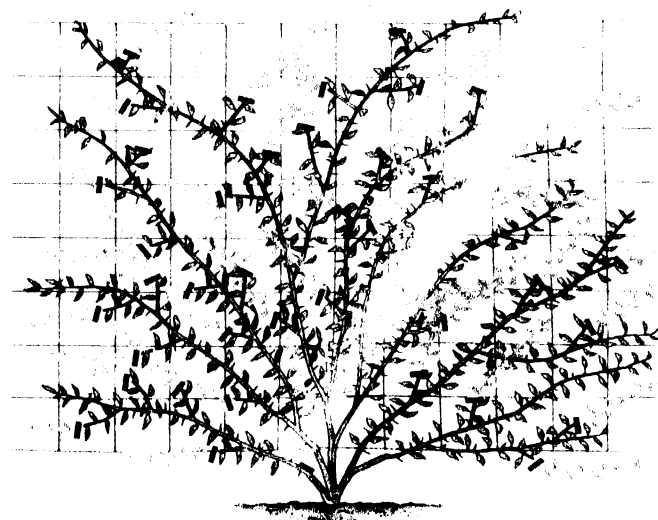
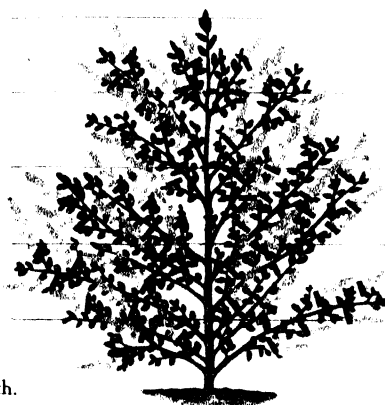
**GROUP 13** e.g. *Ceanothus*, *Chaenomeles*

**TYPE** Wall-trained, deciduous and evergreen shrubs that flower on previous or current year's growth. (For *Cotoneaster* and *Pyracantha*, see cultivation notes in each genus introduction.)

**ACTION** Cut back flowered shoots to within 2–4 buds of permanent framework. Trim outward-facing shoots and those growing towards the wall.

**WHEN** Annually:

- after flowering, if flowering on previous year's growth.
- in late winter or early spring, if flowering on current year's growth.



# Propagation

Plants propagate naturally in ways that can be exploited by gardeners to increase stocks or preserve the distinct characteristics of individual plants. The cultivation notes for each genus described in this encyclopedia specify the methods that may be used. Techniques fall into two categories: propagation by seed or by

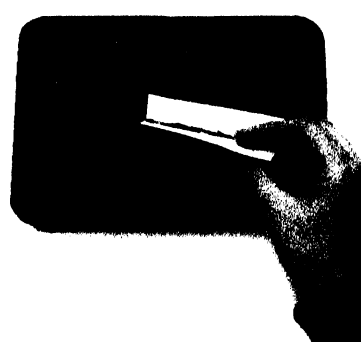
vegetative means. Raising plants from seed is relatively simple, although variants of garden origin are unlikely to breed true from garden-collected seed (see p.11). Such plants should instead be increased by asexual, vegetative means, such as from suckers, by division, grafting, or layering, or by taking cuttings.

## Propagation from seed

Most seed is best sown as soon as ripe. If necessary, soak fruits in water first, then extract seeds by rubbing the flesh, and leave to dry. Hard-coated seeds may need soaking or scarification before germination. Soak in recently boiled water for between 10 minutes and 72 hours, depending on the species; viable seeds will swell, and should then be sown immediately. To scarify small seeds, abrade with emery paper; with large seeds, file the coats or chip (nick) with a knife. Some seeds need cold stratification to break dormancy: sow in a cold frame or open frame for exposure to winter cold. Alternatively, place in moist

peat inside a plastic bag, and keep warm for 3 or 4 days, then place in a refrigerator at 1–5°C (34–41°F). Sow on germination – after 3–18 weeks, depending on the species.

Seed may be sown *in situ*, or in a tray or seedbed; sow thinly to avoid damping off, and, except tiny seeds or seeds that need light, cover with soil or compost. Most will germinate at 5°C (41°F) above the minimum temperature prescribed for each plant. As a rule, maintain seeds of plants from the tropics at 19–24°C (66–75°F); from warm-temperate and subtropical areas at 13–18°C (55–64°F); from cool-temperate areas at 6–12°C (43–54°F).



### Sowing in a seed tray

*Sow seed thinly and evenly on to moist seed compost and cover, if required, to its own depth in sieved compost. Cover with glass, shade from hot sun, and keep at an appropriate temperature.*



### Pricking out

*When seed leaves are strong enough to be handled, prick out singly into modular trays or small containers. Pot on when large enough, or harden off, then plant out in open ground.*

## Division

Division is the most rapid means of increasing perennials that have a spreading rootstock and produce new shoots annually from the crown, as well as rhizomatous plants and some tuberous ones. The term is also loosely used to describe the separation of offsets from clump-forming bulbous plants (see p.45).

Division is best carried out when the plant is dormant, normally between late autumn and early spring, but never in very wet or frosty weather. However, fleshy-rooted plants, or those that are not fully hardy, are best divided in early spring, when young plants are less likely to suffer damage from cold.

Lift the parent plant and shake off excess soil from the roots. Separate the plant into sections, using forks, a spade, or a sharp knife, so that each part has a good root system and several new shoots or growth buds. Discard old, damaged, or unproductive pieces, and replant vigorous material immediately, at the original depth of soil. Small divisions may be potted up and grown on in a cold frame until established. For plants with thick rhizomes, cut the rhizomes into sections; retain at least two growing points on each section. Dust cut surfaces with fungicide before replanting at the original depth.



### Loose, fleshy roots

*Lift the parent plant and shake off surplus soil. Separate the plant into sections by hand. Replant vigorous, healthy sections, each with several new shoots, at their previous depth of soil.*



### Fibrous roots and woody crowns

*Lever apart fibrous-rooted plants using two forks set back-to-back. To section plants with tough, woody crowns, use a spade or knife to cut through the roots, avoiding growth buds.*

## Layering, suckers, and grafting

Layering is a simple technique for increasing plants whose stems will produce roots if wounded: the stem is pegged to the ground and left to form roots, while still attached to the parent plant.

Suckering plants, such as *Cornus alba* and kerrias, naturally produce suckers that may be detached and inserted as ready-rooted plants.

Several trees, shrubs, and house- or greenhouse plants may be increased by air layering. Cut a slit in an aerial stem, pack the resulting tongue with a wad of damp sphagnum moss, and enclose it in a plastic sleeve. Once roots have grown into the moss, which may take up to 2 years,

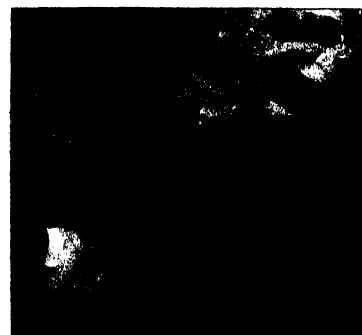
separate the layered stem from the parent plant and pot up.

Grafting involves taking the stem of one plant and uniting it with the rootstock of a closely related plant. It is used to increase stocks of newly bred woody cultivars, and to improve the rate of development or flowering of slow-growing plants by joining them to more vigorous ones. The union is achieved by making a close-fitting join between woody parts of the rootstock (the plant with roots and stem) and the scion (the plant with top-growth). Budding is a form of grafting, in which a vegetative bud of one plant is grafted on to another plant.



### Simple layering

*Wound the underside of a pliable young stem. Apply rooting hormone, peg the wounded section down, and cover with soil. Bend the stem tip upright and tie to a cane. Sever when roots have formed.*



### Suckers

*To detach a sucker, uncover its long suckering root and sever this close to the parent plant. Dig up the sucker with its own fibrous roots, replant, then cut back top-growth by half.*



### Taking cuttings

Raising plants from cuttings is one of the most common methods of vegetative propagation. In general, the technique involves taking a small piece of material from a living plant. After insertion in a rooting medium (usually in a propagating case to maintain humidity), this develops new roots, and may then be grown on until large enough to be planted out. There are 3 main types of cutting: stem, leaf, and root. Several types of stem cutting are used, differentiated by the ripe-

ness of the wood. Instructions for propagation from each of the main types are given in the table below.

Two other types of cutting (not listed below) are also used. Semi-ripe leaf-bud cuttings are trimmed just above an axillary leaf bud, and 2cm (¾in) below it. Wound 5mm (¼in) of the base, and insert in cutting compost with the leaf axil just above the surface. Heel cuttings are taken as other stem cuttings, using sideshoots with a heel (sliver) of old wood at the base.



**Simple propagating case**

Use a clear plastic bag, inflated and supported by canes or wire hoops, as an alternative to a propagating case.



wound stem of cutting to about 2.5cm (1in)

**Cuttings from conifers**

For most conifers, propagate from semi-ripe cuttings, choosing leaders or sideshoots typical of the parent plant.

### GUIDE TO TAKING CUTTINGS

	TYPE OF CUTTING	WHEN TO CUT	CUTTING MATERIAL	PREPARATION	ROOTING MEDIUM	ROOTING ENVIRONMENT
TREES, SHRUBS, AND CLIMBERS (WOODY PLANTS)	<b>SOFTWOOD AND GREENWOOD CUTTINGS</b>  <i>trim cutting below node</i>	Spring to early summer.	Soft, pliable tips of fast-growing, non-flowering shoots of current season's growth, with 3–5 pairs of leaves. Greenwood is slightly firmer.	Take early in morning, and seal in an opaque plastic bag to conserve moisture. Do not allow to wilt. Trim to 8–10cm (3–4in) long, with a straight cut just below a node. Remove leaves on lower third of cutting.	Insert into standard cutting compost, or equal parts peat (or substitute) and perlite or sharp sand. Ensure that leaves do not touch. Water with fungicide solution.	Place in a mist unit or propagating case at 18–24°C (64–75°F). Remove fallen leaves daily. Apply fungicidal spray weekly.
	<b>SEMI-RIPE AND RIPEWOOD CUTTINGS</b>  <i>for nodal cuttings, cut just below node</i>	Semi-ripe: mid- or late summer, occasionally early autumn. Ripewood: early autumn to early winter.	Soft-tipped shoots of current season's growth, firm and woody at the base. Cut just below a node for nodal cuttings, or with a heel of older wood at the base.	Remove sideshoots. Trim nodal cuttings to 8–10cm (3–4in) long; heel cuttings to 5–7cm (2–3in) long; trim heel. Remove leaves on lower third, and for semi-ripes also soft tips. Reduce large leaves by half. Wound 2.5–4cm (1–1½in) of the stem base.	Dip base of cutting in rooting hormone. Insert into standard cutting compost, or equal parts peat (or substitute) and perlite or sharp sand. Ensure that leaves do not touch. Water with fungicide solution.	Place in a mist unit or propagating case at 21°C (70°F), if bottom heat is needed, or use an insulated cold frame (vital for ripewood). Shade from hot sun. Remove fallen leaves daily. Once rooted, apply liquid fertilizer every 2 weeks.
	<b>HARDWOOD CUTTINGS</b>  <i>pencil-thick, leafless, woody shoot</i>	Early autumn (after leaf fall) to early winter.	Leafless shoots of fully ripe current year's growth, cut at join with previous year's growth. On pithy stems, take with a heel of older wood at the base.	Trim to 15–23cm (6–9in) long, with the top cut just above a bud or pair of buds, and the bottom cut just below a bud or pair of buds. Make a wound in the stem base up to 1.5cm (½in) long, if difficult to root.	Dip base in rooting hormone. Insert in a trench in a prepared bed; line the bottom with coarse sand (vital in heavy soil) and cover with soil. Alternatively, insert in containers in a cold frame; use equal parts peat (or substitute) and fine grit.	Firm into the trench with the top 2.5–5cm (1–2in) of the cutting visible above soil level; check and re-firm after frost. If slow-rooting, place in bundles in a sand bed in a cold frame; move to the trench in spring.
	<b>BASAL STEM CUTTINGS</b>  <i>make straight cut at lower end</i>	Early or mid-spring.	New shoots, when about 3.5–5cm (1½–2in) high, as first leaves unfurl, taken from close to the base or crown, with a heel of older, woody tissue at the base.	Trim to 3.5–5cm (1½–2in) long, with a straight cut at the base, and with a heel of basal tissue. Remove leaves on lower third of cutting.	Dip base in rooting hormone. Insert singly or severally into standard cutting compost, or equal parts peat (or substitute) and perlite or sharp sand. Ensure that leaves do not touch. Water with fungicide solution.	Place in a propagating case or cold frame, or cover with a clear plastic bag supported by canes or wire hoops.
PERENNIALS (NON-WOODY PLANTS)	<b>STEM-TIP (SOFT-TIP) CUTTINGS</b>  <i>strip lowest third of cutting</i>	Spring to autumn, or any time in growing season when suitable shoots are available.	Soft, pliable tips of fast-growing, non-flowering shoots, 7–12cm (3–5in) long, cut just above leaf nodes.	Take early in morning, and seal in an opaque plastic bag to conserve moisture. Do not allow to wilt. Trim to 5–7cm (2–3in) long, with a straight cut just below a node. Remove leaves on lower third of cutting.	Insert into standard cutting compost, or equal parts peat (or substitute) and perlite or sharp sand. Ensure that leaves do not touch. Water with fungicide solution.	Place in a mist unit or propagating case, or cover with a clear plastic bag supported by canes or wire hoops. Shade from hot sun. Remove fallen leaves daily.
	<b>ROOT CUTTINGS</b>  <i>straight cut</i> <i>slanted cut</i>	In dormant period, usually late winter.	Vigorous young roots, preferably at least 5mm (¼in) in diameter, taken from close to the crown of the parent plant.	Trim thick roots to 5–10cm (2–4in) long; thin roots to 7–12cm (3–5in) long. Make a straight cut at the proximal end (nearest to crown), and a slanted cut at the distal (opposite) end to ensure correct orientation. Remove fibrous roots. Dust with fungicide powder.	Insert thick roots upright in containers of moist standard cutting compost, the proximal end flush with the surface. Lay thin roots flat in trays; cover with compost. Top-dress with fine grit or sand.	Place in a cold frame or propagating case. Do not water until rooted.
	<b>LEAF CUTTINGS</b>  <i>trimmed leaf square</i>	Any time of year.	Mature, healthy, undamaged leaves, cut off close to the bases of the leaf-stalks.	Whole leaves, e.g. <i>Saintpaulia</i> : cut leaf-stalk straight across, 3cm (1¼in) below leaf-blade. Half-leaf sections, e.g. <i>Streptocarpus</i> : cut in half, removing the midrib. Scored leaf/leaf squares, e.g. Rex begonias: make 1cm (½in) cuts across undersides of main veins.	Use equal parts fine sand and peat (or substitute). Insert whole leaves upright, with leaf-blades touching compost. Pin scored leaves or leaf squares flat on compost, cut side down. Insert half-leaf sections cut edge down. Water with fungicide solution.	Place in a propagating case at 18–24°C (64–75°F). Keep in bright indirect light; always shade from hot sun.

## Preventing problems

### Methods of control

WASPS FEED ON fruit, but also help the gardener by preying on other pests.



Alternatively, remove larger pests by hand and destroy them. Either incinerate infected plant material, if permitted locally, or dispose of it along with other household waste.

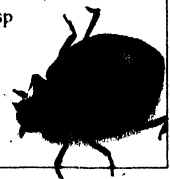
## Using chemicals

To use chemical controls safely, always follow the manufacturer's instructions exactly. In general, observe the following precautions. Avoid contact with skin and eyes, and do not inhale dust, smoke, or spray. Never eat, drink, or smoke when applying a chemical. It is best to spray when the weather is dry and dull with no breeze, preferably in the evening, when pollinating insects are less active. Always keep chemicals well away from children, pets, ponds, and wildlife.

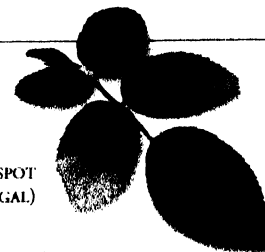
BIOLOGICAL PEST CONTROL

**Red spider mite** Predatory greenhouse mite (*Phytoseiulus persimilis*)

LADYBIRDS  
*feed on*  
*meatybugs.*









# PESTS, DISEASES, AND DISORDERS



### Key to entries

Each entry indicates what part of the plant is affected (see symbols below), briefly describes the nature of the pest, disease, or disorder, then suggests appropriate action.

-  Leaves
-  Flowers and inflorescences
-  Fruit
-  Underground structures
-  Stems, trunks, whole plant
-  Action for prevention or cure

LEAF SPOT  
(FUNGAL)

If caused by bacteria, gum exudes from stems. Buds may not develop, and foliage and flowers may wither and die. *See also* FIREBLIGHT, SHOTHOLE. ♣ *Destroy affected parts; apply fungicide.*

**CATERpillars** ♀♂♂ Larvae of moth and butterfly species that feed on leaves, flowers, or fruit, leaving powdery excreta.  
 ♀ Crush eggs; destroy pests; use biological control; apply insecticide.

**CHAFERS** *see* **BEEETLES**

**CHLOROSIS** (*adj.* chlorotic) ♣ Virus or mineral deficiency that causes leaves to turn pale green, yellow, or white. *See also* MAGNESIUM DEFICIENCY, MANGANESE OR IRON DEFICIENCY. ♣ *Correct mineral imbalance; if caused by virus, destroy plant.*

**CLUBROOT** 🍄🌱 Distortion or swelling of roots and discoloration of foliage, caused by slime mould. Growth is stunted and plant wilts. 🗑️ *Destroy affected plants; improve drainage; add lime to soil; select resistant plants; apply fungicide before planting; maintain hygiene.*

CUCKOO SPIT *see* FROGHOPPERS

**CUTWORMS** 🐛🐛 Caterpillars of moth species that gnaw tap roots, stem bases, and lower leaves. Plant wilts and dies.  
➡ *Destroy pests; apply insecticide to plant or soil.*

**DAMPING OFF** ☹️🍄 Blackening and decay of stem bases and roots, caused by fungi; seedlings collapse. *See also* RHIZOCTONIA, ROTS. ☹️ *Apply fungicide to seedlings; maintain hygiene.*

**DIEBACK** 🌿☛ Death of shoots of trees and shrubs, caused by poor growing conditions, frost damage, or fungal disease. Whole plant often dies. ♡ *Cut back beyond affected parts; treat cause; improve conditions.*

**DOWNY MILDEW** *see* MILDEWS

**EARWIGS** ♀♂ Insects whose larvae and adults feed on leaves and flowers.  
 ♀ Destroy pests; apply insecticide; set traps; maintain hygiene.

**EELWORMS** 🐛🌱 Microscopic, worm-like invertebrates (also known as nematodes) that infest plant tissues, causing distortion and discoloration of leaves and flowers. Plant usually dies. 🗑️ *Destroy affected plants; use crop rotation; in some cases, immerse dormant rootstock in hot water.*

**FIRE** ♣ ♂ Fungus that attacks bulbs, usually daffodils and tulips, causing leaves to turn brown. ♣ *Destroy infected bulbs; apply fungicide; change soil; use crop rotation.*

**FIREBLIGHT** 🌿🌿 Bacterial disease that attacks certain trees in the Rosaceae family, mainly entering through flowers. Infection spreads to branches; cankers form at base of diseased tissues. Where spread is extensive, plant usually dies.  
 ➡ *Cut back to well below affected parts, or destroy whole plants.*

**FROGHOPPERS** ♀♂ Young, sap-sucking insects that produce froth (cuckoo spit) on stems and leaves, causing distortion of growth. ➔ *Destroy pests; apply insecticide.*

**ADELGIDS** 🌿🌿 Small, greyish black, sap-sucking insects, similar to aphids, that weaken leaves and stems, produce white waxy fibres, and excrete honeydew.  
👉 *Apply insecticide.*

**ANTHRACNOSE** 🍄🍄🍄 Fungus causing spots on leaves, which then wither; shoots and fruit are infected; plant may die.  
🍂 Destroy affected parts; apply fungicide; improve ventilation; maintain hygiene.

**ANTS** ☞ Insects whose nest-building disturbs roots, causing growth to be stunted; plant wilts. ☞ *Apply ant-killer.*

**APHIDS** ☹️🐛🐛 Sap-sucking insects (also known as blackflies and greenflies) that excrete honeydew, cause galls, and transmit viruses. They may also cause leaf distortion. Woolly aphids suck sap from bark in spring and secrete white waxy fibres. ➡ *Apply insecticide; use biological control.*

**BACTERIA** 🍄🍄🍄 Micro-organisms that cause distortion and discoloration of leaves or flowers, dieback, or death.  
🍷 Prune out affected areas or remove plant if necessary; control insects that spread infection; select resistant plants; maintain hygiene.

**BEETLES** 🐞🐞🐞 Insects that create holes or pits in various parts of plants, depending on the species. 🐞 *Destroy pests; apply insecticide to seedlings; maintain hygiene.*

**BLACKFLIES** *see* **APHIDS**

**BLOSSOM WILT** ♡☛☛☛ Symptom of fungus that attacks trees, entering through flowers, which wither but remain on the tree. Leaves may discolour; pustules appear. Infection spreads, causing dieback. ♡ *Cut back to well below affected parts; apply fungicide.*

**BOTRYTIS** *see* GREY MOULD

**BUD BLAST** ☛ Fungus that causes buds to turn brown; they may have a silvery grey sheen and be covered in black bristles. Buds remain on the plant but do not develop. ☛ *Destroy affected parts; control insects that spread spores (leafhoppers).*

**BUGS** ♣ ⊕ ♂ Sap-sucking insects that make holes in leaves, flowers, and fruit. ♣ *Destroy affected parts; apply insecticide.*

**BULB SCALE MITES** 🐛🐛 Tiny pests that tunnel into bulbs. ➡ *Destroy affected bulbs; immerse bulbs in hot water before planting.*

**CANKER** • Root or stem lesion. If caused by fungi, raised rings of bark, sometimes oozing gum, may lie close to a wound or bud, with pustules nearby; plant may die.



**GALL MIDGES** 🐝🐝 Small flies, whose adults and larvae feed on plant tissues, causing galls to form on stems, leaves, and flowers. Growth may be stunted. ☞ *Destroy affected parts; apply insecticide.*

**GALL MITES** 🕷️🕷️ Small pests that feed on or within plant tissues, causing galls to form on foliage and buds. ☞ *Destroy affected parts.*

**GALLS** 🐛🐛 Irregular swellings, usually on woody plants, caused by bacteria, fungi, insects, or mites. ☞ *Destroy affected parts; improve drainage; avoid injury to plant.*

**GREENFLIES** see APHIDS

**GREY MOULD** (*Botrytis*) 🍄🍄 Fungi that cause patches of rot on leaves, stems, flowers, and fruit; mould may spread to rest of plant. ☞ *Destroy affected plants; apply fungicide; improve ventilation; avoid injury to plant; maintain hygiene.*

**GRUBS** 🐛 Plump insect larvae that are often found in soil, where they feed on underground structures. ☞ *Apply insecticide to soil.*

**GUMMING** 🍯🍯 Leakage of clear, amber-coloured gum from trunk and branches of conifers and other trees; trees with stone fruits also exude gum around stone inside fruit. Caused by poor growing conditions. ☞ *Improve conditions.*

**HONEYDEW** 🍯🍯 Sticky excreta of various pests that encourages growth of moulds on leaves and stems. See also ADELGIDS, APHIDS, MEALYBUGS, SCALE INSECTS, WHITEFLIES. ☞ *Destroy pests.*

**HONEY FUNGUS** 🍄 Fungus that causes mycelium and black fungal strands; fruiting bodies appear in autumn. Conifers may exude gum or resin. Growth is stunted; plant often dies. ☞ *Destroy affected plants including roots; select resistant plants.*

**LEAF BLOTCHES** see SPOTS

**LEAF-CUTTER BEES** 🐝 Small, hairy bees that cut semi-circular pieces from leaves. ☞ *No treatment necessary.*

**LEAFHOPPERS** 🐛 Sap-sucking insects, related to aphids, that may transmit viruses and spread fungal spores. When disturbed, they leap away. Larvae feed on undersides of leaves, causing mottling on upper surfaces. ☞ *Apply insecticide.*

**LEAF MINERS** 🐛 Larvae of flies, moths, beetles, and sawflies that tunnel into leaves, producing usually white or brown, linear, blotched, or irregular discoloration. ☞ *Destroy pests and affected leaves; apply insecticide.*

**LEAF SPOT** see SPOTS

**LEATHERJACKETS** 🐛 Crane fly larvae that cause brown patches on grass in midsummer. ☞ *Water grass, and cover with black plastic sheets to bring larvae to surface, then destroy pests; apply insecticide.*

**MAGGOTS** 🐛🐛 Legless larvae, especially of flies, that feed on fruit and underground structures; plant may die. ☞ *Destroy affected parts; apply insecticide.*

**MAGNESIUM DEFICIENCY** 🍃 Disorder that often occurs in acid soils, causing foliage to discolour (magnesium is one of the main constituents of chlorophyll). See also CHLOROSIS. ☞ *Apply Epsom salts (hydrated magnesium sulphate) to plants or soil.*

**MANGANESE OR IRON DEFICIENCY** 🍃 Disorder that often occurs in alkaline soils, manifested as chlorosis on mature

leaves, or as disorders specific to certain genera. ☞ *Match plant to soil type; clear any builder's debris; add trace elements and chelated iron to soil; apply acid mulch; irrigate with rainwater.*

**MEALYBUGS** 🐛🐛 Sap-sucking insects, whose adults and young produce tufts of waxy wool and excrete honeydew on leaves and stems. Under glass, root mealybugs infest underground structures; plant may die. ☞ *Use biological control; apply insecticide.*

**MILDEWS** 🍄🍄 Mouldy growth. Downy mildew (white tufts or down, usually on the undersides of leaves) and powdery mildews (dusty white coatings) are both caused by fungi. ☞ *Destroy affected parts; apply fungicide; keep roots moist; avoid overhead watering; improve ventilation; select resistant plants.*

**MILLIPEDES** 🐛 Small, dark brown pests, with 2 legs to each body segment, that feed on underground structures, extending injuries caused by other pests. ☞ *Apply inorganic fertilizer and insecticide; maintain hygiene; cultivate soil regularly.*

**MOSAIC VIRUSES** see VIRUSES

**MOTHS** 🐛🐛 Insects whose larvae (caterpillars) bite holes in leaves, flowers, and fruit. ☞ *Apply insecticide; use biological controls.*

**MOTTLES** see VIRUSES

**NECROSIS** 🍃 Death of plant cells, caused by fungal infection. ☞ *Apply fungicide.*

**NEEDLE CAST** 🍃 Discoloration and shedding of coniferous foliage, caused by fungal infection. ☞ *Apply fungicide; maintain hygiene.*

**NEMATODES** see EELWORMS

**OEDEMA** 🍃 Formation on leaves of warty patches, which later turn brown; caused by excess moisture in soil or air. ☞ *Do not remove affected foliage; improve ventilation and drainage.*

**PEACH LEAF CURL** 🍃 Fungus that shows as white spores on surfaces of blistered red leaves, usually of peach trees; overwintered spores enter developing leaf buds. ☞ *Destroy affected leaves; apply fungicide.*

**PEAR LEAF BLISTER MITE** 🕷️ Small pest that causes formation of pale green, raised markings (later turning brown) on the undersides of leaves, corresponding to brown areas on the upper surfaces; leaves may become distorted. Particularly affects *Pyrus* and *Sorbus* species. ☞ *Destroy affected leaves.*

**PHYLOXERIDS** 🐛 Small yellow, sap-sucking insects, related to aphids, that infest undersides of leaves, causing discoloration and withering. ☞ *Apply insecticide.*

**POTASSIUM DEFICIENCY** 🍃 Disorder that causes leaves to turn dull blue-green with brown areas; broad-leaved foliage curls down at margins. Growth is stunted. ☞ *Improve soil; apply high-potash fertilizer.*

**POWDERY MILDEWS** see MILDEWS

**PSYLLIDS** see SUCKERS

**RED SPIDER MITES** 🕷️ Tiny, sap-sucking insects that appear mainly under glass, or outdoors in warm climates. Fine webbing may appear over plant, which may die. ☞ *Under glass, use biological control. Apply insecticide.*

**REPLANT DISEASE** 🍃 Loss of vigour, dieback, and discoloration or stunting of roots, caused by eelworms, nutrient depletion, soil-borne fungi, or viruses. Particularly affects roses. ☞ *Change soil; improve conditions; plant trees, shrubs, and perennials in fresh soil.*

**RHIZOCTONIA** 🍄 Fungus that causes damping off in seedlings. In mature plants, it encourages root rots and causes discoloration of foliage; plant may die. ☞ *Destroy affected parts; apply fungicide; improve conditions; maintain hygiene.*

**ROOT FLIES** 🐛🐛 Insects whose larvae tunnel into roots, causing wilting and sometimes death. ☞ *Destroy affected parts; apply insecticide; cover soil around plant; dress seed.*

**ROOT MEALYBUGS** see MEALYBUGS

**ROTS** 🍄🍄 Decay caused by water-logging, fungi, or bacteria. Leads to root damage, and wilting, discoloration, and dieback of leaves and stems; plant dies. ☞ *Destroy affected plants; improve drainage; use crop rotation; maintain hygiene.*

**RUSTS** 🍄 Fungal disease that causes raised, brown, orange, or buff pustules or spores to appear, usually on stems or on undersides of leaves, with corresponding discoloration on upper surfaces; leaves may drop. If stem is affected, growth may be stunted and plant may die. ☞ *Destroy affected leaves; apply fungicide; improve ventilation; reduce humidity.*

**SAWFLIES** 🐛 Insects whose larvae feed on leaf surfaces or on the insides of plant tissues and galls. ☞ *Destroy affected parts; apply insecticide.*

**SCAB** 🍃 Dark lesions on fruit surfaces, caused by fungi. Fruit may become distorted or discoloured; leaves may blister and drop. ☞ *Destroy affected parts; apply fungicide; improve soil; use resistant plants.*

**SCALE INSECTS** 🐛 Insects resembling small raised scales on stems and undersides of leaves; they excrete honeydew on leaves. ☞ *Use biological control; apply insecticide.*

**SHOTHOLE** 🍃 Holes in leaves, resulting from death of tissue due to cankers or leaf spots. ☞ *Apply fungicide; improve conditions; fertilize annually; mulch and irrigate in spring.*

**SILVER LEAF** 🍃 Fungal disease that causes foliage to turn silver, later brown. Wood is stained; shoots or branches suffer dieback; fruiting bodies form on dead wood. Particularly affects trees with stone fruits. ☞ *Cut back beyond affected parts; prune susceptible trees in summer only.*

**SLUG** 🐛 Soft-bodied pests that feed on underground structures and low-growing leaves, which may be stripped. Slime trails may be visible. ☞ *Use biological control; apply pellets or liquid; cultivate soil regularly; maintain hygiene.*

**SLUGWORMS** 🐛 Black, slime-covered sawfly larvae, similar to small slugs, that feed on upper leaf surfaces, causing opaque patches. ☞ *Spray with insecticide.*

**SMUTS** 🍄 Fungal diseases that cause pale swellings, later releasing black spores, on stems and foliage. Parts affected may wither and die. ☞ *Destroy affected parts or plants; disinfect greenhouse; apply fungicide.*

**SNAILS** 🐛 Hard-shelled pests that feed on leaves; plant may be stripped. Slime trails may be visible. ☞ *Apply pellets or liquid; cultivate soil regularly; maintain hygiene.*

**SOFT SCALE INSECTS** see SCALE INSECTS

**SPOTS** 🍃 Bacterial or fungal diseases that affect leaves. Bacterial spots may be angular with a yellow rim; fungal spots have concentric zones and an area of fruiting bodies. See also ANTHRACNOSE, SHOTHOLE. ☞ *Destroy affected parts; apply fungicide; improve conditions; sow seed thinly; fertilize annually; mulch and water in spring.*

**SPRINGTAILS**

🐛 Tiny, whitish pests, often prolific on roots, that extend damage caused by other pests. When disturbed, some leap using rear of body. ☞ *Apply insecticide to soil; maintain hygiene.*

**SUCKERS** 🐛 Sap-sucking insects, related to aphids but with flattened bodies and prominent eyes and wing buds. Larvae and adults excrete honeydew on leaves and stems, causing distortion of young growth. ☞ *Destroy affected parts; apply insecticide.*

**THRIPS** 🐛 Insects whose juveniles and adults cause pale white flecks on petals and leaves; buds may fail to turn green. ☞ *Use biological control; apply insecticide; water regularly; improve ventilation.*

**VINE WEEVIL LARVAE** see WEEVILS

**VIRUSES** 🍃 Diseases that cause distortion and discolouring of leaves and flowers. Growth is stunted; plant may die. ☞ *Destroy affected plants; control insects that spread infection; select resistant plants; maintain hygiene.*

**WASPS** 🐛 Insects that feed on fruit, but also prey on other pests. ☞ *Destroy nests at dusk if treatment is required.*

**WEEVILS** 🐛 Small, dark-coloured insects that feed on plants. Grubs gnaw cuttings, underground structures, and seedlings. Plant or seedlings wilt, discolour, and die. ☞ *Destroy pests; use biological control; apply insecticide.*

**WHIPTAIL** 🍃 Molybdenum deficiency in brassicas, often in acid soils, that causes development of narrow, ribbon-like leaves. ☞ *Add lime to soil; add molybdenum to soil before sowing or planting out.*

**WHITE BLISTER** 🍃 Fungal diseases that cause unsightly, gleaming white patches on foliage. ☞ *Destroy affected leaves.*

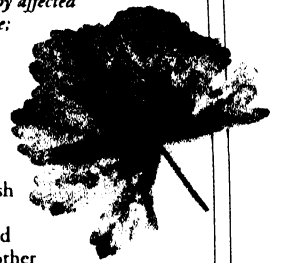
**WHITEFLIES** 🐛 Insects, related to aphids, whose juveniles and tiny white, moth-like adults suck sap on leaf undersides and excrete honeydew, causing distortion of young growth. ☞ *Apply insecticide outdoors; use biological control under glass.*

**WILT** 🍃 Fungal disease that enters via roots or is carried on scateurs. Plant wilts and usually dies. ☞ *Destroy affected plants; use crop rotation; maintain hygiene.*

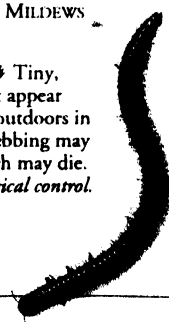
**WIREWORMS** 🐛 Small, orange-yellow click beetle larvae that feed on underground structures and bases of seedlings. Plant or seedlings may die. Most common on newly cultivated former grassland. ☞ *Destroy pests and affected plants; apply insecticide to plants or soil; cultivate soil regularly.*

**WOODLICE** 🐛 Pests that feed on young or damaged roots, stems, and leaves. ☞ *Maintain hygiene.*

**WOOLLY APHIDS** see APHIDS



POTASSIUM DEFICIENCY



# ORNAMENTAL PLANT GROUPS

## Trees

As the largest and most prominent of all garden plants, trees establish the basic, long-term framework of a garden, and their forms and colours influence the selection of other plants. Since they originate from most regions of the world, there is an immense variety of ornamental trees suitable for almost any garden site.

### What are trees?

Trees may be broadly defined as long-lived, woody perennial plants, deciduous or evergreen, each usually with a single stem, although some, such as birches (*Betula*), may have 2 or 3 stems and still be regarded as trees. They are generally quite distinct from shrubs, which produce several or many stems that branch from or near soil level. As a group, trees are larger than shrubs, but show great variation in shape (see facing page) and

height, ranging from dwarf cultivars only 1m (3ft) high to specimens of 90m (300ft). In horticulture, a grafted shrub that is grown as a standard, even if only 2m (6ft) or so high, is often referred to as tree-like.

Most trees are angiosperms (see p.10). Exceptions include conifers, which reproduce by means of naked ovules borne on the scales of cones. Conifers can withstand extreme climatic conditions, and have distinctive, regular branching, often conical crowns, and linear, needle-like leaves. They are popular as specimen trees, and for hedging and screening. Dwarf conifers are ideal in beds and containers.

### Shape and size

A tree's shape and size have a strong impact on the style of a garden. Tall, narrow trees can lend a formal air; trees that are open and spreading



### An ideal specimen

The best specimen trees display a succession of ornamental features. *Catalpa bignonioides* 'Aurea' has bronze young foliage in mid-spring, soon turning bright yellow, and bears bell-shaped flowers in summer, followed by bean-like pods.

seem more informal. Weeping trees are graceful, whereas conical trees are strong and sculptural.

When choosing a tree, take note of its size at maturity and the proximity of other plants to ensure that it will be appropriate for the size and style of the garden. A weeping willow (*Salix x sepulcralis* 'Chrysocoma'), for example, would overwhelm a small garden and cause problems for other plants growing nearby, whereas the same tree would look magnificent in a larger area.

dioecious trees, such as most hollies (*Ilex*), must be cross-pollinated by a second plant of the opposite sex before setting fruit. Bisexual and monoecious trees can usually set their own fruit (see p.13).

Bark can also provide fascinating patterns, textures, and colours (see panel, left). Some species may need to be pruned to the base annually to stimulate vividly coloured new growth.

### Garden uses

Trees are most commonly grown in an open site as specimen plants, visible from all angles, generally on a lawn or underplanted with ground cover, or they may be grown in a large shrub border as a focal point. Single trees can also be used to mark an entrance or change of levels in a garden. Ideally, a specimen tree will display one or more features at different times during the year.

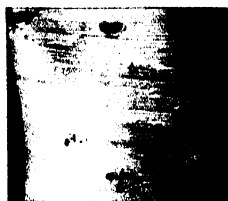
In larger gardens, trees can be planted in groups. Year-round interest is ensured if both evergreen and deciduous trees are included, since the branches of deciduous trees may be bare for up to half of the year in cool climates.

Trees may also be used as hedging, as wind or sound barriers, to screen eyesores, to frame a view, or to line a pathway. They can give shelter from sun or rain, as well as provide a home for wildlife.

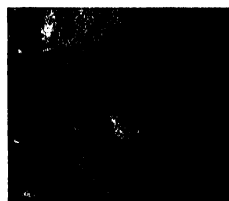
### DECORATIVE BARK

Bark performs the essential function of protecting the sensitive growth tissue of the tree stem or branches beneath. As their girth expands with age, the bark may fissure or peel, sometimes resulting in patterns, textures, and

hues with ornamental interest. Brightly coloured bark is also produced on the young branches of some trees. Bark may be conspicuously marked with lenticels (pores), which provide access for air to the inner tissues.



ATTRACTIVELY COLOURED  
*Betula ermanii*



PEELING IN FLAKES  
*Betula nigra*



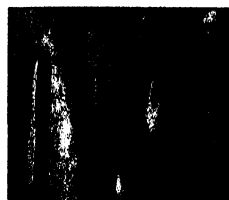
PEELING VERTICALLY  
*Eucalyptus johnstonii*



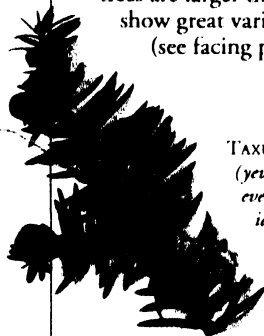
FISSURED  
*Quercus suber*



PEELING HORIZONTALLY  
*Prunus serrula*



PEELING IN PATCHES  
*Eucalyptus pauciflora*

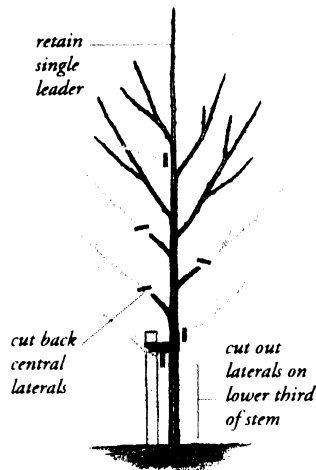


*TAXUS BACCATA*  
(yew) has dense,  
evergreen foliage,  
ideal for hedging;  
females bear  
persistent,  
bright red fruit.

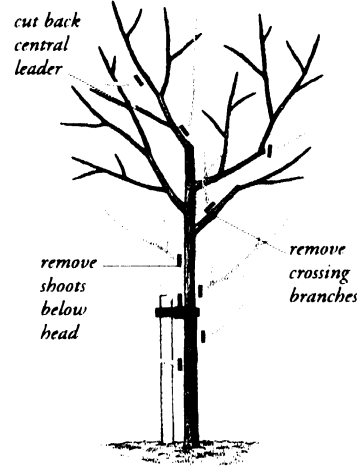
## FORMATIVE PRUNING

A young tree, particularly if deciduous, requires formative pruning in order to develop even growth. A "feathered" tree, with a stem branched to the base, can be trained either as a central-leader standard, with a clear stem and lateral branches tapering towards the bottom

third of the trunk, or as a branched-head standard, with a clear stem and a more fully developed crown. Mature trees require little pruning, except to maintain their vigour and shape (see pp.26-27). More drastic pruning, such as for renewal, is described on p.25.



**Central-leader standard**  
Remove the lower lateral branches and prune back all others to produce a clear stem, 1.8m (6ft) tall.



**Branched-head standard**  
Train as a central-leader standard with a clear stem, 1.8m (6ft) tall, then cut back the leader to open the crown.

A woodland garden provides a naturalistic, shady, and sheltered environment in which to nurture shrubs, perennials, and bulbs that grow best in dappled shade. Larger birches or oaks (*Quercus*) can provide an excellent canopy above smaller trees, such as some magnolias and maples (*Acer*).

Many trees are also tolerant of cultivation in containers. As it is possible to move them around, they can be used in varied displays in areas such as patios and courtyard or roof-top gardens, or to flank steps or doorways. Container-grown trees can also be underplanted with annuals and trailing plants for

colour and variety. In cold climates, ensure that containers are frost-proof; tender trees can be moved under glass for protection in winter.

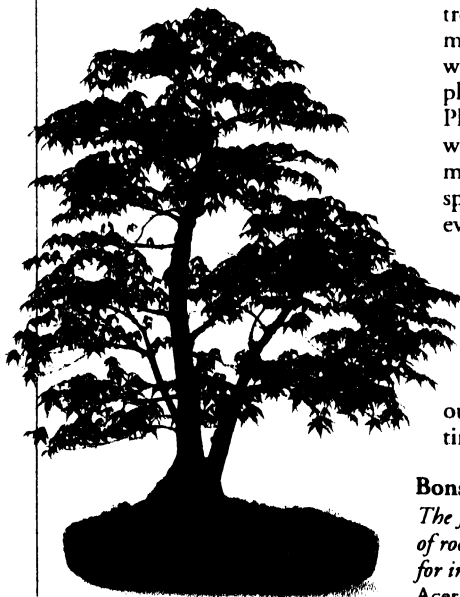
## Cultivation

Trees can thrive for decades, some even for centuries, if they are grown in the right soil and climate, and have adequate shelter, levels of light, and rainfall. Plant away from pipes, drains, cables, and usually walls and buildings, although some tender trees are best grown against a sunny wall. On slopes, plant trees halfway down, where it is warmer and less windy. In coastal zones, select trees that tolerate salt winds and spray.

Plant bare-root, usually deciduous trees between mid-autumn and mid-spring, but not in frosty weather; evergreen trees are best planted in autumn or mid-spring. Plant hardy trees with fleshy roots, whether evergreen or deciduous, in mid-autumn or in mid- or late spring; in cold areas, half-hardy and evergreen trees should be planted only in mid-spring. Plant root-balled trees in early or mid-autumn, or in early or mid-spring; deciduous root-balled trees may be planted in winter when the weather is mild. Plant out container-grown trees at any time, except in frost or drought.


## Bonsai tree

The Japanese art of restrictive pruning of roots and branches produces tiny trees for indoor and outdoor use, such as this *Acer palmatum* 'Schindeshojo'.



## TREE SHAPES

The basic shape of every tree in this encyclopedia is represented by one of the stylized shape symbols shown below (for palms and cycads, see p.50). The symbols appear within the plant entry, directly after the botanical name, and indicate the general outline of each tree, regardless of its internal branch structure (see right) and the differences that naturally occur from one specimen to another. When choosing a tree, consider the impact of its overall shape on the planting site.

**Branch structure**  
Each of these 3 trees is classified as  (rounded to broadly spreading), despite their different branch structures.



*Fagus sylvatica*




*Zelkova serrata*




*Malus floribunda*

## SHAPES AND SYMBOLS




 **ROUNDED TO BROADLY SPREADING**  
e.g. *Fagus sylvatica*




 **ROUNDED TO BROADLY COLUMNAR**  
e.g. *Populus szechuanica*




 **BROADLY COLUMNAR**  
e.g. *Quercus pontica*




 **NARROWLY COLUMNAR**  
e.g. *Juniperus chinensis* 'Obelisk'




 **BROADLY CONICAL**  
e.g. *Betula papyrifera*




 **NARROWLY CONICAL**  
e.g. *Thuja koratensis*




 **NARROWLY CONICAL (FLAME-SHAPED)**  
e.g. *Cupressus sempervirens*



 **LARGE WEEPING**  
e.g. *Salix babylonica*



 **SMALL WEEPING**  
e.g. *Salix caprea* 'Kilmarnock'

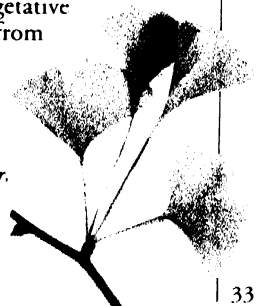
Dig the planting hole 2 to 4 times as wide as the root ball, and 1½ times as deep, working organic matter into the base. If necessary, drive a stake off-centre into the hole (see p.23). Plant the tree, backfill with soil mixed with organic matter, tread it in firmly, and water well, mulching thickly or top-dressing with bark chips or a similar organic mulch. Secure the tree to the stake and protect it with a stem guard. Until established, water young trees regularly, especially those on light, sandy soils; keep them free of weeds to a diameter of 1m (3ft) around the trunk. Provide a winter mulch. Remove suckers as they appear.

Feed and water trees grown in containers regularly, watering freely in hot, dry weather. In spring, replace the top 5cm (2in) of

compost with fresh compost and apply a slow-release fertilizer. Pot on every 3 to 5 years.

Trees may be propagated by seed, cuttings, layering, or grafting (rarely used by amateur gardeners). Species are often grown from seed, although they take a long time to establish. Hybrids and cultivars rarely come true from seed, and must be increased by vegetative means, usually from cuttings.

**GINKGO BILOBA**, a deciduous conifer, has fan-shaped, mid-green leaves that turn golden yellow in autumn.



# Shrubs

Both deciduous and evergreen shrubs are prized as essential elements in most garden designs. The diversity of their ornamental features – architectural habits, fragrant flowers, striking fruits, or attractive foliage – and the year-round presence of their woody, often decorative stems, offers an almost infinite choice for gardeners. Like trees, they occur in the wild in a broad spectrum of habitats, ensuring there is a wide range of shrubs suitable for every soil and aspect.

## What are shrubs?

Shrubs are woody-stemmed plants, usually freely branching from the base. Whereas a tree usually has a single stem (see p.32), a shrub has several or many stems arising from or near ground level. Most shrubs reach no more than 5–6m (15–20ft) in height, the majority of species and cultivars attaining considerably smaller stature.

However, a degree of overlap occurs between shrubs and other plant groups. Larger shrubs, such as lilac (*Syringa*), that grow on a single stem, can also be considered trees, although this depends on their size at maturity. Subshrubs (shrubs that are woody only at the base), such as *Perovskia*, and shrubs that die back annually as a result of winter frosts, such as *Fuchsia*, are often cultivated as herbaceous perennials.

## Essential framework

In every size and style of garden, shrubs are invaluable for their structural forms and their woody stems, which provide the garden with a long-term framework. They offer a variety of shapes and sizes, from prostrate, mat-, or clump-forming subshrubs, such as dwarf cultivars of *Erica carnea*, only 15cm (6in) high, to erect, tree-like shrubs like *Buddleja colvilei*, 6m (20ft) tall.

## Ornamental features

Shrubs display an immense range of decorative features. They are often cultivated for their foliage, occurring in many shades of green, yellow, red, purple, silver, or grey. Some are especially favoured for their brilliant autumn coloration: Japanese maples (*Acer palmatum*) include numerous cultivars that turn from yellow through orange to shades of red, while the purple leaves of some *Cotinus* cultivars turn red between autumn and early winter. The notable autumn colour of witch hazels (*Hamamelis*) ranges from yellow to orange-red or purple.

The flowers of shrubs vary enormously in shape, size, and scent, and occur in almost every colour. At one end of the spectrum are the abundant, tiny flowers of



## Designing for a mature border

Positioned too close together, larger plants may compete for space, light, moisture, and nutrients. Here, *Viburnum plicatum* 'Mariesii' is centrally placed at the back of the border, with ample room for its spreading growth. Its magnificent white flowerheads cascade towards the bronze foliage of the perennial *Rodgersia podophylla*.

*Ceanothus*; at the other are the giant blooms of tree peonies (*Paeonia*). While numerous shrubs bloom for only a few weeks each year, others, including *Hypericum* and *Potentilla*, flower reliably over several months; shrubs of the latter type are valuable during periods when little else is in bloom. Some shrubs, such as Mexican orange blossom (*Choisya ternata*) are remontant, regularly flowering twice in a year. Winter-flowering shrubs, such as *Viburnum x bodnantense*, often bear scented blooms over a long period.

Many popular shrubs, including *Cotoneaster*, *Gaultheria*, holly (*Ilex*), and *Pyracantha*, bear vividly coloured berries in autumn, which persist into winter. Other types of fruit range from those of *Dipelta*, which are covered by papery bracts, to the pendent, bean-like, deep blue pods of *Decaisnea fargesii*.

Some shrubs display brightly coloured winter stems. In dogwoods (*Cornus*), the stems can be blazing red through to bright greenish yellow. A special pruning regime may be required to stimulate new growth for the best display of colour (see pruning group 7, p.27).

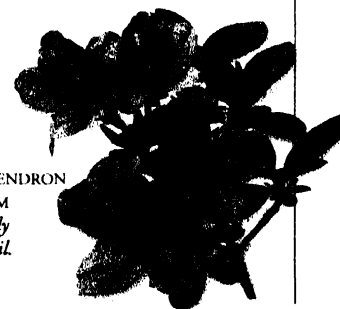
## Garden uses

Most shrubs are grown in a shrub border, or in a mixed border among annuals or perennials. When designing a border, it is advisable first to establish a theme. Consider whether the border is to display a selection of favourite species, to provide interest in a particular

season or throughout the year, and whether plants should feature ornamental or scented flowers, decorative foliage, or fruit, or various combinations of all of these.

For a dedicated shrub border, select larger shrubs that will flower in different seasons: for example, choose *Viburnum tinus* to flower from late winter to spring, lilacs (*Syringa*) or *Philadelphus* for flowers in summer, and *Garrya elliptica* or witch hazel (*Hamamelis*) for winter blooms. For year-round foliage interest, include both deciduous and evergreen shrubs.

Shrub borders are usually designed with larger shrubs planted at the back of the border, and dwarf or ground-cover shrubs, such as *Chaenomeles japonica*, at the front, although other arrangements can also be successful. It is particularly important to provide sufficient space for each shrub; as plants become established, they should not crowd one another. If necessary, any bare patches can be filled in with small, fast-growing shrubs, such as *Cistus*, fuchsias, or hebes, which can



RHODODENDRON  
KIUSIANUM  
thrives only  
on acid soil.



## Container display

A shrub grown in a pot, such as this *Pyracantha* 'Golden Chatter', is ideal for a small, paved garden or formal area. Container-grown shrubs need careful watering and pruning.



#### Scented specimen

*Syringa vulgaris* 'Congo' is ideal for use as a lawn specimen. Tree-like in habit, it also has fragrant flowers, which are particularly attractive to butterflies.

be removed when shrubs with a slower growth rate have reached maturity. Some shrubs are best trained against a warm, sunny wall, particularly tender shrubs, which may not thrive elsewhere in the garden; a few, such as *Ceanothus*, may grow to twice their usual height in this situation.

In a mixed border, cultivate shrubs alongside annuals, biennials, bulbs, or herbaceous perennials, seeking associations of colour and texture of flowers and foliage, and contrasts in form and habit. When dividing (see p.28) or transplanting perennials within a mixed border, take care not to damage the roots of plants growing nearby.

Shrubs that exhibit a variety of ornamental features make excellent specimen plants, and are ideally sited where they may be viewed from different angles. A specimen shrub should be appealing in habit and branch structure, particularly if it is deciduous, as well as in its foliage, flowers, or fruit. In a small garden, where a single specimen serves as a focal point throughout the year, versatility is essential; it is less important in a large garden that can accommodate a selection of shrubs of different sizes and features.

#### Growing in containers

Many shrubs thrive in containers, and are excellent for a small garden, patio, or roof terrace. Use an isolated specimen in a decorative container as an arresting focal point, or group containers in different arrangements for variety.

Container growing also enables cultivation of shrubs that may not survive in the open garden due to the acidity or alkalinity of the local soil, poor drainage, or an unsuitable climate. Tender plants can be displayed outdoors in summer, and then moved under glass before the first frosts. Ensure that hardy plants kept outside in frost-prone areas are grown in frost-proof containers.

#### Cultivation

Shrubs will thrive for many years, given the right growing conditions. The majority will grow in any type of garden soil, but generally prefer a fertile, well-drained but moisture-

#### HEDGES AND SCREENS

Many shrubs can be used as boundary markers or screens, as low edging, or to divide areas within a garden. Those most suitable are robust, dense, and erect in habit, and tolerate clipping.

Spiny-leaved or thorny shrubs, such as cultivars of *Berberis thunbergii*, *Ilex aquifolium*, and roses, as well as shrubs with dense growth, including *Taxus*

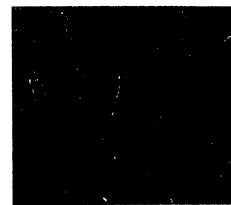
*baccata* 'Adpressa', are excellent for creating an impenetrable hedge. Dwarf shrubs, such as *Buxus sempervirens* 'Suffruticosa', are good for low edging. Herbs, such as lavender (*Lavandula*) and rosemary (*Rosmarinus*), make fragrant low hedges. In coastal areas, select plants resistant to wind and salt, such as *Flaeagnus* or *Griselinia*.



*Buxus sempervirens*  
'Suffruticosa'



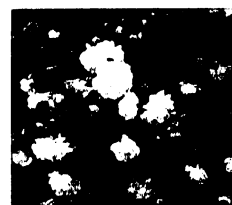
*Ilex aquifolium*  
'Handsworth New Silver'



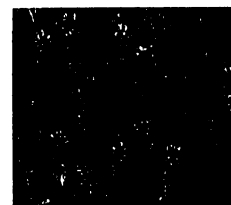
*Taxus baccata* 'Adpressa'



*Berberis thunbergii*  
'Dart's Red Lady'



*Rosa* 'Buff Beauty'



*Lavandula angustifolia*  
'Hidcote'

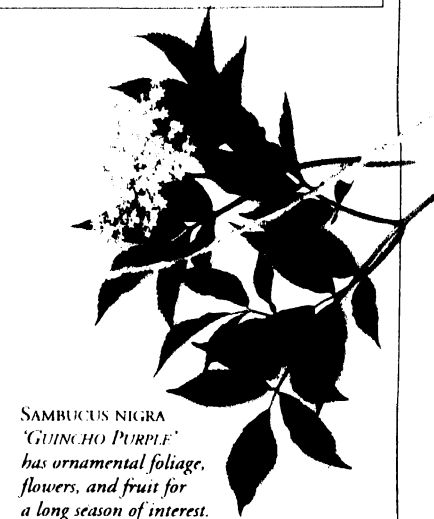
retentive loam. Plant bare-root and root-balled shrubs from autumn to spring, although planting should be delayed if the ground is frozen.

Container-grown plants can be planted at any time, except in frost or drought, but usually establish best if planted in autumn or spring.

For root-balled or container-grown plants, make the planting hole 2 or 3 times the width of the root ball and deep enough for the roots to be buried to their original depth of soil. For bare-root plants, allow room for the roots to fan out fully around the shrub.

Plant the shrub, backfilling with a mixture of soil and organic matter, and firm in. In sandy soils, leave a depression around the shrub to retain moisture; in clay soils, plant the shrub slightly higher than the surrounding soil level so that water will readily drain off. Water and mulch well with garden compost or bark chips. Protect newly planted shrubs from cold, drying winds. Plant wall-trained shrubs about 45cm (18in) from the wall; lean the plant against the wall and support it with canes tied into wires. Young plants require regular watering until established. Apply fertilizer in early spring, and mulch thickly with bark chips or garden compost in spring or autumn.

From early spring to midsummer, water shrubs in containers freely and apply a quick-release fertilizer 2 or 3 times. In spring, replace the top 5–10cm (2–4in) of compost



*SAMBUCUS NIGRA*  
'GUINCHO PURPLE'  
has ornamental foliage,  
flowers, and fruit for  
a long season of interest.

with fresh compost, mixed with a slow-release, balanced fertilizer. Pot on in late summer or autumn, when the root growth appears congested.

For all shrubs, remove suckers and cut out reverted (plain) shoots from variegated plants as soon as they appear. Dead-head regularly to encourage stronger growth.

General pruning advice and details of the pruning groups for each shrub genus in this encyclopedia are given on pp.25–27. Unless otherwise stated, coniferous shrubs do not require pruning.

Shrubs can be propagated by seed (for species), from cuttings, or by layering, division, or grafting (not usually used by amateur gardeners). Hybrids and cultivars must be propagated by vegetative means as they do not come true from seed.



#### Heather border

In this border, the low, rounded form of the heathers, interspersed with ferns and bergenias, is accentuated by the columnar habit of *Chamaecyparis lawsoniana* and other conifers in a pleasing combination of shape, habit, texture, and colour.

# Climbers

Gardeners value evergreen and deciduous climbing plants for their ability to cover walls, tree stumps, or buildings, or to grow through the branches of robust trees or shrubs. Many can be used as ground cover or as living ornamental screens. Climbers provide diverse attractions of flowers, fruits, and foliage, and there is an ample choice of woody or herbaceous perennials, or annuals.

## What are climbers?

Climbing plants may be self-clinging or twining, or scandent, scrambling, or trailing. Self-clinging plants use aerial roots or terminal adhesive pads to attach themselves to any surface that offers purchase, for example rock faces, tree trunks, or walls, and need only initial guidance. Twining climbers twine their stems, coil their tendrils, or use modified leaf-stalks to wind through trees, shrubs, or trellis. They will thread their way through shrubs and trees without additional support, but require wires or trellis if wall-trained. If used as ground cover, they need to be pinned down so that they root at

the nodes. Scandent, scrambling, and trailing plants have long stems that attach themselves loosely, if at all, to their support. To climb, they must be tied in to their support, or they can be allowed to tumble over walls or banks.

## Garden uses

Evergreens, such as *Hedera colchica* and its variegated cultivars, provide handsome foliage all year round. Deciduous climbers can display attractive foliage from their first bright new spring growth through to autumn, when many, such as *Parthenocissus tricuspidata*, provide brilliant autumn colour. *Actinidia kolomikta* has decorative green foliage splashed pink and white.

Many climbers, including clematis, honeysuckle (*Lonicera*), and jasmine (*Jasminum*), are cultivated for their colourful or fragrant flowers. Some produce ornamental fruits: the silky seed heads of clematis often remain decorative for some time after the flowers have gone; many honeysuckles follow their blooms with

## Arching stems

The lax shoots of a scandent climber, such as *Plumbago auriculata*, can be loosely tied in to a free-standing support for an attractively informal display.

red berries. Climbers grown mainly for their fruits include *Celastrus*, whose fruits split open in autumn, revealing brightly coloured seeds.

Vigorous climbers, such as *Fallopia baldschuanica* or *Wisteria*, can be used to hide unsightly out-buildings. To cover low objects, such as old tree stumps, and for use as ground cover, choose self-clinging plants, such as ivies (*Hedera*), *Hydrangea petiolaris*, and

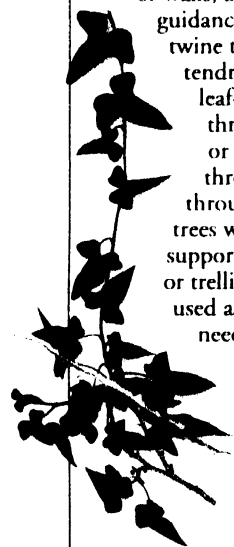
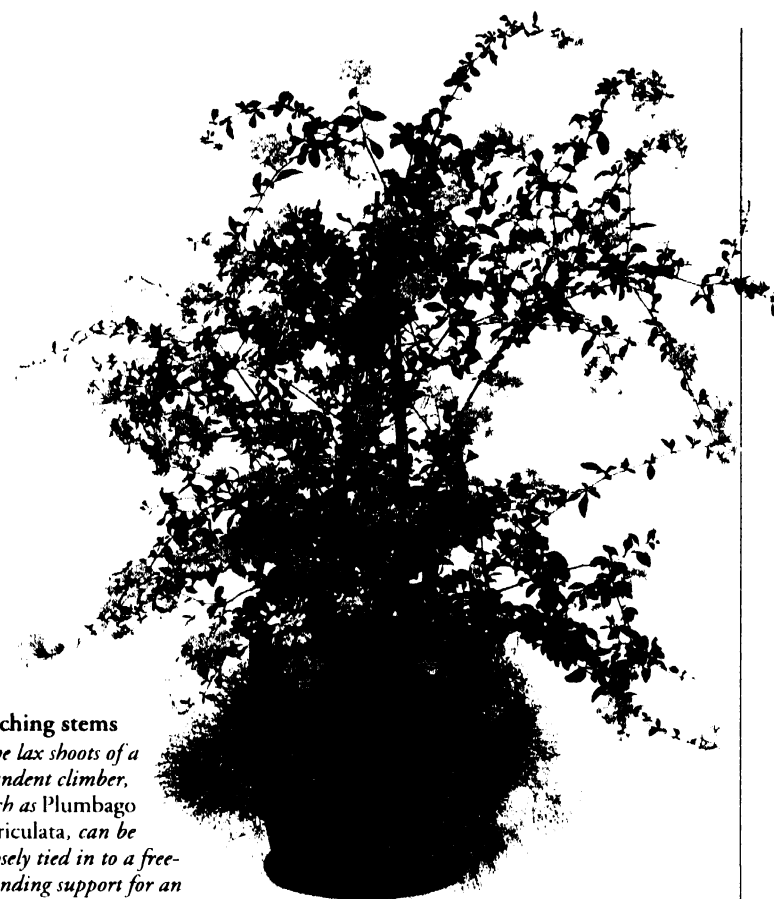
Virginia creeper (*Parthenocissus*), which require no training or support. Climbers can also be trained to form attractive screening between various parts of a garden. For example, a trellis can be used to support a screen of fragrant annuals, or can be smothered with both climbing roses and honeysuckle.

Many climbers will easily twine through the branches of a tree, complementing the host tree's own features and extending its period of interest. Self-clinging climbers planted at the base of a tree will establish themselves against the trunk; twining or tendril climbers will need to be trained into the lower branches. *Clematis montana* and *C. armandii*, as well as honeysuckles, *Hydrangea petiolaris*, ivies, *Vitis coignetiae*, and *Wisteria* can all be grown this way. Shade-loving honeysuckles flower beneath the foliage of the tree, while sun-loving clematis will flower only at the sunlit top of the canopy.

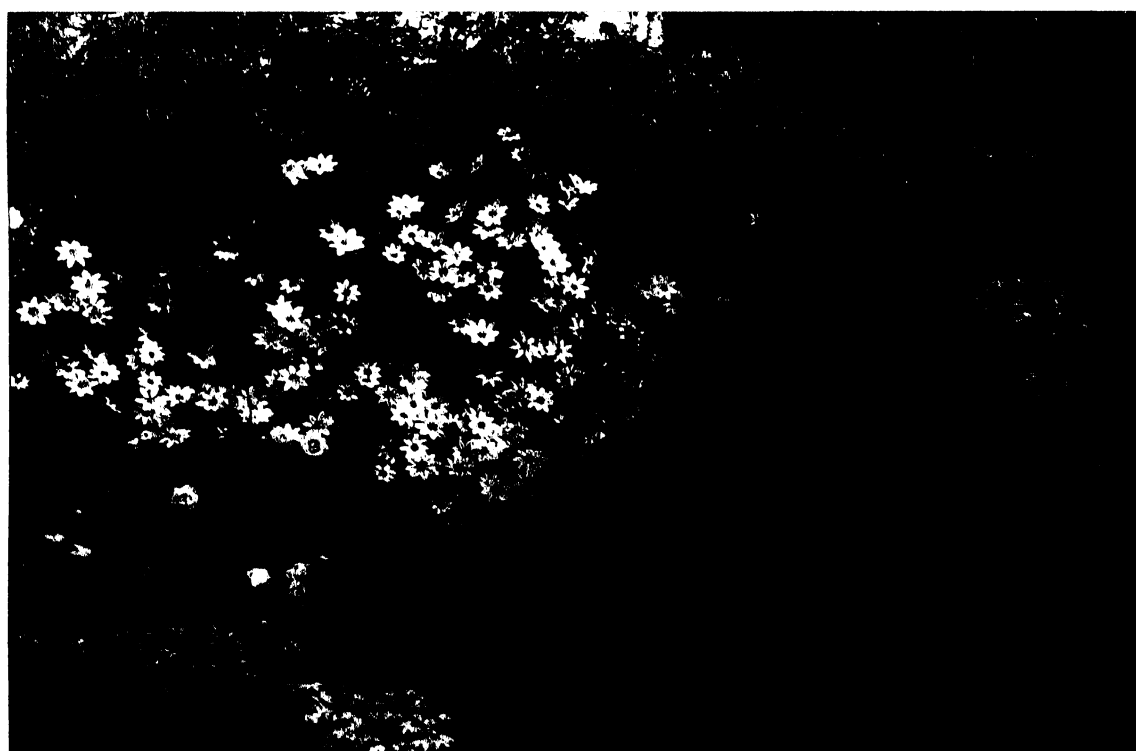
Pergolas and pillars are ideal for supporting climbers, as they can be admired from all sides. These structures also provide strong vertical elements in garden design.

## Visual counterpoint

Here, climbers are used as the focus of a raised bed improvised from a well-head. The lush foliage of *Humulus lupulus* and a clematis, trained over a wire loop, are offset by abundantly flowering roses, honeysuckle (*Lonicera*), Clematis 'Nelly Moser', and *C. William Kennett*.



*HEDERA NEPALENSIS*  
'SUZANNE' is excellent  
for clothing a sheltered,  
shady wall.





### Short-term climbers

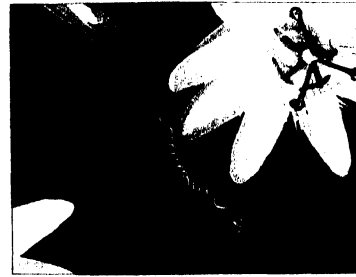
Climbing annuals, and perennials grown as annuals (such as *Eccremocarpus scaber*), are useful for providing temporary screens, for short-term cover on arches or trellis until permanent plantings are established, or for providing shade during summer. The fragrant sweet pea (*Lathyrus odoratus*) is ideal for a cottage-style garden, with attractive flowers suitable for cutting. Slender perennial climbers, such as species of *Codonopsis*, can be used to twine through subshrubs. Herbaceous species, for example *Tropaeolum speciosum*, *Lathyrus grandiflorus*, and *L. latifolius*, will scramble through robust shrubs. All die back in autumn, thereby avoiding problems with pruning among the host plants.

### Choosing a climber

Consider the aspect of the intended site before choosing a climber. Many climbers, including *Actinidia*, *Clerodendrum*, and passion flowers (*Passiflora*), need a sunny wall to thrive, as does any climber grown at the limits of its climatic tolerance. *Akebia quinata*, *Jasminum officinale*, *Stauntonia hexaphylla*, and *Wisteria* tolerate a shaded wall, but flower and fruit more reliably in full sun. A few, like *Hydrangea petiolaris* and Virginia creeper, thrive in sun or shade. *Parthenocissus henryana* will colour better in shade. For shaded walls, use a robust ivy, or *Pileostegia viburnoides*, *Schizophragma hydrangeoides*, or *S. integrifolium*. Take care to match the vigour of the chosen climber to the size and strength of the host tree or the scale of the building to be covered. Very vigorous climbers, such as *Fallopia baldschuanica*, or rampant ramblers,

### HOW CLIMBERS ATTACH

Twining plants use tendrils or leaf-stalks to coil their stems in spirals around a support; guide them into the branches of a tree or shrub, or train them on to a wire framework or wooden trellis against a wall. Self-clinging plants climb by using aerial roots or adhesive pads on their tendrils until they have become established against the trunk of a tree or a wall. Scandent and scrambling climbers need to be tied in to a support in order to climb, or they can be left to trail. All types can be used as ground cover.



**Twining tendrils**  
*Passion flowers send out slender tendrils (modified stems) to curl around a support.*



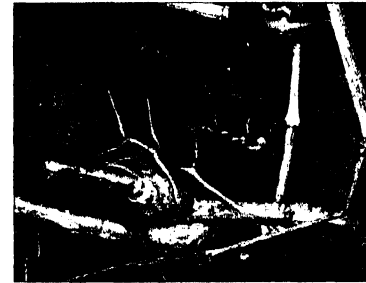
**Twining leaf-stalks**  
*Clematis climb by spiralling modified leaf-stalks around an appropriate support.*



**Twining stems**  
*The flexible stems of Akebia curl and extend around the support as they grow.*



**Self-clinging aerial roots**  
*Ivies fasten to a surface by means of their aerial roots (adventitious rootlets).*



**Self-clinging adhesive pads**  
*Virginia creepers cling to a surface using adhesive pads at the end of their tendrils.*

such as *Rosa wichurana* and *R. filipes* 'Kiftsgate', may cause an elderly or small tree to topple, or may rapidly overwhelm a small structure.

### Types of support

Choose a support that will accommodate the eventual height, spread, and vigour of the chosen climber. The main types are wooden or plastic trellis panels, wire or plastic mesh, and wires (usually plastic-covered) stretched between vine eyes. Trellis is the most reliable support for twining climbers; use

wire or mesh for tendril climbers, and trellis or wire framework for scandent or scrambling climbers.

Purpose-built structures, such as pergolas and pillars, must be strong and durable to support plants throughout their life-span.

### Cultivation

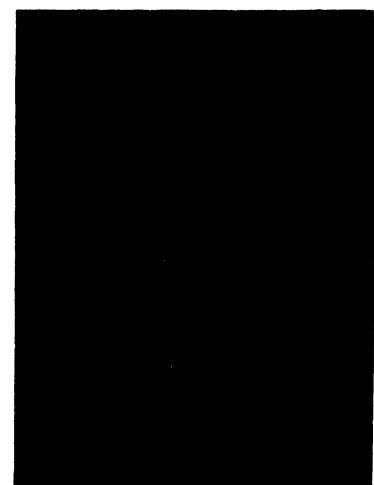
When planting climbers against a wall or fence, position the plant at least 45cm (18in) from the base of the support. This allows the roots to receive sufficient rainwater, once established. After planting, water and apply mulch 5–7cm (2–3in) deep to a radius of about 60cm (24in) around the plant. Top-dress climbers in spring during their first two seasons, using 50–85g (2–3oz) of a balanced fertilizer, and apply a mulch each spring. Apply a slow-release fertilizer annually.

In hot, dry periods, water weekly. Dead-head plants regularly, unless fruits are desired. Tie in new shoots, and cut back overgrown plants (see p.25). Protect tender climbers grown outdoors in cold weather.

In frost-prone areas, climbers that are not reliably hardy, such as the spectacular, tropical *Bougainvillea*, *Hoya*, *Mandevilla*, and *Pandorea*, may be grown in a greenhouse or conservatory; some are suitable as houseplants. Climbers grown permanently under glass will outgrow their allotted space, so early restrictive pruning is essential (see p.25). Small climbers grown in containers with free-standing supports, such as cane tripods or trellis panels, can be moved outside

during summer and returned under glass before autumn frosts. Plant vigorous species in large containers or in a greenhouse border. If they are allowed to grow very large, they may need to be replaced, since few respond to hard renovation pruning. Climbers in containers need to be repotted and fed regularly.

Climbing plants can be propagated by seed, by stem or root cuttings, or by layering. For species, seed is the most practical method, particularly for annuals and herbaceous species, although woody plants take some time to establish. Cultivars and hybrids do not come true from seed; take cuttings or layer.



**Instant colour**  
*Parthenocissus tricuspidata offers a spectacular display of autumn colour, and is one of the best climbers for covering a bare wall rapidly.*

### ESTABLISHING A CLIMBER

It is important that climbers become well established against their support early on. Plants with aerial roots or adhesive pads are best planted at the base of a wall without support and allowed to establish themselves.

To grow a climber that requires support against a wall, fix a wooden trellis or wire support 30cm (12in) above the soil, slightly away from the wall. Dig a hole 45cm (18in) from the foot of the wall, deep enough so that the top of the root ball, when planted, will be level with the surrounding soil. Drench the root ball, then place it at an angle of 45° to the support. Fan the roots out away from the wall. Fill in the hole with soil, firm in, and water well. Remove the stake that comes with the plant, and fasten each main shoot to a new stake, fixing them to the lower rungs of the support. As new shoots appear, tie in to the support; do not damage the stems by tying too tightly. Cut out any weak or wayward shoots. Water freely until established.



*Check the level of the root ball.*



*Tie shoots to stakes, fixed to the support.*

# Perennials

Perennials reach maturity in as little as two seasons. A well-chosen selection rapidly forms a fine tableau of textures and colours, both foliage and flowers providing visual interest for months. They can be featured as specimen plants, massed in a traditional herbaceous border, or interspersed with shrubs, annuals, and biennials in a mixed border. For variety, they can be cultivated in containers or window boxes, or grown among fruit and vegetables in a kitchen garden.

## What are perennials?

Precisely defined, perennials are plants that live for 2 years or longer and, once mature, flower annually. In gardens, however, the term perennial is commonly applied to herbaceous plants that form flowering stems each year before seeding, then die back in autumn to ground level, sending up new growth in spring. The term is also used to describe some non-woody, evergreen plants, such as *Bergenia* and *Yucca*, as well as subshrubs like *Artemisia* and *Penstemon*.

## Ornamental features

Perennials are probably the most diverse plant group, providing a huge variety of shape, form, colour, texture, and scent with which to design a planting. They range in height from low, creeping plants, useful for ground cover, to feature plants, such as *Rheum palmatum*, which is 2.5m (8ft) or more high.

Colourful foliage plants can add contrast to a predominantly mid-

green backdrop, accentuating each plant's structural form. Possible choices include the glossy, dark green leaves of *Acanthus*, the purple foliage of some *Canna* species, the variegated leaves of *Hosta* cultivars, or the silvery foliage of *Onopordum*.

Perennials with unusual shapes, arrangements, or textures of leaf can also produce eye-catching effects, especially when used as dot plants (usually taller feature plants used to accentuate contrasts).

Flowers of perennials are extremely varied in colour, size, and form, presenting the gardener with endless possibilities for contrasting, complementary, and single-colour plantings. Well-chosen groupings can also provide form and structure, for example the flat corymbs of *Achillea*, the tall spikes of lupins (*Lupinus*), or the tiered whorls of *Phlox russeliana*. Popular fragrant perennials, attractive to bees and butterflies, include species of clematis, *Heimericallis*, *Nicotiana*, phlox, and verbenas.



## Mixed border

*Shrubs and perennials have been planted here in a series of groupings, some of them providing colour harmonies, others striking contrasts. Heights are unevenly arranged with taller plants such as alstroemerias, heleniums, salvias, and verbascums brought to the front, surrounding smaller plants such as Argyranthemum frutescens.*

## Borders

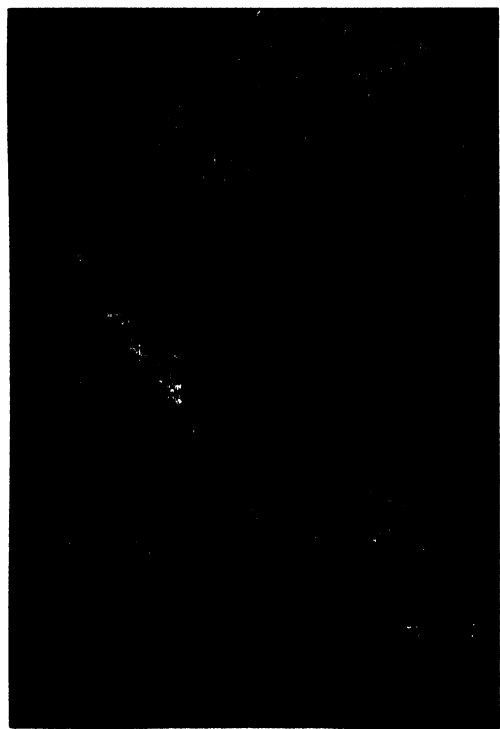
The traditional herbaceous border dates back to the nineteenth century and earlier. It was usually a large rectangular plot, set into a lawn or against a hedge or wall, filled with summer- and autumn-flowering perennials, banked according to height. Today, herbaceous borders are frequently more modest in scale, often incorporating a carefully planned colour scheme, and using foliage as well as flowers for colour, texture, and structure. Some gardeners still prefer a banked effect. Others choose to arrange plant heights unevenly.

Borders can be planned as a series of incidents (groupings of 3 or more

plants) or as a progression of subtle associations along the border.

Swathes of massed plants, at an oblique angle to the front of the border, have strong visual impact. Experiment with merging informal drifts of several different species and cultivars, or create intricate patterns using regularly spaced groups of a more limited number of plants.

For ground cover, choose low, mat-forming, or creeping perennials displaying attractive foliage, such as *Lamium*, or flowering, clump-forming plants, such as geraniums; evergreens, such as *Bergenia* and some hellebores, can soften stark winter borders in cold areas. (See also panel, far right.)

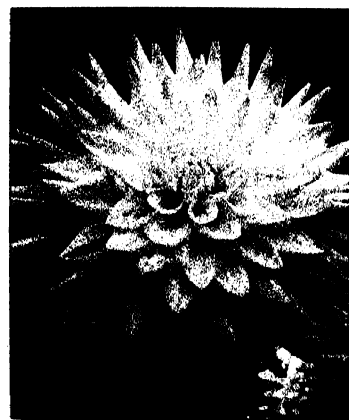


## Late-season interest

*Many perennials provide interest throughout autumn and winter. A fine clump of ice plant (Sedum spectabile), whose stems and seed heads remain attractive in winter, dominates the centre of this planting, with salvia and rosemary (Rosmarinus) at the rear. At the front, the deep red flowers of Sedum 'Ruby Glow' contrast with the cool, silvery green foliage of various species of Stachys and Senecio.*

## SPECIALIST GROWING

The cultivation and exhibition of prodigious and flawless blooms can be a source of immense satisfaction to many gardeners. Popular hobby plants, such as carnations, chrysanthemums, dahlias, delphiniums, and gladioli, can all be grown with other plants in garden beds and borders. Specialist growers, however, will often set aside a designated area for such plants, such as a kitchen garden or in a greenhouse, to provide them with extra space, careful tending, and to protect them from any damage from pests or diseases, or from adverse weather conditions. Specialist societies have been established to distribute information to enthusiasts about species, hybrids, and cultivars of their favoured plants, and to give advice on sources, cultivation, and the exhibition of blooms.



## Show bloom

*This Dahlia 'Hamari Accord' flower is ready for exhibition, demonstrating perfect petals and ideal proportions.*



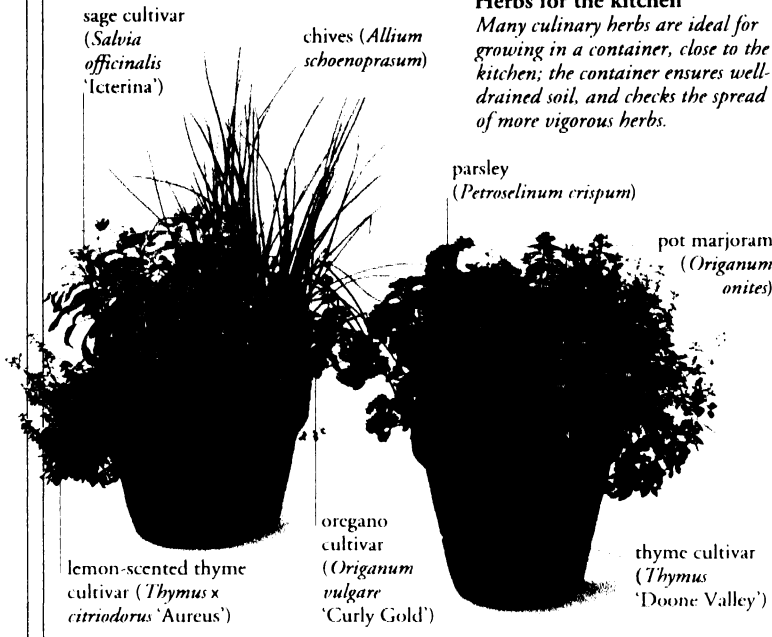
## CULTIVATING HERBS

In gardens, herbs are simply perennials grown for culinary or medicinal use, although many are also popular for their ornamental qualities. Most are of Mediterranean origin, preferring full sun and sharply drained soil, although mint (*Mentha*) thrives in moist soil and tolerates partial shade. A few, such as lavender (*Lavandula*) and chives (*Allium schoenoprasum*), bear showy

flowers, and many have attractively coloured or variegated leaves. Sow annual or biennial herbs in succession against a framework of perennials to provide a continuous supply and to avoid gaps in the herb garden in late summer. Some medicinal herbs are of benefit only if prescribed by a qualified herbalist; unsupervised use may have harmful consequences.

### Herbs for the kitchen

Many culinary herbs are ideal for growing in a container, close to the kitchen; the container ensures well-drained soil, and checks the spread of more vigorous herbs.



Mixed borders of herbaceous perennials, shrubs, bulbs, climbers, annuals, and biennials are excellent for providing year-round interest. A careful selection of perennials and deciduous and evergreen shrubs that fill up to a third of the border will provide a balanced planting. Fill out the border with annuals until the perennials and shrubs mature. For extra interest in spring, many perennials, particularly those coming into growth in mid- to late spring, such as hostas, can be underplanted with bulbs or other early-flowering plants, such as tulips, anemones, and scillas. Tender perennials, such as dahlias, can be added to enhance a late-summer and autumn display.

### Container ideas

Some hardy perennials are ideal for use in containers; ornamental grasses, for example, offer excellent choices of shape, structure, and colour. Less hardy plants, such as *Agave*, *Cordyline*, *Melanthus major*, and variegated *Phormium* cultivars, are also attractive, but may need overwintering under glass. Perennial subshrubs in decorative containers, for example *Argyranthemum* and lavender (*Lavandula*), can serve as focal points in paved areas. For a long floral display, choose summer- and autumn-flowering perennials, such as *Felicia* and pelargoniums.

### Cutting and drying

Perennials include some of the best garden plants for cutting. Blooms often last well if they are cut early in the morning. Remove leaves from the bases of the stalks. To encourage them to take up water, bruise or slit the base of each stem, or plunge stems briefly in boiling water, before immersing them in cool water to the necks (where the flowers begin).

The flowers and seed heads of some perennials are also good for drying, particularly those that hold their shape and colour well, such as *Achillea* and *Eryngium*. Some less rigid flowers with a higher water content may be air-dried if this is done quickly, by suspending small bunches in a dark and airy place. Flowers with papery petals can be dried in a proprietary desiccant. Pick blooms as they begin to open. If picked too soon, the stems will not be sufficiently stiff; if picked too late, the colour of the flowers will have deteriorated or the petals (or seed, in the case of grasses) will fall.

### Cultivation

When planning a herbaceous or mixed border, match the needs of plants to the aspect and conditions of the chosen site. Plant in carefully prepared ground, usually in spring or autumn. Keep the surrounding area free of weeds, and water young

plants regularly until established. Mature perennials require little watering except during prolonged dry periods. Apply an annual top-dressing of bone meal or a balanced, slow-release fertilizer, preferably in early spring after rain.

Most herbaceous plants produce vigorous shoots in spring, but some may be spindly. When the plant is one-quarter to one-third of its final height, pinch out or cut back weak shoots; the remaining sturdy shoots will usually bear larger flowers. This particularly benefits plants such as Michaelmas daisies (*Aster*), delphiniums, and phlox. Plants that require support should be staked when young to ensure that lax stems remain upright (see p.23). Dead-head regularly to prolong flowering.

In autumn, cut shoots down to the base, and remove dead and faded growth and weeds, leaving the border tidy in winter. In spring, when the ground is moist, apply a mulch of organic matter, such as mushroom compost or bark chips. Where practical, perennials grown in a border should be divided not only for propagation, but also to maintain vigour, ideally every 3 to 5 years. Take care when lifting and replanting not to damage the roots of surrounding trees and shrubs.

To appreciate grasses and other plants throughout the winter months, delay cutting and mulching until spring. In very cold areas, leaving top-growth in place during winter will also offer some frost protection to the crown of a plant.

For container-grown perennials, use loam-based compost, or lighter

*ACHILLEA  
FILIPENDULINA  
'GOLD PLATE'*  
retains its  
magnificent  
shape and  
colour when  
dried.



soilless compost mixed with a slow-release, balanced fertilizer. Although the extra weight of the loam adds stability, use soilless composts in plastic containers for roof gardens or balconies where heavy containers may be too great a load; lighter containers are also easier to move.

Ensure that compost in containers does not dry out when plants are in growth; water daily in hot, dry weather. Plants in larger containers require less frequent watering, especially if moisture-retentive polymer granules have been mixed in with the compost. Mulching also helps to retain moisture; replace this when dividing or repotting plants.

Perennials can be propagated by seed, division, cuttings, or grafting (rarely used by amateur gardeners). Sowing seed is preferable for species where large numbers of plants are required. Hybrids and cultivars do not come true from seed; divide or take cuttings.

## GROUND COVER

A wide variety of perennials can be used as decorative, low-maintenance ground cover, with the added benefit of reducing the labour of weeding. Geraniums are often chosen for their abundant flowers, while others, such

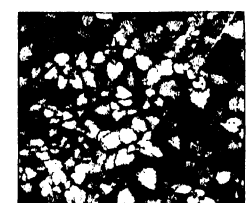
as hostas, are grown mainly for their attractive foliage. Cerastiums prefer full sun, but many perennials, such as geraniums, hostas, *Lamium*, and *Persicaria*, also thrive in partial shade. Tiarellas prefer partial to deep shade.



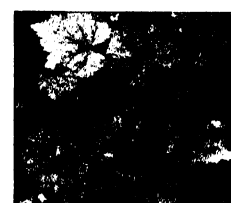
*Persicaria virginiana*  
'Painter's Palette'



*Geranium asphodeloides*



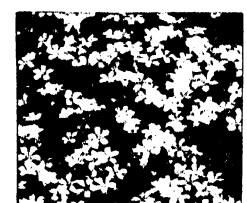
*Lamium maculatum*  
'Beacon Silver'



*Tiarella cordifolia*



*Hosta* 'Shade Fanfare'



*Cerastium tomentosum*

# Rock plants

As a group, rock plants represent an extensive range of hardy perennials, shrubs, and bulbous plants, many of which originate in mountain ranges. Many rock plants will flourish in a suitably well-drained site with an appropriate aspect; some require special conditions in the garden or in an alpine house. Delicate, simple, clear-coloured flowers are often prolifically borne in spring and early summer.



*GENTIANA VERNA*  
bears a profusion  
of blue flowers in  
early spring.

## What are rock plants?

The term rock plant is often used more or less interchangeably with alpine. In fact, true alpine are native to mountains in temperate, subtropical, and tropical regions, where they grow above the tree-line in screes, rocky crevices, and turf. Subalpine occur just below the tree-line. Most alpine are compact in habit, and rarely over 15cm (6in) tall. This minimizes wind resistance and water loss at high altitudes.

When more broadly defined, a rock plant is any plant sufficiently dwarf in its habit to associate well with true alpine. Many rock plants are found in mountain pasture and

woodland, or on dry hillsides. A few occur on coastal cliffs and shores.

Adapted to growth in thin, rapidly draining soil, often at high altitudes, most alpine and rock plants will survive extremes of temperature but not excessive wet. In cultivation, many prefer an artificial environment that reproduces the aspect, light level, exposure to the elements, and soil conditions of their natural habitat. Rock gardens, raised beds, scree beds, and alpine houses (see panel opposite) will all provide suitable growing conditions. Other less specialized plants, like aubretias (*Aubrieta*), will thrive in any well-drained site with a suitable aspect.

## Ornamental features and uses

Rock plants in the broadest sense encompass a diverse mixture of mat- or cushion-forming plants, dwarf shrubs and trees, and bulbous plants. Dwarf coniferous shrubs and trees, such as *Juniperus communis* 'Compressa', can provide height and structure in a planting, contrasting with specimens of more open or



## Mountain dwellers

True alpine, like this *Aquilegia fragrans*, grow above the tree-line in mountain ranges to over 3,000m (10,000ft) high. In the garden, such plants require conditions that replicate their high-altitude habitats: well-drained soil and a cool root run.

rounded habit like hebes. Lower-growing, tufted, or mat-forming plants, like sandworts (*Arenaria*), are useful as ground cover or edging.

Some rock plants, like houseleeks (*Sempervivum*), have fleshy, water-storing leaves. Others, like edelweiss (*Leontopodium*), have small, closely arranged, sometimes hairy leaves, which minimize water loss through transpiration. These provide a varied choice of foliage textures for garden plantings. Specimens like *Celmisia semicordata*, with its sword-shaped, silvery leaves, will offset rosette-forming, fleshy plants like stonecrops (*Sedum*), or those with feathery leaves, such as pulsatillas.

Many rock plants are evergreen and will provide year-round interest in the open garden. Spaces within a framework of miniature shrubs can be filled with rock plants; their tufts, clumps, or cushions of foliage are often as interesting as their blooms.

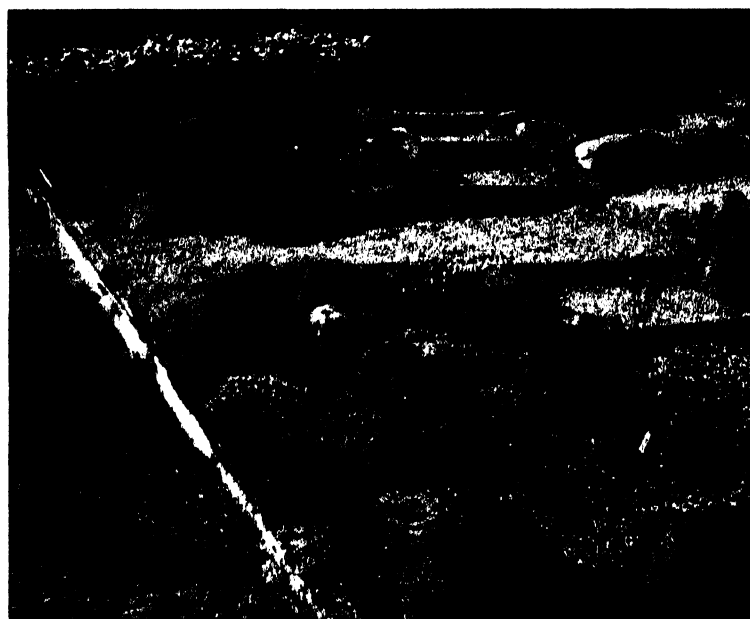
Rock plants flower mainly over a relatively short period in spring and

early summer, but often produce a profusion of tiny, clear-coloured blooms. Autumn- and late winter-flowering bulbs, such as some cyclamen or crocuses, may be used to extend the flowering season.

## Rock gardens

The most popularly constructed environment for rock plants is a rock garden. This is best located in an open, sunny site on a slope, clear from the shade cast by trees, and sheltered from cold, drying winds. Where possible, include a source of water, such as a pond or stream, to enhance the basic design.

Construct the rock garden on a bed of coarse rubble, covered with standard rock garden soil (see right). Set rocks into the soil in a natural formation. Pockets between the rocks will accommodate the rock plants and provide them with a deep, cool root run. Top-dress the surface after planting with grit, gravel, or stone chippings.

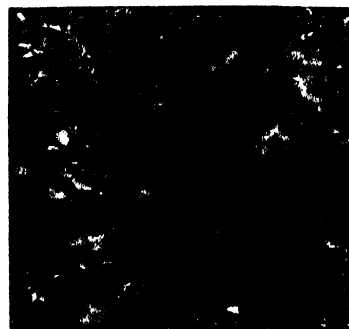


## Establishing a rock garden

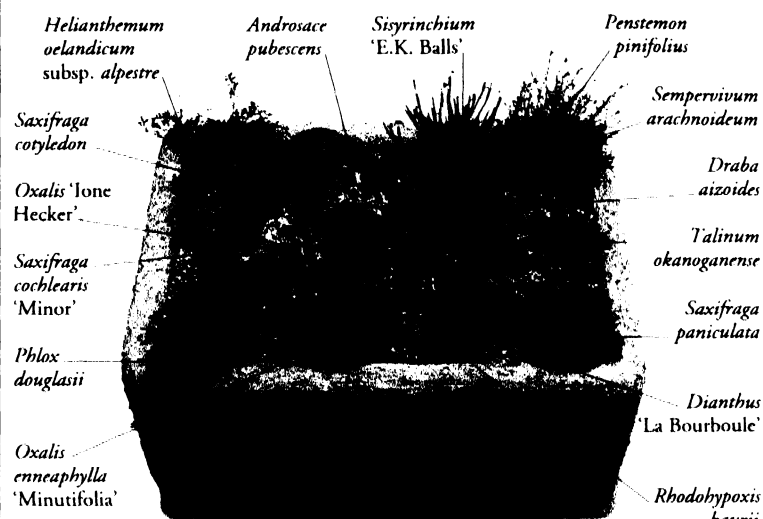
Alpine and other rock plants, such as *Antennaria*, *Armeria*, *hebes*, *saxifrages*, *stonecrops*, and *houseleeks*, will rapidly establish themselves on the gentle slopes of a sunny, well-planned rock garden.

## GESNERIADS

A plant family of about 2,500 species, the Gesneriaceae are mainly evergreen perennials (some epiphytic) or shrubs, and a few trees. Most are native to tropical or subtropical regions, with a few from temperate zones. Of the latter group, rock plants such as *Ramonda* and *Haberlea* are ideal for growing in the niches of a cool, shady wall or rock, or in a scree bed, where their rosettes will remain free of excess moisture. Often grown in an alpine house, *Jancaea heldreichii* will also thrive outdoors in tufa, in a shady site.



*Haberlea ferdinandi-coburgii*



Niches or crevices in a wall, or between paving, can provide similar growing conditions to a rock garden. Some rosette-forming plants, such as *Lewisia* and *Ramonda*, are best planted on their sides in cracks in a wall, so that water drains away quickly from their collars.

Grow mat-forming plants like *Sedum acre* or *Dianthus deltoides* in pockets of soil on the top of a wall, or in vertical cracks, to produce a

cascade of colour. Use trailing or spreading plants, such as *Saponaria ocymoides* or *Saxifraga 'Tumbling Waters'*, to soften the lines of a boundary wall or the retaining wall of a bank or raised bed.

### Beds and containers

Raised beds and scree beds are ideal for growing plants on a level site. Rock plants that prefer very gritty soil and a well-drained root run, like

this reduces the need for watering and offers some frost protection. Plants in plastic containers do not require plunging, but they risk dehydration if the growing medium freezes hard in winter. A raised bed allows for landscaping and provides a deep root run, but plants cannot then be moved.

To keep plants cool in summer, shade an alpine house (see p.24) from late spring to early autumn and, where possible, move containerized plants that have finished flowering to an open plunge bed or cold frame outdoors.

### ALPINE HOUSES

The needs of moisture-sensitive rock plants are best met in an alpine house – an unheated greenhouse with maximum levels of ventilation, usually provided by a door at each end, and extra windows or louvred panels set into the sides, along the roof ridge, and below the staging. Some growers heat an alpine house just sufficiently to prevent hard-freezing of soil and compost, enabling the cultivation of frost-hardy to half-hardy plants.

Most plants are grown in clay pots, plunged to the rims in sand on staging;



### Maintaining healthy plants

In an alpine house, most rock plants are grown in clay pots, plunged to the rims in a layer of sand upon staging. In summer, maximum levels of ventilation reduce the risk of disease, while green shade netting protects foliage and flowers from scorching.

### Planting a trough

As with raised beds, carefully placed rocks can enhance the natural effect of a trough or sink planting. If using tufa, bore holes in them to fill with compost and appropriate small plants.

alpine forget-me-nots (*Myosotis alpestris*), will grow best in a scree bed. If the bed is designed to be a free-standing feature, it should be slightly raised to assist drainage. A scree bed may also be constructed as part of a larger rock garden.

A raised bed can be constructed in a garden of any size, and is useful where garden soil is heavy or slow-draining. Its added height improves drainage and brings the attractions of low-growing plants closer to eye-level. Grow species and cultivars that prefer acid soil, such as *Cassiope* or *Arctostaphylos*, in a peat bed or peat bank, which may be top-dressed with bark chips.

The retaining walls of a raised or scree bed can be constructed from natural or artificial stone, bricks, wooden logs, or railway sleepers. As with a rock garden, all beds should have a rubble base, covered with a suitable soil mix and top-dressed with grit, stone chippings, or gravel.

Rock plants will also flourish in containers such as sinks, troughs, and tubs. Provide a generous top-dressing of grit around the bases of the plants to improve drainage and reduce the evaporation of moisture from the compost.

### Cultivation

In general, alpine and other rock plants prefer an open site in full sun, with moderately fertile soil, a cool, deep root run, and sharp drainage.

With some cushion-forming plants, like *Dionysia* or *Androsace*, the rotting of one or two rosettes may rapidly lead to the death of the whole plant. Such species and their cultivars are best grown within the controlled environment of an alpine house or cold frame. Some bulbous plants, like *Calochortus*, also benefit from a controlled environment as they require protection from moisture when dormant in summer.

In the open garden, shelter susceptible plants from damp by providing very well-drained soil and a thick dressing of grit around the collar of each plant. Panes of glass or clear plastic can also be propped up over the plants, or they can be covered with an open-ended cloche of glass or transparent plastic.

At planting, incorporate a slow-release, balanced fertilizer into the soil or compost. Thereafter, apply a general-purpose fertilizer in spring, if vigorous growth is required. Plants grown in a free-draining scree bed may require watering until

### COMPOSTS

Special soil mixes aim to reproduce the mediums in which alpine and other rock plants grow in the wild. For acid-loving plants, use lime-free loam and grit, supplemented with granitic or sandstone chippings; for alkaline-loving plants, use limestone chippings. Peat substitutes include decomposed bark, bracken litter, garden compost, and leaf mould.

ROCK GARDEN (STANDARD MIX)	
2 parts J1 No.2 or 3 (or 1 part sterilized loam; 1 part peat or peat substitute); 1 part sharp sand or grit.	
SCREE BED	
1 part sterilized loam; 1 part peat or substitute; 3 parts grit or stone chippings (in dry areas, 2 parts grit or chippings). Or 2 parts sterilized loam; 2 parts leaf mould; 1 part sharp sand; 4 parts grit or chippings.	
RAISED BED	
3 parts sterilized loam; 2 parts peat or substitute; 1–2 parts sharp sand or coarse grit.	
PEAT BED (< pH6.5)	
1 part peat or substitute; 1 part acid leaf mould; 1 part fibrous acid loam; 1 part lime-free sharp sand or coarse grit. Add a slow-release, balanced fertilizer.	
WALLS	
3 parts sterilized loam; 2 parts peat or substitute; 1–2 parts sharp sand or coarse grit. Add extra sand, grit, or stone chippings to improve drainage in crevices.	
FOR ACID-LOVING PLANTS (< pH6.5)	
4 parts acid leaf mould, or peat or substitute (such as decomposed bark, or bracken litter); 1 part sharp sand.	
FOR HIGH-ALTITUDE ALPINES	
1 part J1 No.3; 1 part gravel or stone chippings. Or 1 part sterilized loam; 1 part leaf mould, or peat or substitute (such as decomposed bark); 2–3 parts gravel or stone chippings.	
FOR CONTAINERS	
3 parts J1 No.1; 1 part coarse grit. Add a slow-release, balanced fertilizer.	

established. Rock plants grown in an alpine house, in raised beds, or in containers should be watered regularly. In an alpine house, soak the medium in which plants are plunged, as well as the individual plants. For species and cultivars that resent moisture from above, soak the plunging medium only.

Dead-head rock plants, where practical, to encourage further flowering, and remove withered or damaged growth immediately. Trim plants as required to maintain their neat, compact form and, where necessary, to restrict their spread.

Various propagation methods are used for rock plants; consult individual genus entries for the most appropriate method in each case.

# Annuals and biennials

These versatile and free-flowering plants, though short-lived, are easy to grow from seed and require little maintenance. They are suitable for all gardening situations, being native to both temperate and sub-tropical climates. Annuals and biennials will quickly provide a vibrant display of colour, enhancing a framework of trees, shrubs, and perennials, or grown by themselves in beds, containers, or hanging baskets.

## What are annuals and biennials?

Annuals are plants that germinate, flower, set seed, and die within one year. Certain members of other plant groups, such as perennials or subshrubs, which will often flower in their first year when raised from cuttings or seed, are also commonly grown as annuals. Some tender perennials, like *Cobaea*, busy Lizzies (*Impatiens*), and pelargoniums, can be seed-raised each year to provide a display of flowers, and then

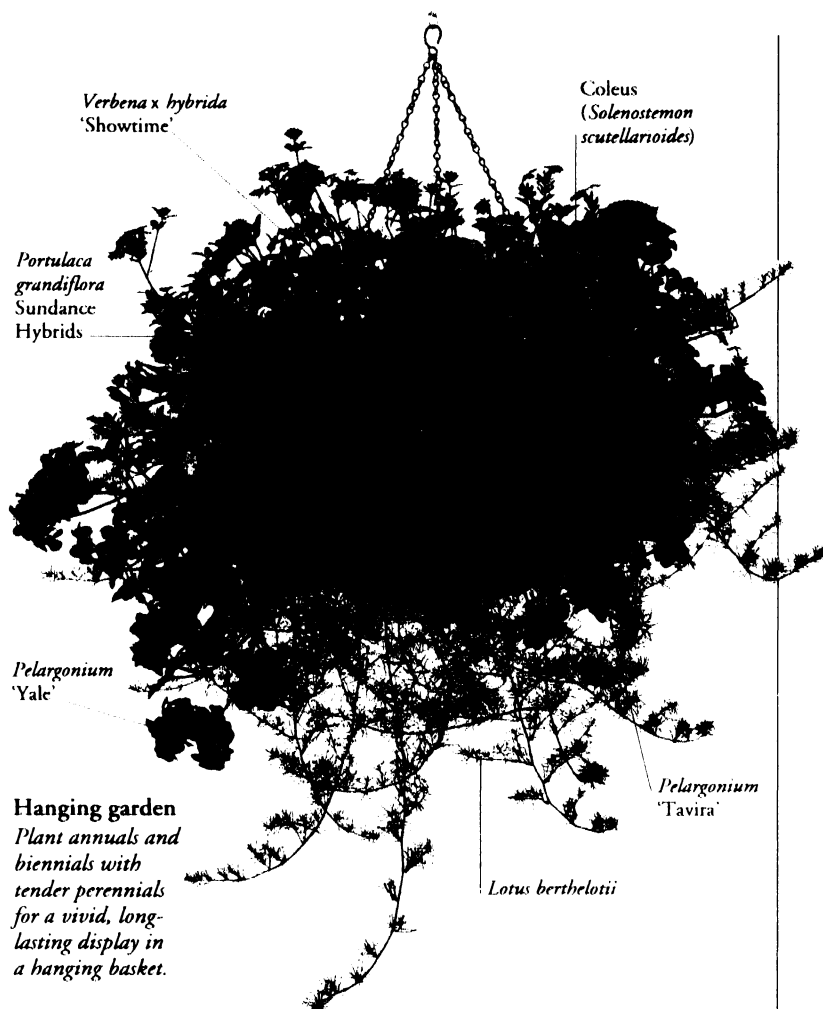
cleared away rather than over-wintered under glass.

Biennials normally produce only foliage in their first year, bearing flowers and completing their life-cycle in the following season.

In this encyclopedia, both annuals and biennials are described as fully hardy, frost hardy, half hardy, or frost tender, according to their individual levels of resistance to low winter temperatures. Commercially, however, annuals are classed only as hardy, half hardy, or frost tender. General details of the sowing and flowering times for each category of annuals and biennials are presented in the chart on the facing page.

## New plants and names

Each year, new annual and biennial cultivars are introduced to stimulate or cater for commercial demand. These may be completely new plants, or improvements of existing cultivars. In many species, breeding programmes have increased the



## Hanging garden

Plant annuals and biennials with tender perennials for a vivid, long-lasting display in a hanging basket.

choice of flower colours, extended the flowering season, and developed a wider range of habits, often producing dwarf cultivars ideal for small gardens, or pendent cultivars suitable for window-boxes and hanging baskets.

New introductions may have been obtained from the wild, selected from a batch of seedlings, or are the result of genetic mutation. Continuous breeding and inter-breeding of these selections blurs the parentage of many cultivars, and results in a complicated (and often confusing) system of categorization. Two or more cultivars are often crossed to produce a hybrid or group of hybrids. In these circumstances, where parentage becomes confused, or where several cultivars display very similar or common features, they may form a Group, the name of which is printed in roman rather than italic type, as in *Impatiens* New Guinea Group, or *Digitalis purpurea* Foxy Hybrids.

Cultivars that consistently share the same characteristics, differing in only one feature (usually flower colour) may be termed a Series, as in *Tropaeolum* Alaska Series. This distinguishing feature may also be used to identify further a plant within a Series: for example, *Tagetes* Antigua Series 'Antigua Gold' differs from other cultivars in the Series only in its golden yellow flowers.

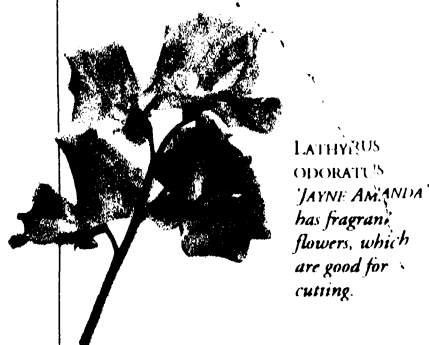
Individual cultivars within a Group or Series may bear flowers of

only one colour (self-coloured), or may produce flowers comprised of two colours (bicoloured). A cultivar may also consistently bear flowers of the same colour (single colours), or individual plants of the same cultivar may bear flowers in any one of a number of colours (mixes).

## Ornamental features

Annuals and biennials have an exceptionally diverse range of habits, from low, mat-formers to erect or climbing plants, allowing them to fulfil many roles in different areas of the garden. Most are cultivated for their brightly coloured, sometimes very fragrant flowers, which are often freely borne over long periods during spring and summer. Some blooms, such as those of *Gypsophila*, china asters (*Callistephus*), and cornflowers (*Centaurea cyanus*), are excellent for cutting. "Everlasting" flowers, like statice (*Limonium sinuatum*) and strawflowers (*Bracteantha bracteata*), and the decorative seed heads of plants such as love-in-a-mist (*Nigella*) and scabious (*Scabiosa*), are invaluable for dried arrangements (see p.39).

Several annuals and biennials are valued primarily for their attractively coloured or textured foliage. These include silver-leaved plants, such as *Senecio cineraria* (a half-hardy perennial that is usually grown as an annual), coleus (*Solenostemon*), which have foliage in yellows and greens to reds and purples, and



## Formal border

Intricate patterns are created by the regular placing of plants, here *Tradescantia pallida* 'Purpurea', *Impatiens balsamina* 'Tom Thumb' Series, *Senecio cineraria* 'Silver Dust', *Ageratum houstonianum* cultivars, and *Nicotiana* 'Lime Green'.

## WILD FLOWERS

Ancestors of many annual and biennial cultivars, wild flowers can be used in informal plantings that replicate their sometimes threatened natural habitats. Grow in poor soil on land that can remain relatively undisturbed once the plants have become established; in rich soil, invasive species will swamp those that are less robust. Use native plants that already grow wild in the local vicinity; a specialist seed supplier can advise on the best wildflower mix for naturalization in the chosen habitat.



**Natural planting**  
On poor soil, wild flowers will provide soft drifts of colour for most of the year, and attract native wildlife to a garden.

ornamental cabbages (*Brassica oleracea* cultivars), with their low-growing, crinkled leaves in muted shades of pink, green, and white.

## Garden uses

Annuals and biennials will provide a fast-growing display of colour in a new garden, before a final planting scheme has been devised, or while slower-growing trees and shrubs become established. They may also be used to alter the colour scheme or fill spaces within the long-term framework of a mature garden.

Plants with scented blooms are best enjoyed close to the house or beside a seating area. A sheltered, sunny site at the base of a wall or fence is recommended for tender plants like cockscombs (*Celosia*) and coleus.

Trailing annuals and biennials, such as nasturtiums (*Tropaeolum majus*), will provide rapid ground cover, and may be encouraged to tumble over the sides of window-boxes, hanging baskets, or other containers. Container-grown plants are of particular value where space is limited, such as on a balcony or patio. Annual climbers, or those grown as annuals, like *Cobaea* and *Rhodochiton*, may also be trained through a tree or other support, or used to clothe a screen or barrier.

Tender annuals and biennials cultivated as specimen plants in a conservatory or temperate greenhouse, or as houseplants, can be moved outdoors in summer, either in their containers, or as temporary bedding plants.

## Planning displays

As annuals and biennials are short-lived, use a succession of plants to provide flowers over a long period; some gardeners change their bedding scheme several times in a year. Group plants with shared cultivation needs, like busy Lizzies and common foxgloves (*Digitalis purpurea*), both of which prefer moist soil in dappled shade. To obtain a dense block of colour, plant multiples of a single cultivar.

In an informal, cottage-style garden, use annuals and biennials among vegetables, herbs, perennials, shrubs, and trees. Arrange adjacent drifts with varying outlines and heights for an apparently random, flowing effect. In maturity, plants will overflow the edges of paths and lawns, and may self-seed profusely.

In a garden of formal design, use annuals and biennials in ordered or



## Informal border

Annuals and biennials can provide waves of texture and colour. In this border, the strong colours and abundant flowers of snapdragons (*Antirrhinum*), Cosmos, and Tagetes are balanced by the striking foliage of *Senecio cineraria* 'Silver Dust'.

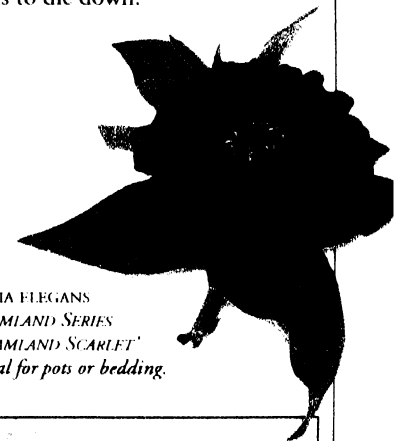
structured plantings to create a uniform display, to form a pattern, or to enhance or soften the edges of rigid lines of tiles, pathways, or hedges, such as clipped box (*Buxus*).

## Cultivation

Seed-raised annuals and biennials depending on their hardiness a flowering season may be sown *in situ* or under glass. Outdoors, the seeds of genera that dislike transplanting, such as *Clarkia*, are best scattered where they are to flower. Sow the seeds of other annuals and biennials in drills and thin out when seedlings have developed. Under glass, sow seed in containers or seed trays (see p.28) and plant out at the times given in the chart below.

Weed regularly, stake tall plants, and pinch out growing tips to

promote bushiness (see p.23). On poor soils, apply a quick-release fertilizer as flower buds form. Water freely in hot weather; containerized plants dry out very quickly. Dead-head regularly to avoid self-seeding. Clear plants away when the foliage starts to die down.



ZINNIA ELEGANS  
DREAMLAND SERIES  
'DREAMLAND SCARLET'  
is ideal for pots or bedding.

## GUIDE TO SOWING, GROWING, AND FLOWERING TIMES

SEASON	ANNUALS			BIENNIALS - YEAR 1			BIENNIALS - YEAR 2		
	FULLY HARDY/ FROST HARDY	HALF HARDY	FROST TENDER	FULLY HARDY/ FROST HARDY	HALF HARDY	FROST TENDER	FULLY HARDY/ FROST HARDY	HALF HARDY	FROST TENDER
SPRING	Sow <i>in situ</i> in mid-spring. In flower if autumn-sown.	Sow under glass at 13-21°C (55-70°F).	Sow under glass at 13-21°C (55-70°F).				New growth begins. In flower.	New growth begins. Plant out after last frosts. In flower.	New growth begins. In flower.
SUMMER	In flower.	Plant out spring-sown seedlings. Sow seed <i>in situ</i> when soil reaches 13°C (55°F). In flower.	Plant out in early summer, or grow under glass. In flower.	Sow <i>in situ</i> .	Sow under glass at 13-21°C (55-70°F), or sow <i>in situ</i> when soil reaches 13°C (55°F).	Sow under glass at 13-21°C (55-70°F). Plant out in midsummer in frost-free areas.	In flower.	In flower.	Plant out in early summer. In flower.
AUTUMN	In flower. Discard as foliage dies. Sow <i>in situ</i> to flower next spring.	In flower. Discard as foliage dies.	Discard as foliage dies.	Basal leaves or rosettes develop.	Basal leaves or rosettes develop. Move into frost-free conditions in frost-prone areas.	Basal leaves or rosettes develop. Ensure under glass at 7°C (45°F), in frost-prone areas.	Discard as foliage dies.	Discard as foliage dies.	Discard as foliage dies.
WINTER	Autumn-sown seed overwintering.			Overwintering.	Overwintering.	Overwintering.			

# Bulbous plants

Bulbous plants occur worldwide in habitats from scrub, meadows, and woodland to mountains and streamsides. Sometimes evergreen, bulbs are valued mainly for the beauty of their flowers, which can provide welcome colour in early spring. Summer-flowering bulbs, like lilies or gladioli, are splendid in borders or integrated into a bedding scheme; their tall, showy blooms often last well when cut. Excellent in containers, bulbs can also be used to brighten the home or garden in winter.

## What are bulbous plants?

The term bulb is generally used to describe a range of different structures including true bulbs, corms, tubers, and rhizomes. These fleshy storage organs enable bulbous plants to survive a long dormant period, often spent underground.

True bulbs have fleshy scales (swollen leaves or leaf bases), sometimes tightly overlapping, attached to a small basal plate. In plants such as daffodils (*Narcissus*), each bulb is encased in a thin, papery tunic;

others, like lilies (*Lilium*), have loosely arranged, unclothed scales.

Corms are enlarged, compressed stems, often marked with leaf scars. The majority, including those of crocuses and gladioli, are sheathed in a papery or fibrous tunic. Each corm usually lasts for one year, and is then replaced by a new one.

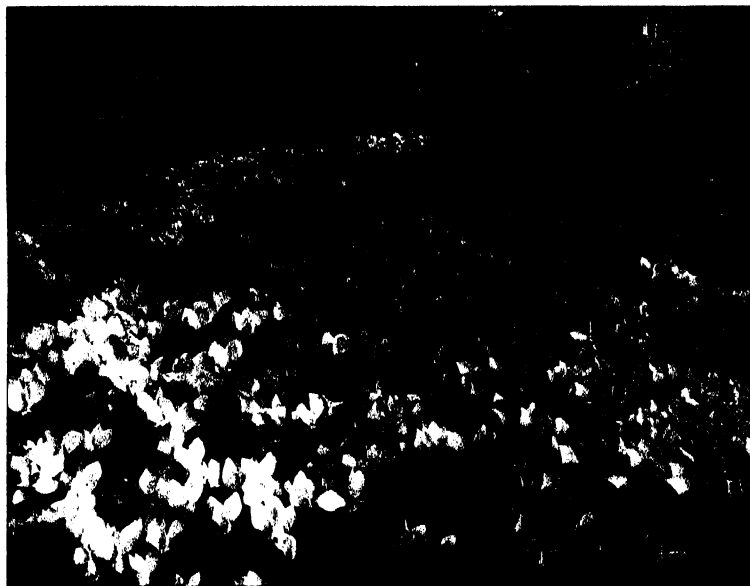
Tubers are swollen sections of stem or root, modified to store food. They are solid in form, like those of dahlias and cyclamen, and usually lack scales or tunics.

Rhizomes are stems that usually creep at or below ground level, often dividing as they spread. Ridged with leaf scars, rhizomes may be thin and wiry, as with lily-of-the-valley (*Convallaria*), or thick and fleshy, as with bearded irises.

A bulbous structure that has died down out of sight is often described as being dormant. Far from a state of low activity, however, this period represents a significant time in the plant's life-cycle, when the bulb ripens and flower buds form, ready for the new season of active growth.



AGAPANTHUS INAPERTUS, a half-hardy bulbous plant, may be placed outdoors in summer in frost-prone areas.



## Woodland bulbs

Bulbous plants native to woodland soon naturalize when planted in the dappled shade of a tree. Here, *Cyclamen hederifolium* has colonized a shady bank to form a carpet of colour with its vivid autumn blooms.



## Spring border

A burst of early spring colour is produced here by *Crocus tommasinianus*, winter aconites (*Eranthis*), *Arum italicum* 'Marmoratum', hellebores, and snowdrops.

## Ornamental features

Bulbous plants are grown mainly for their decorative and sometimes fragrant flowers. These can have the delicate appeal of tiny snowdrops (*Galanthus*) or the imposing effect of tall gladiolus spikes. Many, like those of irises and lilies, are good for cutting. Their floral parts are usually arranged in multiples of 3.

Most bulbous plants are monocotyledons (see p.10), having long, narrow to fairly broad, strap-shaped leaves with near-parallel veins along their length. Some, like cannas, are particularly valued for their foliage, which is erect or semi-erect, sometimes attractively coloured, and forms striking clumps.

## Year-round interest

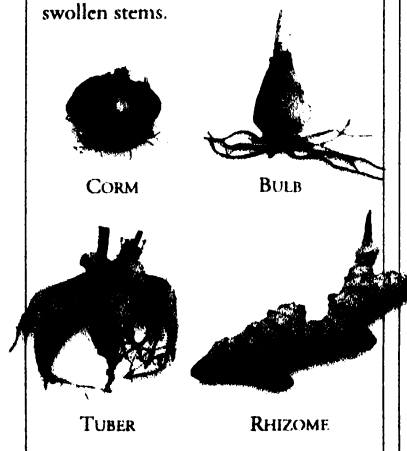
A spectacular array of flowering bulbs, from snowdrops and crocuses to daffodils, provides some of the first blooms of spring. Different species and cultivars may be interplanted with each other to create a rich display that will last for several months until perennials and shrubs come fully into flower.

Later-flowering bulbs can be used to provide highlights of seasonal colour, extending interest throughout the year. Summer-flowering bulbs are often tall, robust plants, bearing flowers in vivid colours,

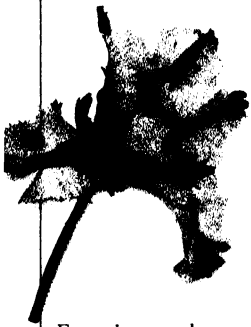
such as the brilliant red or yellow of montbretias (*Crocsmia*) or the purple globes of *Allium aflatumense*. Autumn-blooming bulbs, including colchicums and some crocuses, are dormant during summer, but provide a late flush of colour with the onset of autumn rains.

## STORAGE ORGANS

Gardeners commonly refer to any swollen, underground, food-storage organ as a bulb. True bulbs consist of fleshy scales attached to a basal plate, often within a papery tunic. Corms are swollen stem bases. Tubers are unevenly swollen stems or roots. Rhizomes are horizontal, swollen stems.







TULIPA 'FLAMING PARROT' bears showy, vibrantly striped blooms in late spring.

For winter colour, grow bulbous plants such as *Chionodoxa*, grape hyacinths (*Muscari*), snowdrops, or scillas. Several species can be successfully forced indoors.

### Where to grow

Interesting contrasts can be achieved by associating bulbs with other plants. Small bulbs, like autumn daffodils (*Sternbergia*), are ideal for growing among rock plants. Those with larger leaves and flowers, like lilies and *Crinum*, are good for infilling or naturalizing in a mixed or shrub border. After flowering, bulbs may be lifted to make room for new plantings, or left in place to increase and flower the next year.

To encourage an abundant crop of flowers, plant bulbs originating from Mediterranean climates in a site where they will receive maximum sun. *Amaryllis*, nerines, and autumn daffodils can be planted at the base of a warm wall or fence.

Bulbs native to woodland habitats, such as some cyclamen, *Eranthis*, erythroniums, snowdrops, and many lilies, will thrive in the light shade of deciduous trees or large shrubs.

Some bulbs, including daffodils, scillas, and crocuses, can be planted

in quantity in grass. Cease mowing when the noses of the bulbs appear in late summer or early autumn, and recommence only when the foliage has died down in late spring.

Bulbs are excellent for providing a display of flowers in window-boxes or in containers on a patio. Plant species with differing flowering times to extend the show.

### Cultivation

Many bulbs thrive outdoors without protection, even in areas of severe frost. Their main requirement is a near-neutral, well-drained soil in full sun, although bulbs of woodland origin prefer partial shade.

Improve the texture of heavy, wet soil by digging in grit, coarse sand, and organic matter. On poor soil, incorporate a balanced fertilizer on planting. Supplement very light soil with decomposed organic matter to assist moisture retention.

After flowering, allow the foliage to die down naturally; do not knot leaves together, as this reduces their ability to photosynthesize and thus store food in the bulb.

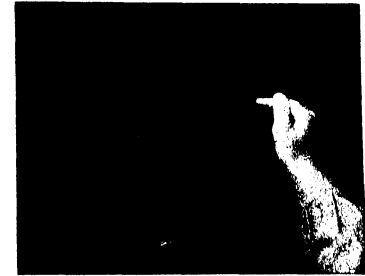
Bulbs from dry summer habitats may rot if subjected to summer rainfall. They are best grown in a raised bed to provide sharp drainage, or in a bulb frame (a raised bed with a protective shelter). Small, rare bulbs with specialized needs are best grown in an alpine house (see p.41) or in a cool greenhouse (see p.24).

In frost-prone areas, plant summer-flowering, half-hardy and frost-tender bulbs in late spring; lift them in autumn and store in frost-free conditions. They may also

### PLANTING BULBS

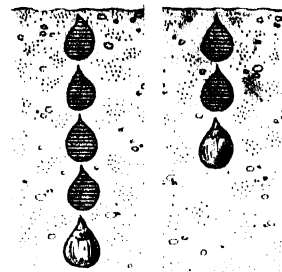
Bulbs must be planted at the correct depth (see below) and distance apart. In the individual plant entries in this encyclopedia, the ideal planting distance between single bulbous plants of the same species is given against the symbol (↔) normally used for spread.

Once planted, protect bulbs from extremes of temperature. Those prone to rotting are best laid on a layer of sharp sand to improve drainage. Place bulbs with a hollow top, such as crown imperials (*Fritillaria imperialis*), on their side, to prevent water from lying in the crown.



#### Planting bulbs in the open

Plant bulbs randomly at the correct depth with growing points uppermost, at least their own width apart.



#### Planting depths

In frost-prone areas and sandy soil, plant at 4-5 times bulb depth (left). Elsewhere, plant at 2-3 times bulb depth (right).



#### Planting bulbs singly or in grass

Remove a core of soil for each bulb. Place bulb on a little bone meal, and replace soil. If in grass, cover with a lid of turf.

be grown in a conservatory or warm greenhouse, or indoors. Keep tender bulbs that are dormant in summer, like some nerines and *Hippeastrum*, in a cool, dry site; in early autumn, move them to a frost-free place, such as a sunny window-sill, to flower.

The atmosphere in a home may not be sufficiently humid to support bulbs for long periods. They can be brought indoors when in bud, but returned under glass for their foliage to mature and for their dormant period. When in growth, apply a potash-rich (tomato-type) liquid fertilizer each month to bulbs grown in containers for more than one year. Water freely when in flower. When the leaves die back after flowering, allow bulbs to dry off, and keep warm and dry while dormant. At the end of this period, repot and water to stimulate growth.

### Forcing

To induce unseasonal flowering (forcing), pot up bulbs such as hyacinths in early autumn; keep them in the dark for 8-10 weeks, either plunged outdoors or in a cool place indoors, until flower buds show. Then keep indoors at about 10-15°C (50-59°F), gradually increasing to 20-23°C (68-73°F) as the flower buds develop. Kept too warm or dry, flowers may not open. Once the flowers have died back, return the bulbs to a bulb frame and plant them outdoors in spring.

"Prepared" bulbs are also available; these are specially treated to bear flowers earlier than forced bulbs.

### INCREASING STOCKS

Bulbous plants can be raised from seed, but may take several years to flower. In true bulbs, like daffodils, scales or the offsets that form on mature bulbs can be removed for propagation. Plants like lilies form bulbils in the flowerheads and stem and leaf axils. Other plants produce bulblets at the stem bases. Place offsets, scales, bulbils, and bulblets in trays of loam-based compost; when rooted, grow them on in deep boxes of moist compost in a cold frame.



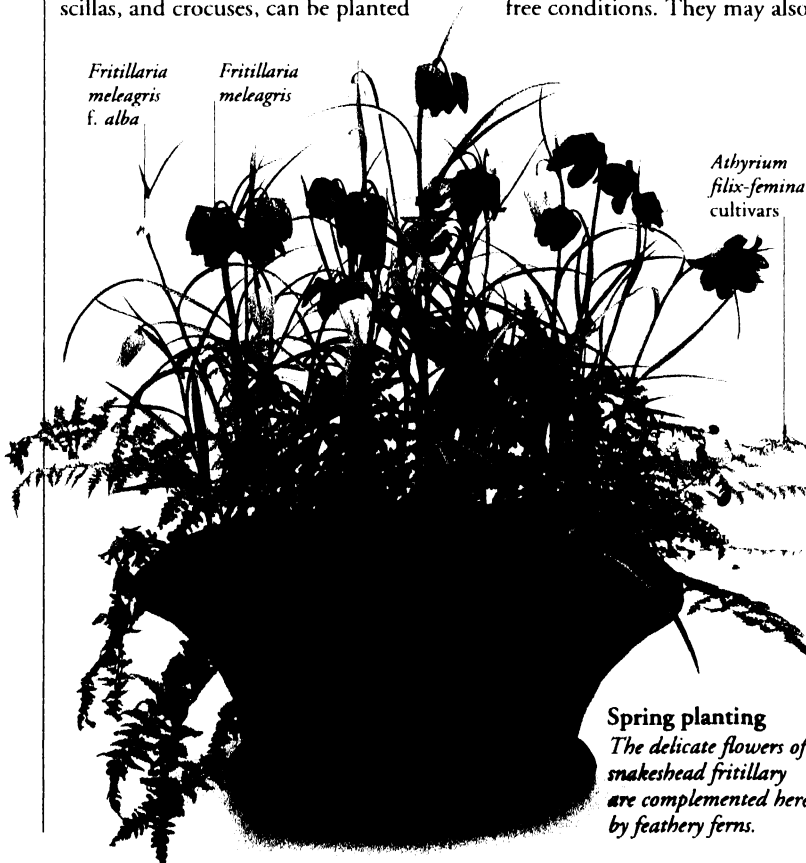
#### Offsets

Detach large offsets and plant them in trays of loam-based potting compost.



#### Stem bulbils

Collect ripe bulbils in late summer. Press them gently into soil or compost.



*Fritillaria meleagris f. alba*

*Fritillaria meleagris*

*Athyrium filix-femina* cultivars

### Spring planting

The delicate flowers of snakeshead fritillary are complemented here by feathery ferns.

# Orchids

All orchids belong to the huge Orchidaceae family, which contains 25,000 species and 100,000 hybrids in some 835 genera. They are evergreen or deciduous perennials, epiphytic, lithophytic (rock-dwelling), or terrestrial in habit, and distinguished by a unique flower structure that has diversified into numerous shapes and spectacular colour combinations.

## What are orchids?

Most orchid species are rhizomatous epiphytes from tropical rainforest. They often bear fleshy, aerial roots, which are fully or partially attached to the host tree, and which absorb atmospheric moisture; some species are lithophytic. Most cultivated orchids are complex hybrids. The majority are grexes, denoted by a vernacular name in roman type, as in *Lycaste* Wyldfire (see also p.11).

Epiphytic orchids have 2 distinct patterns of growth. Sympodial

epiphytes, mainly from rainforest at sea level or at low altitudes, arise from horizontal rhizomes. Each season, growing points (buds) on the rhizomes produce new pseudobulbs – erect, swollen stems that store water and food, and bear leaves and flowers. Active buds usually cease growth by flowering time, and any new growth occurs from lateral buds on older rhizomes. Backbulbs (pseudobulbs that no longer bear leaves) may be used for propagation (see panel); their removal reactivates dormant buds on the bulbs.

Monopodial epiphytes are usually native to dense, steamy rainforest at higher altitudes. Instead of pseudobulbs, they have extended stems that produce new growth from the shoot tips and growing points.

Terrestrial orchids, mainly native to temperate regions, are distinct from epiphytes in that they have underground tubers or rhizomes. These bear a rosette of leaves from which flower stems arise.

## Cultivation

All epiphytes, and a few terrestrials, require 1 of 3 controlled temperature zones – cool, intermediate, or warm (see panel below) – depending upon their native origins. Use shading in spring and summer to regulate temperatures and protect foliage from scorching (see p.24).

In hot climates, orchids of tropical origin provide a spectacular and



## Orchids outdoors

In tropical climates, orchids thrive outdoors if shaded from strong sun by trees or a lath house. In cool areas, use the vivid colour and unusual shape of orchid flowers for an exotic effect under glass, or grow hardier orchids from temperate zones outdoors.

colourful outdoor display. Epiphytes that need moist, shaded conditions, such as moth orchids (*Phalaenopsis*), are best grown in a lath house to protect them from strong sunlight.

In cool regions, terrestrial orchids from northern temperate zones, like lady's slipper orchids (*Cypripedium*), can be cultivated outdoors in a rock garden, in woodland, or on a peat bank. Most die back after flowering and undergo a dormant period.

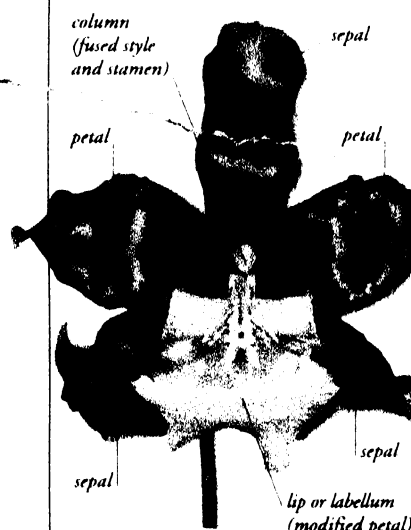
Some epiphytic orchids may be mounted on slabs of bark, others on branches anchored to form an orchid "tree". Genera with pendent or semi-pendent flowers, such as *Stanhopea*, are best grown in open-slatted hanging baskets.

Both epiphytic and terrestrial orchids are suitable for growing in a conservatory, greenhouse, or, in certain cases, as houseplants. Grow those kept as houseplants in half-pots or wooden baskets, in humid but well-ventilated conditions.

When the roots of a plant overflow its container, report at the onset of the growing season into a container that has room for 2 years' new growth.

Orchids are not easily propagated from seed; in the wild, the tiny seeds usually germinate only with the help of a mycorrhizal fungus, which must be replicated in cultivation. Alternative methods of propagation are given below.

As illegal collecting is depleting orchid species in the wild, it is vital that gardeners obtain only plants that have been raised in cultivation.



## Flower structure

x *Odontocidium* Tiger Hambühren clearly displays the typical anatomy and brilliant coloration of an orchid flower.

## ORCHID PROPAGATION

Increase stocks by division, removal of backbulbs, or from stem cuttings. Professional growers also raise plants from seed or by meristem culture.

For division, select a plant that has outgrown its container, and split the rhizome so that each part retains at least 3 healthy pseudobulbs; cut out any dead roots, then pot up with the oldest pseudobulb against the rim. With backbulbs, detach from the rhizome, and pot up singly in a 6cm (2½in) container, the cut surface against the rim. For stem cuttings, use sections 7cm (3in) long, with at least 1 dormant bud. Store on moist moss in indirect light until rooted.



**Selecting backbulbs**  
Choose firm backbulbs, such as the examples on this *Cymbidium*.

## CULTIVATION REQUIREMENTS

TEMPERATURE REGIME	GROWING MEDIUM	LIGHT	HUMIDITY	WATERING	FERTILIZER
<b>COOL</b> Min. 10–13°C (50–55°F). Max. 21–24°C (70–75°F).	<b>STANDARD EPIPHYTIC COMPOST</b> 3 parts bark chippings (use fine-grade granulated bark for fine-rooted orchids); 1 part perlite; 1 part fine charcoal.	<b>IN SUMMER</b> Most need shade from direct sunlight; shade the greenhouse from late spring until early autumn.	<b>IN SUMMER</b> Damp down daily in early morning (tropical species also in late afternoon). Also mist foliage to reduce leaf temperature. Ventilate well.	<b>IN GROWTH</b> When new growth appears, water regularly in the early morning. Use rainwater or soft water at ambient temperature; compost should remain moist. Mist foliage.	<b>IN GROWTH</b> Apply proprietary orchid fertilizer or ¼- to ½-strength balanced liquid fertilizer every 2–3 weeks, when watering. (Some growers use a high-nitrogen fertilizer for leaf growth, followed by a high-potash fertilizer for better flowering.)
<b>INTERMEDIATE</b> Min. 14–19°C (57–66°F). Max. 30–33°C (86–91°F).	<b>STANDARD TERRESTRIAL COMPOST</b> 3 parts fibrous peat; 3 parts coarse grit; 1 part perlite; 1 part fine charcoal.	<b>IN WINTER</b> Provide full light.	<b>IN WINTER</b> Do not damp down in cold, clammy conditions, except to counteract drying effects of heating in very cold weather.	<b>WHEN DORMANT</b> Water species that retain leaves sufficiently to prevent dehydration; allow compost to dry out between applications. Keep orchids that lose their leaves dry.	<b>WHEN DORMANT</b> Do not feed.
<b>WARM</b> Min. 20–24°C (68–75°F). Max. 30–33°C (86–91°F).					



# Bromeliads

Members of the Bromeliaceae family, bromeliads number over 2,000 species, most of which grow wild from the southern states of the USA through to Central and South America, and in the West Indies. Producing striking inflorescences and colourful, often variegated leaves, they are easy to cultivate in a greenhouse, as houseplants, or even outdoors in warm regions.

**What are bromeliads?**

Bromeliads are mainly rainforest plants, although some are found in mountainous or semi-desert areas, with a few in marshes and on sea-shores. Most are tropical epiphytes, thriving in humid conditions, lodged in trees or on rocks with little soil around their roots. Others are terrestrial.

Most bromeliads are rosette-forming. They range greatly in size, from low-growing plants that form dense colonies, like *Bromelia balansae*, through to tree-like species up to 5m (15ft) tall, such as *Puya*

*berteroniana*. The erect or semi-prostrate rosettes comprise brightly coloured or variegated, sometimes toothed or spiny-margined leaves, which are often adapted to absorb or conserve moisture. Some bromeliads, including air plants (*Tillandsia*), have leaves covered in tiny scales that enable them to retain and absorb moisture and nutrients from the atmosphere, often from mists and low, moisture-laden cloud. In other bromeliads, like *Guzmania*, *Vriesea*, and *Aechmea*, the centre of the rosette forms a "cup" or "vasc" that retains water and nutrients.

Brightly coloured inflorescences of bracts and flowers are borne in the centre of the rosettes, or are set low in the central cup in certain bromeliads. As monocotyledons (see p.10), bromeliads have flower parts in groups of 3. After flowering, the rosettes begin to die, although new offsets are borne from dormant buds in the basal leaf axils, or on the rhizomes or roots. These offsets can be used for propagation (see below).

**Cultivation**

Bromeliads are best cultivated by simulating the conditions of their natural habitat (see panel below). Given the right growing environment, they require relatively little maintenance.



**Rainforest epiphytes**

In the wild, many epiphytes (here, *Aechmea fasciata*) cling to the highest branches of trees to obtain maximum levels of moisture and light. In cultivation, such plants may be displayed on bare branches, secured with adhesive or wedged into notches.

In cool areas, most rock-dwelling and terrestrial bromeliads will thrive in a greenhouse or conservatory, or as houseplants. In warmer climates, cultivate bromeliads outdoors, with protection from extremes of heat, sunlight, and rain. Most epiphytes require partial shade, both outdoors and under glass, as bright light may fade their foliage. In many terrestrial species, however, full light improves the coloration of their rigid leaves.

Epiphytes may be attached to a tree or branch, which can be secured in a container, or to a metal or wire framework covered in bark.

To propagate bromeliads, detach offsets from the base or leaf axils of mature plants. Pot up each offset individually into a mix of equal parts

shredded peat (or substitute), leaf mould, and granitic grit. Water sparingly until new growth develops.

Sow seed as soon as ripe in a mix of 1 part each leaf mould and shredded peat (or substitute), and 3 parts sharp sand or fine granitic grit. Sow winged seeds (like those of air plants) on slabs of moistened wood or bark; place these at regular intervals on a tray containing a mix of equal parts sharp sand and moist, chopped sphagnum moss.

Apply a proprietary fungicide to prevent damping-off, then place the containers or tray in a propagator with bottom heat at about 21°C (70°F). The slow-growing seedlings will be large enough to prick out and grow on after a few months.



**Water-retaining cup**

The leaves of some bromeliads, such as *Neoregelia*, form a cup, which should be wiped clean and refilled regularly.

CULTIVATION REQUIREMENTS							
TYPE		TEMPERATURE REGIME	GROWING MEDIUM	LIGHT	HUMIDITY AND VENTILATION	WATERING	FERTILIZER
UNDER GLASS	EPIPHYTES	RAINFOREST SPECIES Min. 13–15°C (55–59°F).  MOST OTHER SPECIES Min. 10°C (50°F); some hardy, alpine species can tolerate lower temperatures.	IN CONTAINERS Equal parts shredded peat or granulated bark; leaf mould; and granitic grit.  GROWN EPIPHYTICALLY Wrap roots in moist sphagnum moss.	Most need bright filtered light.	Rainforest species need high humidity; all others need moderate humidity. Damp down daily in growth, less often when dormant. Ventilate well.	Mist daily, using rainwater or soft water; also mist moss around roots of epiphytes. Watering is not generally necessary.	IN GROWTH Apply ¼-strength proprietary orchid foliar fertilizer every 4–5 weeks when misting.  WHEN DORMANT Do not feed.
	TERRESTRIALS AND ROCK-DWELLERS		1 part peat or coconut fibre (coir); 1 part leaf mould; 3 parts granitic grit.	Most need full light.	Maintain low to moderate humidity. Ventilate well.	Water freely; allow compost to dry partially between applications. Where appropriate, regularly replenish cup with fresh rainwater.	IN GROWTH Apply ½-strength low-nitrogen liquid feed every 3–4 weeks when watering.  WHEN DORMANT Do not feed.
OUTDOORS	EPIPHYTES, TERRESTRIALS, AND ROCK-DWELLERS	Minimum temperatures as above.	Most prefer sharply drained, humus-rich soil.	Most epiphytes need partial shade; most terrestrials and rock-dwellers need full sun.	Rainforest epiphytes need high humidity. Terrestrials need low to moderate humidity.	Watering is generally not necessary, although light misting is advisable in extremely hot weather.	Feeding is not necessary.

# Cacti and other succulents

The fascinating shapes of cacti and other succulents are the result of the adverse conditions they endure in their natural habitats. They vary in habit from small cushions of rosetted leaves to the tall, branching columns of desert cacti. Their unusual textures include smooth, waxy, hairy, or spiny surfaces. Many produce subtly or brightly coloured flowers, enhancing their appeal in desert gardens, and as greenhouse and houseplants.

## What are succulents?

Succulents are plants that have adapted to extreme conditions, particularly frequent periods of drought. Typical adaptations include reduced leaf size and the presence of fleshy, water-storing tissue in the stems, leaves, or roots. They are native to a range of habitats, from cold alpine climates, and semi-desert areas in temperate and subtropical zones, to moist rainforest;



CAUDICIFORM SUCCULENTS, such as *Adenium obesum*, have swollen stem bases.

many may undergo a dormant period in either summer or winter. Succulents may be loosely grouped as stem succulents (including cacti), leaf succulents, root succulents, and caudiciform succulents.

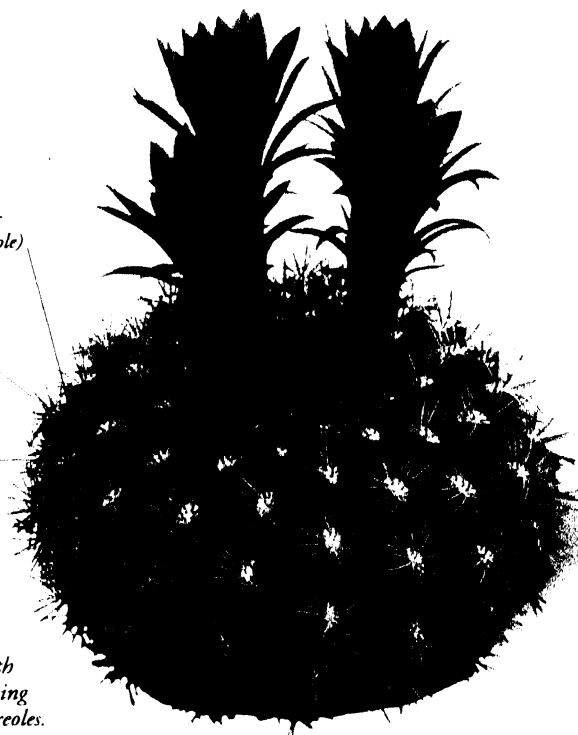
## Stem succulents

Stem succulents (most of which are cacti) have swollen, moisture-retaining stems, usually slender, oval, columnar, or spherical in shape. They may be climbing, pendent, or tree-like in habit; some resemble flat, leaf-like pads. Epiphytic succulents native to dry regions often produce aerial roots on their stems that absorb moisture from the atmosphere.

Cacti, which originate in North, Central, or South America (except for *Rhipsalis baccifera*), are distinguished from other stem succulents by their unique growing points, known as areoles. Although a few, such as *Pereskia*, have semi-

**Spiny cactus**  
Cacti like *Oreocereus intertexta* (syn. *Matucana intertexta*) are stem succulents with characteristic growing points known as areoles.

radials (outer spines on areole)  
centrals (inner spines on areole)  
areole (growing point)



succulent leaves, most lack foliage, thereby minimizing water loss through transpiration in very dry conditions; chlorophyll for photosynthesis is contained in the stems.

Most cacti have ribs arranged longitudinally on the stems, which expand or contract according to their water content. Along the ribs are the areoles, from which arise flowers, new growth, and spines. Cactus spines are modified leaves, borne as radials (around the edge of an areole) or as centrals (in the centre of an areole). These condense moisture which drips on to the soil around the plant's roots. Epiphytic cacti from humid rainforests have flattened stems with broad surface areas to absorb as much of the limited available light as possible.

Some cacti, such as *Melocactus*, produce a terminal, head-like, almost woody structure, the cephalium, which produces a mass of woolly spines and flowers, and stops further vegetative growth. In other genera, the cephalium is lateral, allowing growth in height to continue. It is then often referred to as a pseudocephalium.

## Leaf succulents

The foliage of leaf succulents is usually fleshy, very variable in shape, and downy, felted, glaucous, powdery, waxy, or glossy in texture. Many species have opaque areas at the leaf tips to diffuse the sun's rays. To lessen the rate of transpiration in a dry climate, leaves have a limited number of stomata (pores), which remain closed in the heat of the day.

Water-storage tissues inside the leaves enable the plants to survive in arid conditions. Leaves swell and shrink according to their water content, and usually drop away during periods of severe drought. In many species, the leaves form tight rosettes, which are borne on short stems. This minimizes evaporation both from the plant itself and from the soil beneath.

## Root succulents

These succulents are usually found in places where the climate is harsh, or the soil thin and poor. They have swollen roots, hidden below ground, which lose moisture relatively slowly. Most root succulents develop from

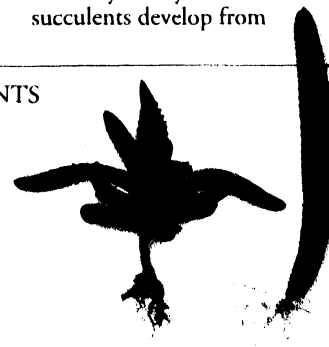


## A desert garden

In warm, dry climates, dramatic effects can be achieved by contrasting the columnar habits of *Cereus*, *Cleistocactus*, and *Haageocereus* species with the more complex outlines of such plants as *Agave*, *Aloe*, or *Opuntia* species.

## LEAF AND STEM SUCCULENTS

Leaf succulents have foliage but often lack a stem, whereas cacti and other stem succulents have a swollen stem but mostly lack leaves. In both types, stems or foliage expand when water is plentiful and contract or, in the case of foliage, drop away, in a drought. The fibrous root system of leaf and stem succulents extends over a wide area just below the surface level to maximize the collection of water. New root hairs are quickly formed to take up any available moisture from dew and passing rain showers.



**LEAF SUCCULENT**  
Thick, fleshy leaves retain water.

**STEM SUCCULENT**  
Stem contains water-storage tissue.

a normal root system, but some have a specialized rootstock, usually in the form of a tuber. Many also have deciduous succulent leaves or stems, which regenerate when good conditions for growth prevail.

### Caudiciform succulents

Some succulents, such as certain species of *Adenium*, *Dioscorea*, *Euphorbia*, and *Pachypodium*, have a rootstock that may develop to large proportions, and gradually emerge above ground to form a rounded, sometimes slightly flattened, bottle-shaped or tree-like growth, known as a caudex. The caudex is defined botanically as a swollen base formed at the junction of root and stem. More generally, any succulent with a swollen stem or root above ground is described as caudiciform.

### Garden and indoor displays

Where climate allows, cacti and other succulents can provide an impressive outdoor display. Planted out or grouped in containers, their foliage, flowers, and unusual forms create an eye-catching feature on a sunny patio or terrace. Even in frost-prone areas, plants may be moved outdoors to a sheltered site during the hottest summer months. Some succulents from

### PROPAGATION

Increase succulents by the following methods, or by offsets or grafts.

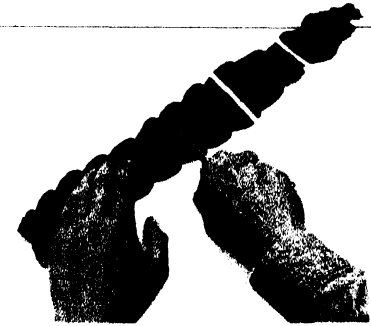
Divide clump-forming species and cultivars as soon as new growth appears, so that each part has a healthy bud or shoot and roots.

Take stem cuttings from early to mid-spring: trim a leaf-bearing stem to 1cm (½in), or cut sections of leaf-like or columnar cacti into lengths of 5–10cm (2–4in). Take leaf cuttings in spring or early summer, each with a sliver of stem at the base. Allow all cuttings to callus, then insert upright into equal parts peat (or substitute) and sharp grit or sand. Top-dress with grit or gravel and place in bright indirect light at 21°C (70°F). Spray with tepid water until rooted.

Sow seed as soon as ripe from late winter to late spring; cover with twice their depth of standard seed compost, top-dressed with fine grit. Keep moist and place in a propagator in indirect light. On germination, gradually admit more light and air. Apply fungicide to minimize damping-off. Maintain half-hardy and tender species at 21°C (70°F). Plunge containers of seed of hardy species in a cold frame. After pricking out, grow on at 15°C (59°F).



**Division of rootstock**  
*Split rootstock into sections; discard old or damaged material; repot each section.*



**Stem cuttings**  
*Cut leaf-like stems laterally into sections about 5–10cm (2–4in) long.*



**Leaf cuttings**  
*Detach a healthy leaf with a small piece of stem attached to the base.*



**Cacti seedlings**  
*Prick out seedlings as soon as they can be handled (several months after sowing).*

mountainous regions are hardy, particularly when protected from moisture in winter, and are ideal for cultivating outdoors in a raised bed. Those originating from cooler areas are best shaded from full sun. Cacti and other

succulents are very popular as houseplants, individually or grouped in bowl gardens. They are often also grown in a temperate or warm greenhouse, where they may be displayed in containers, in landscaped indoor borders, or in raised beds.

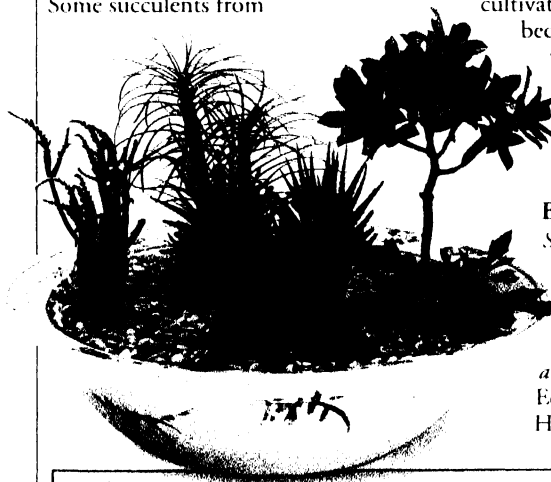
Epiphytic succulents, such as *Epiphyllum* and *Schlumbergera*, require partial or dappled shade. They are particularly effective when used in plantings with epiphytic bromeliads (see p.47), which have similar cultivation requirements. Many epiphytic species can be wedged into the crevices of a wall or between roof tiles; those with pendent or trailing habits are suitable for hanging baskets. Some

can be lodged in the branches of a tree, with moistened sphagnum moss wrapped around their roots, and held in place with fine wire or garden twine; the roots will eventually anchor themselves.

### Cultivation

The panel below gives details of the general growing requirements of cacti and other succulents.

Suitable containers for growing succulents include shallow pans or half-pots, which should contain a layer of crocks at the base to ensure sharp drainage. Plants should also be top-dressed with grit or stone chippings to protect their collars from excess moisture, which tends to lead to fatal rotting.



### Bowl display

*Select plants with similar cultivation requirements that are unlikely to outgrow their allotted space, such as dwarf species and cultivars of Crassula, Echeveria, Gasteria, Haworthia, and Senecio.*

### CULTIVATION REQUIREMENTS

	TEMPERATURE REGIME	GROWING MEDIUM	LIGHT	HUMIDITY	WATERING	FERTILIZER
UNDER GLASS	<p>MOST SPECIES Optimum day temp: 15–30°C (59–86°F). Min. night temp: 10–15°C (50–59°F). When dormant: 7–10°C (45–50°F).</p> <p>TROPICAL AND EQUATORIAL SPECIES Optimum day temp: 21–32°C (70–90°F). Min. night temp: 13–20°C (55–68°F). When dormant: 10–15°C (50–59°F).</p>	<p>Most need pH 6–7.5 and sharply drained soil.</p> <p>STANDARD CACTUS COMPOST 3 parts loam-based compost (J1 No.2) or 2 parts loamless compost; 1 part 6mm (¼in) grit. Top-dress with grit, or apply limestone chippings for species that require alkaline conditions.</p> <p>EPIPHYTIC CACTUS COMPOST 3 parts loam-based compost (J1 No.2) or loamless compost; 2 parts 6mm (¼in) grit; 1 part leaf mould.</p>	<p>SUMMER Most species require full light with shade from hot sun. Epiphytes and trailing/climbing members of the Asclepiadaceae family require partial shade or bright filtered light.</p> <p>WINTER Provide full light in winter. Supplement light for winter-growing species, if possible.</p>	<p>Most require high humidity and good ventilation. Damp down in very hot weather. Many rainforest epiphytes require high humidity (<i>Rhipsalis</i> species need 80% humidity); mist on warm days. Shelter all from draughts.</p>	<p>IN GROWTH Soak thoroughly, using rain-water or soft water; allow compost to dry between applications; avoid wetting the foliage. Keep compost of tropical and epiphytic species just moist.</p> <p>WHEN DORMANT Keep most species dry; mist with tepid water at noon on warm days to prevent dessication. Keep compost of tropical species and epiphytes just moist.</p>	<p>Add slow-release balanced fertilizer to compost.</p> <p>IN GROWTH Apply proprietary cactus fertilizer or ½-strength balanced liquid fertilizer every 4–5 weeks when watering.</p> <p>WHEN DORMANT Do not feed when dormant or when compost is dry.</p>
OUTDOORS	<p>Min. temp. 10°C (50°F) for most. In frost-prone areas, move plants outdoors only in warm summer months (except for fully hardy species).</p>	<p>CONTAINERS AND RAISED BEDS 2 parts loamless compost, coconut fibre, or granulated bark; 1 part 6mm (¼in) grit. Apply slow-release balanced fertilizer.</p>	<p>Most require full sun. Very succulent, smooth-skinned species require full sun with some midday shade.</p>	<p>Most require low humidity. Many rainforest epiphytes need high humidity.</p>	<p>Watering is not necessary. Many rainforest epiphytes require light misting on warm days.</p>	<p>Apply slow-release balanced fertilizer to soil.</p>

# Palms and cycads

These evergreen trees or shrubs, with arching, divided leaves, are similar in appearance, yet botanically unrelated. Mainly from tropical and subtropical regions, palms and cycads can be grown outdoors as specimen plants in warm climates. In frost-prone areas, most are best cultivated as short-term young plants, either under glass or as houseplants.

## What are palms?

Palms range from usually unbranched large trees to dwarf shrubs that grow on the rainforest floor or in open, rocky sites. Some appear stemless; most have an upright trunk. Many have a distinctive crownshaft (a usually green, slightly swollen extension of the stem tip) formed from tightly rolled, flattened leaf-stalks.

The leaves may be pinnate, palmately lobed, or semi-palmate. Palms with pinnate foliage, such as the coconut palm (*Cocos nucifera*), are known as feather palms. The leaflets may be lobed or cut, forming a 2-pinnate leaf, as in fish-tail palms (*Caryota*). The palmately lobed leaves of fan palms, such as *Trachycarpus*, are basically hand-shaped, sometimes with radiating lobes. Semi-palmate leaves, such as those of some species of *Livistona*, appear palmate, but have a short extension of the leaf-stalks between each pair of leaflets.

Palm trees produce panicles of small flowers among the leaves or just beneath the lowest leaf. They are monocotyledons (see p.10), their floral parts occurring in

multiples of 3. The variably sized fruits have moist flesh, as in the date palm (*Phoenix dactylifera*), or dry flesh, as in the coconut palm.

## Cultivating palms

In warm climates, grow palms in moist but well-drained, neutral to slightly acid soil in full sun to deep shade, depending on the species. Many require shelter from strong winds, although some, such as the coconut palm and *Trachycarpus*, are wind-tolerant.

Indoors or under glass, grow palms as dwarf or young specimens in loamless potting compost. Place them in bright, indirect light to minimize leaf scorch: those native to rainforests are particularly sensitive to harsh light. From late spring to late summer, water moderately and apply a balanced liquid fertilizer monthly. At other times water sparingly. Repot in spring. Palms do not usually require pruning.

Most palms are grown from seed, although some species may be divided, and a few produce suckers that may be transplanted. Sow fresh seed singly, as soon as ripe, in standard seed compost in containers



## Coconut palms

*Cocos nucifera* (coconut palm) thrives in tropical climates as a specimen or avenue tree, reaching a height of 20–30m (70–100ft). Young specimens are impressive as houseplants or grown under glass, and will last until they outgrow their site.

7–9cm (3–3½in) in diameter. Cover each seed with its own depth in compost, although very large seeds should be only half-buried. Sow seed of tropical species at 22–30°C (72–86°F), and seed of temperate species at 13–18°C (55–64°F). Germination often occurs within 2 or 3 months, but may take from 10 days to 2 years. Grow seedlings in partial shade with moderate humidity.

structures similar to reduced leaves. The ovules develop into nut-like seeds up to 8cm (3in) long, with a tough, woody casing, covered by a thin, sometimes bright red or orange pulp.

## Cultivating cycads

Cycads, with their slow growth and elegant habit, are popular houseplants. They are becoming scarce in their native habitats, so always ensure that plants purchased have not been collected in the wild.

In warm climates, grow cycads outdoors in well-drained, neutral to acid soil in full sun or partial shade. Indoors or under glass, grow them in bright but indirect light, in a mix of 2 parts well-drained, loam-based potting compost, such as J1 No.1, and 1 part grit or washed sand. Water plants sparingly, and keep dry in cooler temperatures. Apply a half-strength balanced liquid fertilizer monthly to container-grown plants when in growth. Repot in spring. Cycads do not usually require pruning.

## What are cycads?

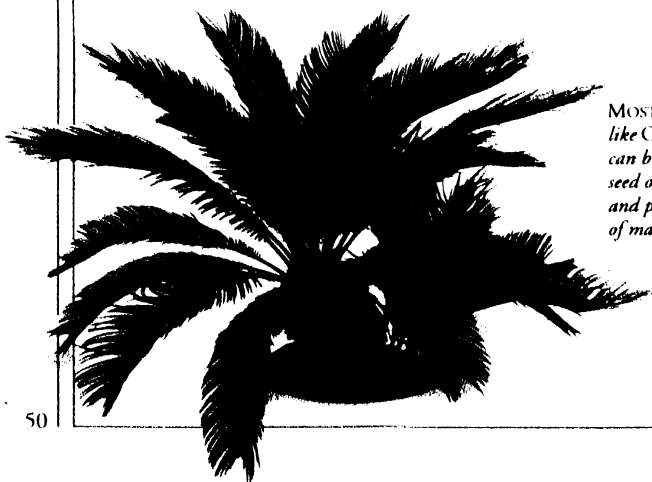
Cycads are primitive seed plants. Most have short, sometimes branched, occasionally tuber-like trunks, either fully or partly below ground. Some produce suckers. The foliage is pinnate or 2-pinnate, usually tough, leathery, and often rigid; the leaflets may be tipped or margined with spines.

The majority of cycads reproduce by means of primitive, unisexual, cone-like structures, which bear either ovules or pollen sacs. *Cycas* species differ in bearing large, naked ovules along the margins of

## PROPAGATING CYCADS

Cycads can be increased from seed or by transplanting suckers. Sow seed singly in small, deep containers. Use a standard, loam-based potting compost or a mix of equal parts gritty sand and peat (or substitute). Seeds should protrude slightly above the surface of the soil. Maintain at a temperature of

16–30°C (61–86°F). Germination, if successful, may take from 3 months to 2 years. The subsequent growth rate will also be slow, with each plantlet producing 1–2 leaves per year. To propagate from suckers, detach the suckers produced by mature plants in spring and pot them up separately.




MOST CYCADS, like *Cycas revoluta*, can be propagated from seed or by detaching and potting up suckers of mature plants.


## SHAPE SYMBOLS

Each palm, cycad, or other tree of similar appearance described in this encyclopedia is assigned a shape symbol. This identifies it either as a single-stemmed tree, or as a multi-stemmed tree that spreads outwards from its base, near ground level.



 SINGLE-STEMMED  
e.g. *Roystonea regia*



 MULTI-STEMMED  
e.g. *Chamaedorea seifrizii*

# Ferns

Attractive foliage, year-round interest, and a preference for damp, shaded areas where many flowering plants are unable to survive make ferns deservedly popular as houseplants, or for growing outdoors or under glass. Hardy ferns are especially effective in streamside and woodland settings, and frost-tender, tropical ferns are handsome plants for greenhouses or conservatories.

## What are ferns?

Ferns are primitive plants that produce evergreen or deciduous leaf-like structures, known as fronds. Together with club mosses and horsetails, they belong to the Pteridophytes, a group of plants that lack flowers and reproduce by spores rather than seeds. Ferns are epiphytic (lodging on trees or rocks), or terrestrial (rooted in soil). Their reproductive spores are sometimes borne in sporangia, usually clustered within indusia (covers of epidermal tissue) on the underside of their fronds. After germination, spores form a flap of green tissue (the prothallus), where the male and female reproductive organs are both sited. Fertilization occurs on the underside of the prothallus.

## Ornamental features

Ferns are highly valued for the elegant symmetry of their fronds, and the textural contrasts of their lush, usually green foliage, varied in some species with displays of red, yellow, or grey. Fronds may also have brown scales at their bases, or have silvery undersides.

Their diversity of habit presents a wide choice for the gardener. Shuttlecock ferns like *Matteuccia* have erect rhizomes, each bearing a crown of fronds. Creeping ferns, such as *Phlebodium*, are prostrate, and provide good ground cover, producing single fronds at intervals along each rhizome. Tree ferns, such as *Dicksonia*, have erect, trunk-like rhizomes, ridged with scars left by the stalks of old fronds. Staghorn ferns (*Platycerium*) are tender epiphytes with some clasping fronds produced from the base of each plant, and some erect fronds, slightly arching outwards.

If carefully chosen, ferns provide year-round garden interest. Most uncurl bright foliage in spring, the fronds of deciduous plants starting to fade by late summer and dying back after the first frosts. Evergreen ferns often remain attractive throughout autumn and winter.

## Cultivation

Once established, ferns usually require little maintenance. The majority prefer conditions ranging from partial to deep shade. Some, such as *Matteuccia*, *Onoclea*, and



## Planting for contrasts

Successful plantings of ferns often contrast textures, habits, and colours of foliage. Here, the glossy, strap-shaped leaves of *Asplenium scolopendrium* arch over the feathery fronds of *Polypodium vulgare*.

*Osmunda* require damp soil. Others, such as *Asplenium*, *Polypodium*, and *Polystichum*, tolerate relatively dry sites. Dwarf species of *Asplenium* and ferns from desert areas, such as *Cheilanthes*, prefer full sun, and are ideal in rock crevices. Most other hardy species will thrive outdoors in well-aerated, humus-rich soil.

Many ferns, particularly half-hardy and frost-tender species, may be grown in a conservatory or greenhouse, or as houseplants. They are best grown in bright indirect light. Species native to desert habitats, such as *Cheilanthes* and *Pellaea*, will thrive in full light in an alpine house (see p. 67).

Water ferns only when compost is barely moist to the touch, as they are intolerant of excessive water. As a rule, they should be watered more freely in summer than in winter. Do not allow ferns in containers to remain standing in water.

Most ferns prefer high levels of humidity, which can be achieved indoors by standing containers on a tray of moistened, expanded clay granules or gravel. In winter, the humidity level may be reduced by the drying effects of central heating. This can be offset by keeping ferns in a cool room or hallway.

Grow terrestrial ferns in a mix of 1 part each of loam, medium-grade granulated bark, and charcoal, 2

parts sharp sand, and 3 parts coarse leaf mould; add 1 part limestone chippings for species that require alkaline conditions. Include a slow-release, balanced fertilizer in the mixture; alternatively apply a half-strength, general-purpose or tomato-type liquid fertilizer every 3-4 weeks during growth. Grow epiphytic ferns in a mix of equal parts fine grade granulated bark, perlite, and charcoal.

Repot all container-grown ferns in spring or summer when their roots overflow the containers.

To propagate ferns, cut rhizomes into sections, or divide crowns, in spring, or use bulbils or spores (see panel).

## PROPAGATION BY BULBILS OR SPORES

To propagate from bulbils, sever a frond full of bulbils at the base. Peg it flat on to seed or cutting compost in a tray, water, label, and seal in an inflated plastic bag, and leave in a warm, light place until the bulbils have rooted. Grow on singly in 6cm (3in) containers of moist, soilless compost. To propagate from spores, place a

frond with plump sporangia on clean paper to collect the spores. As soon as possible, sow them thinly on to moist, sterilized seed compost, place in a propagator, and mist twice weekly until prothalli appear. Firm small clumps on to compost, spray, and return to propagator. Grow sporelings on until fronds develop; pot up singly.



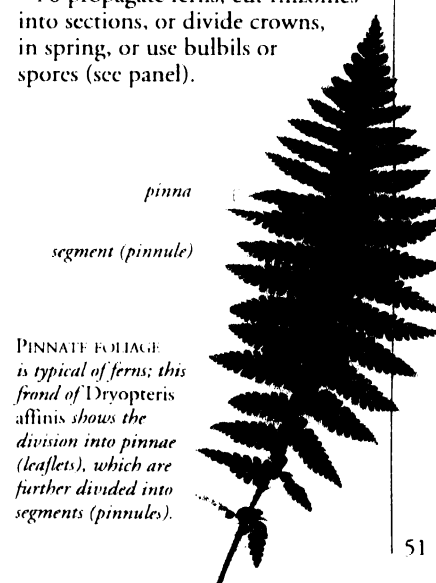
### Ripe bulbils

Select a frond that is drooping under the weight of bulbils, which may have tiny green fronds emerging from them.



### Ripe spores

Select fronds with sporangia that are neither rough (too old) nor still tightly wrapped in the indusium (too young).



PINNATE FOLIAGE is typical of ferns; this frond of *Dryopteris affinis* shows the division into pinnae (leaflets), which are further divided into segments (pinnules).

# Aquatic plants

Many aquatic plants, prized over the centuries for their beauty, can be cultivated in artificial or natural water features in the garden. Large and small ponds, formal or informal pools, streams, bog gardens, and even small barrel ponds all present different conditions and varying water depths that will support an exciting diversity of aquatic plant, insect, and animal life.

## What are aquatic plants?

All plants that grow rooted, floating, or submerged in water are broadly termed aquatic plants. They are categorized as submerged, deep-water, surface-floating, marginal, bog, or moisture-loving plants, according to the depth of water in which they grow best. Depth is measured from the surface of the soil around a plant's roots to the surface of the water.

Most aquatic plants are both ornamental and functional. They produce attractive foliage and flowers but also play a vital role in the ecosystem of water features, by providing a habitat for myriad micro-organisms, insects, and wildlife, and by helping to suppress algal growth and maintain the clarity of water. A healthy balance of animal and plant life can be achieved only if a pond is stocked with an appropriate range of plant species.

## Submerged and floating plants

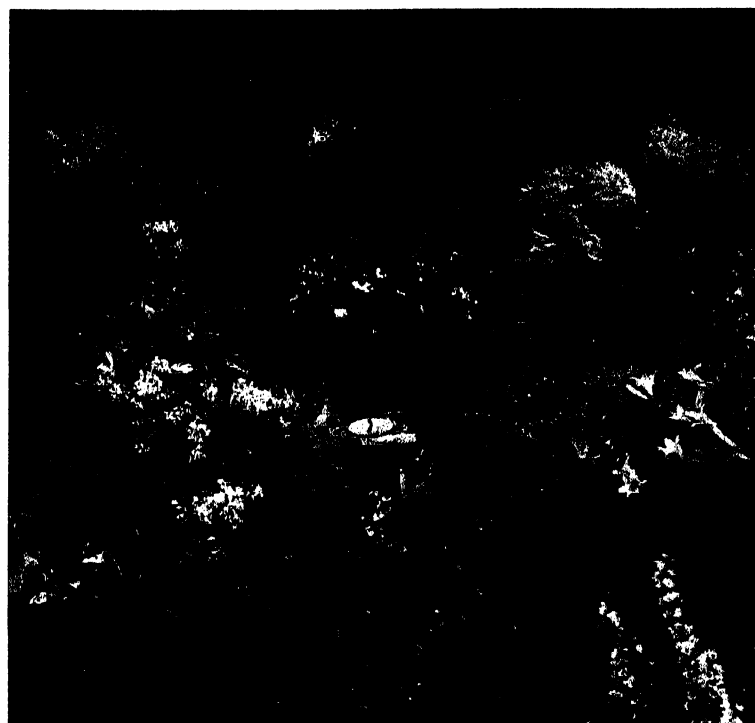
Certain plants, such as *Lagarosiphon major* and milfoils (*Myriophyllum*), remain totally submerged below water. They are fast-growing, and

usually produce slender stems and leaves. Submerged plants are grown mainly for their ability to reduce algae by competing with them for mineral salts (released by the breakdown of organic matter, such as dead leaves) dissolved in the water. They are often called oxygenators, because they release oxygen into the water as a by-product of photosynthesis – an asset if fish are to be kept in a pool. The fine strands of submerged plant foliage also provide valuable shelter for fish fry.

Deep-water plants, like water lilies (*Nymphaea*), grow with their root systems at depths of 30–90cm (12–36in), and with their foliage and flowers floating at surface level. The shade cast by their leaves reduces underwater light levels, which helps to control algal growth.

Surface-floating plants, such as *Azolla filiculoides*, usually have tiny leaves and spreading roots that absorb nutrients from the water. They multiply rapidly during summer, forming dense colonies.

Ideally, 50–70 per cent of a pool's surface should be covered with the foliage of deep-water and floating



## An emphasis on marginals

*Marginals, bog plants, and moisture-loving plants link a pond with the rest of the garden and provide a habitat for wildlife. They are also useful in smaller ponds, leaving the water surface clear to reflect the colours and forms of the planting.*

plants to keep the water clear. In a new pond this allows other aquatics to become established. If coverage is greater than 70 per cent, insufficient light will filter through the water for submerged plants to survive.

## Shallow-water and bog plants

Marginal plants tolerate conditions ranging from pure mud to water 30–45cm (12–18in) deep over their roots, and are perhaps the most diverse of all aquatic plants. They are best used to conceal the artificial outline of an informal water feature, such as a wildlife pond or water-course, but also provide cover for birds and other wild creatures.

Bog plants are also marginal plants but prefer a site in shallower water. However, the term is commonly used to describe any plant that grows in saturated soil just beyond the water's edge, normally without a covering of water. Such plants represent the transition between true aquatics and plants that are simply moisture-loving. In nursery catalogues, the latter are sometimes referred to as bog plants, despite their intolerance of waterlogged ground and need for oxygen around their roots.

## Planning a water feature

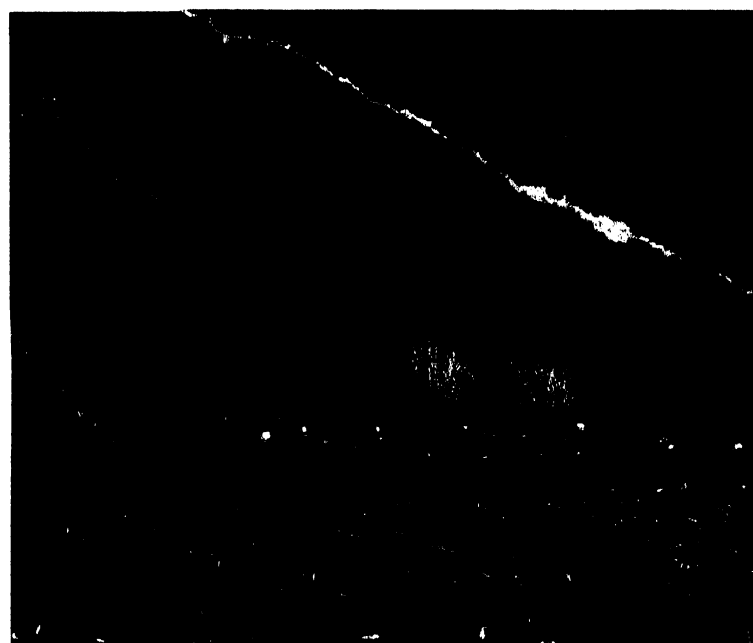
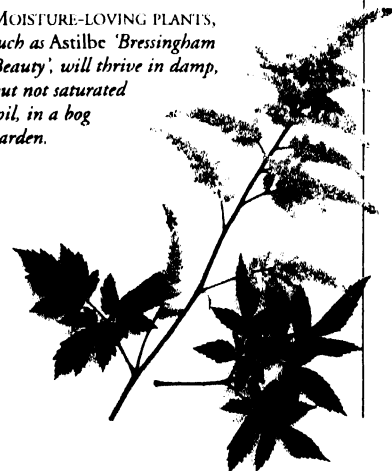
Formal and informal water features and their associated aquatic plants have been used throughout history as major elements of garden design. As with all plantings, water gardens should be designed to take advantage of the contrasts and similarities

between plants, and provide a long succession of flowers and seed heads or decorative foliage throughout the year. In selecting aquatic plants, it is worth bearing in mind that many die back after frost, reducing winter interest in cold regions. Native plants provide food for insect life, such as dragonflies, which in turn fall prey to other creatures.

Always choose a water feature that is appropriate for the size and style of the garden, and take great care when deciding on its position. A pond is best sited in full sun, away from overhanging trees, and should not be constructed in an exposed site or frost pocket. Since most gardens lack a brook or natural spring, a pond should lie near an accessible water source so that moisture lost through evaporation can be replaced easily.

A formal pond of any dimensions provides an impressive focal point

*MOISTURE-LOVING PLANTS, such as Astilbe 'Bressingham Beauty', will thrive in damp, but not saturated soil, in a bog garden.*



## Water lily pond

*Deep-water plants, such as these water lilies (*Nymphaea* 'Escarboucle'), are ideal for larger ponds; they are complemented here by marginal clumps of sedges and rushes.*

## PLANTING A POND

Aquatic plants are best introduced into a pond from late spring to midsummer. Slide surface-floaters on to the water with roots trailing downwards. Plant deep-water, submerged, and marginal plants in an underwater bed, or in containers, using heavy loam or a proprietary aquatic compost that will not cloud the water. Containers will curb invasive species and allow easier relocation and division of plants.

Aquatic containers have a broad, flat base with open-meshed sides to prevent stagnation of the growing medium: unless the mesh is fine, line pots with polypropylene or hessian. Firm plants into the soil and top-dress with grit or pea shingle for ballast and to prevent fish disturbing the roots. Apply a slow-release aquatic fertilizer in summer.

**SURFACE-FLOATING PLANTS**  
Foliage rapidly covers large areas of water.

**DEEP-WATER PLANTS**  
Roots remain submerged, but leaves and flowers float at surface level.

45CM (18IN)

**SUBMERGED PLANTS**  
Suppress algae and release oxygen into the water.

**MARGINAL PLANTS**  
Grow in conditions from pure mud to water 30–45cm (12–18in) deep.

**BOG PLANTS**  
Thrive in saturated soil beyond the water-line.

**DEPTH ADJUSTMENT**  
Piers of bricks can help to achieve required depth.

180CM (72IN)

within a garden. It may be sunken or raised, made from concrete or stone, and is usually geometric in shape, with straight sides. Use ornamental materials to decorate its perimeter, either as paving, or in the form of a raised edge or seat.

A small formal pond will support a limited but choice range of species and cultivars. These are often best selected for their architectural interest. Ideal examples are water lilies, with their spreading, rounded foliage and exquisite flowers, or water irises, like *Iris pseudacorus*, which have upright blooms on strongly erect stems.

Informal pools are mostly sunken and irregular in outline, often designed to attract native wildlife to a garden. To suit amphibians, the pool should ideally have a muddy bottom and gently sloping sides, dotted with large, flat stones. Birds and other wild creatures, such as hedgehogs, will be attracted to the bathing and drinking facilities

provided by an area of shallow beach. Soften or disguise the edges of an informal pool with natural materials, like rocks or turves, partially concealed by clumps of marginal and bog plants.

A bog garden is an attractive way of using waterlogged ground, and also provides good conditions for local wildlife. To create an artificial bog garden, place a perforated synthetic liner under soil next to a pool; this will retain sufficient moisture for bog plants.

Almost any water-tight container may be used to grow oxygenators, dwarf water lilies, and marginal plants. Metal containers must be sealed inside with rubber paint or a synthetic liner to avoid poisoning either fish or plants. In cold regions, containers also enable frost-tender plants to be grown outdoors in summer, then overwintered indoors.

## Maintenance

Synthetic liners, plastic modules, and electric pumps for filtering water have all simplified pond maintenance. Ensure that drainage is adequate for occasions when the pond may overflow. On sloping ground, a tumbling or split-level watercourse or waterfall may be constructed. If fish are kept, install a fountain or similar device to aerate the water during still summer nights, when oxygenating plants are unable to photosynthesize. Most aquatic plants are intolerant of splashing water, so they are best sited in more tranquil parts of the pond. In areas with cold winters, move fish that are normally kept in a container pond, such as a barrel, to a sunken pool, where they are more likely to survive.

Aquatic plants require little regular care, although submerged plants grown in a soil-bottomed pond need regular thinning and cutting back. In autumn, cut back any leaves or

stems that would rot in the water, together with damaged or diseased marginals and bog plants. With wildlife ponds, however, foliage is best left until spring to provide winter cover for birds and animals.

## Aquarium plants

An indoor aquarium enables year-round cultivation of tender plants, and also displays the foliage of submerged plants and the feathery roots of surface-floaters to good effect. Grow aquatic plants from temperate regions in a cold water aquarium. Tropical plants and fish must have a heated aquarium.

Line the base of the aquarium with an inert medium, such as grit, sand,

**CABOMBA CAROLINIANA** is an oxygenator with attractive feathery foliage, best displayed in an aquarium.

or gravel. Maintain the balance of the water chemistry by growing a suitable range of oxygenating plants, and provide a good filtration system and correct temperature. Ensure that lighting is adequate but not too bright (excess light will encourage algal growth). Trim foliage as necessary, and occasionally apply proprietary slow-release fertilizer tablets to the growing medium.

## PROPAGATION

Aquatic plants can be propagated by seed, division, cuttings, turions (see below), offsets, and runners. Most are increased by division of the rootstock in summer; divide every 1–2 years, as roots soon become thickly enmeshed.

Moisture-loving and some aquatic plants can be grown from ripe seed in summer or autumn. Sow on an inert medium and top-dress with fine grit. Keep submerged under glass in bright indirect light at 18°C (64°F). Prick out plantlets, retain under glass, and plant out in spring of the second year.

With submerged plants, take stem-tip cuttings in spring or summer. Trim to 10–15cm (4–6in) long, and insert singly or in bunches of 3–6 into submerged pots of loam; transplant when rooted. Alternatively, float weighted bunches on the water to root in the bottom of a soil-based pond.

Certain aquatic species bear turions – swollen buds that overwinter at the bottom of a pond. When they surface in spring, pot up singly as new plants.

Many surface-floating plants of tropical origin may be increased from offsets or runners, which form on long, adventitious shoots. If detached from the parent, these plantlets will multiply rapidly on the water's surface.



**Planting cuttings in containers**  
Insert cuttings singly or in bunches in a container that is sufficiently large to accommodate the adult plant.



**Offsets**  
Place offsets of floating plants directly on the surface of the water, supporting each one until it floats upright.



## Corner feature

Even small gardens may be enlivened by a small pool and fountain, ringed with ferns and other moisture-loving plants.



# Grasses and bamboos

True grasses, including bamboos, are members of a vast family of plants that grow wild throughout the world. A few are very commonly grown as lawns, but many ornamental grasses are valued for their stately habit, feathery inflorescences, and slender, sometimes unusually coloured leaves. Some bear decorative seed heads, and many are suitable for indoor displays.

## What are grasses?

Grasses are evergreen or deciduous annuals or perennials belonging to the Gramineae family. Their erect or arching stems are usually round and hollow, with regularly spaced nodes, very clearly seen in the jointed canes of bamboos. The foliage is borne in 2 ranks from sheaths, which may be split or peeled back. Colours include yellow, silvery blue, and red, as well as shades of green;

numerous cultivated grasses have attractively variegated leaves, with longitudinal stripes or cross-bands.

The delicate inflorescences, in the form of spikes, panicles, or racemes of tiny spikelets, are usually light and feathery, and subtle in colour. Many are suitable for cutting and displaying indoors, either fresh or dried (see p.39).

In the garden, grasses have a variety of uses. Those of imposing habit, like pampas grass (*Cortaderia selloana*), are splendid as specimen plants, while some lower-growing grasses, such as hair grass (*Aira elegantissima*), provide excellent ground cover. Many grasses can also be used in a mixed border, where their soft curves and vertical lines contrast well with more rounded, broader-leaved plants.

## Cultivation

Once established, grasses need little maintenance. Most prefer full sun and moist but well-drained soil, not too rich in nutrients. Feeding is



## Grass border

Use grasses to give a border strong visual impact. Select species that contrast in height and habit, as well as in the shape and texture of their inflorescences. Here, the tall panicles of *Stipa gigantea* are offset by the soft mounds of *Pennisetum orientale*.

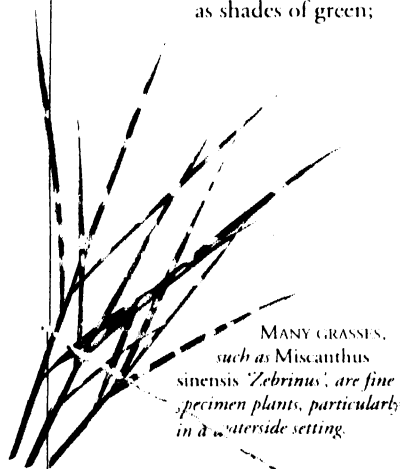
rarely required. Grow grasses that prefer damp soil near a water feature.

Plant hardy, container-grown grasses in any season. Half-hardy and tender grasses are best planted in spring; in areas with high rainfall, use sharply drained, gritty soil, and top-dress with stone chippings in winter. Bamboos should be watered freely until established.

Restrain vigorous and invasive grasses by growing in containers, or place a barrier, such as thick plastic sheeting, in the soil around them. Alternatively, cut back invasive roots

with a spade when new growth appears in spring, and again in mid- or late summer. Cut perennials to ground-level in autumn or early winter, but leave attractive foliage and seed heads until late winter. Cut back tender grasses in spring.

Propagate grasses by seed, sown as soon as ripe, or divide rhizomatous and clump-forming grasses in late spring or early summer. Divisions are often best potted up and established before planting out; use moist but well-drained compost and keep cool in bright indirect light.



MANY GRASSES, such as *Miscanthus sinensis* 'Zebrinus', are fine specimen plants, particularly in a waterside setting.

## BAMBOOS

Most of these woody-caned, perennial grasses originate in tropical and subtropical regions, particularly E. Asia. The majority are frost tender and evergreen; the few that are fully hardy are from temperate zones. Bamboos range in habit from low-growing plants like *Pleioblastus pygmaeus* var. *distichus* to those with a tall, almost tree-like habit, such as *Phyllostachys aureosulcata* 'Spectabilis'. Popularly grown as specimen or accent plants, for screening and hedging, or as decorative ground cover, bamboos have elegant, ornamental foliage, which is sometimes variegated with green, cream, or yellow.



*Sasa veitchii*



*Phyllostachys nigra*



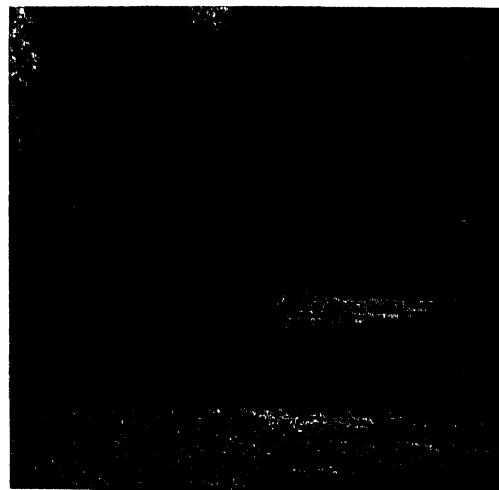
*Phyllostachys aureosulcata* 'Spectabilis'



*Pleioblastus pygmaeus* var. *distichus*

## Sedges and rushes

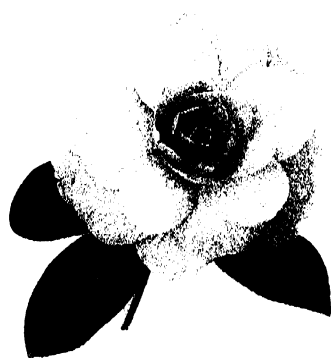
Sedges (*Cyperaceae*) and rushes (*Juncaceae*) are large families of perennials from temperate and arctic regions. Grown for their attractive foliage and inflorescences, they are similar to grasses in appearance and garden use, but differ botanically. Many, such as the *Carex* species shown here, thrive in or close to water. Some rushes also flourish in damp or dry shade.

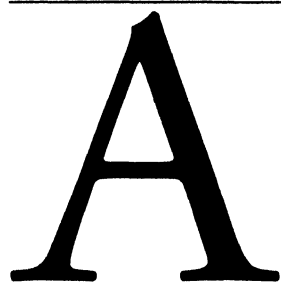




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DIRECTORY

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- ▷ **Aaron's beard** see *Hypericum calycinum*  
 ▷ **Aaron's rod** see *Solidago, Verbascum thapsus*  
 ▷ **Abele** see *Populus alba*

## ABELIA

CAPRIFOLIACEAE

Genus of about 30 species of deciduous and evergreen shrubs found on hillsides and in open woodland from the Himalayas to E. Asia, and in Mexico. They are cultivated for their attractive foliage and profusion of flowers. The ovate to rounded leaves are opposite or occasionally in whorls of 3 or 4. Funnel-shaped or tubular flowers are borne in axillary cymes or terminal panicles on the current year's growth in summer and autumn; they have persistent calyces which, in several species, remain attractive after the flowering period. Abelianas are ideal for a sunny border. In frost-prone climates, grow less hardy species against a warm, sunny wall.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun, sheltered from cold, dry winds. Pruning group 1 for deciduous shrubs (group 6, if very vigorous); group 8 for evergreen shrubs.
- **PROPAGATION** Root greenwood cuttings in early summer, or semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*A. chinensis*, syn. *A. rupestris*. Spreading, deciduous shrub with ovate, glossy, dark green leaves, to 4cm (1½in) long. From summer to autumn, bears terminal panicles of fragrant, funnel-shaped, pink-tinged white flowers, 5mm (¼in) long, with 5-lobed pink calyces. ↑ 1.5m (5ft), ↔ 2.5m (8ft). China. \*\*  
*A. 'Edward Goucher'* ♀ Semi-evergreen shrub with arching branches and ovate, glossy, dark green leaves,



*Abelia x grandiflora*

to 5cm (2in) long, bronze when young. Trumpet-shaped, lilac-pink flowers, 2cm (¾in) long, with 2-lobed pink calyces, are borne singly or in small axillary cymes from summer to autumn. ↑ 1.5m (5ft), ↔ 2m (6ft). \*\*

*A. floribunda* [□] ♀ Evergreen shrub with arching shoots and ovate, glossy, dark green leaves, to 5cm (2in) long. Pendent, tubular, bright cerise flowers, 3-5cm (1¼-2in) long, with 5-lobed green calyces, are borne in profuse terminal panicles in early summer. ↑ 3m (10ft), ↔ 4m (12ft) (more if against a wall). Mexico. \*

*A. x grandiflora* [□] ♀ (*A. chinensis* x *A. uniflora*), syn. *A. rupestris* of gardens. Vigorous, rounded, evergreen or semi-evergreen shrub with arching branches which produce ovate, glossy, dark green leaves, to 5cm (2in) long. Axillary cymes and terminal panicles of funnel-shaped, fragrant, pink-tinged white flowers, 2cm (¾in) long, with 2- to 5-lobed pink calyces, are borne from midsummer to autumn. ↑ 3m (10ft), ↔ 4m (12ft). Garden origin. \*\* (borderline).

*A. 'Mason'* ♀ is less vigorous, and has yellow leaves marked with dark green; ↑ 1.5m (5ft), ↔ 2m (6ft). 'Goldsport', syn. 'Gold Strike', has all-yellow foliage.

*A. rupestris* see *A. chinensis*.

*A. rupestris* of gardens see *A. x grandiflora*.

*A. schumannii* [□] Deciduous shrub with arching shoots and ovate, mid-green leaves, bronze when young, to 3cm (1¼in) long. Funnel-shaped, slightly scented, orange-marked, lilac-pink flowers, 2.5cm (1in) long, with



*Abelia triflora*

2-lobed, pinkish green calyces, are produced singly or in axillary cymes, from late summer to autumn. ↑ 2m (6ft), ↔ 3m (10ft). C. China. \*\*

*A. triflora* [□] Large shrub or tree, vigorous and erect in habit, with deeply ridged bark and deciduous, ovate, dark green leaves, to 8cm (3in) long. Small, very fragrant, pink-tinged white flowers, 1.5cm (½in) long, with 5-lobed, bronzed, narrowly segmented calyces, are produced in threes from the upper leaf axils, in clusters to 5cm (2in) across, in summer. ↑ 5m (15ft) or more, ↔ 3m (10ft). N.W. Himalayas. \*\*

## ABELIOPHYLLUM

*White forsythia*

OLEACEAE

Genus of one species of deciduous shrub occurring on open hillsides in Korea. Related to *Forsythia*, it is cultivated for its fragrant flowers, borne in late winter or spring on the previous year's growth. Grow *A. distichum* in a sunny border or train against a warm wall.

- **HARDINESS** Fully hardy, if wood has adequately ripened in summer. Early flowers may be damaged by late frosts.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun. Pruning group 5, or group 13 if wall-trained.
- **PROPAGATION** Root greenwood or semi-ripe cuttings, or layer, in summer.
- **PESTS AND DISEASES** Trouble free.

*A. distichum* [□] Open, spreading shrub with opposite, ovate, matt, dark green leaves, to 8cm (3in) long, often turning purple in autumn. Long, axillary

racemes of small, cross-shaped, 4-petalled, fragrant white, sometimes pink-tinged flowers, with purple-tinged calyces and stalks, are produced in late winter or early spring. ↑ 1.5m (5ft) (taller if against a wall). Korea. \*\*

## ABELMOSCHUS

MALVACEAE

Genus of 15 species of hairy annuals and perennials from meadows and wasteland in tropical Asia. They are grown mostly for their flowers, although some are tropical crops, grown for their edible pods (okra and gumbo) and leaves. They have large, palmately lobed, toothed leaves, and 5-petalled flowers, usually yellow with purple centres, borne in terminal racemes or singly from the leaf axils. Grow *A. moschatus* as an annual in a mixed border, or in summer bedding.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1), in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed at 10-13°C (50-55°F) in late winter or early spring, or sow *in situ* in mid- or late spring, after any danger of frost has passed.
- **PESTS AND DISEASES** Susceptible to slugs and fungal diseases, including powdery mildew and possibly rust. Red spider mites and whiteflies may be a problem under glass.

*A. moschatus*, syn. *Hibiscus abelmoschus* (Musk mallow). Bushy perennial, often grown as an annual, with broadly ovate, 3- to 7-lobed, coarsely hairy leaves, to 45cm (18in) long. Hibiscus-like flowers, to 10cm (4in) across, usually yellow with purple centres, sometimes pink or red with white centres, are borne singly or in terminal racemes from midsummer to autumn, followed by musk-scented seeds. ↑ 1.5m (5ft), ↔ 45cm (18in). Tropical Asia. \* (min. 5°C/41°F)

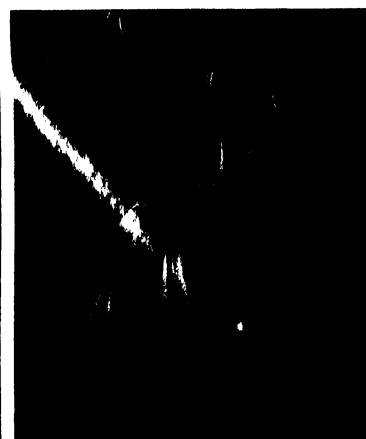
## ABIES

*Silver fir*

Pinaceae

Genus of about 50 species of evergreen conifers from Europe, N. Africa, Asia, and North America, dominating northern and mountainous regions. The whorled branches bear linear, flattened, sometimes glossy, mid- to dark green leaves, often with 2 longitudinal silver bands beneath. The female cones are often purplish blue, erect, with occasionally protruding bracts, and are produced on the upper branches in late spring and early summer. After ripening in autumn, they break up to release the seeds, leaving the central stalk on the shoot. Male cones are pendent, green when young, usually purple, purplish blue, or brown when mature, and are borne throughout the crown. In the descriptions below, all the cones are female. Silver firs provide good shelter and screening, and also make fine specimen trees.

- **HARDINESS** Fully hardy, although frost may damage new foliage.
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral to slightly acid



56 *Abelia floribunda*



*Abelia schumannii*



*Abeliophyllum distichum*

*Abies balsamea* 'Nana'

soil in full sun, with some shelter from cold winds. Most are shade tolerant, especially when young. *A. amabilis* prefers acid soil; *A. pinsapo* and *A. vejarii* tolerate alkaline and drier soils.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in late winter; stratify for 21 days to aid germination. Graft cultivars in winter.

• **PESTS AND DISEASES** Prone to adelgids and honey fungus.

*A. alba* ♀ syn. *A. pectinata* (European silver fir, Silver fir). Columnar tree with dark green leaves, silver beneath, to 2.5cm (1in) long, arranged on the shoots in a V-shape. Cylindrical cones are yellow-green ripening to brown, 10–15cm (4–6in) long, with protruding bracts. ↑ 25–45m (80–150ft), ↔ 4–6m (12–20ft). Mountains of C. and S.E. Europe. \*\*\*

*A. amabilis* ♀ (Beautiful fir, Pacific fir). Conical tree with shoots covered in pale hairs, and with small, spherical, resinous buds. Square-tipped, dark green leaves, silvery white beneath, 2–3cm (¾–1¼in) long, are densely borne on the upper surface of each shoot in neat, forward-pointing rows. Ovoid-cylindrical purple cones, 9–15cm (3½–6in) long, have hidden bracts. Grows best in cool, moist climates in acid soil. ↑ 20–30m (70–100ft), ↔ 4–6m (12–20ft). USA (S. Alaska to N. California). \*\*\*

*A. balsamea* ♀ (Balsam fir). Conical tree with smooth grey bark interspersed with fragrant resin blisters. Dark green leaves, whitish green beneath, and 1.5–2.5cm (½–1in) long, are semi-erect, forward pointing, and densely arranged

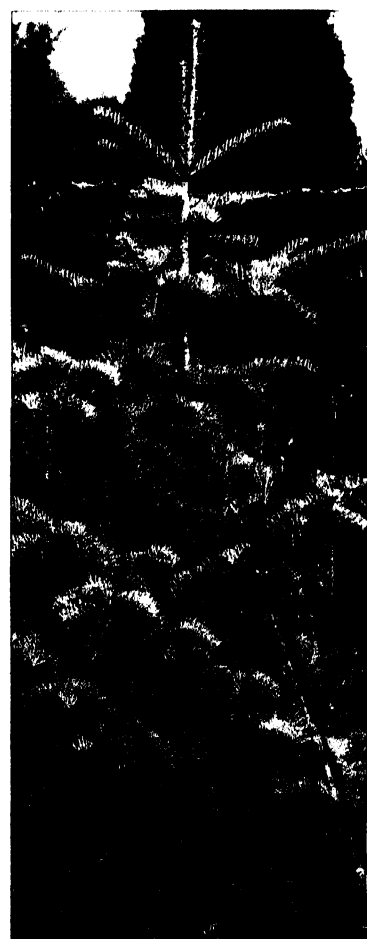
*Abies cephalonica* 'Meyer's Dwarf'

on the shoots in a V-shape. Oblong-cylindrical, purplish blue cones, 5–8cm (2–3in) long, have hidden bracts. Needs a moist site. ↑ to 15m (50ft), ↔ to 5m (15ft). C. and E. Canada, N.E. USA.

\*\*\* *f. budsonia* ♀♂ is a dwarf, irregularly rounded variant, with leaves to 1.5cm (½in) long, and no cones; ↑ to 60cm (24in), ↔ 1m (3ft). 'Nana' ♀♂ is rounded, with short leaves, 4–10mm (¼–½in) long, arranged radially around the shoots; ↑ to 1m (3ft).

*A. bracteata* ♀ syn. *A. venusta* (Bristlecone fir, Santa Lucia fir). Columnar tree with distinctive spindle-shaped, pointed, non-resinous buds. Sharp-pointed, glossy, dark green leaves, silvery green beneath, to 5cm (2in) long, spread either side of each shoot in 3 or 4 ranks. Ovoid, golden brown cones, 8cm (3in) long, have large, protruding bracts, with long, narrow, reflexed points, and often exude resin. ↑ 25m (80ft), ↔ to 6m (20ft). USA (Santa Lucia Mountains, California). \*\*\*

*A. cephalonica* ♀ (Greek fir). Conical tree with a spreading crown in old age. Stiff, glossy, dark green leaves, greenish white beneath, 2–3cm (¾–1¼in) long, are arranged radially around each shoot, with a rounded, sucker-like pad at each leaf base. Cylindrical, tapering, resinous, green-brown cones, 10–16cm (4–6in) long, have protruding, reflexed bracts, and nipple-like apices. ↑ to 30m (100ft), ↔ 5–8m (15–25ft). C. and S. Greece. \*\*\* *'Meyer's Dwarf'* ♀♂ syn. 'Nana', produces short leaves, 0.8–1.5cm (⅜–½in) long, and forms a low, spreading mound; ↑ 50cm (20in), ↔ 1–3m (3–10ft).

*Abies concolor* 'Argentea'

*A. cilicica* ♀ (Cilician fir). Columnar tree with lax, shiny, rich green leaves, dull white beneath, 2.5–4cm (1–1½in) long, spreading at the sides and pointing forwards along the upper surface of each shoot. Cylindrical, green-brown cones are 6–20cm (2½–8in) long, rarely to 30cm (12in), with hidden bracts and nipple-like apices. ↑ to 30m (100ft), ↔ to 6m (20ft). S.E. Turkey, N. Syria, N. Lebanon. \*\*\*

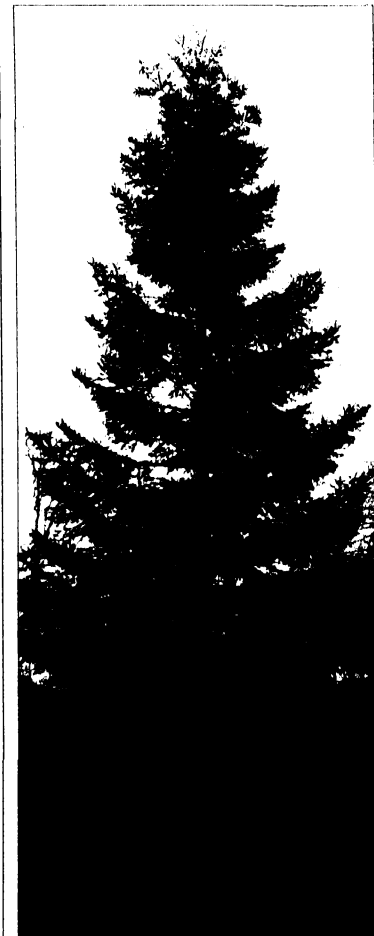
*A. concolor* ♀♂ (White fir). Columnar tree with soft, lax, glaucous or bluish green leaves, 4–6cm (1½–2½in) long, pointing forwards and upwards along the shoots. Cylindrical cones, 7–12cm (3–5in) long, with hidden bracts, are mid-green, olive-green, yellow, or pale violet, ripening to brown. ↑ 25–40m (80–130ft), ↔ 5–7m (15–22ft). USA (Oregon) to N. Mexico. \*\*\*

'Argentea' ♀♂ syn. 'Candicans', is conical when young, later columnar, with silver-white leaves. 'Candicans' see *Argentea*. 'Compacta' ♀ syn. 'Glaucia Compacta', is slow growing, with grey foliage; ↑ to 3m (10ft). 'Glaucia Compacta' see 'Compacta'. 'Violacea' has bluish white foliage when young.

*A. fargesii* ♀ syn. *A. sutchuenensis* (Farges fir). Columnar to conical tree with finely flaky, pale brown bark and deep purple, year-old shoots with conical, resinous purple buds. Shiny, dark green leaves, banded with silver beneath, to 2.5cm (1in) long, spread below and point forwards above each shoot. Ovoid, slightly resinous cones, 5–8cm (2–3in) long, are violet-purple with protruding bracts. ↑ 10–15m (30–50ft), ↔ 3–4m (10–12ft). China (Gansu, Sichuan, Hubei). \*\*\*

*A. forrestii* ♀♂ (Forrest fir). Conical tree with an open, whorled habit, becoming denser when old, and smooth, silvery grey bark. Shoots are red-brown, with spherical, resinous white buds. Dark green leaves, silvery white beneath, 2–4cm (¾–1½in) long, are arranged densely and radially around each shoot. Ovoid-cylindrical, violet-blue cones, 8–15cm (3–6in) long, have protruding bracts. ↑ 10–20m (30–70ft), ↔ 3–6m (10–20ft). China (Yunnan). \*\*\*

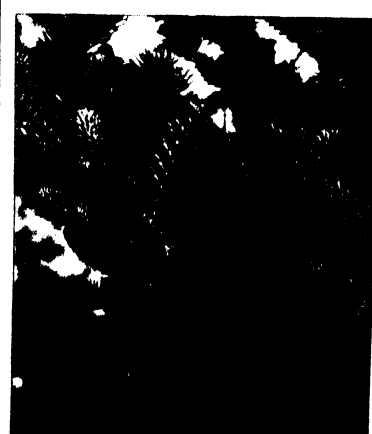
*A. grandis* ♀♂ (Giant fir, Grand fir). Very fast-growing, conical to columnar tree with smooth grey bark, cracked into squares on old trees, and small, conical, resinous buds. Produces soft, shiny, dark green leaves, 3–5cm (1¼–2in) long, with whitish green bands on the reverse, arranged like the teeth of a 2-sided

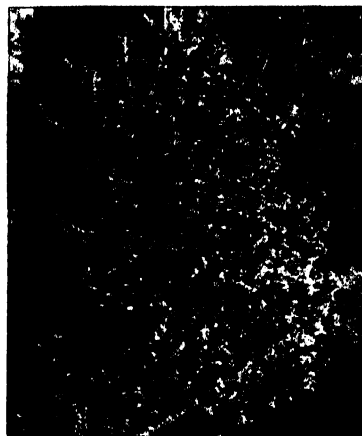
*Abies forrestii**Abies grandis*

comb. Cylindrical cones, 5–11cm (2–4½in) long, with hidden bracts, are green, ripening to brown. ↑ 25–60m (80–200ft), ↔ 5–8m (15–25ft). W. North America (British Columbia, Oregon, Idaho). \*\*\*

*A. homolepis* ♀ (Nikko fir). Conical tree with tiered branches and deeply ridged shoots. Glaucous green leaves, 1.5–3cm (½–1¼in) long, with silver bands beneath, are arranged on the shoots like the teeth of a 2-sided comb. Cylindrical, violet-blue cones, 7–12cm (3–5in) long, have hidden bracts. ↑ to 25m (80ft), ↔ 5–8m (15–25ft). S. Japan. \*\*\*

*A. koreana* ♀♂ (Korean fir). Small, conical tree with shiny, dark green leaves, silver beneath, 1–2cm (½–¾in) long, arranged radially but mainly on the upper surface of each shoot. From

*Abies koreana*



*Abies lasiocarpa* var. *arizonica*  
'Compacta'

a young age, produces cylindrical, violet-blue cones, 5–7cm (2–3in) long, with either hidden or protruding bracts. ↑ 10m (30ft), ↔ to 6m (20ft). S. Korea. \*\*\*. 'Silberlocke' ♀ has leaves that twist above the fawn-coloured shoots to reveal the silver undersides.

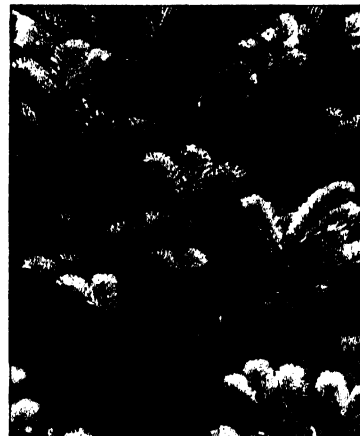
**A. lasiocarpa** ♀ Small, narrowly pyramidal tree with corky bark. Densely arranged but spreading, 2-ranked, grey-green leaves, 1.5–3.5cm (½–1½in) long, have a waxy coating. Oblong-cylindrical cones, 8–10cm (3–4in) long, with hidden bracts, are dark purple, ripening to brown. ↑ to 10m (30ft), ↔ 3–4m (10–12ft). North America (Alaska to Oregon, Wyoming to N. Colorado). \*\*\*. var. *arizonica* (Corkbark fir) has thicker, soft bark, silvery grey leaves,



*Abies nordmanniana* 'Golden Spreader'

2.5–3.5cm (1–1½in) long, and cones 6–8cm (2½–3in) long; USA (Arizona, New Mexico). var. *arizonica* 'Compacta' ♀ is slow growing, forming a conical to oval tree with blue-grey leaves; ↑ 3–5m (10–15ft), ↔ 2–3m (6–10ft). 'Roger Watson' is a slow-growing dwarf cultivar, with grey-green leaves, reaching its full height after about 10 years; ↑ to 90cm (36in).

**A. magnifica** ♀ (California red fir). Columnar tree with a narrow crown and stout trunk. Leaves, 4–5cm (1½–2in) long, grey-green to bright blue-grey above, inconspicuously grey-banded beneath, lie flat along the upper surfaces of the shoots and are arranged like the teeth of a comb beneath. Barrel-shaped, golden green cones, 18–25cm (7–10in)



*Abies veitchii*

long, have concealed bracts. ↑ 25–35m (80–120ft), ↔ 5–6m (15–20ft). USA (S. Oregon to N. California). \*\*\*

**A. nobilis** see *A. procera*.

**A. nordmanniana** ♀ (Caucasian fir, Nordmann fir). Columnar tree with tiered branches. Densely arranged, glossy, rich green leaves, dull white beneath, 2–3cm (¾–1¼in) long, point forwards and overlap above on each shoot. Ovoid-cylindrical, greenish brown cones, to 15cm (6in) long, have protruding bracts. ↑ to 40m (130ft), ↔ to 6m (20ft). Caucasus, N. Turkey. \*\*\*. 'Golden Spreader' ♀ is slow-growing, and usually dwarf, with spreading branches and bright golden yellow leaves, pale yellowish white beneath; ↑ to 1m (3ft), ↔ to 1.5m (5ft), but occasionally forms a small tree.

**A. pectinata** see *A. alba*.

**A. pinsapo** ♂ (Hedgehog fir, Spanish fir). Tree with a conical crown, later becoming untidy. Rigid, dark green to glaucous, grey-blue leaves, 1–2cm (½–¾in) long, are arranged radially around each shoot. Cylindrical cones, 10–15cm (4–6in) long, with hidden bracts, are green, ripening to brown. ↑ to 25m (80ft), ↔ 5–8m (15–25ft). S. Spain. \*\*\*. 'Glauca' ♀ has striking, glaucous, grey-blue leaves. **A. procera** ♀ (Noble fir). Conical tree, later becoming broad and columnar, with whorled branches when young, and silvery grey bark. Grey-green to bright blue-grey leaves, 1–3.5cm (½–1½in) long, with narrow grey bands beneath, lie flat along the upper surfaces of the shoots, and are 2-ranked and slightly downward-curving below. Cylindrical, green and brown cones, 15–25cm (6–10in) long, with protruding, reflexed bracts, are borne on the uppermost branches when the tree is 6m (20ft) or more tall. ↑ 25–45m (80–150ft), ↔ 6–9m (20–28ft). USA (Oregon, Washington). \*\*\*. 'Glauca' has glaucous, bright blue foliage and forms a tall tree or, if no leader develops, a spreading shrub.

**A. sushuenensis** see *A. fargesii*.

**A. veitchii** ♀ (Veitch fir). Fast-growing, conical tree with soft, densely arranged, glossy, dark green leaves, to 3cm (1¼in) long, which curve upwards and are silver on the reverse. Cylindrical, bright grey-blue cones, 5–7cm (2–3in) long, bear either protruding or hidden bracts. ↑ 15–20m (50–70ft), ↔ 4–6m (12–20ft). Japan. \*\*\*

**A. vejarii** ♂ (Vejar fir). Conical tree with olive-green shoots and forward- and upward-pointing, grey-green or glaucous leaves, grey-banded on the reverse, 2–2.5cm (¾–1in) long. Produces cylindrical or ovoid violet cones, 6–15cm (2½–6in) long, which have protruding bracts. Very drought tolerant. ↑ 10–20m (30–70ft), ↔ 3–5m (10–15ft). N.E. Mexico. \*\*\*

**A. venusta** see *A. bracteata*.

## ABROMEITIELLA

BROMELIACEAE

Genus of 2 or 3 species of low, mound-forming, terrestrial, evergreen perennials (bromeliads) occurring in dry, rocky sites in the Andes of Bolivia and Argentina. They form large mats or cushions of numerous small, dense rosettes of triangular, succulent, greyish green leaves, with spiny margins and tips. Short-branched inflorescences, made up of groups of 3 greenish yellow or green flowers with twisted petals, develop from the centres of the rosettes in summer, and are followed by dull, greyish green berries. Where temperatures fall below 5°C (41°F), grow in a cool or temperate greenhouse, or as houseplants; in warmer areas, they are excellent for a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light. Keep almost dry in winter; water moderately at all other times of the year. Excess water may cause rotting at temperatures below 5°C (41°F). Apply a low-nitrogen liquid fertilizer every 3–4 weeks from mid-spring to late autumn. Outdoors, grow in moderately fertile, lime-free, well-drained soil in full sun. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring. Detach and root rosettes in spring and summer.

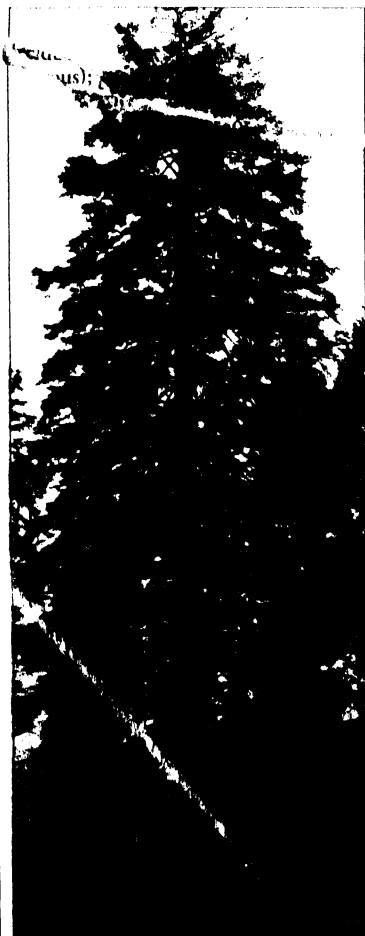
• **PESTS AND DISEASES** Mealybugs may be a problem at flowering time.

**A. brevifolia** ♀ syn. *A. chlorantha*. Terrestrial bromeliad with narrowly triangular, densely arranged leaves, 2cm (¾in) long, toothed only at the bases, and with sharp-pointed tips. Cylindrical green flowers, 3cm (1¼in) long, with a white basal scale to each petal, are produced in summer. ↑ 15cm (6in) or more, ↔ indefinite. S.W. Bolivia, N.W. Argentina. ☼ (min. 5°C/41°F)

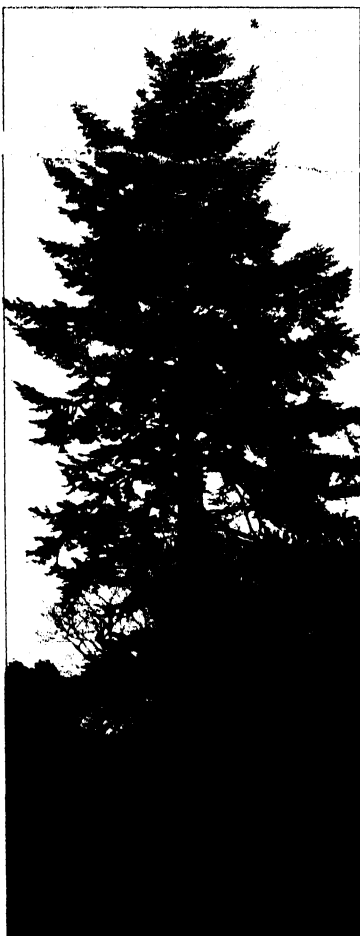
**A. chlorantha** see *A. brevifolia*.



*Abromeitiella brevifolia*



58 *Abies nordmanniana*



*Abies procera*



Abromeitiella lorentziana

**A. lorentziana** ■ Terrestrial bromeliad with triangular, spine-tipped, greyish green leaves, 4–15cm (1½–6in) long. In summer, bears long-tubed yellow, green-tipped flowers, to 3.5cm (1½in) long. Very similar to *A. brevifolia*, but with leaves that are more spiny, and with a white-fringed basal scale to each petal. ↑ 24cm (10in) or more, ↔ indefinite. N.W. Argentina. \* (min. 5°C/41°F)

† **Absinth** see *Artemisia absinthium*

## ABUTILON

Flowering maple, Indian mallow, Parlor maple

MALVACEAE

Genus of about 150 species of evergreen and deciduous shrubs, small trees, perennials, and annuals from tropical and subtropical regions of Africa, Asia, Australia, and North and South America. The leaves vary from simple to palmately 3- to 7-lobed. Abutilons are cultivated for their showy, mostly bell-, cup-, or bowl-shaped axillary flowers, some with highly coloured calyces and stamens. The flowers are usually solitary and pendent, occasionally borne in racemes or panicles, and often produced continuously from spring to autumn. Some abutilons also have attractive variegated foliage. In frost-prone areas, grow tender and half-hardy abutilons in a conservatory or cool or temperate greenhouse, or as houseplants; half-hardy species are also suitable for bedding in a sunny, sheltered border; train frost-hardy species of arching habit against a warm wall. In frost-free areas, grow abutilons in a shrub border.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1 or 6, as required, for deciduous shrubs; group 9 for evergreens. Pruning group 13 for wall-trained abutilons.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root softwood cuttings in spring, or greenwood cuttings in summer.

• **PESTS AND DISEASES** Whiteflies, red spider mites, mealybugs, and scale insects may be a problem, particularly under glass.



Abutilon 'Boule de Neige'

**A. 'Ashford Red'** ♀ Erect to spreading, evergreen shrub or small tree with broadly ovate to rounded, 3- to 5-lobed, pale to mid-green leaves, 10–20cm (4–8in) long. Bears nodding to pendent, bell-shaped red flowers, 6–8cm (2½–3in) long, from spring to autumn. ↑ to 3m (10ft). \*

**A. 'Boule de Neige'** ■♀ Vigorous, evergreen shrub or small tree, of erect to spreading habit, with broadly ovate to rounded, 3- to 5-lobed, mid-green leaves, 10–20cm (4–8in) long. From spring to autumn, bears pendent, bell-shaped white flowers, 6–8cm (2½–3in) long. ↑ to 4m (12ft), ↔ to 3m (10ft). \*

**A. 'Canary Bird'** ♀ Erect to spreading, evergreen shrub or small tree with broadly ovate to rounded, 3- to 5-lobed, mid-green leaves, 10–20cm (4–8in) long. From spring to autumn, produces pendent, bell-shaped, lemon-yellow flowers, 6–8cm (2½–3in) long. ↑ to 3m (10ft). \*

**A. globosum** of gardens see *A. x hybridum*.

**A. x hybridum** ♀ (*A. darwinii* x *A. pictum* and other species) syn. *A. globosum* of gardens. Erect to spreading, evergreen shrub or small tree with ovate to rounded, 3- to 5-lobed, pale to mid-green leaves, 10–20cm (4–8in) long, which may be variegated. Bears pendent, bowl- or bell-shaped, white, yellow, red, or orange flowers, 5–8cm (2–3in) long, from spring to autumn. ↑ to 5m (15ft), ↔ 2–5m (6–15ft). Garden origin. \*

**A. 'Kentish Belle'** ■♀ Evergreen or semi-evergreen shrub with slender, arching, dark purple-brown shoots and narrowly ovate, shallowly lobed, dark green leaves, to 4cm (1½in) long. Pendent, bell-shaped flowers, 6–8cm (2½–3in) long, with apricot-yellow petals and purple stamens, protruding from red calyces, are produced along the young shoots from summer to autumn. ↑ to 2.5m (8ft). \*\*

**A. 'Louise de Marignac'** see *A. 'Louis Marignac'*.

**A. 'Louis Marignac'** ♀ syn. *A. 'Louise de Marignac'*. Evergreen shrub or small tree, of erect to spreading habit, with ovate to rounded, 3- to 5-lobed, pale to mid-green leaves, 10–20cm (4–8in) long. Distinctive, pendent, bell-shaped, pale pink flowers, 6–8cm (2½–3in) long, are borne from spring to autumn. ↑ to 3m (10ft). \*

**A. megapotamicum** ■♀ (Trailing abutilon). Evergreen or semi-evergreen shrub with slender, arching shoots and



Abutilon 'Kentish Belle'

lance-shaped to ovate, bright green leaves, to 12cm (5in) long, sometimes shallowly lobed, and heart-shaped at the bases. Pendent, bell-shaped flowers, to 4cm (1½in) long, with yellow petals and purple stamens, protruding from red calyces, are borne along the young shoots from summer to autumn. ↑ to 2m (6ft). Brazil. \*\*.

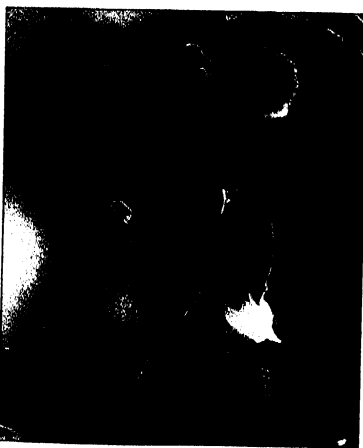
**'Variegatum'** has leaves heavily mottled yellow.

**A. x milleri** ♀ (*A. megapotamicum* x *A. pictum*). Evergreen shrub with thin, arching shoots and narrowly ovate, bright green leaves, to 12cm (5in) long, with 3 long-pointed lobes. Pendent, bell-shaped flowers, to 4cm (1½in) long, with dusky pink calyces surrounding petals of dark apricot, flushed dark red inside the bases, are borne along the young shoots from summer to autumn. ↑ to 2.5m (8ft). Garden origin. \*\*.

**A. 'Nabob'** ♀ Erect to spreading, evergreen shrub or small tree. Leaves are ovate to rounded, 3- to 5-lobed, 10–20cm (4–8in) long, and rich green in colour. From spring to autumn, bears large, nodding to pendent, open bowl-shaped, deep crimson flowers, to 7cm (3in) across. ↑ to 3m (10ft). \*

**A. ochsenii**. Fast-growing, upright, deciduous shrub, sometimes tree-like, with stout, grey-felted shoots and ovate, 3- to 5-lobed, dark green leaves, to 15cm (6in) long. Pendent, cup-shaped, violet-blue flowers, to 6cm (2½in) across, are borne on long stalks in late spring and early summer. ↑ 3m (10ft), ↔ 2.5m (8ft). Chile. \*\*.

**A. 'Patrick Syngé'** ♀ Very vigorous, evergreen shrub or small tree, of erect to spreading habit, bearing ovate to



Abutilon megapotamicum

rounded, 3- to 5-lobed, pale to mid-green leaves, 10–20cm (4–8in) long. Bears pendent, open bowl-shaped flowers, to 7cm (3in) across, with slightly reflexed, flame-red petals, from spring to autumn. ↑ to 3m (10ft). \*

**A. pictum** ♀ syn. *A. striatum* of gardens. Evergreen shrub or small tree, erect at first, then spreading, with ovate to rounded, 3- to 5-lobed, mid- to deep green leaves, to 15cm (6in) long. From spring to autumn, bears pendent, bell-shaped, yellow to orange flowers, 6cm (2½in) long, with dark red veins. ↑ 5m (15ft), ↔ 2–5m (6–15ft). Brazil. \*

**'Thompsonii'** ■♀ is erect, with 5- to 9-lobed leaves, mottled with yellow, and orange-flushed, salmon-pink flowers.

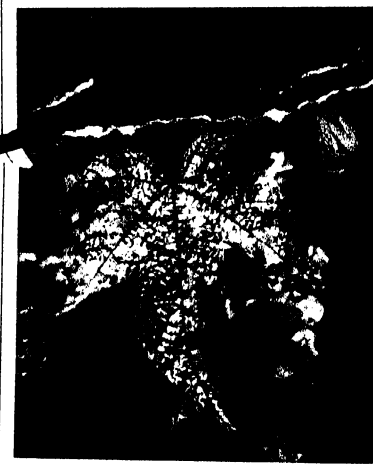
**A. 'Souvenir de Bonn'** ■♀

Vigorous, erect, evergreen shrub or small tree with ovate to rounded, 3- to 5-lobed, pale to mid-green leaves, 10–20cm (4–8in) long, margined and occasionally mottled creamy white. From spring to autumn, bears pendent, bowl-shaped flowers, to 7cm (3in) across, soft orange with darker veins. ↑ to 3m (10ft), ↔ 2–3m (6–10ft). \*

**A. striatum** of gardens see *A. pictum*.

**A. x suntense** (*A. ochsenii* x *A. vitifolium*). Fast-growing, upright, deciduous shrub with stout, grey-felted shoots and narrowly ovate, 3- to 5-lobed, grey-green leaves, to 12cm (5in) long, with toothed margins. In late spring and early summer, bears long-stalked, pendent, saucer-shaped, white to dark violet-blue flowers, to 6cm (2½in) across. ↑ 4m (12ft), ↔ 2.5m (8ft). Garden origin. \*\*.

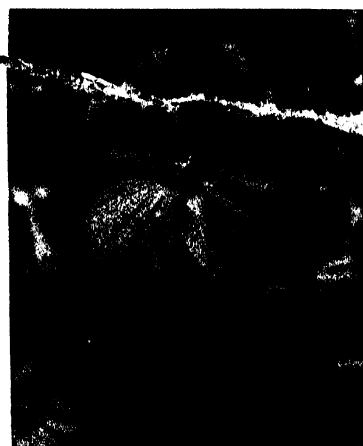
**'Geoffrey Gorer'** has sprays of purple-blue flowers.



Abutilon pictum 'Thompsonii'



Abutilon 'Souvenir de Bonn'

*Abutilon x suntense* 'Ralph Gould'*Abutilon x suntense* 'Violetta'60 *Abutilon vitifolium* var. *album*

'Gorer's White' has pure white flowers. 'Ralph Gould' ■ bears larger, flatter flowers, to 8cm (3in) wide. 'Violetta' ■ bears abundant dark violet-blue flowers. *A. vitifolium*. Fast-growing, upright, deciduous shrub, sometimes tree-like, with stout, grey-felted shoots, and ovate, shallowly 3- to 5-lobed, toothed, softly grey-hairy leaves, to 15cm (6in) long. Bears long-stalked, pendent, saucer-shaped, white to purple-blue flowers, to 8cm (3in) across, with long stamens, in early summer. ‡ 5m (15ft), ↔ 2.5m (8ft). Chile. \* \*. var. *album* ■ has white flowers. 'Veronica Tennant' ■ ♀ bears profuse, mauve flowers, to 9cm (3½in) across.

▷ *Abutilon*, *Trailing* see *Abutilon megapotamicum*

*Abutilon vitifolium* 'Veronica Tennant'

## ACACIA

Wattle

LEGUMINOSAE/MIMOSACEAE

Genus of at least 1,100 species of deciduous and evergreen trees, shrubs, and climbers, cultivated mainly for their flowers, and sometimes foliage. Acacias are found in tropical to warm-temperate regions of Central and South America, Kenya, southern Africa, Polynesia, and Australia. Leaves are alternate and 1- or 2-pinnate, or may be reduced to flattened leaf-stalks known as phyllodes, mostly lance-shaped to ovate and entire. Tiny flowers, often sweetly scented, with 4 or 5 minute petals and long stamens, form either spherical heads, 5-10mm (¼-½in) across, in racemes or panicles, or are borne in short, cylindrical spikes, 1-8cm (½-3in) long. They are usually produced in winter or spring. These are followed by varyingly shaped seed pods, mostly green, sometimes flushed with red or purple. In frost-prone areas, grow tender species in a cool or cold greenhouse and half-hardy species against a warm wall outdoors; in frost-free areas, grow in a border, or as specimen plants.

• **HARDINESS** Half hardy to frost tender.

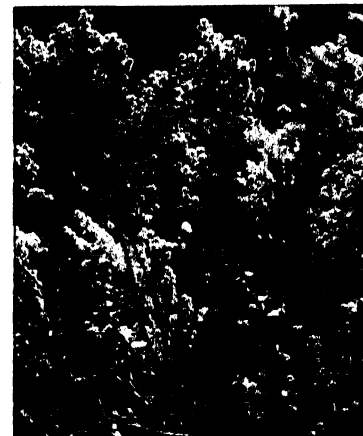
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, neutral to acid soil in a sheltered site in full sun. Pruning group 1 for deciduous acacias; group 8 for evergreen acacias; and group 13 for wall-trained plants. Most acacias resent hard pruning.

• **PROPAGATION** Sow seed in spring at not less than 18°C (64°F), after soaking in warm water until swollen. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*A. armata* see *A. paradoxa*.

*A. baileyana* ■ ♀ (Cootamundra wattle). Small tree or large shrub with spreading, dense branches and fern-like, 2-pinnate, evergreen, silvery grey leaves, to 5cm (2in) long, composed of 16-40 tiny, linear leaflets. Spherical, bright yellow flowerheads, 5mm (¼in) across, open in dense axillary racemes, 7-10cm (3-4in) long, from winter to spring. ‡ 5-8m (15-25ft), ↔ 3-6m (10-20ft). Australia (New South Wales). \*

*Acacia baileyana**Acacia cultriformis*

*A. cultriformis* ■ (Knife-leaf wattle). Erect, evergreen shrub, becoming bushy and spreading with age. Bluish green phyllodes are 1-2.5cm (½-1in) long, and lopsidedly oval to triangular. In spring, bears spherical, bright yellow flowerheads, 5mm (¼in) across, in axillary racemes, 4-8cm (1½-3in) long, which are crowded towards the tips of the stems. ‡ 2-4m (6-12ft). Australia (Queensland to New South Wales). \*

*A. dealbata* ■ ♀ (Mimosa, Silver wattle). Open, evergreen tree with fern-like, 2-pinnate, hairy leaves, 12cm (5in) long, each with 40-80 linear, glaucous to silvery leaflets. Terminal racemes, 10-20cm (4-8in) long, of spherical, fragrant yellow flowerheads, 5mm (¼in) across, are borne from winter to spring. ‡ 15-30m (50-100ft), ↔ 6-10m (20-30ft). Australia (New South Wales to Tasmania). \*

*A. decurrens* ♀ (Early black wattle, Green wattle). Spreading, evergreen large shrub or medium-sized tree with 2-pinnate, fern-like, dark green leaves, to 8cm (3in) long, composed of 60-80 linear leaflets. In spring, bears spherical, rich yellow flowerheads, 5mm (¼in) across, in profuse axillary racemes and panicles, 10-15cm (4-6in) long. ‡ 5-15m (15-50ft), ↔ 3-8m (10-25ft). Australia (New South Wales). \*

*A. drummondii* (Drummond's wattle). Open, spreading, evergreen shrub producing sparse, 1- or 2-pinnate leaves, 2-3cm (¾-1¼in) long, with up to 12 oblong, mid-green or slightly glaucous leaflets. During late winter and spring, bright to rich yellow flowerheads, in the form of cylindrical spikes, 1-3cm (½-1¼in) long and 8-10mm (⅜-½in) across, are produced at the tips of short side branches. ‡ 0.6-1.8m (2-6ft), ↔ 0.9-1.5m (3-5ft). Australia (Western Australia). \*

*Acacia dealbata*

## ACACIA

**A. floribunda** ♀ (White sallow wattle). Tall shrub or small tree, usually open in habit, but sometimes bushy. Evergreen, mid-green phyllodes, 5–12cm (2–5in) long, are linear to lance-shaped with slender, curved tips. Produces 1–3 spikes of loosely cylindrical, fragrant, pale yellow flowerheads, 2.5–6cm (1–2½in) long and 7–10mm (¼–½in) across, from each upper phyllode axil, in spring. †4–8m (12–25ft), ↔ 3–6m (10–20ft). Australia (Queensland to Victoria). \*

**A. mearnsii** ♀ (Black wattle). Spreading, evergreen tree producing 2-pinnate, fern-like leaves, 8–15cm (3–6in) long, with 18–40 tiny, linear, grey-green leaflets. Many spherical, richly fragrant, pale yellow flowerheads, 5mm (¼in) across, are borne in axillary racemes and panicles, 8–15cm (3–6in) long, in spring. †8–20m (25–70ft), ↔ 5–10m (15–30ft). Australia (New South Wales, Victoria). \*

**A. melanoxylon** ♀ (Blackwood). Evergreen tree or shrub with an erect to spreading habit and freely branching, angular stems. Tapered, deep matt to greyish green phyllodes, to 15cm (6in) long, are oblong to lance-shaped. From late winter to late spring, bears branched axillary racemes, 5–10cm (2–4in) long, of spherical, cream to pale yellow flowerheads, 1cm (½in) across. †5–25m (15–80ft), ↔ 4–12m (12–40ft). Australia (South Australia, Queensland to Tasmania). \*

**A. paradoxa** ♂ syn. *A. armata* (Hedge wattle, Kangaroo thorn). Evergreen shrub with erect, spiny stems and lance-shaped to oblong, deep green phyllodes, 1–3cm (½–1½in) long, often with strongly waved margins. Solitary, long stalked, spherical, golden yellow flowerheads, 1cm (½in) across, are produced from the phyllode axils in spring. †2–4m (6–12ft). Australia (New South Wales). \*

**A. pendula** ♀ (Weeping myall). Bushy, broad-headed, evergreen tree with pendent branches. Bears lance- or slightly sickle-shaped, greyish green to glaucous phyllodes, to 10cm (4in) long. Short, branching racemes, 2–5cm (¾–2in) long, of spherical, pale yellow flowerheads, 1cm (½in) across, are borne from the phyllode axils in winter. †6–10m (20–30ft), ↔ 6–7m (20–22ft). Australia (Queensland to Victoria). \*

**A. podalyriifolia** (Queensland silver wattle). Erect, loosely branched, evergreen, hairy shrub, often grown for its attractive foliage. Downy, white to blue-



*Acacia pravissima*

white phyllodes are ovate to oblong and 2–4cm (¾–1½in) long. Produces spherical, fragrant, rich yellow flowerheads, 1cm (½in) across, in terminal and axillary racemes, 7–15cm (3–6in) long, in spring. †3–5m (10–15ft), ↔ 3–4m (10–12ft). Australia (Queensland to New South Wales). \*

**A. pravissima** ♂ (Ovens wattle). Large shrub or small tree, open to dense in habit, with short, pendent branches, crowded with lopsidedly triangular, evergreen, grey-green phyllodes, 0.5–2cm (¼–¾in) long. Spherical, fragrant, bright yellow flowerheads, 5mm (¼in) across, are profusely borne in axillary racemes, 5–10cm (2–4in) long, in late winter and spring. †3–8m (10–25ft), ↔ 3–7m (10–22ft). Australia (New South Wales, Victoria). \*

**A. pulchella** (Western prickly Moses). Bushy, evergreen, prickly shrub with 2-pinnate leaves, 1–2cm (½–¾in) long, composed of 4–22 narrowly oblong, deep green leaflets. Solitary, spherical, golden yellow flowerheads, to 1cm (½in) across, are produced from the phyllode axils in winter and spring. †0.6–1.5m (2–5ft), ↔ 1–2m (3–6ft). Australia (Western Australia). \*

**A. retinodes** ♂ (Silver wattle, Swamp wattle). Spreading, large shrub or small tree with slender, angular, often pendent stems, and linear to narrowly lance-shaped, evergreen, bluish green phyllodes, 10–20cm (4–8in) long. Short axillary racemes, 2–4cm (¾–1½in) long, of spherical, lemon-yellow flowerheads, 5mm (¼in) across, are produced periodically throughout the year. †4–8m (12–25ft), ↔ 3–7m (10–22ft).



*Acacia retinodes*



*Acacia paradoxa*

Australia (South Australia, Victoria, Tasmania). ☼ (min. 3–5°C/37–41°F)

**A. verticillata** ♀ (Prickly Moses). Tall, bushy, evergreen shrub or sometimes small tree, bearing linear, spine-tipped, dark green phyllodes, 2cm (¾in) long, usually in whorls, or scattered. Bears panicles, to 1.5cm (½in) long, of 1–3 ovoid to rod-shaped, lemon-yellow flowerheads, 3cm (1¼in) long, in spring. †2–8m (6–25ft), ↔ 3–8m (10–25ft). Australia (South Australia, New South Wales to Tasmania). \*

▷ **Acacia**,

**False see** *Robinia pseudoacacia*

**Mop-head see** *Robinia pseudoacacia* 'Umbraculifera'

**Rose see** *Robinia hispida*

## ACAENA

*Bidi-bidi*, *New Zealand burr*

ROSACEAE

Genus of about 100 species of mainly evergreen, creeping, mat-forming perennials and semi-prostrate subshrubs, widely distributed over the S. hemisphere, most from open habitats at high altitudes. Acaenas are cultivated for their variously coloured, narrowly oblong-ovate, pinnate leaves, and petalless flowers. These are produced in stalked spikes or dense, ovoid or spherical heads, which develop into colourful, spiny burrs in mid- or late summer. The prostrate stems root where they touch the ground and rapidly form dense mats of foliage. The burrs may be a nuisance to pets. *A. microphylla* 'Kupferteppich' is an effective and restrained rock garden plant. Other acaenas are good – although invasive – ground cover plants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in sun or partial shade. Pull out rooted stems to restrict growth.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Separate rooted stems from the parent plant in autumn or early spring. Take soft-wood cuttings in late spring.

• **Pests and diseases** Trouble free.

**A. anserinifolia** of gardens see

*A. novae-zelandiae*.

**A. 'Blue Haze'** ♂ syn. *A. 'Pewter'*.

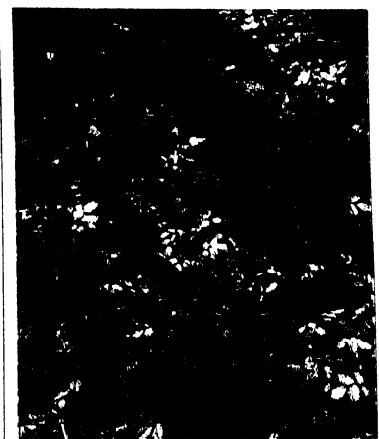
Creeping, vigorous, evergreen perennial producing pinnate leaves, to 8cm (3in) long, grey-blue, shaded bronze at the margins, with 9–13 oval leaflets.



*Acaena* 'Blue Haze'

## ACALYPHA

A



*Acaena microphylla* 'Kupferteppich'

Spherical flowerheads are followed by dark red burrs, to 2cm (¾in) across, with pinkish red spines, in midsummer. †10–15cm (4–6in), ↔ 1m (3ft). \*\*\*

**A. caerulea** see *A. caesiiglauca*.

**A. caesiiglauca**, syn. *A. caerulea*.

Creeping, usually evergreen perennial with pinnate, glaucous blue leaves, to 10cm (4in) long, divided into 7–13 obovate leaflets. Spherical flowerheads are followed by reddish brown burrs, to 2cm (¾in) across, in late summer. †8–12cm (3–5in), ↔ to 1m (3ft). New Zealand. \*\*\*

**A. microphylla** 'Copper Carpet' see

*A. microphylla* 'Kupferteppich'.

**A. microphylla** 'Kupferteppich' ♂

syn. *A. microphylla* 'Copper Carpet'.

Compact, creeping, usually evergreen perennial with pinnate bronze leaves, to 3cm (1¼in) long, with 9–15 rounded leaflets. Small, spherical flowerheads are followed by bright red burrs, 2.5–3cm (1–1¼in) across, in late summer. †10–15cm (4–6in), ↔ to 60cm (24in).

**A. novae-zelandiae**, syn.

*anserinifolia* of gardens.

Creeping, evergreen perennial producing pinnate, grey-green or rich green leaves, to 10cm (4in) long, with 9–15 oblong leaflets. Small, ovoid to spherical flowerheads are followed by red burrs, 1.5cm (½in) across, in late summer. †1 to 15cm (6in), ↔ 1m (3ft) or more. New Zealand. \*\*\*

**A. 'Pewter'** see *A. 'Blue Haze'*.

## ACALYPHA

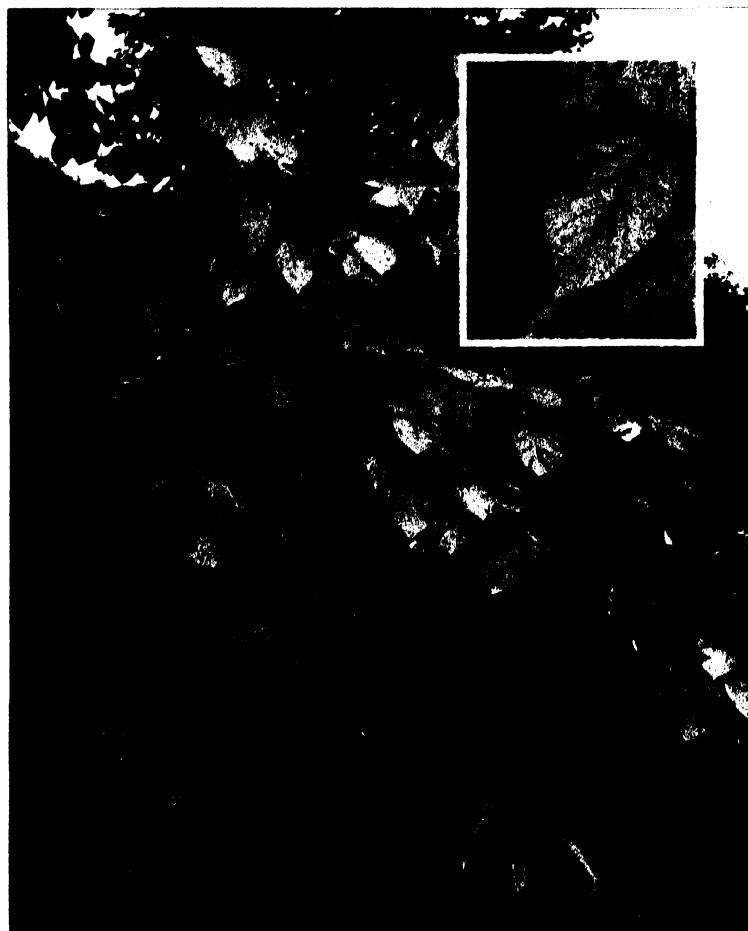
EUPHORBACEAE

Genus of about 430 species of evergreen shrubs and trees, and annuals, grown for their foliage and flowers. They are found in tropical and subtropical regions, from tropical woodland to open savannah. Their alternate leaves are oval to elliptical, simple, and toothed. Tiny, petalless flowers are borne in terminal or axillary, catkin-like racemes, either small and insignificant, or large and brightly coloured. Where temperatures fall below 10–13°C (50–55°F), grow in a warm greenhouse or as a houseplant. In warmer areas, grow in a border, or use for hedging or as specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in full or filtered light. Water freely in the growing season, applying a balanced liquid fertilizer monthly during summer; water moderately in winter. Pot on or





*Acalypha wilkesiana* (inset: leaf colour variation)

top-dress in early spring or autumn. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in sun or partial shade. Pruning group 9.

• **PROPAGATION** Divide rhizomatous or clump-forming species in spring. Root softwood cuttings in early spring, or semi-ripe cuttings in late summer, with bottom heat.

• **PESTS AND DISEASES** Scale insects, mealybugs, whiteflies, and red spider mites may be a problem under glass.

**A. hispida** ♀ (Red-hot cat's tail). Erect shrub, usually sparsely branched, with oval, rich green leaves, 10–25cm (4–10in) long. Bears thick, fluffy, deep crimson or bright red catkins, 25–50cm (10–20in) long, periodically during the year. † 2–3m (6–10ft), ↔ 1–2m (3–6ft). Malaysia, New Guinea. ☼ (min. 13°C/55°F). 'Alba' has off-white catkins.

**A. wilkesiana** ■ (Copperleaf). Spreading shrub, with oval, multi-coloured, mottled, and often variegated leaves, 10–20cm (4–8in) long. Bears catkin-like racemes, 10–20cm (4–8in) long, usually green- or copper-tinted, and often hidden among the leaves, periodically during the year. † to 2m (6ft), ↔ 1–2m (3–6ft). Pacific islands. ☼ (min. 10°C/50°F). 'Marginata' has leaves with crimson to white margins. 'Musaica' has foliage heavily mottled red and orange.

▷ *Acanthocalycium aurantiacum* see *Echinopsis thionantha*

▷ *Acanthocalycium violaceum* see *Echinopsis spiniflora*

▷ *Acanthocalyx* see *Morina*

## ACANTHOLIMON

PLUMBAGINACEAE

Genus of about 120 species of evergreen, mat-forming perennials, found in open, rocky areas at high altitudes, from the E. Mediterranean to C. Asia. They are grown for their dense, spiny rosettes of needle-like leaves, 1–7cm (½–3in) long, and short spikes or panicles of shallowly funnel-shaped flowers, borne in early and midsummer. Suitable for a scree bed, or a wall, although in cold climates with high winter rainfall, most species are best grown in an alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Outdoors, grow in moderately fertile, very well-drained soil in full sun; only *A. glumaceum* tolerates winter wet. Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.1) and sharp grit, with additional limestone chippings; top-dress with grit. Established plants resent disturbance.

• **PROPAGATION** Sow seed as soon as ripe in containers in an open frame. Root softwood cuttings in spring. Layer shoot tips in sandy potting compost in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**A. glumaceum** ■ Slow-growing perennial with crowded rosettes of stiff, linear-lance-shaped, spiny, dark green leaves, to 2.5cm (1in) long. In summer, dense spikes of 3–8 deep rose-pink flowers are produced on stems 2.5cm (1in) long. † 5–8cm (2–3in).



*Acantholimon glumaceum*

↔ 20–30cm (8–12in). Caucasus, Armenia, Turkey. \*\*\*

**A. venustum**. Slow-growing perennial with rosettes of linear-lance-shaped, spiny, silver-margined, blue-grey leaves, 1.5–4cm (½–1½in) long. Bears spikes of up to 20 pink flowers on stems to 3cm (1¼in) long, in midsummer. † 5–8cm (2–3in), ↔ 15–20cm (6–8in). Turkey, Syria, Iraq, Iran. \*\*\*

▷ *Acanthopanax* see *Eleutherococcus*

**A. ricinifolius** see *Kalopanax septemlobus*

**A. sieboldianus** see *Eleutherococcus sieboldianus*

## ACANTHOPHOENIX

Barbel palm

ARECACEAE/PALMAE

Genus of one very variable species of single-stemmed palm from coastal woodland in the Mascarene Islands in the Indian Ocean. Pinnate leaves are produced in a terminal tuft on the stem, and small, separate male and female flowers are borne in panicles just beneath them. In cool climates, grow young specimens as foliage plants in a conservatory or warm greenhouse. In warmer regions, barbel palms are fine specimen trees for growing outdoors.

• **HARDINESS** Frost tender.

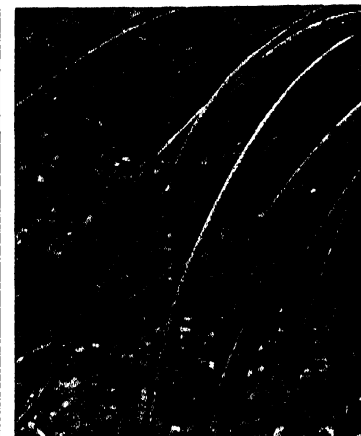
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with additional sharp sand, in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pot on or top-dress in spring. Outdoors, they are best grown in fertile, sandy soil in full sun.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**A. crinita** see *A. rubra*.

**A. rubra** ♀ syn. *A. crinita*. Elegant palm with a slender trunk, swollen at the base and topped by a prominent crownshaft. The pinnate leaves, 2–4m (6–12ft) long, have prickly stalks and midribs, and are divided into many crowded, linear, rich green leaflets with cleft tips. Small, inconspicuous, dull white, yellow, pink, red, or purple flowers are produced in panicles, to 45cm (18in) long, during summer. † to 18m (60ft), ↔ 4–8m (12–25ft). Mascarene Islands. ☼ (min. 10–13°C/50–55°F)



*Acanthostachys strobilacea*

## ACANTHOSTACHYS

Prickle ear

BROMELIACEAE

Genus of one species of stemless, evergreen, epiphytic or rock-dwelling perennial (bromeliad) occurring at altitudes above 800m (2,600ft) in Brazil, Paraguay, and N. Argentina. Cone-shaped inflorescences are borne from the centre of loose rosettes of arching, slender leaves, and develop into edible, sweet-tasting fruit resembling small pineapples. Where temperatures fall below 10°C (50°F), grow in a warm greenhouse or as a houseplant; in warmer areas, grow *A. strobilacea* in a border or epiphytically.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow epiphytically or in standard epiphytic bromeliad compost, in full light. Water moderately from spring to autumn; keep moist in winter. Apply a low-nitrogen granular fertilizer 3 or 4 times when in growth. Outdoors, grow in well-drained, fertile, humus-rich soil in an open, sunny site. See also p.47.

• **PROPAGATION** Sow seed at 27°C

(81°F) as soon as ripe. Sever offsets in early spring; grow on new plantlets *in situ* or pot up separately.

• **PESTS AND DISEASES** Vulnerable to scale insects, especially before flowering.

**A. strobilacea** ■ Epiphytic bromeliad with short rhizomes and open rosettes of a few linear, spiny, white-scaly, bright green leaves, to 1m (3ft) long. In summer, tubular yellow flowers, 1cm (½in) long, are borne in dense, cone-shaped inflorescences, on erect, leafless stems, 50cm (20in) long, just above 2 leaf-like, widely spreading, reddish orange bracts. †↔ to 1m (3ft). Brazil, Paraguay, Argentina. ☼ (min. 10°C/50°F)

## ACANTHUS

Bear's breeches

ACANTHACEAE

Genus of about 30 species of perennials from dry, rocky sites, mostly in the Mediterranean. They are vigorous, architectural plants, with striking foliage and flowers. The dark green, oblong-lance-shaped to broadly ovate, usually basal leaves, up to 90cm (36in) long, are variously lobed and toothed, sometimes spiny. The tubular, 2-lipped flowers are



generally 3.5–5cm (1½–2in) long, usually with spiny bracts and sepals in combinations of white, green, yellow, pink, or purple. They are borne, sometimes in ranks of 4, in erect, terminal racemes, to 1.2m (4ft) tall. Grow acanthus in a spacious border; they are also good for cutting or drying. In frost-prone areas, grow *A. montanus* in a cool or temperate greenhouse or conservatory.

• **HARDINESS** Fully hardy to frost tender. *A. montanus* will withstand short periods at 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full or filtered light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in any soil in sun or partial shade, although they thrive in deep, fertile, well-drained loam.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring or autumn. Take root cuttings in winter.

• **PESTS AND DISEASES** Powdery mildew may be a problem.

*A. balcanicus* see *A. hungaricus*.

*A. dioscoridis*. Variable perennial with a fleshy, running rootstock which produces rosettes of narrowly lance-shaped, lobed, spiny, dark green leaves, 8–20cm (3–8in) long. Racemes, 20–25cm (8–10in) long, of purplish pink or rich pink flowers, with green bracts, are borne from late spring to late summer. ↑ 20–40cm (8–16in), ↔ 90cm (36in). Turkey, Lebanon, W. Iraq, W. Iran. \*\*\*. **var. perringii** has pinnatifid, spiny, grey-green leaves; ↑ 30–40cm (12–16in), ↔ 60cm (24in); Turkey (S. Anatolia).

*A. hirsutus* ■ Clump-forming perennial with slender, semi-erect, lance-shaped, pinnatifid, weakly spiny, dark green leaves, 25–35cm (10–14in) long. Racemes, 15cm (6in) long, of pale yellow or greenish white flowers with hairy, weakly spiny, yellowish green bracts, are produced from late spring to midsummer. ↑ 15–35cm (6–14in), ↔ 30cm (12in). Turkey. \*\*\*

*A. hirsutus* var. *syriacus* see *A. syriacus*.

*A. hungaricus* ■ syn. *A. balcanicus*, *A. longifolius*. Clump-forming perennial with oblong-ovate, dark green leaves, 60–90cm (24–36in) long, with deep lobes narrowed at the bases, and wide, winged midribs between the main lobes.



*Acanthus hungaricus*

Racemes, 65–70cm (24–28in) long, of white or pale pink flowers with purple-shaded bracts, are produced in early and midsummer. ↑ 60–120cm (2–4ft), ↔ 60–90cm (24–36in). Balkans. \*\*\*

*A. longifolius* see *A. hungaricus*.

*A. mollis* ■ Clump-forming perennial with obovate, deeply lobed, dark green leaves, shiny above, to 1m (3ft) long. In late summer, white flowers with purple-shaded bracts are borne in 1m (3ft) long racemes, often with purple-tinted stems. ↑ 1.5m (5ft), ↔ 90cm (36in). S.W. Europe, N.W. Africa. \*\*\*

**Latifolius Group** includes variants with broad, shallowly lobed, conspicuously veined, shiny, rich green leaves, to 1.2m (4ft) long.

*A. montanus* (Mountain thistle).

Shrubby perennial with few branches and oblong lance-shaped, pinnatifid, spiny, leathery leaves, 30cm (12in) long, that are glossy, dark green, with silver markings and wavy margins. Bears racemes, 23–30cm (9–12in) long, of rose-pink or pale mauve flowers with spiny calyces in late summer and early autumn. ↑ 2m (6ft), ↔ 60cm (24in). W. Africa. \*

*A. spinosissimus* see *A. spinosus* Spinosissimus Group.

*A. spinosus* ■ ♀ Variable, clump-forming perennial producing narrowly oblong-ovate, arching, dark green leaves, to 1m (3ft) long, often deeply cut to the midribs, with spiny margins. Tall racemes, to 1m (3ft) long, of pure white flowers with purple bracts are borne from late spring to midsummer. ↑ 1.5m (5ft), ↔ 60–90cm (24–36in). Italy to W. Turkey. \*\*\*. **Spinosissimus**



*Acanthus spinosus*

**Group**, syn. *A. spinosissimus*, includes variants with deep greyish green leaves, 50cm (20in) long, deeply cut to the bold white midribs, and with white-spiny margins: ↑ 1.2m (4ft), ↔ 60cm (24in).

*A. syriacus*, syn. *A. hirsutus* var. *syriacus*. Clump-forming perennial with clusters of long-stalked, pinnatifid, lance-shaped, spiny, hairy, dark green leaves, to 20cm (8in) long. Racemes, 15–23cm (6–9in) long, of greenish white flowers with purple-shaded bracts, are borne from late spring to midsummer. ↑ 60cm (24in). Turkey, Syria, Jordan, Israel, Lebanon. \*\*\*

## ACCA syn. FEIJOA

MYRTACEAE

Genus of 2 or 3 species of evergreen, opposite-leaved shrubs occurring in dry upland slopes, scrub, and open woodland in subtropical South America. They are cultivated for their attractive, shallowly cup-shaped flowers, which are produced singly from the upper leaf axils in midsummer. In hot climates, edible fruits may also be produced. To obtain fruit in areas where temperatures fall below 5°C (41°F), grow in a cool greenhouse. *A. sellowiana* is tolerant of salt and drought, and may be used as hedging in mild coastal areas.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. During the growing season, water freely and apply a balanced liquid fertilizer every 4 weeks; water plants more sparingly in winter. Outdoors,

grow in light, well-drained soil in full sun in a sheltered site.

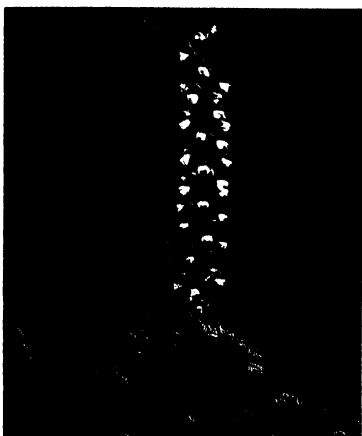
• **PROPAGATION** Sow seed at 13–15°C (55–61°F) as soon as ripe. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*A. sellowiana* ■ (Pineapple guava). Bushy shrub with elliptic-oblong, grey-green leaves, to 7cm (3in) long, white-woolly beneath. Flowers, 4cm (1½in) across, with long red stamens, purple-red petals, white on the margins and reverse, are produced singly from the upper leaf axils in midsummer, followed in warm climates by ovoid, red-tinged, green berries, 5cm (2in) long. ↑ 2m (6ft), ↔ 2.5m (8ft). Brazil, Uruguay. \*\*\*. 'Variegata' has leaves that are margined creamy white.



*Acanthus hirsutus*



*Acanthus mollis*



*Acca sellowiana*

A

## ACER

Maple

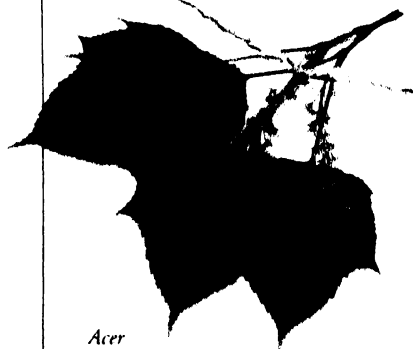
ACERACEAE

Genus of about 150 species of evergreen and deciduous trees and shrubs from Europe, N. Africa, Asia, and North and Central America. Mainly woodland plants, they either form large trees or grow as part of the understorey. The opposite leaves are usually shallowly to deeply palmately lobed, but in some species and cultivars are unlobed or, more rarely, 3-palmate or pinnate. The small, often greenish yellow flowers are borne in generally pendent, occasionally upright racemes, panicles, or umbels, in early or mid-spring, and are followed by usually brown, occasionally colourful, winged fruits, joined in pairs. Maples are valued for their foliage, which may be variegated or have good autumn colour; some also have attractive bark. Grow large maples as specimen trees; smaller trees and those of shrubby habit are excellent for gardens of any size. Maples are also suitable for growing in large containers, although doing so will restrict their growth.

• **HARDINESS** Most are fully hardy; some are frost hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil, in sun or partial shade. Shelter cultivars of *A. palmatum* from cold winds and from late frosts, which may kill the young leaves. Where temperatures fall below -10°C (14°F), mulch the roots of *A. palmatum* and *A. japonicum* and their cultivars in autumn. Pruning group 1, but prune only from late autumn to midwinter. Train large species as central leader standards.

• **PROPAGATION** Sow seed *in situ* or in containers outdoors as soon as ripe. Graft in late winter; bud in late summer.



*Acer capillipes*



*Acer cappadocicum*



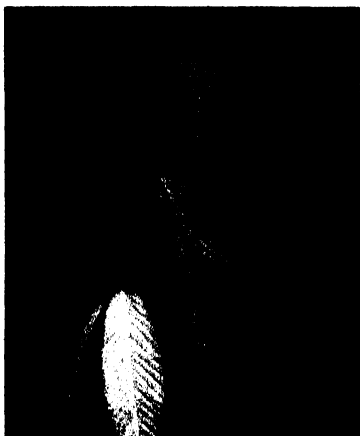
*Acer cappadocicum* subsp. *lobelii*

• **PESTS AND DISEASES** Prone to aphids, mites, scale insects, caterpillars, tar spot, *Verticillium* wilt, leaf scorch, and honey fungus. In several species, mites may cause the production of galls.

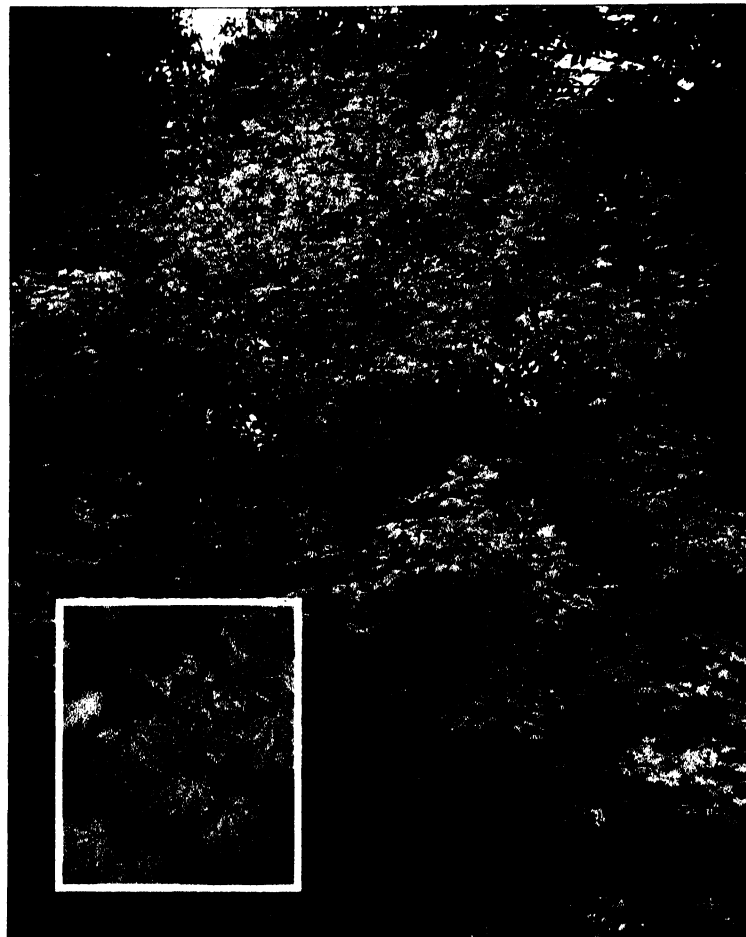
*A. buergerianum* ♀ (Three-toothed maple, Trident maple). Spreading, deciduous tree with obovate, 3-lobed, glossy leaves, to 9cm (3½in) long, dark green above, blue-green beneath, turning orange and red in late autumn and early winter. Bears erect racemes of pale yellow flowers. Ideal in a small garden or large containers; also popular for bonsai work. ↑ 10m (30ft), ↔ 8m (25ft). E. China, Korea, Japan. \*\*\*  
*A. caesium* subsp. *giraldii* see *A. giraldii*

*A. campestre* 'Schuerinii' ♀ Broadly upright, narrow-crowned, deciduous tree with ovate to rounded, 5-lobed leaves, to 6cm (2½in) long, reddish purple when young, dark green by late summer. Bears erect umbels of green flowers, followed by spreading fruit wings, which ripen to red. ↑ 8m (25ft), ↔ 4m (12ft). \*\*\*

*A. capillipes* ♀ (Snake-bark maple). Deciduous tree with spreading,



*Acer carpinifolium*



*Acer circinatum* (inset: autumn leaf colour)

arching branches, streaked green and white, and with red young shoots. Broadly ovate, mid- to dark green leaves, to 12cm (5in) long, with 3 pointed lobes, turn bright red in autumn. Bears pendent racemes of greenish white flowers. ↑ 10m (30ft). Japan. \*\*\*  
*A. cappadocicum* ♀ (Cappadocian maple, Caucasian maple). Spreading, deciduous tree with broadly ovate, bright green leaves, to 10cm (4in) long, with 5-7 tapered lobes, which turn yellow in autumn. Bears erect umbels of pale yellow flowers. ↑ 20m (70ft), ↔ 15m (50ft). Caucasus, N. Turkey, Iran, Himalayas, China. \*\*\*  
'Aureum' ♀ has bright yellow young leaves, which turn green in summer, and yellow again in autumn; ↑ 15m (50ft), ↔ 10m (30ft). subsp. *lobelii* ♀-♂ syn. *A. lobelii* (Lobel's maple), is narrow, with upright branches and dark green leaves, 8-13cm (3-5in) long, each with 3-5 wavy-margined lobes, on glaucous shoots; ↑ 20m (70ft), ↔ 6m (20ft); Italy. var. *mono* see *A. mono*. 'Rubrum' ♀ produces dark red young leaves on red shoots.

*A. carpinifolium* ♀ (Hornbeam maple). Bushy, spreading, deciduous tree with upright branches and simple, ovate to ovate-oblong, tapered, sharply toothed, prominently veined, mid-green leaves, to 15cm (6in) long, which turn golden brown in autumn. Green flowers are borne in short, pendent racemes. ↑ 10m (30ft). Japan. \*\*\*

*A. circinatum* ♀ (Vine maple). Spreading, bushy, sometimes shrubby, deciduous tree with rounded, deeply 7- to 9-lobed, light green leaves, to 13cm

(5in) long, which turn orange and red in autumn. Bears pendent umbels of small, purple and white flowers. ↑ 5m (15ft), ↔ 6m (20ft). W. North America. \*\*\*  
*A. cissifolium* ♀ Spreading, deciduous tree with deeply toothed, 3-palmate, dark green leaves, with oval or obovate leaflets, each to 8cm (3in) long, that open bronze, become dark green, then turn brilliant red in early autumn. Bears upright racemes of pale yellow flowers. Acid or neutral soils give the best autumn colour. ↑ 8m (25ft), ↔ 10m (30ft). Japan. \*\*\*. subsp. *henryi* see *A. henryi*.

*A. crataegifolium* ♀ (Hawthorn maple). Spreading, deciduous tree with green- and white-streaked bark and arching branches. Ovate, shallowly 3-lobed, dark green leaves, to 8cm (3in)



*Acer crataegifolium* 'Veitchii'

*Acer davidii* 'George Forrest'*Acer davidii* 'Madeline Spitta'

long, with toothed margins, turn orange in autumn. Produces pale yellow flowers in upright racemes.  $\pm 10$ m (30ft). Japan. \*\*\*. 'Veitchii'  $\square$  has white-mottled leaves, sometimes also pink-mottled, which turn pink and purple in autumn;  $\pm 6$ m (20ft).

*A. dasycarpum* see *A. saccharinum*.

*A. davidii*  $\square$  (Père David's maple, Snake-bark maple). Variable, deciduous tree with arching branches and green-and white-streaked bark. The ovate, unlobed or shallowly lobed, mid-green leaves, to 15cm (6in) long, turn orange to yellow in autumn, when pink-brown fruit are also borne. Bears pendent racemes of pale yellow flowers.  $\pm 15$ m (50ft). China. \*\*\*. 'Ernest Wilson' has pale green leaves that turn bright orange in autumn;  $\pm 8$ m (25ft),  $\pm 10$ m

*Acer griseum**Acer heldreichii* subsp. *trautvetterii*

(30ft). 'George Forrest'  $\square$   $\square$  is broadly upright, with large, mid- to dark green leaves, to 20cm (8in) long, but with poor autumn colour. **subsp. *grosseri***  $\square$  syn. *A. grosseri*, *A. grosseri* var. *hersii*, *A. hersii*, has boldly streaked bark and triangular-ovate leaves, each with 3 shallow side lobes, which turn orange or yellow in autumn; N. China. 'Madeline Spitta'  $\square$  is narrowly erect, with glossy, dark green leaves, orange-red in late autumn;  $\pm 12$ m (40ft),  $\pm 5$ m (15ft). 'Serpentine'  $\square$  has leaves to 10cm (4in) long and dark purple shoots. *A. 'Dissectum'* see *A. palmatum* var. *dissectum*.

*A. forrestii* see *A. pectinatum* subsp. *forrestii*.

*A. ginnala* see *A. tataricum* subsp. *ginnala*.

*A. giraldui*  $\square$  syn. *A. caesium* subsp. *giraldui*. Spreading, deciduous tree with glaucous young shoots and broadly ovate, 3-lobed, glossy, dark green leaves, 13cm (5in) long, glaucous beneath, borne on stout red leaf-stalks. Produces greenish white flowers in upright umbels.  $\pm 15$ m (50ft). C. China. \*\*

*A. grandidentatum* see *A. saccharum* subsp. *grandidentatum*.

*A. griseum*  $\square$   $\square$  (Paper-bark maple). Slow-growing, spreading, deciduous tree with peeling, orange-brown bark. Dark green, 3-palmate leaves, to 10cm (4in) long, have ovate leaflets, and turn orange to red and scarlet in autumn. Bears yellow flowers in pendent racemes.  $\pm 10$ m (30ft). C. China. \*\*\*

*A. grosseri* see *A. davidii* subsp. *grosseri*.

*A. grosseri* var. *hersii* see *A. davidii* subsp. *grosseri*.

*Acer henryi**Acer japonicum* 'Aconitifolium'

*A. heldreichii* subsp. *trautvetterii*  $\square$   $\square$  (Greek maple, Red bud maple). Upright, deciduous tree with heart-shaped, deeply 5-lobed, dark green leaves, 10–15cm (4–6in) long, which open from red buds and turn dark yellow in autumn. Erect umbels of yellow flowers are followed by fruit wings that ripen to red.  $\pm 15$ m (50ft). Caucasus, N. Turkey. \*\*\*

*A. henryi*  $\square$   $\square$  syn. *A. cissifolium* subsp. *henryi*. Spreading, deciduous tree producing 3-palmate, dark green leaves, to 10cm (4in) long, with entire or nearly entire, elliptic leaflets, which open bronze and turn brilliant red in early autumn. Produces green flowers in slender, pendent racemes.  $\pm 8$ m (25ft),  $\pm 10$ m (30ft). C. China. \*\*\*

*A. hersii* see *A. davidii* subsp. *grosseri*.

*A. x hillieri* 'West Hill'  $\square$  Rounded, deciduous tree with deeply heart-shaped leaves, 10–20cm (4–8in) long, with 5–7 tapered lobes, slightly glossy, mid-green, turning yellow in autumn. Bears upright umbels of yellow-green flowers.  $\pm 10$ m (30ft). \*\*\*

*A. japonicum*  $\square$  (Full-moon maple, Japanese maple). Spreading, bushy, deciduous tree or shrub with rounded, 7- to 11-lobed, toothed, mid-green leaves, 15–20cm (6–8in) long, turning red in autumn. Bears upright umbels of conspicuous, small, red-purple flowers.  $\pm 10$ m (30ft). Japan. \*\*\*

'Aconitifolium'  $\square$   $\square$  syn. 'Filicifolium', 'Laciniatum', has deeply lobed leaves and is very free flowering;  $\pm 5$ m (15ft),  $\pm 6$ m (20ft). 'Aureum' see *A. shirasawanum* 'Aureum'. 'Filicifolium' see 'Aconitifolium'. 'Laciniatum' see 'Aconitifolium'. 'Vitifolium'  $\square$   $\square$  has large, shallowly lobed leaves, 5–25cm (2–10in) long, with coarsely toothed margins, turning dark red in autumn.

*A. laxiflorum*  $\square$  syn. *A. pectinatum* subsp. *laxiflorum*. Rounded, deciduous

*Acer japonicum* 'Vitifolium'

tree with arching branches and green-and white-streaked bark. Simple, ovate, leathery, glossy, mid-green leaves, to 8cm (3in) long, on red leaf-stalks, turn orange in autumn. Bears brownish green flowers in slender, pendent racemes.

$\pm 10$ m (30ft). W. China. \*\*\*

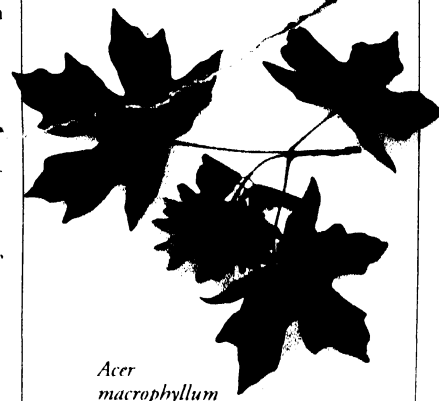
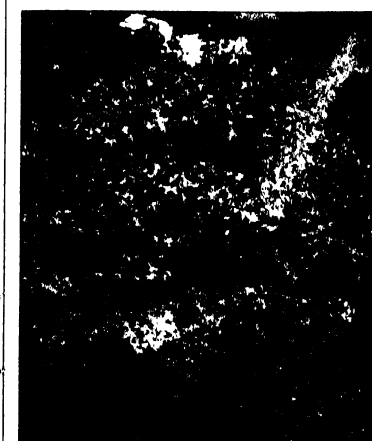
*A. lobelii* see *A. cappadocicum* subsp. *lobelii*.

*A. macrophyllum*  $\square$   $\square$  (Big-leaf maple, Oregon maple). Vigorous, deciduous tree with broadly ovate, deeply 5-lobed, glossy, dark green leaves, 20–30cm (8–12in) long, which turn orange-brown in autumn. Yellow-green flowers, in long, pendent racemes, are followed by large, bristly, winged fruit.  $\pm 20$ m (70ft). W. North America. \*\*\*

*A. maximowiczianum*  $\square$  syn. *A. nikoense* (Nikko maple). Rounded, deciduous tree producing 3-palmate leaves, to 10cm (4in) long, with oval, entire or nearly entire leaflets, dark green above, glaucous and softly hairy beneath, which turn red in autumn. Bears yellow flowers in small umbels.  $\pm 12$ m (40ft). Japan, China. \*\*\*

*A. micranthum*  $\square$   $\square$  Deciduous tree or shrub with upright, arching branches and red young shoots. Ovate, deeply 5-lobed, mid-green leaves, 5–7cm (2–3in) long, with lobes tapered and sharply toothed, turn yellow and red in autumn. Produces pendent racemes of greenish white flowers.  $\pm 10$ m (30ft),  $\pm 8$ m (25ft). Japan. \*\*\*

*A. mono*  $\square$   $\square$  syn. *A. cappadocicum* var. *mono*, *A. pictum*. Rounded, deciduous tree with almost heart-shaped leaves, 8–15cm (3–6in) long, each with 5–7 tapered lobes, bright green, turning yellow in autumn. Bears erect umbels of greenish yellow flowers.  $\pm 12$ m (40ft). China, Korea, Japan. \*\*\*

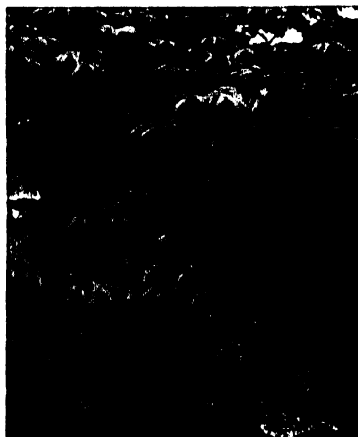
*Acer macrophyllum**Acer mono*

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*Acer negundo* 'Flamingo'

**A. monspessulanum** ♀ (Montpellier maple). Variable, bushy, deciduous shrub or small, rounded tree bearing leathery, ovate, glossy, dark green leaves, 3–5cm (1¼–2in) long, with 3 rounded lobes. Bears a profusion of yellow-green flowers in pendent racemes, followed by red-winged fruit in midsummer. ♂↔ 8m (25ft). Mediterranean. \*\*\*

**A. negundo** ♀ (Ash-leaved maple, Box elder). Fast-growing, upright, deciduous tree, mostly cultivated in the variants described below. Pinnate leaves, 20cm (8in) or more long, have 3–7 (sometimes 9) ovate, light green leaflets, to 10cm (4in) long, turning yellow in autumn. Greenish yellow flowers are borne in pendent racemes, males and females on separate plants. ♂ 15m (50ft), ↔ 10m (30ft). North America. \*\*\*

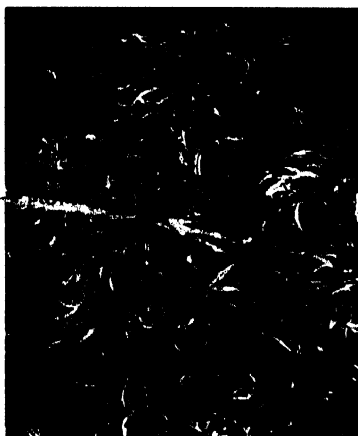
*Acer negundo* 'Variegatum'*Acer palmatum* f. *atropurpureum**Acer palmatum* 'Bloodgood'

'**Argenteovariegatum**' see 'Variegatum'. '**Auratum**' ♀ is slow growing, with bright yellow leaves in spring, becoming paler in summer; ♂↔ 8m (25ft).

'**Flamingo**' ♂ ♀ has glaucous shoots and leaves with broad pink margins that turn white in summer. '**Variegatum**' ♂ ♀ syn. 'Argenteovariegatum', has leaves broadly margined with white. var. '**violaceum**' ♀ has very glaucous shoots and long, hanging tassels of tiny, purple-violet flowers.

**A. nikoense** see *A. maximowiczianum*.

**A. oliverianum** ♀ Graceful, deciduous tree with spreading, arching branches. Ovate, shallowly lobed, mid-green leaves, 5–12cm (2–5in) long, each with 5 tapered and finely toothed lobes, turn orange, red, and purple in autumn. Bears pale yellow flowers in long-

*Acer palmatum* 'Butterfly'*Acer palmatum* 'Chitoseyama'*Acer palmatum* 'Corallinum'

stalked, upright, corymb-like umbels. ♂ 8m (25ft), ↔ 10m (30ft). China.

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**A. opalus** ♀ (Italian maple). Round-headed, deciduous tree with ovate to obovate, 5-lobed, dark green leaves, 6–15cm (2½–6in) long, turning yellow in autumn. Bears showy, pendent corymb-like umbels of yellow flowers. ♂↔ 15m (50ft). S. Europe. \*\*\*

**A. palmatum** ♀ (Japanese maple). Round-headed, deciduous tree with rounded, shallowly to deeply 5- to 9-lobed, mid-green leaves, 5–12cm (2–5in) long, which turn orange to yellow or red in autumn. Tiny, purple-red flowers, borne in small, pendent corymbs, are followed by red-winged fruit in late summer. ♂ 8m (25ft), ↔ 10m (30ft). China, Korea, Japan. \*\*\*. Most cultivars are low growing and shrubby; taller ones form trees or large shrubs. Several, particularly var. *dissectum* and similar mound-forming cultivars with arching shoots, may be top-grafted to make miniature trees.

'**Atrolineare**' see 'Linearilobum Atropurpureum'. f. *atropurpureum* ♂ syn. 'Atropurpureum', has deeply lobed, red-purple leaves, turning brilliant red in autumn. '**Beni-kagami**' has pendent branches and very deeply cut, 5-lobed, red-purple leaves; ♂↔ 8m (25ft).

'**Bloodgood**' ♂ ♀ has deeply cut, 5-lobed, dark red-purple leaves, turning bright red in autumn, and red fruit; ♂↔ 5m (15ft). '**Burgundy Lace**' ♀ has very deeply cut, 5-lobed, dark red-purple leaves; ♂ 4m (12ft) ↔ 5m (15ft).

'**Butterfly**' ♂ ♀ is upright with small, shallowly 5-lobed, grey-green leaves,

*Acer palmatum* 'Garnet'

3–5cm (1¼–2in) long, margined white and pink; ♂ 3m (10ft), ↔ 1.5m (5ft).

'**Chishio**' see 'Shishio'. '**Chitoseyama**' ♂ ♀ is mound-forming, with deeply 7-lobed, pale crimson-green leaves,

which turn rich purple-red in autumn; ♂ 2m (6ft), ↔ 3m (10ft). '**Corallinum**' ♂ is slow growing, with small, deeply lobed, pale green leaves, 3–8cm (1¼–3in) long, opening brilliant pink in spring; ♂ 1.2m (4ft), ↔ 1m (3ft).

'**Crimson Queen**' ♀ has arching shoots and red-purple leaves divided into finely cut, deeply toothed lobes; ♂ 3m (10ft), ↔ 4m (12ft). var. *dissectum* ♀ syn. *A.*

'*Dissectum*', is mound-forming, with arching shoots, and has 7- to 11-lobed leaves, each deeply and finely cut, turning gold in autumn; ♂ 2m (6ft), ↔ 3m (10ft). '**Dissectum**

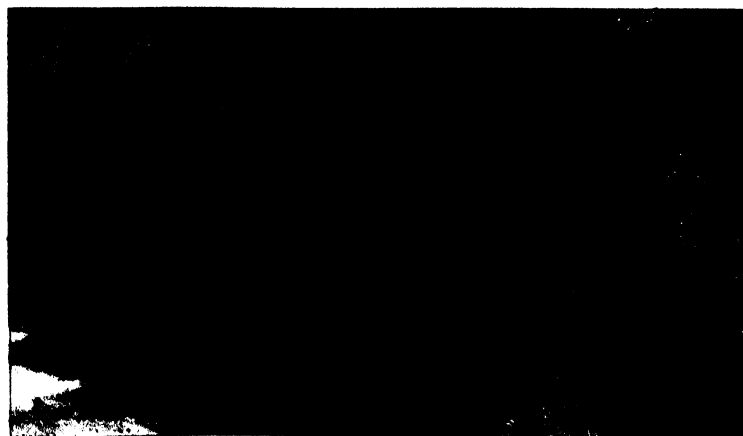
**Atropurpureum**' ♂ is similar to var. *dissectum*, but has red-purple leaves.

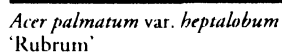
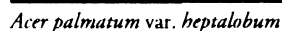
'**Dissectum Nigrum**', syn. 'Ever Red', is similar to 'Dissectum Atropurpureum', but has dark red-purple leaves, silvery-hairy beneath when young. '**Dissectum**

**Ornatum Variegatum**' is similar to var. *dissectum*, but has leaves with white markings. '**Ever Red**' see 'Dissectum Nigrum'. '**Filigree**' is similar to var. *dissectum*, but has very finely cut leaves, opening pale green mottled with cream, turning gold in autumn. '**Garnet**' ♂ ♀ is similar to 'Dissectum

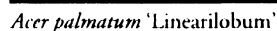
*Atropurpureum*', but with leaves remaining red-purple into autumn. var. *heptalobum* ♂ has leaves with 7–9

broad lobes, turning orange to red in autumn; ♂ 5m (15ft), ↔ 6m (20ft). var. *heptalobum* '**Lutescens**' is similar to var. *heptalobum*, but has

*Acer palmatum* 'Dissectum Atropurpureum'



'**Higasayama**' has small leaves, 5–8cm (2–3in) long, margined white and pink, turning yellow to red in autumn; ♂→ 5m (15ft). '**Kagiri-nishiki**', syn. '**Roseomarginatum**', has blue-green leaves with deeply cut, often curved lobes, margined white and pink, and turning pink and red in autumn; ♂→ 3m (10ft). '**Linearilobum**' ♂♀ syn. '**Scolopendrifolium**', has deeply cut, bright green leaves with 7 long, slender lobes, turning yellow in autumn; ♂ 5m (15ft), ↔ 4m (12ft). '**Linearilobum Atropurpureum**', syn. '**Atrolinære**', is similar to 'Linearilobum', but with red-purple foliage. '**Osakazuki**' ♂♀ produces large, deeply 7-lobed leaves, 10–12cm (4–5in) long, which turn brilliant red in autumn; ♂→ 6m (20ft). '**Red Pygmy**' ♀♂ is vase-shaped, with linear leaves that are dark red in spring, turning gold in autumn; ♂→ 1.5m (5ft). '**Ribesifolium**' see 'Shishigashira'. '**Roseomarginatum**' see 'Kagiri-nishiki'. '**Sango-kaku**' ♂♀ syn. 'Senkaki', has bright coral-red shoots in winter and deeply 5-lobed leaves, 3–7cm (1¼–3in) long, opening orange-yellow, turning soft yellow in autumn; ♂ 6m (20ft), ↔ 5m (15ft). '**Scolopendrifolium**' see 'Linearilobum'. '**Senkaki**' see 'Sango-kaku'. '**Shindeshojo**' has 5- to 7-lobed leaves, that are brilliant red when young, white- and pink-speckled green in summer, and orange and red in autumn;

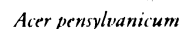


'Waterfall' is similar to var. *dissectum*, but has slightly deeper cut, semi-pendent leaves.

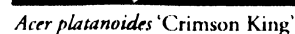
**A. pensylvanicum** [♂ ♀] (Moosewood, Striped maple). Broadly upright,



***A. platanoides*** ♀♂ (Norway maple). Vigorous, spreading, deciduous tree with large, broadly ovate, dark green leaves, 8–15cm (3–6in) long, each with 3–5 lobes, ending in slender-pointed



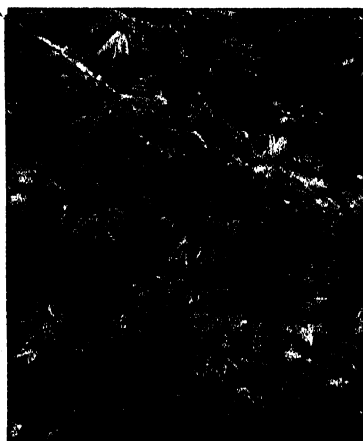
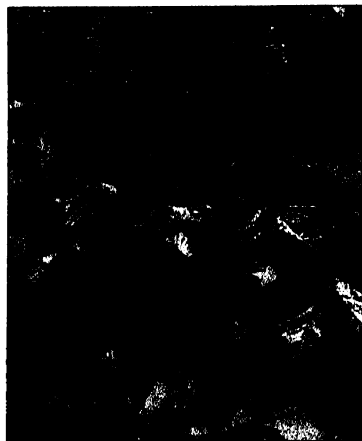
teeth. The leaves turn clear yellow or sometimes red in autumn. Bears small but conspicuous, upright corymbs of yellow flowers.  $\uparrow$  25m (80ft),  $\leftrightarrow$  15m (50ft). Europe. \*\*\*. **'Enas. F. Irish'** has an open, rounded crown with upswept branches;  $\uparrow$  15m (50ft) or more. **'Columnar broad'**  $\varnothing$  syn. 'Parkway', is compact and broadly upright, with an oval crown and bright yellow autumn colour;  $\uparrow$  12m (40ft),  $\leftrightarrow$  8m (25ft). **'Columnare'**  $\varnothing$  is similar to 'Columnar broad', but is taller and has a narrower spread;  $\uparrow$  20m (70ft),  $\leftrightarrow$  6m (20ft). **'Crimson King'**  $\square$   $\varnothing$  has dark red-purple foliage, maturing dark purple, and red-tinged yellow flowers. **'Crimson Sentry'**  $\varnothing$  is narrowly upright, and has red-purple foliage;  $\uparrow$  12m (40ft),  $\leftrightarrow$  5m (15ft). **'Deborah'** produces wavy



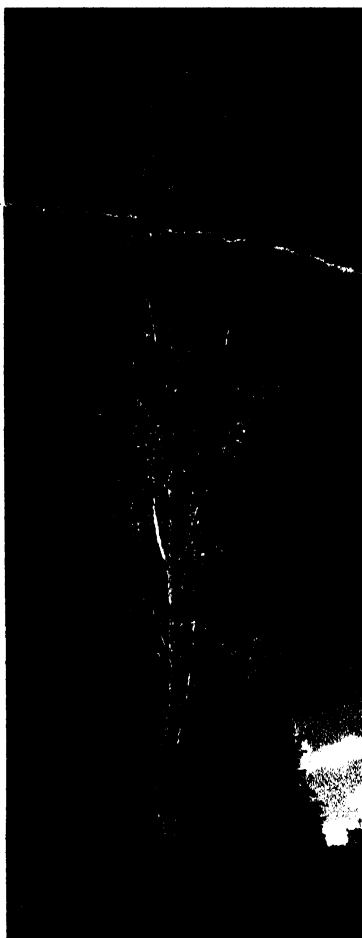
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*Acer platanoides* 'Palmatifidum'

margined leaves, which open brilliant red, turn dark green in summer, and become orange-yellow in autumn. 'Drummondii' ♀ has leaves broadly margined creamy white; ♀→ 10–12m (30–40ft). 'Faassen's Black' is similar to 'Crimson King', but has duller and darker, red-purple leaves, turned up at the margins, becoming bright red in autumn. 'Fairview' has leaves opening dark red, then turning dark green in summer. 'Globosum' has a dense, rounded head; ♀ 6m (20ft), ♀→ 8m (25ft). 'Goldsworth Purple' is similar to 'Crimson King', but has lighter red-purple leaves, wrinkled when young. 'Jade Glen' is fast growing, with an open head. 'Laciniatum' ♀ (Eagle's claw maple) is upright, and has fan-shaped, deeply lobed leaves with claw-like lobes;

*Acer pseudoplatanus* 'Brilliantissimum'*Acer pseudoplatanus* f. *erythrocarpum**Acer pseudoplatanus* 'Simon Louis Frères'

♀ 20m (70ft), ♀→ 10m (30ft). 'Lorbergii' see 'Palmatifidum'. 'Olmsted' ♀ is dense and upright; ♀ 10m (30ft), ♀→ 5m (15ft). 'Oregon Pride' is fast growing, with shallowly lobed leaves that turn golden bronze in autumn. 'Palmatifidum' ♀ syn. 'Lorbergii', has shallowly to deeply lobed leaves, the lobes ending in long, slender teeth. 'Parkway' see 'Columnarbrood'. 'Schwedleri' ♀ bears conspicuous, purplish yellow flowers before the leaves. The leaves open red at first, then turn dark purple-green in summer. *A. pseudoplatanus* ♀ (Sycamore). Fast-growing, spreading, rounded, deciduous tree producing ovate, 5-lobed, dark green leaves, 10–20cm (4–8in) long. Yellow-green flowers are borne in pendent panicles, to 12cm (5in) long,

*Acer rubrum* 'Columnare'

followed by green, sometimes red, winged fruit. ♀ 30m (100ft), ♀→ 25m (80ft). Europe, S.W. Asia. \*\*\*. 'Atropurpureum' has dark green leaves, dark red-purple beneath, with red leaf-stalks; it bears clusters of red-winged fruit in late summer; ♀ 25m (80ft), ♀→ 20m (70ft). 'Brilliantissimum' ♀ is slow growing, with a dense head, and bright pink leaves that turn yellow, then green in summer; ♀ 6m (20ft), ♀→ 8m (25ft). f. *erythrocarpum* ♀ produces fruit with bright red wings. 'Leopoldii' ♀ has leaves that open pink, later turning yellow, then green speckled with yellow and pink; ♀→ 10m (30ft). 'Nizetii' produces leaves splashed and streaked with pale green and white above, red-purple beneath; ♀→ 12m (40ft). 'Prinz Handjery' is similar to 'Brilliantissimum', but with leaves that are red-purple beneath. 'Simon Louis Frères' ♀ is slow-growing, with leaves opening pink, then turning creamy green speckled with white in summer; ♀→ 10m (30ft). 'Worley' ♀ syn. 'Worlei', 'Worleei', has leaves that open yellow, then turn green in summer, with red leaf-stalks.

*A. pseudosieboldianum* ♀ (Korean maple). Small, rounded, deciduous tree with a bushy head and rounded, glossy, mid-green leaves, to 12cm (5in) long, with 9–11 finely toothed lobes. The leaves turn red, orange, or purple in autumn. Red-purple flowers are borne in erect corymbs. ♀→ 6m (20ft). N.E. China, Korea. \*\*\*.

*A. rubrum* ♀ (Red maple, Scarlet maple, Swamp maple). Round-headed to open-crowned, deciduous tree with

3- or 5-lobed, ovate, dark green leaves, to 10cm (4in) long, blue-white beneath, turning bright red in autumn. Produces erect clusters of tiny red flowers. Grow in acid soil for best autumn colour. ♀ 20m (70ft), ♀→ 10m (30ft). E. North America. \*\*\*. 'Armstrong' ♀ is erect; ♀→ 6m (20ft). 'Autumn Flame' ♀ has foliage that turns brilliant red in early autumn. 'Columnare' ♀ is narrow, with red-orange autumn colour; ♀→ 3m (10ft). 'Gerling' is conical when young; ♀ 8m (25ft), ♀→ 10m (30ft). 'Indian Summer' see 'Morgan'. 'Morgan', syn. 'Indian Summer', is vigorous and extremely hardy, with leaves that turn brilliant orange-red in autumn. 'October Glory' ♀ ♀ has glossy foliage, which turns brilliant red in early autumn. 'Red Sunset' has bright red colour very early in autumn. 'Scanlon' ♀ ♀ is dense and columnar, and has foliage that turns red-orange in autumn; ♀ 15m (50ft), ♀→ 5m (15ft). 'Scarlet Sentinel' ♀ syn. 'Scarsen', is vigorous and columnar, with leaves that turn orange-red in autumn; ♀ 12m (40ft). 'Scarsen' see 'Scarlet Sentinel'. 'Schlesingeri' ♀ has leaves that turn dark red very early in autumn. *A. rufrinerve* ♀ ♀ (Snake-bark maple). Arching, deciduous tree with glaucous young shoots, green-and-white-striped branches, and ovate, 3-lobed leaves, to 12cm (5in) long, which turn red in autumn. Greenish yellow flowers are borne in erect racemes, followed by red-winged fruit. ♀→ 10m (30ft). Japan. \*\*\*. 'Hatsuyuki', syn. f. *albolimbatum*, has leaves that are boldly mottled white.

*Acer rubrum* 'October Glory'

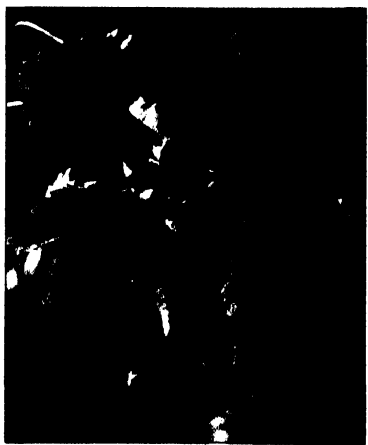
## ACER

**A. saccharinum** ☐ ♀ ☐ - ☐ syn. *A. dasycarpum* (Silver maple). Spreading, fast-growing, deciduous tree, often with pendent branches. Sharply toothed, shallowly to deeply 5-lobed leaves, 10–20cm (4–8in) long, are light green above, silvery white beneath, and turn yellow to orange or red in autumn. Greenish yellow flowers are borne in small, erect corymbs. ‡25m (80ft), ↔ 15m (50ft). E. North America. \*\*\*. 'Laciniatum Wieri' ☐ syn. 'Wieri' has pendent lower branches and very deeply cut leaves. 'Lutescens' ☐ has yellow-green leaves that turn yellow in autumn. 'Pyramidale' ☐ is broadly upright, with deeply cut leaves. 'Silver Queen' ☐ is broadly upright, with bright green leaves turning yellow in autumn, and produces few fruit. 'Wieri' see 'Laciniatum Wieri'.

**A. saccharum** ☐ (Rock maple, Sugar maple). Deciduous tree with a dense, oval to rounded crown and large, broadly ovate, dull, mid-green leaves, 8–18cm (3–7in) long, with 3–5 blunt lobes, which turn brilliant orange to red and yellow in autumn. Greenish yellow flowers are borne in upright corymbs.



*Acer rubrum* 'Scanlon'

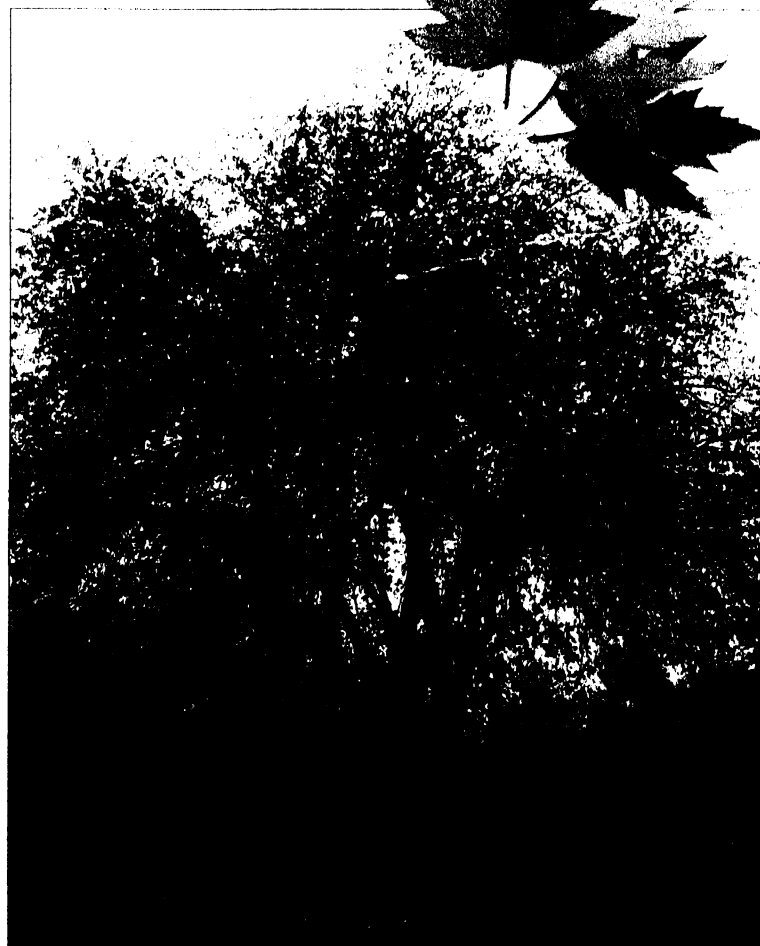


*Acer rubrum* 'Schlesingeri'

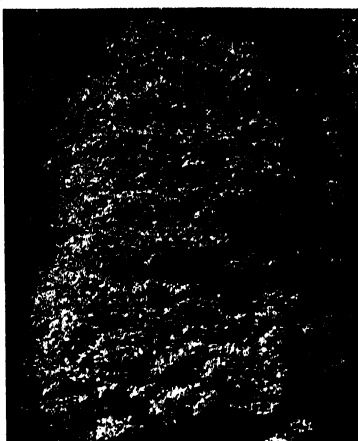


*Acer rufinerve*

‡20m (70ft), ↔ 12m (40ft). E. North America. \*\*\*. 'Bonfire' ☐ is vigorous, with glossy, mid-green leaves, turning bright red and orange in autumn. 'Columnare' see 'Newton Sentry'. 'Goldspire' is columnar, with leaves that turn bright yellow-orange in autumn. **subsp. grandidentatum** ☐ syn. *A. grandidentatum* (Canyon maple), is much smaller than *A. saccharum*, and has glossy, mid-green leaves, 6–12cm (2½–5in) long, which turn brilliant scarlet, orange, or yellow in autumn; ‡10m (30ft); W. USA. 'Green Mountain' is upright, and ideal for growing in hot, dry areas. 'Monumentale' see 'Temple's Upright'. 'Newton Sentry' ☐ syn. 'Columnare', has upright branches, which have short, spur-like shoots, and lacks a central leader; ‡10m (30ft), ↔ 2.5m (8ft). **subsp. nigrum** 'Green Column' ☐ ☐ is broadly columnar, with leaves that turn



*Acer saccharinum* (inset: autumn leaf colour)



*Acer saccharum* subsp. *nigrum* 'Green Column'

bright yellow in autumn; ‡12m (40ft), ↔ 8m (25ft). 'Sweet Shadow' ☐ has deeply lobed leaves, turning orange in autumn. 'Temple's Upright' ☐ ☐ syn. 'Monumentale', is narrowly upright, and has ascending branches; ‡20m (70ft), ↔ 5m (15ft).

**A. shirasawanum** 'Aureum' ☐ ☐ syn. *A. japonicum* 'Aureum'. Rounded, bushy, deciduous tree or shrub producing rounded, 7- to 11-lobed,

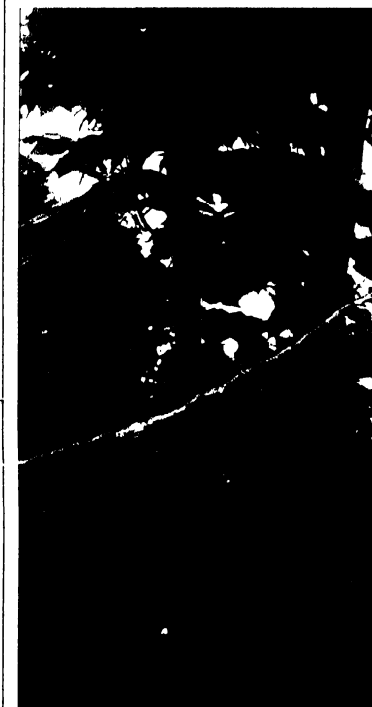


bright yellow leaves, 7–10cm (3–4in) long, which turn red in autumn. Tiny, red-purple flowers are borne in upright corymbs. ‡6m (20ft). \*\*\*

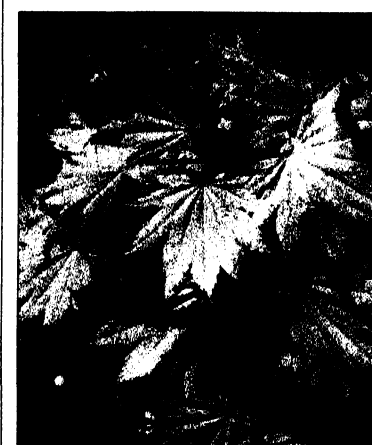
**A. sieboldianum** ☐ Rounded, bushy, deciduous tree with rounded, 7- to 11-lobed, mid-green leaves, 6–9cm (2½–3½in) long, which turn orange-yellow to red in autumn. Bears small, nodding corymbs of tiny yellow flowers. ‡6m (20ft). Japan. \*\*\*

**A. spicatum** ☐ (Mountain maple). Deciduous tree or shrub with upright shoots, red-tinged when young, and ovate, shallowly 3-lobed, toothed, bright green leaves, to 12cm (5in) long, turning red in autumn. Creamy white flowers are borne in slender, upright panicles. ‡8m (25ft), ↔ 5m (15ft). E. North America. \*\*\*

**A. tataricum** ☐ (Tatarian maple). Bushy, deciduous tree with a rounded crown. Produces broadly ovate, glossy, bright green leaves, to 10cm (4in) long, entire or with up to 3 lobes, and with toothed margins; the leaves turn red or yellow in autumn. Upright panicles of creamy white flowers are followed by red-winged fruit. ‡10m (30ft), ↔ 8m (25ft). S.E. Europe, S.W. Asia. \*\*\*.



*Acer saccharum* 'Temple's Upright'



*Acer shirasawanum* 'Aureum'



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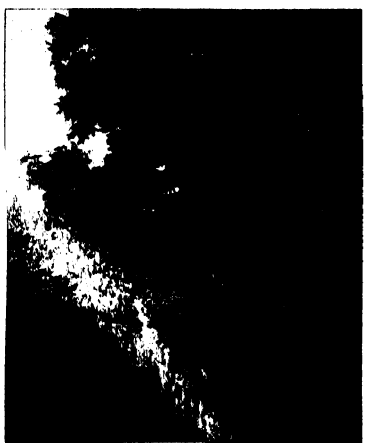
*Acer tataricum* subsp. *ginnala*

subsp. *ginnala* [♀ syn. *A. ginnala* (Amur maple), has slender, arching branches and deeply 3-lobed leaves, which turn deep red in autumn. subsp. *ginnala* 'Durand Dwarf' is dense and shrubby, and has leaves, to 4–8cm (1½–3in) long, which turn light to dark red in early autumn; ‡ 1.5m (5ft), ↔ 2m (6ft). subsp. *ginnala* 'Flame' has red leaves and fruit in autumn.

*A. tegmentosum* [♂] Spreading, deciduous tree with green-and-white-striped branches, and ovate, shallowly 3-lobed, bright green leaves, to 15cm (6in) long, yellow in autumn. Bears yellowish green flowers in pendent racemes. ‡ 8m (25ft), ↔ 10m (30ft). N.E. Asia. \*\*\*  
*A. triflorum* [♂] Broadly columnar to spreading, deciduous tree with peeling, grey-brown bark and unevenly toothed, 3-palmate, mid-green leaves, to 8cm (3in) long, with obovate to lance-shaped leaflets, orange in autumn. Bears clusters of yellow-green flowers. ‡ 10m (30ft), ↔ 8m (25ft). N.E. Asia. \*\*\*

*A. truncatum* [♂] (Shantung maple). Compact, rounded, deciduous tree with a spreading head and glossy, mid-green, broadly ovate leaves, 8–12cm (3–5in) long, usually with 5 tapered lobes, turning yellow in autumn. Yellowish green flowers are produced in upright corymbs. ‡ 8m (25ft), ↔ 10m (30ft). N. China, Korea. \*\*\*

*A. velutinum* [♂] Vigorous, spreading, deciduous tree with ovate, 5-lobed, dark green leaves, 15–25cm (6–10in) long, downy on the reverse, on red leaf-stalks. Bears upright corymb-like panicles of yellow-green flowers. ‡ 20m (70ft), ↔ 15m (50ft). Caucasus, N. Iran.

70 *Acer triflorum**Acer velutinum*

\*\*\*. var. *vanvolxemii* has large leaves, 20–30cm (8–12in) long, blue-green beneath.  
*A. x zoeschense* [♂] (*A. campestre* x *A. cappadocicum* subsp. *lobelii*). Rounded, deciduous tree with broadly ovate leaves, deeply heart-shaped at the bases, and 7–12cm (3–5in) long. The leaves usually have 5 tapered, shallowly toothed lobes, and are glossy, dark green, turning yellow in autumn. Bears yellowish green flowers in upright, softly hairy corymbs. ‡ 15m (50ft). Garden origin. \*\*\*. 'Annae' has red-purple leaves that turn dark green in summer.

▷ *Aceriphyllum* see *Mukdenia*  
*A. rossii* see *M. rossii*

## ACHILLEA

Yarrow

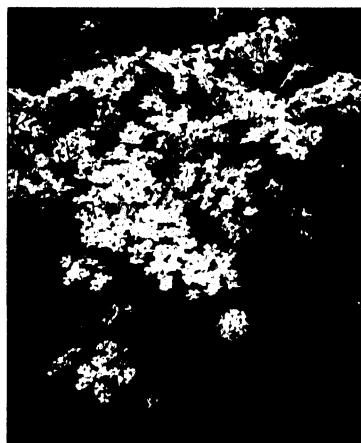
ASTERACEAE/COMPOSITAE

Genus of about 85 species of mainly deciduous perennials from temperate regions of the N. hemisphere. Some, from mountainous regions, are low growing and mat-forming; other species, from grassland or dry wasteground, are taller and herbaceous. The grey or green, often aromatic leaves are mostly 1- to 3-pinnate or pinnatifid, and fern-like, although some are entire. They are elliptic to lance-shaped, toothed, and 15–30cm (6–12in) long in most species, 5–12cm (2–5in) long in smaller-growing achilleas. The basal leaves are usually larger than the stem leaves. Most achilleas produce daisy-like flowerheads, 3–15mm (¼–½in) across, in corymbs, 7–12cm (3–5in) across, in summer and autumn; the disc- and ray-florets are usually both white or both yellow.

Newer cultivars and hybrids, including the Galaxy Hybrids (*A. millefolium* x *A. 'Taygetea'*), offer a wide colour range, and produce flowerheads in compound corymbs, 15–20cm (6–8in) across. Grow achilleas in a wildflower or rock garden; the taller ones are excellent for a mixed or herbaceous border, and for cutting and drying. Contact with foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained soil in an open site in full sun, although most will tolerate a wide range of soils and conditions. *A. ageratum* 'W.B. Childs' and *A. ptarmica* cultivars require more moisture than other achilleas, but not waterlogged soils, and partial shade. *A. clavennae* and *A. x*

*Achillea ageratum* 'W.B. Childs'

*kellereri* will not tolerate winter wet in poorly drained soils. Dwarf species and silver- and hairy-leaved alpine species must have sharp drainage.

• **PROPAGATION** Sow seed *in situ* or divide in spring. *A. clypeolata* is short-lived, so divide annually to maintain stocks. Divide *A. 'Moonshine'* regularly to maintain vigour.

• **PESTS AND DISEASES** Aphids may be a problem; powdery mildew is common, especially on *A. ptarmica* cultivars.

*A. aegyptica* of gardens see

*A. 'Taygetea'*.

*A. ageratum*, syn. *A. decolorans*.

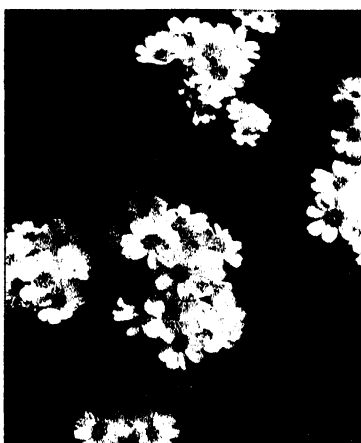
Spreading perennial producing linear, pinnatifid, sharply toothed, grey-white leaves. Yellowish white flowerheads are borne in loose corymbs, 8cm (3in) wide, from midsummer to early autumn. ‡ 60cm (24in). Portugal, W. Mediterranean. \*\*\*. 'W.B. Childs' [♂] bears many attractive white flowerheads with creamy white disc-florets; ‡ 60–70cm (24–28in).

*A. argentea* see *Tanacetum argenteum*.

*A. argentea* of gardens see *A. clavennae*.

*A. chrysocoma*. Mat-forming, spreading perennial with ovate, 2- or 3-pinnate, mid-green leaves. In early summer, produces corymbs, 1–2cm (½–¾in) across, of golden yellow flowerheads. ‡ 5–8cm (2–3in), ↔ 30cm (12in). Greece, Turkey (Anatolia). \*\*\*

*A. clavennae* [♂] syn. *A. argentea* of gardens. Mat-forming perennial with semi-evergreen, narrowly obovate, pinnatifid or pinnate, light grey-green, silver-hairy leaves. Bears clusters of up to 25 white flowerheads, in corymbs

*Achillea clavennae**Achillea clypeolata*

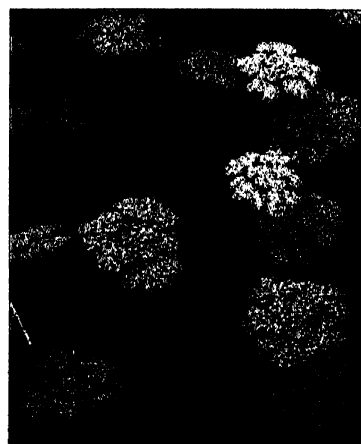
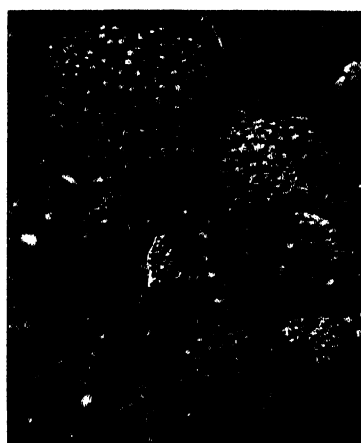
4–5cm (1½–2in) across, in summer and early autumn. ‡ 15–20cm (6–8in), ↔ 30cm (12in) or more. E. European Alps. \*\*\*

*A. clypeolata* [♂] Mat-forming perennial with ovate to lance-shaped, pinnatifid, silvery green leaves. Corymbs, 5–7cm (2–3in) across, of tiny, golden yellow flowerheads are produced from early to late summer. ‡ 45–60cm (18–24in), ↔ 30cm (12in). Balkans. \*\*\*

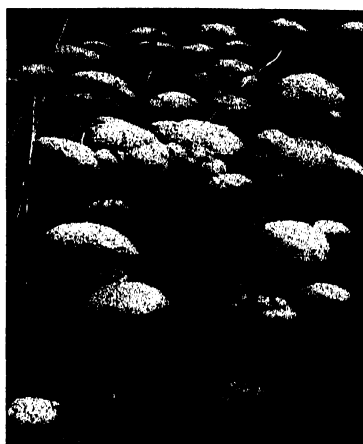
*A. 'Coronation Gold'* [♂] Clump-forming perennial with evergreen, oblong, pinnatifid, silvery grey leaves. Bears tiny, golden yellow flowerheads in corymbs, 10cm (4in) across, from mid-summer to early autumn. ‡ 75–90cm (30–36in), ↔ 45cm (18in). \*\*\*

*A. decolorans* see *A. ageratum*.

*A. eupatorium* see *A. filipendulina*.

*Achillea* 'Coronation Gold'*Achillea* 'Fanal'



*Achillea filipendulina* 'Gold Plate'

**A. 'Fanal'** [■] syn. *A. 'The Beacon'*. Mat-forming Galaxy Hybrid with broadly linear, 2-pinnate, slightly greyish green leaves. In early summer, bears corymbs, to 15cm (6in) across, of bright red flowerheads with yellow disc-florets that fade with age. ↑75cm (30in), ↔60cm (24in). \*\*\*

**A. filipendulina**, syn. *A. eupatorium*. Clump-forming, evergreen perennial with rosettes of oblong, 1- or 2-pinnate, mid- to grey-green leaves. Strong, leafy stems bear golden yellow flowerheads in flat corymbs, 12cm (5in) across, from early summer to early autumn. ↑1.2m (4ft), ↔45cm (18in). Caucasus. \*\*\*

**'Altgold'** has grey-green leaves and corymbs of copper-tinged yellow flowerheads; ↑60cm (24in). **'Cloth of Gold'** has light green leaves and corymbs of deep golden yellow flowerheads; ↑1.5m (5ft). **'Gold Plate'** [■] ♀ has bright golden yellow flowerheads in slightly convex corymbs, 15cm (6in) across.

**A. 'Flowers of Sulphur'** see *A. 'Schwefelblüte'*.

**A. 'Forngett Candy'** [■] Clump-forming, evergreen perennial producing rosettes of fern-like, broadly linear, pinnatifid, grey-green leaves. During summer, freely branching stems bear a profusion of pale pink flowerheads in corymbs to 15cm (6in) across; the ray-florets fade almost to white with age; ↑85cm (34in), ↔45cm (18in). \*\*\*

**A. 'Forngett Ivory'**. Clump-forming perennial with rosettes of evergreen, broadly linear, fern-like, pinnatifid, mid-green to grey-green leaves. In summer, bears corymbs, to 15cm (6in) across, of ivory flowerheads, the disc-

florets tinged reddish brown. ↑85cm (34in), ↔45cm (18in). \*\*\*

**A. grandifolia**. Clump-forming perennial with ovate, coarsely pinnate, greyish green leaves. Stout stems bear white flowerheads, in corymbs to 12cm (5in) across, from early summer to autumn. ↑90cm (36in), ↔60cm (24in). C. Balkans. \*\*\*

**A. 'Great Expectations'** see *A. 'Hoffnung'*.

**A. 'Hartington White'**. Spreading perennial with linear, finely divided, pinnatifid, sharply toothed, greyish green leaves. White flowerheads are borne in corymbs, 10–15cm (4–6in) across, in early summer. ↑↔60cm (24in). \*\*\*

**A. 'Hoffnung'**, syn. *A. 'Great Expectations'*. Compact, clump-forming Galaxy Hybrid with broadly linear, 2-pinnate, mid-green leaves. In summer, freely bears corymbs, 10–15cm (4–6in) across, of creamy, sand-coloured flowerheads with disc-florets that darken with age. ↑75cm (30in), ↔60cm (24in). \*\*\*

**A. x kellereri** (*A. ageratifolia* x *A. clypeolata*). Semi-evergreen perennial with lance-shaped, pinnatifid, grey-green leaves. Loose clusters of 6–8 cream flowerheads, each 2cm (¾in) across, with darker disc-florets, are produced in summer. ↑15–20cm (6–8in), ↔30cm (12in) or more. Garden origin. \*\*\*

**A. x kolbiana 'Weston'**, syn. *A. umbellata* 'Weston'. Mat-forming perennial with semi-evergreen, linear, pinnate, silver-grey leaves. Short-stemmed white flowerheads, 1–2cm (½–¾in) across, are borne in corymbs 3–10cm (1¼–4in) wide, in summer and early autumn. ↑10–15cm (4–6in), ↔30cm (12in). \*\*\*

**A. 'Lachsschönheit'** [■] syn. *A. 'Salmon Beauty'*. Clump-forming Galaxy Hybrid with broadly linear, pinnatifid, dark green leaves. In summer, many-branched stems bear a profusion of light salmon-pink flowerheads, fading to pink-flushed, creamy white, in corymbs 14cm (5½in) across. ↑75–90cm (30–36in), ↔60cm (24in). \*\*\*

**A. x lewisii 'King Edward'** [■] ♀ Woody-based, mat- to low-mound-forming perennial with semi-evergreen, linear, fern-like, pinnatifid, sharply toothed, soft grey-green leaves. Pale yellow flowerheads are borne in dense corymbs, to 10cm (4in) across, in early and midsummer. ↑8–12cm (3–5in) or more, ↔23cm (9in) or more. \*\*\*

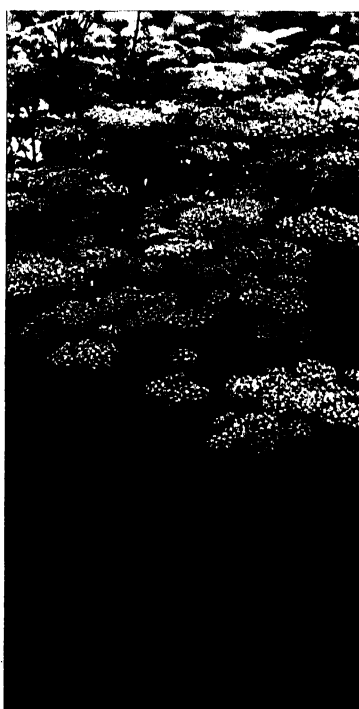
*Achillea x lewisii* 'King Edward'

**A. millefolium cultivars**. Selections from this rhizomatous, mat-forming and invasive perennial have linear to lance-shaped, pinnatisect, mid-green leaves. Flowerheads are borne in flat corymbs, 7–10cm (3–4in) across, from early to late summer. ↑↔60cm (24in). \*\*\*

**'Burgundy'** bears deep red flowerheads. **'Cerise Queen'** [■] is very vigorous and forms a mat of dark green leaves; the bright magenta-pink flowerheads have white disc-florets, fading with age. **'Fire King'** is vigorous and upright, with richer red flowerheads than 'Cerise Queen'. **'Lavender Beauty'** see 'Lilac Beauty'. **'Lilac Beauty'**, syn. 'Lavender Beauty', is very free-flowering, with lilac flowerheads fading with age; ↑80cm (32in). **'Paprika'** bears orange-red flowerheads that fade with age.

**'Sammetriese'** has dark green leaves and heavy, dark red flowerheads, in corymbs 20cm (8in) across, slightly darker and brighter than those of 'Cerise Queen', and fading to bright magenta; ↑80cm (32in).

**A. 'Moonshine'** [■] ♀ Clump-forming perennial producing evergreen, linear to lance-shaped, pinnatifid, grey-green leaves. Light yellow flowerheads with

*Achillea millefolium* 'Cerise Queen'*Achillea* 'Moonshine'

slightly darker disc-florets are borne in corymbs, to 15cm (6in) across, from early summer to early autumn.

↑↔60cm (24in). \*\*\*

**A. 'Moonwalker'**. Clump-forming, aromatic perennial with linear to lance-shaped, pinnatifid, dark green leaves. In summer, bears flat corymbs, 10–15cm (4–6in) across, of scented, golden yellow, copper-tinged flowerheads that fade with age. ↑↔60cm (24in). \*\*\*

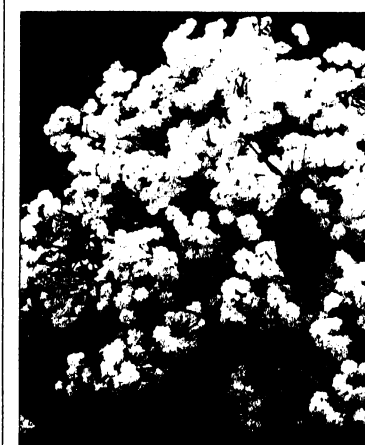
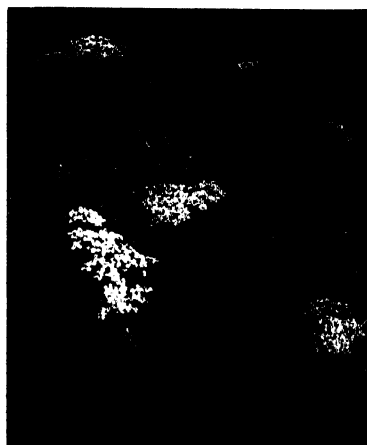
**A. ptarmica** (Sneezewort). Strong, rhizomatous perennial with simple, linear-lance-shaped, finely toothed, dark green leaves. From early to late summer, bears loose corymbs, 2–10cm (¾–4in) across, of usually off-white flowerheads, 1.5–2cm (½–¾in) across. ↑30–90cm (12–36in), ↔60cm (24in). Europe, W. Asia. \*\*\*

**'Ballerina'** bears small, double white flowerheads, which open to show disc-florets that fade to grey; ↑to 60cm (24in), ↔30cm (12in).

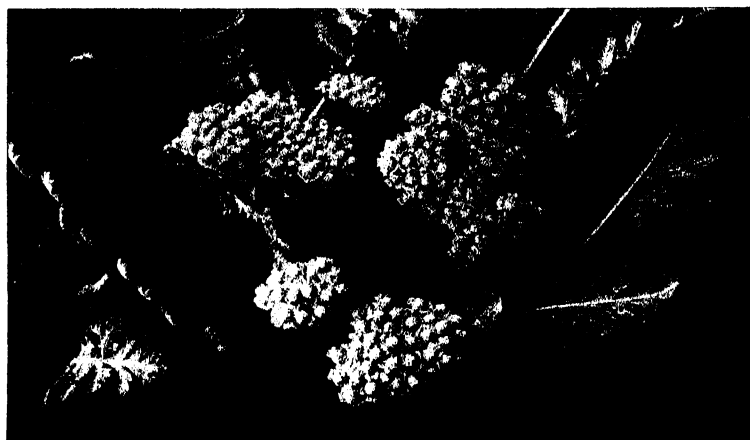
**'Boule de Neige'** [■] syn. 'Schneeball', has double, pure white flowerheads; ↑45–60cm (18–24in). **'Perry's White'** has larger, double white flowerheads; ↑80–100cm (32–39in). **'Schneeball'** see 'Boule de Neige'. **'The Pearl'** has tight, button-like, double white flowerheads; the flowers may be variable when seed-raised. ↑75cm (30in).

**A. 'Salmon Beauty'** see *A. 'Lachsschönheit'*.

**A. 'Schwefelblüte'**, syn. *A. 'Flowers of Sulphur'*. *A. 'Sulphur Flowers'*. Clump-forming perennial with broadly linear, pinnatifid, greyish green leaves. In early and midsummer, bears corymbs, to 10cm (4in) across, of sulphur-yellow flowerheads, that fade to a paler shade of

*Achillea ptarmica* 'Boule de Neige'*Achillea* 'Forngett Candy'*Achillea* 'Lachsschönheit'

A



Achillea 'Schwellenburg'



Achillea 'Summerwine'



Achillea 'Taygetea'



Achillea tomentosa

yellow with age. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'Schwellenburg'** ■ Low-growing, spreading perennial producing oblong-ovate, pinnatifid, grey-green leaves. From early summer to early autumn, branched stems bear corymbs, 10–20cm (4–8in) across, of lemon-yellow flowerheads, opening from silvery buds. †45cm (18in), ↔ 60cm (24in). \*\*\*

**A. 'Sulphur Flowers'** see A. 'Schwefelblüte'.

**A. 'Summerwine'** ■ Upright Galaxy Hybrid with linear, pinnatifid, dark green leaves. Dark red flowerheads, 2cm (¾in) across, with white disc-florets, are produced in corymbs, to 7cm (3in) across, in mid- and late summer. \*\*\*

**A. 'Taygetea'** ■ syn. *A. aegyptica* of gardens. Clump-forming perennial with evergreen, linear, pinnatifid, greyish green leaves. In mid- and late summer, bears pale, creamy yellow flowerheads in corymbs, 5–10cm (2–4in) across. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'The Beacon'** see A. 'Fanal'.  
**A. tomentosa** ■ ♀ Mat-forming perennial with linear, pinnatifid, woolly, grey-green leaves. Bears dense corymbs, to 7cm (3in) across, of lemon-yellow flowerheads from early summer to early autumn. † to 35cm (14in), ↔ 45cm (18in). S. Europe to W. Asia. \*\*\*

**'Aurea'**, syn. 'Maynard's Gold', is more compact, with brighter (but fewer) flowerheads in early summer; †20cm (8in). **'Maynard's Gold'** see 'Aurea'.

**A. umbellata**. Clump-forming, semi-evergreen perennial with ovate, pinnate, silver-grey, white-hairy leaves. Hairy stems bear umbels, 3cm (1¼in) across,

of 3–6 white flowerheads, to 1.5cm (½in) across, in summer. † to 20cm (8in), ↔ 30cm (12in). Greece. \*\*\*  
**'Weston'** see *A. x kolbiana* 'Weston'.

**A. 'Wesersandstein'** ■ Mat-forming, many-branched Galaxy Hybrid with linear to lance-shaped, pinnatifid, mid-green leaves. In summer, bears corymbs, to 15cm (6in) across, of pinkish red flowerheads, fading to a creamy sand colour. †45–60cm (18–24in), ↔ 60cm (24in). \*\*\*

## X ACHIMENANTHA

GESNERIACEAE

Hybrid genus, a cross between *Achimenes* and *Smithiantha*, of upright, rhizomatous, herbaceous perennials, cultivated for their brightly coloured flowers. The ovate to oval leaves are opposite and usually hairy. The axillary clusters of tubular flowers vary greatly in colour. In frost-prone areas, grow in a warm greenhouse; in warmer regions, grow in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered light and moderate humidity. Water sparingly in spring; in summer, water moderately and apply a quarter-strength balanced liquid fertilizer at each watering. After flowering, reduce water until growth has withered; remove any dead growth. Overwinter dormant rhizomes in dry, frost-free conditions. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in partial shade.

• **PROPAGATION** Divide rhizomes or plant individual scales in containers in spring. The latter will produce flowering plants only after several years.

• **PESTS AND DISEASES** Greenfly, red spider mites, and particularly western flower thrips may be a problem.

**x A. naegelioides**. Upright, rhizomatous perennial with hairy, ovate to oval, mid-green leaves, to 12cm (5in) long. In summer, bears tubular, slightly nodding, red to white flowers, to 5cm (2in) long, often marked yellow, maroon, or purple. †35cm (14in), ↔ 23cm (9in). Garden origin. ☼ (min. 10°C/50°F). **'Ginger Peachy'** is compact, with peach-pink flowers; †20cm (8in), ↔ 15cm (6in). **'Inferno'** has bright red, yellow-centred, red-veined flowers. **'Rose Bouquet'** has small leaves, to 7cm (3in) long, and double magenta flowers.

## ACHIMENES

Cupid's bower, Hot water plant

GESNERIACEAE

Genus of about 25 species of winter-dormant, rhizomatous perennials, grown for their flowers, occurring mainly in subtropical forest in Mexico and Central America. Each of the small, scaly rhizomes produces a single upright, spreading, or trailing stem, which may be either branched or unbranched. The simple, ovate, dark green leaves are opposite (sometimes in unequal pairs) or in whorls, have toothed margins, and are fleshy and usually hairy; the undersides are often red and less hairy. From summer to autumn, salverform flowers are borne singly, in pairs, or in cymes from the leaf axils. There are many

cultivars, with flowers in a wide range of colours. In frost-prone areas, grow in containers or hanging baskets in a temperate greenhouse, or as houseplants. In frost-free areas, grow in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered light and moderate humidity. Bring into growth at 16–18°C (61–64°F) in spring, and water sparingly. In summer, water freely and apply a quarter-strength balanced liquid fertilizer at each watering. In autumn, remove dead top growth, and store in containers at 10°C (50°F) in dry conditions until spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun; needs partial shade in very hot areas.

• **PROPAGATION** Divide rhizomes or take stem cuttings in spring.

• **PESTS AND DISEASES** Aphids, thrips, and red spider mites may be a problem.

**A. antirrhina**. Erect perennial with unequal pairs of ovate, toothed, downy, dark green leaves, 10cm (4in) long, red beneath. Solitary, cream or yellow flowers, to 2.5cm (1in) across, striped purple and spotted red in the throats, are borne from summer to autumn.

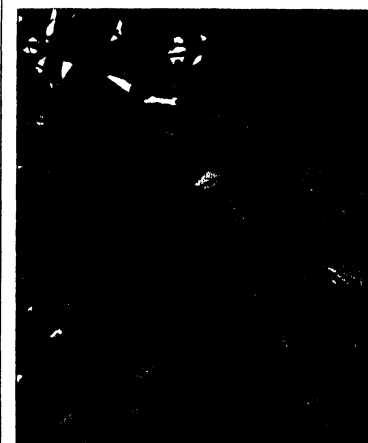
†30cm (12in), ↔ 15cm (6in). Mexico, Guatemala. ☼ (min. 10–15°C/50–59°F)

**A. coccinea** see *A. erecta*.

**A. erecta**, syn. *A. coccinea*, *A. pulchella*. Long-stemmed perennial, trailing to 45cm (18in), with whorls of 3 ovate to elliptic, toothed, dark green leaves, 6cm (2½in) long, often red-flushed beneath. Bears numerous solitary, long-tubed, bright red, occasionally rose-pink flowers, 1cm (½in) across, from summer to autumn. †45cm (18in), ↔ 30cm (12in). Mexico to Panama. ☼ (min. 10–15°C/50–59°F)

**A. grandiflora**. Erect perennial bearing pairs of ovate, pointed, toothed, dark green leaves, 15–18cm (6–7in) long, hairy and dark green above, red-flushed beneath. From summer to autumn, produces solitary or paired, reddish purple flowers, to 5cm (2in) across, each with a white eye and a purple-dotted throat. † to 60cm (24in). Mexico to Honduras. ☼ (min. 10–15°C/50–59°F)

**A. 'Little Beauty'** ■ Bushy perennial with 3-whorled, ovate, pointed, dark green leaves, 15–18cm (6–7in) long, with toothed margins. Solitary, deep pink flowers, 3cm (1¼in) across, with yellow eyes, are produced from summer



Achimenes 'Little Beauty'



*Achimenes longiflora* 'Ambrose Verschaffelt'

to autumn.  $\uparrow$  25cm (10in),  $\leftrightarrow$  30cm (12in).  $\bullet$  (min. 10–15°C/50–59°F)

**A. longiflora** 'Ambrose Verschaffelt'

Free-flowering perennial, trailing to 30cm (12in). Dark green leaves, usually in whorls of 3 or 4, sometimes opposite, are ovate to oblong, 5cm (2in) long, coarsely toothed, and sometimes red-tinted on the reverse. From summer to autumn, bears numerous solitary white flowers, 5cm (2in) across, with purple-red veins and dots in the yellowish throats.  $\uparrow$  24cm (10in),  $\leftrightarrow$  35–40cm (14–16in).  $\bullet$  (min. 10–15°C/50–59°F)

**A. 'Paul Arnold'** Erect, compact perennial with whorls of 3 or 4 ovate, toothed, dark green leaves, 6cm (2½in) long, red-purple beneath. Attractive, solitary, deep purple-blue flowers, 5cm (2in) across, with white throats suffused with yellow and purple, are borne from summer to autumn.  $\uparrow$  40cm (16in).  $\bullet$  (min. 10–15°C/50–59°F)

**A. 'Peach Blossom'**, Trailing perennial with whorls of usually 3 ovate, pointed, toothed, dark green leaves, 6cm (2½in) long. Solitary, magenta-pink flowers, 5cm (2in) across, each with a darker ring around the eye, are borne from summer to autumn.  $\uparrow$  20cm (8in).  $\bullet$  (min. 10–15°C/50–59°F)

**A. pulchella** see *A. erecta*.

**A. 'Purple King'**, Vigorous, upright or spreading perennial, trailing to 40cm (16in), with whorls of 3 ovate, toothed, dark green leaves, red beneath. Solitary, ruffle-margined, reddish purple flowers, 5cm (2in) across, open from summer to autumn.  $\uparrow$  35–40cm (14–16in),  $\leftrightarrow$  30cm (12in).  $\bullet$  (min. 10–15°C/50–59°F)



*Achimenes* 'Paul Arnold'

**A. 'Yellow Beauty'**, Erect perennial with pairs of ovate, toothed, slightly hairy, dark green leaves, 5cm (2in) long. Solitary, primrose-yellow flowers, 5cm (2in) across, are produced from summer to autumn.  $\uparrow$  24cm (10in),  $\leftrightarrow$  30cm (12in).  $\bullet$  (min. 10–15°C/50–59°F)

▷ **Achiote** see *Bixa orellana*

▷ **Achnatherum** see *Stipa*

▷ **Acidantha** see *Gladiolus*

**A. bicolor** var. **murielae** see

*G. callianthus*

**A. murielae** see *G. callianthus*

## ACINOS

*Calamint*

LABIATAE/LAMIACEAE

Genus of 10 species of annuals and evergreen or semi-evergreen, spreading, woody-stemmed perennials found in mountainous areas and open sites from C. and S. Europe to Asia. They have small, aromatic, usually mid-green, opposite leaves, and tubular, 2-lipped flowers, borne in erect, spike-like whorls in midsummer. Grow in a rock garden or at the front of a border.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun; they resent wet conditions.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Separate rooted stems, or root basal soft-wood cuttings, in late spring or summer.

• **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

**A. alpinus**, syn. *Calamintha alpina* (Alpine calamint). Woody-based, low-growing, evergreen perennial with entire or slightly toothed, elliptic to rounded leaves, to 2cm (¾in) long, with pointed or blunt tips. In midsummer, produces spike-like whorls of 3–8 purple flowers, 1–2cm (½–¾in) long, marked white on the lower lips, from the upper leaf axils.  $\uparrow$  10–20cm (4–8in),  $\leftrightarrow$  8–16cm (3–6in). S. and C. Europe. \*\*\*

**A. arvensis** syn. *Clinopodium acinos* (Basil thyme, Mother of thyme). Spreading, short-lived perennial or annual with ovate to elliptic leaves, to 1.5cm (½in) long, on erect, branching stems. In mid- and late summer, produces loose, axillary whorls of 3–8 violet flowers, 7–10mm (¼–½in) long, marked white on the lower lips.  $\uparrow$  20cm (8in),  $\leftrightarrow$  to 30cm (12in). N. Europe, Mediterranean, W. Asia. \*\*\*



*Acinos arvensis*

**A. corsicus**, syn. *Calamintha corsica*, *Micromeria corsica*. Low, mat-forming, semi-evergreen perennial with obovate to spoon-shaped leaves, 4–10mm (¼–½in) long, blunt at the tips. Short, spike-like whorls of 2–4 violet flowers, to 1.5cm (½in) long, are borne in midsummer.  $\uparrow$  to 10cm (4in),  $\leftrightarrow$  20–30cm (8–12in). Corsica. \*\*\*

## ACIPHYLLA

Bayonet plant, Speargrass

APIACEAE/UMBELLIFERAE

Genus of about 40 species of evergreen, mostly dioecious perennials, mainly from New Zealand and a few from Australia. Most species are from sparse mountain grassland or alpine regions, but some are from lower altitudes. They form stiff, grassy clumps, the rosettes of flattened, linear, leathery leaves having divided, much-reduced leaf-blades, large terminal spines, and usually conspicuous stipules, also spined. Aciphyllas bear terminal panicles of numerous compound umbels, 2–4cm (¾–1½in) across, of tiny, star-shaped, white or yellow-green flowers, to 2mm (¼in) long, which are protected by spiny bracts, usually larger and more colourful than the flowers themselves. Most species seldom flower in cool climates. Both male and female plants are needed to produce fruit. Grow larger species in a mixed border and smaller species in a rock garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moist but well-drained, fertile, humus-rich, gritty soil in an open site in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, although it may remain viable for up to one year. Plant out seedlings *in situ* as soon as possible, because the deep roots resent disturbance. Divide rhizomatous species, such as *A. pinnatifida*, in spring.

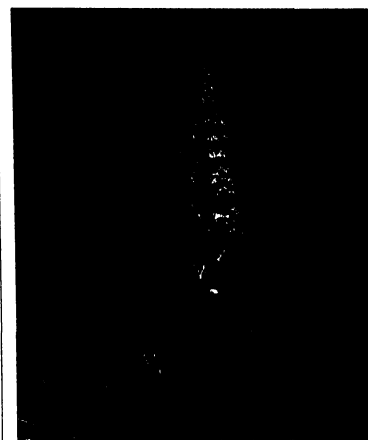
• **PESTS AND DISEASES** Slugs may damage young plants.

**A. aurea** Rosette-forming perennial with narrowly strap-shaped, pinnate or 2-pinnate, spine-tipped, grey-green leaves, to 60cm (24in) long, with bold yellow margins and midribs. From early to late summer, bears numerous golden brown flowers.  $\uparrow$  1m (3ft). New Zealand. \*\*\*

**A. colensoi** (Speargrass, Wild Spaniard). Rosette-forming perennial with strap-shaped, pinnate or 2-pinnate, stiff,



*Aciphylla aurea*



*Aciphylla scott-thomsonii*

spiny, bluish green leaves, 30–50cm (12–20in) long, with toothed margins and red or reddish brown main veins. In summer, bears small, yellowish green flowers on prickly stems.  $\uparrow$  to 2.5m (8ft),  $\leftrightarrow$  1.5–2m (5–6ft). New Zealand. \*\*\*

**A. glaucescens**, Rosette-forming perennial producing very narrow, strap-shaped, 3-pinnate, spine-tipped, silvery grey leaves, to 1m (3ft) long; they have prominent, almost white midribs, toothed margins, and stipules divided into 3 unequal lengths. Yellow-green flowers are borne from early to late summer.  $\uparrow$  1m (3ft). New Zealand. \*\*\*

**A. hectoris**, Dwarf, rosette-forming, perennial producing flat, lance-shaped, dark green leaves, 20–25cm (8–10in) long, deeply divided into 3 slender segments; they have toothed, almost spineless, narrow, red-gold margins and shiny stipules. Pale yellow-green flowers are borne in midsummer.  $\uparrow$  15cm (6in). New Zealand. \*\*\*

**A. latifolia** see *Anisotome latifolia*.

**A. pinnatifida**, Low-growing, fern-like, rhizomatous perennial producing linear, deeply-pinnatifid, spine-tipped, bronzed, dark green leaves, 15–20cm (6–8in) long, with yellow midribs and shiny stipules. Bears off-white flowers in summer.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  30cm (12in). New Zealand. \*\*\*

**A. scott-thomsonii** (Giant Spaniard). Rosette-forming perennial with linear, pinnate or 2-pinnate, sharply spined, glaucous, blue-green leaves, to 1.5m (5ft) long, with green or pale yellow midribs and finely toothed margins. Yellowish green flowers are produced from early to late summer.  $\uparrow$  3m (10ft) or more,  $\leftrightarrow$  2m (6ft). New Zealand. \*\*\*

## ACMENA

MYRTACEAE

Genus of 7 species of evergreen trees, occurring in rainforest and moist woodland from Australia to New Guinea. The opposite leaves are oval to lance-shaped, simple, and entire. Small, 5-petalled flowers are borne in axillary racemes or terminal panicles, followed by colourful, succulent berries. In frost-prone regions, grow in a temperate greenhouse; in frost-free areas, grow as specimen trees.

• **HARDINESS** Frost tender, although *A. smithii* may survive short periods at just above 0°C (32°F).

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light (they will also tolerate filtered light). Pot on or top-dress in early spring or autumn. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, moderately fertile soil in full sun. Pruning group 8, or 13 if well-trained.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe, or in spring. Root semi-ripe cuttings with bottom heat in late summer.
- **PESTS AND DISEASES** Whiteflies, scale insects, and aphids may be a problem.

**A. smithii** ♀ syn. *Eugenia smithii* (Lillypilly). Rounded, bushy tree producing ovate to lance-shaped, glossy, dark green leaves, 4–10cm (1½–4in) long, with long, slender tips. Terminal panicles, 2–5cm (¾–2in) long, of greenish white flowers are borne in late spring and early summer. Edible, white, pink, or red-purple berries, 1cm (½in) across, ripen in autumn. In cool areas, only established container plants will bear fruit. †8–15m (25–50ft), ↔ 6–10m (20–30ft). Australia (Northern Territory, Queensland to Victoria). ☼ (min. 5°C/41°F)

## ACOELORRAPHE

Saw palm

ARECACEAE/PALMAE

- Genus of one species of cluster-stemmed palm from moist forest and swampland in S. Florida in the USA, and from Mexico to Central America and the West Indies. Panicles of bowl-shaped, hermaphrodite flowers are borne among fan-shaped leaves, which are produced in terminal racemes. In frost-prone areas, grow young saw palms in a temperate or warm greenhouse; in frost-free areas, grow outdoors as specimen trees.
- **HARDINESS** Frost tender.
  - **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, well-drained soil in full sun.
  - **PROPAGATION** Sow seed at 27°C (81°F) in spring.
  - **PESTS AND DISEASES** Red spider mites may be a problem under glass.



74 *Acoelorrhaphe wrightii*

**A. wrightii** ♂♀ syn. *Paurotis wrightii* (Everglades palm, Saw cabbage palm, Silver saw palm). Compact-crowned palm with no crownshaft and 3–10 slender stems clothed with brown fibres and old leaf bases. Rounded, deeply cut, fan-like leaves, with spiny stalks, are glossy, mid-green above, light green to silvery beneath, and to 1m (3ft) long. In summer, bears small white flowers in slender panicles, to 1m (3ft) long, partly hidden by the leaves, followed by black fruit. †5–8m (15–25ft), ↔ 2.5–6m (8–20ft). Mexico to Central America, West Indies. ☼ (min. 10°C/50°F)

## ACOKANTHERA

APOCYNACEAE

Genus of 5 species of evergreen trees and shrubs from arid to seasonally moist scrub in tropical to subtropical regions, from southern and eastern Africa to the Arabian Peninsula. They are cultivated mainly for their clusters of long-tubed, 5-petalled flowers, which are borne on the previous year's growth, and for their simple, leathery leaves, produced in opposite pairs. In frost-prone climates, grow in a temperate greenhouse; in frost-free areas, grow in a border. The sap and small, plum-like fruits that follow the flowers are highly toxic if ingested.

- **HARDINESS** Frost tender, although *A. oblongifolia* will survive short periods down to 2°C (36°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light; top-dress or pot on in autumn. From late spring to autumn, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 9; plants under glass may need restrictive pruning.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

**A. oblongifolia** ♂♀ syn. *A. spectabilis*, *Carissa spectabilis* (Poison arrow plant, Wintersweet). Bushy shrub or small tree producing elliptic, glossy, dark green leaves, to 12cm (5in) long. Fragrant white flowers, 1.5–2cm (½–¾in) long, are borne in axillary clusters, 5–10cm (2–4in) long, from winter to spring. The flowers are followed by ellipsoid, purple-black fruit, to 2.5cm (1in) long. †3–6m



*Acokanthera oblongifolia*

(10–20ft), ↔ 1.5–4m (5–12ft). Mozambique, South Africa (KwaZulu/Natal, Northern Cape). ☼ (min. 5°C/41°F)

**A. spectabilis** see *A. oblongifolia*.

▷ **Aconite** see *Aconitum*

**Winter** see *Eranthis*, *E. hyemalis*

## ACONITUM

Aconite, Monkshood

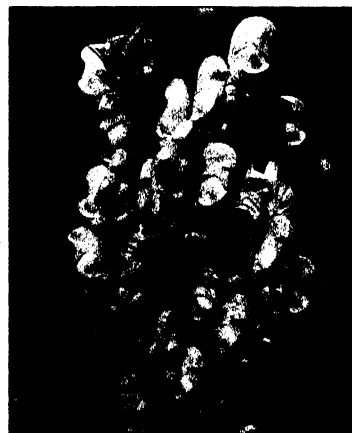
RANUNCULACEAE

Genus of 100 species of perennials and biennials, mainly from mountainous grassland or scrub in the N. hemisphere. Most have tuberous or occasionally fibrous roots and erect, sometimes twining stems. The stems bear shallowly to palmately lobed, kidney-shaped to rounded or ovate, usually rich green leaves, mostly 5–10cm (2–4in) long. The curious, hooded flowers, usually 2.5–5cm (1–2in) long, are borne in racemes or panicles, 30–60cm (12–24in) long, well above the leaves. Flower shape and colour are provided by the sepals, because the petals are converted to nectaries under the "hood" of sepals. Ideal for a woodland garden and for borders; grow twining species through shrubs for support. Aconites are good for cutting, but contact with the foliage may irritate skin; all parts are highly toxic if ingested.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Best grown in cool, moist, fertile soil in partial shade, but will tolerate most soils and full sun. Taller aconites require staking.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide every third year in autumn or late winter to maintain vigour, although plants are sometimes slow to re-establish.
- **PESTS AND DISEASES** Fungal stem rot, aphids, and *Verticillium* wilt may be a problem.

**A. anthora** ♂ Upright, usually hairy perennial with rounded, deeply lobed, dark green leaves. In mid- and late summer, bears compact racemes of pale yellow, sometimes blue-violet flowers. †60–75cm (24–30in), ↔ 30cm (12in). C., S., and E. Europe. \*\*\*

**A. 'Blue Sceptre'**. Erect perennial with rounded, 3- to 5-lobed, glossy, dark green leaves. From midsummer to early autumn, bears bicoloured, violet and white flowers in tapering racemes. †60cm (24in), ↔ 30cm (12in). \*\*\*



*Aconitum anthora*



*Aconitum* 'Bressingham Spire'

**A. 'Bressingham Spire'** ♂♀ Upright perennial with rounded, 3- to 5-lobed, glossy, dark green leaves. Bears tapering racemes of deep violet flowers from midsummer to early autumn. †0.9–1m (36–39in), ↔ 30cm (12in). \*\*\*

**A. x cammarum cultivars**. Selections from *A. x cammarum* are erect with ovate to rounded, deeply 3- to 7-lobed, glossy, dark green leaves. They bear panicles or racemes of purple to white, sometimes bicoloured flowers in mid- and late summer. †1.2–1.5m (4–5ft), ↔ 30cm (12in). \*\*\*. **'Bicolor'** ♂♀ bears loose racemes of blue-and-white flowers on arching branches; † to 1.2m (4ft). **'Grandiflorum Album'** has white flowers, evenly spaced in long racemes. **'Nachtimmel'** bears loose racemes of deep violet flowers on arching branches. **A. carmichaelii**, syn. *A. fischeri* of gardens. Erect perennial with ovate, 3- to 5-lobed, leathery, dark green leaves. In early autumn, bears dense panicles of large, violet or blue flowers. †1.5–1.8m (5–6ft), ↔ 30–40cm (12–16in). Russia to China. \*\*\*. **'Arendsii'** ♂♀ syn. 'Arends', has sturdy stems and rich blue flowers in branched panicles in early and mid-autumn; † to 1.2m (4ft), ↔ 30cm (12in). **'Barker's Variety'** bears deep violet flowers. **'Kelmescott'** ♀ has tall panicles of lavender-blue flowers in early and mid-autumn.

**A. compactum 'Carneum'** see *A. napellus* 'Carneum'.

**A. fischeri of gardens** see *A. carmichaelii*.

**A. hemsleyanum** ♂♀ syn. *A. volubile* of gardens. Perennial, twining climber with ovate, 3- to 5-lobed leaves. Racemes of



*Aconitum x cammarum* 'Bicolor'

*Aconitum carmichaelii* 'Arendsii'

large violet flowers are borne from midsummer to early autumn. † 2–3m (6–10ft). W. and C. China. \*\*\*  
**A. 'Ivorine'** [■] syn. *A. septentrionale* 'Ivorine'. Upright, bushy perennial with rounded, deeply 3- to 7-lobed leaves. Dense racemes of ivory flowers are borne in late spring and early summer. The flowers are larger and clearer in colour in cool, moist climates. † 90cm (36in), ↔ 45cm (18in). \*\*\*  
**A. lamareckii** see *A. lycoctonum* subsp. *neapolitanum*.

**A. lycoctonum** (Wolf's hane). Erect perennial with rounded, 5- to 7-lobed, dark green leaves and panicles of usually yellow, sometimes purple flowers borne in mid- and late summer. † 1–1.5m (3–5ft), ↔ 30cm (12in). C. and S. Europe. \*\*\*. **subsp. lycoctonum**, syn.

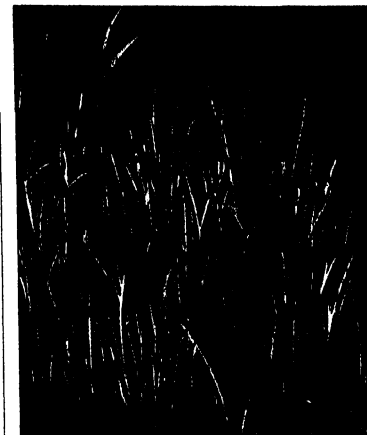
*Aconitum hemsleyanum*

*A. septentrionale*, has deeply lobed leaves and often scandent stems, bearing erect racemes of tall, narrowly hooded, pale yellow, cream, or purple flowers; W. Europe to Romania. **subsp. neapolitanum**, syn. *A. lamareckii*, *A. neapolitanum*, *A. pyrenaicum*, has 7- or 8-lobed leaves and bears yellow flowers in large racemes or panicles; † 1–1.2m (3–4ft); Pyrenees to Balkans. **subsp. vulparia** [■] syn. *A. orientale* of gardens. *A. vulparia*, has 5- to 9-lobed leaves and pale yellow flowers; C. and S. Europe. **A. napellus** (Monkshood). Variable, erect perennial with rounded, deeply 5- to 7-lobed, dark green leaves, the lobes toothed or further divided. Bears dense racemes of indigo-blue flowers in mid- and late summer. † 1.5m (5ft), ↔ 30cm (12in). N. and C. Europe. \*\*\*.

*Aconitum* 'Ivorine'*Aconitum lycoctonum* subsp. *vulparia**Aconitum* 'Spark's Variety'

**'Albidum'** bears grey-white flowers. **'Carneum'**, syn. *A. compactum* 'Carneum', has leaves with deep, narrow lobes and dusty pink flowers, which are a clearer colour in cool, moist climates. **A. neapolitanum** see *A. lycoctonum* subsp. *neapolitanum*. **A. 'Newry Blue'**. Erect perennial with rounded, 5- to 7-lobed, dark green leaves, and many-branched, dense racemes of mid-blue flowers produced in mid- and late summer. † to 1.5m (5ft), ↔ 30cm (12in). \*\*\*  
**A. orientale** of gardens see *A. lycoctonum* subsp. *vulparia*. **A. pyrenaicum** see *A. lycoctonum* subsp. *neapolitanum*. **A. septentrionale** see *A. lycoctonum* subsp. *lycoctonum*. **A. septentrionale 'Ivorine'** see *A. 'Ivorine'*. **A. 'Spark's Variety'** [■] Upright perennial with rounded, deeply 5- to 7-lobed leaves on thin stems. Large, widely branched panicles of deep violet flowers are produced in mid- and late summer. † 1.2–1.5m (4–5ft), ↔ 45cm (18in). \*\*\*  
**A. volubile**. Perennial climber, often confused with *A. hemsleyanum*, with small, rounded, 3-lobed leaves. Racemes of lilac or greenish blue flowers are produced in mid- and late summer. † to 2m (6ft) or more. E. Siberia, China (Manchuria), Japan. \*\*\*  
**A. volubile** of gardens see *A. hemsleyanum*. **A. vulparia** see *A. lycoctonum* subsp. *vulparia*.

▷ *Aconogonon* see *Persicaria*

*Acorus calamus* 'Variegatus'

## ACORUS

ARACEAE

Genus of 2 species of rhizomatous, marginal aquatic perennials, one semi-evergreen and one deciduous, found in shallow water by streams and lakes throughout the N. hemisphere, particularly E. Asia. They have sheathed, radical, linear or strap-shaped leaves, which die off in autumn leaving a small basal tuft of foliage that develops the following year. In midsummer, insignificant flowers, resembling small horns, 5–7cm (2–3in) long, are produced laterally just below the tips of central, leaf-like flower stems. They are excellent foliage plants for the shallow margins of a pool, for a bog garden or sink garden, or for marshy areas. Some cultivars of *A. gramineus* are useful aquarium plants.

- **HARDINESS** Fully hardy to half hardy. *Acorus* species are short-lived in cold climates, but they are hardy in warmer climates. They tolerate temperatures down to  $-22^{\circ}\text{C}$  ( $-7^{\circ}\text{F}$ ) and can survive in full sun; use aquatic baskets for *A. gramineus* and *A. calamus* cultivars, which thrive in shallow water, to 10cm (4in) deep. In an aquarium, grow *A. gramineus* and its cultivars in containers to avoid disturbing the roots. See also pp.52–53.
- **PROPAGATION** Divide rhizomes at the beginning of the growing season and pot up, planting out only when established; repeat every 3–4 years to prevent congestion.
- **PESTS AND DISEASES** Trouble free.

**A. calamus 'Variegatus'** [■] Spreading, deciduous, aquatic perennial with strap-shaped, aromatic, bright green leaves, 1.5m (5ft) long, longitudinally striped white and cream, and with distinct midribs and occasionally wrinkled margins. Grows best in water no deeper than 22cm (9in). † 60–90cm (24–36in), ↔ 60cm (24in). \*\*\*

**A. gramineus** (Japanese rush). Semi-evergreen, aquatic perennial with fans of 2-ranked, linear, glossy, rich green leaves, 8–35cm (3–14in) long. † 8–35cm (3–14in), ↔ 10–15cm (4–6in). E. Asia. \* **'Ogon'**, syn. **'Wogon'**, bears glossy, variegated leaves, striped with pale green and cream; † to 25cm (10in), ↔ 10–15cm (4–6in). **'Pusillus'** (Dwarf Japanese rush) is compact, with stiff, dark green leaves, 4–16cm (1½–6in)







*Ada aurantiaca*

***A. aurantiaca*** ■ Evergreen, epiphytic orchid with oblong pseudobulbs and 2 narrowly oval, mid-green leaves, 10cm (4in) long. Bears basal racemes of bright orange flowers, 2.5cm (1in) long, in spring. ↑ 23cm (9in), ↔ 15–23cm (6–9in). Colombia, Venezuela. ☼ (min. 10°C/50°F; max. 24°C/75°F)

▷ **Adam's needle** see *Yucca filamentosa*

## ADANSONIA

BOMBACACEAE

Genus of 9 or 10 species of mostly deciduous trees from tropical, semi-arid regions of Africa, the Comoros Islands, Madagascar, and N. and N.W. Australia. They have succulent, often swollen trunks and short, branched crowns. The simple to palmate (sometimes only palmately lobed) leaves are borne only on mature plants, in summer. The large, solitary, pendent flowers are usually creamy white with 5 crinkled, waxy petals and "powder puffs" of numerous stamens; they are followed by spherical to oblong-ovoid, fleshy, often woody-coated, edible, velvety, pale brown fruits. Where temperatures fall below 16°C (61°F), grow in a warm greenhouse; in warmer climates, grow in a desert garden.

• **HARDINESS** Frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit or sharp sand, in full light. Water sparingly in spring and autumn, moderately in summer; keep dry in winter. In the growing season, apply a low-phosphate liquid fertilizer monthly. Outdoors, grow in well-drained, sandy, moderately fertile soil in full sun.

• **PROPAGATION** Sow seed as soon as ripe at 19–24°C (66–75°F).  
• **PESTS AND DISEASES** Aphids may infest young leaves and flower buds.

***A. digitata*** ♀ (Baobab tree). Deciduous tree with a thick, swollen, succulent trunk and short branches. These bear rounded, usually 5- to 9-palmate, occasionally only lobed leaves, to 17cm (7in) long. Pendent flowers, 10–12cm (4–5in) across, with partially reflexed white petals and extended, central "balls" of purple-anthered stamens, are borne on long stalks, with or just before the leaves, in summer. Woody, ovoid fruit, 25cm (10in) long, contain large black seeds. ↑ to 18m (60ft), ↔ 30m

(100ft). S.W. Africa, N.E. South Africa, Comoros Islands, W. Madagascar. ☼ (min. 16°C/61°F)

▷ **Adder's tongue,**

**Footed** see *Scolioptus bigelovii*

**Yellow** see *Erythronium americanum*

## ADENIA

PASSIFLORACEAE

Genus of over 90 species of deciduous, perennial succulents, sometimes semi-evergreen, with caudiciform rootstocks and vine-like climbers with thin, thorny, tendril-bearing stems; they are found in scrub or desert in Africa, Madagascar, and Burma. All have alternate, palmate or simple leaves. The axillary cymes of tiny, sometimes scented flowers, to 1cm (½in) across, are followed by conical to obovoid, capsular, yellow, green, or red fruits, 2–4cm (¾–1½in) long. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse; in warmer regions, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light in dry, airy conditions. Water sparingly in spring and autumn, freely in summer; keep dry in winter. In the growing season, apply a balanced liquid fertilizer every 4–6 weeks. Outdoors, grow in well-drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Take cuttings from non-flowering stems in summer; small tubers develop about 3 months from rooting.

• **PESTS AND DISEASES** Vulnerable to mealybugs during the growing season.

***A. buchananii*** see *A. digitata*.

***A. digitata***, syn. *A. buchananii*, *Modecca digitata*. Perennial succulent with a cylindrical grey caudex, to 30cm (12in) or more across, which tapers into an erect, slender stem, crowned by a cluster of 3- to 5-palmate, sometimes semi-evergreen, dark green leaves, 10cm (4in) or more long. Small, star-shaped yellow flowers open with the leaves in summer, followed by obovoid, yellow to red fruit. The sap may cause severe discomfort if ingested. ↑ 1.5m (5ft), ↔ 1m (3ft). Mozambique, N.E. South Africa. ☼ (min. 15–16°C/59–61°F)

***A. globosa*** ■ Perennial succulent with a spherical, greyish green caudex, to 1m (3ft) across. Interlaced, stiff, spiny,



*Adenia globosa*

thick, greyish green branches have lance-shaped, warty, mid-green, deciduous leaves, 7–10mm (¼–½in) long. Small, star-shaped, scented, bright red flowers open in spring, followed by ovoid, green then orange fruit. ↑ to 1.5m (5ft), ↔ 1m (3ft). Kenya, Tanzania. ☼ (min. 15–16°C/59–61°F)

***A. spinosa***. Perennial succulent with a swollen, grey-green caudex, to 2m (6ft) wide, and stiff, sharply spiny branches with ovate to elliptic, mid-green, deciduous leaves, 3cm (1¼in) long. Small, tubular, creamy white flowers open in summer with the leaves; they are followed by obovoid yellow fruit. ↑ 3m (10ft), ↔ 1m (3ft). N.E. South Africa. ☼ (min. 15–16°C/59–61°F)

## ADENIUM

Desert rose, Impala lily

APOCYNACEAE

Genus of one very variable species (sometimes considered to be 5 or 6 species) of perennial succulent found in semi-arid regions of the Arabian Peninsula and E. to S.W. Africa. The swollen caudex may be very low, with its base partly underground, or may grow taller and be widely bottle-shaped. The irregular, spineless branches bear glossy leaves in spiral, terminal clusters, with salverform flowers varying in colour from rich red to pink or white. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse or as houseplants; in warmer areas, grow in a desert garden. The milky sap that exudes from broken stems may irritate skin and cause severe discomfort if ingested.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full light with shade from hot sun. When in growth, water moderately and apply a balanced liquid fertilizer 2 or 3 times; water more sparingly in winter. Outdoors, grow in well-drained, slightly alkaline, humus-rich soil in full sun with some midday shade. See also pp.48–49.

• **PROPAGATION** Sow seed as soon as ripe at 21°C (70°F). Root cuttings from non-flowering shoots in summer with bottom heat.

• **PESTS AND DISEASES** Prone to aphids.

***A. arabicum*** see *A. obesum*.

***A. micranthum*** see *A. obesum*.

***A. obesum*** ■ syn. *A. arabicum*, *A. micranthum*, *A. speciosum*, *Nerium*



*Adenium obesum*

***obesum***. Variable, perennial succulent with a thick, usually bottle-shaped, twisted, greyish brown caudex, often more than 1m (3ft) long, and tapering to a many-branched tip. Upright, succulent brown branches produce ovate, grey-green leaves, to 10cm (4in) long. Red, pink, or white flowers, to 4–6cm (1½–2½in) across, are borne in small terminal corymbs throughout summer, sometimes before the leaves. ↑ 1.5m (5ft), ↔ 1m (3ft). E. to S.W. Africa, Arabian Peninsula. ☼ (min. 15°C/59°F; optimum 21°C/70°F).

**subsp. *oleifolium*** has an almost spherical or ovoid caudex, and produces 1–5 slender branches with lance-shaped, grey-green leaves, to 15cm (6in) long, arranged in loose rosettes; ↑ 45cm (18in), ↔ 30cm (12in); S.W. Africa.

***A. speciosum*** see *A. obesum*.

## ADENOCARPUS

LEGUMINOSAE/PAPILIONACEAE

Genus of about 15 species of deciduous and evergreen, sometimes semi-evergreen shrubs, occasionally trees, found in scrub or light woodland in S. W. Europe, the Mediterranean, Canary Islands, and N. Africa. They have alternate, 3-palmate leaves and are valued for their broom-like yellow flowers, which are borne in terminal, sometimes congested racemes on the previous year's growth in spring or summer. Grow in a sunny shrub border in frost-free climates, or against a warm, sunny wall in frost-prone areas.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in light, moderately fertile, very well-drained soil in full sun; in frost-prone areas, protect from winter wet and wind. Pruning group 8, or 13 if wall-trained.

• **PROPAGATION** Sow seed in corners in a cold frame in autumn, sowing. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Broomrape free.

***A. complicatus***. Variable, upright or spreading, deciduous shrub producing 3-palmate leaves with inversely lance-shaped leaflets, to 2.5cm (1in) long. In summer, bears dark yellow flowers, occasionally red-tinged, to 1.5cm (½in) long, in dense, arching terminal racemes, to 10–15cm (4–6in) long. ↑↔ 4m (12ft). Mediterranean, S.W. Europe. ✱✱

***A. decorticans*** ■ Stiff, horizontally branching, deciduous shrub with flaky



*Adenocarpus decorticans*



A

grey to white bark and dense clusters of small, silver-hairy leaves with 3 narrowly elliptic leaflets, 0.5–1.5cm (¼–½in) long, with inrolled margins. Bright yellow flowers, to 1.5cm (½in) long, are borne in short, erect racemes, to 6cm (2½in) long, in late spring and early summer.  $\pm$  2.2m (7ft). Spain. \* \*

**A. viscosus.** Semi-evergreen shrub with erect, then spreading branches covered with 3-palmate, stalkless, grey-green leaves with narrowly elliptic leaflets, to 1cm (½in) long. In late spring, bears dark golden yellow to orange flowers, 1.5–2cm (½–¾in) long, in dense terminal racemes, to 6cm (2½in) long.  $\pm$  1m (3ft),  $\pm$  1.5m (5ft). Canary Islands (Tenerife and La Palma). \* \*

## ADENOPHORA

CAMPANULACEAE

Genus of more than 40 species of fleshy-rooted perennials, similar to campanulas (differing in having discs at the bases of the styles). They are found in temperate woodland and grassland, sometimes at high altitudes, in Europe and Asia. They produce rounded basal leaves (dying back before flowering in some species) and small, lance-shaped to ovate, entire or toothed stem leaves, arranged alternately or, occasionally, in whorls. The pendent or semi-pendent, bell- or funnel-shaped flowers, 0.5–2cm (¼–¾in) long, with protruding styles, are pale to dark lavender-blue and are mostly produced in terminal racemes or panicles. Grow in a border or in open woodland; smaller species are suitable for a rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, humus-rich, moist but well-drained soil in sun or partial shade. Plant seedlings when young, then avoid disturbing the deep roots.

• **PROPAGATION** Sow seed thinly in containers outdoors as soon as ripe or in late winter; plant out potsful of seedlings to avoid disturbing the roots. Root

cuttings of basal shoots in late spring. Seldom tolerates division.

• **PESTS AND DISEASES** Vine weevils may attack the fleshy roots. Slugs and snails will eat young growth.

**A. bulleyana**  $\square$  Erect perennial with alternate, lance-shaped, toothed stem leaves, to 8cm (3in) long. In late summer, bears spike-like racemes of nodding, narrowly funnel-shaped, pale to mid-blue flowers, 1cm (½in) long, often in groups of 3.  $\pm$  1.2m (4ft),  $\pm$  30cm (12in). W. China. \* \* \*

**A. liliiflora** see *A. liliifolia*.

**A. liliifolia**, syn. *A. liliiflora*. Erect perennial with alternate, lance-shaped, stalkless, toothed, hairy stem leaves, 5–8cm (2–3in) long; the basal leaves die back before flowering. Produces panicles of pendent, widely bell-shaped, fragrant, pale blue flowers, to 2cm (¾in) long, in midsummer.  $\pm$  45cm (18in),  $\pm$  30cm (12in). C. Europe to Siberia. \* \* \*

**A. polymorpha** var. *tashiroi* see *A. tashiroi*.

**A. potaninii**. Upright perennial with alternate, ovate to lance-shaped, toothed stem leaves, to 5cm (2in) long. Racemes of pendent, open bell-shaped violet flowers, to 2cm (¾in) long, are borne in mid- and late summer.  $\pm$  60–90cm (24–36in),  $\pm$  30cm (12in). W. China. \* \* \*

**A. tashiroi**, syn. *A. polymorpha* var. *tashiroi*. Semi-decumbent perennial producing small, alternate, ovate to elliptic, coarsely toothed stem leaves, 1.5–3cm (½–1¼in) long. Pendent, bell-shaped violet flowers, to 2cm (¾in) long, are borne in few-flowered racemes on branching stems in midsummer.  $\pm$  10–50cm (4–20in),  $\pm$  15cm (6in). Korea, Japan. \* \* \*

**A. triphylla**. Erect perennial with ovate to elliptic, toothed stem leaves, 4–8cm (1½–3in) long, borne in whorls of 4. In early summer, bears dense, short-branched, lax panicles of bell-shaped violet flowers, to 1cm (½in) long.  $\pm$  60–100cm (24–39in),  $\pm$  15cm (6in). Japan (particularly Hokkaido). \* \* \*. var. *hakusanensis* has a tighter, less lax inflorescence;  $\pm$  30–50cm (12–20in).

▷ *Adiantum duvernoia* see *Justicia adhatoda*

## ADIANTUM

Maidenhair fern

ADIANTACEAE/PTERIDACEAE

Genus of 200–250 species of evergreen, semi-evergreen, and deciduous ferns, many from tropical and subtropical areas of North and South America, but a few from temperate regions of Europe, Asia, Australasia, and North America. Most grow at woodland margins, in shady crevices in rocks, or at stream-sides; some prefer deeper forest shade. The fronds are 1- to 5-pinnate, with oblong or diamond-shaped to rounded segments and usually long, shiny black or deep purple-red stalks; these are produced from often many-branched, long- to short-creeping, sometimes erect rhizomes. Rounded or oblong sori form on the margins of the frond divisions and are covered by kidney-shaped or semi-circular indusia. Adiantums are grown for their elegant foliage and, in many species, the purplish pink colour

in partial shade; *A. capillus-veneris* prefers moist, alkaline soil. Grow tender species in humus-rich, well-drained soil in a partially shaded, open site.

• **PROPAGATION** Sow spores as soon as ripe, at minimum 15°C (59°F) for hardy species and 21°C (70°F) for tender ones. Divide rhizomes in early spring. Root plantlets from *A. caudatum* and others that root at the frond tips. See also p.51.

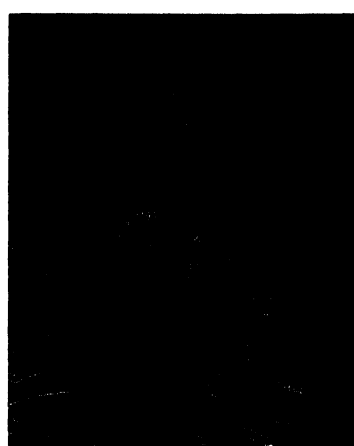
• **PESTS AND DISEASES** Scale insects may be a problem under glass.

**A. aleuticum**  $\square$  syn. *A. pedatum* subsp. *aleuticum* (Aleutian maidenhair fern, Northern maidenhair fern). Deciduous or semi-evergreen fern with short rhizomes and broadly ovate to kidney-shaped, pedate, pale to mid-green fronds, 20–30cm (8–12in) long, with oblong segments, and black stalks and midribs. New fronds may be tinged pink when very young. Closely allied to *A. pedatum* but with shorter rhizome internodes.  $\pm$  75cm (30in). W. North America, E. Asia. \* \* \*

'Japonicum' has golden red new fronds, maturing to green. var. *subpumilum*, syn. subsp. *subpumilum* (Dwarf maidenhair fern), has fronds 10–12cm (4–5in) long;  $\pm$  15cm (6in),  $\pm$  30cm (12in).

**A. capillus-veneris** (True maidenhair fern). Evergreen fern, deciduous at around -2°C (28°F), with short-creeping rhizomes. Triangular, 2- or 3-pinnate, light green fronds, 70cm (28in) long, with fan-shaped pinnae, are produced on glossy black stalks.  $\pm$  30cm (12in),  $\pm$  40cm (16in). Temperate and tropical regions worldwide. \* \*

**A. caudatum** (Trailing maidenhair fern, Walking maidenhair fern). Evergreen fern, with short-creeping rhizomes, bearing ladder-like, linear, pinnate fronds, to 60cm (24in) long, with entire to shallowly lobed, sometimes deeply cut pinnae. Young fronds are pale green to pale pink with red-brown stalks that darken with age, and prominent veins. Plantlets are produced on the elongated frond tips. Ideal for hanging baskets.

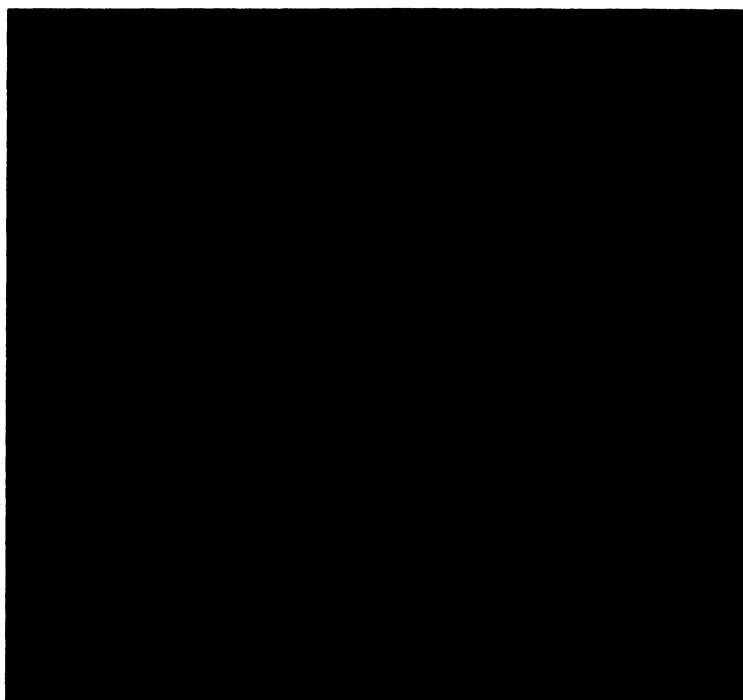


*Adiantum aleuticum*

of the croziers and young fronds. Where temperatures fall below 10°C (50°F), grow tender species in a temperate or warm greenhouse (*A. formosum* in a cool greenhouse). Grow hardy species, or tender species in warmer regions, in woodland, or in a shady border.

• **HARDINESS** *A. aleuticum*, *A. capillus-veneris*, *A. pedatum*, and *A. venustum* are fully hardy or frost hardy. In mild areas, *A. formosum* will survive short periods of frost if given protection and a sheltered site. The remaining species and cultivars are frost tender.

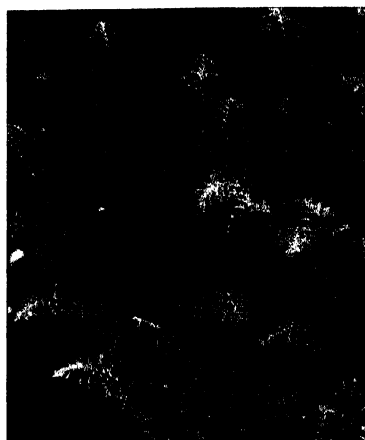
• **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, charcoal, and limestone chippings; 2 parts sharp sand; 3 parts leaf mould. Provide bright indirect light in summer, bright filtered light in winter, and medium to high humidity with good ventilation; water less if air flow is poor, and sparingly in winter. When in growth, apply a half-strength balanced liquid fertilizer monthly. Remove old, damaged fronds in spring. If moving plants from a humid to a drier environment, do so gradually to avoid wilting. Outdoors, grow hardy species in moist but well-drained, moderately fertile soil



*Adiantum formosum*



78 *Adenophora bulleyana*

*Adiantum pedatum*

↑ 10–40cm (4–16in), ↔ 60cm (24in). India to Philippines, New Guinea, Taiwan, China. ☼ (min. 10°C/50°F)

*A. cuneatum* see *A. raddianum*.

*A. formosum* ■ (Australian maidenhair fern, Giant maidenhair fern). Evergreen fern with erect, roughly triangular, 2- to 4-pinnate fronds, to 1m (3ft) long, on long purple-black stalks, arising from long-creeping rhizomes. Segments are triangular to diamond-shaped and deeply cut. Fronds are pale green when young, darkening with age. Grow in a cool greenhouse in cold climates. ↑ to 1m (3ft), ↔ 2m (6ft) or more. E. Australia, New Zealand. \*

*A. pedatum* ■ ♀ (Deciduous fern with stout, creeping rhizomes, producing lance-shaped, broadly ovate to kidney-shaped, pinnate, mid-green fronds, to 35cm (14in) long, on glossy, dark brown or black stalks. The segments are oblong or obliquely triangular, and lobed or toothed on their upper margins. ↑↔ 30–40cm (12–16in). E. North America. \*\*\*.

subsp. *aleuticum* see *A. aleuticum*.

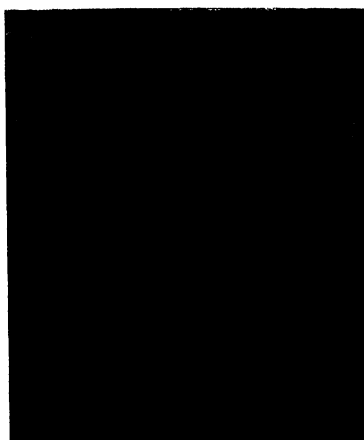
*A. peruvianum* (Silver dollar maidenhair fern). Evergreen fern with short-creeping rhizomes, producing triangular, 1- to 3-pinnate, dark green fronds, to 1m (3ft) long, on black-purple stalks. Diamond-shaped to ovate-rhomboid segments are to 5cm (2in) long. Young fronds are pale pink with a silky sheen. ↑ 1m (3ft), ↔ 1.5m (5ft). Ecuador, Peru, Bolivia. ☼ (min. 14°C/57°F)

*A. raddianum*, syn. *A. cuneatum* (Delta maidenhair fern). Evergreen fern with short rhizomes and roughly triangular, 3- or 4-pinnate, black-stalked fronds, to 60cm (24in) long, with rounded to triangular, variably lobed segments. Fronds are pale green, darkening with age. ↑ to 60cm (24in), ↔ 80cm (32in). Tropical North and South America, West Indies, W. South America. ☼ (min. 7°C/45°F). 'Elegans' has fronds to 25cm (10in) long, with small, narrowly wedge-shaped segments, 1cm (½in) long, tapered at the bases and often curved towards the centres of the fronds. 'Fragrantissimum', syn. 'Fragrans', has dense fronds with deeply lobed, often overlapping, segments; ↑ to 75cm (30in). 'Fritz Luth' has light green fronds with segments that are held almost horizontally or arch downwards. 'Gracillimum' ■ syn. 'Gracilis', has pendent, broadly triangular, much-dissected fronds, with oblong segments, tapered at the bases. Some variants are

*Adiantum raddianum* 'Gracillimum'

crested; young foliage may be pale pink; ↑ 80cm (32in). 'Grandiceps' (Tassel maidenhair fern) is crested, with each frond tip forming a dissected fan. Use in a hanging basket. 'Victoria's Elegans' is often confused with 'Elegans', but has fronds with broad, wedge-shaped, more rounded segments. 'Weigandii' is compact, and has dense, erect fronds with broadly fan- to diamond-shaped, deeply cut segments; ↑ to 40cm (16in). 'White Fritz Luth' has fronds that unfold pure white and turn pale green.

*A. tenerum* ■ (Brittle maidenhair fern). Evergreen fern with broadly triangular, 1- to 3-pinnate, mid-green fronds, to 1m (3ft) long, borne on dark purple-brown to black stalks, arising from short rhizomes. Superficially similar to *A. raddianum*, but the segments are ovate and deeply cut, with jointed stalks, and softly hairy when young. Some cultivars will overwinter in a cool garden if given a dry mulch. ↑ to 60cm (24in), ↔ to 90cm (36in). S. USA, Central America, N. South America. ☼ (min. 5°C/41°F). 'Farleyense' (Barbados maidenhair fern, Glory fern) is a variable complex of large ferns with broadly fan-shaped, deeply cut segments, tinged bronze-pink when young and becoming light green with age; many of its selections are infertile; ↑ to 90cm (36in). 'Lady Moxham' has pendent fronds with broad, fan-shaped segments. 'Pacific May' has broadly fan-shaped segments with many narrow, deeply cut divisions; ↑ to 75cm (30in). 'Scutum Roseum' has erect, 3-pinnate fronds with crowded, rhomboidal segments. Young fronds are rose-pink; ↑ 50cm (20in).

*Adiantum tenerum**Adiantum venustum*

*A. trapeziforme* (Diamond maidenhair fern, Giant maidenhair fern). Evergreen fern with short rhizomes, producing erect to spreading, broadly triangular, 3-pinnate fronds, to 2m (6ft) or more long, on black stalks. Segments, to 6cm (2½in) long, vary from ovate-diamond-shaped to rhomboidal, and are mid-green, sometimes glaucous beneath. ↑ to 2m (6ft) or more, ↔ 2.5m (8ft) or more. Tropical North and South America, West Indies, Cuba. ☼ (min. 14°C/57°F)

*A. venustum* ■ ♀ (Himalayan maidenhair fern). Evergreen fern, deciduous below -10°C (14°F), with creeping rhizomes. Narrowly triangular, usually 3-pinnate, mid-green fronds, 15–30cm (6–12in) long, with narrowly fan-shaped segments, are produced on black stalks. New fronds emerge bright bronze-pink in late winter and early spring. Hardy to -30°C (-22°F). ↑ 15cm (6in), ↔ indefinite. China, Himalayas. \*\*\*

## ADLUMIA

### FUMARIACEAE

Genus of one species of biennial climber found at the edges of moist woodland in temperate areas of Korea and E. North America, grown for its delicate foliage and nodding to pendent flower panicles. The leaves are 2- to 4-pinnate, and form a basal rosette on the plant when young, becoming alternate as the flowering stem elongates in the second year. The flowers, borne in axillary, nodding to pendent panicles, each have 2 pairs of petals, the outer pair with basal pouches. *A. fungosa* is effectively grown over an arch, pergola, or through a large shrub.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any fertile, humus-rich, moist but well-drained soil in sun or partial shade, with shelter from strong winds.

• **PROPAGATION** Sow seed as soon as ripe or in spring, either in containers in a cold frame or *in situ*. May self-seed.

• **PESTS AND DISEASES** Prone to aphids.

*A. cirrhosa* see *A. fungosa*.

*A. fungosa*, syn. *A. cirrhosa* (Allegheny vine, Climbing fumitory, Mountain fringe). Slender biennial climber with leaf-stalk tendrils and 2- to 4-pinnate, light green, fern-like leaves, 10–25cm (4–10in) long. Green- or purple-tinted, pale pink or white flowers, 1.5cm (½in) long, are borne in panicles, 5–10cm (2–4in) long, from summer to autumn.

As the flowers fade, the persistent petals enclose the developing seed pods.

↑ 3–5m (10–15ft), occasionally more.

Korea, E. North America. \*\*\*

▷ *Adonidia merrillii* see *Veitchia merrillii*

## ADONIS

### RANUNCULACEAE

Genus of about 20 species of annuals and perennials from Europe and Asia, mainly from alpine habitats. The fern-like foliage dies back by midsummer in some species. The solitary, terminal, anemone-like flowers are usually yellow in perennials and red in annuals; double-flowered cultivars have up to 30 petals. The Asiatic species are best grown in shady woodland and the European species in an open, rocky site.

• **HARDINESS** Fully hardy.

• **CULTIVATION** *Adonis* species have varying cultivation requirements. For ease of reference, these have been divided into the following groups:

1. Humus-rich, cool, moist, light, acid soil in full shade.

2. Moist but well-drained, humus-rich soil in partial shade.

3. Well-drained, moderately fertile, alkaline soil in full sun.

• **PROPAGATION** Sow seed of perennials in containers in a cold frame as soon as ripe; germination in spring is slow and erratic, and seedling growth slow. Sow seed of annuals *in situ* in autumn or spring. Perennial species resent division, but if required, divide after flowering.

• **PESTS AND DISEASES** Susceptible to slug damage, especially *A. vernalis*.

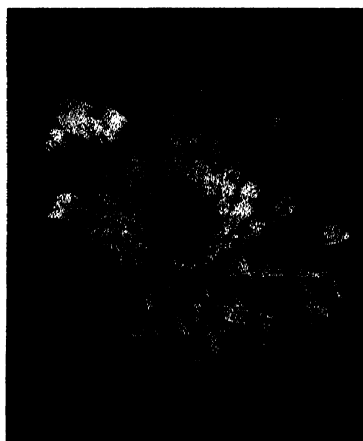
*A. aestivalis*. Erect annual with 1- to 3-pinnate leaves, 3–5cm (1¼–2in) long, with linear to thread-like leaflets; in midsummer, bears cup-shaped, dark-centred red flowers, 1.5–2.5cm (½–1in) wide, with 5 spreading petals, and sepals pressed to the petals. Cultivation group 3. ↑ 40cm (16in), ↔ 15–30cm (6–12in). C. and S. Europe. \*\*\*

*A. amurensis* ■ Clump-forming perennial producing triangular to ovate, 3-pinnate leaves, to 10cm (4in) long, with many linear leaflets with pointed lobes. Bowl-shaped yellow, sometimes bronze-backed flowers, 3–5cm (1¼–2in) across, with 20–30 petals, are borne in late winter and early spring, before the leaves emerge, on short stems that gradually lengthen. Cultivation group 1.

*Adonis amurensis*

A

‡ 20–40cm (8–16in), ↔ 30cm (12in). China (Manchuria), Korea, Japan. \*\*\*. **'Flore Pleno'** ■ has double, green-tinged yellow flowers. **'Fukujukai'** has semi-double, sterile, bright yellow flowers, 5cm (2in) across. **'Hinomoto'** has orange-red, green-tinted flowers. **'Pleniflora'**, syn. **'Plena'**, produces neat, double yellow flowers, each with a prominent green eye. **A. annua** (Pheasant's eye). Erect annual producing finely divided, 3-pinnate leaves, 3–5cm (1½–2in) long, with linear leaflets. Cup-shaped, dark-centred scarlet flowers, 1.5–2.5cm (½–1in) across, are borne in early summer. The 5 almost erect petals are clearly separated from the sepals. Cultivation group 3. ‡ 45cm (18in), ↔ 15–30cm (6–12in). S. Europe to S.W. Asia. \*\*\*

*Adonis amurensis* 'Flore Pleno'*Adonis brevistyla**Adonis vernalis*

**A. brevistyla** ■ Clump-forming perennial with narrowly ovate, 1- or 2-pinnate leaves, 5–12cm (2–5in) long, the leaflets with pointed lobes. Shallowly cup-shaped flowers, to 5cm (2in) across, with 20 or more petals, usually white with blue on the outside, are produced in late spring. Cultivation group 1. ‡ 20–40cm (8–16in), ↔ 20cm (8in). China (Yunnan), S. Tibet, Bhutan. \*\*\*

**A. chrysocyathus**. Clump-forming perennial with triangular, 3-pinnate leaves, to 16cm (6in) long, the leaflets with long, flat, sharp-pointed lobes. Many cup-shaped, bright yellow flowers, to 5cm (2in) across, with 20–25 petals, are produced from early summer to early autumn. Cultivation group 2. ‡ 15–40cm (6–16in), ↔ 30cm (12in). W. Himalayas, Tibet. \*\*\*

**A. vernalis** ■ Clump-forming perennial producing 2- or 3-pinnate, bright green leaves, 3–5cm (1¼–2in) long, with linear leaflets, the lower ones scale-like. Shallowly cup-shaped, bright golden yellow flowers, to 8cm (3in) across, with up to 20 elliptic petals, are produced in mid- and late spring. Cultivation group 3. ‡ to 38cm (15in), ↔ 45cm (18in). Finland to Italy, E. Europe to the Urals. \*\*\*

## ADROMISCHUS

CRASSULACEAE

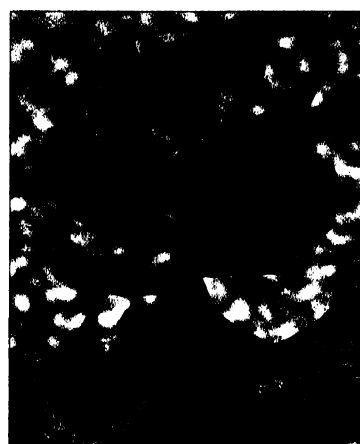
Genus of about 30 species of stemless or short-stemmed perennial succulents, closely related to *Cotyledon*, from semi-arid areas of southern Africa. The thick, fleshy leaves are clustered or spirally arranged, and the small, tubular flowers, with spreading lobes, are borne in spike-like cymes, mainly in summer. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse or as houseplants; in warmer areas, grow in a raised bed.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in sharply drained standard cactus compost in full light with good ventilation. In summer, water only when the soil has become dry; at other times, water only in warm weather; excess watering may encourage root rot. Apply a low-nitrogen fertilizer 2 or 3 times in the growing season. Outdoors, grow in well-drained, fertile soil, enriched with leaf mould, in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take stem or leaf cuttings in summer.
- **PESTS AND DISEASES** Susceptible to mealybugs and greenfly.

**A. clavifolius** see *A. cooperi*.

**A. cooperi**, syn. *A. clavifolius*, *Cotyledon cooperi*, *Echeveria cooperi*. Freely branching succulent with greyish brown stems and inversely lance-shaped, glossy, grey-green leaves, to 5cm (2in) long, often purple-marked above. Tubular, green-and-red flowers, to 1.5cm (½in) long, with white-margined, pink or purple lobes, are borne in spike-like cymes, 25cm (10in) or more long, in summer. ‡ 10cm (4in), ↔ to 15cm (6in). South Africa (Eastern Cape, Western Cape). ☼ (min. 7°C/45°F)

**A. cristatus** var. *zeyheri*, syn. *Cotyledon zeyheri*. Perennial succulent with semi-erect stems and many aerial roots.

*Adromischus nussbaumerianus*

Inversely lance-shaped to obovate, hairy, grey-green leaves, to 4cm (1½ in) long, spotted purple-red, are fan-like and wavy near the tips. Tubular, greenish red flowers, to 1.5cm (½in) long, with white and pink lobes, are produced in spike-like cymes, to 12cm (5in) long, in summer. ‡ 10cm (4in), ↔ indefinite. South Africa (Eastern Cape). ☼ (min. 7°C/45°F)

**A. nussbaumerianus** ■ Perennial succulent with a low-growing, fleshy, brownish grey caudex and wedge-shaped to obovate, pale to dark green leaves, to 4.5 cm (1¾ in) long. Spike-like cymes, 30cm (12in) long, of tubular white flowers, 1cm (½in) long, are produced in summer. ‡ to 40cm (16in), ↔ to 15cm (6in). South Africa. ☼ (min. 7°C/45°F)

## AECHMEA

BROMELIACEAE

Genus of nearly 200 species of rosette-forming, often rhizomatous, mostly epiphytic, evergreen perennials (bromeliads), mainly from rainforest in S. Mexico, Central America, South America and the West Indies. Their arching leaves are narrowly strap-shaped to triangular. Terminal, simple or compound, spike-like inflorescences with long-lasting, brightly coloured, tubular flowers and triangular bracts are produced in summer, and are often followed by persistent, fleshy, colourful fruits. In areas where temperatures fall below 10°C (50°F), grow in a warm greenhouse or as houseplants; in warmer regions, grow epiphytically in a moist site.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow either epiphytically or in epiphytic bromeliad compost in bright filtered light with low humidity. In the growing season, water freely and apply a low-nitrogen fertilizer monthly. Keep the central "cup" filled with soft water. Outdoors, grow epiphytically or in moist, gritty, humus-rich soil. See also p.47.
- **PROPAGATION** Root offsets in early summer.
- **PESTS AND DISEASES** Scale insects and mealybugs may be a problem.

**A. candida**. Epiphytic perennial with wide funnel-shaped rosettes of strap-shaped, stiff, grey-scaly, mid-green leaves, to 45cm (18in) long, with spiny margins. In summer, bears pyramidal,

floury-white inflorescences, to 20cm (8in) long, of 4- to 9-flowered spikes, 1cm (½in) long, with woolly, pink and white bracts, pale yellow sepals, and white petals. These are followed by spherical, woolly, yellowish white fruit. ‡ 70cm (28in), ↔ 60cm (24in). S. Brazil. ☼ (min. 10°C/50°F)

**A. caudata**. Epiphytic perennial with funnel-shaped rosettes of strap-shaped, grey-scaly, dark green leaves, to 1m (3ft) long, with finely sharp-toothed brown margins. Panicle-like inflorescences, to 25cm (10in) long, of spreading spikes of 4–7 lilac-pink-bracted yellow flowers, 2.5cm (1in) long, are produced in summer. They are followed by ovoid, woolly white fruit. ‡ 1.2m (4ft), ↔ 80cm (32in). S.E. Brazil. ☼ (min. 10°C/50°F)

**A. chantinii** ■ Epiphytic perennial with wide-spreading rosettes of strap-shaped, mid-green leaves, to 40cm (16in) long, margined with short brown spines and cross-banded in greyish white. Lax pyramidal inflorescences, 15cm (6in) long, with short spikes of up to 8 bright yellow to orange flowers, 3cm (1¼in) long, are borne on erect, white-scaly, red-bracted stems in summer. They are followed by ovoid, greenish red fruit. ‡ to 1m (3ft), ↔ to 80cm (32in). S.E. Colombia, N.E. Peru, N. Brazil. ☼ (min. 10°C/50°F)

**A. cylindrata**. Rhizomatous, epiphytic or terrestrial perennial with dense, flat, open rosettes of strap-shaped, grey-scaly, mid-green leaves, to 50cm (20in) long, with red tips and lilac-grey stripes. In summer, bears simple, cylindrical inflorescences, to 20cm (8in) long, composed of many rows of red-bracted flowers, 2cm (¾in) long, with blue petals and rose-red sepals. They are followed by ovoid, woolly white fruit. ‡ 60cm (24in), ↔ to 35cm (14in). S.E. Brazil. ☼ (min. 10°C/50°F)

**A. distichantha** ■ Variable, epiphytic or terrestrial perennial with funnel-shaped rosettes of narrowly triangular to strap-shaped, grey-scaly, dull, mid-green leaves, 1m (3ft) long, with pointed tips and brown marginal spines. Pyramidal or ovoid inflorescences composed of erect to spreading spikes of 2–12 white-felted, pink-bracted, purple, blue, or white flowers, to 3cm (1¼in) long, are borne on white-woolly stems in summer. These are followed by cylindrical, woolly white fruit. ‡ to 1m (3ft) or more. S. Brazil, Bolivia, N.E. Argentina, Paraguay, Uruguay. ☼ (min. 10°C/50°F)

*Aechmea chantinii*



*Aechmea distichantha*

***A. fasciata*** [♂] syn. *Billbergia rhodocyanea* (Vase plant). Rhizomatous, epiphytic perennial with funnel-shaped rosettes of strap-shaped, lilac-grey leaves, to 60cm (24in) long, cross-banded with grey scales, and with tiny brown marginal spines. In summer, densely white-woolly stems bear wide pyramidal inflorescences, 8cm (3in) long, consisting of dense clusters of flowers, 3.5cm (1½in) long, with blue petals, rose-pink bracts, and white-scaly, rose-pink sepals. These are followed by spherical, woolly white fruit. ↓ 40cm (16in) or more, ↔ 50cm (20in). S.E. Brazil. ☼ (min. 10°C/50°F)

***A. Foster's Favorite Group*** [♂] Terrestrial perennial with erect rosettes of strap-shaped, wine-red leaves, 45cm (18in) long, with tiny marginal spines. Semi-pendent inflorescences, to 50cm (20in) long, of pink-tipped, red-bracted blue flowers, 2cm (¾in) long, are borne in summer, followed by pear-shaped red fruit. ↑↔ 30–60cm (12–24in). ☼ (min. 10°C/50°F)

***A. fulgens*** [♂] Epiphytic perennial with funnel-shaped rosettes of broadly strap-shaped, bright green leaves, 40cm (16in) long, grey-waxy beneath, with marginal spines. In summer, red stems bear branched inflorescences, 20cm (8in) long, consisting of spikes of 2–5 flowers, 2cm (¾in) long, with red sepals and violet petals, fading to red; the bracts are absent or reduced to scales. The red fruit are spherical and stalked. ↓ to 50cm (20in), ↔ 40cm (16in). E. Brazil. ☼ (min. 10°C/50°F). **var. *discolor*** ♀ produces leaves purplish or brownish red beneath.



*Aechmea fasciata*



*Aechmea* Foster's Favorite Group

***A. gamosepala*** [♂] Epiphytic or terrestrial perennial with erect, funnel-shaped rosettes of broadly strap-shaped, bright green leaves, 25–55cm (10–22in) long, grey-scaly beneath, with rounded, spiny tips. In summer, bears cylindrical inflorescences, to 25cm (10in) long, of flowers, 1.5cm (½in) long, with pale blue or purple petals, red or pink sepals, and reddish brown bracts. These are followed by spherical, rose-pink fruit. ↑ 50cm (20in), ↔ to 60cm (24in). S.E. Brazil. ☼ (min. 10°C/50°F)

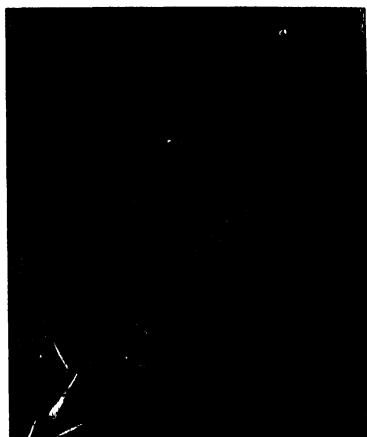
***A. marmorata*** see *Quesnelia marmorata*

***A. mertensii***. Variable, epiphytic perennial with funnel-shaped rosettes of strap-shaped, lilac-grey, white-scaly leaves, to 70cm (28in) long, with black marginal spines. In summer, spikes of 2–8 red-bracted, red or yellow flowers, 2cm (¾in) long, are borne in cylindrical inflorescences, 30cm (12in) long, followed by ovoid pink fruit. ↓ to 70cm (28in), ↔ 35–40cm (14–16in). Venezuela, Colombia, Ecuador, Peru, Brazil, Guyana, Trinidad. ☼ (min. 10°C/50°F)

***A. mexicana***. Epiphytic or terrestrial perennial with wide funnel-shaped rosettes of broadly strap-shaped, spiny-margined, mid-green leaves, 1m (3ft) or more long, irregularly marked with darker green patches. In summer, bears pyramidal or cylindrical, branched inflorescences, to 70cm (28in) long, on grey-scaly stems; they consist of spikes of 5–10 red, lilac, or violet flowers, 1.5cm (½in) long, with rose-pink bracts, and are followed by spherical white fruit. ↑↔ 1m (3ft) or more. Mexico. ☼ (min. 10°C/50°F)



*Aechmea fulgens*



*Aechmea gamosepala*

***A. nudicaulis*** [♂] Variable, epiphytic or terrestrial perennial with rosettes of strap-shaped, grey-green leaves, 30–90cm (12–36in) long, cross-banded with darker grey-green beneath, and with black marginal spines. In summer, bears simple, cylindrical inflorescences, 5–25cm (2–10in) long, of 15–20 red-bracted yellow flowers, 2cm (¾in) long, followed by cylindrical, scaly green fruit. ↑ to 70cm (28in), ↔ 25cm (10in). Central America, N. and N.E. South America, West Indies. ☼ (min. 10°C/50°F). **var. *cuspidata*** has triangular yellow bracts; ↓ to 50cm (20in); Brazil.

***A. orlandiana*** [♂] Epiphytic perennial with funnel shaped rosettes of strap-shaped, mid-green, grey-scaly leaves, 30cm (12in) long, spotted and banded dark purple with purple marginal spines. In summer, red stems bear pyramidal inflorescences, to 10cm (4in) long, with spikes of 4–6 red-bracted, yellow-white flowers, 2–3cm (¾–1½in) long; they are followed by ovoid, pale green fruit. ↓ to 50cm (20in), ↔ 40–50cm (16–20in). S.E. Brazil. ☼ (min. 10°C/50°F)

***A. pineliana***. Variable, mainly epiphytic perennial with funnel-shaped rosettes of strap-shaped, silvery grey-scaly, dark green leaves, to 70cm (28in) long, often cross-banded with silver-grey beneath, and with dark reddish brown marginal spines. In summer, slender, white-woolly stems bear cylindrical inflorescences, 7cm (3in) long, with clusters of brown bristles, and long-bracted yellow flowers, 1.5cm (½in) long, which gradually turn black. The white fruit is spherical and woolly. ↓ to 80cm (32in), ↔ 50cm (20in) or more. S.E. Brazil. ☼ (min. 10°C/50°F)

***A. pubescens***. Epiphytic perennial with wide-spreading rosettes of strap-shaped, mid-green leaves, 1m (3ft) long, which have spiny, sometimes grey margins. In summer, white-woolly, red-bracted stems bear pyramidal inflorescences, 35cm (14in) long, composed of spikes of 8–16 pale violet flowers, 1.5cm (½in) long. These are followed by ellipsoid blue fruit. ↓ 1m (3ft), ↔ to 40cm (16in). Central America, Colombia, Venezuela. ☼ (min. 10°C/50°F)

***A. recurvata*** [♂] Variable, terrestrial perennial with dense, tubular rosettes of narrowly triangular, channelled, often strongly recurved, dark or mid-green leaves, 40cm (16in) long, with curved marginal spines; the central leaves turn red at flowering time and in strong sun. Ovoid inflorescences, 6cm (2½in) long,



*Aechmea nudicaulis*



*Aechmea orlandiana*

have red bracts almost hiding the pinkish white or purple flowers, 3.5cm (1½in) long; they are followed by ovoid white fruit. ↓ to 20cm (8in), ↔ to 50cm (20in). Brazil, Paraguay, Argentina, Uruguay. ☼ (min. 10°C/50°F)

***A. weilbachii***. Epiphytic perennial with funnel-shaped rosettes of strap-shaped, almost smooth-margined, dark green leaves, to 60cm (24in) long, often tinged purple. In summer, red-bracted pink stems bear slender inflorescences, 15cm (6in) long, composed of spikes of 5–10 red-bracted, bluish purple flowers, 1.5cm (½in) long. They are followed by ellipsoid, rough, lilac-red fruit. ↓ to 70cm (28in), ↔ 30cm (12in). S.E. Brazil. ☼ (min. 10°C/50°F)

♂ *Aegle* see *Poncirus*



*Aechmea recurvata*

A

*Aegopodium podagraria* 'Variegatum'

## AEGOPODIUM

Ground elder

APIACEAE/UMBELLIFERAE

Genus of about 5 species of perennials, with invasive rhizomes and deep roots, occurring in woodland in N. and C. Europe, Siberia, and W. Asia. The alternate, deep green leaves have 3 ovate leaflets, and the many-rayed umbels of white flowers are borne on branching, hairless stems. Only the variegated cultivars are suitable for a garden; plant either in containers or as ground cover in poor soil in a shady site, where little else flourishes and where they cannot spread into other plants.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any soil in full or partial shade. Dead-head before the flowers set seed.
- **PROPAGATION** Separate rhizomes in autumn or spring.
- **PESTS AND DISEASES** Trouble free.

*A. podagraria* 'Variegatum' ☐ (Variegated goutweed, Variegated ground elder). Ground-covering perennial with ternate or 2-ternate, toothed, deep green leaves, 10–20cm (4–8in) long, margined and splashed creamy white. Bears flat umbels, 2–6cm (¾–2½in) across, of tiny, creamy white flowers in early summer. † 30–60cm (12–24in), ↔ indefinite. \*\*\*

## AEONIUM syn. MEGALONIUM

CRASSULACEAE

Genus of about 30 species of evergreen, perennial, occasionally biennial succulents, often subshrubby, mainly found on hillsides in Madeira, the Canary Islands, Cape Verde Islands, N. Africa, and the Mediterranean. Neat rosettes of fleshy leaves are produced at the ends of clustered basal shoots.

Terminal cymes, panicles, or racemes of numerous star-shaped, many-petalled flowers, 8–15mm (⅜–½in) across,

develop from the centres of the rosettes from spring to summer. In some species, the flowering branches die once the seeds have ripened. Where temperatures fall below 10°C (50°F), grow in a cool or temperate greenhouse or as houseplants; elsewhere, grow in a border.

- **HARDINESS** Frost tender; they may withstand occasional short periods of frost in dry conditions.

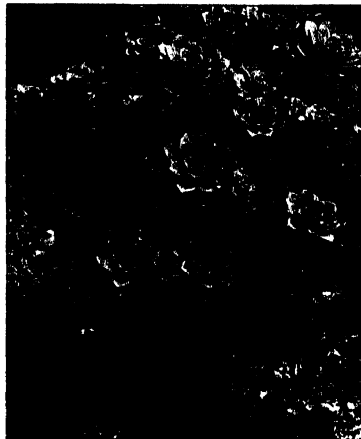
- **CULTIVATION** Under glass, grow in standard cactus compost in filtered light. Water freely and apply a balanced liquid fertilizer 2 or 3 times during the growing season; allow the compost to dry out almost completely between waterings. Keep dry when dormant. Outdoors, grow in moderately fertile, well-drained soil in partial shade. See also pp.48–49.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take rosette cuttings in early summer, wait until calluses have formed, then insert in sandy cactus cutting compost in moderate light, at 18°C (64°F), and keep barely moist until rooted.

- **PESTS AND DISEASES** Prone to greenfly, especially while flowering, and to mealybugs in autumn and winter.

*A. arboreum* ♀ syn. *Sempervivum arboreum*. Erect, succulent subshrub with few branches, each bearing a tightly packed rosette, 20cm (8in) across, of spoon-shaped, light green leaves, to 15cm (6in) long, margined with fine hairs and sometimes mottled purplish green. Bears large, pyramidal panicles, to 30cm (12in) long, of many bright yellow flowers in late spring. † to 2m (6ft). Morocco, but naturalized in other frost-free areas. ☐ (min. 10°C/50°F). 'Zwartkop' ☐ ♀ syn. 'Schwarzkopf', has rich, almost black-purple leaves.

*A. balsamiferum*, syn. *Sempervivum balsamiferum*. Shrubby, balsam-scented, perennial succulent with thick branches, each crowned by a saucer-shaped rosette, 20cm (8in) across, of spoon-shaped, sticky, pale green leaves, 7cm (3in) long,

*Aeonium haworthii*

with pointed tips. Bears pyramidal panicles, 15cm (6in) or more long, of many pale yellow flowers in late spring. An unusual species needing dry conditions. † 1.2–1.5m (4–5ft), ↔ 60cm (24in). Canary Islands (Lanzarote). ☐ (min. 10°C/50°F)

*A. bertoletianum* see *A. tabuliforme*.

*A. canariense*, syn. *A. exsul*. Short-stemmed, perennial succulent, often branching at the base. Produces rosettes, to 40cm (16in) across, of broadly spoon-shaped, dark green leaves, to 25cm (10in) long, with glandular, sticky white hairs. In spring, bears pale green and white flowers in pyramidal, leafy racemes, 50–70cm (20–28in) long. † to 20cm (8in), ↔ 50cm (20in). Canary Islands (Tenerife). ☐ (min. 10°C/50°F)

*A. domesticum* 'Variegatum' see *Aichryson x domesticum* 'Variegatum'.

*A. exsul* see *A. canariense*.

*A. haworthii* ☐ ♀ syn. *Sempervivum haworthii*. Succulent subshrub with slender branches, each crowned by a rosette, 6–15cm (2½–6in) across, of spoon-shaped, pointed, toothed, bluish green leaves, to 8cm (3in) long, keeled beneath, and with red margins. Bears lax panicles, 10–15cm (4–6in) long, of pale

*Aeonium tabuliforme*

yellow to pinkish white flowers in spring. † to 60cm (24in). Canary Islands (Tenerife). ☐ (min. 10°C/50°F)

*A. nobile*, syn. *Megalonium nobile*, *Sempervivum nobile*. Subshrubby, usually unbranched, short-stemmed succulent. Produces rosettes, 50cm (20in) across, of broadly obovate to rounded, very fleshy, often red-tinged, olive-green leaves, to 30cm (12in) long, with incurved margins. Bears large, pyramidal, flat-topped cymes, 20–40cm (8–16in) long, of copper-red or yellow flowers, lined with red, in late spring. The rosettes often die soon after flowering. † 60cm (24in), ↔ 50cm (20in). Canary Islands (La Palma). ☐ (min. 10°C/50°F)

*A. sedifolium*, syn. *Aichryson sedifolium*, *Sempervivum masferrerii*. Dense, succulent subshrub with slender, erect branches that later become pendent. Club-shaped, sticky, fleshy, mid-green to yellowish green, red-lined leaves, to 1.5cm (½in) long, are borne in rosettes, 6cm (2½in) across. Bears large, golden yellow flowers, in racemes, 2–7cm (¾–3in) long, in spring. † 15–40cm (6–16in), ↔ 13cm (5in). Canary Islands (Tenerife). ☐ (min. 10°C/50°F)

*A. tabuliforme* ☐ ♀ syn. *A. bertoletianum*, *Sempervivum complanatum*. Biennial or perennial succulent with very short, unbranched stems bearing plate-like rosettes, to 50cm (20in) across, of many spoon-shaped, bright green leaves, to 25cm (10in) long, margined with fine hairs. Yellow flowers are produced in large panicles, 30cm (12in) or more long, in spring. † 8–10cm (3–4in), ↔ to 50cm (20in). Canary Islands (Tenerife). ☐ (min. 10°C/50°F)

## AERANGIS

ORCHIDACEAE

Genus of about 35 species of evergreen, epiphytic, monopodial orchids, mostly from lowland forest and savannah or woodland in tropical Africa and Madagascar. The fleshy or leathery leaves are generally oval, obovate, or inversely lance-shaped, occasionally narrowly linear-oblong, and are arranged in 2 ranks. Racemes of white, sometimes red- or yellow-tinted, usually star-shaped, long-spurred flowers, in most cases night-scented, are borne at various times of the year, but mostly in winter or spring.

- **HARDINESS** Frost tender.

*Aeonium arboreum* 'Zwartkop'



*Aerangis luteoalba* var. *rhodosticta*

• **CULTIVATION** Intermediate- to warm-growing orchids. Grow epiphytically on an orchid raft or cork slab; provide shade in summer and high humidity. Water freely throughout the year, more sparingly in winter. In spring and summer, apply a half-strength, balanced foliar fertilizer at every third watering. Spray aerial roots with water once or twice daily in summer. See also p.46.

• **PROPAGATION** Not suitable for division, although cuttings or offshoots may be rooted successfully.

• **PESTS AND DISEASES** Aphids, red spider mites, and mealybugs may be a problem.

**A. ellisii** var. *grandiflora*. Epiphytic orchid with oblong-ovate leaves, 20–25cm (8–10in) long. Pendent racemes, to 60cm (24in) long, of star-shaped, fragrant, pure white flowers, 5cm (2in) across, with curved spurs, 18–27cm (7–11in) long, and tinted pale orange, are borne from summer to autumn. †25cm (10in), ↔ 30cm (12in). Madagascar. ☼ (min. 13–18°C/55–64°F; max. 30°C/86°F)

**A. luteoalba** var. *rhodosticta* ■ Epiphytic orchid with oblong-ovate leaves, to 15cm (6in) long. Star-shaped, fragrant white to creamy white flowers, 3cm (1¼in) across, with a striking bright red column and spurs, 2–4cm (¾–1½in) long, are borne in arching racemes, 10–30cm (4–12in) long, in winter. †15cm (6in). Cameroon, Ethiopia, Kenya, Tanzania. ☼ (min. 13–18°C/55–64°F; max. 30°C/86°F)

## AERIDES

ORCHIDACEAE

Genus of about 40 species of evergreen, monopodial, epiphytic orchids from India, the Himalayas, and S.E. Asia, mostly found at low altitudes in tropical forest. Strap-shaped to linear, leathery leaves are borne alternately in 2 ranks, with moth-like, often fragrant flowers produced in dense, arching racemes

from the leaf axils in summer. They develop numerous aerial roots, sometimes up to 1m (3ft) long.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in an orchid basket or epiphytically on slabs of bark. Provide high humidity and filtered light. Water freely throughout the year, watering more sparingly in winter. Apply a half-strength, balanced foliar fertilizer at every third watering in spring and summer. They will bloom in spring and summer if grown suspended in a position with good light. See also p.46.

• **PROPAGATION** Not suitable for division, although cuttings or offshoots may be rooted successfully.

• **PESTS AND DISEASES** Aphids, white-flies, red spider mites, and mealybugs may be a problem.

**A. japonica** see *Sedirea japonica*.

**A. odorata**. Epiphytic orchid with linear leaves, to 25cm (10in) long. In summer, produces arching racemes, to 25cm (10in) long, of fragrant, white-tinted, rose-pink to purple, often spotted flowers, 4cm (1½in) long, with incurved green- or yellow-tipped spurs. †45cm (18in), ↔ 30cm (12in). India to Philippines. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F)

**A. rosea**. Epiphytic orchid with linear leaves, to 25cm (10in) long. Many fragrant, white-spotted amethyst flowers, 2.5cm (1in) across, with white spurs, are produced in pendent racemes, to 60cm (24in) long, in early summer. †30cm (12in). Himalayas. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F)

## AESCHYNANTHUS

GESNERIACEAE

Genus of about 100 species of evergreen subshrubs, climbers, and trailing and semi-trailing perennials, some of which are epiphytic, from subtropical forest in the Himalayas, S. China, Malaysia, Indonesia, and New Guinea. They have ovate to lance-shaped, leathery, fleshy leaves in opposite pairs or whorls. From summer to winter, vividly coloured flowers are produced in pairs from the leaf axils near the stem tips, or in terminal corymbs or clusters. The flowers often have prominent calyces, sometimes in a contrasting colour, and long, tubular, often curved, sometimes hooded corollas, with protruding stamens and styles. In frost-prone areas, grow in hanging baskets in a warm conservatory or greenhouse; compact species are good houseplants. In tropical or subtropical areas, grow outdoors in a shady site.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 3 parts fibrous peat and 1 part sphagnum moss, with high humidity. Grow in filtered light to encourage flowering. Water freely with soft water during the growing season, more sparingly in winter; when established, apply a half-strength, balanced liquid fertilizer monthly. Outdoors, grow in humus-rich, well-drained soil in partial shade; they will tolerate a more sunny position if humidity is high.

• **PROPAGATION** Take cuttings of young shoots, 3–5cm (1¼–2in) long, in spring,

or semi-ripe cuttings in summer; root in gritty compost at 15–19°C (59–66°F).

• **PESTS AND DISEASES** Aphids may infest young growth.

**A. 'Black Pagoda'** ■ Semi-trailing perennial producing elliptic leaves, to 10cm (4in) long, pale green with dark brown marbling above, and purple beneath. Terminal clusters of 3 or 4 deep burnt-orange flowers, to 5cm (2in) long, with green calyces, are borne from summer to winter. †60cm (24in), ↔ to 45cm (18in). ☼ (min. 15–18°C/59–64°F)

**A. bracteatus**. Scrambling epiphyte, often growing on rocks in the wild, with elliptic to ovate, sharply pointed, dark green leaves, 10cm (4in) long. Produces terminal clusters of 4 or 5 scarlet flowers, to 5cm (2in) long, with dark purple calyces, from summer to winter. †15cm (6in), ↔ 60cm (24in). E. Himalayas. ☼ (min. 15–18°C/59–64°F)

**A. hildebrandii**, syn. *A. 'Hillbrandii'*. Small subshrub with ovate, dark green leaves, to 2.5cm (1in) long, tinged red at the margins. From summer to autumn, bears terminal clusters of 2 or 3 orange-red flowers, 5cm (2in) long, with green calyces. †20cm (8in), ↔ 30cm (12in) or more. Burma. ☼ (min. 15–18°C/59–64°F)

**A. 'Hillbrandii'** see *A. hildebrandii*.

**A. lobbianus** ■ syn. *A. radicans* var. *lobbianus* (Lipstick vine). Spreading, trailing perennial with elliptic, dark green leaves, 4.5cm (1¾in) long, tinged purple at the margins. Bears terminal clusters of 2 or 3 red flowers, 5cm (2in) long, with purple calyces, from summer to winter. †20cm (8in), ↔ to 90cm (36in). Indonesia (Java). ☼ (min. 15–18°C/59–64°F)

**A. longicaulis** ♀ Semi-trailing perennial with lance-shaped, dark green leaves, 8cm (3in) long. Orange-red flowers, 5cm (2in) long, with green calyces, are produced in axillary and terminal clusters of 1–3 from summer to winter. †60cm (24in), ↔ to 90cm (36in). Malaysia. ☼ (min. 15–18°C/59–64°F)

**A. marmoratus**, syn. *A. zebrinus*. Semi-trailing perennial producing oval leaves, 8–10cm (3–4in) long, light green with dark marbling above and red beneath. Solitary, axillary, greenish yellow flowers, 3.5cm (1½in) long, with maroon- or brown-tinged throats and deeply cut green calyces, are produced from summer to winter. Often confused with *A. longicaulis*. †60cm (24in).



*Aeschynanthus* 'Black Pagoda'

A



*Aeschynanthus lobbianus*

↔ 90cm (36in). Burma, Thailand, Malaysia. ☼ (min. 15–18°C/59–64°F)

**A. pulcher** ♀ (Lipstick plant). Epiphytic climber with thin, rooting branches and oval, slightly toothed, dark green leaves, 4.5cm (1¾in) long. From summer to winter, bears terminal corymbs of 6–8 hooded, bright red flowers, 6cm (2½in) long, with green calyces and yellow throats. †75cm (30in). Indonesia (Java). ☼ (min. 15–18°C/59–64°F)

**A. radicans** var. *lobbianus* see *A. lobbianus*.

**A. speciosus** ♀ Trailing perennial with lance-shaped, pale green leaves, to 10cm (4in) long. From summer to winter, bright orange flowers, 10cm (4in) long, marked red across the lower lobes and with green calyces, are borne in terminal clusters of 6–20. †80cm (32in). Malaysia. ☼ (min. 15–18°C/59–64°F)

**A. zebrinus** see *A. marmoratus*.

## AESCULUS

Buckeye, Horse chestnut

HIPPOCASTANACEAE

Genus of about 15 species of deciduous trees and shrubs, mainly from woodland in S.E. Europe, the Himalayas, E. Asia, and North America. They have opposite, palmate leaves, mostly mid- to dark green, some turning deep yellow or red in autumn. Large, upright, conical to cylindrical panicles of 4- or 5-petalled flowers, each 1.5–3cm (½–1¼in) across, with prominent stamens, are borne usually in late spring and early summer. The spiny or smooth-skinned, rounded to pear-shaped fruits contain 1 or 2 large, usually brown or blackish brown seeds. Most horse chestnuts are suitable only for large gardens, where they are best planted as specimen trees, although *A. x mutabilis* 'Induta' and *A. parviflora* may be grown in a medium-sized garden. All parts may cause mild stomach upset if ingested.

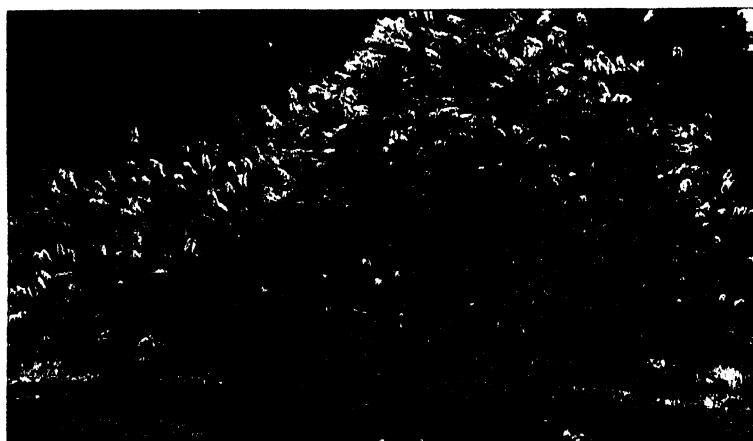
• **HARDINESS** Most are fully hard: *A. californica* and *A. indica* will be damaged below -15°C (5°F).

• **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in sun or partial shade. Grow *A. californica* and *A. chinensis* in a hot, but not dry, sunny site for best results. Pruning group 1, when dormant; train trees as central leader standards.

• **PROPAGATION** Sow seed in a seedbed as soon as ripe. *A. x carnea* comes true



A

*Aesculus californica**Aesculus x carnea* 'Briotii'

from seed. Graft in late winter or bud in summer. Propagate *A. parviflora* from suckers.

• **PESTS AND DISEASES** Prone to canker, coral spot, leaf blotch, and scale insects.

***A. californica*** ♀ (California buckeye). Spreading, rounded, short-trunked tree with 5- to 7-palmate, mid-green leaves divided into narrowly ovate leaflets, 10cm (4in) or more long. Bears fragrant, white or pink-tinged white flowers, with long, protruding stamens, in dense, cylindrical panicles, to 20cm (8in) tall, in early summer, followed by rough-skinned fruit, 5-7cm (2-3in) long. Grow in full sun. ‡8m (25ft), ↔10m (30ft). USA (California). \*\*\*  
***A. x carnea*** ♀ (*A. hippocastanum* x *A. pavia*) (Red horse chestnut).

*Aesculus chinensis*

Spreading tree with 5- to 7-palmate, dark green leaves composed of stalkless or short-stalked, often slightly twisted, obovate leaflets, 25cm (10in) long. Bears dark red or rose-red flowers with yellow centres in conical panicles, 20-30cm (8-12in) tall, in early and midsummer, followed by spiny fruit. ‡20m (70ft), ↔15m (50ft). Garden origin. \*\*\*

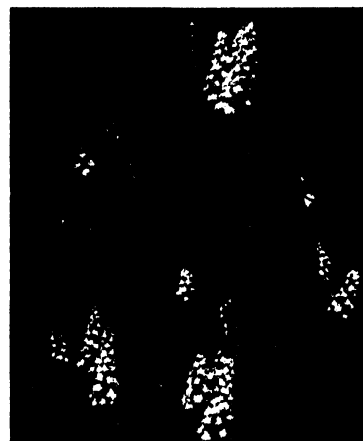
**'Briotii'** ♀ has glossy leaves and larger panicles of dark rose-red flowers.

**'Plantierensis'** has pale pink flowers and does not develop mature fruit.

***A. chinensis*** ♀ (Chinese horse chestnut). Slow-growing, spreading tree with 5-palmate (occasionally 7-palmate), glossy, mid-green leaves composed of narrowly oblong, finely pointed leaflets, 20cm (8in) or more long. White flowers with protruding stamens are produced in slender, cylindrical panicles, to 30cm (12in) tall, in midsummer, followed by rough-skinned fruit. ‡15m (50ft), ↔10m (30ft). N. China. \*\*\*

***A. flava*** ♀ syn. *A. octandra* (Yellow buckeye). Broadly conical tree with 5- to 7-palmate, glossy, dark green leaves with obovate or ovate leaflets, 8cm (3in) or more long. Bears yellow flowers in conical panicles, to 18cm (7in) tall, in late spring and early summer, followed by smooth-skinned fruit. ‡15-25m (50-80ft), ↔10-15m (30-50ft). E. USA. \*\*\*

***A. glabra*** ♀ (Ohio buckeye). Broadly conical tree with rough, fissured bark, bearing 5-palmate, glossy, light green leaves with obovate to ovate, long-pointed leaflets, 15cm (6in) or more long. In late spring and early summer, bears yellow-green flowers in conical

*Aesculus flava**Aesculus hippocastanum*

panicles, to 15cm (6in) tall, followed by sparsely prickly fruit. ‡15m (50ft), ↔10m (30ft). C. and E. USA. \*\*\*

***A. hippocastanum*** ♀ (Horse chestnut). Vigorous, spreading, rounded tree with 5- to 7-palmate, mid-green leaves comprising obovate leaflets, 30cm (12in) or more long. White flowers, with yellow, later pink marks, open in conical panicles, to 30cm (12in) tall, in late spring and early summer; flowers are followed by the well-known, spiny "horse chestnut" fruit. ‡25m (80ft), ↔20m (70ft). S.E. Europe. \*\*\*

**'Baumannii'** ♀ syn. 'Flore Pleno', has double flowers and does not bear fruit.

***A. indica*** ♀ (Indian horse chestnut). Spreading, rounded tree with usually 7-palmate leaves composed of obovate to lance-shaped leaflets, 30cm (12in) or

*Aesculus x neglecta* 'Erythroblastos'

more long, opening bronze and turning glossy, mid-green. White or pink flowers, with central red and yellow marks, are borne in cylindrical panicles, 30-40cm (12-16in) tall, in summer, followed by smooth-skinned fruit. ‡15m (50ft). N.W. Himalayas.

\*\*\* **'Sydney Pearce'** ♀ is vigorous, with freely produced panicles of deep pink, yellow-centred flowers.

***A. x mutabilis*** 'Induta' ♀ Small tree, sometimes shrubby in habit, producing 5- to 7-palmate, mid-green leaves with ovate leaflets, 20cm (8in) or more long. Profuse yellow-flushed pink flowers are borne in panicles, to 20cm (8in) tall, in late spring and early summer. Does not bear fruit. ‡5m (15ft). \*\*\*

***A. x neglecta*** ♀ (*A. flava* x *A. sylvatica*). Conical tree with 5-palmate, mid-green

*Aesculus indica* 'Sydney Pearce' (inset: flower detail)





*Aesculus parviflora*

leaves composed of obovate to ovate leaflets, 15cm (6in) or more long. Bears yellow or yellow-flushed red flowers in conical panicles, to 15cm (6in) tall, in midsummer, followed by smooth-skinned fruit.  $\downarrow$  10m (30ft) or more,  $\leftrightarrow$  8m (25ft). S.E. USA. \*\*\*.

'**Erythroblastos**'  $\square$   $\nabla$  (Sunrise horse chestnut) has red leaf-stalks and leaves that unfold cream, bright pink, become yellow, then turn green by midsummer. *A. octandra* see *A. flava*.

*A. parviflora*  $\square$   $\nabla$  (Bottlebrush buckeye). Suckering shrub with 5- to 7-palmate, mid-green leaves divided into ovate leaflets, 23cm (9in) or more long, bronze when young. Bears spidery white flowers, with protruding stamens, in conical panicles, to 30cm (12in) tall, in midsummer, followed by smooth-skinned fruit. Tolerant of all but very poorly drained sites.  $\downarrow$  3m (10ft),  $\leftrightarrow$  5m (15ft). S.E. USA. \*\*\*.

*A. pavia*  $\nabla$   $\triangle$  syn. *A. splendens* (Red buckeye). Conical shrub or small tree, producing 5- to 7-palmate, mid-green leaves with obovate to oblong to lance-shaped leaflets, 13cm (5in) or more long. Red, sometimes yellow-marked flowers are borne in conical panicles, to



*Aesculus pavia* 'Atrosanguinea'

15cm (6in) tall, in early summer, followed by smooth-skinned fruit.  $\downarrow$  5m (15ft),  $\leftrightarrow$  3m (10ft). E. USA. \*\*\*.

'**Atrosanguinea**'  $\square$  has dark red flowers. *A. splendens* see *A. pavia*.

*A. turbinata*  $\triangle$  (Japanese horse chestnut). Vigorous, spreading tree producing 5- to 7-palmate, mid-green leaves with obovate leaflets, 40cm (16in) or more long. White flowers, each with a yellow, later pink mark, are borne in cylindrical panicles, to 30cm (12in) tall, in early and midsummer, followed by smooth-skinned fruit.  $\downarrow$  20m (70ft),  $\leftrightarrow$  12m (40ft). Japan. \*\*\*.

## AETHIONEMA

syn. EUNOMIA

Stone cress

BRASSICACEAE/CRUCIFERAE

Genus of more than 40 species of evergreen or semi-evergreen, dwarf subshrubs, woody-based perennials, and annuals from sunny, open sites, on limestone, in the mountains of Europe and W. Asia, particularly Turkey. They are grown for their dense to loose, terminal racemes of small, 4-petalled, cross-shaped, sometimes fragrant flowers, in red, pink, or creamy to pure white, profusely borne on stems 2-4cm ( $\frac{3}{4}$ -1 $\frac{1}{2}$ in) long, usually from spring to early summer. The leaves are small, usually stalkless, fleshy, and arranged alternately, or sometimes in opposite pairs. Grow in a rock garden or wall crevice; *A. oppositifolium* prefers a scree bed or alpine house.

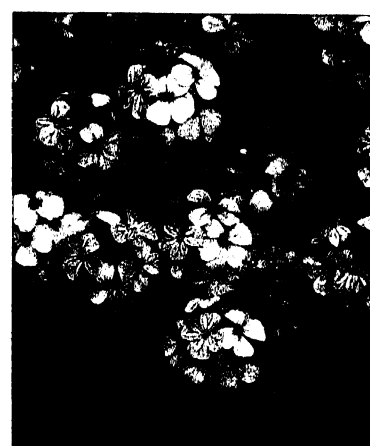
• **HARDINESS** Fully hardy, given good drainage.

• **CULTIVATION** Grows best in fertile, well-drained, alkaline soil in full sun, but will tolerate poor, acid soils.

• **PROPAGATION** Sow seed of perennials in containers in a cold frame in spring. Sow seed of annuals *in situ* as soon as ripe or in autumn. Seedlings grown from garden seed often prove to be hybrids. Root softwood cuttings in late spring or early summer.

• **PESTS AND DISEASES** Aphids and red spider mites may be a problem.

*A. armenum*  $\square$  Short-lived, compact, evergreen or semi-evergreen subshrub with linear-oblong, blue- to grey-green leaves, 0.5-1.5cm ( $\frac{1}{4}$ - $\frac{1}{2}$ in) long. Dense racemes of small, pale pink flowers, 5mm ( $\frac{1}{4}$ in) across, are borne in late spring.  $\downarrow$  15-20cm (6-8in). Caucasus, Turkey. \*\*\*.



*Aethionema armenum*

*A. grandiflorum*  $\square$   $\nabla$  syn. *A. pulchellum*. Short-lived, evergreen or semi-evergreen, loosely branched subshrub or woody-based perennial with blunt-tipped, linear-oblong, blue-green leaves, to 1cm ( $\frac{1}{2}$ in) long. Bears pale to deep rose-pink flowers, to 7mm ( $\frac{1}{4}$ in) wide, in loose racemes in late spring and early summer.  $\downarrow$  20-30cm (8-12in). Caucasus, Turkey, Iraq, Iran. \*\*\*.

*A. oppositifolium*, syn. *Eunomia oppositifolia*. Mat- or cushion-forming, evergreen or semi-evergreen perennial with opposite, obovate, blue-grey leaves, 1cm ( $\frac{1}{2}$ in) long. Bears small racemes of lavender-pink flowers, 6-8mm ( $\frac{1}{4}$ - $\frac{1}{2}$ in) across, in late spring.  $\downarrow$  to 5cm (2in),  $\leftrightarrow$  10-15cm (4-6in). Caucasus, Turkey, Syria, Lebanon. \*\*\*.

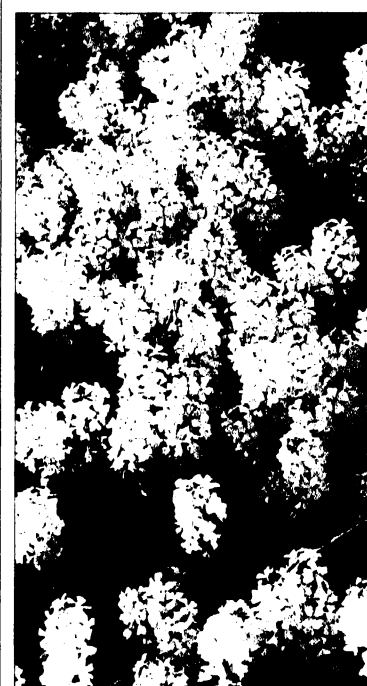
*A. pulchellum* see *A. grandiflorum*.

*A. 'Warley Rose'*  $\square$   $\nabla$  Short-lived, evergreen or semi-evergreen, compact subshrub with linear, blue-grey leaves, 1cm ( $\frac{1}{2}$ in) long. Profuse racemes of rich pink flowers, to 7mm ( $\frac{1}{4}$ in) across, are borne in late spring and early summer.  $\downarrow$  15-20cm (6-8in). \*\*\*.

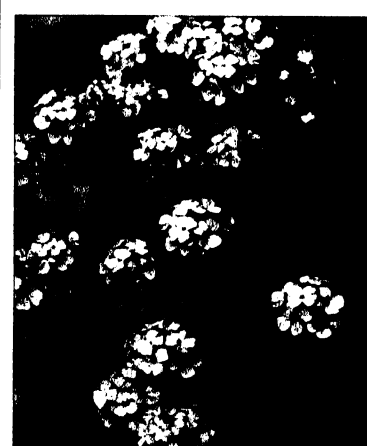
▷ **African daisy** see *Arctotis*

▷ **Blue-eyed** see *A. venusta*

▷ **African violet** see *Saintpaulia*



*Aethionema grandiflorum*



*Aethionema* 'Warley Rose'

## AGAPANTHUS

African blue lily

ALLIACEAE/LILIACEAE

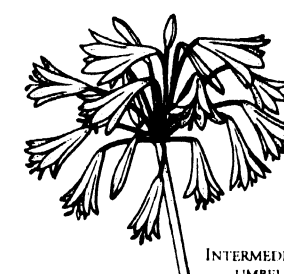
Genus of about 10 species of vigorous perennials, some of them evergreen, from southern Africa. The evergreen species occur in coastal areas, the deciduous ones in moister, mountain grassland in inland regions. They form bold clumps of large, strap-shaped, usually arching, often deep green leaves, and bear rounded, intermediate, or pendent umbels of many tubular, bell- or trumpet-shaped, blue or white flowers. The inflorescences are good for cutting, and are followed by decorative seed heads. Grow in a border or in large containers. Most hybrids are deciduous and usually hardier than the species, with dense, rounded umbels, to 20cm (8in) across, of 3cm ( $\frac{1}{4}$ in) long flowers, and with leaves to 45cm (18in) long. The name Headbourne Hybrids, originally referring to selected seedlings raised by the Hon. Lewis Palmer, is now misapplied to cover a range of mixed seedlings that vary greatly in flower colour, size, and quality, and so is not included here.

### AGAPANTHUS INFLORESCENCES

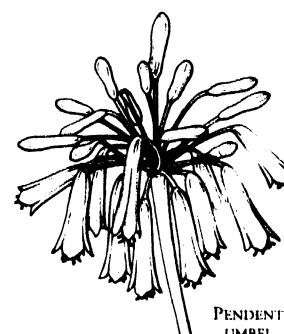
*Agapanthus* flowers are borne in 3 main inflorescence types: rounded umbels of bell- to trumpet-shaped flowers; intermediate umbels of usually trumpet-shaped flowers; and pendent umbels of tubular flowers.



ROUNDED  
UMBEL



INTERMEDIATE  
UMBEL

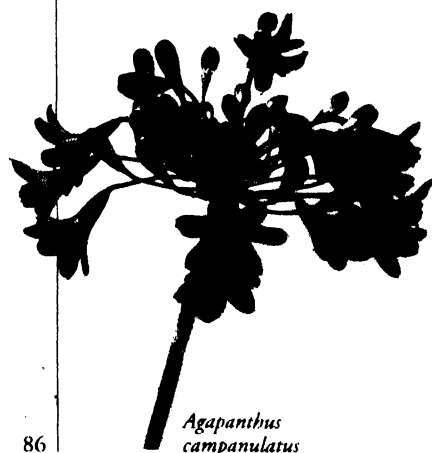


PENDENT  
UMBEL

A

*Agapanthus* 'Blue Giant'

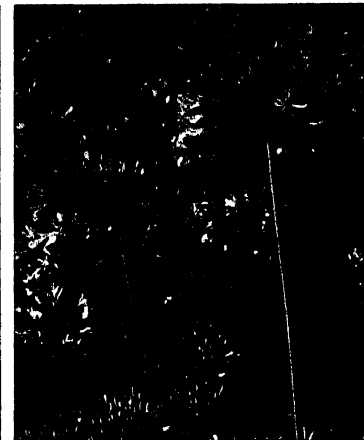
- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. In cold areas, mulch hardy hybrids in winter. In containers, grow in loam-based compost (J1 No.3). Water freely when in growth, sparingly in winter. Apply a balanced liquid fertilizer monthly from spring until flowering. Overwinter: *A. africanus*, *A. campanulatus* 'Albovittatus', and *A. praecox* subsp. *orientalis* under cover, except in the warmest areas.
- **PROPAGATION** Sow seed at 13–15°C (55–59°F) when ripe or in spring; keep the seedlings in a frame for the first winter in frost-prone climates. They will flower in 2–3 years. Most seedlings grown from garden seed do not come true. Divide in spring.
- **PESTS AND DISEASES** Slugs, snails, and viruses may be a problem.

*Agapanthus campanulatus*

- A. africanus* ♀ Clump-forming, ever-green perennial with strap-shaped leaves, to 30cm (12in) or more long. In late summer, bears trumpet-shaped, deep blue flowers, 2.5–5cm (1–2in) long, in rounded umbels, 15–30cm (6–12in) across. †60–90cm (24–36in), ↔ 45cm (18in). South Africa (Northern Cape, Western Cape, Eastern Cape). \*
- A. 'Alice Gloucester'*. Clump-forming perennial that produces intermediate umbels of trumpet-shaped white flowers, the buds and pedicels tinged lilac, in mid- and late summer. †90cm (36in), ↔ 45cm (18in). \*\*\*
- A. 'Ben Hope'*. Clump-forming perennial bearing rounded umbels of trumpet-shaped, dark blue flowers in mid- and late summer. † to 1.2m (4ft), ↔ 60cm (24in). \*\*\*
- A. 'Blue Giant'* ♂ Clump-forming perennial producing rounded umbels of open bell-shaped, rich blue flowers in mid- and late summer. † 1.2m (4ft), ↔ 60cm (24in). \*\*\*
- A. 'Blue Moon'*. Clump-forming perennial bearing large, rounded umbels of open bell-shaped, pale blue flowers in late summer and early autumn. † 60cm (24in), ↔ 45cm (18in). \*\*\*
- A. 'Blue Triumphator'*. Clump-forming perennial producing rounded to intermediate umbels of open bell-shaped, clear blue flowers in mid- and late summer. † 90cm (36in), ↔ 45cm (18in). \*\*\*
- A. 'Bressingham White'*. Clump-forming perennial bearing intermediate umbels of trumpet-shaped, pure white flowers in mid- and late summer. † 90cm (36in), ↔ 60cm (24in). \*\*\*

*Agapanthus campanulatus* 'Albovittatus'

- A. campanulatus* ♂ Vigorous, clump-forming perennial producing narrow, strap-shaped, deciduous, greyish green leaves, 15–40cm (6–16in) long. Rounded umbels, 10–20cm (4–8in) across, of bell-shaped, pale to dark blue, sometimes white flowers, 2–3.5cm (¾–1½in) long, are borne on strong stems in mid- and late summer. † 60–120cm (24–48in), ↔ 45cm (18in). South Africa (KwaZulu/Natal, Northern Cape). \*\*\*
- A. 'Albovittatus'* ♂ is less vigorous and has broad leaves, boldly striped white; \*\*
- A. 'Isis'* produces dark blue flowers; † 75cm (30in), ↔ 30cm (12in); \*\*\* (borderline).
- subsp. *patens* ♀ bears light blue flowers, with shorter tubes and more open mouths than the species, in late summer and early autumn; † to 45cm (18in), ↔ 30cm (12in); South Africa (Drakensberg mountains to Northern Transvaal); \*\*\* (borderline)
- A. 'Castle of Mey'*. Clump-forming perennial bearing rounded to intermediate umbels of broadly trumpet-shaped, deep blue flowers in mid- and late summer. † 60cm (24in), ↔ 45cm (18in). \*\*\*
- A. caulescens* ♀ Clump-forming perennial with a leek-like stem, bearing deciduous, narrowly strap-shaped lower leaves, to 15cm (6in) long, and broader upper leaves, to 60cm (24in) long. From midsummer to early autumn, produces open, rounded umbels, 15–24cm (6–10in) across, of bell-shaped violet-blue flowers, 3–5cm (1¼–2in) long, with tepals spreading at the mouths, and long, projecting stamens. † 90–120cm (3–4ft), ↔ 60cm (24in). Swaziland. \*\*

*Agapanthus inapertus**Agapanthus praecox* subsp. *orientalis*

- A. 'Cherry Holley'*. Clump-forming perennial bearing intermediate umbels of open, trumpet-shaped, dark blue flowers in midsummer. Often flowers again in early autumn. † 75cm (30in), ↔ 60cm (24in). \*\*\*
- A. 'Dorothy Palmer'*. Clump-forming perennial bearing intermediate umbels of open trumpet-shaped, rich blue flowers, fading to reddish mauve, in mid- and late summer. † 90cm (36in), ↔ 60cm (24in). \*\*\*
- A. 'Golden Rule'*. Slow-growing, clump-forming perennial with small, narrow, yellow-margined leaves. Bears rounded to intermediate umbels of bell-shaped, light blue flowers in mid- and late summer. † 40–60cm (16–24in), ↔ 30–40cm (12–16in). \*\*\* (borderline)
- A. inapertus* ♂ Clump-forming perennial with erect, strap-shaped leaves, to 70cm (28in) long. In late summer and early autumn, stiff, upright stems bear pendent umbels, 10–15cm (4–6in) across, of pendent, tubular blue flowers, narrowed at the mouths, and 2.5–4.5cm (1–1¾in) long. † 90–150cm (3–5ft), ↔ 60cm (24in). South Africa (Northern Transvaal, Eastern Transvaal). \*\*

*Agapanthus* 'Snowy Owl'

## AGAPANTHUS

**A. 'Lilliput'**. Clump-forming perennial bearing rounded to intermediate umbels of trumpet-shaped, deep blue flowers in mid- and late summer.  $\uparrow$  to 40cm (16in). \*\*\*

**A. 'Loch Hope'** ♀ Clump-forming perennial with rounded to intermediate umbels of broadly trumpet-shaped, deep blue flowers in late summer and early autumn.  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**A. 'Midnight Blue'**. Clump-forming perennial with intermediate umbels of broadly trumpet-shaped, very dark blue flowers in mid- and late summer.  $\uparrow$  45cm (18in),  $\leftrightarrow$  30cm (12in). \*\*\*

**A. orientalis** see *A. praecox* subsp. *orientalis*.

**A. praecox** subsp. *orientalis* ■ syn. *A. orientalis*. Clump-forming, evergreen perennial with broad, strap-shaped, dark green leaves, 30–70cm (12–28in) long. Bears large, rounded umbels, 15–30cm (6–12in) across, of trumpet-shaped, rich mid-blue flowers, 4–6cm (1½–2½in) long, in late summer and early autumn.  $\uparrow$  60–90cm (24–36in),  $\leftrightarrow$  60cm (24in). South Africa. \*

**A. 'Snowy Owl'** ■ Clump-forming perennial with rounded umbels of bell-shaped white flowers in late summer.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*\*\*

## AGAPETES

ERICACEAE

Genus of about 95 species of spreading to erect or scandent shrubs, sometimes epiphytic in the wild, found in scrub and forest from warm-temperate regions of E. Asia to the western Pacific, including Australia. The evergreen, occasionally briefly deciduous leaves are simple, usually entire, and leathery, and are borne in opposite pairs. They are cultivated mainly for their solitary or clustered, pendent flowers, which are tubular, or bell- or urn-shaped, with 5 short petal lobes. In frost-prone areas, grow in a cool or temperate greenhouse; in frost-free areas, grow in a border or against a wall or arbour.

• **HARDINESS** Frost tender, although *A. serpens* and *A. 'Ludgvan Cross'* will survive temperatures to 0°C (32°F).  
• **CULTIVATION** Under glass, grow in well-drained, lime-free (ericaceous) potting compost in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in late winter or spring.



*Agapetes incurvata*



*Agapetes serpens*

Outdoors, grow in moist but well-drained, neutral to acid, moderately fertile soil, enriched with composted bark. They prefer partial shade, but tolerate some sun. Mulch in spring every other year. Pruning group 11, but pruning is best kept to a minimum.

• **PROPAGATION** Root semi-ripe cuttings with bottom heat in late summer, or layer in spring.

• **PESTS AND DISEASES** Scale insects may be a problem.

**A. incurvata** ■ syn. *A. rugosa*. Sparsely branched shrub, which may be trained as a climber, with flexible, arching to pendent stems. Dark green leaves, to 10cm (4in) long, are broadly lance-shaped to ovate, shallowly toothed, and conspicuously veined. In summer, bears pendent clusters of up to 5 angular, narrowly urn-shaped, white to pink, purple-veined flowers, 2cm (¾in) long, with prominent, ovate calyx lobes.  $\uparrow$  to 1m (3ft),  $\leftrightarrow$  1–2m (3–6ft) as a shrub;  $\uparrow$  2–3m (6–10ft) as a climber. E. Nepal to India (Arunachal Pradesh). ☉ (min. 5–7°C/41–45°F). var. *hookeri* has yellow flowers.

**A. 'Ludgvan Cross'** (*A. incurvata* x *A. serpens*). Pendent shrub with lance-shaped, mid- to dark green leaves, to 5cm (2in) long. From spring to summer, bears pendent clusters of up to 6 urn-shaped pink flowers, 2–3cm (¾–1¼in) long, with dark crimson veins.  $\uparrow$  to 1.2–1.5m (4–5ft). \*

**A. macrantha** see *A. variegata* var. *macrantha*.

**A. rugosa** see *A. incurvata*.

**A. serpens** ■ ♀ Initially erect, then arching shrub, which may be trained as a climber. Small, crowded, lance-shaped leaves, to 2cm (¾in) long, are rich green and glossy. From late winter to spring, usually solitary, narrowly urn-shaped red flowers, 2cm (¾in) long, with V-shaped, darker red markings, are produced from the leaf axils.  $\uparrow$  60–90cm (24–36in),  $\leftrightarrow$  2–3m (6–10ft);  $\uparrow$  2–3m (6–10ft) if grown as a climber. Nepal, Bhutan, India (Assam). \*

**A. variegata** var. *macrantha*, syn. *A. macrantha*. Spreading, arching shrub with lance-shaped-elliptic, mid- to deep green leaves, 8–12cm (3–5in) long. From winter to spring, older stems bear clusters of up to 5 urn-shaped, white to pink flowers, 4–5cm (1½–2in) long, patterned with V-shaped red lines.  $\uparrow$  to 1–2m (3–6ft). N.E. India. ☉ (min. 7–10°C/45–50°F)

## AGASTACHE

syn. BRITTONASTRUM

LABIATAE/LAMIACEAE

Genus of about 30 species of aromatic perennials from dry, often hilly habitats in China, Japan, USA, and Mexico. Most are stiffly erect, bushy plants, with lance-shaped to ovate, greyish green leaves, borne in opposite pairs. Spikes of long-lasting, small, 2-lipped, tubular flowers are produced in whorls from midsummer to autumn. They are suitable for a mixed border; *A. barberi* and *A. mexicana* may also be grown as annuals in frost-prone areas.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in well-drained, fertile soil in full sun. In warmer areas, less hardy species will overwinter in a sheltered site.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring. Divide in spring. Root semi-ripe cuttings in late summer; overwinter young plants under cover in frost-prone areas. Root semi-ripe cuttings of *A. mexicana* in early summer to maintain stocks.

• **PESTS AND DISEASES** Powdery mildew may affect the leaves in dry summers.

**A. anethiodora** see *A. foeniculum*.

**A. anisata** see *A. foeniculum*.

**A. barberi**. Upright, bushy perennial with aromatic, ovate leaves, 3–5cm (1¼–2in) long. Loose spikes, to 30cm (12in) long, of red-purple flowers are produced from midsummer to late autumn.  $\uparrow$  60cm (24in),  $\leftrightarrow$  30cm (12in). S. USA to N. Mexico. \*. 'Firebird' has



*Agastache barberi* 'Tutti-Frutti'

copper flowers. 'Tutti-Frutti' ■ has strongly aromatic foliage and pinkish red flowers.

**A. foeniculum**, syn. *A. anethiodora*, *A. anisata* (Anise hyssop). Erect, leafy, aniseed-scented perennial with ovate-lance-shaped, veined leaves, 5–8cm (2–3in) long, downy and whitish green beneath. Dense spikes, 4–8cm (1½–3in) long, of blue flowers, with violet bracts and calyces, are borne from midsummer to early autumn.  $\uparrow$  90–150cm (3–5ft),  $\leftrightarrow$  30cm (12in). North America. \*. 'Alabaster' has white flowers.

**A. mexicana**, syn. *Brittonastrum mexicanum*, *Cedronella mexicana*. Bushy, aromatic, short-lived perennial with ovate to lance-shaped leaves, 4–6cm (1½–2½in) long. Rose-red flowers are produced in spikes, to 30cm (12in) long, in mid- and late summer.  $\uparrow$  60–90cm (24–36in),  $\leftrightarrow$  30cm (12in). Mexico. \*

▷ *Agathaea* see *Felicia*

## AGATHIS syn. DAMMARA

Kauri pine

ARAUCARIACEAE

Genus of 13 species of evergreen, coniferous trees with broad, flat leaves, from tropical areas without a dry season, from Malaysia and the Philippines to New Guinea, Australia (Queensland), Fiji, and New Zealand. The male cones are cylindrical, the females spherical. They are monoecious, but may be dioecious when young. In frost-prone areas, grow young plants for their foliage in a cool greenhouse or conservatory. In frost-free areas, grow as specimen trees.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No. 5) in full light, with ample ventilation. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in any moist but well-drained soil in full sun, sheltered from cold winds.

• **PROPAGATION** Sow seed at 10–13°C (50–55°F) in early spring.

• **PESTS AND DISEASES** Trouble free.

**A. australis** △ (Kauri pine). Coniferous tree, conical when young, with a massive spreading crown on a stout trunk when mature. Leathery leaves are opposite, lance-shaped, to 8cm (3in) long, and bright green when young, maturing to grey-green. Female cones, 5–7cm (2–3in) long, are woody and green; male cones are 3–4cm (1¼–1½in) long.  $\uparrow$  40m (130ft),  $\leftrightarrow$  to 15m (50ft). New Zealand (North Island). \* (borderline)

## AGATHOSMA

RUTACEAE

Genus of 135 species of heather-like evergreen shrubs and subshrubs from open, sandy savannah in South Africa. They are grown for their small, single-petalled flowers, borne singly or in axillary clusters. The crowded leaves are small, often narrow, and aromatic. In frost-prone areas, grow in containers in a cool greenhouse, and place outside in summer; in frost-free areas, grow in a border or against a wall.

• **HARDINESS** Frost tender; *A. pulchella* may survive short spells at 0°C (32°F).

## A

- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, with good ventilation. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, neutral to acid, preferably sandy soil in full sun. Pruning group 8.
- **PROPAGATION** Sow seed in spring, or root semi-ripe cuttings in summer, both at 13–18°C (55–64°F).
- **PESTS AND DISEASES** Trouble free.

*A. pulchella*, syn. *Barosma pulchella*. Wiry-stemmed, branching shrub with crowded, alternate, ovate to lance-shaped leaves, 6mm (¼in) long. From spring to summer, purplish pink, mauve, or white flowers, 5mm (¼in) across, are produced singly or in pairs from the upper leaf axils. ± 1m (3ft) or more. South Africa. \* (borderline)

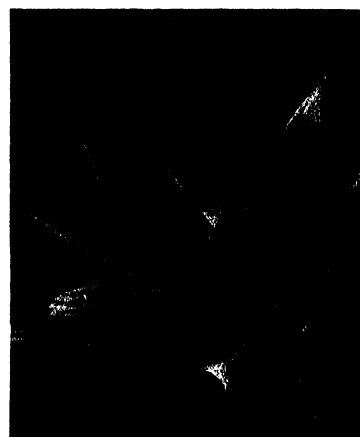
## AGAVE

## AGAVACEAE

Genus of more than 200 species of rosette-forming, perennial or monocarpic succulents from desert and mountain regions of North, Central, and South America, and the West Indies. The leaves are often rigid and fleshy, usually having sharp terminal spines and toothed margins. The funnel-shaped, short-tubed flowers, each with 6 tepals, are borne in umbel-like clusters, racemes or panicles on leafless stems from the centres of the rosettes. The ovoid or spherical, capsular fruits contain numerous flat black seeds. In



*Agave americana* 'Marginata'



*Agave attenuata*



*Agave filifera*

most species, the rosettes die after flowering and fruiting, leaving offsets to mature and flower in subsequent years. In frost-prone areas, grow in a cool or temperate greenhouse; in frost-free areas, grow as specimen plants.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. In summer, water freely and apply a low-nitrogen fertilizer 3 or 4 times; reduce water in autumn; keep dry in winter. Outdoors, grow in slightly acid, moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Remove offsets in spring or autumn; if already rooted, treat as mature plants. Insert unrooted offsets, or plantlets of *A. americana* and other species in a mix of equal parts peat and sharp sand until rooted.
- **PESTS AND DISEASES** Prone to scale insects, particularly on young growth.

*A. altissima* see *A. americana*.

*A. americana* ♀ syn. *A. altissima*. Monocarpic succulent producing basal rosettes of spreading, lance-shaped, spine-tipped and spiny-margined, grey-green leaves, often to 2m (6ft) long. In summer, bears clusters of yellowish green flowers, 9–10cm (3½–4in) long, in spreading panicles, to 8m (25ft) long. ± to 2m (6ft), ↔ to 3m (10ft). Mexico. ☉ (min. 5°C/41°F). 'Marginata' ♂ has pale yellow-margined leaves that often become white with age. 'Mediopicta' ♀ has a broad, pale yellow central band along each leaf. 'Striata' produces leaves vertically striped yellow or white.



*Agave parryi*



*Agave parviflora*

*A. attenuata* ♂ syn. *A. cernua*.

*A. glaucescens*. Perennial succulent with a thick trunk, often branching at the base. The branches are crowned by rosettes of ovate, sometimes finely toothed, pale yellowish green or greyish green leaves, 50–70cm (20–28in) long, with no terminal spines. Recurring racemes, to 3.5m (11ft) or more long, bear greenish white flowers, 6cm (2½in) long, in summer. ± to 1m (3ft), ↔ to 2m (6ft). C. Mexico. ☉ (min. 10°C/50°F)

*A. cernua* see *A. attenuata*.

*A. consideranti* see *A. victoriae-reginae*.

*A. cupreata*. Basal-rosetted or short-stemmed, perennial succulent. Pointed, pale green leaves are ovate to obovate, 75cm (30in) long, with twisted, spiny, reddish brown marginal teeth, and brown terminal spines. Yellow flowers,

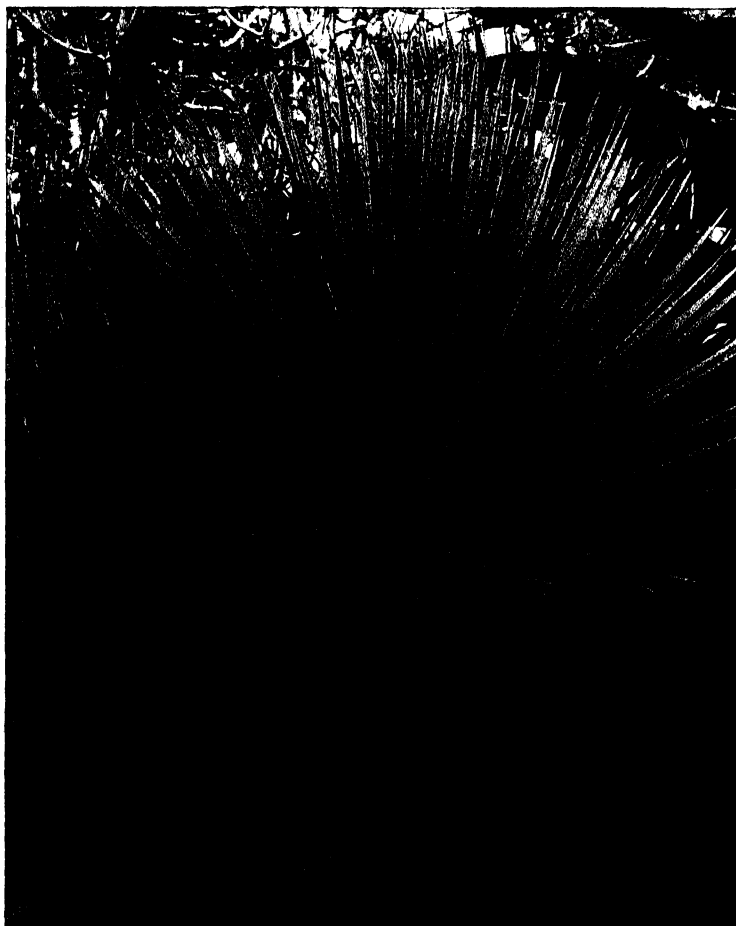
3.5–7cm (1½–3in) long, are produced in erect panicles, 60cm (24in) or more long, in summer. ± to 1m (3ft), ↔ 1.5m (5ft). W. Mexico. ☉ (min. 10°C/50°F)

*A. dentiensi* see *A. deserti*.

*A. deserti*, syn. *A. dentiensi*, *A. nelsonii*, *A. pringlei*. Variable, perennial succulent with basal rosettes of thick, sharp-tipped, greyish green leaves, 15–40cm (6–16in) long. The concave to flat leaves are triangular to linear to lance-shaped, channelled above, sometimes banded, usually with spiny margins, occasionally entire. In summer, bears erect panicles, 2–7m (6–22ft) long, of silvery yellow flowers, to 5cm (2in) long. ± to 50cm (20in), ↔ to 1m (3ft). USA (California, Arizona), N. Mexico. ☉ (min. 10°C/50°F)

*A. ferox*. Rosetted, perennial succulent with a stout stem. Oblong to spoon-shaped, rigid, fleshy, sharp-tipped, dark green leaves, 1m (3ft) long, have marginal hooked teeth, to 2cm (¾in) long, and terminal spines, to 8cm (3in) long. In summer, bears greenish yellow flowers, 8cm (3in) long, in erect then spreading panicles, to 10m (30ft) long. ± to 4–5m (12–15ft), ↔ to 2m (6ft). Mexico. ☉ (min. 10°C/50°F)

*A. filifera* ♂ ♀ Stoloniferous, perennial succulent with basal rosettes of slender, lance-shaped, dark green leaves, to 25cm (10in) long, margined with white threads, and each with a brown terminal spine. Erect, spike-like inflorescences, to 2.5m (8ft) long, with dense clusters of greenish yellow flowers, 5cm (2in) long, are borne in late summer and early autumn. ± 30–50cm (12–20in), ↔ 1m (3ft). C. Mexico. ☉ (min. 10°C/50°F)



*Agave stricta*

*Agave utahensis*

*A. glaucescens* see *A. attenuata*.

*A. hartmanii* see *A. parviflora*.

*A. huachuensis* see *A. parryi* var. *huachuensis*.

*A. hystrix* see *A. stricta*.

*A. nelsonii* see *A. deserti*.

*A. neomexicana* see *A. parryi*.

*A. parryi* [■] syn. *A. neomexicana*.

Perennial succulent producing a dense, compact, basal rosette of broadly oblong, spiny, grey-blue leaves, to 30cm (12in) long. Numerous creamy yellow flowers, pink- or red-tinged in bud, and 6cm (2½in) long, open in erect panicles, to 5m (15ft) long, in summer. ↑ 50cm (20in), ↔ to 1m (3ft). Mountains of USA (Arizona) to N. Mexico. ☼ (min. 5°C/41°F). var. *huachuensis*, syn. *A. huachuensis*, has broadly oblong leaves to 65cm (26in) long, and flowers 7cm (3in) long; USA (S. Arizona).

*A. parviflora* [■] syn. *A. hartmanii*.

Basal-rosetted, perennial succulent with narrowly lance-shaped, white-marked, dark green leaves, 4–10cm (1½–4in) long, margined with white threads, and each with a greenish brown terminal spine. Erect racemes, 1–1.8m (3–6ft) or more long, with clusters of pale yellow flowers, 1.5cm (½in) long, are borne in summer. ↑ 15cm (6in), ↔ 50cm (20in). USA (S. Arizona) to N. Mexico. ☼ (min. 10°C/50°F).

*A. pringlei* see *A. deserti*.

*A. scaphoidea* see *A. utahensis*.

*A. schidigera*, syn. *A. vestita*. Basal-rosetted or short-stemmed, perennial succulent with lance-shaped, shiny, dark green or purplish green leaves, to 50cm (20in) long, margined with coiled white threads, and each with a brown terminal

spine. Produces erect, spike-like inflorescences, 2–2.5m (6–8ft) long, with yellow-green or reddish brown flowers, 5cm (2in) long, in summer. ↑ to 50cm (20in), ↔ to 75cm (30in). C. Mexico. ☼ (min. 10°C/50°F).

*A. stricta* [■] syn. *A. hystrix*. Short-stemmed, perennial succulent with rosettes of linear-lance-shaped, sharply tapered, mid-green leaves, to 35cm (14in) long, with red-brown terminal spines. In summer, bears red to purple-red flowers, 2cm (¾in) long, in dense, erect, spike-like racemes, 2–2.5m (6–8ft) long. ↑ to 25–50cm (10–20in). S.E. Mexico. ☼ (min. 10°C/50°F).

*A. utahensis* [■] syn. *A. scaphoidea*.

Variable, basal-rosetted, clump-forming, perennial succulent with linear to lance-shaped, grey-green leaves, to 30cm (12in) long, each with a long terminal spine; indented, wavy margins have hooked spines. In summer, bears yellow flowers, 3cm (1¼in) long, in erect panicles or racemes, 1.5–4m (5–12ft) long. ↑ 30cm (12in), ↔ indefinite. USA (Utah). ☼ (min. 10°C/50°F).

*A. vestita* see *A. schidigera*.

*A. victoriae-reginae* [■] syn.

*A. consideranti*. Variable, perennial succulent with basal rosettes of straight or incurved, triangular-oblong, white-marked, dark green leaves, 15–30cm (6–12in) long, with thick, rounded tips, and each with a brown terminal spine. The horny leaf margins are usually entire, but may have small white spines. In summer, bears erect or curved, spike-like racemes, 4–5m (12–15ft) long, of creamy white flowers, to 5cm (2in) long, sometimes tinged purple. ↑ to 50cm (20in). USA (California), N. and W. Mexico. ☼ (min. 10°C/50°F).

▷ *Ageratina altissima* see *Eupatorium rugosum*

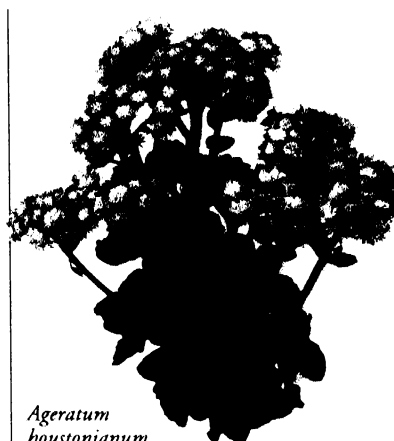
▷ *Ageratina ligustrina* see *Eupatorium ligustrinum*

## AGERATUM

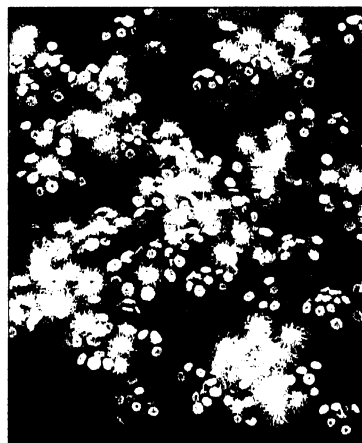
Floss flower

ASTERACEAE/COMPOSITAE

Genus of about 40 species of annuals, perennials, and shrubs from diverse habitats in tropical and warm-temperate North and South America, some of which have become naturalized in many tropical and subtropical countries. They may be erect, spreading, or mound-forming in habit, and have oval to lance-shaped, mid-green leaves. In summer



*Ageratum houstonianum*  
'Bavaria'



*Ageratum houstonianum* Hawaii Series  
'Hawaii White'

and early autumn, panicles of 30–50 small flowerheads form soft, rounded, brush-like clusters, varying in colour from bright blue or grey-blue to pink or white; they are attractive to butterflies. Ageratums are usually grown as annuals; use *A. houstonianum* and its cultivars for bedding or as edging in borders. They may also be grown in containers.

• **HARDINESS** Half hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun, in a sheltered site. Water freely in mid-summer to prolong flowering. Dead-head to encourage a second flowering.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in early spring, or sow in autumn and overwinter at 10°C (50°F).

• **PESTS AND DISEASES** Prone to root rot.

*A. houstonianum* cultivars. Selections from the fast-growing, Mexican annual *A. houstonianum* are mostly compact, mound-forming, and of uniform habit. They have oval, downy leaves, 5–7cm (2–3in) long, heart-shaped at the bases. Rounded panicles, 5–10cm (2–4in) across, of 40 or more small flowerheads are borne just above the foliage from midsummer until the first frosts.

↑ to 15–30cm (6–12in). \*, 'Adriatic' [■] is bushy, with clear, mid-blue flowerheads; ↑ 15–20cm (6–8in). 'Atlantic Plus' has deep blue flowerheads; ↑ 15–20cm (6–8in). 'Bavaria' [■] has blue-and-white flowerheads; ↑ 25cm (10in). 'Blue Danube' bears many small, weather-resistant, lavender-blue flowerheads while plants are still young; ↑ 15–18cm (6–7in). 'Blue Horizon'



*Ageratum houstonianum* 'Swing Pink'

produces purple-blue, weather-resistant flowerheads on long, sturdy stems, good for cutting; ↑ 45cm (18in). 'Blue Mink' is vigorous and of relatively open habit, with powder-blue flowerheads; ↑ 20–30cm (8–12in). **Hawaii Series** includes uniform, compact plants, with deep to pale blue and white flowerheads; 'Hawaii White' [■] has fluffy white flowerheads; ↑ to 15cm (6in). 'Pacific' ♀ is neat, with tight clusters of deep violet-blue flowerheads; ↑ 20cm (8in). 'Swing Pink' [■] is dwarf, with attractive pink flowerheads; ↑ 15–20cm (6–8in).

## AGLAOMORPHA

POLYPODIACEAE

Genus of 10 or more species of ever-green, mostly epiphytic ferns, usually with thick, creeping rhizomes, found on tree trunks, rocks, and cliff faces in rainforest and scrub in tropical S.E. Asia. The large, pinnate fronds are erect, then often arching or pendent, with thin, leathery leaflets. In most species, organic matter accumulates in the closely overlapping bases of the fronds. Sori are dispersed over the undersides of the fronds, and are arranged serially between the veins. Aglaomorphas are attractive specimen plants, and their foliage forms a good backdrop for other ferns. In frost-prone areas, grow in a warm greenhouse.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in an orchid basket, shallow container, or hanging basket, in equal parts fine-grade bark, perlite, and charcoal in filtered light with high humidity. When in growth, water freely and apply a half-strength, balanced liquid fertilizer monthly; water sparingly in winter. Pot on annually in early spring to prevent the rhizomes covering the outside of the container. Outdoors, grow epiphytically, or in moist, coarse, moderately fertile, humus-rich soil in a shady, humid site.

• **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Divide rhizomes as growth begins in spring, making sure that each division has a growing point. See also p.51.

• **PESTS AND DISEASES** Susceptible to scale insects under glass.

*A. coronans*, syn. *Pseudocorynaria coronans*. Epiphytic or terrestrial, rhizomatous fern producing arching, overlapping, triangular to lance-shaped, dark green fronds, strongly waved or

*Agave victoriae-reginae**Ageratum houstonianum* 'Adriatic'

A

shallowly lobed at the bases, and deeply pinnatifid or pinnatisect with lance-shaped to oblong segments.  $\pm$  to 2m (6ft). India to Taiwan.  $\bullet$  (min. 10°C/50°F)

**A. meyeniana** (Bear's paw fern). Epiphytic, rhizomatous fern with overlapping, triangular to lance-shaped, deep green fronds, 80cm (32in) long, almost entire at the bases, and pinnate in the middle and at the top; the upper segments on fertile fronds are very short.  $\pm$  to 1m (3ft). Taiwan, Philippines.  $\bullet$  (min. 10°C/50°F)

## AGLAONEMA

ARACEAE

Genus of about 20 species of usually rhizomatous, evergreen perennials from tropical forest in Asia. The leaf-blades are borne on long, sheathing leaf-stalks from a central growing point, and are variegated in many species. The stems are erect and cane-like, or short, decumbent, and creeping. Insignificant flowering spadices, enclosed in cream or greenish white spathes, are borne sporadically. In frost-prone areas, grow in a temperate or warm greenhouse or conservatory, or as houseplants; in frost-free areas, grow in a shady border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in well-drained, loamless or loam-based potting compost (J1 No.2 or 3), in filtered light, with high humidity. Water moderately; allow some drying out between applications in winter; excess watering may encourage stem or root rot. Apply a balanced liquid fertilizer monthly in the growing season. Pot on every 2–3 years. Outdoors, grow in well-drained, moderately fertile, humus-rich soil in partial shade.

• **PROPAGATION** Separate basal shoots with 3 or 4 leaves, ideally with roots attached, or cut in spring.

• **PESTS AND DISEASES** Mealybugs may infest the leaf axils.

**A. commutatum**  $\square$  Erect perennial, becoming decumbent with age. Leaf-stalks, to 15cm (6in) long, bear oblong-elliptic, dark green leaf-blades, feathered and barred grey, and 30cm (12in) long.  $\pm$  to 50cm (20in). Philippines, Indonesia (Sulawesi).  $\bullet$  (min. 13°C/55°F). '**Malay Beauty**', syn. '**Pewter**', has green-marbled white stems and yellow- and green-mottled leaf-blades, 30cm (12in) long, with white veins. '**Pewter**' see



*Aglaonema commutatum*  
'Pseudobracteatum'



*Aglaonema commutatum* 'Treubii'

'**Malay Beauty**'. '**Pseudobracteatum**'  $\square$  produces narrowly elliptic leaf-blades, 20cm (8in) long, which are mid- to dark green, with irregular white and pale green markings radiating from the leaf veins;  $\pm$  to 60cm (24in). '**Treubii**'  $\square$  is compact, with narrowly lance-shaped, pointed, grey-green leaf-blades, 25cm (10in) long, irregularly marked with silver or pale green;  $\pm$  to 40cm (16in).

**A. costatum**. Rhizomatous, creeping perennial with leaf-stalks to 12cm (5in) long, bearing ovate to lance-shaped, dark green leaf-blades, 20cm (8in) long, with broad white midribs, and spotted white on both surfaces.  $\pm$  to 75cm (30in). Malaysia.  $\bullet$  (min. 13°C/55°F)

**A. crispum**, syn. *A. roebelinii* (Painted drop-tongue). Erect perennial with lance-shaped to elliptic, leathery, silvery



*Aglaonema* 'Silver King'

grey-green leaf-blades, 20cm (8in) long, with dark green margins, on leaf-stalks to 25cm (10in) long.  $\pm$  to 1.2m (4ft). Philippines.  $\bullet$  (min. 13°C/55°F)

**A. modestum**  $\square$  Erect perennial bearing lance-shaped to ovate, waxy, glossy, dark green leaf-blades, 20cm (8in) long, with wavy margins, on leaf-stalks 10–20cm (4–8in) long.  $\pm$  to 60cm (24in). S. China to N. Thailand.  $\bullet$  (min. 7°C/45°F)

**A. pictum**  $\square$  Erect perennial producing narrowly elliptic to oval, wavy-margined leaf-blades, 20cm (8in) long, lustrous bluish green in colour, and irregularly marked with pale green and silvery grey, on leaf-stalks 5–6cm (2–2½in) long.  $\pm$  to 60cm (24in). Indonesia (Sumatra).  $\bullet$  (min. 13°C/55°F)

**A. roebelinii** see *A. crispum*.

**A. 'Silver King'**  $\square$  Upright perennial bearing lance-shaped leaf-blades, 30cm (12in) long, light to dark green, strongly suffused silver, and with short-pointed tips, on leaf-stalks to 10cm (4in) long.  $\pm$  to 60cm (24in).  $\bullet$  (min. 13°C/55°F)

## AGONIS

MYRTACEAE

Genus of 10–12 species of evergreen shrubs and small trees from dry to seasonally moist scrub, often near the sea, in Western Australia. They are grown mainly for their small, 5-petalled, fragrant flowers, which are produced in clusters from the upper leaf axils. The alternate leaves vary from ovate to lance-shaped. In frost-prone climates, overwinter in a cool greenhouse. In frost-free areas, grow *A. flexuosa* as an elegant specimen tree; smaller species are effective in a border or against a wall.

• **HARDINESS** Frost tender, but

*A. flexuosa* may tolerate temperatures around 0°C (32°F) for short periods.

• **CULTIVATION** Under glass, grow in well-drained, lime-free (ericaceous) potting compost in full light, with good ventilation. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in moist but well-drained, moderately fertile, neutral to slightly acid soil in full sun; established plants will tolerate partial shade and dry spells. Pruning group 8, but pruning is best kept to a minimum.

• **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.



*Agonis flexuosa*

**A. flexuosa**  $\square$  Bushy tree, willow-like in growth, with pendent branches and lance-shaped, bright green leaves, 5–15cm (2–6in) long. Numerous axillary clusters of 2 or 3 white flowers, 1cm (½in) across, are produced in summer.  $\pm$  6–12m (20–40ft),  $\pm$  5–10m (15–30ft). Australia (S.W. Western Australia). \* (borderline)

## AGROSTEMMA

Corn cockle

CARYOPHYLLACEAE

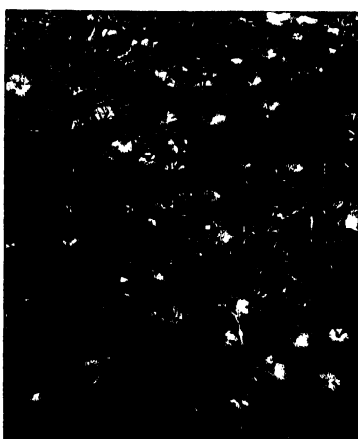
Genus of 2–4 species of erect, branching annuals from scrub, stony slopes, and cultivated fields in S. Europe, the Mediterranean, and W. Asia. They have linear, opposite leaves and, in summer, bear usually solitary, 5-petalled, open trumpet-shaped flowers with long-toothed calyces. The stems are slender and covered with a soft down. Grow in a wildflower or cottage garden, or in containers. The flowers are suitable for cutting and are attractive to bees. Seeds may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in preferably poor, well-drained soil in full sun. The lax growth needs staking. Dead-head to prolong flowering, but allow last seed crop to self-sow.

• **PROPAGATION** Sow seed *in situ* as soon as ripe, or in early spring; thin seedlings to 23–30cm (9–12in) apart. For summer-flowering container plants, sow seed in autumn, overwinter in a cold frame, and then pot on the following spring.

• **PESTS AND DISEASES** Trouble free.



*Agrostemma githago* 'Milas'



*Aglaonema commutatum*



*Aglaonema pictum*



*A. coeli-rosa* see *Silene coeli-rosa*.

**A. githago.** Summer-flowering annual with linear to lance-shaped, grey-green leaves, to 8cm (3in) long. Produces magenta-purple, sometimes white-eyed, or white flowers, to 5cm (2in) across, with ribbed, hairy calyces. ↑60–90cm (24–36in), ↔30cm (12in).

Mediterranean. \*\*\*. **'Milas'** ■ syn. **'Rose Queen'**, has deep plum-pink flowers. **'Milas Cerise'**, syn. **'Purple Queen'**, has cerise-pink flowers, darker than those of **'Milas'**. **'Purple Queen'** see **'Milas Cerise'**. **'Rose Queen'** see **'Milas'**.

## AGROSTIS

GRAMINEAE/POACEAE

Genus of 120–150 species of annual and perennial grasses found at high altitudes in tropical regions and temperate zones; some species are important fodder grasses, while others are used in fine lawn seed mixtures. A few annual species with light, airy panicles are suitable for a border and for cutting and drying. The perennial species are more commonly cultivated and are useful for the front of a border or a wildflower meadow.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained soil in full sun. *A. canina* thrives in all but very dry soils in sun or partial shade. Dead-head before seed is set.
- **PROPAGATION** Divide between mid-spring and early summer.
- **PESTS AND DISEASES** Trouble free.

**A. canina** (Velvet bent). Mat-forming, evergreen perennial with short stolons and erect, rounded stems bearing flat, slightly rough, linear, mid-green leaves, 6cm (2½in) long. From early to late summer, bears slender panicles, to 11cm (4½in) long, of shiny, reddish brown spikelets. ↑6cm (2½in), ↔30cm (12in) or more. Europe, Asia, N.E. USA. \*\*\*. **'Silver Needles'** has leaf-blades with silvery white margins.

## AICHRYSON

CRASSULACEAE

Genus of about 10 annual or perennial succulents, mostly from hilly areas of the Azores, Madeira, and the Canary Islands. They have erect, often forked stems and rosettes of mid- to dark green, mainly alternate, hairy leaves, produced close to the stem tips. Panicles or cymes of star-shaped yellow or red flowers are borne from late spring to summer. In frost-prone areas, grow in a temperate greenhouse or as houseplants. In frost-free areas, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost or loam-based potting compost (J1 No.2), with additional grit, in full or bright filtered light. Water moderately at all times, and apply a balanced liquid fertilizer 3 or 4 times when in growth. Outdoors, grow in an open site in poor to moderately fertile, well-drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring; flowers are usually borne after 2 years. Root cuttings of rosettes in spring or early summer.
- **PESTS AND DISEASES** Susceptible to mealybugs and aphids.



*Aichryson x domesticum* 'Variegatum'

**A. x domesticum** 'Variegatum' ■♀ syn. *Aeonium domesticum* 'Variegatum'. Shrubby, branching, perennial succulent with rosettes of diamond-shaped, or obovate to ovate, finely hairy, dark green leaves, 2–5cm (¾–2in) long, margined and marbled white or creamy white. Occasionally produces shoots with only creamy white or white leaves. In early summer, bears panicles of bright yellow flowers, 1.5–2cm (½–¾in) wide. ↑15cm (6in) or more, ↔40cm (16in). ☼ (min. 7°C/45°F; optimum 13–26°C/55–79°F). **A. sedifolium** see *Aeonium sedifolium*. **A. villosum.** Densely branched, annual or short-lived perennial succulent with sticky, usually rough, white-hairy stems and diamond-shaped, mid-green leaves, to 3cm (1¼in) long, densely covered with long hairs. Cymes of golden yellow flowers, to 1.5cm (½in) wide, are borne in late spring. ↑20cm (8in), ↔40cm (16in). Azores, Madeira. ☼ (min. 7°C/45°F; optimum 13–26°C/55–79°F).

## AILANTHUS

SIMAROUBACEAE

Genus of 5 species of deciduous trees and shrubs occurring in woodland in China and from S.E. Asia to Australia, with large, alternate, pinnate leaves. *A. altissima*, the most commonly cultivated species, is grown as a specimen tree, mainly for its striking foliage and colourful, winged fruit. It is suitable for a large garden. Individual plants usually have either male or female flowers; both are needed to produce fruit. Male flowers are unpleasantly scented; the pollen may cause an allergic reaction.



*Ailanthus altissima*

Flowering and fruiting are most profuse in areas with hot summers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, fertile, well-drained soil in sun or partial shade. Suckers may be a problem with *A. altissima*. Pruning group 1; train as a central leader standard or prune hard annually to grow as a large-leaved shrub.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or in spring. Remove and pot up suckers or take root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

**A. altissima** ■♀□ (Tree of heaven). Spreading tree with large, oblong-elliptic, pinnate leaves, to 60cm (24in) long, composed of up to 30 ovate to lance-shaped leaflets, which open reddish green and later turn mid-green. Bears terminal panicles, to 30cm (12in) across, of small green flowers in summer, followed by red-brown fruit, similar to those of ash (*Fraxinus*). ↑25m (80ft), ↔15m (50ft). China. \*\*\*

## AIPHANES

Ruffle palm

ARECACEAE/PALMAE

Genus of about 40 species of single-stemmed, spiny, monoecious palms from dry forest in the West Indies and Central and South America. The pinnate leaves are arranged in terminal tufts, and small, cup-shaped flowers are borne in panicles among them. In frost-prone areas, grow young plants as foliage specimens in a temperate or warm greenhouse. In frost-free areas, grow as specimen trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with additional leaf mould, in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun.



*Aiphanes caryotifolia*

- **PROPAGATION** Sow seed at 25–30°C (77–86°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**A. caryotifolia** ■♀ (Spine palm). Slender-stemmed palm, ringed with spines, and producing pinnate leaves, 1–3m (3–10ft) long, with prickly stalks and 4–10 strap-shaped, light to mid-green leaflets. In summer, bears yellow flowers in panicles, to 1.5m (5ft) long, followed by spherical red or yellow fruit. ↑6–12m (20–40ft), ↔2.5–3m (8–10ft). N. South America. ☼ (min. 7°C/45°F).

## AIRA

Hair grass

GRAMINEAE/POACEAE

Genus of 8 or 9 species of annual, sometimes biennial grasses from dry, open areas in Europe, the Mediterranean, N. Africa, and mountainous regions of tropical Africa, the Middle East, and N. and W. Asia. They have linear, often inrolled leaves. Several species are cultivated for their delicate, lax, finely branched flower panicles, and provide good cut or dried flowers. Grow at the front of a border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained soil in sun or partial shade.
- **PROPAGATION** Sow seed *in situ* in spring.
- **PESTS AND DISEASES** Trouble free.

**A. elegantissima** (Hair grass). Tufted annual grass with linear, inrolled, mid-green leaves, to 5cm (2in) long. Open, diffuse panicles, to 10cm (4in) long, of small silvery or purple spikelets, 2–3mm (¼–⅜in) long, are borne on hair-fine branches in late spring and early summer. ↑30cm (12in), ↔25cm (10in). Mediterranean. \*\*\*. **A. flexuosa** see *Deschampsia flexuosa*.

▷ Air plant see *Tillandsia*

## AJANIA

ASTERACEAE/COMPOSITAE

Genus of 30 species of low-mound-forming perennials, subshrubs, or shrubs from exposed, rocky hillsides in C. and E. Asia. The leaves are shallowly lobed to pinnatifid, and often white-woolly. They bear attractive racemes or branched corymbs of button-like yellow flowers in summer and autumn, and are suitable for a sunny rock garden or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor, well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide runners in spring, or take basal cutting in spring or summer.
- **PESTS AND DISEASES** Trouble free.

**A. pacifica**, syn. *Chrysanthemum pacificum*, *Dendranthema pacificum*. Low, mound-forming perennial or subshrub with short runners and lobed, ovate, silky-white, silver-margined, mid-green leaves, to 5cm (2in) long. Small yellow flowerheads, to 2cm (¾in) across, are borne in branched corymbs, to 10cm (4in) across, in autumn. ↑30cm (12in), ↔90cm (36in). C. and E. Asia. \*\*\*



## A

## AJUGA

Bugle

LABIATAE/LAMIACEAE

Genus of about 40 species of annuals and clump-forming or spreading, evergreen or semi-evergreen, usually rhizomatous perennials found in shady habitats throughout temperate Europe and Asia. The attractive leaves are opposite and entire, or occasionally toothed, and the 2-lipped, tubular, usually blue flowers are produced in whorls from the axils of leaf-like bracts from spring to early summer. Bugles are excellent for ground cover, spreading freely from rhizomes or stolons, especially in moist conditions.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist soil in partial shade or part-day sun, as the foliage may scorch in full sun. *A. reptans* and its cultivars will tolerate poor soils, even in full shade.
- **PROPAGATION** Separate rooted stems, or root softwood cuttings, in early summer. Divide *A. pyramidalis* 'Metallica Crispa' every 2–3 years to maintain vigour.
- **PESTS AND DISEASES** Susceptible to powdery mildew.

*A. genevensis* ■ (Blue bugle, Upright bugle). Clump-forming, densely hairy to almost hairless, evergreen perennial, rhizomatous but without stolons, and with upright stems to 40cm (16in) long. Long-stalked, mid- or light green, obovate, basal leaves, to 12cm (5in) long, are shallowly lobed or toothed. In spring, bears spike-like whorls, to 10cm (4in) tall, of bright deep blue (sometimes pink or white) flowers, 2cm (¾in) long. ↑ 20–40cm (8–16in), ↔ 45cm (18in). S. Europe, S.W. Asia. \*\*\*

*A. metallica* see *A. pyramidalis*.

*A. pyramidalis*, syn. *A. metallica* (Pyramidal bugle). Clump-forming, evergreen or semi-evergreen, rhizomatous perennial, without stolons,



Ajuga genevensis



Ajuga reptans

producing basal rosettes of obovate, slightly toothed, softly hairy, dark green leaves, to 11cm (4½in) long. Deep blue or pale violet-blue (sometimes pink or white) flowers, 2cm (¾in) long, are borne in dense, pyramidal, spike-like whorls, to 10cm (4in) tall, among purple-tinged bracts, from spring to early summer. ↑ 15–25cm (6–10in), sometimes to 30cm (12in), ↔ 45–60cm (18–24in). N. and C. Europe, Alps. \*\*\*. 'Metallica Crispa' forms tight cushions of crinkled and curled, metallic green-purple leaves; ↑ 15cm (6in), ↔ 30–40cm (12–16in).

*A. reptans* ■ Creeping, evergreen, rhizomatous perennial, spreading rapidly by stolons, with partly hairy stems producing ovate to oblong-spoon-shaped, dark green leaves, 9cm (3½in) long. Dark blue flowers, 1.5cm (½in) long, are borne in spike-like whorls, to 15cm (6in) tall, in late spring and early summer. ↑ 15cm (6in), ↔ 60–90cm (24–36in) or more. Europe, Caucasus, Iran. \*\*\*. The wild species is invasive, but selected cultivars, varying in flower and foliage, are excellent ground-cover plants. 'Burgundy Glow' ♀ has silvery green leaves suffused deep wine-red. 'Catlin's Giant' ♀ has very dark bronze-purple leaves, to 15cm (6in) long, and produces inflorescences to 20cm (8in) long. 'Multicolor' ■ syn. 'Rainbow', is mat-forming, with dark bronze-green leaves marked with cream and pink. 'Pink Elf' is compact, with deep pink flowers on stems 5cm (2in) long. 'Rainbow' see 'Multicolor'. 'Variegata' is dense and slow-spreading, with grey-green leaves margined and splashed cream.



Ajuga reptans 'Multicolor'

## AKEBIA

Chocolate vine

LARDIZABALACEAE

Genus of about 5 species of deciduous or semi-evergreen, twining climbers from forest margins in E. Asia, grown for their flowers and foliage. They have alternate, 3- to 5-, occasionally 7-palmate, mid-green leaves, often bronze-tinted when young. Racemes of self-sterile, shallowly cup-shaped flowers, with both sexes borne in each raceme, and with the larger, deeper-coloured female flowers at the base, are produced in spring, followed by unusual, sausage-shaped, fleshy purple fruits. To ensure cross-pollination, grow 2 plants from the same species (not of the same clone); they need warm springs and long, hot summers to fruit well. Grow against a wall or train into a tree or on a pergola.

- **HARDINESS** Fully hardy, but late frosts may damage the flowers.
- **CULTIVATION** Grow in moist but well-drained, fertile soil, in sun or partial shade. Pruning group 11, after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings in summer. Layer in winter.
- **PESTS AND DISEASES** Trouble free.

*A. lobata* see *A. trifoliata*.

*A. quinata* ■ Semi-evergreen climber with rounded leaves, 4–8cm (1½–3in) long, composed of usually 5 oblong to obovate, entire leaflets, notched at the tips, dark green above, blue-green below, tinged purple in winter. Spicily fragrant, brownish purple flowers are borne in pendent racemes, to 12cm (5in) long, in early spring, followed by fruit to 10cm (4in) long. ↑ 10m (30ft). China, Korea, Japan. \*\*\*

*A. trifoliata*, syn. *A. lobata*. Deciduous climber with rounded leaves, 10cm (4in) long, composed of 3 broadly ovate, shallowly lobed leaflets, opening bronze,



Akebia quinata

then turning glossy, dark green. Purple flowers are produced in pendent racemes, to 12cm (5in) long, in spring, and are followed by fruit, to 12cm (5in) long. ↑ 10m (30ft). China, Japan. \*\*\*

## ALANGIUM

ALANGIACEAE

Genus of about 17 species of deciduous and evergreen trees, shrubs, and climbers from open scrub in tropical Africa and warm-temperate to tropical regions from E. Asia to E. Australia. *A. platanifolium*, the most commonly grown species, has attractive, alternate leaves and axillary cymes of unusual, tubular flowers. They are best grown in a shrub border.

- **HARDINESS** Frost hardy to frost tender; unripened wood may be damaged by frost.
- **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade. In frost-prone areas, grow against a wall or among other plants for protection. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or early spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*A. platanifolium*. Upright, deciduous shrub with rounded, maple-like, shallowly 3- to 7-lobed leaves, to 20cm (8in) long, dark green above and mid-green beneath. In summer, produces clusters of 4 (sometimes up to 7) tubular, fragrant white flowers, to 4cm (1½in) wide, with recurving petal lobes. ↑ 3m (10ft), ↔ 2m (6ft). Korea, Japan. \*\*\*

## ALBIZIA

syn. PARASERIANTHES

LEGUMINOSAE/MIMOSACEAE

Genus of about 150 species of deciduous trees, shrubs, and climbers, often found in poor soils, in tropical and subtropical regions from Africa to Asia to Australia. They are grown for their filigree foliage and attractive flowerheads of small florets with long stamens, which may be borne on plants only a few years old. The alternate, 2-pinnate leaves have numerous oblong-ovate to sickle-shaped leaflets. In frost-prone areas, overwinter container-grown plants in a cool greenhouse; elsewhere, grow as specimen plants.

- **HARDINESS** Frost hardy to frost tender; *A. julibrissin* may survive to -20°C (-4°F) if growth has been ripened in summer. Alternating mild and cold spells may damage top-growth.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in poor to moderately fertile, well-drained soil in full sun. Pruning group 1, or 13 if wall-trained; plants under glass may need restrictive pruning in early spring.
- **PROPAGATION** Sow seed in spring, at not less than 15°C (59°F), after soaking for 24 hours in warm water. Root semi-ripe cuttings with bottom heat in summer. Take root cuttings in winter.

*Albizia julibrissin* var. *rosea*

• **PESTS AND DISEASES** Red spider mites and whiteflies may be a problem under glass. Outdoors, prone to vascular wilt.

*A. distachya* see *A. lophantha*.

*A. julibrissin* ☞ (Silk tree). Large shrub or small tree with a domed crown when mature. Fern-like, light to mid-green leaves, 30–45cm (12–18in) long, have many small, sickle-shaped leaflets. Bears terminal clusters, 7–15cm (3–6in) wide, of spherical, yellow-green flowerheads, 3.5cm (1½in) across, in summer. ↓ 6m (20ft), ↔ 4–6m (12–20ft). Iran to Japan.

✱✱. var. *alba* has white flowerheads.

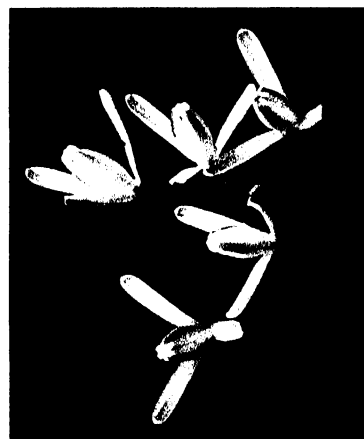
var. *rosea* ☞ has pink flowerheads.

*A. lophantha* ☞ syn. *A. distachya*, *Paraserianthes lophantha* (Cape wattle, Swamp wattle). Erect to spreading, large shrub or small tree with fern-like, bright green leaves, 30cm (12in) long, with numerous small, oblong-ovate, oppositely pointed leaflets. In spring, bears tiny, yellow-green or gold flowerheads in cylindrical, axillary spikes, 3–6cm (1¼–2½in) long. ↓ 2–10m (6–30ft), ↔ 1–3m (3–10ft). Australia (Western Australia). ☞ (min. 4–5°C/39–41°F)

## ALBUCA

LILIACEAE

Genus of 30 species of bulbous perennials from grassland in the Middle East and Africa. Most of those cultivated come from South Africa, and have open tubular flowers and long, strap-shaped to lance-shaped or narrowly linear, deep green to grey-green, basal leaves. The narrowly bell-shaped or tubular flowers, 2–4cm (¾in–1½in) across, are borne in

*Albuca humilis**Albuca nelsonii*

loose racemes, and are usually white or yellow with a green or dull red central stripe on each tepal. In frost-prone areas, grow in a temperate greenhouse; in warmer areas, use in an open, sunny site.

• **HARDINESS** Half hardy to frost tender;

*A. canadensis* may survive brief spells at around -5°C (23°F). *A. humilis* is half hardy; in mild areas, it will survive in a sheltered site, mulched in winter.

• **CULTIVATION** Plant bulbs 5cm (2in) deep in spring. Under glass, grow in sandy, loam-based potting compost (J1 No.2) in full light. In the growing season, apply a balanced liquid fertilizer monthly. Water freely when flowering, more sparingly in spring and autumn; keep dry in winter. Pot on in spring, if required. Outdoors, grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe, or remove offsets in autumn.

• **PESTS AND DISEASES** Trouble free.

*A. canadensis*, syn. *A. minor*. Bulbous perennial with 3–6 lance-shaped leaves, 15cm (6in) long. In late spring and early summer, produces up to 7 nodding, narrowly bell-shaped, pale yellow flowers, the tepals each with a wide green central stripe. ↓ 50cm (20in), ↔ 21cm (8in). South Africa. ✱

*A. humilis* ☞ Bulbous perennial with 1–3 narrowly linear leaves, 7–15cm (3–6in) long. Produces 1–3 narrowly bell-shaped white flowers in late spring and early summer. Outer tepals are green-striped; inner ones have yellow tips. ↓ 10cm (4in), ↔ 5cm (2in). South Africa. ✱

*A. minor* see *A. canadensis*.

*A. nelsonii* ☞ Tall, bulbous perennial with 4–6 lance-shaped leaves, 90–120cm (3–4ft) long. Bears dense racemes of many, almost erect, tubular white flowers, the tepals each with a green, or occasionally dull red central stripe, in late spring and early summer. Good for cutting. ↓ 1.5m (5ft), ↔ 21cm (8in). South Africa. ☞ (min. 7°C/45°F)

## ALCEA

Hollyhock

MALVACEAE

Genus of about 60 species of biennials and short-lived perennials found in temperate regions of Europe and Asia, usually in rocky sites and on dry, grassy wasteland. They are cultivated for their tall, slender inflorescences of large,

stalkless or short-stalked, funnel-shaped, 5-petalled, brightly coloured flowers, often double in cultivars, which are borne in summer. Suitable for a mixed border, or for growing along a wall; they are attractive to butterflies and bees.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. May require staking in exposed sites. Grow as annuals or biennials to limit the spread of hollyhock rust.

• **PROPAGATION** To grow as annuals, sow seed at 13°C (55°F) in late winter, or *in situ* in mid-spring. For biennials and perennials, sow seed *in situ* in midsummer. If required, transplant in early autumn, when 2 or 3 true leaves have developed.

• **PESTS AND DISEASES** Susceptible to hollyhock rust. Cutworms and slugs may damage young growth. Mallow flea beetles, aphids, and capsid bugs may be a problem in dry conditions.

*A. ficifolia*. Erect biennial or short-lived perennial with rounded, 5- to 7-lobed, conspicuously veined, rough, mid-green leaves, to 18cm (7in) long. Terminal spikes of single, sometimes double yellow flowers, 5–8cm (2–3in) across, are produced in early summer. ↓ to 2.5m (8ft), ↔ 90cm (36in). Siberia. ✱✱✱

*A. rosea*, syn. *Althaea rosea* (Hollyhock). Vigorous, upright perennial producing rounded, roughly hairy, light green leaves, to 3.5cm (1½in) long, cut into 3–7 shallow lobes. Long, terminal racemes of single, purple, pink, white, or yellow flowers, 5–10cm (2–4in) across, are borne in early and midsummer. ↓ 1.5–2.5m (5–8ft), ↔ to 60cm (24in). Probably W. Asia. ✱✱✱. 'Chater's Double' ☞ bears peony-form, double flowers in a range of bright colours and paler shades, including pink, apricot, red, white, lavender-blue, yellow, and purple; ↓ 2–2.5m (6–8ft). 'Indian Spring' bears single, white, pink, or yellow flowers. 'Majorette' is dwarf and bushy, bearing rosette-like, fringed,

semi-double flowers in pale shades, including yellow, carmine-red, and apricot, in early summer; ↓ 1m (3ft), ↔ to 30cm (12in). 'Nigra' ☞ has single, deep chocolate-maroon flowers with yellow throats; ↓ to 2m (6ft). 'Summer Carnival', bred for annual cultivation, bears double flowers in colours such as pale yellow and red, in early summer. Flowers are produced lower on the flowering stems than in other cultivars.

## ALCHEMILLA

Lady's mantle

ROSACEAE

Genus of about 250 species of perennials from meadows and light woodland, some from rocky habitats, in N. temperate and arctic zones, and from mountain regions in tropical Africa, India, Sri Lanka, and Indonesia (Java). Alchemillas are valued for both their attractive foliage and their frothy sprays of flowers. Most have woody rhizomes, and shallowly to palmately lobed, rounded or kidney-shaped, often silky-haired leaves. The many-branched cymes of tiny, green or yellowish green flowers, 2–3mm (¼–⅛in) across, are good for cutting. Alchemillas are suitable for a wildflower or large rock garden, or for a border.

• **HARDINESS** Fully hardy to frost hardy; *A. ellenbeckii* is hardy to -8°C (18°F).

• **CULTIVATION** Grow in any moist, humus-rich soil in sun or partial shade. Dead-head *A. mollis* soon after flowering, as it self-seeds very freely.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Transplant

spreading, perennating stems with deeply 7- to 9-lobed leaves, 3.5-4.5cm (1½-1¾in) long, blue-green above, and silver-hairy beneath. Cymes of tiny, greenish yellow flowers are borne from early summer to early autumn. †40cm (16in), ↔30cm (12in). Jura mountains, S.W. Alps. \*\*\*  
**A. ellenbeckii.** Evergreen, mat-forming perennial with wiry red stems and small kidney-shaped, deeply 5-lobed, pale green leaves, to 2cm (¾in) long. Bears tiny, yellow-green flowers in loose cymes in summer. Flowers resemble those of *A. alpina*, but are fewer, on shorter stems, and almost hidden by the foliage. Thrives in moist but well-drained soil. †2.5-5cm (1-2in), ↔30cm (12in) or more. Mountains of E. Africa. \*\*  
**A. erythropoda** ♀ Clump-forming perennial with rounded, shallowly 7- to 9-lobed, sharp-toothed, hairy, bluish

silver-hairy beneath. Bears cymes of tiny, greenish yellow flowers from early summer to early autumn. †40cm (16in), ↔30cm (12in). E. Iceland. \*\*\*  
**A. fulgens**, syn. *A. splendens* of gardens. Spreading, rhizomatous perennial with rounded, shallowly 7- to 9-lobed, toothed, hairy leaves, 4.5-5cm (1½-2in) long, blue-green above and silvery green beneath. Cymes of greenish yellow flowers are borne from early to late summer. †30cm (12in), ↔25cm (10in). Pyrenees. \*\*\*  
**A. mollis** ♂♀ Clump-forming perennial with rounded, shallowly 9- to 11-lobed, toothed, densely softly hairy, pale green leaves, to 15cm (6in) long. Bears loose cymes of many tiny, greenish yellow flowers from early summer to early autumn. Drought-tolerant. Excellent for ground cover and for providing cut flowers. †60cm (24in), ↔75cm (30in). E. Carpathians, Caucasus, Turkey. \*\*\*  
**A. splendens** of gardens see *A. fulgens*.  
**A. xanthochlora.** Clump-forming perennial producing kidney-shaped, shallowly 9- to 11-lobed, often yellowish green leaves, 5cm (2in) long, hairless above and hairy beneath, with hairy leaf stalks. Cymes of tiny, yellow-green flowers are borne in profusion from early to late summer. †50cm (20in), ↔60cm (24in). N.W. and C. Europe, Greece. \*\*\*  
 ▸ **Alder** see *Alnus*  
**African red** see *Cunonia capensis*  
**Black** see *Ilex verticillata*  
**Common** see *Alnus glutinosa*  
**Green** see *Alnus viridis*  
**Grey** see *Alnus incana*  
**Italian** see *Alnus cordata*  
**Japanese** see *Alnus japonica*  
**Mountain** see *Alnus tenuifolia*  
**Oregon** see *Alnus rubra*  
**Red** see *Alnus rubra*  
**Sitka** see *Alnus sinuata*  
**Thinleaf** see *Alnus tenuifolia*  
**White** see *Alnus rhombifolia*, *Clethra*  
**Witch** see *Fothergilla gardenii*  
 ▸ **Alecoast** see *Tanacetum balsamita*



94 *Alchemilla conjuncta*

## ALEURITES

EUPHORBIACEAE

Genus of 6 species of evergreen trees from tropical to subtropical rainforest and moist woodland in China, Indonesia, and W. Pacific islands. The usually alternate leaves are shallowly lobed or entire. The small, 5-petalled white flowers are borne in terminal, panicle-like cymes, followed by fruits containing oil-bearing seeds. Where temperatures fall below 7°C (45°F), grow in a cool greenhouse. In warmer areas, grow as shade or specimen trees.  
 • **HARDINESS** Frost tender; *A. fordii* may tolerate short spells around 0°C (32°F).  
 • **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained, neutral to acid soil in full sun; they will tolerate partial shade. Pruning group 1; plants under glass may need restrictive pruning.  
 • **PROPAGATION** Sow seed at 13-18°C (55-64°F) as soon as ripe or in spring. Root semi-ripe cuttings in late summer.  
 • **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

**A. fordii** ♀ Erect to spreading tree with ovate, pointed, 3-lobed, light green leaves, to 25cm (10in) long, mostly arranged in whorls. Red-tinted white flowers are borne in panicle-like cymes, 10-15cm (4-6in) long, in summer, followed by spherical, greenish brown fruit, 6-7cm (2½-3in) across. †5-7m (15-22ft), ↔3-6m (10-20ft). W. and C. China. ☼ (min. 5°C/41°F).

▸ **Alexanders, Perfoliate** see *Smyrniolum perfoliatum*  
 ▸ **Alfalfa** see *Medicago sativa*

## X ALICEARA

ORCHIDACEAE

Hybrid genus of evergreen, epiphytic orchids that are crosses between *Brassia*, *Miltonia*, and *Oncidium*. Basal rhizomes produce groups of oval pseudobulbs, each pseudobulb bearing 2 narrowly oval, mid-green leaves with pointed tips. Up to 12 long-lasting flowers, varying in size and colour, are borne in racemes from the bases of the pseudobulbs at various times during the year.  
 • **HARDINESS** Frost tender.  
 • **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in the smallest possible containers. Provide shady, well-ventilated conditions and high humidity in summer; remove shading in winter. Water moderately throughout the year, more sparingly in winter. In summer, spray the foliage lightly with water once or twice a day; apply a half-strength fertilizer at every third watering. See also p.46.  
 • **PROPAGATION** Divide when the plant overgrows its container.  
 • **PESTS AND DISEASES** Susceptible to aphids, red spider mites, and mealybugs.

✕ **A. 'Dark Warrior'** ♂ Evergreen hybrid orchid with oval pseudobulbs and oval leaves, 23cm (9in) long. Racemes of up to 12 flowers, each 4cm



✕ *Aliceara* 'Dark Warrior'

(1½in) across, typically brown with cream lips, are borne throughout the year. †25cm (10in), ↔30cm (12in). ☼ (min. 11-13°C/52-55°F; max. 24°C/75°F)

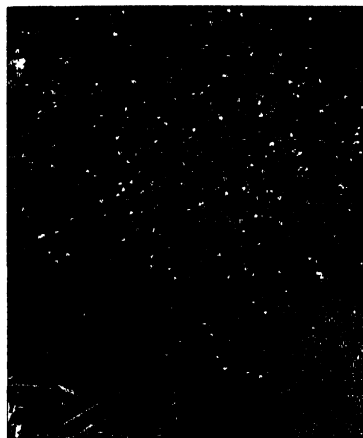
## ALISMA

Water plantain

ALISMATACEAE

Genus of 9 species of rhizomatous, deciduous, marginal aquatic perennials from temperate regions of the N. hemisphere, southern Africa, and from Australia. Basal rosettes of plantain-like leaves, with long leaf-stalks and elliptic to lance-shaped leaf-blades, are held above the water surface in spring. Whorled, umbel-like panicles of 3-petalled, saucer-shaped, white or pink flowers are borne above the foliage in mid- and late summer. Grow in large groups or drifts at pool margins. *A. plantago-aquatica* is ideal for a large pond and for naturalizing in a lake.  
 • **HARDINESS** Fully hardy.  
 • **CULTIVATION** Flowering is most profuse in water 15cm (6in) deep; they will tolerate water up to 30cm (12in) deep. *A. plantago-aquatica* self-seeds freely; dead-head regularly, once established. See also pp.52-53.  
 • **PROPAGATION** Sow seed as soon as ripe in seed trays or pots half submerged in shallow trays of water. Divide tuber-like rhizomes in late spring.  
 • **PESTS AND DISEASES** Trouble free.

**A. gramineum.** Aquatic perennial with growth above the water surface, or submerged to a depth of 23cm (9in). Above water, the dark green leaves are elliptic to lance-shaped, and 10cm (4in) long; submerged, they are linear, and to 45cm (18in) long. White or pinkish white flowers, to 6mm (¼in) across, are borne in dense panicles, 12-15cm (5-6in) tall. †15-20cm (6-8in). Europe, N. Africa, W. Asia, North America. \*\*\*  
**A. lanceolatum.** Aquatic perennial that thrives in water 20-23cm (8-9in) deep. Lance-shaped, bluish green leaves, to 30cm (12in) long, often smaller, grow above water. Bears panicles, 20-70cm (8-28in) tall, of purplish pink flowers, to 1.5cm (½in) across. †50-70cm (20-28in), ↔23cm (9in). Europe, Africa, C. and S.W. Asia. \*\*\*  
**A. plantago-aquatica** ♂ Aquatic perennial with rosettes of elliptic to lance-shaped, greyish green leaves, to 30cm (12in) long, heart-shaped at the



*Alisma plantago-aquatica*

bases, with pointed tips, borne on long stalks above the water. Bears white or pinkish white flowers, to 1.5cm (½in) wide, in panicles, 20–75cm (8–30in) tall. †60–75cm (24–30in), ↔45cm (18in). Europe, N. and southern Africa, E. Asia, North America. \*\*\*

▷ **Alison**, Sweet see *Lobularia*

▷ **Alkanet** see *Anchusa*

▷ **Green** see *Pentaglottis*, *P. sempervirens*

## ALKANNA

BORAGINACEAE

Genus of 30–40 species of annuals or evergreen, clump-forming perennials, mostly found in scree and rock crevices from S. Europe to Iran. Few species are cultivated. They have basal tufts of alternate leaves, 8–15cm (3–6in) long, which are usually entire and hairy. They are grown for their funnel-shaped or salverform, bright blue flowers, borne in erect, terminal cymes on leafy stems in early summer. Grow in a raised scree bed or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Outdoors, grow in sharply drained soil in a raised scree bed, protected from winter wet; alternatively, grow in an alpine house in very gritty potting compost. Water moderately in the growing season; keep just moist in winter; avoid wetting the foliage.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or root softwood cuttings in summer.

• **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

**A. incana**. Low, mound-forming, evergreen perennial with linear to lance-shaped, very hairy, grey-green leaves, to 15cm (6in) long, and salverform, bright blue flowers, 1cm (½in) across, on stiff stems, to 4–5cm (1½–2in) long. Needs good drainage. †5–15cm (2–6in), ↔5–10cm (2–4in). Turkey. \*\*\*

## ALLAMANDA

syn. ALLEMANDA

APOCYNACEAE

Genus of 12 species of evergreen shrubs and scandent climbers from scrub and forest in tropical North, Central, and South America. They have simple leaves, which may be alternate, opposite, or whorled, and are grown for their showy, usually terminal cymes of large, funnel-

or trumpet-shaped flowers, each with 5 broad petal lobes. These are followed by spiny seed capsules. Where temperatures fall to 7°C (45°F), grow in a temperate or warm greenhouse. In warmer areas, grow in a border or on a wall. Contact with sap may irritate skin; all parts may cause mild stomach upset if ingested.

• **HARDINESS** Frost tender: *A. blanchetii* and *A. cathartica* may survive very short spells at about 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Water freely in growth, applying a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Outdoors, grow in moist, fertile soil in full sun. Pruning group 11 or 12 in late winter or early spring.

• **PROPAGATION** Sow seed at 18–20°C (64–68°F) in spring. Root greenwood cuttings in late spring or early summer.

• **PESTS AND DISEASES** Red spider mites and whiteflies may be a problem.

**A. blanchetii**, syn. *A. violacea*. Erect shrub or semi-scandent climber, with whorls of 4 oblong-obovate leaves, 8–12cm (3–5in) long. From summer to autumn, produces axillary and terminal cymes of broadly trumpet-shaped flowers, 6–9cm (2½–3½in) long, which are purplish pink, deeper toned inside. †2–3m (6–10ft). South America.

• (min. 7–10°C/45–50°F)

**A. cathartica** (Golden trumpet).

Strong-growing climber with whorls of 3 or 4 lance-shaped to obovate leaves, 10–15cm (4–6in) long. Axillary and terminal cymes of yellow flowers, 12cm (5in) or more long, are borne from summer to autumn. †8–16m (25–52ft). Central and South America. • (min. 7–10°C/45–50°F). 'Hendersonii' ♀ has bronze-tinted buds that open to bright yellow flowers, sometimes white flecked in the throats.

**A. violacea** see *A. blanchetii*.

▷ **Allemanda** see *Allamanda*

▷ **All heal** see *Valeriana officinalis*



*Allamanda cathartica* 'Hendersonii'

## ALLIUM

Onion

LILIACEAE

Genus of about 700 species of spring-, summer-, and autumn-flowering, bulbous and rhizomatous perennials, mainly from dry and mountainous areas of the N. hemisphere. In most species, a single bulb produces clusters of offset bulbs around it, which gradually form clumps. A few species have elongated bulbs, which develop on short, fleshy rhizomes; some produce bulbils in the flowerheads. The upright to spreading, sometimes cylindrical, linear to strap-shaped, basal or stem-clasping leaves have a pungent aroma when crushed; they are often withered by flowering time. The tubular-based flowers are bell-, star-, or cup-shaped; they are borne, few to many, in usually spherical, sometimes hemispherical or ovoid, occasionally pendent umbels, mostly 1–10cm (½–4in) across, sometimes to 30cm (12in) across. Grow taller species in groups in a border; some have flowerheads that dry well. Grow shorter species at the front of a border or in a rock garden. Contact with the bulbs may irritate skin or aggravate some skin allergies. Several species have culinary uses, including *A. sativum* (garlic), *A. schoenoprasum* (chives), and *A. tuberosum* (Chinese chives).

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun. Plant bulbs 5–10cm (2–4in) deep in autumn; plant clump-forming species with rhizomes at, or just below, the soil surface in spring. Grow alliums from areas with hot, dry summers in sandy, loam-based potting compost (J1 No.1) in an alpine house; keep dry when dormant in summer.

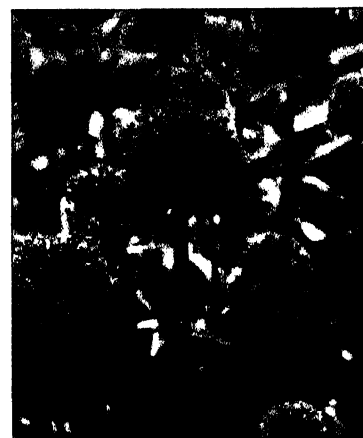
• **PROPAGATION** Sow seed in containers in a cold frame, when ripe or in spring; sow seed of *A. schoenoprasum* in drills *in situ*. Remove offsets of bulbous species in autumn. Divide clump-forming, rhizomatous species in spring.

• **PESTS AND DISEASES** Susceptible to white rot, downy mildew, and onion fly.

**A. acuminatum** ♀ Bulbous perennial with linear, channelled, mid-green basal and stem-clasping leaves, 10–20cm (4–8in) long. Hemispherical umbels, 4–6cm (1½–2½in) across, of 10–30 star-shaped, pinkish purple, occasionally white or pale pink flowers are produced



*Allium acuminatum*



*Allium aflatunense*

in early summer. †10–30cm (4–12in), ↔5cm (2in). W. North America. \*\*\*

**A. aflatunense** ♀ Bulbous perennial with slightly ribbed stems and linear, mid-green, basal leaves, 30–60cm (12–24in) long. Dense umbels, 10cm (4in) across, of many star-shaped, purplish pink flowers, are produced in summer. †1m (3ft), ↔10cm (4in). C. Asia. \*\*\*

**A. aflatunense of gardens** see *A. x hollandicum*.

**A. akaka**. Bulbous perennial with oblong-elliptic, grey-green, basal leaves, to 20cm (8in) long. Virtually stemless umbels, 6cm (2½in) across, of 30–40 small, star-shaped, lilac-pink flowers are produced in spring. †12cm (5in), ↔10cm (4in). Caucasus, Turkey, Iran. \*\*\*

**A. albopilosum** see *A. cristophii*.

**A. azureum** see *A. caeruleum*.

**A. beesianum** ♀ Bulbous perennal with linear, grey-green, basal leaves, 15–20cm (6–8in) long, and umbels, 2.5cm (1in) across, of 6–12 pendent, bell-shaped, blue or white flowers, with short stamens, from late summer to autumn. †15–20cm (6–8in), ↔5cm (2in). W. China. \*\*\*

**A. bulgaricum** see *Nectaroscordum siculum* subsp. *bulgaricum*.

**A. caeruleum** ♀ syn. *A. azureum*. Bulbous perennial with linear, mid-green, stem-clasping leaves, 7cm (3in) long, which die back before flowering. Dense umbels, 2.5cm (1in) across, of 30–50 small, star-shaped, bright blue flowers are borne on stiff stems in early summer. †60cm (24in), ↔2.5cm (1in). N. and C. Asia. \*\*\*



*Allium caeruleum*

A

**A. callimischon.** Bulbous perennial with grass-like, linear, mid-green, stem-clasping leaves, to 30cm (12in) long. Wiry stems bear loose umbels, 2.5cm (1in) across, of 8–25 cup-shaped, white or pale pink flowers in autumn.  $\uparrow$  9–35cm (3½–14in),  $\leftrightarrow$  5cm (2in). Greece, W. Turkey. \*\*\* **subsp.**

**haemostictum** has white or pale pink flowers with maroon spots; Crete.

**A. campanulatum.** Bulbous perennial with linear, mid-green, stem-clasping leaves, to 30cm (12in) long, which die back at flowering time. Bears dense umbels, 3–6cm (1¼–2½in) across, of up to 20 cup-shaped, rose-pink flowers in summer.  $\uparrow$  10–30cm (4–12in),  $\leftrightarrow$  5cm (2in). USA (California, Nevada). \*\*\*

**A. carinatum.** Bulbous perennial with linear, mid-green basal and stem-clasping leaves, to 20cm (8in) long. Bears loose umbels, 5cm (2in) across, of up to 30 bell-shaped purple flowers in midsummer, usually accompanied by bulbils; the outer flowers are pendent. Spreads rapidly, so best in informal plantings.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  5cm (2in). C. and S. Europe, Turkey, former USSR. \*\*\* **subsp. pulchellum**  $\varnothing$  syn. *A. pulchellum*, has rich purple flowers in dense, elongated umbels, 6cm (2½in) across, with no bulbils. Virtually evergreen, since new leaves are produced with the flowers. Rapidly forms clumps, but is not invasive.  $\uparrow$  30–45cm (12–18in),  $\leftrightarrow$  5cm (2in). S. Europe. **subsp. pulchellum f. album** has white flowers.

**A. cernuum**  $\square \varnothing$  (Nodding onion, Wild onion). Vigorous, bulbous perennial with narrowly strap-shaped, dark green, basal leaves, 10–20cm (4–8in) long. In summer, stiff stems, curving over sharply at the tips, bear pendent umbels, 6cm (2½in) across, of 25–40 bell-shaped, mid- to deep pink flowers.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  5cm (2in). North America. \*\*\*

**A. christophii** see *A. cristophii*.

**A. cowanii** see *A. neapolitanum*.

**A. cristophii**  $\square \varnothing$  syn. *A. albopilosum*. *A. christophii*. Bulbous perennial with ribbed stems and strap-shaped, grey-green, basal leaves, 15–40cm (6–16in) long, with stiff marginal hairs. The leaves wither before large umbels, 20cm (8in) across, of up to 50 star-shaped, pinkish purple flowers with a metallic sheen are produced in early summer. The flowerheads dry well.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  15–19cm (6–7in). Turkey, C. Asia. \*\*\*



*Allium cernuum*



*Allium cristophii*

**A. cyaneum**  $\varnothing$  Bulbous perennial with short rhizomes and thread-like, dark green, basal leaves, to 15cm (6in) long. Produces small umbels, 2cm (¾in) across, of 6–8 bell-shaped blue flowers in summer.  $\uparrow$  10–25cm (4–10in),  $\leftrightarrow$  8cm (3in). China. \*\*\*

**A. cyathophorum var. farreri**  $\square$  syn. *A. farreri*. Vigorous, bulbous perennial with narrowly strap-shaped, mid-green, basal leaves, 18–24cm (7–10in) long. In summer, bears loose umbels, 1.5cm (½in) across, of 6–30 small, pendent, bell-shaped, deep violet-purple flowers.  $\uparrow$  15–30cm (6–12in),  $\leftrightarrow$  5cm (2in). China. \*\*\*

**A. dichlamydeum.** Bulbous perennial with narrowly strap-shaped, short, mid-green, basal leaves, 10–20cm (4–8in) long. Bears thick-stemmed, compact umbels, 4cm (1½in) across, of up to 20 large, bell-shaped, bright pinkish purple flowers in early summer.  $\uparrow$  10–24cm (4–10in),  $\leftrightarrow$  5cm (2in). USA (California). \*\*

**A. elatum** see *A. macleanii*.

**A. farreri** see *A. cyathophorum* var. *farreri*.

**A. jensenii**  $\square \varnothing$   $\varnothing$  Variable, bulbous perennial with cylindrical, narrowly strap-shaped, glaucous, stem-clasping leaves, to 20cm (8in) long. In summer, produces loose umbels, 1.5cm (½in) across, of up to 60 bell-shaped, bright yellow flowers with prominent stamens. The flowers bend downwards as they open.  $\uparrow$  10–35cm (4–14in),  $\leftrightarrow$  5cm (2in). Europe, W. Asia. \*\*\*

**A. giganteum**  $\square$  Bulbous perennial with large, strap-shaped, pale green, basal leaves, 30–100cm (12–39in) long,



*Allium flavum*

which wither before flowering. In summer, bears dense umbels, 10cm (4in) across, of 50 or more star-shaped, lilac-pink flowers with prominent stamens.  $\uparrow$  1.5–2m (5–6ft),  $\leftrightarrow$  15cm (6in). C. Asia. \*\*\*

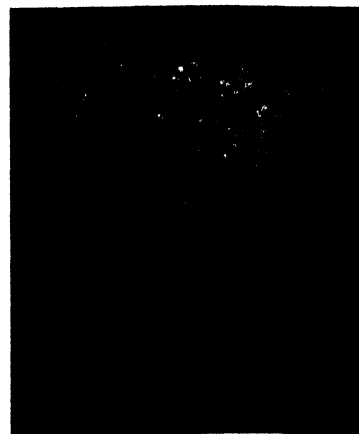
**A. 'Globemaster'**  $\square$  Bulbous perennial with strap-shaped, grey-green, basal leaves, 40–100cm (16–39in) long. Bears large umbels, 15–20cm (6–8in) across, of numerous star-shaped, deep violet flowers in summer.  $\uparrow$  80cm (32in),  $\leftrightarrow$  20cm (8in). \*\*\*

**A. x hollandicum.** syn. *A. aflatanense* of gardens. Bulbous perennial with unribbed stems and strap-shaped, mid-green, basal leaves, 30–60cm (12–24in) long, dying back at flowering time. Numerous star-shaped, purplish pink flowers are borne in dense umbels, 10cm (4in) across, in summer. Excellent for drying.  $\uparrow$  1m (3ft),  $\leftrightarrow$  10cm (4in). Garden origin. \*\*\*

**A. insubricum**  $\varnothing$  Bulbous perennial with short rhizomes and narrowly strap-shaped, mid-green, stem-sheathing leaves, 12–20cm (5–8in) long. Umbels, 2.5cm (1in) across, of 3–5 pendent, bell-shaped, pink-purple flowers are produced in summer, and are followed by pendent seed heads. Often confused with *A. narcissiflorum*, which has more flowers and erect seed heads.  $\uparrow$  15–25cm (6–10in),  $\leftrightarrow$  5cm (2in). N. Italy. \*\*\*

**A. kansuense** see *A. sikkimense*.

**A. karataviense**  $\square \varnothing$  Bulbous perennial grown for its pairs of elliptic, almost horizontal, red-margined, grey-green or greyish purple, basal leaves, 15–23cm (6–9in) long. In summer, bears umbels, 5–8cm (2–3in) across, of 50 or more



*Allium giganteum*



*Allium 'Globemaster'*

star-shaped, pale pink flowers with purple midribs.  $\uparrow$  10–25cm (4–10in),  $\leftrightarrow$  10cm (4in). C. Asia. \*\*\*

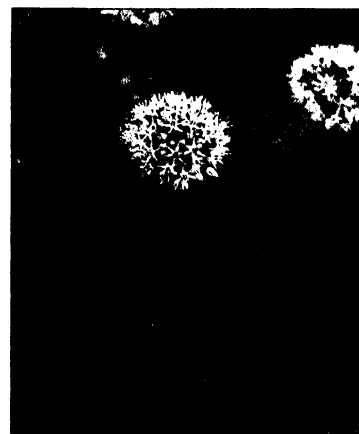
**A. lemmonii.** Bulbous perennial with sickle-shaped, grass-like, mid-green, basal leaves, 10–20cm (4–8in) long. In early summer, bears numerous tiny, star-shaped, white to pink flowers in umbels, 4cm (1½in) across.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  5cm (2in). USA (California). \*\*

**A. 'Lucy Ball'.** Robust, bulbous perennial with strap-shaped, pale green, basal leaves, to 1m (3ft) long. In early summer, bears 50 or more star-shaped, dark lilac flowers in tight umbels, 5–8cm (2–3in) across.  $\uparrow$  1m (3ft),  $\leftrightarrow$  15cm (6in). \*\*\*

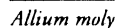
**A. macleanii.** syn. *A. elatum*. Bulbous perennial with deeply ridged stems and strap-shaped, glossy, mid-green, basal leaves, to 30cm (12in) long. In summer, bears umbels, 5–8cm (2–3in) across, of 50 or more star-shaped violet flowers, fading to rose-pink.  $\uparrow$  60–110cm (24–42in),  $\leftrightarrow$  15cm (6in). C. and S.E. Asia. \*\*

**A. macranthum.** syn. *A. oviflorum*. Bulbous perennial with short rhizomes and channelled, linear, mid-green, basal leaves, 15–45cm (6–18in) long. Loose umbels, 7–10cm (3–4in) across, of up to 20 pendent, bell-shaped, deep purple flowers are borne in summer.  $\uparrow$  20–30cm (8–12in),  $\leftrightarrow$  5cm (2in). India (Sikkim), W. China. \*\*\*

**A. mairei.** Slender, bulbous perennial with short rhizomes and linear, grass-like, mid-green, basal leaves, to 25cm (10in) long. In late summer, bears loose umbels, 2.5cm (1in) across, of up to 10 bell-shaped, pale to bright pink flowers

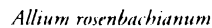


*Allium karataviense*

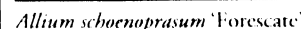


*Allium neapolitanum*

*Allium oreophilum*



*Allium schoenoprasum*

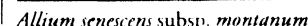


***A. schubertii***. Bulbous perennial with strap-shaped, bright green, basal leaves, 20–40cm (8–16in) long, which die back before flowering. Umbels, to 30cm (12in) across, of up to 50 star-shaped, pale purple flowers are borne on stalks of differing lengths in early summer. ↑30–60cm (12–24in), ↔20cm (8in). E. Mediterranean to C. Asia. ★★

***A. senescens***. Vigorous, bulbous perennial with short rhizomes and short strap-shaped, mid-green, basal leaves, 4–30cm (1½–12in) long. In mid- and late summer, bears dense umbels, 2cm (¾in) across, of up to 30 long-lasting, cup-shaped, pale to mid-purple-pink flowers. ↑8–60cm (3–24in), ↔5cm (2in). Europe, N. Asia. ★★ ★★. **var. *calcareum*** see subsp. *montanum*. **subsp. *montanum*** [■] syn. var. *calcareum*, has grey-green, often twisted leaves, and pink flowers; ↑45cm (18in). **subsp. *montanum* var. *glaucum***, syn. *A. spiralis*, a variant of the subspecies, has twisted grey leaves and bears bright pink flowers; ↑15cm (6in).

***A. siculum*** see *Nectaroscordum siculum*.

***A. sikkimense***, syn. *A. kansuense*, *A. tibeticum*. Slender, bulbous perennial with short rhizomes and linear, mid-



A

green, basal leaves, 30cm (12in) long. In early summer, bears nodding umbels, 2.5cm (1in) across, of up to 10 small, bell-shaped, bright blue, sometimes white flowers. †15–25cm (6–10in), ↔ 10cm (4in). W. China, Tibet, Nepal, India (Sikkim). \*\*\*

**A. sphaerocephalon** (Round-headed leek). Bulbous perennial with linear, mid-green, basal leaves, to 35cm (14in) long. Ovoid umbels, 2.5cm (1in) across, of up to 40 tightly packed, bell-shaped flowers, varying from pink to dark red-brown, are produced in summer, and are sometimes accompanied by bulbils. †50–90cm (20–36in), ↔ 8cm (3in). Europe, N. Africa, W. Asia. \*\*\*

**A. spiralis** see *A. senescens* subsp. *montanum* var. *glaucum*.

**A. stipitatum**. Bulbous perennial with ribbed stems and broadly strap-shaped, grey-green, basal leaves, 30–45cm (12–18in) long, hairy beneath. In early summer, bears tightly packed umbels, 10cm (4in) across, of 50 or more star-shaped, pale lilac flowers. Excellent for drying. Often confused with *A. rosenbachianum*. †1.4m (4½ft), ↔ 10cm (4in). C. Asia. \*\*\*. 'Album' has smaller heads of white flowers.

**A. tibeticum** see *A. sikkimense*.

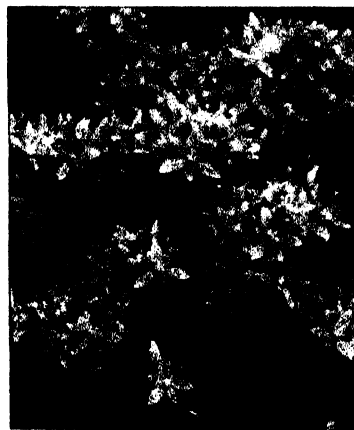
**A. tuberosum** (Chinese chives). Fast-growing, bulbous perennial with short rhizomes and solid, linear, keeled, edible, mid-green basal and stem-sheathing leaves, to 35cm (14in) long. From late summer to autumn, bears many star-shaped, fragrant white flowers in umbels, 5cm (2in) across. †25–50cm (10–20in), ↔ 5cm (2in). S.E. Asia. \*\*\*

**A. unifolium** [ ] syn. *A. murrayanum*.

Bulbous perennial with short, linear, grey-green, basal leaves, 15–20cm (6–8in) long, that wither by flowering time. In spring, each stem produces a hemispherical umbel, 6cm (2½in) across, of up to 20 large, open bell-shaped, clear purple-pink flowers. †30cm (12in), ↔ 5cm (2in). USA (Oregon, California). \*\*\*

**A. wallichii**. Bulbous perennial with short rhizomes and linear, keeled, mid-green basal and stem-clasping leaves, 60–90cm (24–36in) long. Many star-shaped purple flowers are borne in loose umbels, 5–7cm (2–3in) across, in late summer and early autumn. Bulbs are slender and poorly developed. †30–90cm (12–36in), ↔ 8cm (3in). Nepal to W. China. \*\*\*

**A. zebdanense**. Bulbous perennial producing strap-shaped, mid-green,



*Allium unifolium*

basal leaves, 10–30cm (4–12in) long. In spring, bears umbels, 3cm (1¼in) across, of 6–10 large, bell-shaped, lightly scented white flowers. †25–40cm (10–16in), ↔ 5cm (2in). Lebanon. \*\*\*

▷ **Allspice** see *Calycanthus*  
**Californian** see *C. occidentalis*  
**Carolina** see *C. floridus*

## ALLUAUDIA

DIDIERACEAE

Genus of about 6 species of tree-like, perennial succulents from dry regions of S.W. and S. Madagascar. They have mainly thick, fleshy trunks and often thorny stems. The fleshy leaves are shed in dry periods and are apparent only during the growing season. The unisexual flowers are borne in umbel-like cymes. Where temperatures fall below 15°C (59°F), grow in a temperate or warm greenhouse. In warmer climates, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with up to 10 per cent each of added leaf mould and sharp sand, in full light. Water moderately in summer; keep almost dry at other times. Apply a balanced liquid fertilizer 2 or 3 times in the growing season. Outdoors, grow in sharply drained, humus-rich, slightly alkaline soil, with additional sharp sand, in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Take stem cuttings in spring, and place in partial shade until rooted.

• **PESTS AND DISEASES** Trouble free.

**A. comosa**. Perennial succulent with 4 or 5 erect main branches and slender, twiggy, long-thorned stems bearing obovate to rounded, mid-green leaves, to 2cm (¾in) long, sometimes indented at the tips. Minute white flowers in small, 2cm (1½–3in) across, are produced directly from branches, below a thorn, in summer. † to 20m (70ft), ↔ 1m (3ft). S.W. and S. Madagascar. ☉ (min. 15°C/59°F)

**A. dumosa**. Erect, freely branching succulent producing twig-like stems, with short, isolated thorns and cylindrical, mid-green leaves, 0.8–2cm (⅜–¾in) long, which soon fall. Cymes, 2cm (¾in) across, of tiny, pale pinkish white flowers are borne directly from branches in summer. †2–8m (6–25ft), ↔ 1.5m (5ft). S. Madagascar. ☉ (min. 15°C/59°F)

▷ **Almond**,  
**Common** see *Prunus dulcis*  
**Dwarf Russian** see *Prunus tenella*  
**Flowering** see *Prunus triloba*  
**Indian** see *Terminalia catappa*

## ALNUS

Alder

BETULACEAE

Genus of about 35 species of deciduous trees and shrubs from all parts of the N. hemisphere, usually found on poor or wet soils. Alders have alternate, simple, toothed leaves, and bear male and female flowers in separate catkins on the same tree. The male catkins are conspicuous; the females are smaller,



*Alnus cordata*

and after pollination develop into persistent, woody, cone-like green fruits, which turn brown in autumn. Some alders, such as *A. rubra* and selected forms of *A. cordata*, *A. glutinosa*, and *A. incana*, are grown for their ornamental foliage, and are particularly effective planted close to water. Most, however, are notable for their ability to thrive on poor, wet soils, and are widely used in land reclamation. *A. cordata*, *A. incana*, and *A. rubra* are fast-growing and valuable as windbreaks.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Alders will thrive in moderately fertile, moist but well-drained soil in full sun; *A. cordata* and *A. incana* tolerate dry soils. Pruning group 1, between leaf fall and midwinter.

• **PROPAGATION** Sow seed in a seedbed as soon as ripe. Root hardwood cuttings in winter. Bud in late summer.

• **PESTS AND DISEASES** Prone to *Phytophthora* root rot.

**A. cordata** [ ] ♀ (Italian alder).

Conical tree with broadly ovate, glossy, dark green leaves, heart-shaped at the bases, and to 10cm (4in) long. Groups of 3–6 pendent, yellow-brown male catkins, to 8cm (3in) long, open before the leaves, in late winter or early spring. Bears ovoid fruit, 2–3cm (¾–1¼in) long, in summer. †25m (80ft), ↔ 6m (20ft). Corsica, S. Italy. \*\*\*

**A. crispa** see *A. viridis* subsp. *crispa*.

**A. glutinosa** [ ] (Common alder).

Broadly conical tree with ovate, dark green leaves, to 10cm (4in) long, sticky when young. Groups of 3–5 pendent, yellow-brown male catkins, 10cm (4in) long, are produced in late winter or early spring. Bears ovoid fruit, 1–2cm (½–¾in) long, in summer. †25m (80ft), ↔ 10m (30ft). Europe, N. Africa, W. Asia. \*\*\*. 'Aurea' has yellow leaves that mature to light green; †12m (40ft), ↔ 5m (15ft). 'Imperialis' [ ] ♀ has mid-green leaves with deeply cut lobes.

'Laciniata' resembles 'Imperialis', but the leaves are more shallowly cut.

'Pyramidalis' [ ] is stiffly erect, with upright branches and dark green leaves; †15m (50ft), ↔ 5m (15ft).

**A. incana** [ ] (Grey alder). Conical tree with ovate, dark green leaves, to 10cm (4in) long, grey-white and hairy beneath. Clusters of 3 or 4 pendent, yellow-brown male catkins, to 10cm (4in) long, are borne in late winter and



*Alnus glutinosa* 'Imperialis' (inset: leaf detail)



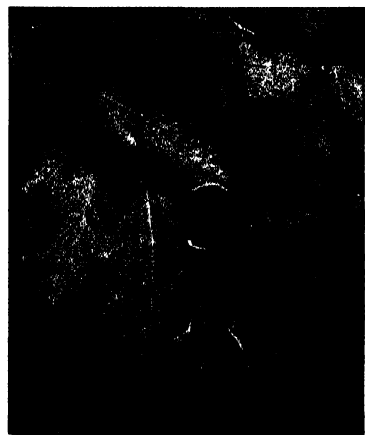
*Alnus incana*

early spring, before the leaves. Produces ovoid fruit, 1.5cm (½in) long, in summer. ↑20m (70ft), ↔10m (30ft). Europe, Caucasus. \*\*\*. **'Aurea'** [M] has yellow leaves, pale green in summer, and orange shoots and catkins in winter; ↑10m (30ft), ↔5m (15ft). **'Laciniata'** has narrow-lobed leaves. **'Pendula'** has weeping branches; ↑10m (30ft), ↔6m (20ft). **'Ramulis Coccineis'** has yellow leaves in spring, red shoots and buds in winter, and orange catkins; ↑10m (30ft), ↔5m (15ft).

**A. japonica** (Japanese alder). Conical tree with narrowly ovate, glossy, dark green leaves, paler beneath, to 10cm (4in) long. Clusters of 4–8 pendent, yellow-brown male catkins, to 8cm (3in) long, open before the leaves in early spring. Ovoid fruit, 1.5–2.5cm (½–1in) long, are borne in summer. ↑20m (70ft), ↔8m (25ft). N. China, Korea, Japan. \*\*\*

**A. oregona** see *A. rubra*.

**A. rhombifolia** (White alder). Rounded tree with spreading branches and arching shoot-tips. Ovate, glossy, dark green leaves, to 10cm (4in) long, are yellow-green beneath. Groups of 2–7 pendent, yellowish brown male catkins, to 10cm (4in) long, open before the leaves in early spring. Bears ovoid fruit, 1.5cm (½in) long, in summer. ↑25m (80ft), ↔20m (70ft). W. USA. \*\*\*. **A. rubra** (syn. *A. oregona*) (Oregon alder, Red alder). Very vigorous, conical tree with semi-pendent shoots and ovate, red-veined, glossy, dark green leaves, to 10cm (4in) or more long. Clusters of 2–5 pendent yellow male catkins, to 15cm (6in) long, open in

*Alnus incana* 'Aurea'

early spring, followed by ovoid-oblong fruit, 3cm (1¼in) long, in summer. ↑25m (80ft), ↔10m (30ft). W. North America. \*\*\*

**A. sinuata** (Sitka alder). Narrowly conical tree, sometimes shrubby, with ovate, light green leaves, to 15cm (6in) long, glossy beneath and sticky when young. Bears clusters of 3–6 pendent yellow male catkins, to 12cm (5in) long, in spring, after the leaves; they are followed in summer by ellipsoid fruit, 1.5cm (½in) long. ↑10m (30ft), ↔4m (12ft). N.W. North America. \*\*\*

**A. tenuifolia** (Mountain alder, Thinleaf alder). Spreading tree with a rounded head and red buds. Ovate leaves, to 10cm (4in) long, are dark green above and paler beneath. Pendent clusters of 3 or 4 small, yellow-brown male catkins, to 6cm (2½in) long, open in early spring, before the leaves.

Produces narrowly ovoid fruit, 2cm (¾in) long, in summer. ↑8m (25ft). W. North America. \*\*\*

**A. viridis** (Green alder). Upright shrub with ovate leaves, to 9cm (3½in) long, matt, mid-green above, glossy, yellow-green beneath. Groups of up to 10 stout, yellow-brown male catkins, to 8cm (3in) long, open in spring – erect at first, later pendent. In summer, bears ovoid fruit, to 1.5cm (½in) long. ↑3m (10ft), ↔2m (6ft). Europe. \*\*\*

**subsp. crispa**, syn. *A. crispa*, has slightly larger, fine-toothed, bright green leaves, to 8cm (3in) long; Canada, N.E. USA.

## ALOCASIA

Elephant's ear plant

ARACEAE

Genus of about 70 species of large, evergreen, mainly rhizomatous, sometimes tuberous-rooted perennials, found in tropical forest and sunny, open or shaded, usually damp sites by streams and marshes in S. and S.E. Asia. They are cultivated for their large, usually peltate, heavily veined, oblong to ovate, arrow-shaped leaves, which are often marked in black, dark violet, or bronze, and have cylindrical leaf-stalks. The relatively insignificant spathes, borne at any time of year, are followed by clusters of red or orange fruits. In frost-prone areas, grow in a warm greenhouse; some species are suitable as houseplants. In frost-free areas, grow in a shady border. Contact with sap may irritate skin; all parts may cause mild stomach upset if ingested.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts composted bark, loam, and sand, in filtered light. In the growing season, provide high humidity, water freely, and apply a balanced liquid fertilizer every 2–3 weeks; water moderately in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in partial shade.

• **PROPAGATION** Sow seed at 23°C (73°F) as soon as ripe. Divide the rhizomes, or separate offsets, in spring or summer. Root stem cuttings in early spring.

• **PESTS AND DISEASES** Mealybugs may be a problem.

**A. cuprea** [R] Rhizomatous perennial with oblong-ovate leaf-blades, 45cm (18in) long, and leaf-stalks 60cm (24in)

*Alocasia cuprea*

long. Upper leaf surfaces have dark green zones and midribs with copper-coloured areas in between; the undersides are reddish violet. Produces purple spathes, to 15cm (6in) long. ↑1m (3ft), ↔75cm (30in). Malaysia, Borneo. \* (min. 15–18°C/59–64°F)

**A. indica** var. **metallica** of gardens see *A. plumbea*.

**A. lowii** var. **veitchii** see *A. veitchii*.

**A. macrorrhiza** [R] (Giant taro).

Imposing, rhizomatous perennial with large, ovate, glossy, mid- to dark green leaves, arrow-shaped at the bases, with pale green veins, borne on "false stems" to 2m (6ft) long. Each leaf-blade is 1–1.2m (3–4ft) long, and each leaf-stalk 1.2m (4ft) long. Produces yellow-green spathes, to 20cm (8in) long. Widely cultivated in tropical areas for its edible rhizomes and shoots. ↑4–5m (12–15ft), ↔2–2.5m (6–8ft). India, Sri Lanka, Malaysia. \* (min. 15–18°C/59–64°F)

**A. picta** see *A. veitchii*.

**A. plumbea**, syn. *A. indica* var. **metallica** of gardens. Rhizomatous perennial producing purple or dark olive-green leaves that are arrow-shaped, to 1m long, with wavy margins, purple or silvery purple beneath. Each leaf-blade is 1–1.2 (3–4ft) long, and each leaf-stalk 1.2 (4ft) long. Produces white spathes, 15–17cm (6–7in) long. ↑4–5m (12–15ft), ↔2–2.5m (6–8ft). Indonesia (Java). \* (min. 15–18°C/59–64°F)

**A. sanderiana** [R] (Kris plant).

Rhizomatous perennial with arrow-shaped, dark green leaves, sometimes purple beneath, with wavy or deeply lobed silver margins, a metallic sheen,

*Alocasia macrorrhiza**Alocasia sanderiana*

and silver veins. Each leaf-blade is 30–40cm (12–16in) long, the leaf-stalk to 60cm (24in) long. The creamy white spathes are 12cm (5in) long. ↑2m (6ft), ↔2m (6ft). Philippines (Mindanao). \* (min. 15–18°C/59–64°F)

**A. veitchii**, syn. *A. lowii* var. **veitchii**, **A. picta**. Rhizomatous perennial with very dark green, pointed, narrowly ovate-triangular leaves, arrow-shaped at the bases, with grey margins and veins, and red-purple beneath. Each leaf-blade is to 75cm (30in) long, the leaf-stalk 1.3m (4½ft) long. Produces yellowish green spathes, 11–12cm (4½–5in) long. ↑2–2.2m (6–7ft), ↔1.2m (4ft). Borneo. \* (min. 15–18°C/59–64°F)

## ALOE

ALOEACEAE/LILIACEAE

Genus of about 300 species of small to large, rosetted, evergreen perennials. Some are shrub-like or climbing, a few tree-like. They are found at various altitudes in the Cape Verde Islands, tropical and southern Africa, Madagascar, and the Arabian Peninsula. Most have succulent leaves and axillary or terminal racemes or panicles of cylindrical to 3 angled, tubular, or bell-shaped flowers. The leaves of many *Aloe* species become suffused red in poor soils and dry conditions. The cylindrical or spherical fruits are papery or woody, and contain flat or angular seeds. Where temperatures fall below 10°C (50°F), grow in a cool or temperate greenhouse or as houseplants. In warmer climates, grow in a desert garden or in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand or perlite, in full light with good ventilation. Water moderately throughout the year, but sparingly when dormant. In the growing season, apply a balanced liquid fertilizer 2 or 3 times. Outdoors, grow in fertile, well-drained soil in full sun. See also pp.48–49.

A

- **PROPAGATION** Sow seed at 21°C (70°F) as soon as ripe. Separate offsets late spring or early summer. Insert unrooted offsets in standard cactus potting compost.
- **PESTS AND DISEASES** Prone to scale insects and mealybugs.

**A. albiflora**, syn. *Guillauminia albiflora*. Basal-rosetted, clump-forming succulent producing spirally arranged, linear, tapering, fleshy, dark green leaves, 12–15cm (5–6in) long, slightly grooved and rough, white-warty above and with small white marginal teeth. Terminal racemes, 60cm (24in) tall, of bell-shaped white flowers, to 1.5cm (½in) long, are borne in early summer. ↑ 15cm (6in), ↔ indefinite. Madagascar. ☀ (min. 10°C/50°F)

**A. arabica** see *A. vera*.

**A. arborescens**, syn. *A. perfoliata* var. *arborescens*. Tree-like, many-branched succulent with rosettes of sword-shaped, very fleshy, bright green leaves, to 60cm (24in) long, partly concave above, with wavy, toothed margins. Each rosette produces terminal racemes, to 30cm (12in) long, of cylindrical red flowers, to 4cm (1½in) long, in late spring and early summer. ↑ 2–4m (6–12ft), ↔ 2m (6ft). Malawi, Mozambique, Zimbabwe, South Africa. ☀ (min. 10°C/50°F).

**'Variegata'** [B] has yellow-striped leaves.

**A. aristata** [B] syn. *A. ellenbergeri*.

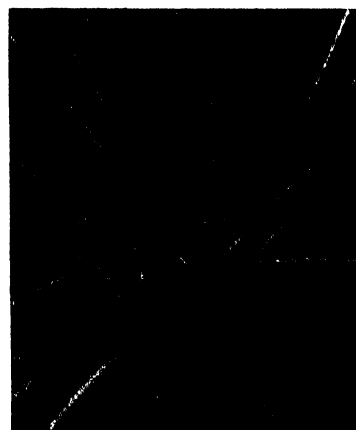
Stemless, clump-forming succulent with a dense rosette of lance-shaped, minutely toothed, white-margined, dark green leaves, 8–10cm (3–4in) long, cross-banded with very small white spots and soft white spines, particularly on the undersides. Terminal panicles, to 50cm (20in) long, and usually 2- to 6-branched, bear cylindrical, orange-red flowers, to 4cm (1½in) long, in autumn. ↑ to 12cm (5in), ↔ indefinite. E. and S. South Africa. ☀ (min. 10°C/50°F)

**A. atherstonei** see *A. p. ridens*.

**A. ausana** see *A. variegata*.

**A. bakeri** [X] Mat-forming succulent, with clustered rosettes of very slender, linear, fleshy, white-mottled, greenish or reddish brown leaves, to 10cm (4in) long, sometimes partially banded red or pink, with softly toothed margins. In summer, bears tubular, green-tipped scarlet or yellowish orange flowers, 2cm (¾in) long, in axillary racemes, 30cm (12in) long. ↑ 10–20cm (4–8in), ↔ 40cm (16in). Madagascar. ☀ (min. 10°C/50°F)

**A. barbadensis** see *A. vera*.



*Aloe arborescens* 'Variegata'

**A. bellatula**. Stemless, suckering succulent forming dense, rosetted clumps of linear to lance-shaped, grooved, warty, fleshy, dark green leaves, to 13cm (5in) long, spotted with pale green; the leaf margins are horny and minutely toothed. Terminal racemes, to 60cm (24in) long, with bell-shaped, coral-red flowers, to 1.5cm (½in) long, are produced throughout the summer. ↑ 15cm (6in), ↔ indefinite. Madagascar. ☀ (min. 10°C/50°F)

**A. brevifolia**, syn. *A. prolifera*. Stemless or short-stemmed succulent producing groups of compact rosettes with erect to spreading, triangular-lance-shaped, fleshy, glaucous leaves, 7–18cm (3–7in) long, with toothed margins. Each rosette bears an axillary raceme, 40–50cm (16–20in) long, of cylindrical red flowers, 4cm (1½in) long, in autumn. ↑ 10cm (4in), ↔ indefinite. South Africa (Western Cape). ☀ (min. 10°C/50°F)

**A. ciliaris** [B] Scrambling or climbing succulent with freely branching, warty stems bearing narrowly lance-shaped, fleshy, dull green leaves, 10–15cm (4–6in) long, with white marginal teeth. Broadly cylindrical, axillary racemes, 15cm (6in) or more long, of tubular, curving, scarlet and greenish yellow flowers, 3cm (1¼in) long, are produced in summer. ↑ 5m (15ft). South Africa (Eastern Cape). ☀ (min. 10°C/50°F)

**A. comptonii**. Stemless or short-stemmed succulent with large, compact rosettes of upright, lance-shaped, fleshy, toothed, bluish green leaves, to 30cm (12in) long, concave above, keeled and spiny below. Terminal panicles, 80cm (32in) long, with 3–5 branches, bear



*Aloe ciliaris*

pendent, cylindrical scarlet flowers, 4cm (1½in) long, in autumn. ↑ 40cm (16in), ↔ indefinite. South Africa (Eastern and Western Cape). ☀ (min. 10°C/50°F)

**A. descoingsii**. Stemless, clump-forming succulent with rosettes of ovate, tapered, dull green leaves, 3–4cm (1¼–1½in) long, with small white tubercles on both surfaces, and incurved, toothed margins. Flattened racemes, to 15cm (6in) long, terminate in cylindrical to bell-shaped, deep red and yellowish orange flowers, 8mm (⅜in) long, in summer. ↑ 4–5cm (1½–2in), ↔ indefinite. Madagascar. ☀ (min. 10°C/50°F)

**A. distans** [B] Trailing succulent with stems often 2–3m (6–10ft) long, and rooting at the nodes. Lance-shaped to broadly ovate, fleshy, white-spotted, bluish green leaves, 8cm (3in) long, are



*Aloe distans*

sharply pointed and have horny yellow marginal teeth. In winter, panicles, 40–60cm (16–24in) long, with 3 or 4 branches, bear cylindrical, red and yellow flowers, 4cm (1½in) long, in terminal clusters. ↑ 50cm (20in), ↔ indefinite. South Africa (Western Cape). ☀ (min. 10°C/50°F)

**A. ellenbergeri** see *A. aristata*.

**A. excelsa**. Tree-like succulent with very thick stems bearing dense rosettes of lance-shaped, fleshy, dull green leaves, 60–65cm (24–26in) long, with toothed margins and undersides. Each rosette has 1 or 2 many-branched panicles, to 1.3m (4½ft) tall, bearing terminal clusters of cylindrical, orange-red to rich scarlet flowers, to 3cm (1¼in) long, in summer. ↑ 6–9m (20–28ft), ↔ 75cm (30in). Zimbabwe. ☀ (min. 10°C/50°F)

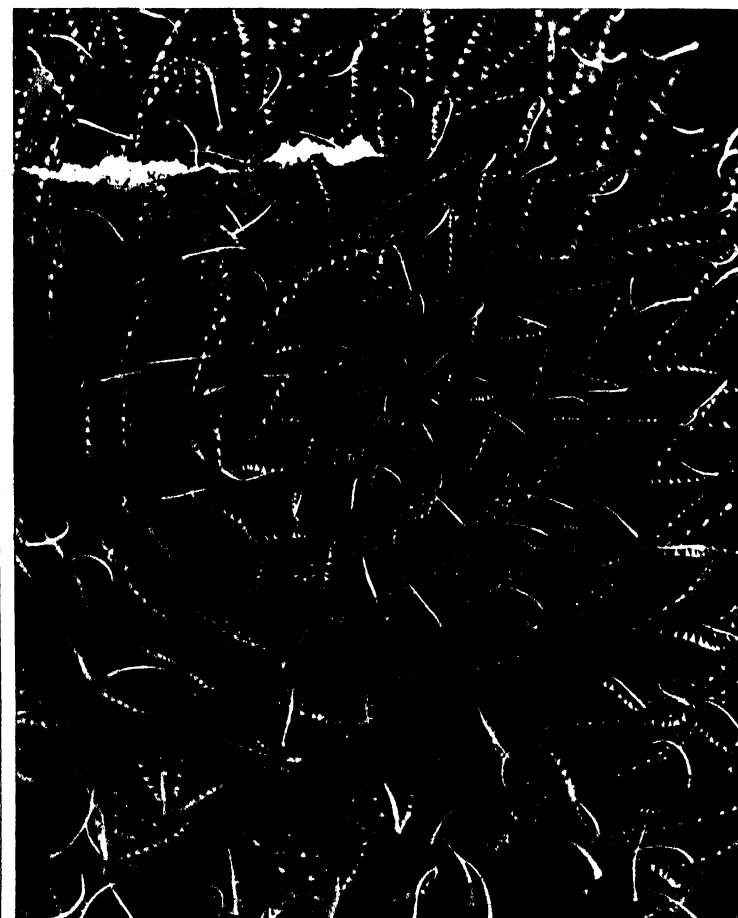
**A. ferox** [B] syn. *A. galpinii*, *A. socotrana*, *A. supralaevis*. Single-stemmed, tree-like succulent crowned by a rosette of narrowly to broadly lance-shaped, fleshy, sometimes red-tinged, dull green leaves, to 1m (3ft) long, hairless or spiny above, spiny beneath, and with red marginal teeth. Erect, terminal panicles with 5–10 branches, 30–80cm (12–32in) long, covered with tubular, scarlet-orange flowers, 2–3cm (¾–1¼in) long, are produced in summer. ↑ 2–3m (6–10ft), ↔ 1.5m (5ft). South Africa (Northern Cape, Eastern Cape, Western Cape). ☀ (min. 10°C/50°F)

**A. galpinii** see *A. ferox*.

**A. haemanthifolia**. Stemless, suckering succulent with 2-ranked, broadly strap-shaped, round-tipped, fleshy, grey-green to bluish green leaves, to 20cm (8in) long, which are concave above and have



*Aloe ferox*



*Aloe aristata*

red margins. The flattened, terminal racemes, 30–45cm (12–18in) long, produce clusters of tubular, stiffly pendent scarlet flowers, 4cm (1½in) long, in autumn. †20cm (8in), ↔ to 50cm (20in). South Africa (Eastern and Western Cape). ☼ (min. 10°C/50°F)

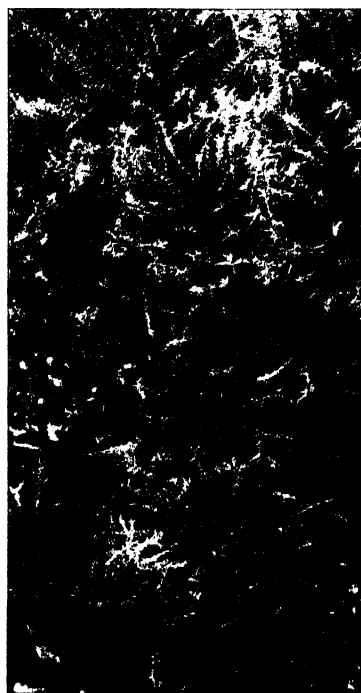
**A. haworthioides** ■ syn. *Aloinella haworthioides*. Stemless, suckering succulent with dense rosettes of lance-shaped, fleshy, white-warty, grey-green leaves, 3–6cm (1¼–2½in) long, suffused red in dry conditions; each has a terminal spine and white marginal teeth. Bears terminal racemes, to 30cm (12in) long, of tubular orange flowers, 8mm (⅜in) long, with projecting stamens, in summer. †6cm (2½in), ↔ 10cm (4in). Madagascar. ☼ (min. 10°C/50°F)

**A. indica** see *A. vera*.

**A. jucunda**. Stemless or short-stemmed, clump-forming succulent with rosettes of ovate, recurved, fleshy, deep green leaves, 4cm (1½in) long. These are brown-tinged towards the tips and have pale green and white spots, and reddish brown marginal teeth. In summer, bears sublateral racemes, to 30cm (12in) long, of cylindrical, pale pink flowers, 2cm (¾in) long. †to 5cm (2in), ↔ indefinite. Somalia. ☼ (min. 10°C/50°F)

**A. marlothii**. Tree-like succulent with persistent old leaves, on a thick stem crowned with a dense rosette of semi-erect, broadly lance-shaped, fleshy, mid-green or glaucous, grey-green leaves, 1m (3ft) long; both upper and lower surfaces and margins are spiny. Many-branched, dense, terminal panicles, to 80cm (32in) or more long, of cylindrical, yellowish orange flowers, to 3cm (1¼in) long, are borne in summer. †to 4m (12ft), ↔ 1.5m (5ft). Botswana, E. South Africa. ☼ (min. 10°C/50°F)

**A. mitriformis** ■ syn. *A. xanthocantha*. Variable, clump-forming succulent with thick, nearly erect or horizontal stems bearing terminal rosettes of ovate-lance-shaped, fleshy, bluish green leaves, 45cm (18in) long, keeled beneath, and suffused red in poor soil conditions.



*Aloe haworthioides*



*Aloe mitriformis*

Both keel and leaf margins are yellow-toothed. In winter, broadly conical, occasionally branched, axillary racemes, 40–60cm (16–24in) long, of tubular, dull scarlet flowers, 4–5cm (1½–2in) long, are borne on branched stems. †to 2m (6ft), ↔ indefinite. South Africa (Western Cape). ☼ (min. 10°C/50°F)

**A. niebuhriana**. Stemless, suckering, semi-prostrate succulent with rosettes of lance-shaped, fleshy, grey-green leaves, 45–60cm (18–24in) long, purple-flushed above, with close-set marginal teeth. In summer, bears dense, broadly conical, occasionally branched, axillary racemes, 1m (3ft) tall, of slightly pendent, tubular, scarlet or greenish yellow flowers, to 3cm (1¼in) long. †to 60cm (24in), ↔ 80cm (32in). S.W. Arabian Peninsula. ☼ (min. 10°C/50°F)

**A. paniculata** see *A. striata*.

**A. perfoliata** var. *arborescens* see *A. arborescens*.

**A. platyphylla** see *A. zebrina*.

**A. pluridens** ■ syn. *A. atherstonei*. Tree-like succulent with simple or branching stems, each crowned by a dense rosette of strap-shaped, recurved, fleshy, pale green or yellowish green leaves, 70–80cm (28–32in) long, with horny, grooved white marginal teeth. Conical, axillary racemes, to 80cm (32in) long, of cylindrical, rose-pink to scarlet flowers, 3.5–4.5cm (1½–1¾in) long, are borne in spring. †2–3m (6–10ft), ↔ 1m (3ft). South Africa (Eastern Cape). ☼ (min. 10°C/50°F)

**A. prolifera** see *A. brevifolia*.

**A. punctata** see *A. variegata*.

**A. raubii** ♀ Stemless, clump-forming succulent with rosettes of spreading,



*Aloe pluridens*



*Aloe saponaria*

lance-shaped, fleshy, grey-green leaves, to 10cm (4in) long. They are sometimes tinged brown, with H-shaped markings and minute white marginal teeth. In summer, produces tubular, rose-scarlet flowers, 2.5cm (1in) long, in cylindrical, terminal racemes, to 30cm (12in) long. †10–15cm (4–6in), ↔ indefinite. Madagascar. ☼ (min. 10°C/50°F)

**A. saponaria** ■ Stemless or short-stemmed, suckering succulent with solitary or multiple rosettes of toothed, lance-shaped, pale to dark green leaves, 20cm (8in) or more long, with oblong white marks. In summer, bears terminal panicles, 40–60cm (16–24in) long, with up to 3 branches, of cylindrical red to yellow flowers, 3.5–4.5cm (1½–1¾in) long. †70cm (28in), ↔ indefinite. E. South Africa. ☼ (min. 10°C/50°F)

**A. socotrana** see *A. ferox*.

**A. striata** ■ syn. *A. paniculata*. Almost stemless succulent with a dense rosette of lance-shaped, fleshy, white-margined leaves, 45cm (18in) or more long. They are often reddish green, indistinctly spotted and striped, and with a waxy white bloom. Corymb like, many-branched, terminal panicles, to 1m (3ft) long, of tubular, orange-red flowers, 2.5cm (1in) long, are borne in sun. †1m (3ft), ↔ 85cm (34in). S.W. to southern Africa. ☼ (min. 10°C/50°F)

**A. supralaevis** see *A. ferox*.

**A. variegata** ■ ♀ syn. *A. ausana*, *A. punctata* (Partridge-breasted aloe). Stemless, stoloniferous succulent, forming dense clumps, with rosettes of semi-erect, overlapping, lance-shaped, fleshy, dark green leaves, 12cm (5in) long. They are V-shaped in cross-



*Aloe striata*



*Aloe variegata*

section, with irregular white cross-bands and small white marginal teeth. Each rosette produces axillary racemes, 30cm (12in) long, sometimes branched, of pendent, tubular, pink or scarlet flowers, 3–4.5cm (1¼–1¾in) long, in summer. †20cm (8in), ↔ indefinite. South Africa. ☼ (min. 10°C/50°F)

**A. vera** ■ ♀ syn. *A. arabica*, *A. barbadensis*, *A. indica*. Clump-forming, suckering succulent producing basal rosettes of lance-shaped, fleshy, grey-green leaves, 45cm (18in) long, slightly grooved above, with toothed pink margins. In summer, bears tubular yellow flowers, to 3cm (1¼in) long, in terminal racemes, 90cm (36in) or more long, sometimes with up to 4 branches. †60cm (24in), ↔ indefinite. Origin unknown, but widespread in tropical and subtropical regions. ☼ (min. 10°C/50°F)

**A. xanthocantha** see *A. mitriformis*.

**A. zebrina**, syn. *A. platyphylla*. Usually stemless succulent with rosettes of linear-lance-shaped, waxy, glaucous, sometimes mottled, dark green leaves, 45cm (18in) long, with stout basal teeth and white marginal teeth. Many-branched, erect, terminal panicles, 1–1.5m (3–5ft) long, of cylindrical, deep red or orange-red flowers, 3–3.5cm (1¼–1½in) long, are produced in spring. †30cm (12in), ↔ 80cm (32in). S.W. to southern Africa. ☼ (min. 10°C/50°F)

† **Aloe, Partridge-breasted** see *Aloe variegata*  
 † **Aloinella haworthioides** see *Aloe haworthioides*



*Aloe vera*

A

*Aloinopsis schooneesii*

## ALOINOPSIS

AIZOACEAE

Genus of 10–15 species of dwarf, fleshy- or tuberous-rooted, tufted, perennial succulents, closely related to *Nananthus* and *Titanopsis*, from low, hilly areas of South Africa. Most species have loose, basal rosettes of warty leaves and bear usually solitary, stalked, 2-bracted, many-petalled flowers in late autumn; the flowers open in late afternoon or early evening. Below 10°C (50°F), grow in a temperate greenhouse; in warm, dry areas, grow in a raised bed or border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. In the growing season, water moderately and apply a half-strength, balanced liquid fertilizer 2 or 3 times; keep almost dry in winter. Outdoors, grow in sharply drained soil in full sun. See also pp. 48–49.

- **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Take stem or leaf cuttings in late spring/early summer; root in equal parts fine peat:vermiculite and in partial shade.

- **PESTS AND DISEASES** Vulnerable to mealybugs and root mealybugs.

*A. rubrolineata*, syn. *Nananthus rubrolineata*. Fleshy-rooted succulent producing rosettes of 4–6 ovate, slightly recurved, dull, mid-green leaves, 2.5cm (1in) long. Bears daisy-like yellow flowers, 2.5cm (1in) across, with a central red stripe along each petal. ‡ 3cm (1¼in), ↔ 25cm (10in). South Africa. ★ (min. 10°C/50°F)

*A. schooneesii*, syn. *Nananthus schooneesii* [■]. Tuberous-rooted succulent with irregular rosettes of 8–10 roughly diamond-shaped, dark green leaves, to 1.5cm (½in) long. Yellowish red flowers, 1cm (½in) across, are silky and daisy-like. ‡ 2cm (¾in), ↔ 30cm (12in). South Africa. ★ (min. 10°C/50°F)

## ALONSOA

Mask flower

SCROPHULARIACEAE

Genus of about 12 species of evergreen shrubs, subshrubs, and perennials from stony slopes and scrub in tropical and subtropical W. South America. The leaves are arranged in opposite pairs or in whorls of 3, on 4-angled, branching, slender shoots, and often alternately on

*Alonsoa linearis*

the flowering shoots. Delicate, spurred, unequally 2-lipped, orange or red, sometimes white flowers are borne in spring and autumn in lax, terminal racemes. Use as colourful winter-flowering

container plants in a temperate greenhouse or conservatory, as summer bedding, or in a mixed border. They also provide good cut flowers. Modern, compact-growing seed selections for bedding are now available. The species described are usually grown as annuals.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with a minimum of 10°C (50°F). Water moderately. Outdoors, grow in any fertile, well-drained soil in full sun.

- **PROPAGATION** Sow seed at 15–18°C (59–64°F) in early spring; plant out in late spring. Sow seed in late summer for winter-flowering container plants. Root semi-ripe cuttings in late summer.

- **PESTS AND DISEASES** Aphids may be a problem, particularly under glass.

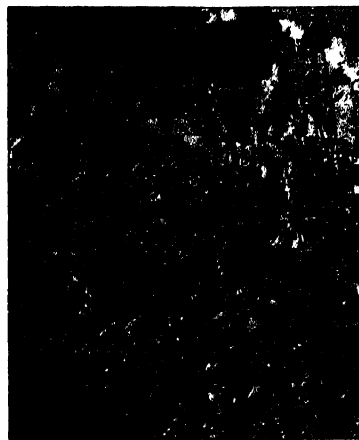
*A. acutifolia*, syn. *A. myrtifolia*. Erect, spreading subshrub with lance-shaped, pointed, toothed, downy, dark green leaves, 2–3cm (¾–1¼in) long. Lax racemes of spurred, orange or deep red flowers, 2–2.5cm (¾–1in) across, are produced continuously throughout summer. ‡ 50–90cm (20–36in), ↔ 15–23cm (6–9in). Andes in Peru and Bolivia. ★. var. *candida*, syn. *A. albiflora* of gardens, has white flowers. *A. albiflora* of gardens see *A. acutifolia* var. *candida*.

*A. caulialata* see *A. meridionalis*.

*A. grandiflora* see *A. warscewiczii*.

*A. linearis* [■] syn. *A. linifolia*. Erect, moderately compact subshrub with linear to ovate to lance-shaped, pointed, entire or minutely toothed, dark green leaves, to 4cm (1½in) long. Lax racemes of spurred, brick-red flowers, 2–2.5cm (¾–1in) across, with black-spotted throats, are borne for much of the summer. Useful for cutting. ‡ to 1m (3ft), ↔ 30cm (12in). Peru, Chile. ★ *A. linifolia* see *A. linearis*.

*A. meridionalis*, syn. *A. caulialata*. Bushy, red-stemmed perennial or subshrub with ovate to lance-shaped, pointed, toothed, mid-green leaves, to 3.5cm (1½in) long. Lax racemes of spurred, orange or deep red flowers, to 2cm (¾in) across, are borne in summer. Useful for cut flowers. ‡ 30–90cm (12–36in), ↔ 30cm (12in). Colombia,

*Alonsoa warscewiczii*

Peru. ★. Cultivars in **Firestone Jewels Series** produce scarlet, orange, salmon-pink, pink, or white flowers, with red shades predominating; selected cultivars are also available from seed.

*A. myrtifolia* see *A. acutifolia*.

*A. warscewiczii* [■] syn. *A. grandiflora*. Bushy, compact, red-stemmed perennial or subshrub with ovate to lance-shaped, toothed, dark green leaves, to 4cm (1½in) long, heart-shaped at the bases. From summer to autumn, bears lax racemes of spurred, scarlet, sometimes white flowers, 1.5–2cm (½–¾in) wide. ‡ 45–60cm (18–24in), ↔ 30cm (12in). Peru. ★

## ALOPECURUS

Foxtail grass

GRAMINEAE/POACEAE

Genus of 25–40 species of annual and perennial grasses from meadows and pastures, occasionally scree and rocky sites, in N. temperate regions. They produce tufts of usually flat, sometimes channelled leaves and dense, terminal panicles of cylindrical, single-flowered spikelets. Some are important fodder crops; several have ornamental foliage and are suitable for a rock garden or mixed border.

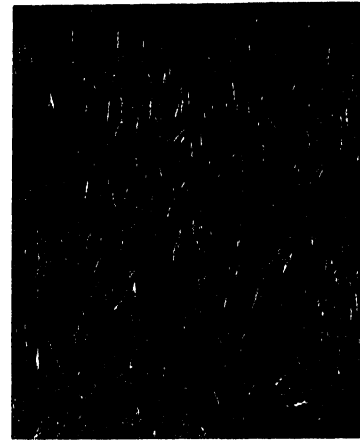
- **HARDINESS** Fully hardy.

- **CULTIVATION** Grow in gritty soil in a sunny scree bed or trough with a top-dressing of grit, or in a mix of equal parts loam, leaf mould, and grit in an alpine house. *A. lanatus* does not tolerate wet conditions in winter. *A. pratensis* 'Aureovariegatus' thrives in fertile, well-drained soil in sun or partial shade. Clip back in spring for best foliage effect.

- **PROPAGATION** Sow seed in containers in a cold frame when ripe, or in spring. Divide with care in spring or early summer.

- **PESTS AND DISEASES** Trouble free.

*A. lanatus* (Woolly foxtail grass). Densely tufted perennial producing linear, often channelled, white-woolly, blue-green leaves, to 5cm (2in) long, appearing silvery grey overall. Bears ovoid-spherical, densely hairy, light green panicles, to 2cm (¾in) long by 1.5cm (½in) wide, from mid-spring to midsummer. ‡ to 10cm (4in), ↔ 12cm (5in). E. Mediterranean, Turkey. ★★ *A. pratensis* 'Aureovariegatus' [■] Spreading, but not invasive perennial with striped, rich yellow and green, linear leaves, 5–6cm (2–2½in) long,

*Alopecurus pratensis* 'Aureovariegatus'

arranged in basal tufts. Produces dense, cylindrical, pale green to purple panicles, to 10cm (4in) long by 1cm (½in) across, from mid-spring to mid-summer. ‡ to 1.2m (4ft), ↔ 40cm (16in) or more. ★★

▷ *Alophia lahue* see *Herbertia lahue*

## ALOYSIA

VERBENACEAE

Genus of 37 species of deciduous or evergreen shrubs from warm areas of North and South America, favouring dry, rocky soils. The simple leaves are aromatic, and opposite or whorled, and small, salverform flowers are borne in slender, spike-like panicles or racemes.

*A. triphylla* (Lemon verbena) is cultivated for its strongly lemon-scented foliage, which is used for culinary purposes or in pot-pourri. In frost-prone areas, grow in a cool greenhouse or at the base of a warm, sheltered wall. In frost-free areas, grow in a sunny border.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, poor, dry soil in full sun. Mulch in autumn to protect the roots. Pick and dry leaves in summer before flowering. Pruning group 6, or 13 if wall-trained.

- **PROPAGATION** Root softwood or greenwood cuttings in summer.

- **PESTS AND DISEASES** Trouble free.

*Aloysia triphylla*

## ALOYSIA

*A. citriodora* see *A. triphylla*.  
***A. triphylla*** [V] syn. *A. citriodora*, *Lippia citriodora* (Lemon verbena). Bushy, upright, deciduous shrub with whorled, narrow, lance-shaped, lemon-scented, rough, bright green leaves, to 10cm (4in) long. Bears tiny, pale lilac to white flowers in slender panicles, to 12cm (5in) long, in late summer.  $\pm$  3m (10ft). Chile, Argentina. \*\*

▷ **Alpenrose** see *Rhododendron ferrugineum*

▷ **Alpine chrysanthemum** see *Leucanthemopsis alpina*

## ALPINIA

Ginger lily

ZINGIBERACEAE

Genus of about 200 species of rhizomatous, evergreen, clump-forming perennials from open forest and forest margins in moist tropical areas of India, China, S.E. Asia, and Australia. The ginger-scented rhizomes give rise to slender but strong, reed-like stems, to 3m (10ft) high, which bear 2-ranked, lance-shaped leaves and a panicle or raceme of showy, narrowly bell-shaped, slightly hooded flowers; these each have a 3-lobed calyx and a 3-petalled corolla, with a 2-lobed lip, enclosed in prominent bracts. The fruits are ovoid or spherical capsules. In frost-prone areas, grow smaller species in a warm greenhouse or conservatory, preferably in a border, so their growth is not restricted; they may be difficult to grow in containers. In frost-free areas, they are best grown in a shady border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with up to 25 per cent each added leaf mould and composted bark, in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer every month; water moderately in winter. Pot on container-grown plants, and cut out flowered stems in

spring. Outdoors, grow in moist, fertile, humus-rich soil in partial shade.

• **PROPAGATION** Sow seed as soon as ripe at 20°C (68°F), or divide in spring. Treat plantlets produced in the inflorescence of *A. purpurata* as offsets.

• **PESTS AND DISEASES** Trouble free.

***A. calcarata*** (Indian ginger). Slender, upright perennial with narrowly lance-shaped, stalkless, glossy, mid-green leaves, 30cm (12in) long, with minute, well-spaced bristles on the margins. Yellow flowers, 4–5cm (1½–2in) long, with lower petals veined dark red or maroon, are usually borne in pairs in spreading or more or less erect panicles, 10–13cm (4–5in) long, in summer.  $\pm$  1m (3ft),  $\pm$  30–60cm (12–24in). India, China.  $\odot$  (min. 16°C/61°F)

***A. nutans* of gardens** see *A. zerumbet*.  
***A. purpurata*** [V] (Red ginger). Robust, upright perennial with stalked, hairless, lance-shaped, mid-green leaves, 80cm (32in) long. In summer, pendent to semi-erect racemes, to 90cm (36in) long, of many small white flowers, to 2.5cm (1in) long, are produced from the axils of persistent red bracts.  $\pm$  3–4m (10–12ft),  $\pm$  60–90cm (24–36in). S. Pacific islands.  $\odot$  (min. 16°C/61°F)

***A. sanderi* of gardens** see *A. vittata*.  
***A. speciosa*** see *A. zerumbet*.

***A. vittata***, syn. *A. sanderi* of gardens (Variegated ginger). Robust, upright perennial with almost stalkless, lance-shaped, mid-green leaves, 15cm (6in) long, striped with white and cream, and with bristly hairy margins. In summer, pale green flowers, 2cm (¾in) long, are borne in pendent racemes, 15cm (6in) long, from the axils of green, pink-tinged bracts.  $\pm$  1.5m (5ft),  $\pm$  60–90cm (24–36in). Solomon Islands.  $\odot$  (min. 16°C/61°F)

***A. zerumbet*** [V] syn. *A. nutans* of gardens, *A. speciosa* (Pink porcelain lily, Shell ginger). Robust, upright perennial with stalkless, oblong-lance-shaped, mid-green leaves, to 60cm (24in) long. Fragrant white, purple-ringed flowers, to



*Alpinia zerumbet*

5–6cm (2–2½in) long, with yellow lips striped red and brown, are borne mostly in pairs, in pendent racemes, to 40cm (16in) long, in summer.  $\pm$  3m (10ft),  $\pm$  1–1.2m (3–4ft). E. Asia.  $\odot$  (min. 7°C/45°F). 'Variegata' has dark green foliage, banded or striped pale yellow.

▷ **Alsobia** see *Episcia*

***A. 'Cygnit'*** see *E. 'Cygnit'*

***A. dianthiflora*** see *E. dianthiflora*

▷ **Alsophila** see *Cyathea*

***A. australis*** see *C. australis*

***A. australis* of gardens** see *C. cooperi*

## ALSTROEMERIA

Peruvian lily

ALSTROEMERIACEAE

Genus of about 50 species of perennials from open mountain screes and grassland in South America. The fleshy, sometimes rhizome-like tubers spread to form clumps, 30–60cm (12–24in) across. They produce erect stems with alternate or scattered, linear to lance-shaped, mid- to grey-green leaves, usually 7–12cm (3–5in) long, with twisted leaf-stalks. Showy, funnel-shaped, 6-tepalled flowers, 3.5–10cm (1½–4in) long (smaller in the dwarf species), are borne in summer; they are produced in loose, often compound, few- to many-rayed, terminal umbels, 7–12cm (3–5in) across. They are ideal for a mixed or herbaceous border, although *A. pygmaea* and *A. hookeri* are best grown in an alpine house. Many species are good for cut flowers. Contact with foliage may aggravate skin allergies.

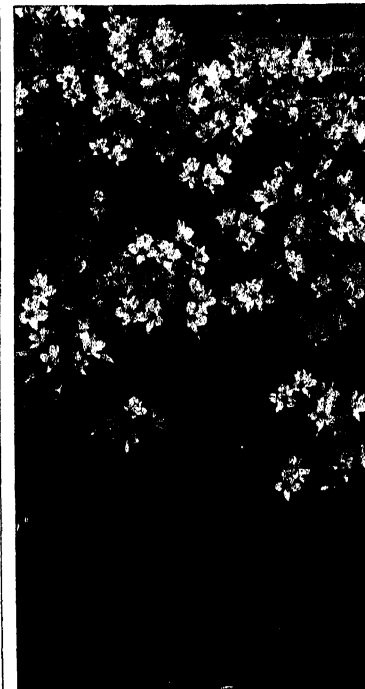
• **HARDINESS** Hardy to -10°C (14°F), although *A. aurea* and *A. ligu* and their hybrids will tolerate brief falls in temperature to -15°C (5°F).

• **CULTIVATION** Plant tubers 20cm (8in) deep in late summer or early autumn. Take care when handling. In an alpine house, grow in a mix of loam, leaf mould, and sharp sand. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in sun or partial shade. Mulch for the first 2 years; in frost-prone areas, protect with a dry mulch in winter. Leave undisturbed to form clumps.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Plant out seedlings by the potful to avoid damaging the tubers. Divide established clumps in autumn or very early spring.

## ALSTROEMEUS

A



*Alstroemeria aurea*

• **PESTS AND DISEASES** Susceptible to slug damage and viruses; red spider mites may be a problem under glass.

***A. aurantiaca*** see *A. aurea*.

***A. aurea*** [V] syn. *A. aurantiaca*.

Tuberous perennial bearing 3- to 7-rayed umbels, each ray with 1–3 bright orange or yellow flowers, the inner tepals streaked dark red, in summer.  $\pm$  1m (3ft),  $\pm$  45cm (18in). Chile. \*\*

'Dover Orange' has deep orange flowers with paler orange inner tepals, streaked red. 'Lutea' has bright yellow flowers with brown-spotted inner tepals.

***A. 'Ballerina'***. Tuberous perennial producing 2- to 7-rayed umbels, each ray with 1–3 rose-pink flowers, with orange-green tips and purple stripes, in summer.  $\pm$  1m (3ft),  $\pm$  75cm (30in). \*\*

***A. 'Beatrix'***, syn. *A. 'Stadoran'*.

Tuberous perennial bearing 3- to 8-rayed umbels of vivid orange flowers, 2 or 3 per ray, in summer.  $\pm$  1m (3ft),  $\pm$  75cm (30in). \*\*

***A. gayana*** see *A. pelegria*.

***A. hookeri*** [V] Dwarf, tuberous perennial with grey-green leaves to 2.5cm (1in) long, and stems to 15cm (6in) long.



*Alstroemeria hookeri*



*Alpinia purpurata*

A

*Alstroemeria Ligtu Hybrids*

bearing up to 6-rayed umbels, each ray with 1-3 pink flowers, in summer. The inner tepals have yellow flashes and are streaked with purple.  $\uparrow$  30-60cm (12-24in),  $\leftrightarrow$  to 60cm (24in). Peru. \*\*

**A. *ligtu***. Tuberous perennial producing 3- to 8-rayed umbels, each ray with 2 or 3 flowers, varying in colour from white to pale lilac or pinkish red, in summer. The obovate inner tepals are usually yellow with white, yellow, red, or purple markings; the stamens are shorter than the tepals.  $\uparrow$  50cm (20in),  $\leftrightarrow$  75cm (30in). Chile, Argentina. \*\* **Ligtu Hybrids**  $\square$   $\Delta$  is a collective name given to seedlings derived mainly from crosses between *A. ligtu* and *A. haemantha*. Flower colour varies considerably.

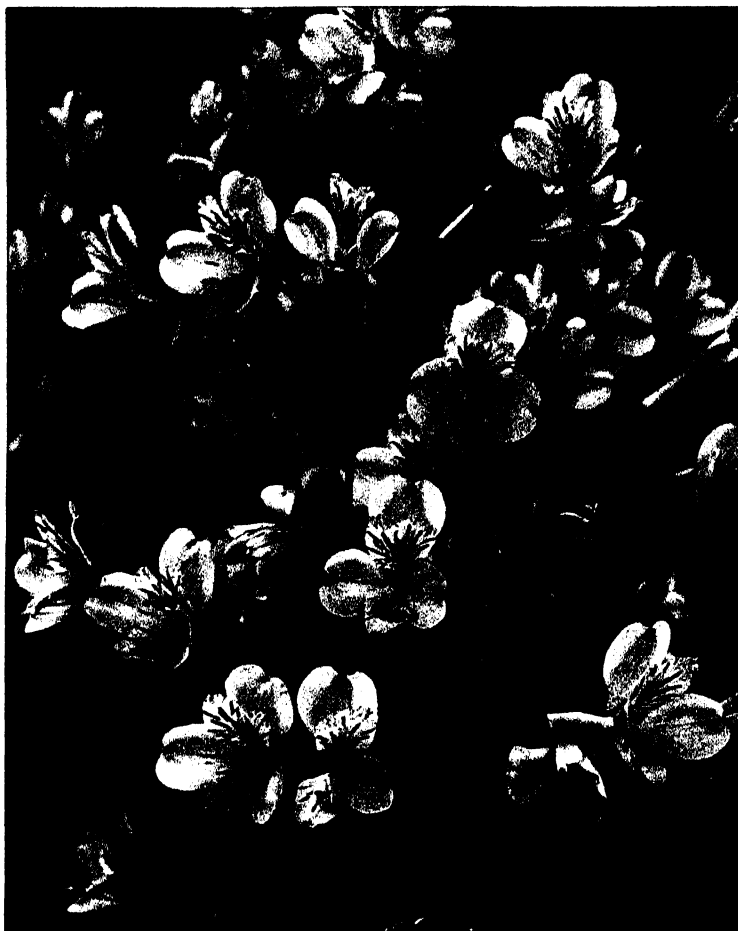
**A. 'Margaret'**  $\square$   $\Delta$  syn. *A. 'Stacova'*. Tuberous perennial bearing 3- to 8-rayed umbels, each ray with 2 or 3 deep red flowers, in summer.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  75cm (30in). \*\*

**A. 'Orchid'** see *A. 'Walter Fleming'*.

**A. 'Parigo Charm'**  $\square$  Tuberous perennial with 3- to 8-rayed umbels, each ray bearing 2 or 3 salmon-pink flowers, in summer. The inner tepals are primrose-yellow, marked carmine-red.  $\uparrow$  1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*

**A. *paupercula***, syn. *A. violacea*. Tuberous perennial with 3- to 6-rayed umbels, each ray with 3-5 violet flowers, in summer; the inner tepals have white centres, spotted purple.  $\uparrow$  50-90cm (20-36in),  $\leftrightarrow$  45cm (18in). Chile. \*\*

**A. *pelegrina***  $\square$   $\Delta$  syn. *A. gayana*. Tuberous perennial, similar to *A. hookeri*, producing white flowers, flushed pink or purple and with a darker

*Alstroemeria 'Margaret'**Alstroemeria 'Parigo Charm'*

central area, in summer. The inner tepals are yellow at the bases, with maroon flecks. Blooms are solitary or borne in 2- or 3-rayed umbels, with 1-3 flowers per ray.  $\uparrow$  30-60cm (12-24in),  $\leftrightarrow$  to 60cm (24in). Peru. \*\* **'Alba'** produces green-flushed white flowers, the inner tepals with yellow or green markings.

**A. *psittacina***, syn. *A. pulchella*. Tuberous perennial with mauve-spotted stems bearing 4- to 6-rayed umbels, each ray with 1-3 green flowers, heavily overlaid with deep red, in summer.  $\uparrow$  1m (3ft),  $\leftrightarrow$  45cm (18in). Brazil. \*\*

**A. *pulchella*** see *A. psittacina*.

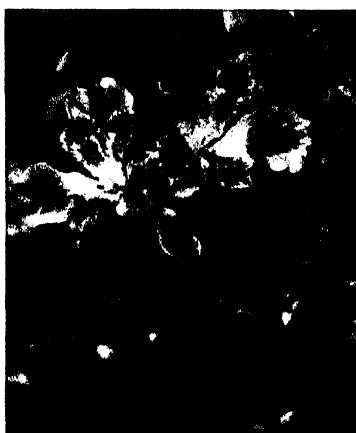
**A. *pygmaea***  $\square$  Dwarf, fleshy-rooted perennial producing grey-green leaves to 2.5cm (1in) long, and stems to 15cm (6in) long. In summer, solitary, deep

yellow flowers, 5cm (2in) long, the inner tepals spotted with red, are borne in single-rayed umbels. Attractive species for a scree bed or cold greenhouse.  $\uparrow$  15-20cm (6-8in). Andes of Argentina, Bolivia, and Peru. \*\*

**A. 'Regina'** see *A. 'Victoria'*.

**A. 'Rosy Wings'**. Tuberous perennial producing 3- to 8-rayed umbels, each ray with 2 or 3 flowers, in summer. The outer tepals are red with green-marked tips, the inner ones are pink, marked with yellow and red.  $\uparrow$  1m (3ft),  $\leftrightarrow$  50cm (20in). \*\*

**A. 'Sonata'**. Tuberous perennial producing 3- to 8-rayed umbels of red flowers, with 2 or 3 blooms per ray, in summer; the tepals have green margins and yellow and purple markings.  $\uparrow$  1m (3ft),  $\leftrightarrow$  1m (3ft). \*\*

*Alstroemeria pelegrina**Alstroemeria pygmaea*

**A. 'Stacova'** see *A. 'Margaret'*.

**A. 'Stadoran'** see *A. 'Beatrix'*.

**A. 'Sweetheart'**. Tuberous perennial bearing 3- to 8-rayed umbels, each ray with 2 or 3 flowers, in summer. The outer tepals are pink, each with a darker central mark; the inner ones are paler, with red, yellow, and brown markings.  $\uparrow$  1m (3ft),  $\leftrightarrow$  50cm (20in). \*\*

**A. 'Victoria'**, syn. *A. 'Regina'*. Tuberous perennial bearing 3- to 6-rayed umbels, each ray with 2 or 3 pale pink flowers with bright yellow and red markings, in summer.  $\uparrow$  1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*

**A. *violacea*** see *A. paupercula*.

**A. 'Walter Fleming'**, syn. *A. 'Orchid'*. Tuberous perennial producing 3- to 8-rayed umbels of yellow- and purple-marked cream flowers in summer. Each ray bears 2 or 3 blooms.  $\uparrow$  60cm (24in),  $\leftrightarrow$  20cm (8in). \*\*

## ALTERNANTHERA

### AMARANTHACEAE

Genus of about 200 species of bushy annuals and perennials from moist, open forest areas in tropical and subtropical Central and South America. They are grown for their colourful leaves, which are opposite, linear to obovate, often toothed, and variable in size. They bear insignificant flowers in terminal or axillary spikes. In frost-prone areas, use as annuals in summer bedding, or grow in a cool or temperate greenhouse or conservatory; they are excellent for hanging baskets. In frost-free climates, use for bedding or as ground cover.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; in winter, water sparingly and keep well ventilated. Outdoors, plant out after any risk of frost has passed; grow in moist but well-drained soil, in full sun for best leaf colour, or in partial shade. Clip over to maintain compactness.

• **PROPAGATION** Sow seed at 13-18°C (55-64°F) as soon as ripe, or in spring; seedlings will vary in leaf colour, making the plants less suitable for a uniform display. Divide in spring. Take softwood or greenwood cuttings in late summer. Overwinter young plants under glass.

• **PESTS AND DISEASES** Red spider mites may be a problem.

*Alternanthera ficoidea var. amoena*



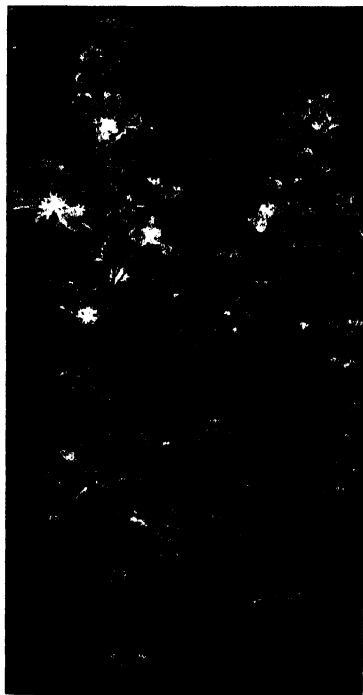
## ALTERNANTHERA

**A. amoena** see *A. ficoidea* var. *amoena*.  
**A. bettzichiana** (Calico plant). Mat-forming to erect annual or short-lived perennial with narrow, spoon-shaped, olive-green to yellow leaves, to 2.5cm (1in) long, mottled in combinations of red, purple, and bronze. Insignificant white flowers are borne in axillary spikes, 5–10mm (¼–½in) long, and are similar to those of *A. ficoidea*, of which this species is sometimes considered a variety. † 5–20cm (2–8in), ↔ indefinite. Brazil. ☀ (min. 5°C/41°F).  
**A. ficoidea** (Parrot leaf). Mat-forming to erect perennial with elliptic to obovate, pointed, mid-green leaves, 2.5cm (1in) long, which are marked with combinations of red, orange, purple, and yellow. Insignificant white flowers are produced in spherical to ovoid, axillary spikes, 3–10mm (⅛–½in) long. † 20–30cm (8–12in), ↔ indefinite. Mexico, South America. ☀ (min. 5°C/41°F). var. *amoena* ☐ syn. *A. amoena*, is dwarf, with lance-shaped to elliptic, mid-green leaves, heavily mottled and veined brown-red, orange, and purple; † to 5cm (2in). 'Versicolor', syn. *A. versicolor*, is erect with bluntly spoon-shaped, copper or blood-red to maroon leaves; † to 30cm (12in).  
**A. versicolor** see *A. ficoidea* 'Versicolor'.

## ALTHAEA

MALVACEAE

Genus of about 12 species of annuals and perennials, similar to *Alcea* but bearing smaller, usually stalked flowers, found mainly in moist, sometimes brackish coastal habitats from W. Europe to C. Asia. They have strong, wiry stems that seldom need support, and broadly ovate, shallowly to deeply lobed, dark green leaves. Racemes or panicles of small, pink to bluish purple, 5-petalled flowers are produced from summer to autumn. They are suitable for a mixed or herbaceous border or wildflower garden.  
 • **HARDINESS** Fully hardy.



*Althaea cannabina*

- **CULTIVATION** They will tolerate a wide range of situations, but for best results grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed of annuals at 13°C (55°F) in late winter, or *in situ* in mid-spring. For perennials, sow seed in drills in midsummer; transplant in early autumn, when 2 or 3 true leaves have developed.
- **PEST AND DISEASES** Rust and flea beetles may be a problem.

**A. armeniaca**. Erect, woody-based perennial with triangular-ovate, toothed or deeply 3- to 5-lobed leaves, to 15cm (6in) long, dark green above, paler beneath, and densely softly hairy. From midsummer to early autumn, produces leafy racemes of open funnel-shaped, deep rose-pink flowers, to 5cm (2in) across, on short stalks from the leaf axils. † 1.2m (4ft), ↔ 30cm (12in). C. and S.W. Asia, S.E. Russia. \*\*\*  
**A. cannabina** ☐ Erect, woody-based perennial with rounded, hairy leaves, to 35cm (14in) long, each with 3–5 lobes, which are themselves lobed or toothed, and dark green above, paler beneath. Axillary clusters of small, cupped, lilac to deep pink flowers, 3–5cm (1¼–2in) across, sometimes with darker eyes, open from midsummer to early autumn. † 2m (6ft), ↔ 60cm (24in). C., S., and E. Europe. \*\*\*  
**A. officinalis** (Marsh mallow). Erect perennial producing softly hairy leaves with 3–5 shallow, toothed lobes. From midsummer to early autumn, bears pale lilac-pink flowers, 1.5–2cm (½–¾in) across, singly or in short axillary or terminal clusters. Sometimes grown for culinary or medicinal purposes. † 2m (6ft), ↔ to 1.5m (5ft). C., S., and E. Europe. \*\*\*  
**A. rosea** see *Alcea rosea*.

† **Aluminium plant** see *Pilea caderei*

## ALYOGYNE

MALVACEAE

Genus of 4 species of evergreen shrubs, formerly included in *Hibiscus*, growing wild in dry scrub in Australia (Northern Territory, Southern Australia, Western Australia). The leaves are alternate and entire to deeply lobed. They are valued for their large, attractive, hibiscus-like flowers, which are produced singly from the upper leaf axils from late spring to autumn. In frost-prone areas, grow in a cool greenhouse and stand plants outdoors in summer. In frost-free areas, grow in a border or at the base of a wall. Established plants will tolerate short periods of drought.  
 • **HARDINESS** Half hardy to frost tender.  
 • **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light. Pot on or top-dress in spring. In the growing season, water moderately and apply a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Outdoors, grow in any well-drained soil in full sun. Pruning group 9, or 13 if wall-trained.  
 • **PROPAGATION** Sow seed in spring, at not less than 16°C (61°F). Root semi-ripe cuttings in late summer.  
 • **PESTS AND DISEASES** Aphids, white-flies, and red spider mites may be a problem, especially under glass.

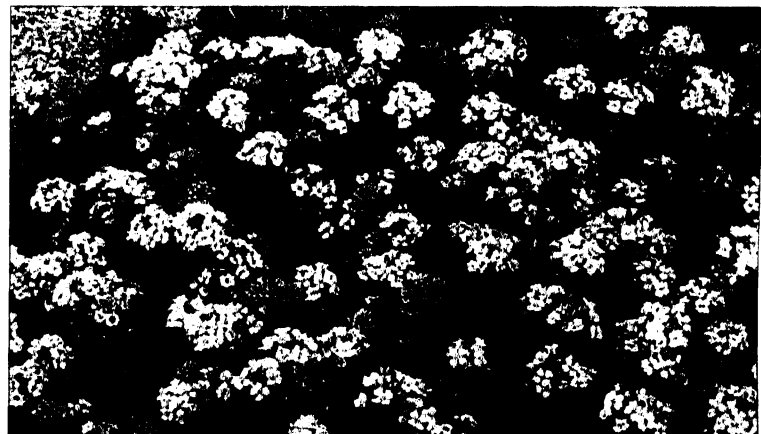
**A. huegelii**, syn. *Hibiscus huegelii*. Erect, fast-growing shrub, spreading with age, bearing palmate, hairy, bright green leaves, 3–8cm (1¼–3in) long, each with 5 irregularly toothed lobes. Solitary, funnel-shaped, satiny, lilac, mauve, or purple flowers, to 10cm (4in) across, are produced from the leaf axils of young shoots from late spring to autumn. † 1–2m (3–6ft). Australia (Western Australia). \* 'Santa Cruz' is a free-flowering, mauve-purple cultivar.

## ALYSSUM

BRASSICACEAE/CRUCIFERAE

Genus of over 150 tufted, mat- or hummock-forming, sometimes erect annuals, and evergreen perennials and subshrubs, mostly found in open, rocky sites in C. and S. Europe, N. Africa, and S.W. and C. Asia. They have simple, alternate leaves, 0.4–2.5cm (⅛–1in) long, and are cultivated mainly for their corymb-like racemes of cross-shaped, 4 petalled, yellow or white flowers, produced in early summer. They are suitable for growing in a rock garden, at the front of a mixed border, or in wall crevices.  
 • **HARDINESS** Fully hardy.  
 • **CULTIVATION** Grow in well-drained, moderately fertile, preferably gritty, loamy soil in full sun. Trim lightly after flowering to maintain compactness.  
 • **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root greenwood cuttings in early summer.  
 • **PESTS AND DISEASES** Aphids, flea beetles, white blister, and downy mildew may be a problem.

**A. maritimum** see *Lobularia maritima*.  
**A. montanum** 'Berggold', syn. *A. montanum* 'Mountain Gold'. Evergreen, mat-forming perennial with prostrate stems and rosettes of small, oblong to obovate grey leaves. Racemes of many fragrant, golden yellow flowers, each to 5mm (¼in) across, are borne in early summer. † 10–15cm (4–6in), ↔ to 50cm (20in) or more. \*\*\*  
**A. montanum** 'Mountain Gold' see *A. montanum* 'Berggold'.  
**A. saxatile** see *Aurinia saxatilis*.  
**A. spinosum**, syn. *Ptilotrichum spinosum*. Compact, mounded, evergreen subshrub with densely branching, spine-tipped stems. Dense, corymb-like racemes of white flowers, each to 7mm (¼in) across, are borne in early summer



*Alyssum wulfenianum*

## AMARANTHUS

A

above tiny, obovate, silvery grey leaves. † to 30–50cm (12–20in). S.E. France, S. Spain. \*\*\* var. *roseum* ♀ has pale to deep rose-pink flowers.  
**A. vesicaria** see *Coluteocarpus vesicarius*.  
**A. wulfenianum** ☐ Erect or prostrate, tufted, evergreen perennial producing rosettes of small, oblong-obovate, grey- or white-hairy leaves. Corymbs of tiny pale yellow flowers, each to 6mm (¼in) across, are borne in early summer. † 10–15cm (4–6in), ↔ to 50cm (20in). S.E. Alps. \*\*\*

† **Alyssum**, Sweet see *Lobularia*

† **Amana** see *Tulipa*

**A. edulis** see *T. edulis*

† **Amaranth**,

**Globe** see *Gomphrena globosa*

**Purple** see *Amaranthus cruentus*

**Red** see *Amaranthus cruentus*

## AMARANTHUS

AMARANTHACEAE

Genus of about 60 species of erect, spreading, or prostrate annuals or short-lived perennials, often invasive, from a range of habitats, including wasteland and fields, in temperate and tropical regions worldwide. They have alternate, entire leaves, and bear large, upright or pendent, catkin-like cymes of numerous densely packed, small, red or green flowers in summer and early autumn. The flowers are followed by variously coloured seed heads. In frost-prone areas, use as summer bedding, or grow in containers or hanging baskets; they may also be grown as short-lived houseplants or in a temperate greenhouse. *A. tricolor* cultivars are best grown under glass in cool climates. In frost-free areas, use for summer bedding. *A. caudatus* and *A. hypochondriacus* cultivars are good for cut or dried flowers.  
 • **HARDINESS** Half hardy.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. Water freely in summer, and provide high humidity. Outdoors, grow in moderately fertile, humus-rich, moist soil in full sun in a sheltered site. *A. caudatus* will tolerate poor soil. Water freely during dry periods in summer to prolong flowering.  
 • **PROPAGATION** Sow seed at 20°C (68°F) in mid-spring. *A. caudatus* may also be sown *in situ* in mid-spring; thin to 60cm (24in) apart.  
 • **PESTS AND DISEASES** Aphids and viruses may be a problem.



*Amaranthus caudatus*

**A. caudatus** [■] (Love-lies-bleeding, Tassel flower). Bushy, erect annual or short-lived perennial with red, purple, or green stems, and ovate to ovate-oblong, light green leaves, to 15cm (6in) long. Some cultivars have red or purple-green leaves. Tassel-like, pendent, terminal and axillary panicles, 45–60cm (18–24in) long, of crimson-purple flowers are borne freely from summer to early autumn. ↑ 1–1.5m (3–5ft), ↔ 45–75cm (18–30in). Africa, India, Peru. ✱. **'Viridis'** [■] has tassels of vivid green flowers, fading to cream.

**A. cruentus** [■] (Prince's feather, Purple amaranth, Red amaranth). Coarsely hairy, erect annual with ovate to lance-shaped, purplish green leaves, to 15cm (6in) long. Bears pendent, cylindrical, terminal cymes, to 60cm (24in) long, of tightly packed, red-suffused green flowers from summer to early autumn, followed by red-brown or purple, sometimes yellow seed heads. ↑ to 2m (6ft), ↔ 45cm (18in). Tropical North and South America. ✱. **'Golden Giant'** has prominent golden seed heads.

**A. hypochondriacus cultivars.** Erect, bushy annuals with oblong-lance-shaped, dark purple-green leaves, 15cm

*Amaranthus caudatus* 'Viridis'*Amaranthus tricolor* 'Illumination'

(6in) long. From summer to early autumn, bears tiny crimson flowers in erect, plume-like, sometimes flattened, terminal cymes, to 15cm (6in) or more long. ↑ 0.9–1.2m (3–4ft), ↔ 30–45cm (12–18in). ✱. **'Green Thumb'** ♀ has much-divided cymes of brilliant yellow-green flowers; ↑ to 60cm (24in), ↔ 30cm (12in). **'Pygmy Torch'** ♀ is dwarf, with erect cymes of maroon flowers; ↑ 30–45cm (12–18in), ↔ 30cm (12in).

**A. tricolor cultivars** (Chinese spinach, Tampala). Erect, bushy annuals, grown for their ovate or elliptic, sometimes lance-shaped, multi-coloured leaves, to 20cm (8in) or more long, which vary in colour from green or purple to brilliant crimson or maroon, often suffused with gold, rose-pink, and bronze in the different cultivars. Insignificant green or red flowers are borne in often thickened and flattened, terminal or axillary cymes, from summer to early autumn. ↑ 1.3m (4½ft), ↔ 30–45cm (12–18in). ✱.

**'Flaming Fountains'** has willow-like, lance-shaped leaves in carmine-red, crimson, and bronze. **'Illumination'** [■] has ovate to elliptic, bright rose-red upper leaves topped with gold, and lower leaves in copper-brown; ↑ to 45cm (18in). **'Joseph's Coat'** has ovate to elliptic, gold and crimson upper leaves, and a mix of green, yellow, and chocolate-brown lower leaves.

## X AMARCRINUM

syn. x CRINODONNA

AMARYLLIDACEAE

Hybrid genus of a single summer-flowering, evergreen, bulbous perennial, a cross between *Amaryllis* and *Crinum*. x *A. memoria-corsii* is similar to *Crinum* in both its growth and showy, funnel-shaped flowers. Where temperatures do not fall below -5°C (23°F), grow in a mixed or herbaceous border or at the base of a sheltered wall. In colder climates, grow in a cool greenhouse or conservatory.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant in late summer or spring, with the nose of the bulb just below soil level. Under glass, grow in well-drained, loam-based potting compost (J1 No.2), with additional leaf mould and sharp sand, in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; reduce water after flowering and keep almost dry in winter.

Outdoors, grow in moderately fertile,

x *Amarcrinum memoria-corsii*

dry, well-drained soil in full sun. Protect foliage from prolonged frost.

• **PROPAGATION** Remove offsets from established plants in early spring; grow on under glass for 1–2 years before planting outside in spring.

• **PESTS AND DISEASES** Susceptible to slug damage; aphids and red spider mites may be a problem under glass.

x *A. howardii* see x *A. memoria-corsii*.

x *A. memoria-corsii* [■] syn. x *A. howardii*, x *Crinodonna corsii*. Robust, bulbous perennial with semi-erect, wide, strap-shaped, basal leaves, to 60cm (24in) long. In late summer, stout stems bear loose umbels of up to 10 funnel-shaped, fragrant, rose-pink flowers, 6–10cm (2½–4in) long. ↑ 1m (3ft), ↔ 60cm (24in). Garden origin. ✱ ✱

## X AMARYGIA

syn. x BRUNSDONNA

AMARYLLIDACEAE

Hybrid genus of a single bulbous perennial, a cross between *Amaryllis belladonna* and *Brunswigia*, cultivated for its umbels of showy flowers, which are borne before the leaves from summer to autumn. In areas where temperatures do not fall below -5°C (23°F), grow in a mixed or herbaceous border, or at the base of a warm, sheltered wall. In cooler areas, grow in a cool greenhouse or conservatory.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant from early to late summer with the neck of the bulb just above soil level. Under glass, grow in loam-based potting compost (J1 No.2)

x *Amarygia parkeri*

with additional leaf mould and sharp sand. Provide full light, but shade when flowering to prevent scorching. Water moderately during the growing season, more sparingly when the leaves fade; keep dry while dormant. Allow the bulbs to become congested before potting on. Outdoors, grow in humus-rich, sandy, well-drained soil in full sun; protect foliage from prolonged frost.

• **PROPAGATION** Remove offsets from congested plants only, just before the plant comes into growth in summer.

• **PESTS AND DISEASES** Prone to leaf scorch. Narcissus eelworm, narcissus bulb fly, aphids, mealybugs, whiteflies, and red spider mites may be a problem.

x *A. parkeri* [■] syn. x *Brunsdonna*

*parkeri*. Robust, bulbous perennial bearing loose umbels of up to 12 large, funnel-shaped, frilled pink flowers, 6–10cm (2½–4in) long, on stout stems in summer. Semi-erect, strap-shaped, basal leaves, 30–45cm (12–18in) long, are borne after flowering. ↑ 1m (3ft), ↔ 30cm (12in). Garden origin. ✱ ✱

## AMARYLLIS

AMARYLLIDACEAE

Genus of one species of deciduous, autumn-flowering, bulbous perennial from coastal hills and streambanks in S. Western Cape, South Africa. It is cultivated for its showy flowers. Where temperatures fall below -5°C (23°F), grow in a cool greenhouse; in warmer areas, grow against a sheltered wall.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant bulbs just below the soil or compost surface when dormant in late summer, or in spring. Under glass, grow in loam-based potting compost (J1 No.2), with additional leaf mould and sharp sand, in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep dry when dormant. Outdoors, grow in moderately fertile, well-drained soil in full sun. Protect foliage from frost.

• **PROPAGATION** Sow seed thinly in containers at 16°C (61°F) as soon as ripe; grow on under glass. Remove offsets in spring, and grow on under glass for 1 or 2 seasons, before planting outdoors.

• **PESTS AND DISEASES** Prone to slug damage and narcissus bulb fly; aphids and red spider mites may be a problem under glass.

*Amaryllis belladonna*

*Amaryllis belladonna* 'Hathor'

**A. belladonna** [■] (Belladonna lily) Bulbous perennial producing stout, purple or purple-green stems with umbels of 6 or more funnel-shaped, scented pink flowers, 6–10cm (2½–4in) long, in autumn. Strap-shaped, fleshy leaves, 22–40cm (9–16in) long, are produced after flowering. ↑60cm (24in), ↔10cm (4in). South Africa. \*\*\*  
**'Barberton'** produces dark rose-pink flowers. **'Cape Town'** bears deep rose-red flowers. **'Hathor'** [■] has white flowers, which are pink in bud. **'Johannesburg'** is free flowering, with pale pink flowers. **'Kimberley'** has deep carmine-pink flowers with white centres.

† **Amaryllis** see *Hippeastrum*  
 † **Amaryllis, Blue** see *Worsleya*

## AMBERBOA

Sweet sultan

ASTERACEAE/COMPOSITAE

Genus of about 6 species of upright annuals or biennials found in gravelly and sandy soils from the Mediterranean to W. and C. Asia, with alternate, entire to deeply divided, pinnatifid, grey-green leaves. Solitary flowerheads, each with a thistle-like centre of disc-florets and soft, fringed rings of long, outer ray-florets, appear from spring to autumn. Grow in a border or cottage garden, or in containers. Good for cutting.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moderately fertile, well-drained, neutral to alkaline soil in full sun. Provide plants with light, twiggy support when they reach 7–10cm (3–4in) high. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed thinly in containers in a cold frame or *in situ* in early spring; plant out *A. moschata* seedlings in pots to avoid root disturbance. Alternatively, sow seed in autumn; in very cold areas, overwinter young plants under glass.
- **PESTS AND DISEASES** Powdery mildew may be a problem in dry summers.

**A. moschata**, syn. *Centaurea moschata* (Sweet sultan). Strongly branched annual with grey-green leaves, the basal leaves entire, to 10cm (4in) long, the stem leaves lobed or pinnatifid. Bears scented, fringed flowerheads, to 5cm (2in) across, resembling large corn-flowers, in white, yellow, pink, or purple, on erect stems, from spring to summer. ↑to 60cm (24in), ↔23cm (9in). Turkey, Caucasus. \*\*\*

† **Amblyopetalum caeruleum** see *Tweedia caerulea*

## AMELANCHIER

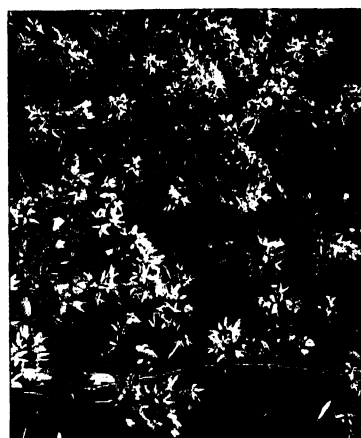
Juneberry, Shadbush, Snowy Mespilus

ROSACEAE

Genus of about 25 species of deciduous trees and shrubs, often suckering, mostly from moist woodland and streambanks in Europe, Asia, and North America. Amelanchiers are cultivated for their racemes of 5-petalled, star-shaped, flat to very shallowly saucer-shaped, usually white or pink-flushed flowers, 1–2cm (½–¾in) across, borne from spring to early summer, and for their fine autumn colour and fruit. The alternate, ovate to oblong leaves are often bronze when young, and open with the flowers. Grow in a shrub border or as specimen plants. The spherical or pear-shaped, purple to maroon fruits, attractive to birds, ripen in summer and are edible when cooked.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in lime-free (acid), fertile, moist but well-drained soil in sun or partial shade. *A. asiatica* is lime-tolerant. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed as soon as ripe; the species hybridize freely. Root greenwood or semi-ripe cuttings in summer. Remove suckers of stoloniferous species in winter.
- **PESTS AND DISEASES** Susceptible to fireblight.

**A. asiatica** [■] Spreading tree with arching branches and ovate leaves,

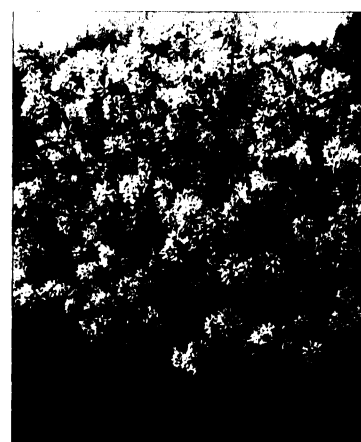
*Amelanchier asiatica*

4–7cm (1½–3in) long, white-hairy beneath when young, mid-green in summer, then orange to red in autumn. Bears scented white flowers in upright racemes, 3–6cm (1¼–2½in) long, in late spring, followed by insipid-tasting, blue-black fruit, 5–10mm (¼–½in) across. ↑8m (25ft), ↔10m (30ft). China, Korea, Japan. \*\*\*

**A. 'Ballerina'** [■] Spreading, shrubby tree with broadly elliptic, glossy leaves, 5–8cm (2–3in) long, bronze-tinted when young, becoming mid-green in summer, and red and purple in autumn. White flowers are borne in arching racemes, 15cm (6in) long, in mid-spring. Sweet, juicy fruit, to 1.5cm (½in) across, are red at first, ripening to purplish black. Free-flowering hybrid of *A. laevis*. ↑6m (20ft), ↔8m (25ft). \*\*\*

**A. canadensis** (Shadbush). Dense, erect, suckering shrub with oblong elliptic to obovate leaves, 3.5–5cm (1½–2in) long, white-hairy when young, becoming almost hairless when mature, and mid-green in summer, yellow to orange and red in autumn. Erect racemes, 2.5–6cm (1–2½in) long, of white flowers open in spring, followed by sweet, blue-black fruit, 7–10mm (¼–½in) across. Often confused in European gardens with *A. arborea*, *A. laevis*, and *A. lamarckii*. ↑6m (20ft), ↔3m (10ft). E. North America. \*\*\*

**A. confusa**. Upright shrub with ovate leaves, 2–3.5cm (¾–1½in) long, light green above, glaucous beneath, turning red and yellow in autumn. White flowers are borne in erect racemes, 3–8cm (1¼–3in) long, in late spring

*Amelanchier* 'Ballerina'*Amelanchier laevis*

and early summer, followed by insipid-tasting, blue-black fruit, 7–9mm (¼–⅜in) across. Often confused with *A. lamarckii*. ↑3m (10ft), ↔2m (6ft). Sweden. \*\*\*

**A. x grandiflora** [■] (*A. arborea* x *A. laevis*). Spreading, sometimes shrubby tree producing ovate leaves, 4.5–8cm (1¾–3in) long, bronze with hairy undersides, turning green in late spring, orange and red in autumn. Bears pendent racemes, 6–8cm (2½–3in) long, of white flowers in mid-spring, followed by sweet, juicy, blue-black fruit, 7–10mm (¼–½in) across. ↑8m (25ft), ↔10m (30ft). Garden origin. \*\*\*  
**'Autumn Brilliance'** is vigorous, with brilliant red autumn colour.

**'Robin Hill'** [■] is compact and broadly upright, with white flowers and pink tinged buds; ↑8m (25ft), ↔5m (15ft).

**'Rubescens'** syn. *A. lamarckii* 'Rubescens', has dark pink buds and paler pink flowers.

**A. laevis** [■] (Allegheny serviceberry). Spreading, sometimes shrubby tree with ovate leaves, 4–6cm (1½–2½in) long, bronze and hairless when young (unlike *A. lamarckii*), turning mid-green in summer, then orange or red in autumn. Pendent racemes, 4–12cm (1½–5in) long, of white flowers are borne in mid-spring, followed by sweet, blue-black fruit, to 1.5cm (½in) long. Often confused with *A. lamarckii*. ↑to 8m (25ft). North America. \*\*\*

**A. lamarckii** [■] Upright-stemmed shrub or small tree with white-haired young shoots and leaves, soon becoming hairless. Elliptic to oblong bronze leaves, to 8cm (3in) long, turn dark green, then orange and red in autumn. In mid-spring, bears pendent racemes, 6–12cm

*Amelanchier lamarckii*

(2½–5in) long, of white flowers, followed by sweet, juicy, purple-black fruit, 7–10mm (¼–½in) across. Often confused with *A. canadensis* or *A. laevis*. ↑ 10m (30ft), ↔ 12m (40ft). Uncertain origin; naturalized in Europe. \* \* \*. 'Rubescens' see *A. × grandiflora* 'Rubescens'.

**A. stolonifera.** Dense, erect, thicket-forming, suckering shrub with oval to rounded leaves, 1–3cm (½–1¼in) long, white-hairy beneath when young, mid-green, turning yellow to orange and red in autumn. Bears erect, compact racemes, to 4cm (1½in) long, of 4–10 white flowers in mid- and late spring, followed by sweet, blue-black fruit, 6–8mm (¼–⅓in) across. ↑ 2m (6ft), ↔ 1.5m (5ft). E. North America. \* \* \*

## AMESIELLA

ORCHIDACEAE

Genus of one species of evergreen, epiphytic, monopodial orchid from the Philippines, where it grows in mountain forest at an altitude of 800m (2,600ft). Short stems, 3–6cm (1¼–2½in) long, bear 2-ranked leaves (usually no more than 4) and produce racemes of spurred, almost spherical flowers, mostly in autumn.

- **HARDINESS** Frost tender.
- **CULTIVATION** Intermediate-growing orchid. Grow in small pots or slatted baskets of epiphytic orchid compost in filtered light and humid conditions. Water moderately throughout the year, applying a fertilizer at every third watering in summer. See also p.46.
- **PROPAGATION** Not suitable for division, although cuttings or offshoots may be rooted successfully.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

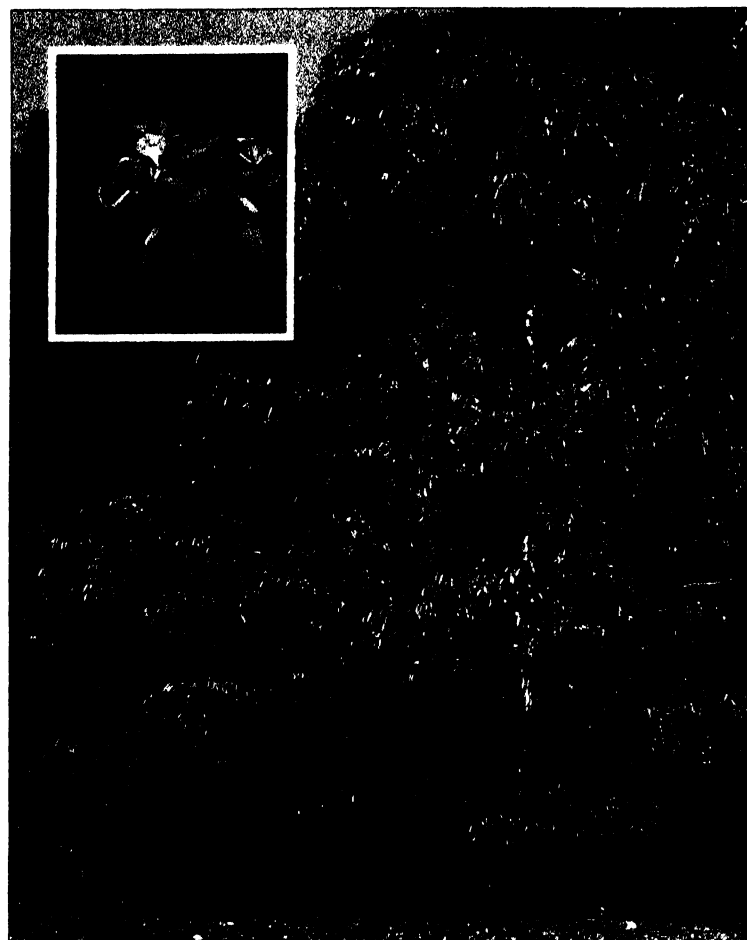
**A. philippinensis.** Miniature, evergreen, epiphytic orchid with elliptic-oblong, fleshy leaves, to 5cm (2in) long. Short, axillary racemes of 1–3 almost spherical white flowers, 3cm (1¼in) across, each with a yellow stain on the lip, and spurs 4cm (1½in) long, are produced in autumn. ↑ 6cm (2½in), ↔ 10cm (4in). Philippines. ☉ (min. 16°C/61°F; max. 30°C/86°F)

## AMHERSTIA

CAESALPINIACEAE/LEGUMINOSAE

Genus of one species of evergreen tree, found on riverbanks in tropical forest in Burma. It has alternate, large, pinnate leaves, and long racemes of 5-petaled, orchid-like flowers. Where temperatures fall below 16°C (61°F), grow *A. nobilis* in a warm greenhouse, although it rarely flowers in a container. In tropical areas, it is a spectacular specimen tree.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light and high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist, fertile soil in a sheltered, reasonably sunny site. Pruning group 1; plants under glass may need restrictive pruning in late winter or after flowering.
- **PROPAGATION** Sow seed in spring at a minimum temperature of 21–24°C



*Amherstia nobilis* (inset: flower detail)

(70–75°F); the seedlings are delicate and must be handled with care.

- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**A. nobilis** ☐☐ (Orchid tree, Pride of Burma). Erect, open-branched tree producing pinnate leaves, 60–90cm (24–36in) long, divided into 8–18 copper-pink leaflets, which turn deep green with age. The orchid-like flowers, 6–10cm (2½–4in) across, are bright red, suffused pink and white, with yellow tips and protruding stamens, and are borne in pendent racemes, 40–90cm (16–36in) long, in early summer. ↑ 10m (30ft), ↔ 15m (50ft). Burma. ☉ (min. 16°C/61°F)

## AMICIA

LEGUMINOSAE/PAPILIONACEAE

Genus of 7 species of upright, woody-based perennials found on riverbanks and in woodland in the mountains of Mexico and in the Andes. They are grown mainly for their alternate leaves, each with 2 pairs of leaflets and, when young, large, pale green stipules with purple veins. The pea-like autumn flowers may be damaged by early frosts, except in mild areas. Where temperatures fall below -10°C (14°F), grow in containers in a cool greenhouse and move outdoors in summer. Elsewhere, grow in a mixed or herbaceous border.

- **HARDINESS** Half hardy to frost hardy; *A. zygoensis* will tolerate temperatures down to -10°C (14°F), and will regenerate from the woody base if cut back by frost.

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, fertile soil in full sun; mulch in winter in frost-prone sites.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root basal cuttings in late spring, or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Slugs and snails may be a problem.

**A. zygoensis** ☐ Woody-based perennial with mid-green leaves, 15–20cm (6–8in) long. Each leaf has 2 pairs of inversely heart-shaped leaflets with rounded, pale green stipules, to 4cm



*Amicia zygoensis*

(1½in) across, veined purple and diffused reddish purple. Racemes of 3–10 pea-like yellow flowers, to 3cm (1¼in) across, with purple keels, are borne in early and mid-autumn. ↑ 2.2m (7ft), ↔ 1.2m (4ft). Mexico. \* \* \*

## AMMI

APIACEAE/UMBELLIFERAE

Genus of about 10 species of slender, upright to spreading, summer-flowering annuals and biennials occurring in scrub in Europe, N. Africa, and W. Asia. They have pinnate to 3-pinnate or ternate to 3-ternate, fern-like leaves, and white or creamy white, lace-like flowers borne in large, rounded, branched umbels in summer. Suitable for a border or a cottage garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist but well-drained, fertile soil in sun or partial shade. Provide support when seedlings are 7–10cm (3–4in) high.
- **PROPAGATION** Sow seed *in situ* in spring.
- **PESTS AND DISEASES** Trouble free.

**A. majus.** Slender, upright, branched annual producing 2- or 3-pinnate, light green leaves, 15–20cm (6–8in) long, divided into many finely toothed, ovate to lance-shaped leaflets. Compound umbels with 30 or more rays, each with 10 or more small white flowers, resembling delicate lacework, are borne in summer. ↑ 30–90cm (12–36in), ↔ 30cm (12in). S. Europe, Turkey, N. Africa. \* \* \*

## AMMOBIUM

Winged everlasting

ASTERACEAE/COMPOSITAE

Genus of 2 or 3 upright, branched or unbranched perennials occurring in grassland and open forest in E. Australia. The white-woolly, lance-shaped leaves are produced in broad, basal rosettes. Bright green flowering stems, winged and flattened, and usually branched, bear loose clusters of papery flowerheads, each to 2.5cm (1in) across. Suitable for an annual border; *A. alatum* is excellent for dried flower arrangements.

- **HARDINESS** Half hardy, but may tolerate temperatures to -5°C (23°F) in well-drained soil.
- **CULTIVATION** Grow in any light, well-drained soil, preferably low in nutrients, in full sun. Cut flowerheads for drying before fully open.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in early spring, or *in situ* in mid-spring.
- **PESTS AND DISEASES** Trouble free.

**A. alatum** (Winged everlasting). Rosette-forming perennial, grown as an annual, with lance-shaped, white-woolly leaves, to 18cm (7in) long. In summer, winged, bright green stems bear clusters of "everlasting" flowerheads, to 2.5cm (1in) across, with orange or yellow disc-florets and reflexed, papery, silvery outer bracts and scales. ↑ 50–90cm (20–36in), ↔ 45cm (18in). Australia (Queensland, New South Wales). \*

▷ *Amomyrtus luma* see *Myrtus lechleriana*

*Amorpha fruticosa*

## AMORPHA

LEGUMINOSAE/PAPILIONACEAE

Genus of 15 species of deciduous shrubs from North America, found in dry, often sandy areas, such as prairies, scrub, and hills, and sometimes in woodland and on riverbanks. They are grown for their aromatic leaves, which are alternate and pinnate, comprising 7–45 leaflets, and their dense, erect racemes of small flowers, which have only a single petal (the standard). They are also valued for their ability to thrive on very poor, dry soils, particularly where temperatures fall to -30°C (-22°F) or below. Grow in a mixed or shrub border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, sandy, well-drained soil in sun or partial shade. Pruning group 6.
- **PROPAGATION** Sow pre-soaked or scarified seed in autumn in containers in an open frame. Separate rooted suckers of *A. fruticosa* in autumn or winter.
- **PESTS AND DISEASES** Vulnerable to rust and mildew.

**A. fruticosa** ■ (Bastard indigo). Fast-growing, spreading shrub with pinnate leaves, to 30cm (12in) long, composed of 13–33 oval or oblong leaflets. Orange- or yellow-anthered, purple-blue flowers, 2cm (¾in) long, are produced in narrow racemes, to 15cm (6in) long, in summer. ↕ to 5m (15ft). E. USA. \*\*\*

## AMORPHOPHALLUS

Devil's tongue, Snake palm

ARACEAE

Genus of 90–100 species of perennials, with corm-like rhizomes, from moist, shaded habitats in tropical Africa and Asia, grown for their magnificent, deeply lobed leaves. The large, purple-red to greenish white spathe, produced in summer, are usually unpleasantly scented. Outside tropical regions, grow in a warm greenhouse, although they may be moved outdoors in summer after any danger of frost has passed.

- **HARDINESS** Frost tender.
- **CULTIVATION** Plant dormant tubers 10cm (4in) deep in late winter or early spring. Under glass, grow in loam-based potting compost (J1 No.3) in containers 60–90cm (24–36in) wide, in filtered light. In the growing season, water freely and apply a balanced liquid fertilizer

*Amorphophallus titanum*

monthly. Reduce water as the foliage dies down; overwinter tubers in warm, barely moist conditions. Outdoors, grow in moist, humus-rich soil in partial shade.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in autumn or early spring. Separate offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

**A. konjac**, syn. *A. rivieri* (Devil's tongue, Snake palm, Umbrella arum). Perennial with corm-like rhizomes, to 25cm (10in) across. Reddish purple spathe, to 40cm (16in) long, each with a protruding, dark brown spadix, are borne on stalks 60cm (24in) long, in summer. Each spathe is followed by a solitary, 2-pinnate leaf, to 1.3m (4½ft) long, with oblong-elliptic leaflets or lobes, on a brownish green, white-mottled leaf-stalk, 1–1.3m (3–4½ft) long. ↕ 1–1.3m (3–4½ft), ↔ 1m (3ft). S.E. Asia. ☉ (min. 13–16°C/55–61°F)

**A. rivieri** see *A. konjac*.

**A. titanum** ■ Perennial with huge, corm-like rhizomes, to 50cm (20in) across, and weighing up to 7kg (15lb) each. In summer, produces reddish purple spathe, 1.5m (5ft) long, each with a protruding white spadix, on stalks 1m (3ft) long. The spathe is followed by solitary, 3-parted, deeply lobed leaves, to 4m (12ft) across, borne on leaf-stalks 4.5m (14ft) long. ↕ 5m (15ft), ↔ 4m (12ft). Indonesia (Sumatra). ☉ (min. 13–16°C/55–61°F)

## AMPELOPSIS

VITACEAE

Genus of about 25 species of woody, deciduous climbers and a few shrubs from woodland in Asia and North America. They are cultivated for their attractive foliage, which often colours well, turning red and yellow in autumn; the leaves are alternate, simple, palmate or pinnate, often lobed or toothed, with clinging tendrils on the stems opposite the leaves. They are also valued for their

sometimes ornamental, spherical or top-shaped berries, which develop from insignificant cymes of small green flowers. The climbers are excellent for covering a wall, fence, pergola, old tree stump, or tree. If grown on house walls, keep clear of gutters and roof tiles. *A. brevipedunculata* 'Elegans' may also be grown as a houseplant.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in any moist but well-drained, fertile soil in sun or partial shade. Fruiting will be most reliable in a sunny site, especially where root growth can be restricted. *A. brevipedunculata* 'Elegans' grows best against a warm, sheltered, partially shaded wall. Pruning group 11, in spring.
- **PROPAGATION** Sow seed in containers in an open frame in autumn, or stratify and sow in containers in a cold frame in spring. Root softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**A. aconitifolia**, syn. *Vitis aconitifolia*. Vigorous, slender-stemmed climber with 3- or 5-palmate, glossy, dark green leaves, to 12cm (5in) long, composed of lance- to diamond-shaped, deeply lobed leaflets. In late summer, bears axillary cymes of small green flowers, followed by spherical orange fruit, to 6mm (¼in) across. ↕ 12m (40ft). Mongolia, N. China. \*\*\*

**A. brevipedunculata** ■ Vigorous climber producing palmately 3-lobed, occasionally 5-lobed, dark green leaves, hairy beneath, and 5–15cm (2–6in) long. Branched, axillary cymes of small green flowers are borne in summer, followed by attractive, spherical, pinkish purple, later clear blue fruit, 5–8mm (¼–¾in) across. ↕ 5m (15ft). N.E. Asia. \*\*\* 'Elegans' is less vigorous, and has dark green leaves, heavily mottled white and pink. **var. maximowiczii**, syn. *A. heterophylla*, *Vitis heterophylla*, has very variable, slightly longer leaves than the species, sometimes broadly heart-shaped at the bases and shallowly lobed, or deeply cut into 3–5 lobes.

**A. heterophylla** see *A. brevipedunculata* var. *maximowiczii*.

**A. megalophylla**. Vigorous climber with glaucous shoots and large, 2-pinnate,

*Ampelopsis brevipedunculata*

occasionally pinnate leaves, to 60cm (24in) long, composed of 7–9 ovate to ovate-oblong, dark green leaflets, glaucous on the reverse. Few-flowered, axillary cymes of green flowers are borne in late summer, followed by top-shaped black fruit, 6mm (¼in) across. ↕ 10m (30ft). W. China. \*\*\*

**A. sempervirens** see *Cissus striata*.

**A. veitchii** see *Parthenocissus tricuspidata* 'Veitchii'.

▷ **Amphicome** see *Incarvillea*

## AMSONIA

syn. RHAZYA

APOCYNACEAE

Genus of about 20 species of clump-forming perennials from light woodland or grassland in moist, stony or heavy soils in S.E. Europe, Turkey, Japan, and N.E. and C. USA. They have alternate, lance-shaped or ovate to elliptic, entire leaves. Long-lasting cymes or panicles of narrowly funnel-shaped blue flowers, with 5 spreading petal lobes, are borne from spring to summer. They are suitable for a mixed or herbaceous border. Contact with the milky sap may irritate skin.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist but well-drained soil in full sun. Will tolerate some drought.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide in spring. Root softwood or basal cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

**A. illustris**. Clump-forming perennial with broadly ovate to lance-shaped or elliptic, glossy, bright green leaves, 3–7cm (1¼–3in) long. Open panicles of light blue flowers, to 1.5cm (½in) across, are produced on erect stems, in late spring and early summer. ↕ 1.2m (4ft), ↔ 45cm (18in). C. and S. USA. \*\*\*

**A. orientalis** ■ syn. *Rhazya orientalis*. Clump-forming perennial with many erect stems rising from a woody rootstock, and with narrowly ovate to lance-shaped, willow-like, greyish green leaves, 3–7cm (1¼–3in) long. Short, compact or loose panicles of violet-blue flowers, 1–2cm (½–¾in) across, are produced in early and midsummer. ↕ 50cm (20in), ↔ 30cm (12in). N.E. Greece, N.W. Turkey. \*\*\*

**A. salicifolia** see *A. tabernaemontana* var. *salicifolia*.

*Amsonia orientalis*

*Amsonia tabernaemontana*

**A. tabernaemontana** ■ Clump-forming perennial with many stems and small, ovate to elliptic or lance-shaped, matt, dark green leaves, 3–7cm (1¼–3in) long. Dense, rounded, cyme-like panicles of pale blue flowers, 1–2cm (½–¾in) across, are borne from late spring to midsummer. †60cm (24in), ↔ 45cm (18in). E. USA. \*\*\*. **var. salicifolia**, syn. *A. salicifolia*, has much narrower leaves, glaucous beneath, and produces flowers in more open panicles.

▷ *Amygdalus* see *Prunus*

## ANACAMPSEROS

PORTULACACEAE

Genus of about 50 species of perennial succulents, mainly from the most arid regions of Africa and Australia, with either minute leaves, often covered by hairs or hidden by stipules, or fleshy, ovoid to spherical, conspicuous leaves. In summer, the 5-petalled, white, pink, or red flowers, produced singly or in racemes, open only for a brief period, in full sun. In frost-prone areas, grow in a temperate greenhouse; in frost-free areas, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with good ventilation. In the growing season, water moderately and apply a dilute liquid fertilizer monthly; keep almost dry when dormant in winter. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed as soon as ripe at 18°C (64°F), or take stem cuttings in spring and root at the same temperature.
- **PESTS AND DISEASES** Prone to aphids.

**A. alstonii**. Tufted, many-branched succulent with a tuberous rootstock, which, when exposed, is caudex-like. Tiny leaves are arranged in rows along the branches and are hidden by small, overlapping, triangular silver stipules, 2mm (⅛in) long. Solitary, open white flowers, 3cm (1¼in) across, are borne in summer. †3cm (1¼in), ↔ 8cm (3in). South Africa (Northern Cape). ♀ (min. 7°C/45°F)

**A. comptonii**. Succulent with a short, thick stem, much of which is buried, becoming swollen and caudex-like. The aerial stems produce spherical, olive-green or bronzed leaves, 3–5cm (1¼–2in) long, tapered at the tips,

grooved above, and covered with white hairs. Solitary, open, red-purple, pink, or white flowers, 6mm (¼in) across, are borne in summer. †→ 2.5cm (1in). Namibia, South Africa. ♀ (min. 7°C/45°F)

**A. intermedia** see *A. telephiastrum*.  
**A. telephiastrum**, syn. *A. intermedia*, *A. varians*. Mat-forming succulent, becoming tufted when mature, with ovoid, short-pointed, fleshy, brownish green leaves, 2cm (¾in) long. Racemes of 1–4 deep pink flowers, 3cm (1¼in) or more across, open in summer. †5cm (2in), ↔ 10cm (4in). South Africa (Western Cape). ♀ (min. 7°C/45°F)  
**A. varians** see *A. telephiastrum*.

▷ *Anacharis densa* see *Egeria densa*

## ANACYCLUS

ASTERACEAE/COMPOSITAE

Genus of 9 species of annuals and herbaceous perennials from stony slopes and sandy and disturbed ground in the Mediterranean. The 2- or 3-pinnatisect leaves, with finely cut lobes, are produced on creeping stems radiating from a central rootstock. Solitary or paired, daisy-like flowerheads are borne on short stems in summer. Grow in an alpine house or a rock garden.

- **HARDINESS** Frost hardy, but may tolerate temperatures below -5°C (23°F) with protection from winter wet.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand or grit, in full light. Outdoors, grow in gritty, sharply drained, poor to moderately fertile soil in full sun, protected from winter wet.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Root softwood cuttings in spring or early summer.
- **PESTS AND DISEASES** Aphids may be a problem under glass.

**A. depressus** see *A. pyrethrum* var. *depressus*.

**A. pyrethrum** var. *depressus* ■ syn. *A. depressus*. Prostrate, mat-forming perennial with rosettes of 2- or 3-pinnatisect, grey-green leaves, 10–14cm (4–5½in) long. Bears numerous solitary flowerheads, 2.5–5cm (1–2in) across, with white ray-florets; the ray-florets are red on the reverse, each with a white stripe. †2.5–5cm (1–2in) or more, ↔ 10cm (4in). Atlas Mountains in Morocco, Algeria, and Tunisia. \*\*

*Anacyclus pyrethrum* var. *depressus*

## ANAGALLIS

Pimpernel

PRIMULACEAE

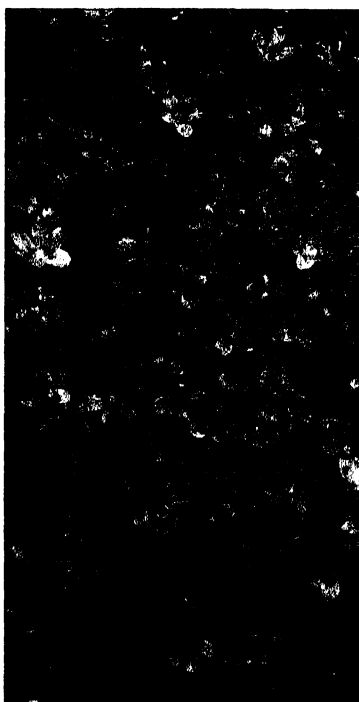
Genus of about 20 species of low-growing or creeping annuals and evergreen perennials, occurring in open meadows, bogs, and dry sites in the Mediterranean and W. Europe. The opposite or alternate leaves (occasionally borne in threes) are entire and smooth, with very short or no leaf-stalks. The solitary, bell-shaped to open saucer-shaped flowers, each with 5 petals, are produced from the leaf axils. Easily cultivated, pimpernels provide colourful ground cover for a rock garden or the front of a border. *A. tenella* 'Studland' is also an excellent specimen for growing in pans in an alpine house.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Under glass, grow *A. tenella* 'Studland' in gritty, loam-based potting compost (J1 No.1) in full light. Outdoors, grow pimpernels in fertile, moist but well-drained soil in full sun; *A. monellii* needs moderately fertile, well-drained soil in full sun. Overwinter young plants in a cool greenhouse and plant out after danger of frost has passed. Pimpernels are often short-lived, so propagate regularly.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide in spring. Increase *A. tenella* 'Studland' and cultivars of *A. monellii* by soft tip cuttings in spring or early summer.
- **PESTS AND DISEASES** Prone to aphids.

**A. collina** see *A. monellii*.

**A. linifolia** see *A. monellii*.

**A. monellii** ♀ syn. *A. collina*, *A. linifolia* (Blue pimpernel). Low-growing perennial with branching stems bearing stalkless, lance-shaped to elliptic, mid-green leaves, to 2.5cm (1in) long, in opposite pairs or in threes. Open saucer-shaped flowers, to 1.5cm (½in) or more across, usually deep blue, sometimes reddish at the bases, are produced on

*Anagallis tenella* 'Studland'

long stalks in summer. Red- and pink-flowered variants are also available.

†10–20cm (4–8in), ↔ to 40cm (16in). Mediterranean. \*\*. **'Phillipii'**, syn. *A. philippii* of gardens, has deep blue flowers; † to 25cm (10in).

**A. philippii** of gardens see *A. monellii* 'Phillipii'.

**A. tenella** 'Studland' ■ ♀ Mat-forming perennial with alternate or opposite, stalkless, elliptic to rounded, bright green leaves, 4–9mm (¼–¾in) long. In late spring and early summer, the leaves are almost hidden by upright, bell-shaped, scented, deep pink flowers, 6–10mm (¼–½in) across. †5–10cm (2–4in), ↔ to 40cm (16in). \*\*\*

## ANANAS

Pineapple

BROMELIACEAE

Genus of 5 or 6 species of evergreen, terrestrial perennials (bromeliads) from South America, occurring in habitats ranging from fairly dry to extremely humid, and from low terrain to mountains over 1,000m (3,000ft). They form rosettes of lance-shaped, spiny leaves and, in summer, produce showy flowers in dense, terminal, cone-like inflorescences on stout stems, giving rise to fleshy, swollen, edible fruits. In areas where temperatures fall below 15°C (59°F), grow pineapples as houseplants or in a warm greenhouse. In tropical climates, grow in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light with low to moderate humidity and in draught-free conditions. Water freely during the growing and flowering season; reduce water slightly and apply a balanced liquid fertilizer weekly as the fruits begin to swell. Keep barely moist at other times of the year. Outside, grow in well-drained, fertile, humus-rich soil in full sun. See also p.47.
- **PROPAGATION** Root basal offsets in early summer; or carefully sever the leafy rosette at the top of the fruit, allow it a day or two to callus, then root it in a barely moist mix of peat and sand, in indirect light at 21°C (70°F).
- **PESTS AND DISEASES** Scale insects may be a problem under glass.

**A. bracteatus** (Red pineapple, Wild pineapple). Terrestrial bromeliad with green-brown, coarsely spiny leaves, 45cm (18in) or more long, the spines

*Ananas bracteatus* 'Tricolor'



*Ananas comosus* 'Variegatus'

upward-pointing. In summer, bears red-bracted, yellowish red flowers in almost cylindrical inflorescences, to 15cm (6in) long, followed by edible but not very fleshy, greenish brown fruit, 15cm (6in) long, to 70cm (28in), to 50cm (20in). Brazil, Paraguay, Argentina. ☼ (min. 15°C/59°F). 'Tricolor' ☼♀ syn. 'Striatus', var. *tricolor*, has deep green, yellow-striped leaves.

**A. comosus.** Variable, terrestrial bromeliad with dense rosettes of slightly recurved, spiny-margined, dark green leaves, to 1m (3ft) long. In summer, produces oblong-ovoid inflorescences, 30cm (12in) or more long, of small, reddish yellow bracts and violet-purple or violet-blue flowers. They are followed by bright red fruit, to 30cm (12in) long. These are the pineapples grown commercially. ↑ 1m (3ft), ↔ 50cm (20in). Presumed to have originated in Brazil. ☼ (min. 15°C/59°F).

'**Variegatus**' ☼ syn. var. *variegatus*, has leaves longitudinally striped yellowish white, occasionally also with red stripes. **A. nanus.** Terrestrial bromeliad resembling a miniature *A. comosus*. Slightly recurved, dark green leaves, to 60cm (24in) long, have upward-pointing marginal spines. Cone-shaped inflorescences, 10cm (4in) long, comprising lilac-purple or red flowers with small yellow bracts, are produced in summer. They are followed by fruit to 10cm (4in) long, with a large crown. ↑ 45cm (18in), ↔ 60cm (24in). Surinam, Brazil. ☼ (min. 15°C/59°F)

## ANAPHALIS

Pearl everlasting

ASTERACEAE/COMPOSITAE

Genus of about 100 species of spreading to upright perennials, some evergreen, from dry slopes, dry forests, sunny riverbanks, or moist woodland in the N. hemisphere. They have woolly grey foliage and produce corymbs of papery "everlasting" white flowerheads, 0.6–2.5cm (¼–1in) across, which are

good for cutting and drying. The larger species provide pale foliage contrast in borders too moist for most sun-loving, grey-leaved plants, while the smaller species are excellent, long-lasting rock-garden plants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in full sun in moderately fertile, reasonably well-drained soil that does not dry out in summer (very important for *A. nepalensis* and its variants). Most will also grow in partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in early spring, or take basal or stem tip cuttings in spring or early summer.

• **PESTS AND DISEASES** Trouble free.

**A. cinnamomea** see *A. margaritacea* var. *cinnamomea*.

**A. margaritacea** ☼ Clump-forming, rhizomatous perennial with erect, leafy stems and lance-shaped, mid-green leaves, 7–14cm (3–5½in) long, white-woolly beneath. From midsummer to early autumn, bears dense corymbs, to 15cm (6in) across, of yellow flowerheads surrounded by white bracts.

↑↔ 60cm (24in). N.E. Asia, North America. \*\*\* var. *cinnamomea*, syn. *A. cinnamomea*, has broader leaves, white or cinnamon-coloured beneath, with 3 main veins, and flowerheads in tighter, rounder, many-branched corymbs; ↑↔ 45–50cm (18–20in). Mountains of India and Burma. var.

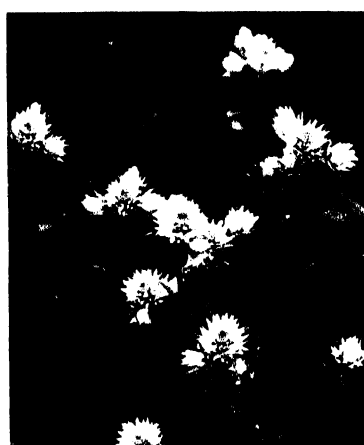
**yedoensis** ♀ syn. *A. yedoensis*, has shorter, narrow, single-veined, white-woolly leaves, 6cm (2½in) long; Japan.

**A. nepalensis** ☼ syn. *A. triplinervis* var. *intermedia*. Clump-forming perennial with lance-shaped, pale grey-green leaves, 3–10cm (1½–4in) long, white-woolly beneath, with 3 main veins, on short, silvery green stems. In late summer and early autumn, produces solitary to several yellow flowerheads, surrounded by pointed white bracts, in rounded corymbs, 2cm (¾in) across. ↑ 30cm (12in), ↔ 15cm (6in) or more. Himalayas, W. China. \*\*\* var.

**monocephala**, syn. *A. nubigena*, has short, densely leafy, white-woolly stems, and inversely lance-shaped to linear-lance-shaped leaves, light grey-green above, white-woolly beneath, to 2.5cm (1in) long. Solitary to several, white or yellow flowerheads in corymbs, 1.5cm (½in) across, are borne in midsummer; ↑ 10–20cm (4–8in), ↔ 30cm (12in). China (Yunnan) to Tibet.



*Anaphalis margaritacea*



*Anaphalis nepalensis*

**A. nubigena** see *A. nepalensis* var. *monocephala*.

**A. sinica** subsp. **morii**. Upright, evergreen, silvery grey, downy perennial, which is a dwarf variant of *A. sinica*, with linear-lance-shaped leaves, to 2cm (¾in) long. In late summer and early autumn, bears spherical corymbs, 3–7cm (1¼–3in) across, of white flowerheads surrounded by pointed white bracts. Tolerates heavy soils and partial shade. ↑ to 20cm (8in), ↔ to 60cm (24in). Mountainous areas of China, Korea, Japan (Kyushu). \*\*\*

**A. triplinervis** ♀ Clump-forming perennial with spoon-shaped to obovate-elliptic, pale grey-green, white-woolly leaves, 3–10cm (1¼in–4in) long, with 3–5 main veins. Domed corymbs, 4–5cm (1½–2in) across, of white-bracted, yellow-centred flowerheads, are produced in mid- and late summer. ↑ 80–90cm (32–36in), ↔ 45–60cm (18–24in). Himalayas to S.W. China. \*\*\* var. *intermedia* see *A. nepalensis*. 'Sommerschnee' ♀ syn. 'Summer Snow', has brilliant white bracts.

**A. yedoensis** see *A. margaritacea* var. *yedoensis*.

## ANCHUSA

Alkanet

BORAGINACEAE

Genus of about 35 species of erect to spreading or mound-forming annuals, biennials, and perennials, often short-lived, occurring in sunny, dry sites, including roadsides, stony hills, cliffs, and grassland, in temperate regions of Europe, Africa, and W. Asia. They have alternate, linear-lance-shaped to elliptic leaves, sometimes with a covering of bristly hairs, and are grown for their tubular, usually blue flowers with 5 spreading lobes, borne in terminal and axillary cymes. Grow dwarf species, such as *A. caespitosa*, in tufa or in a rock garden, raised bed, or trough. Taller species are ideal for a herbaceous border. The flowers are attractive to bees.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in any moist but well-drained, moderately fertile soil in full sun. Tall species and cultivars may need staking when in flower. Cut back top-growth after flowering to encourage the development of overwintering basal rosettes. Dead-head after the first flush of flowers to encourage a second flush. Most species resent excessive winter wet.

• **PROPAGATION** Sow seed of annuals at 13–16°C (55–61°F) in late winter or early spring. Sow seed of perennials in containers in a cold frame in spring. Root basal cuttings in spring, or insert root cuttings in winter.

• **PESTS AND DISEASES** Prone to mildew.

**A. angustissima** see *A. leptophylla* subsp. *incana*.

**A. azurea**, syn. *A. italica*. Erect, clump-forming perennial with mainly basal leaves, 10–40cm (4–16in) long, which are linear-elliptic to lance-shaped, mid- to dark green, and stiffly hairy.

Branching panicles of gentian-blue flowers, to 1.5cm (½in) across, turning blue-purple with age, are borne in early summer. ↑ 90–150cm (3–5ft), ↔ 60cm (24in). S. Europe, N. Africa, W. Asia. \*\*\*

'**Feltham Pride**' is compact, with clear, bright blue flowers. Although perennial, it is often grown as a seed-raised biennial; ↑ to 90cm (36in). '**Little John**' is long-lived and dwarf, with deep blue flowers. It is ideal for the front of a border or a rock garden; ↑ 45cm (18in), ↔ 30cm (12in). '**Loddon Royalist**' ☼♀ is sturdy, so seldom needs staking, and has bright, deep blue flowers; ↑ 90cm (36in). '**Morning Glory**' has flowers in a bright shade of deep blue; ↑ 1m (3ft). '**Opal**' has paler blue flowers than the other cultivars; ↑ 90cm (36in).

**A. barleri**. Erect, clump-forming perennial with elliptic or lance-shaped to oblong-spoon-shaped, wavy-margined or sometimes toothed, mid-green leaves, 5–7cm (2–3in) long. Panicles of white-eyed blue flowers, 6–8mm (¼–½in) across, similar to forget-me-nots, are borne in early summer. ↑ 60cm (24in), ↔ 30cm (12in). N. Balkans to Ukraine, Turkey. \*\*\*

**A. caespitosa** see *A. caespitosa*.

**A. capensis**. Erect biennial, often grown as an annual, with rough, narrowly lance-shaped, mid-green leaves, to 12cm (5in) long, covered in bristly hairs. Bears a mass of terminal, open panicles of saucer-shaped, bright blue, white-



*Anchusa azurea* 'Loddon Royalist'





*Anchusa capensis* 'Blue Angel'

throated flowers, 4–8mm ( $\frac{1}{8}$ – $\frac{3}{16}$ in) across, in summer.  $\uparrow$  12–18cm (5–7in),  $\leftrightarrow$  9–12cm (3½–5in). South Africa. \*\*\*  
**'Blue Angel'**  $\square$  is upright and compact with ultramarine-blue flowers;  $\uparrow$  20cm (8in),  $\leftrightarrow$  15cm (6in). **'Blue Bird'** bears indigo-blue flowers;  $\uparrow$  45cm (18in),  $\leftrightarrow$  15–23cm (6–9in). **'Dawn'** has blue, pink, or white flowers;  $\uparrow$  45cm (18in),  $\leftrightarrow$  15–23cm (6–9in).

**A. caespitosa**  $\square$   $\nabla$  syn. *A. caespitosa*. Dense, mound-forming perennial with rosettes of narrowly linear, hairy, dark green leaves, to 6cm (2½in) long. Bears clusters of stemless, white-eyed, vivid blue flowers, to 1.2cm (½in) across, in spring. Needs sharp drainage.  $\uparrow$  5–10cm (2–4in),  $\leftrightarrow$  15–20cm (6–8in). Mountain rocks in Greece (Crete). \*\*\*

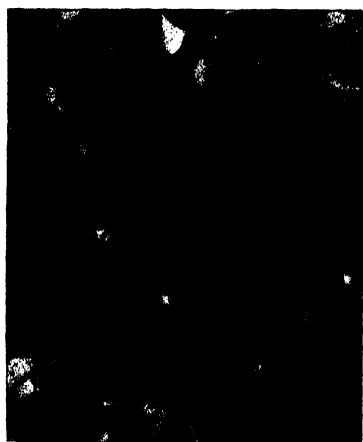
**A. italica** see *A. azurea*.

**A. leptophylla** subsp. *incana*, syn. *A. angustissima*. Upright, tufted, many-branched perennial with loose rosettes of narrowly lance-shaped, dark green leaves, 6–11cm (2½–4½in) long. Bears one-sided cymes of bright azure-blue, white-eyed flowers, 4–6mm ( $\frac{1}{8}$ – $\frac{1}{4}$ in) across, throughout the summer.  $\uparrow$  to 30cm (12in), occasionally more,  $\leftrightarrow$  20cm (8in). Turkey. \*\*\*

**A. myosotidiflora** see *Brunnera macrophylla*.

**A. sempervirens** see *Pentaglottis sempervirens*.

▷ **Ancistrocactus** see *Sclerocactus*  
**A. crassihamatus** see *S. uncinatus* var. *crassihamatus*  
**A. megarrhizus** see *S. scheeri*  
**A. scheeri** see *S. scheeri*  
**A. uncinatus** see *S. uncinatus*



*Anchusa caespitosa*

## ANDROMEDA

Bog rosemary

ERICACEAE

Genus of 2 species of low-growing, wiry-stemmed, evergreen shrubs, found in acid peat bogs in the arctic and cool-temperate regions of the N. hemisphere. The leaves are simple, alternate, and linear-lance-shaped to oblong; the small, urn-shaped flowers, produced in terminal umbels from spring to early summer, are white or pink. Grow with woodland plants in a peat bed; they are also suitable for a shady rock garden, or a damp border in acid soil.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, acid, humus-rich soil, in partial shade or full sun. Mulch annually in spring with leaf mould in dry sites.

• **PROPAGATION** Root softwood cuttings in early to midsummer; pot up suckers or rooted layers in autumn or spring.

• **PESTS AND DISEASES** Trouble free.

**A. polifolia**  $\square$  syn. *A. rosmarinifolia* (Common bog rosemary, Marsh andromeda). Variable, erect or semi-prostrate shrub producing pointed, linear-oblong, leathery, dark green leaves, 1.5–3.5cm ( $\frac{1}{2}$ –1½in) long. White or pale pink flowers are borne on slender flower-stalks, in 2- to 5-flowered umbels, to 3cm (1¼in) across, from spring to early summer.  $\uparrow$  to 40cm (16in),  $\leftrightarrow$  to 60cm (24in). N. Europe. \*\*\*  
**'Alba'**  $\square$  syn. *'Compacta Alba'*, is semi-prostrate and freely produces pure white flowers;  $\uparrow$  15cm (6in).



*Andromeda polifolia*



*Andromeda polifolia* 'Alba'



*Andromeda polifolia* 'Compacta'

$\leftrightarrow$  20cm (8in). **'Compacta'**  $\square$   $\nabla$  is a densely twiggy shrub, with broad, glaucous leaves and pink flowers;  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  to 20cm (8in).

**'Compacta Alba'** see *'Alba'*.

**'Macrophylla'**  $\nabla$  is low-growing, with broad, ovate, dark green leaves, to 3cm (1¼in) long. It produces numerous deep pink and white flowers, which are slightly larger and more rounded than the species;  $\uparrow$  5–15cm (2–6in),  $\leftrightarrow$  25cm (10in). **'Nikko'** is a vigorous, compact, rounded shrub. It has grey-green leaves, to 2.5cm (1in) long, and bears umbels of clear pink flowers;  $\uparrow$  to 20–25cm (8–10in).

**A. rosmarinifolia** see *A. polifolia*.

▷ **Andromeda, Marsh** see *Andromeda polifolia*

## ANDROPOGON

GRAMINEAE/POACEAE

Genus of over 100 species of annual or perennial, rhizomatous and clump-forming grasses, mostly from grassland in tropical regions, but also from the temperate zones of both hemispheres. They have flat, sheathed, linear leaves and produce racemes of small spikelets, on erect, sometimes branching stems in summer or autumn. Only *A. gerardii*, which has colourful foliage and flower-heads, is of ornamental value; it is suitable for growing at the back of a herbaceous border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, fertile, well-drained, and preferably sandy soil, in full sun. *A. gerardii* does not tolerate excessive winter wet. Cut back old stems to the ground in early spring before growth begins.

• **PROPAGATION** Divide from mid-spring to early summer. Sow seed in containers in a cold frame in spring.

• **PESTS AND DISEASES** Trouble free.

**A. gerardii** (Big bluestem). Densely tufted perennial, with short rhizomes, producing erect clumps of arching, linear, blue-green leaves, to 30cm (12in) long, which turn purple in autumn. Strong, erect stems, to 2m (6ft) tall, bear 3–6 terminal, finger-like, deep red-purple racemes, to 10cm (4in) long, in early and mid-autumn.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  60cm (24in). Canada to Mexico. \*\*\*

**A. scoparius** see *Schizachyrium scoparium*.

## ANDROSACE

syn. DOUGLASIA

Rock jasmine

PRIMULACEAE

Genus of about 100 species of annuals, biennials, and predominantly evergreen, mat- or cushion-forming perennials.

They have small rosettes of hairy leaves and produce stemless or short-stemmed, tubular-based flowers, with flat or cup-shaped lobes, singly or in umbels from late spring to late summer. Most occur in the mountains of the N. hemisphere, growing in rock crevices, scree, or turf. The high-alpine (Aretian), cushion-forming species are superb for a well-ventilated alpine house; most of the remainder are ideal for a rock garden, scree bed, or trough.

• **HARDINESS** Fully hardy, but the Aretian species need protection from excessive wet, especially in winter.

• **CULTIVATION** Under glass, grow in pans in full light with good ventilation. Grow Aretian species in a very sharply drained mix of equal parts loam-based potting compost (J1 No.2) and grit, with a collar of grit around the neck of the plant. They are best watered from below to keep the plant neck and foliage dry; do not allow the compost to dry out.

Outdoors, grow other species in a scree bed, in vertical crevices in rock-work, or in moist but gritty, well-drained soil in a trough in full sun. The smallest cushion-forming species also grow well in tufa.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe or in autumn. Root single rosettes as cuttings in early to midsummer. Keep moist, but water from below to avoid wetting the rosettes.

• **PESTS AND DISEASES** Prone to aphids under glass, and to fungal diseases in damp conditions. Remove dead rosettes to reduce the risk of infection.

**A. carnea**  $\square$  Tufted perennial with loose rosettes, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) wide, of evergreen, hairy-margined, linear, fleshy, mid-green leaves, to 2cm ( $\frac{3}{4}$ in) long. In late spring, bears umbels of 3–8 pink, yellow-eyed flowers, 5–8mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) across, on stems 2.5–5cm (1–2in) tall.  $\uparrow$  5cm (2in),  $\leftrightarrow$  8–15cm (3–6in). Pyrenees, Alps, Tyrol. \*\*\*  
**subsp. laggeri**  $\square$   $\nabla$  syn. *A. laggeri*, is more densely tufted with smaller rosettes, 7–10mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) across, and flowers that are a deeper pink; E. Pyrenees.



*Androsace carnea*



*Androsace carnea* subsp. *laggeri*

**A. chamaejasme.** Mat-forming, evergreen perennial with short stolons and open rosettes, 1–2cm (½–¾in) across, of oblong-lance-shaped to elliptic, silky-hairy, mid-green leaves, to 1.5cm (½in) long. In late spring, bears umbels of 2–8 pink or white, yellow-eyed flowers, to 8mm (⅜in) across, sometimes turning pink- or red-eyed with age, on stems to 6cm (2½in) tall. ↑ 3–6cm (1¼–2½in), occasionally to 12cm (5in), ↔ to 15–20cm (6–8in). Europe to North America. \*\*\*

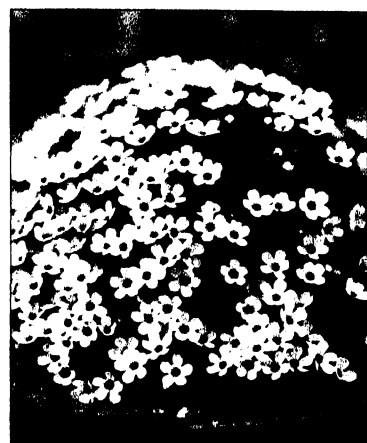
**A. ciliata.** Cushion-forming Aretian with loose, evergreen rosettes, 1.5–2.5cm (½–1in) across, of inversely lance-shaped to ovate, hairy, glossy, mid-green leaves, to 1.5cm (½in) long. In late spring and early summer, pale to deep pink, yellow- to orange-eyed flowers, 8–15mm (⅜–½in) across, are borne singly above the cushions, on stems 1.5cm (½in) long. ↑ 2.5cm (1in), ↔ 5–8cm (2–3in). Pyrenees. \*\*\*

**A. cylindrica.** Compact, cushion-forming, evergreen Aretian with rosettes, 1.5–2cm (½–¾in) wide, of linear-elliptic, hairy-margined, grey-green leaves, to 1cm (½in) long. In mid- and late spring, white flowers, 1cm (½in) high. ↑ 1–2cm (½–¾in), ↔ 10–15cm (4–6in). Pyrenees. \*\*\*

**A. imbricata** see *A. vandellii*.

**A. jacquemontii** see *A. villosa* var. *jacquemontii*.

**A. laevigata.** syn. *Douglasia laevigata*. Densely tufted, evergreen perennial with rosettes, 1–4cm (½–1½in) across, of oblong-lance-shaped, glossy, dark grey-

*Androsace pyrenaica*

green leaves, 1–2cm (½–¾in) long. Compact umbels of 2–10 deep rose-pink flowers, 1–2cm (½–¾in) across, are borne on stems 2–7cm (¾–3in) long, in early summer. ↑ 5cm (2in), ↔ to 20cm (8in). N.W. USA. \*\*\*

**A. laggeri** see *A. carnea* subsp. *laggeri*.

**A. lanuginosa** [ ] ♀ Prostrate, evergreen, mat-forming perennial with trailing, reddish green stems and alternate, elliptic, silky-hairy, grey-green leaves, to 1.5cm (½in) long. Produces compact umbels of 10–15 pale pink flowers, 8–12mm (⅜–½in) across, with greenish yellow eyes, on stems 8–10cm (3–4in) long, in mid- and late summer. ↑ to 5cm (2in), sometimes to 10cm (4in), ↔ to 30cm (12in). Himalayas. \*\*\*

**A. pubescens.** Cushion-forming, evergreen perennial with dense rosettes, 9–15mm (⅜–½in) across, of elliptic to spoon-shaped, hairy, mid-green leaves, to 1cm (½in) long. Solitary white flowers, 6–10mm (¼–½in) across, with green or yellow eyes, are borne on stems to 5mm (¼in) long, in spring and early summer. ↑ to 6cm (2½in), ↔ to 10cm (4in). Pyrenees. \*\*\*

**A. pyrenaica** [ ] Compact, cushion-forming, evergreen perennial with dense rosettes, 4–5mm (⅜–½in) across, of elliptic, hairy, grey-green leaves, to 4mm (⅜in) long. Solitary, almost stemless white flowers, 5mm (¼in) across, with yellow eyes, are borne in mid- and late spring. ↑ 4–5cm (1½–2in), ↔ 7–12cm (3–5in). Pyrenees. \*\*\*

**A. sarmentosa** ♀ Mat-forming, stoloniferous, evergreen perennial, with rosettes, 1.5–3cm (½–1¼in) across, of narrowly to broadly elliptic, white-hairy,

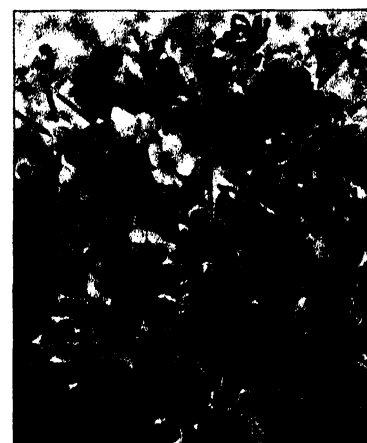
*Androsace vandellii*

light green leaves, 1.5–3cm (½–1¼in) long. In late spring and early summer, stems to 10cm (4in) long, bear compact umbels of 3–8 pale to deep rose-pink flowers, 7–9mm (¼–⅜in) across, with greenish yellow eyes. Vigorous species for a rock garden. ↑ 5–10cm (2–4in), ↔ to 30cm (12in). Himalayas to W. China (Sichuan). \*\*\*

**A. sempervivoides** [ ] ♀ Mat-forming, stoloniferous, evergreen perennial with open rosettes, 1–2.5cm (½–1in) across, of oblong to spoon-shaped, leathery, hairy-margined, mid-green leaves, 5mm (¼in) long. In mid- and late spring, umbels of 4–10 pink to mauve-pink, yellow-eyed, scented flowers, 8–10mm (⅜–½in) across, their eyes turning red with age, open on stems 2–8cm (¾–3in) long. ↑ 2.5–5cm (1–2in), ↔ 15–20cm (6–8in). N.W. Himalayas. \*\*\*

**A. strigillosa.** Vigorous, stoloniferous, evergreen perennial with loosely clustered rosettes, to 8cm (3in) across, of broadly elliptic, mid-green, downy leaves, to 6cm (2½in) long. In early and midsummer, bears open umbels of 5–15 usually white, purplish red-backed, yellow-eyed flowers, 5mm (¼in) across, on stems to 25cm (10in) tall. *Variegata*, with white or pink flowers are also grown. ↑ to 25cm (10in), ↔ to 15cm (6in). C. Himalayas. \*\*\*

**A. vandellii** [ ] syn. *A. imbricata*. Evergreen, cushion-forming Aretian with dense rosettes, 5–10mm (¼–½in) wide, of linear to elliptic, silvery grey-hairy leaves, to 6mm (¼in) long. Produces attractive white, yellow-eyed flowers, 4–8mm (⅜–⅝in) across, singly from the leaf axils on short stems, 1–5mm

*Androsace villosa* var. *jacquemontii*

(⅙–¼in) long, in early and mid-spring. ↑ 4–5cm (1½–2in), ↔ 7–12cm (3–5in). Sierra Nevada, Pyrenees, Alps. \*\*\*

**A. villosa** [ ] Mat- or cushion-forming, evergreen perennial with densely silky-hairy rosettes, to 1.5cm (½in) across, of linear to broadly elliptic leaves, 5–7mm (¼in) long, mid-green above and covered in long, silky hairs beneath. In spring, bears tight umbels of 3–7 white flowers, 6–10mm (¼–½in) across, with yellow eyes, sometimes turning pink- and red-eyed with age, on stems 2–3cm (¾–1¼in) long. ↑ to 4cm (1½in), ↔ to 20cm (8in). W. Europe to W. Asia. \*\*\* **var. jacquemontii** [ ] syn. *A. jacquemontii*, is stoloniferous, with deep pink-purple, yellow- to green-eyed flowers; Himalayas.

**A. vitaliana** see *Vitaliana primuliflora*.

## ANDRYALA

ASTERACEAE/COMPOSITAE

Genus of about 25 species of dry, resistant annuals and perennials from rocky sites, including crevices and cliffs, in the Mediterranean. They have milky sap and alternate leaves, which are simple or deeply pinnatisect, sometimes with deep, wavy margins. The yellow, daisy-like flowerheads may be borne singly or in many-flowered panicles, the outer-most florets often having red stripes on the undersides. They are useful for dry wall crevices or for a raised bed in a rock garden. Grow in an alpine house for protection against winter wet.

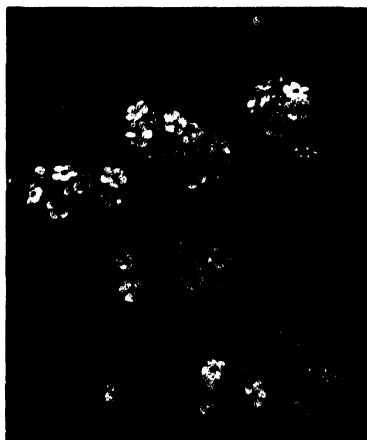
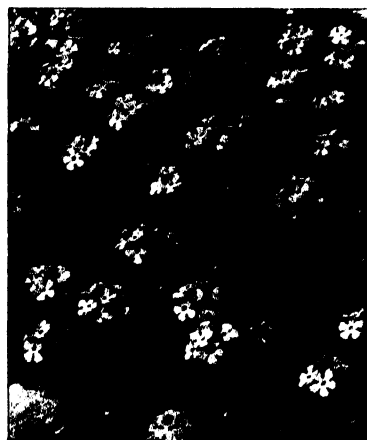
• **HARDINESS** Fully hardy to half hardy. *A. agardhii* is hardy to -10°C (14°F), except in very wet winters.

• **CULTIVATION** Under glass, grow in deep pots in a mix of equal parts loam, leaf mould, and sharp sand, with a top-dressing of grit, in full light. Water freely when in growth, more sparingly in winter. Outdoors, grow in sharply drained, poor, gravelly soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame when ripe, or in spring. Root heel cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**A. agardhii.** Woody-based perennial forming a densely tufted mound of lance-shaped to spoon-shaped, entire, softly white-hairy, mid-green leaves, 3–4cm (1¼–1½in) long, which taper to long leaf-stalks. Bears solitary, clear yellow flowerheads, 2.5cm (1in) across, from early to late summer. ↑ 15cm (6in). S. Spain. \*\*

*Androsace lanuginosa**Androsace sempervivoides**Androsace villosa*

A

## ANEMONE

Windflower

RANUNCULACEAE

Genus of about 120 species of variable perennials from a wide range of habitats in temperate regions, mainly of the N. but also of the S. hemisphere. Anemones have rhizomatous, tuberous, fleshy, or fibrous rootstocks. They may be divided into 3 main groups: spring-flowering species, some with tubers or rhizomes, which are found in woodland and alpine pastures; tuberous Mediterranean and C. Asian species from areas with hot, dry summers, flowering in spring or early summer; and larger, mainly tall, herbaceous species with fibrous roots, occurring in moist, open woodland and grassy sites, and flowering from late summer to autumn. Most anemones produce both basal and stem leaves. The basal leaves are rounded to oval in outline, 3- to 7-palmate or palmately lobed, rarely entire, and mid- to dark green. The leaflets and lobes are often shallowly to deeply dissected or toothed, and may be either hairless or hairy. Smaller, stalkless or short-stalked stem leaves are often produced in a whorl beneath the flowers.

Anemones are grown for their open saucer-shaped to shallowly cup-shaped flowers, each with a central boss of stamens. The flowers are solitary or borne in cymes or umbels, on branched or unbranched stems. Larger species are ideal for a border, smaller species for a woodland or rock garden. Some anemones, such as *A. blanda* and *A.*

*Anemone blanda* 'Violet Star'

*apennina*, are excellent for naturalizing in a variety of sites. Contact with the sap may irritate skin.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Anemones have varying cultivation requirements. For ease of reference, these are grouped as follows:

1. Moist but well-drained, humus-rich soil in partial shade, although drier conditions are tolerated when dormant in summer.
2. Well-drained, humus-rich soil in sun or partial shade.
3. Light, sandy soil in full sun. Ensure a dry dormancy after flowering. Mulch for winter protection, or lift and overwinter in sand in a frost-free place.
4. Moist, fertile, humus-rich soil in sun or partial shade. Some species may be invasive once established. They will not tolerate excessive winter wet. Mulch in spring and late autumn in cold areas.

Most species are best planted in autumn, but plant *A. coronaria* De Caen Group and St. Brigid Group in spring. Plant anemones with tubers 5–8cm (2–3in) below the surface of the soil.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe (use dry seed – rub off the woolly-coated seeds); germination may be slow and erratic. Divide autumn-flowering anemones in early spring or autumn, growing on in containers for a year before planting out in spring. Separate the rhizomes of rhizomatous species in spring, or after the leaves have died down. Separate the tubers of tuberous species in summer, when dormant.

• **PESTS AND DISEASES** Susceptible to leaf eelworms and, occasionally, anemone

smut. All species are prone to leaf spot and powdery mildew, and to damage from caterpillars and slugs.

*A. altaica*. Creeping perennial with slender yellow rhizomes and whorls of 3 rounded to oval, 3-palmate, toothed, mid- to dark green basal and stem leaves, 2–4cm (¾–1½in) long. Solitary flowers, to 4cm (1½in) across, with 8–10 white tepals, veined violet inside, are produced in spring. Cultivation group 1. † 15–20cm (6–8in), ↔ 20–30cm (8–12in). N.E. Russia, N. Asia. \*\*\*

*A. apennina* ♀ Perennial with short, creeping rhizomes and rounded to oval, 3-palmate, dark green, basal and stem leaves, 3–8cm (1¼–3in) long, with hairy undersides, and toothed and lobed leaflets. Solitary, usually blue flowers, 2.5–3cm (1–1½in) across, with 8–14 tepals, are borne in spring; white flowers, sometimes pink-flushed, also occur. Cultivation group 1 or 2. † 20cm (8in), ↔ 30cm (12in). S. Europe. \*\*\*

*A. baldensis*. Clump-forming, fibrous-rooted perennial producing rounded, 3-palmate, dark green basal and stem leaves, 3–8cm (1¼–3in) long, with 3-lobed leaflets. Slightly nodding, solitary white flowers, 2.5–4cm (1–1½in) across, with 8–10 tepals, often flushed blue on the reverse, open in mid- and late spring. Cultivation group 2. † 20cm (8in), ↔ 10–15cm (4–6in). Mountains of N. Italy, rocky sites in former Yugoslavia. \*\*\*

*A. biflora*. Tuberous perennial with rounded, 3-palmate, mid-green basal and stem leaves, 3–5cm (1¼–2in) long,

*Anemone coronaria* 'Lord Lieutenant'

with toothed and lobed leaflets. Red flowers, occasionally yellow or orange, 3–4cm (1¼–1½in) across, with 5 tepals, are borne in 2- or 3-flowered clusters in spring. Cultivation group 3. † 12cm (5in), ↔ 10cm (4in). Iran. \*\*

*A. blanda* ♀ Spreading perennial with knobbly tubers. Produces 1 or 2 broadly oval to triangular, 3-palmate, dark green basal and stem leaves, 3–10cm (1¼–4in) long, with irregularly lobed leaflets. In spring, solitary flowers, 2–4cm (¾–1½in) across, with 10–15 deep blue to white or pink tepals, are borne above the leaves. Quickly forms large clumps. Cultivation group 2 or 3. † ↔ 15cm (6in). S.E. Europe, Turkey. \*\*\*

'*Atrocaerulea*' ■ has deep blue flowers.

'*Blue Star*' produces pale blue flowers.

'*Charmer*' has deep pink flowers.

'*Ingramii*' ♀ bears deep blue flowers with purple-backed tepals.

'*Pink Star*' has bright pink flowers.

'*Radar*' ■ ♀ bears magenta flowers with white centres.

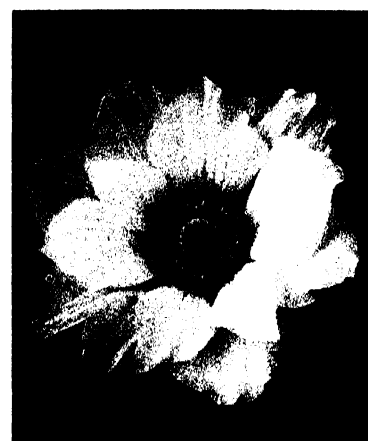
'*Violet Star*' ■ bears large, amethyst flowers with white backs.

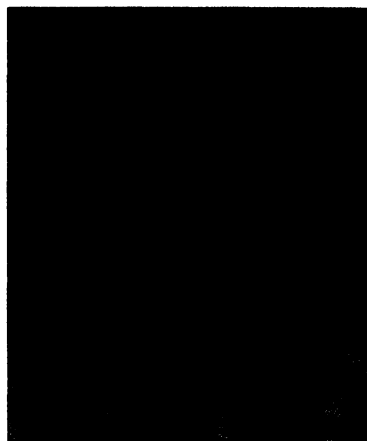
'*White Splendour*' ■ ♀ produces large white flowers with pink-tinged backs.

*A. 'Bressingham Glow'* see *A.*

*hupehensis* var. *japonica* 'Bressingham Glow'.

*A. bucharica*. Clump-forming perennial with knobbly tubers and rounded, 3-palmate, light to dark green basal and stem leaves, 5–12cm (2–5in) long, with lobed and toothed leaflets. In spring, branched stems bear pairs of red or violet-red flowers, 3–4cm (1¼–1½in) across, with 5 tepals, hairy on the outside. Cultivation group 3. † 20cm (8in), ↔ 10cm (4in). C. Asia. \*\*\*

*Anemone blanda* 'Atrocaerulea'*Anemone blanda* 'Radar'*Anemone blanda* 'White Splendour'*Anemone coronaria* 'The Bride'

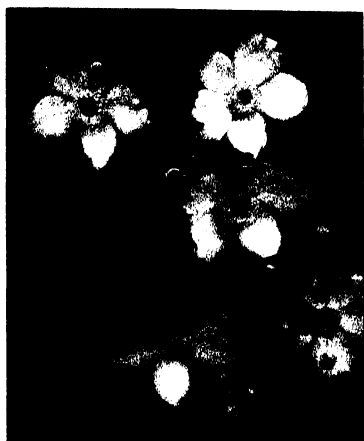
*Anemone x fulgens*

**A. coronaria.** Erect perennial with knobbly tubers, producing rounded to oval, 3-palmate, mid-green basal and stem leaves, 5–12cm (2–5in) long, with finely lobed leaflets. Solitary, showy, single flowers, 3–8cm (1¼–3in) across, with 5–8 tepals, in red, blue, or white, are borne in spring. Cultivation group 3. † 30–45cm (12–18in), ↔ 15cm (6in). Mediterranean. \*\*\*. There are many cultivars, both single- and double-flowered; all are useful as cut flowers.

**De Caen Group** is a collective name for a race of single-flowered cultivars with 5–8 tepals. 'Lord Lieutenant' ■ has semi-double, deep blue flowers. 'Mr. Fokker' has single, violet-blue flowers. **St. Brigid Group** is a collective name for a race of double-flowered cultivars. 'The Admiral' produces semi-double violet flowers. 'The Bride' ■ has semi-double, pure white flowers.

**A. demissa.** Clump-forming perennial with a woody-based, fibrous rootstock, and rounded, deeply 5-lobed, sharply toothed, mid-green basal and stem leaves, 5–15cm (2–6in) long. Branched stems bear spreading umbels of 3–6 white, blue, or purple flowers, 2–4cm (¾–1½in) across, with 5–7 tepals and bold, golden yellow stamens, from early to late summer. Cultivation group 2. † 15–40cm (6–16in), ↔ 15cm (6in). W. Himalayas to S.W. China. \*\*\*

**A. x elegans** see *A. x hybrida*.  
**A. eranthoides.** Erect, tuberous perennial with congested rhizomes and stalkless, rounded, 3- to 5-palmate, mid-green basal leaves, to 12cm (5in) long, the leaflets further 3-lobed and toothed; stem leaves are stalkless, 3-palmate and

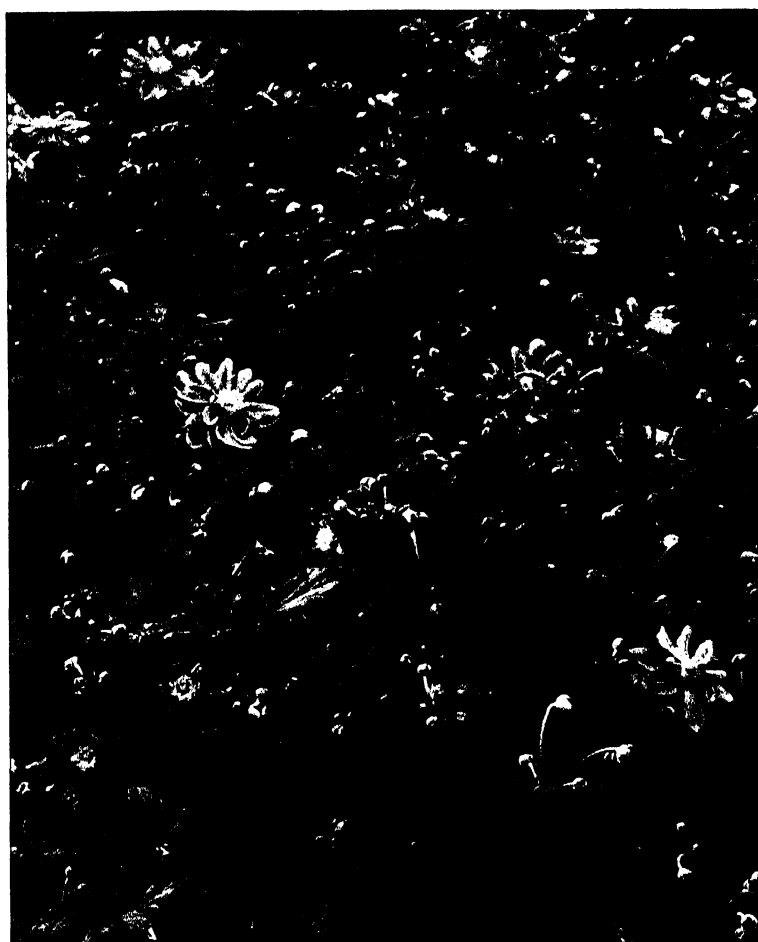
*Anemone hupehensis*

narrowly obovate. Flowers, 1–2.5cm (½–1in) across, with up to 8 tepals, yellow-green outside and golden yellow inside, are borne, usually in pairs, in spring. Cultivation group 3. † to 12cm (5in), ↔ to 8cm (3in). C. Asia. \*\*\*

**A. flaccida.** Erect, rhizomatous perennial forming mounds of oval, 3-palmate, fleshy basal and stem leaves, 3–10cm (1¼–4in) long, with lobed and toothed leaflets, bronze at first, later dark green with white-marked bases. In late spring, bears clusters of 1–3 creamy white, sometimes pink-flushed flowers, 1.5–3cm (½–1¼in) across, with 5–7 tepals. Cultivation group 1. † to 20cm (8in), ↔ 15–20cm (6–8in). Mountain forests in Russia, China, Japan. \*\*\*

**A. x fulgens** ■ (*A. hortensis* x *A. pavonina*). Tuberous perennial with rounded to oval, 3-palmate to deeply 3-lobed, mid-green basal and stem leaves, 3–12cm (1¼–5in) long, with lobed and toothed leaflets. In spring, bears solitary, narrow-petalled scarlet flowers, 5–7cm (2–3in) across, with 10–15 tepals. Cultivation group 3, but will tolerate summer rain without protection. † 30cm (12in), ↔ 15cm (6in). Garden origin. \*\*\*

**'Annulata Grandiflora'** has large red flowers with yellow centres.  
**A. globosa** see *A. multifida*.  
**A. heldreichiana** ■ syn. *A. stellata* var. *heldreichii*. Slow-growing perennial with a tuber-like, congested rhizome. Produces rounded, 3-palmate, light green basal leaves, 3–6cm (1¼–3½in) long, and small, rounded stem leaves, 5–10mm (¼–½in) long, with lobed leaflets. Solitary flowers, 2–4cm (¾–1½in) across, with 8–14 tepals,

*Anemone hupehensis* var. *japonica* 'Bressingham Glow'

grey-blue on the outside and white inside, are borne in spring. Cultivation group 3. † 10–15cm (4–6in), ↔ to 10cm (4in). Greece (Crete). \*\*\*

**A. hepatica** see *Hepatica nobilis*.

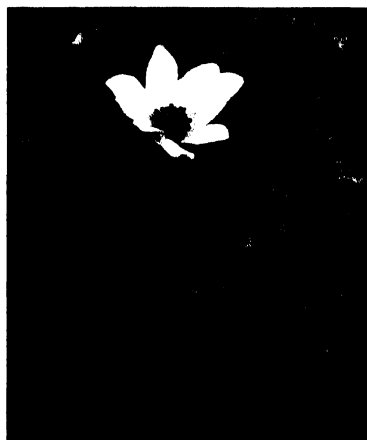
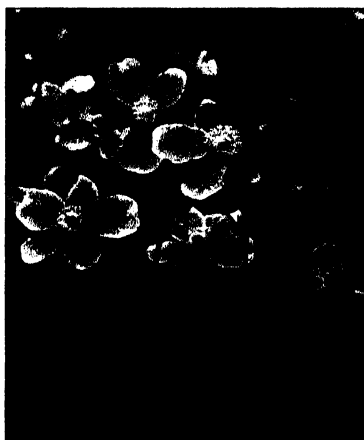
**A. hupehensis** ■ Erect perennial with a woody-based, fibrous rootstock and suckering shoots. Long-stalked, rounded to oval, 3-palmate, dark green basal leaves, 10–20cm (4–8in) long, and smaller stem leaves, are sharply toothed, and sparsely hairy beneath. In mid- and late summer, branched stems bear umbels of up to 15 white or pink flowers, 5–6cm (2–2½in) across, with 5–6 tepals, the outer ones often deep pink outside. Cultivation group 4. † 60–90cm (24–36in), ↔ 40cm (16in). W. and C. China. \*\*\*. **'Hadspen Abundance'** ■ ♀ has flowers with dark

reddish pink outer tepals. **var. japonica** (Japanese anemone) is taller than the species and has creamy pink flowers with 10–20 narrow tepals; † 60–120cm (2–4ft), ↔ 45cm (18in); S. China, Japan. **var. japonica 'Bressingham Glow'** ■ syn. *A. 'Bressingham Glow'*, has slightly darker pink flowers and longer tepals than var. *japonica*, the silky hairs on the outer surfaces producing a white sheen. **var. japonica 'Prinz Heinrich'** ♀ syn. *A. x hybrida* 'Prince Henry', is very similar to var. *japonica* 'Bressingham Glow', but more invasive. **'Pink Shell'** see 'Rosenschale'.

**'Rosenschale'**, syn. 'Pink Shell', is vigorous and produces flowers with large, overlapping, broad-based, dark rose-pink outer tepals. **'September Charm'** ♀ has uniform, pale pink flowers, 9cm (3½in) across.

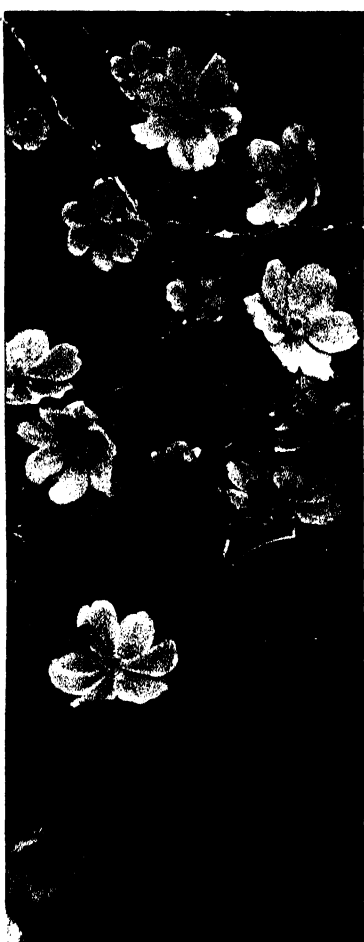
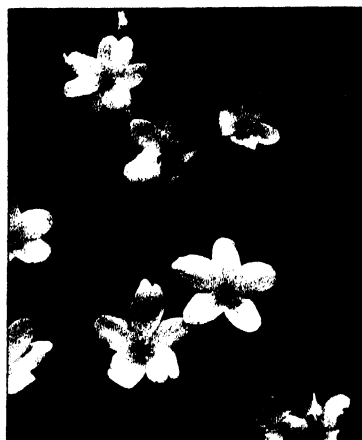
**A. x hybrida** (*A. hupehensis* var. *japonica* x *A. vitifolia*) syn. *A. x elegans*, *A. japonica* of gardens (Japanese anemone). Vigorous, erect, woody-based perennial with suckering shoots and oval, usually 3-palmate, toothed, mid-green leaves, softly hairy beneath. Basal leaves are 10–20cm (4–8in) long; stem leaves are 5–12cm (2–5in) long. Branched stems bear umbels of 12–18 semi-double, pale pink flowers, to 9cm (3½in) across, with 6–11 (sometimes up to 15) tepals, from late summer to mid-autumn. Cultivation group 4. † 1.2–1.5m (4–5ft), ↔ indefinite. Garden origin. \*\*\*

**'Géante des Blanches'** ♀ syn. 'White Giant', 'White Queen', is vigorous and has semi-double flowers with broad white tepals, shaded green on the reverse. **'Honorine Jobert'** ■ ♀

*Anemone heldreichiana**Anemone hupehensis* 'Hadspen Abundance'*Anemone x hybrida* 'Honorine Jobert'

*Anemone x hybrida* 'Luise Uhlk'

has single white flowers, pink-tinged on the reverse, with golden yellow stamens. **'Königin Charlotte'** ♀ syn. 'Queen Charlotte', is vigorous with large, semi-double pink flowers, 10cm (4in) across, shaded purple on the reverse of the outer tepals; † 1.5m (5ft). **'Kriemhilde'** bears semi-double, pale purple-pink flowers, darker on the reverse of the tepals. **'Lady Gilmour'** see 'Margarete'. **'Luise Uhlk'** ♂ is vigorous with large, semi-double white flowers. **'Margarete'**, syn. 'Lady Gilmour', 'Margarer', bears almost double, pale pink flowers. **'Max Vogel'** ♂ bears single, light pink flowers that become paler with age, the 3 or 4 outer tepals slightly darker than the 5 or 6 inner ones. **'Prince Henry'** see *A. hupehensis* var. *japonica* 'Prinz Heinrich'. **'Profusion'** is vigorous with semi-

*Anemone x hybrida* 'Max Vogel'*Anemone x lipsiensis*

double, rose-pink flowers, 6–7cm (2½–3in) across. **'Queen Charlotte'** see 'Königin Charlotte'. **'Whirlwind'** has semi-double white flowers, often with twisted, greenish white tepals at the centres. **'White Giant'** see 'Géante des Blanches'. **'White Queen'** see 'Géante des Blanches'.

*A. x intermedia* see *A. x lipsiensis*.

*A. japonica* of gardens see *A. x hybrida*.

*A. x lesseri* (*A. multifida* × *A. sylvestris*).

Erect, fibrous-rooted perennial forming clumps of large, rounded, 3- to 5-palmate, hairy, mid-green basal and stem leaves, 5–12cm (2–5in) long, with very finely lobed and toothed leaflets.

In summer, bears reddish pink flowers, to 3cm (1¼in) across, with 5–8 tepals, singly or in umbels of 2 or 3. There are also variants with purple, yellow, or white flowers. Cultivation group 2. † 40cm (16in), ↔ to 30cm (12in).

Garden origin. \*\*\*

*A. x lipsiensis* ♂ (*A. nemorosa* × *A. ranunculoides*) syn. *A. x intermedia*, *A. x seemannii*. Vigorous perennial with slender brown rhizomes and rounded, 3-palmate, mid-green basal and stem leaves, 5–8cm (2–3in) long, with deeply lobed leaflets. Similar to *A. nemorosa*, but bears solitary, pale creamy yellow flowers, 1.5–2cm (½–¾in) across, with 6–8 tepals, in spring. Cultivation group 1. † 5–15cm (2–6in), ↔ to 45cm (18in). Europe. \*\*\*

*A. magellanica* of gardens see *A. multifida*.

*A. multifida* ♂ syn. *A. globosa*, *A. magellanica* of gardens. Vigorous, rhizomatous perennial with rounded, 3- to 5-palmate, mid-green basal and stem leaves, 3–8cm (1¼–3in) long, with finely lobed leaflets. In summer, bears umbels of 2 or 3 creamy yellow flowers, to 2.5cm (1in) across, with 5–9 tepals. Cultivation group 2. † to 30cm (12in), ↔ to 15cm (6in). N. America. \*\*\*

*A. narcissiflora* ♂ Clump-forming perennial with a slightly woody rootstock. Rounded, 3- to 5-palmate, mid-green basal leaves, 8–15cm (3–6in) long, and smaller stem leaves have deeply lobed and toothed leaflets. In late spring and early summer, bears umbels of 3–8 (sometimes 9 or 10), white flowers, 2–4cm (¾–1½in) across, occasionally flushed pink on the reverse of the 5–7 tepals. Cultivation group 2. † 40cm (16in), ↔ 45cm (18in).

Mountains of C. and S. Europe to Turkey, Caucasus, Siberia, W. North America. \*\*\*

*Anemone multifida*

*A. nemorosa* ♀ (Windflower, Wood anemone). Vigorous, low-growing, creeping perennial with slender brown rhizomes and rounded, 3-palmate, mid-green basal and stem leaves, 5–12cm (2–5in) long, the narrow leaflets further lobed and toothed. From spring to early summer, bears solitary white, often pink-flushed flowers, 2–3cm (¾–1¼in) across, with 6–8 tepals. Cultivation group 1. † 8–15cm (3–6in), ↔ 30cm (12in) or more. Woods and mountain pastures of Europe. \*\*\*. **'Allenii'** ♀ produces deep lavender-blue flowers, 4cm (1½in) across, shaded paler blue on the outside of the tepals. **'Blue Bonnet'** is late-flowering, with deep blue flowers, 3–4cm (1¼–1½in) across. **'Bracteata Pleniflora'** ♂ has semi-double flowers with a ruff of leaves below the narrow

*Anemone narcissiflora**Anemone nemorosa* 'Bracteata Pleniflora'

tepals, the inner tepals white or white with green tips and the outer ones green. **'Flore Pleno'**, syn. 'Plena', has small, double white flowers, 2–3cm (¾–1¼in) across. **'Plena'** see 'Flore Pleno'.

**'Robinsoniana'** ♂ ♀ produces large, pale lavender-blue flowers, 3–4cm (1¼–1½in) across, with creamy-grey backs. **'Vestal'** ♀ bears double white flowers, 2–2½cm (¾–1in) across, with central buttons of symmetrically arranged tepals. **'Wilk's Giant'** bears single white flowers, 4–5cm (1½–2in) across, the largest blooms of all *A. nemorosa* cultivars.

*A. obtusiloba*. Tufted, fibrous-rooted perennial with rounded, deeply lobed, mid-green basal and stem leaves, 5–12cm (2–5in) long, the 3 lobes subdivided and spreading. In late spring, produces umbels of 2 or 3 white, yellow, or deep blue flowers, 2–3cm (¾–1¼in) across, with 4–6 tepals. Cultivation group 2. † 5cm (2in), ↔ to 25cm (10in). Himalayas, S.W. China. \*\*\*

*A. pavonina* ♂ Tuberous perennial with rounded, 3-palmate or deeply 3-lobed, dissected, sparsely toothed, mid- to dark green basal and stem leaves, 8–15cm (3–6in) long. In early spring, bears solitary, red, pink, or purple flowers, 3–10cm (1¼–4in) across, with 7–9 tepals, often with white tepal bases. Cultivation group 3. † 25cm (10in), ↔ 15cm (6in). Mediterranean. \*\*\*. var. *ocellata* bears scarlet flowers with white centres. **St. Bavo Group** has large flowers, 10cm (4in) across, in shades of purple, pink, and salmon-pink.

*A. petiolulosa*. Tuberous perennial, closely related to *A. biflora*, with

*Anemone nemorosa* 'Robinsoniana'

*Anemone pavonina*

rounded, 3-palmate, mid-green basal and stem leaves, 5–12cm (2–5in) long, with deeply lobed leaflets. In spring, bears clusters of up to 4 slightly pendent yellow, red-backed flowers, 2–4.5cm (¾–1½in) across, with 5 tepals. Cultivation group 3; best in a bulb frame. ↓ 15cm (6in), ↔ 10cm (4in). C. Asia. \*\*\*

**A. polyanthes.** Clump-forming perennial with a woody-based, fibrous rootstock. Rounded, hairy, dark green basal and stem leaves, 15–30cm (6–12in) long, are shallowly 5- to 7-lobed, with rounded teeth. Umbels of 5 or more white, purple-blue, or reddish purple flowers, to 3cm (1¼in) across, with 4–6 tepals, are produced in late spring or early summer. Cultivation group 2. ↓ 50cm (20in), ↔ 45cm (18in). Pakistan to Bhutan. \*\*\*

**A. ranunculoides** [☐] Spreading perennial with yellow rhizomes and rounded, deeply 3-lobed, mid-green basal and stem leaves, 8–15cm (3–6in) long, each lobe also deeply divided. Solitary, deep yellow flowers, 2–3cm (¾–1¼in) across, with 5 or 6 tepals, open in spring. Cultivation group 1. ↓ 5–10cm (2–4in), ↔ to 45cm (18in) or more. Woodland in Europe. \*\*\*. 'Pleniflora', syn. 'Flore Pleno', has double flowers.

**A. rivularis** [☐] Variable, clump-forming perennial with a woody-based fibrous rootstock and long-stalked, rounded, 3-palmate to deeply 3-lobed, softly hairy, dark green leaves, the lobes or leaflets further divided and toothed. Basal leaves are 8–18cm (3–7in) long, stem leaves are slightly smaller. Umbels of 10–20

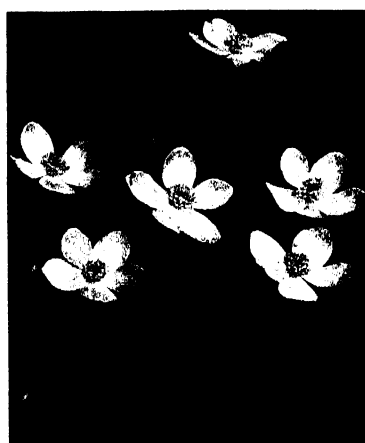
*Anemone rivularis*

or more white flowers, 4–7cm (1½–3in) across, with 5–8 tepals, often blue on the reverse, are borne on long, spreading stalks from the branching stems, in late spring and early summer, and sometimes again in autumn. Cultivation group 2. ↓ 60–90cm (24–36in), ↔ 30cm (12in). India, S.W. China. \*\*\*

**A. x seemannii** see *A. x lipsiensis*.  
**A. stellata** var. *heldreichii* see *A. heldreichiana*.

**A. sylvestris** [☐] (Snowdrop anemone). Perennial with a woody-based, fibrous rootstock, spreading rapidly by root suckers. Long-stalked, mid-green basal and stem leaves, 5–15cm (2–6in) long, are rounded to oval, and deeply 5-lobed, the lobes also deeply divided. In late spring and early summer, bears solitary, single, semi-pendent white flowers, 2.5–8cm (1–3in) across, with 5 or more tepals and golden yellow stamens. Cultivation group 2. ↓ 30–50cm (12–20in). S. Sweden, N.E. France, C. and E. Europe, Caucasus. \*\*\*. 'Flore Pleno' bears double white flowers. 'Macrantha' has large, single white flowers.

**A. tomentosa**, syn. *A. vitifolia* of gardens, *A. vitifolia* 'Robustissima'. Clump-forming perennial with a woody-based, fibrous rootstock, spreading by underground shoots. Oval, toothed, mid-green basal and stem leaves, 10–20cm (4–8in) long, are 3- to 7-palmate, conspicuously veined, and white-woolly on the reverse. In late summer and early autumn, branched stems bear clusters of 10 or more pale pink flowers, 5–8cm (2–3in) across, with 5 or 6 tepals. Cultivation group 4.

*Anemone trullifolia*

↓ 1–1.5m (3–5ft), ↔ 60cm (24in). N. and C. China. \*\*\*

**A. trifolia.** Creeping perennial with slender brown rhizomes and long-stalked, rounded to oval, 3-palmate, toothed, light green basal and stem leaves, 5–12cm (2–5in) long, with narrow leaflets. In spring, leafy stems bear solitary white flowers, sometimes pink on the reverse, 2cm (¾in) across, with 5–8 tepals and a conspicuous boss of blue or white anthers. Cultivation group 1. ↓ to 15cm (6in), ↔ to 30cm (12in). Woodland in S. Europe. \*\*\*

**A. trullifolia** [☐] Compact, tufted, fibrous-rooted perennial, resembling *A. obtusiloba*, but producing wedge-shaped, deeply 3-lobed, mid-green basal and stem leaves, 5–12cm (2–5in) long, the lobes further divided and toothed. Solitary, blue, white, or yellow flowers, 2cm (¾in) across, with 4–6 tepals, are borne in late spring and early summer. Cultivation group 2. ↓ to 15cm (6in), ↔ to 20cm (8in). E. Himalayas, S.W. China. \*\*\*

**A. tschaernjaewii.** Tuberous perennial producing oval, 3-palmate, mid-green basal and stem leaves, 3–8cm (1¼–3in) long, the leaflets shallowly 3-lobed. In

*Anemone vitifolia*

spring, each stem bears 1–3 white or pink flowers, 2–4.5cm (¾–1½in) across, with purple centres and 5 tepals. Cultivation group 3; best grown in a bulb frame. ↓ 22cm (9in), ↔ 10cm (4in). C. Asia. \*\*\*

**A. vitifolia** [☐] Clump-forming perennial with a woody-based, fibrous rootstock and oval, shallowly 5-lobed, vine-like, dark green basal and stem leaves, 10–20cm (4–8in) long, the lobes conspicuously toothed and sparsely white-woolly beneath. Loose umbels of 3–7 white flowers, 3–6cm (1¼–3½in) across, with 5 or 6 tepals, are produced in late summer and early autumn. Cultivation group 4. ↓ 1m (3ft), ↔ indefinite. Afghanistan to W. China, Burma. \*\*\* (borderline).

'Robustissima' see *A. tomentosa*.

**A. vitifolia** of gardens see *A. tomentosa*.

#### ▷ Anemone.

**False rue** see *Isopyrum*

**Japanese** see *Anemone x hybrida*.

*A. hupehensis* var. *japonica*

**Rue** see *Anemonella thalictroides*

**Snowdrop** see *Anemone sylvestris*

**Wood** see *Anemone nemorosa*

## ANEMONELLA

### RANUNCULACEAE

Genus of one species of tuberous, clump-forming perennial occurring in woodland in E. North America. *A. thalictroides* is cultivated for its attractive flowers, and is suitable for growing in a woodland garden, or for underplanting in a shady shrub border or rock garden. Although slow to establish, it will eventually increase to form colonies to 30cm (12in) across.

• **HARDINESS** Fully hardy.

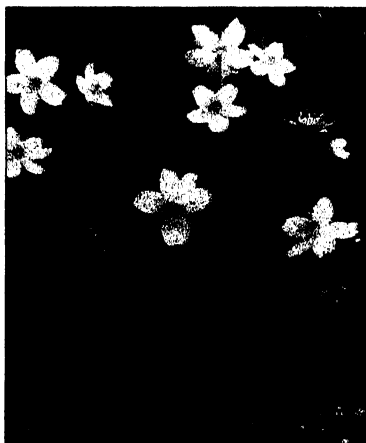
• **CULTIVATION** Grow in moist, moderately fertile, humus-rich soil in partial shade. Tubers may rot in very wet soils.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or divide young plants in early spring.

• **TESTS AND DISEASES** Susceptible to slug damage.

**A. thalictroides** [☐] (Rue anemone).

Tuberous perennial producing loose umbels of 2–4 fragile, cup-shaped, white or pale pink flowers, to 2cm (¾in) wide, on slender stems, from spring to early summer. Flowers are borne above 2- to 3-ternate, delicate, fern-like, dark bluish green leaves, 10–15cm (4–6in) long,

*Anemonella thalictroides**Anemone ranunculoides**Anemone sylvestris*

*Anemonella thalictroides* 'Oscar Schoaf'

with 5-9 ovate leaflets, arising from clusters of small tubers.  $\uparrow$  10cm (4in),  $\leftrightarrow$  30cm (12in). E. North America. \*\*\*. 'Oscar Schoaf'  $\square$  syn. 'Flore Pleno', 'Schoaf's Double', 'Schoaf's Pink', has double pink flowers.

## ANEMONOPSIS

RANUNCULACEAE

Genus of a single species of clump-forming perennial from mountain woodland in Japan. It produces 2- or 3-ternate leaves with lobed or sharply toothed leaflets, and bears racemes or loose panicles of pendent, lilac and violet flowers. Grow *A. macrophylla* in a woodland garden or peat garden, or in a shady border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, cool, moist, moderately fertile, humus-rich, preferably acid soil, in partial shade. Protect from cold, drying winds, which will damage or kill the foliage.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; germination is unreliable. Carefully divide the thick, fleshy roots in spring.
- **PESTS AND DISEASES** Trouble free.

*Anemonopsis macrophylla*

*A. macrophylla*  $\square$  Clump-forming perennial with 2- or 3-ternate, glossy, hairless, dark green leaves, 6-10cm (2½-4in) long, with diamond-shaped to ovate or oblong, sharply toothed, often 3-lobed leaflets. Racemes of cup-shaped, nodding flowers, to 3cm (1¼in) across, each with 3 waxy lilac sepals and several rows of 7-10 smaller violet petals, are borne in mid- and late summer.  $\uparrow$  75cm (30in),  $\leftrightarrow$  45cm (18in). Japan. \*\*\*

## ANEMOPAEGMA

BIGNONIACEAE

Genus of over 40 species of evergreen, tendril climbers from moist forest in tropical North and South America. They are grown for their terminal or axillary racemes of showy, foxglove-like flowers. The leaves are opposite and 2- to 5-pinnate. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer areas, they are ideal for growing on a house wall, pergola, arbour, or tree.

- **HARDINESS** Frost tender, but *A. chamberlaynii* may survive short periods down to 2°C (36°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full or bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade. Pruning group 11, or group 12 in a restricted site; prune in late winter or early spring.
- **PROPAGATION** Sow seed at minimum 16°C (61°F) in spring. Root cuttings of short-jointed, lateral shoots in summer.
- **PESTS AND DISEASES** Prone to red spider mites, whiteflies, and mealybugs.

*A. chamberlaynii*. Vigorous climber, supporting itself by claw-like tendrils at the leaf tips. Ovate-lance-shaped, pinnate leaves, 5-14cm (2-5½in) long, have 2 large, lance-shaped or ovate, glossy, mid-green leaflets with wavy margins. Bears axillary racemes of 2-8 trumpet-like, pale yellow flowers, 5-7cm (2-3in) long, with purple-and-white-striped throats, from summer to early autumn.  $\uparrow$  4-6m (12-20ft). Brazil.  $\star$  (min. 7°C/45°F)

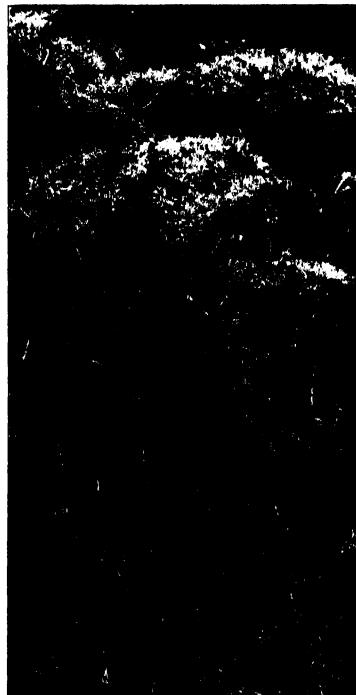
## ANETHUM

Dill

APIACEAE/UMBELLIFERAE

Genus of 2 species of aniseed-scented annuals or biennials with smooth, branching stems, feathery, blue-green foliage, and umbels of small yellow flowers in summer. They are probably native to S.W. Asia and India, but *A. graveolens* has become widely naturalized on roadsides and wasteland in Europe and N. USA. *A. graveolens* is grown in herb and vegetable gardens for its aromatic leaves and seeds, which have many culinary uses.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun with shelter from strong winds. Water freely during the growing season to inhibit bolting.
- **PROPAGATION** Sow seed *in situ* at monthly intervals from spring to midsummer to produce a succession of fresh foliage.
- **PESTS AND DISEASES** Trouble free.

*Anethum graveolens*

*A. graveolens*  $\square$  syn. *Peucedanum graveolens* (Dill). Aromatic annual with hollow, finely ridged stems. It has 3- or 4-pinnate, obovate to oblong leaves, to 35cm (14in) long, finely divided into numerous thread-like, blue-green leaflets. In midsummer, produces flattened umbels, 9cm (3½in) across, of tiny, deep yellow flowers.  $\uparrow$  60cm (24in) or more,  $\leftrightarrow$  30cm (12in). Probably S.W. Asia and India. \*\*\*

## ANGELICA

APIACEAE/UMBELLIFERAE

Genus of 50 species of herbaceous perennials and biennials, some monocarpic, mainly from damp woodland, meadows, fens, and streambanks in the N. hemisphere. They are large, architectural plants producing alternate, 2- or 3-pinnate or 2- or 3-ternate, usually diamond-shaped leaves, 30-90cm (12-36in) long. They bear large umbels of small, white, greenish yellow, or purple flowers, followed by flat, ribbed brown fruit. Angelicas are excellent for a large border, as specimens in a woodland setting, or for growing by a pond or stream. *A. archangelica* also has culinary and medicinal uses, and is suitable for a herb garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, moist, fertile, loamy soil in full or partial shade, although most species will tolerate drier conditions; *A. sylvestris* prefers full sun. *A. archangelica* dies after flowering, but if flowering is prevented, or the spent flowers are removed before setting seed, it will often flower a second year.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; exposure to light is required for germination. Transplant the seedlings while small, as older plants resent disturbance. They normally flower within 2 or 3 years.
- **PESTS AND DISEASES** Powdery mildew may be a problem in dry summers. Susceptible to aphids, snails, slugs, and leaf miners.

*Angelica archangelica*

*A. archangelica*  $\square$  syn. *A. officinalis* (Archangel). Stout, upright, herbaceous or monocarpic perennial, often grown as a biennial, with 2- or 3-pinnate, mid-green leaves, to 60cm (24in) long, which have ovate-lance-shaped, toothed leaflets. Rounded umbels, to 25cm (10in) across, of greenish yellow flowers are borne on thick, ribbed stems in early and midsummer.  $\uparrow$  2m (6ft),  $\leftrightarrow$  1.2m (4ft). N. Europe. \*\*\*

*A. gigas*  $\square$  Clump-forming biennial or short-lived herbaceous perennial with toothed, tripartite, mid-green leaves, 30-40cm (12-16in) long, composed of diamond-shaped to ovate, lobed leaflets. Produces conspicuous, inflated, red-purple leaf-sheaths and dense, purple-bracted umbels, 12cm (5in) across, of rich, dark purple flowers on dark red stems, in late summer and early autumn.  $\uparrow$  1-2m (3-6ft),  $\leftrightarrow$  1.2m (4ft). N. China, Korea, Japan. \*\*\*

*A. montana* see *A. sylvestris*.

*A. officinalis* see *A. archangelica*.

*A. sylvestris*, syn. *A. montana* (Wild angelica). Robust biennial or short-lived herbaceous perennial producing ridged, purple-flushed stems and 2- or 3-pinnate, light green leaves, to 60cm

*Angelica gigas*



## ANGELICA

(24in) long, divided into sharply toothed, oblong-ovate leaflets. Bears many white or pale pink flowers in rounded, compound umbels, to 15cm (6in) across, in late summer and early autumn. Suitable for a wildflower garden. ↑ to 2.5m (8ft), ↔ 1m (3ft). Europe to C. Asia. \*\*\*

▷ **Angelica**, Wild see *Angelica sylvestris*  
▷ **Angelica tree**,

American see *Aralia spinosa*  
Japanese see *Aralia elata*

## ANGELONIA

SCROPHULARIACEAE

Genus of about 30 species of small subshrubs and evergreen, soft-stemmed perennials from damp savannah in tropical and subtropical Central and South America. They have opposite or alternate, broadly to narrowly lance-shaped leaves. The 2-lipped, shallowly cup-shaped, white, pink, mauve, or blue flowers, with spreading lobes, are borne in terminal racemes or singly from the leaf axils. In frost-prone areas, grow as summer bedding annuals or in a warm greenhouse; elsewhere, grow in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with filtered light in summer. Water freely and apply a balanced liquid fertilizer monthly. Containerized plants are best discarded after flowering. Outdoors, grow in moist but well-drained, fertile soil in full sun.

• **PROPAGATION** Sow seed in spring at 24°C (75°F). Divide or take softwood cuttings in spring in frost-prone areas, or at any time in frost-free areas.

• **PESTS AND DISEASES** Prone to aphids in spring and summer.

**A. gardneri**. Subshrubby perennial with stalkless, broadly lance-shaped, softly hairy leaves, 4–6cm (1½–2½in) long, with toothed margins. In summer, bears purple flowers, 2cm (¾in) across, with white disc-florets dotted red, in terminal racemes, to 15cm (6in) high. ↑ 1m (3ft), ↔ 60cm (24in). Brazil. ☼ (min. 10°C/50°F)

▷ **Angel's fishing rod** see *Dierama*  
▷ **Angel's tears** see *Narcissus triandrus*  
▷ **Angels' trumpets** see *Brugmansia*  
Common see *B. arborea*  
Red see *B. sanguinea*  
▷ **Angel wings** see *Caladium bicolor*

## ANGOPHORA

MYRTACEAE

Genus of about 8 species of evergreen trees and shrubs, closely related to *Eucalyptus*, found in dry to moist, tropical to warm-temperate woodland and thickets in Australia. The leathery leaves are simple and entire, opposite on mature plants, but often alternate on immature ones. The 5-petalled, creamy white flowers have a prominent crown of stamens, and are borne in terminal, corymb-like cymes. *A. hispida*, the most commonly grown species, is valued for its foliage, although flowers may be borne once the plant is 2–3m (6–10ft) tall. In frost-prone climates, grow in a cool greenhouse; in frost-free regions, use as handsome specimen trees.

• **HARDINESS** Half hardy to frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with additional sharp sand, in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; reduce water in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 1; plants grown under glass need restrictive pruning.  
• **PROPAGATION** Sow seed in spring at 19–24°C (66–75°F); pot on seedlings singly as soon as possible.  
• **PESTS AND DISEASES** Trouble free.

**A. cordifolia** see *A. hispida*.

**A. hispida** ♀ syn. *A. cordifolia* (Dwarf apple). Erect to spreading shrub or small tree with peeling grey to grey-brown bark, orange-brown when young, and young branchlets with red-brown hairs. The opposite, short-stalked or stalkless, elliptic to ovate, grey-green leaves, to 10cm (4in) long, dark purple-red when young, are heart-shaped at the bases, and have wavy, scalloped margins. From early to late summer, bears corymb-like cymes of 3–7 creamy white flowers, each 2cm (¾in) across. ↑ 3–8m (10–25ft), ↔ 3–6m (10–20ft). E. Australia (New South Wales). \* (borderline)

## ANGRAECUM

ORCHIDACEAE

Genus of about 200 species of mostly evergreen, epiphytic, monopodial orchids, found mainly in warm, humid regions at sea level or at low altitudes in Africa and Madagascar. They have semi-rigid, linear to oblong leaves, produced in 2 ranks, and bear white to green or yellowish green, spurred flowers, singly or in racemes from the leaf axils, at various times of the year.

• **HARDINESS** Frost tender.

• **CULTIVATION** Warm-growing orchids. Grow epiphytically or in baskets of epiphytic orchid compost; provide humid conditions and full shade. Water



*Angraecum sesquipedale*

freely all year, more sparingly in winter. In summer, apply a half-strength liquid fertilizer at every third watering and spray foliage lightly with water once or twice daily. See also p.46.

• **PROPAGATION** Not suitable for division, although robust species sometimes produce offsets, which may be detached and rooted.

• **PESTS AND DISEASES** Susceptible to whiteflies, aphids, red spider mites, and mealybugs.

**A. distichum**. Miniature, evergreen, epiphytic orchid with broadly elliptic-oblong, curved, mid-green leaves, 8–12cm (3–5in) long. Many stalkless, night-scented white flowers, 1cm (½in) across, with spurs 8mm (⅜in) long, are produced singly from the leaf axils from summer to autumn. ↑↔ 15cm (6in). Tropical Africa, from Guinea to Uganda and Angola. ☼ (min. 18°C/64°F; max. 30°C/86°F)

**A. eburneum**, syn. *A. superbum*.

Variable, robust, evergreen epiphytic orchid with rigid, strap-shaped, leathery, mid- to dark green leaves, 30–50cm (12–20in) long. Night-scented, light green flowers, 8cm (3in) long, with white lips and spurs, to 10cm (4in) long, are borne in one-sided axillary racemes, to 60cm (24in) long, from autumn to winter. ↑ 1.2m (4ft), ↔ 60cm (24in). E. tropical Africa, Madagascar, islands of the Indian Ocean. ☼ (min. 18°C/64°F; max. 30°C/86°F)

**A. sesquipedale** ♀ ☼ Robust, evergreen, epiphytic orchid with strap-shaped to oblong, dark green leaves, to 30cm (12in) long. In winter, produces axillary racemes, 25–30cm (10–12in) long, of 2–4 night-scented, waxy, ivory-white flowers, 17–22cm (7–9in) across, with spurs, 20–30cm (8–12in) long. ↑ 60cm (24in), ↔ 30cm (12in). Madagascar. ☼ (min. 18°C/64°F; max. 30°C/86°F)

**A. superbum** see *A. eburneum*

## ANGULOA

Cradle orchid, Tulip orchid

ORCHIDACEAE

Genus of about 10 species of deciduous, epiphytic or terrestrial orchids from South America, where they are found at high altitudes in the Andes. They have cylindrical to conical pseudobulbs, each of which produces 3 strongly ribbed and folded, broadly lance-shaped, soft-textured leaves. Cradle orchids are cultivated for their superb, tulip-like, solitary, fragrant flowers with waxy tepals, which are borne on basal stems in summer. They are closely related to, and hybridize readily with, the genus *Lycaste*.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in containers of epiphytic or terrestrial orchid compost with high humidity and full shade in summer. In spring and summer, while the plants are in leaf, water freely and apply a half-strength liquid fertilizer at every third watering. In autumn, reduce water and temperature, and remove shading. Keep dry after the leaves have died away; resume watering and pot on when new growth develops. Avoid spraying the foliage, as this encourages fungal diseases. See also p.46.

• **PROPAGATION** Remove the oldest pseudobulbs and pot up separately, but



*Anguloa clowesii*

leave no fewer than 4 on the main plant.

• **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**A. clowesii** ☼ Deciduous, terrestrial orchid with conical pseudobulbs and folded, deep green leaves, 45–80cm (18–32in) long. Solitary, bright lemon-yellow flowers, 10cm (4in) long, are chocolate- and wintergreen-scented, and are produced on stems to 23cm (9in) long from spring to summer. ↑↔ 60cm (24in). Colombia, Venezuela. ☼ (min. 11°C/52°F; max. 30°C/86°F)

**A. ruckeri**. Deciduous, epiphytic or terrestrial orchid producing conical pseudobulbs and folded, deep green leaves, 45cm (18in) long. Solitary flowers, 9cm (3½in) long, are greenish brown on the outside and ochre, spotted red on the inside; they are borne on stems 23cm (9in) long in early summer. ↑↔ 60cm (24in). Colombia. ☼ (min. 11°C/52°F; max. 30°C/86°F)

## X ANGULOCASTE

ORCHIDACEAE

Bigeneric hybrid genus of deciduous orchids, a cross between *Anguloa* and *Lycaste*, with conical pseudobulbs and broadly lance-shaped, soft, folded leaves, to 60cm (24in) or more long. They are grown for their large, solitary, tulip-like, fragrant, often colourful flowers, which are borne in profusion in spring.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in humid conditions with full shade in summer. In spring and summer, water freely and apply a half-strength liquid fertilizer at every third watering. In autumn, when the pseudobulbs are fully formed, reduce water and temperature, and remove shading. Keep dry after the leaves have died; resume watering and pot on when new growth develops. Do not spray the foliage, as this encourages fungal diseases. See also p.46.

A



- **PROPAGATION** Remove oldest pseudobulbs and pot up separately, leaving at least 4 on the main plant, or divide when the plant overgrows its container.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

✕ **A. Apollo 'Goldcourt'**. Deciduous hybrid orchid with conical pseudobulbs and folded, dark green leaves, to 60cm (24in) long. In spring, bears numerous solitary, fragrant, deep yellow, red-flecked flowers, to 10cm (4in) across. ↑↔ 60cm (24in). ☼ (min. 11°C/52°F; max. 30°C/86°F)

✕ **A. Olympus 'Magnolia'**. Deciduous hybrid orchid with conical pseudobulbs and folded, dark green leaves, to 60cm (24in) long. Bears many solitary, fragrant, creamy yellow flowers, 10cm (4in) across, in spring. ↑↔ 60cm (24in). ☼ (min. 11°C/52°F; max. 30°C/86°F)

▷ **Anhalonium retusum** see *Ariocarpus retusus*

▷ **Anhalonium trigonum** see *Ariocarpus trigonum*

## ANIGOZANTHOS

Cat's paw, Kangaroo paw

HAEMODORACEAE

Genus of 11 species of evergreen, clump-forming perennials from a variety of habitats in S.W. Australia, including winter-wet swamps, sandy plains, open dry woodland, and coastal heathland. They have short rhizomes, fans of sheathing, lance- or strap-shaped, light to dark green leaves, and erect, slender, sometimes branched stems that bear terminal racemes or panicles of curious, 2-lipped, tubular flowers, thought to resemble a kangaroo's paws. These are densely covered with red, orange, yellow, or green woolly hairs. They flower from spring to midsummer outdoors, but under glass may flower at any time of year. They hybridize freely, both in the wild and in cultivation. In frost-prone areas, grow in a cool greenhouse or conservatory. In frost-free regions, use to add interest to a border. They are also excellent for cut flowers.

- **HARDINESS** Half hardy to frost tender.

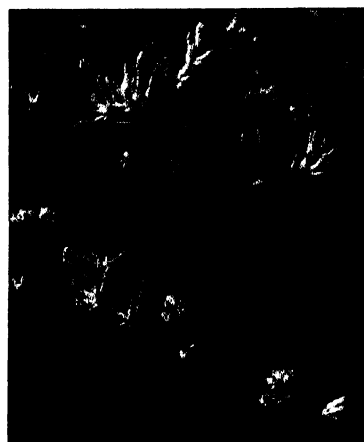
• **CULTIVATION** Under glass, grow in 3 parts leaf mould and 1 part each loam and sharp sand in full light. Water freely in spring and summer, applying a balanced liquid fertilizer monthly; keep almost dry in winter. Outdoors, grow in moist but well-drained, humus-rich, sandy loam in full sun. Water freely during dry periods; mulch with straw or bark chips in autumn to protect the crowns.

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe; divide in spring.

- **PESTS AND DISEASES** Susceptible to leaf spot.

**A. bicolor** (Little kangaroo paw). Clump-forming perennial with mid-green leaves, 30–40cm (12–16in) long, usually with bristly margins. Racemes, 3–10cm (1¼–4in) long, of 4–10 olive-green flowers, 3.5–6cm (1½–2½in) long, blue-green inside with red- or yellow-felted ovaries and reflexed lobes, are borne from spring to summer. ↑↔ 70cm (28in), ↔ 40cm (16in).

S.W. Australia. ✕



*Anigozanthos flavidus*

**A. 'Bush Dawn'**. Clump-forming perennial with dark green leaves, 22–45cm (9–18in) long. From late spring to midsummer, bears racemes, 8–15cm (3–6in) long, of up to 100 yellow flowers, each 3–4cm (1¼–1½in) long, green inside and with reflexed lobes, on branched stems. ↑ 1–1.5m (3–5ft), ↔ 60cm (24in). ☼ (min. 5°C/41°F)

**A. 'Bush Emerald'**. Clump-forming perennial with glaucous, blue-green leaves, to 35cm (14in) long. Red-purple, occasionally forked stems bear racemes, 5–12cm (2–5in) long, of 12–15 yellow-green flowers, 5cm (2in) long, from late spring to midsummer. ↑ 60–100cm (24–39in), ↔ 60cm (24in). ☼ (min. 5°C/41°F)

**A. 'Dwarf Delight'**. Clump-forming perennial with bright green leaves, to 50cm (20in) long. From late spring to midsummer, erect stems bear panicles, 5–12cm (2–5in) long, of 5–15 greenish yellow flowers, 5–7cm (2–3in) long, covered with red hairs, appearing rich orange-red. ↑ 80cm (32in), ↔ 50cm (20in). ✕

**A. flavidus** ☼ Clump-forming, evergreen perennial with olive to mid-green leaves, 35–100cm (14–39in) long. From late spring to midsummer, panicles, 4–7cm (1½–3in) long, of 9–10 yellow-green to brownish red flowers, to 5cm (2in) or more long, the lobes not reflexed, are borne on widely branched stems. ↑ 1–3m (3–10ft), ↔ 60–80cm (24–32in). S.W. Australia. ☼ (min. 5°C/41°F)

**A. humilis** ♀ (Common cat's paw). Clump-forming perennial with light to



*Anigozanthos manglesii*

mid-green leaves, 15–20cm (6–8in) long, with hairy margins. In early and mid-spring, bears racemes, 5–12cm (2–5in) long, of up to 15 yellow-green, yellow, orange, or red flowers, 5cm (2in) long, with lobes not reflexed. ↑ to 50cm (20in), ↔ to 30cm (12in). S.W. Australia. ✕

**A. manglesii** ☼ ♀ (Mangles' kangaroo paw). Clump-forming perennial with erect, grey-green leaves, 10–40cm (4–16in) long. From mid-spring to early summer, red-hairy, rarely branched stems bear racemes, 5–14cm (2–5½in) long, of up to 7 yellow-green flowers, 6–10cm (2½–4in) long, with reflexed lobes, grading to dark green with lime-green hairs outside and red, sometimes yellow or apricot-yellow hairs at the bases. ↑ 30–120cm (1–4ft), ↔ 40–60cm (16–24in). S.W. Australia. ✕

**A. pulcherrimus** (Yellow kangaroo paw). Clump-forming perennial with grey-green, sometimes silky-haired leaves, 20–40cm (8–16in) long. From late spring to late summer, branched stems bear panicles, 3–8cm (1¼–3in) long, of 5–15 yellow flowers, 3.5–5cm (1½–2in) long, with spreading lobes and yellow hairs. ↑ to 1m (3ft), ↔ 40–60cm (16–24in). S.W. Australia. ✕

**A. rufus**. Clump-forming perennial producing mid-green leaves, 20–40cm (8–16in) long, with rough, hairy margins. Broad panicles, 3–9cm (1¼–3½in) long, of 5–15 or more red or deep claret, purple-woolly flowers, to 4.5cm (1¾in) or more long, with lobes not reflexed, are produced on branched stems from mid-spring to midsummer. ↑ to 1m (3ft), ↔ 40–60cm (16–24in). S.W. Australia. ☼ (min. 5°C/41°F)

**A. viridis** (Green kangaroo paw). Clump-forming perennial with narrow, grey-green leaves, 10–50cm (4–20in) long. Racemes, 5–14cm (2–5½in) long, of up to 15 yellow-green flowers, 5–8cm (2–3in) long, with reflexed lobes and covered with greenish yellow hairs, are produced from early spring to early summer. ↑ to 1m (3ft), ↔ 40–60cm (16–24in). S.W. Australia. ✕

▷ **Anise**,

Chinese see *Illicium anisatum*,

*I. verum*

Purple see *Illicium floridanum*

Star see *Illicium verum*

## ANISODONTEA

MALVACEAE

Genus of 19 species of woody-based perennials and shrubs from a variety of habitats in South Africa. The evergreen, alternate, usually toothed leaves vary from linear to elliptic or ovate and are sometimes lobed or 3-palmate. They are grown for their shallowly cup-shaped, 5-petalled flowers, borne singly or in racemes, corymbs, or cymes from spring to autumn. In frost-prone areas, grow in a cool greenhouse, standing plants outside or bedding them out in summer. In frost-free areas, grow in a border.

- **HARDINESS** Half hardy; *A. capensis* and *A. x hypomadarum* may withstand spells to -5°C (23°F) if wood is well-ripened.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. Pot on or top-dress in late winter. From spring to autumn, water freely and apply a balanced liquid



*Anisodonte capensis*

fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Tip prune young plants to encourage a bushy habit. Pruning group 9.

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

- **PESTS AND DISEASES** Susceptible to red spider mites, whiteflies, and aphids.

**A. capensis** ☼ syn. *Malvastrum capensis*. Erect shrub with hairy stems and hairy, triangular to ovate, mid-green leaves, 2.5cm (1in) long, with 3–5 shallow to deep lobes, which may also be lobed and toothed. From summer to autumn, produces dark-veined, pale to deep red-purple flowers, 2.5cm (1in) wide, singly or in 2- or 3-flowered racemes from the leaf axils. ↑ 60–100cm (24–39in), ↔ 40–80cm (16–32in). South Africa. ✕

**A. x hypomadarum**, syn. *A.*

*x hypomandarum*. Bushy shrub or sub-shrub, with slender, erect, densely hairy stems, and obovate to oblong, 3-lobed, toothed, mid- to deep green leaves, to 3.5cm (1½in) long. From spring to autumn, produces purple-veined, pale pink flowers, 2.5–3cm (1–1¼in) wide, singly from the upper leaf axils. ↑ 1.5m (5ft), ↔ 1m (3ft). Garden origin. ✕

**A. x hypomandarum** see *A.*

*x hypomadarum*.

## ANISOTOME

APIACEAE/UMBELLIFERAE

Genus of 13 species of perennials, related to *Aciphylla*, from New Zealand (mainly South Island) and adjacent sub-antarctic islands. They occur mostly in shady sites in moist, rich soil in lowland areas or mountain grassland, and have large, pinnate leaves and broad umbels of small, white, red, or purple flowers. Grow in moist woodland. Alpine species are suitable for a rock garden or trough.

- **HARDINESS** Frost hardy; *A. latifolia* is hardy to -7°C (19°F).

• **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in a cool site with partial shade.

- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide carefully as growth begins in spring.

- **PESTS AND DISEASES** Prone to blackfly.

**A. latifolia**, syn. *Aciphylla latifolia*. Clump-forming perennial with ovate, 2- or 3-pinnate, thick, leathery, glossy, mid-green leaves, 30–60cm (12–24in)

## ANISOTOME

long, with spiny tipped, ovate to lance-shaped leaflets. In summer, umbels, 4–10cm (1½–4in) wide, of small, white to reddish purple flowers, grouped into larger, compound umbels, over 20cm (8in) across, are borne on branched, furrowed stems. ‡ 1–2.2m (3–7ft), ↔ indefinite. New Zealand (Auckland Islands, Campbell Islands). \* \*

▷ **Annatto** see *Bixa orellana*

▷ **Annelisia candida** see *Miltonia candida*

▷ **Annuals** see pp.42–43

## ANODA

MALVACEAE

Genus of about 10 species of upright to spreading annuals, perennials, and subshrubs, widespread in moist soils in meadows and near streams, some from woodland or rocky areas, from S.W. USA to Mexico, in the West Indies, and in N. South America. They have slightly hairy, unlobed, palmately lobed or palmate, lance-shaped to spear-shaped, mid-green leaves, and 5-petalled, mallow-like flowers borne singly or in racemes or panicles from summer to autumn. The short-lived perennials, usually grown as annuals, may survive mild winters with a mulch to protect the root system. They are suitable for a mixed or annual border.

• **HARDINESS** Half hardy.

• **CULTIVATION** Grow in any moist but well-drained soil, preferably low in nutrients, in full sun. Provide early support, when the seedlings are 7–10cm (3–4in) high. Dead-head to prolong flowering.

• **PROPAGATION** Sow seed at 13–15°C (55–59°F) in early spring, or *in situ* in mid-spring.

• **PESTS AND DISEASES** Trouble free.

**A. cristata.** Upright or spreading annual or short-lived perennial with ovate, unlobed to deeply 3- to 7-lobed, entire or toothed leaves, usually to 10cm (4in)

long, but varying greatly in size and shape, even on the same plant. Saucer-shaped, white, lavender-blue, lilac, or purple-blue, veined flowers, 1.5–5cm (½–2in) across, are produced singly or in pairs from the upper leaf axils, from summer to autumn. ‡ to 1.5m (5ft), ↔ to 60cm (24in). S.W. USA to Mexico, West Indies, N. South America. \* \*. 'Opal Cup' produces silver-lilac flowers with darker veins, and leaves sometimes marked purple. 'Silver Cup' has pure white flowers.

▷ **Anoiganthus breviflorus** see

*Cyrtanthus breviflorus*

▷ **Anoiganthus luteus** see *Cyrtanthus breviflorus*

## ANOMATHECA

IRIDACEAE

Genus, closely related to *Freesia*, of 6 species of cormous perennials from upland grassland in C. and southern Africa. They have flat, broadly lance-shaped leaves, and bear terminal racemes of small, trumpet- to funnel-shaped flowers in late spring and early summer. The flowers are followed in autumn by brown capsules containing bright red seeds. In frost-prone climates, they are effective grown in containers in a cool or cold greenhouse. In frost-free regions, they are suitable for a sunny border or terrace.

• **HARDINESS** Half hardy, but will withstand occasional falls to -5°C (23°F).

• **CULTIVATION** Plant corms in spring, 5cm (2in) deep. Under glass, grow in sandy, loam-based potting compost (J1 No.2) in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep completely dry when dormant.

Outdoors, grow in sandy, moderately fertile soil in full sun.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Divide clumps in spring. Seedlings will flower in 2 years.

• **PESTS AND DISEASES** Trouble free.



*Anomatheca laxa* var. *alba*

**A. cruenta** see *A. laxa*.

**A. laxa**, syn. *A. cruenta*, *Lapeirousia cruenta*, *L. laxa*. Cormous perennial with mid-green leaves, 10–35cm (4–14in) long. In early summer, bears stems of up to 6 open trumpet-shaped red flowers, 2cm (¾in) across, with darker red spots on the lower petals. ‡ 15–30cm (6–12in), ↔ 5cm (2in). Southern Africa, Mozambique. \*.

**var. alba** has pure white flowers.

**A. viridis.** Cormous perennial with mid-green leaves, 10–25cm (4–10in) long. In early summer, bears stems of 2–10 green flowers, to 2cm (¾in) across, shaped like curved funnels, with narrow, recurved petals. ‡ 30cm (12in), ↔ 5cm (2in). South Africa (Northern Cape, Eastern Cape, Western Cape). \*.

## ANOPTERUS

ESCALONIACEAE

Genus of 2 species of evergreen shrubs from moist forest in E. Australia and Tasmania. They have simple, alternate leaves and are cultivated for their attractive, terminal racemes of flowers. They are effective when planted in light woodland. In frost-prone areas, grow in a cool greenhouse and move outdoors during the summer.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in lime-free (calcious) potting compost in full or filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in cool, moist, lime-free, humus-rich soil in partial shade, ideally among trees and



*Anopterus glandulosus*

## ANTENNARIA

A

other shrubs for protection from hard frosts and cold winds. Pruning group 8.

• **PROPAGATION** Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**A. glandulosus** (Tasmanian laurel). Upright, evergreen shrub with narrowly obovate, toothed, leathery, glossy, dark green leaves, to 12cm (5in) long. In mid- and late spring, bears cup-shaped white, sometimes pink-tinged flowers in terminal racemes, to 12cm (5in) long. ‡ 10m (30ft), ↔ 8m (25ft). Tasmania. \*

## ANREDERA

syn. BOUSSINGAULTIA

BASELLACEAE

Genus of 10 species of tuberous-rooted, twining, evergreen climbers found in dry scrub and thickets in South America. The leaves are alternate, simple, and fleshy, often with bulbils produced in the leaf axils. Racemes of tiny, 5-petalled flowers are produced from the upper axils of long, young shoots. In frost-prone areas, grow *A. cordifolia* in a cool greenhouse. In frost-free areas, train over a support.

• **HARDINESS** Half hardy to frost tender; the rootstock of *A. cordifolia* often survives in frost-prone areas if planted deeply and protected with a mulch.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Water freely when in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in any well-drained soil in full sun. Pruning group 11; prune in late winter or early spring.

• **PROPAGATION** Divide the tuberous roots in early spring. Root softwood cuttings in early summer. Collect tubers and bulbils in autumn and store in frost-free conditions; plant in early spring.

• **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

**A. cordifolia**, syn. *Boussingaultia baselloides* of gardens (Madeira vine, Mignonette vine). Fast-growing twiner with reddish green stems and oblong, fleshy, bright green leaves, 3–10cm (1¼–4in) long, with heart-shaped bases. In autumn, bears numerous racemes, 30cm (12in) long, of sweetly scented white flowers. ‡ 4–6m (12–20ft). S. Brazil to N. Argentina. \* (borderline)

## ANTENNARIA

Cat's ears, Pussy-toes

ASTERACEAE/COMPOSITAE

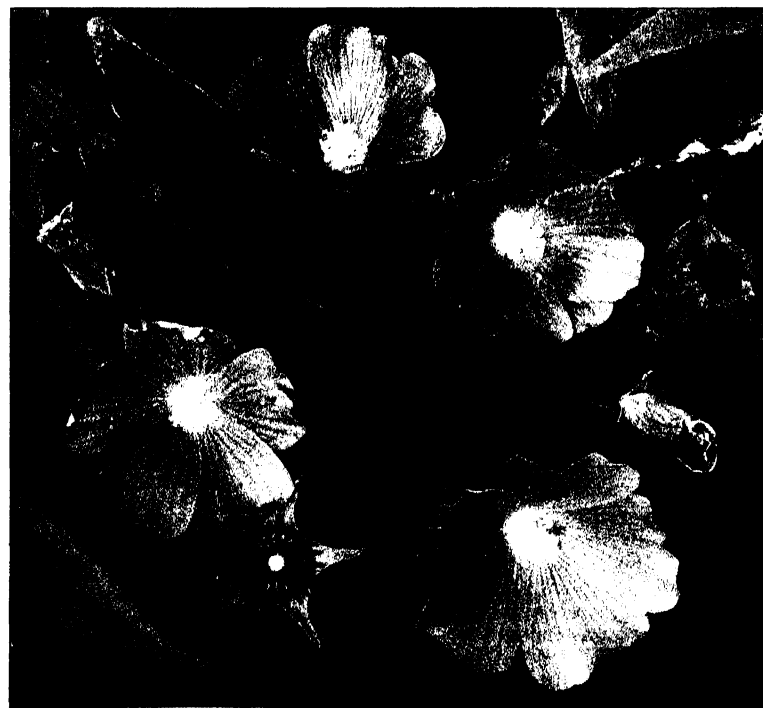
Genus of about 45 species of evergreen or semi-evergreen, dioecious, mat-forming perennials from open habitats in the N. hemisphere. They have basal rosettes of hairy leaves and solitary or corymb-like heads of small, "everlasting" flowerheads on short stems. Use in a rock garden, as low ground cover at the front of a border, and in crevices in walls or paving. The flowerheads may be dried for use in flower arrangements.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed in containers in an open frame in spring or autumn. Separate rooted stems in spring.

• **PESTS AND DISEASES** Trouble free.



*Anoda cristata* 'Opal Cup'



*Antennaria dioica* 'Rosea'

**A. dioica.** Semi-evergreen, mat-forming, stoloniferous perennial with grey-green, spoon-shaped leaves, to 4cm (1½in) long, densely white-hairy beneath. Bears corymbs of small, fluffy, white or pale pink flowerheads, on stems 2cm (¾in) long, in late spring and early summer. † 5cm (2in), ↔ to 45cm (18in). Europe, N. Asia, North America. \*\*\*  
'Nycwoods' is compact, bearing deep pink flowerheads; ↔ to 20cm (8in).  
'Rosea' ☐ ♀ has rose-pink flowerheads.

## ANTHEMIS

ASTERACEAE/COMPOSITAE

Genus of about 100 species of mat- or clump-forming, occasionally hummock-forming annuals and perennials from a wide range of well-drained, sunny habitats from Europe to N. Africa, Turkey, the Caucasus, and Iran. They are valued in a border or rock garden for their filigree foliage and extended flowering season: from late spring to late summer. They have usually pinnatisect to 3-pinnatisect, hairy, aromatic leaves and daisy-like, white or yellow flowerheads with yellow disc-florets; some species are good for cutting.



*Anthemis punctata* subsp. *cupaniana*



*Anthemis sancti-johannis*

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, sandy or gravelly soil in full sun. *A. marschalliana* prefers partial shade with protection from winter wet. *A. sancti-johannis* and *A. tinctoria* are often short-lived; to increase their longevity, cut back hard after flowering to encourage the development of strong, overwintering, basal growth.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring, or root basal cuttings in spring and late summer.
- **PESTS AND DISEASES** Prone to slug damage, aphids, and powdery mildew.

*A. biebersteiniana* see *A. marschalliana*.  
*A. marschalliana*, syn. *A.*

*biebersteiniana*, *A. rudolphiana*. Mat-forming perennial with obovate, 2-pinnatisect, silky-grey leaves, to 7cm (3in) long, densely arranged on the stems. Solitary yellow flowerheads, 1.5cm (½in) across, with white-woolly, black-margined involucre bracts, are borne in late spring and early summer. † 20–45cm (8–18in), ↔ 45–60cm (18–24in). Caucasus, N. Turkey. \*\*\*  
*A. liliago* see *Chamaemelum nobile*.  
*A. nictitans* subsp. *cupaniana* ☐ ♀

Mat-forming perennial with ovate to obovate, pinnatisect or 2-pinnatisect, silvery grey leaves, 7–12cm (3–5in) long, turning dull grey-green in winter. In early summer, bears long-lasting white flowerheads, to 6cm (2½in) wide, with fewer blooms later. † 30cm (12in), ↔ 90cm (36in). Italy (Sicily). \*\*

*A. rudolphiana* see *A. marschalliana*.  
*A. sancti-johannis* ☐ Clump-forming, short-lived perennial bearing oblong, pinnatisect, grey-hairy, white-tipped leaves, to 5cm (2in) long, and bright orange flowerheads, 3–5cm (1¼–2in) across, throughout summer. Hybridizes freely with *A. tinctoria*, and many plants offered under this name are hybrids. † 60–90cm (24–36in), ↔ 60cm (24in). S.W. Bulgaria. \*\*\*

*A. tinctoria* (Golden marguerite, Ox-eye chamomile). Clump-forming, free-flowering perennial with inversely lance-shaped to obovate, 2- or 3-pinnatisect basal leaves, 1–5cm (½–2in) long, and smaller stem leaves. Leaves are mid-green above and grey-downy beneath. In summer, branching stems bear solitary, golden yellow to cream flowerheads, 3cm (1¼in) across, with grey-woolly involucre bracts. † 90cm



*Anthemis tinctoria* 'E.C. Buxton'

(36in). Europe, Caucasus, Turkey, Iran. \*\*\*. The cultivars are excellent in borders, flowering for many weeks, and are also good for cutting; † 60–90cm (24–36in) for most cultivars. 'Beauty of Grallach' has orange-gold flowerheads. 'E.C. Buxton' ☐ produces attractive lemon-yellow flowerheads; † 45–70cm (18–28in). 'Grallach Gold' bears vivid gold flowerheads. 'Kelwayi' has clear mid-yellow flowerheads; † 60cm (24in). 'Sauce Hollandaise' has very pale cream, almost white flowerheads, and dark green foliage; † to 60cm (24in), ↔ 40–60cm (16–24in). 'Wargrave' has pale yellow flowerheads.

## ANTHERICUM

ANTHERICACEAE/LILIACEAE

Genus of about 50 species of fleshy-rooted, rhizomatous perennials from grassy scrub on hillsides in Europe, Turkey, and Africa. They form clumps of narrow, linear, radical leaves and produce attractive, small, lily-like white flowers in racemes or panicles on slender stems, mainly in spring or summer, followed by decorative brown capsular fruits. They are ideal for a herbaceous border, or for naturalizing in grass; also excellent for cutting.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring (they may flower within 3 years) or divide as growth begins in spring.
- **PESTS AND DISEASES** Susceptible to damage from slugs and snails.

*A. algeriense* see *A. liliago* 'Major'.  
*A. graminifolium* see *A. ramosum*.  
*A. liliago* ☐ ♀ (St. Bernard's lily). Rhizomatous perennial with grass-like, linear, mid-green leaves, to 40cm (16in) long. Open trumpet-shaped, lily-like white flowers, 2–3cm (¾–1¼in) across, with tepals to 2cm (¾in) long, are borne in racemes in late spring and early



*Anthericum liliago*

summer. ↑60–90cm (24–36in), ↔ 30cm (12in). N., C., and S. Europe. \*\*\*. **'Major'**, syn. *A. algeriense*, has large, wide-opening flowers, to 3cm (1¼in) across.

*A. ramosum*, syn. *A. graminifolium*. Rhizomatous perennial with linear, grey-green leaves, to 40cm (16in) long. During early and midsummer, bears branched, open panicles of star-shaped, lily-like white flowers, to 1.5cm (½in) across, with tepals 1–2cm (½–¾in) long. ↑90cm (36in), ↔ 30–60cm (12–24in). N. to S. Europe, Turkey, Crimea. \*\*\*

• *Antholyza* see *Crocasmia*

*A. paniculata* see *C. paniculata*

## ANTHRISCUS

APIACEAE/UMBELLIFERAE

Genus of about 12 species of annuals, biennials, and perennials from grassland, wasteland, and light woodland in temperate regions of the N. hemisphere. They have 2- or 3-pinnate, finely divided, light to mid-green leaves and tiny white flowers in umbels, 5–7cm (2–3in) across. Common chervil (*A. cerefolium*) has many culinary uses. Cow parsley (*A. sylvestris*) is attractive as a meadow plant. *A. sylvestris* 'Ravenswing' is good for providing dark foliage contrast in a herbaceous border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any well-drained soil in sun or partial shade. Water *A. cerefolium* in dry periods to inhibit bolting. *A. sylvestris* self-seeds prolifically if not dead-headed.

• **PROPAGATION** Sow *A. cerefolium* seed *in situ*, in succession from early spring to midsummer. Sow seed of perennials in containers in a cold frame in autumn or spring. Insert root cuttings in mid-winter. Grown in isolation, *A. sylvestris* 'Ravenswing' produces many dark-leaved seedlings, but take care to select stock with dark, purple-brown foliage.

• **PESTS AND DISEASES** Slugs, snails, and caterpillars may damage young growth; powdery mildew may also be a problem.

*A. cerefolium* (Common chervil). Erect annual with 2- or 3-pinnate, aniseed-flavoured leaves, 3–5cm (1¼–2in) long, and hairy beneath, composed of ovate, toothed or pinnatifid leaflets. In midsummer, bears umbels of white flowers. ↑ to 50cm (20in), ↔ 24cm (10in). Europe, W. Asia. \*\*\*



*Anthriscus sylvestris* 'Ravenswing'

*A. sylvestris* (Cow parsley, Queen Anne's lace). Clump-forming biennial or short-lived perennial with lacy, 3-pinnate leaves, 15–30cm (6–12in) long, composed of ovate, pinnatifid leaflets. Umbels of tiny white flowers open from mid-spring to early summer. ↑60–100cm (24–39in), ↔ 30cm (12in). Europe, Caucasus, Turkey, N.W. Africa. \*\*\*. **'Ravenswing'** has purple-brown leaves, and bears umbels of tiny white flowers with small pink bracts from late spring to summer; ↑1m (3ft).

## ANTHURIUM

Flamingo flower, Tail flower

ARACEAE

Large genus of 700–900 species of evergreen perennials, many epiphytic, with erect, sometimes climbing stems, from wet mountain forest in tropical and subtropical North and South America. They have large, entire or palmately lobed, often glossy leaves, and produce brightly coloured, flat or concave spathes and cylindrical spadices, to 45cm (18in) long. The spadices usually taper evenly upwards but may be pendent or contorted. The fruits are ovoid or spherical berries, which ripen to orange, red, or purple. In frost-prone areas, anthuriums may be grown in containers or epiphytically on false "trees" in a warm greenhouse; species that tolerate drier conditions, such as *A. scherzerianum*, are suitable for use as houseplants. All provide excellent, long-lasting cut flowers. In humid, tropical areas, grow outdoors as epiphytes or in a border. If ingested, all parts may cause mild stomach disorder; contact with sap may irritate skin.

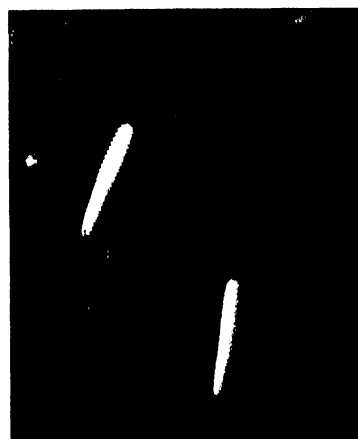
• **HARDINESS** Frost tender.

• **CULTIVATION** Plant with the crowns just above the soil surface and cover with a layer of sphagnum moss to protect the uppermost roots from drying out. Under glass, grow epiphytically or in a mix of 1 part fibrous loam, 1 part coarse sand, and 2–3 parts leaf mould, with additional charcoal. Provide high humidity and a constant temperature, with filtered light in summer and full light in winter. In the growing season, water freely and apply a balanced liquid fertilizer every 2–3 weeks; reduce humidity and water sparingly in winter. Top-dress annually and pot on every 2 years. Outdoors, grow epiphytically or in coarse, moist, fertile, humus-rich soil, enriched with leaf mould, in full or partial shade.

• **PROPAGATION** Sow seed at 24–27°C (75–81°F) as soon as ripe; they may take several months to germinate. Divide rootstock in winter. Root stem cuttings or offsets at 24–27°C (75–81°F) in spring or summer.

• **PESTS AND DISEASES** Mealybugs and scale insects may be a problem. Leaf spotting may be caused by fungal attack.

*A. andraeanum* (Flamingo flower). Upright, epiphytic perennial with stems to 30cm (12in) tall, and ovate, reflexed, dark green leaves, which are arrow-shaped at the bases. Both leaf-blades and leaf-stalks are to 30cm (12in) long. Erect, ovate to heart-shaped red spathes, 10–12cm (4–5in) long, often puckered, with yellow spadices, are produced



*Anthurium andraeanum*

throughout the year. Used extensively for hybridization. ↑60cm (24in), ↔ 20–30cm (8–12in). Colombia, Ecuador. \* (min. 16°C/61°F)

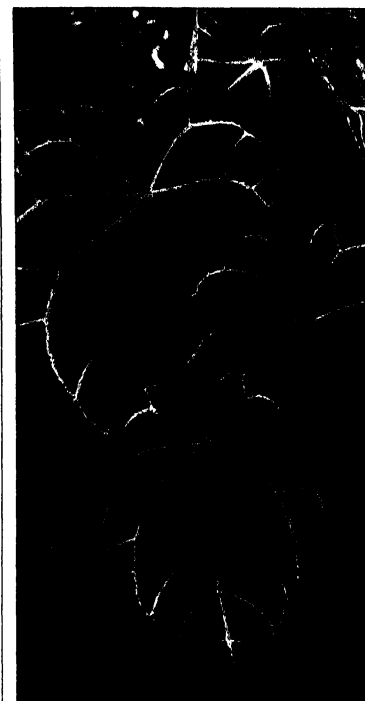
*A. 'Aztec'*. Upright, epiphytic perennial, similar to *A. andraeanum*, with ovate, reflexed, dark green leaves, arrow-shaped at the bases, on stems 30cm (12in) tall. Leaf-blades and leaf-stalks are to 30cm (12in) long. Erect, rounded-ovate scarlet spathes, 10–12cm (4–5in) long, often puckered, with prominent, golden yellow spadices, are borne throughout the year. ↑60cm (24in), ↔ 20–30cm (8–12in). \* (min. 16°C/61°F)

*A. 'Brazilian Surprise'*. Upright, epiphytic perennial with stems, 30cm (12in) tall, and ovate, reflexed, dark green leaves, arrow-shaped at the bases. Both leaf-blades and leaf-stalks are to 30cm (12in) long. Erect, rounded-ovate, orange to red spathes, often puckered, and 10–12cm (4–5in) long, have white spadices, turning yellow with age, and are borne periodically throughout the year. ↑60cm (24in), ↔ 20–30cm (8–12in). \* (min. 16°C/61°F)

*A. crystallinum* (Crystal). Upright, epiphytic perennial with stems 25cm (10in) tall, cultivated for its large, broadly ovate to elliptic, velvety, deep green leaves, which are pink-bronze when young. The blades are sharply reflexed and 30–45cm (12–18in) long, with prominent white veins; the leaf-stalks are 21cm (8in) long. Erect and spreading, narrow green spathes, 8cm (3in) long, with greenish yellow spadices, are borne intermittently throughout the year. ↑ to 60cm (24in). Colombia. \* (min. 16°C/61°F)

*A. x cultorum* see *A. x ferrierense*.

*A. x ferrierense* (*A. andraeanum* x *A. nymphaeifolium*), syn. *A. x cultorum*. Upright, epiphytic perennial with dense growth. Stems are to 30cm (12in) tall; leaves are ovate, reflexed, bright to mid-green, and arrow-shaped at the bases. The leaf-blades are 35–40cm (14–16in) long, the leaf-stalks 1m (3ft) long. Erect, fleshy, smooth, ovate to heart-shaped spathes, to 15cm (6in) long, varying in colour from dark red to pink and orange-white, with curving yellow spadices, are borne at any time of year. ↑1m (3ft), ↔ 75cm (30in). Guatemala. \* (min. 16°C/61°F). **'Guatemala'** has broad, thick, bright red spathes with yellow spadices. **'Reidii'** produces large pink spathes, 15–20cm (6–8in) long. *A. 'Flamingo'*. Upright, epiphytic perennial, similar to *A. andraeanum*, with reflexed, ovate, dark green leaf-



*Anthurium crystallinum*

blades, arrow-shaped at the bases. Leaf-blades and leaf-stalks are both 30cm (12in) long. Erect, rounded-ovate, puckered, bright pink spathes, 18cm (7in) long, with white spadices, which turn yellow with age, are produced sporadically throughout the year. ↑60cm (24in), ↔ 20–30cm (8–12in). \* (min. 16°C/61°F)

*A. 'Negrito'*. Erect, epiphytic perennial with ovate, reflexed, dark green leaf-blades, arrow-shaped at the bases. Leaf-blades and leaf-stalks are 30cm (12in) long. Erect, rounded-ovate, deep copper spathes, 7–12cm (3–5in) long, with purple spadices, are borne throughout the year. ↑50cm (24in), ↔ 20–30cm (8–12in). \* (min. 16°C/61°F)

*A. scherzerianum* (Scherzer's anthurium). Variable, upright, epiphytic or terrestrial perennial with oblong-elliptic to lance-shaped, reflexed, leathery, dark green leaf-blades, 15–21cm (6–8in) long, on leaf-stalks to 25cm (10in) long. Broadly elliptic, reflexed, bright red spathes, 8–10cm (3–4in) long, with twisted, orange-red spadices, are borne intermittently throughout the year. ↑50–60cm (20–24in), ↔ 30cm (12in). Costa Rica, Guatemala. \* (min. 16°C/61°F).



*Anthurium scherzerianum*



*Anthurium scherzerianum*  
'Rothschildianum'

'Rothschildianum' ■ has red spathes with white spots and yellow spadices. 'Wardii' has red stems and large, dark red spathes with long red spadices.

*A. veitchii*. Upright, epiphytic perennial with oblong-ovate, corrugated, reflexed, glossy, dark green leaves, arrow-shaped at the bases, with pale green midribs. The leaf-blades are to 1.1m (3½ft) long, the leaf-stalks to 60cm (24in) long.

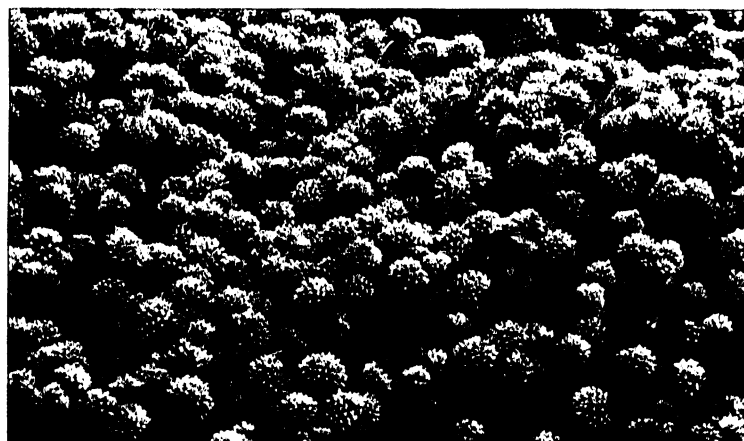
Bears spreading, ovate to lance-shaped, recurved ivory spathes, 8–15cm (3–6in) long, with cream or rose-pink spadices, at any time of year. † 1–1.2m (3–4ft), ↔ 60–90cm (2–3ft). Colombia. ☼ (min. 16°C/61°F)

*A. warocqueanum*. Climbing, epiphytic perennial with narrowly ovate to lance-shaped, reflexed, velvet-textured, glossy, emerald green leaf-blades, 50–90cm (20–36in) long; the leaf-stalks are 15–60cm (6–24in) long. Bears narrow, reflexed green spathes, to 10cm (4in) long, with yellow-green spadices, at any time of year. † 1.2m (4ft), ↔ 60–90cm (2–3ft). Colombia. ☼ (min. 16°C/61°F)

## ANTHYLLIS

LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of annuals, perennials, and shrubs found on rocky cliffs or in open grassland, mainly in the Mediterranean. They have pinnate or 3-palmate leaves, and bear racemes of pea-like, mostly yellow, cream, or red flowers in dense heads, occasionally in clusters or singly from the leaf axils. They thrive in areas with long, hot summers and tolerate poor, dry soils.



*Anthyllis montana*

Some species are suitable for a rock garden or the front of a mixed border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in full sun. Trim untidy plants after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*A. hermanniae*. Compact, rounded shrub with spiny, tangled branches and tiny, 3-palmate leaves, to 1cm (½in) long, with oblong to lance-shaped, bright to grey-green leaflets, the 2 lateral leaflets sometimes very small. In early summer, bears a mass of bright golden yellow flowers, 5–10mm (¼–½in) long, in short, 2- to 8-flowered racemes, 2–3cm (¾–1¼in) long, with 2 large, leaf-like bracts. † to 45cm (18in), ↔ to 60cm (24in) or more. Mediterranean, from Balearic Islands to Turkey. \*\*\* (borderline). 'Minor', syn. 'Compacta', is compact; † 10cm (4in), sometimes more, ↔ 30cm (12in).

*A. montana* ■ Clump-forming, woody-based perennial with pinnate leaves, to 6cm (2½in) long, comprising 8–15 or more pairs of narrowly elliptic to obovate-oblong, silky-haired, grey-green leaflets. During late spring and early summer, bears red, pink, or purple, white-tipped flowers, to 1.5cm (½in) long, in dense, spherical, clover-like heads, 2–3cm (¾–1¼in) across, above 2 deeply lobed, leaf-like bracts. Suitable for a rock garden or retaining wall. † to 30cm (12in), ↔ to 60cm (24in). Alps and mountains of S. Europe. \*\*\*. 'Rubra' ♀ produces bright crimson flowers.

*A. vulneraria* (Kidney vetch). Very variable, spreading, silky-hairy annual or short-lived perennial with erect or spreading stems and pinnate, mid-green leaves, to 14cm (5½in) long, consisting of oblong to elliptic leaflets with a larger terminal leaflet. In summer, bears rounded, umbel-like clusters, to 1.5cm (½in) across, of cream or yellow, often purple-tipped flowers, 1.5cm (½in) long, surrounded by palmately lobed, silky, leaf-like bracts. Four variations from red, orange, and purple to white also occur. Suitable for a large rock garden or a wildflower meadow. † 20–60cm (8–24in), ↔ to 80cm (32in). Europe and North Africa to W. Asia. \*\*\*. var. *coccinea* is applied to variants bearing bright red flowers.



*Antigonon leptopus*

## ANTIGONON

*Corallita*, Coral vine, Queen's wreath

POLYGONACEAE

Genus of 3 species of tendril climbers from Mexico and Central America, where they thrive in moist, tropical forest and scrub. They have tuberous roots, alternate, simple leaves, and are grown for their small, pink or white flowers, usually borne in panicles at the tips of the shoots. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse or conservatory. In warmer areas, train over a pergola, against a house wall, or through a tree.

• **HARDINESS** Half hardy to frost tender. The roots of *A. leptopus* may survive short spells of frost if protected with a mulch in autumn.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. From spring to autumn, water freely and apply a low-nitrogen liquid fertilizer monthly; keep just moist in winter. Outside, grow in moderately fertile, well-drained soil in full sun. Pruning group 11, in spring.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Aphids, red spider mites, and whiteflies may be a problem, especially under glass.

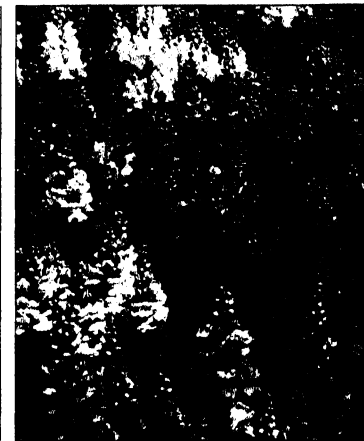
*A. leptopus* ■ (Confederate vine, Mexican creeper). Fast-growing climber with heart-shaped, almost triangular, bright green leaves, 5–14cm (2–5½in) long. From summer to autumn, bears coral-pink to red, occasionally white flowers, 1.5–2cm (½–¾in) across, in airy racemes and panicles, to 15cm (6in) or more long. The tuberous roots are edible. † 8–12m (25–40ft). Mexico. \*

## ANTIRRHINUM

*Snapdragon*

SCROPHULARIACEAE

Genus of about 30–40 species of annuals, perennials, and semi-evergreen subshrubs from mainly rocky sites in Europe, USA, and N. Africa. They are cultivated for their broadly tubular, 2-lipped flowers, with a characteristic hairy palate on the lower lip, which are produced from the leaf axils or in terminal racemes from early summer to autumn. The leaves, borne on branching stems, are linear-lance-shaped to ovate,



*Antirrhinum majus* Coronette Series

and sometimes glandular. The common snapdragon, *A. majus*, is a short-lived perennial, usually grown as a bedding annual. Shrubby perennial species are ideal for growing in a rock garden or retaining wall.

• **HARDINESS** Fully hardy to half hardy. • **CULTIVATION** Grow *A. majus* cultivars in fertile, sharply drained soil in full sun. Dead-head to prolong flowering.

Shrubby perennial species require very well-drained soil and shelter from wind; they are extremely brittle and sensitive to winter wet.

• **PROPAGATION** Sow seed of *A. majus* cultivars at 16–18°C (61–64°F) in late summer, early autumn, or early spring. Root softwood cuttings of shrubby species in summer, or sow seed in containers in a cold frame in autumn or spring; they may not come true. Overwinter young plants under glass.

• **PESTS AND DISEASES** Susceptible to antirrhinum rust; also prone to aphids and powdery mildew.

*A. asarina* see *Asarina procumbens*.

*A. majus*. Variable, strongly branched, short-lived perennial, often woody at the base, with mostly alternate, lance-shaped, glossy, deep green leaves, to 7cm (3in) long. Upright racemes of fragrant, 2-lipped flowers, 3–4.5cm (1¼–1¾in) across, with spreading, rounded, upper and lower lobes, vary in colour in cultivated selections from white, yellow, and bronze, to purple, pink, and red, often including bicolours; they are borne all summer and into autumn. † 0.25–2m (¾–6ft), ↔ 15–60cm (6–24in). S.W. Europe, Mediterranean. \*. Cultivars fall into 3 groups: tall, excellent for cut flowers and as 'fillers' in a mixed border, † 1m (3ft), ↔ to 45cm (18in) or more; intermediate, the most suitable for bedding, † 30–60cm (12–24in), ↔ to 45cm (18in); and dwarf, for a small bedding scheme, edging, and containers, † 20–30cm (8–12in), ↔ to 30cm (12in). 'Bells' is dwarf and early-flowering, with long-lasting, open-faced or hyacinth-like flowers, in purple, purple and white, red, rose-pink, pink, bronze, yellow, or white. 'Chimes' is exceptionally dwarf and compact, producing flowers in a wide colour range including several bicolours; † to 15cm (6in). **Coronette Series** ■ ♀ cultivars are tall, weather- and rust-resistant bedding antirrhinums, good for cutting; they produce flowers in colours that include pale salmon-orange, scarlet, deep velvet-red, light



Antirrhinum majus Sonnet Series

pink, deep rose-pink, rich purple, lemon-yellow, and white; they are also available in single colours; † to 65cm (26in). 'Floral Showers' is dwarf and early-flowering, bearing flowers in up to 10 colours, including some bicolours. Tolerates wet weather; † to 20cm (8in).

**Rocket Series** cultivars are vigorous, tall antirrhinums, producing flowers in a broad colour range; they are excellent for cut flowers; † to 1.2m (4ft). **Sonnet Series** ■ ♀ cultivars are very early and free-flowering, intermediate antirrhinums. They are bushy in habit, with good wet-weather tolerance, and produce bronze, pink, carmine-red, crimson, burgundy, white, and yellow flowers. **Tahiti Series** ■ cultivars are dwarf and rust-resistant, producing flowers in red, orange, rose-pink, and

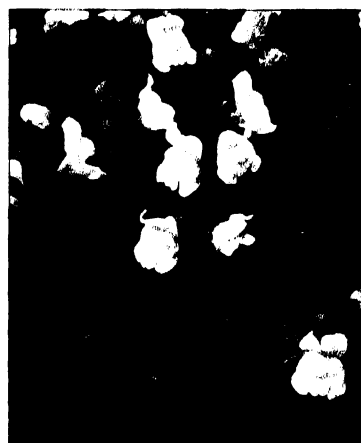


Antirrhinum majus Tahiti Series

bronze, with a pink and white bicolor; † to 20cm (8in).

**A. molle.** Vigorous, dwarf subshrub with both procumbent and almost erect stems producing alternate, broadly ovate to elliptic, sticky-hairy, mid-green leaves, 1–2cm (½–¾in) long. White or pale pink flowers, 2.5–3cm (1–1¼in) long, with yellow palates, are produced from the upper leaf axils in early and midsummer. † 15–20cm (6–8in), ↔ 20–30cm (8–12in). N.E. Spain, Portugal. \*\*\* (borderline)

**A. pulverulentum** ■ Decumbent, dwarf shrub with opposite and alternate, ovate to elliptic, hairy, mid-green leaves, to 3cm (1¼in) long. Pale yellow flowers, 2–2.5cm (¾–1in) long, are produced from the upper leaf axils in early and midsummer. † 15–20cm (6–8in),



Antirrhinum pulverulentum

↔ 20–30cm (8–12in). Chalky, alkaline soils in E. Spain. \*\*\* (borderline)  
**A. sempervirens.** Dwarf shrub, similar to *A. pulverulentum*, with trailing or erect, branching stems bearing opposite, oblong-ovate to elliptic, slightly sticky-hairy, mid-green leaves, 5–15mm (¼–½in) long. In early and midsummer, produces cream or white flowers, to 2.5cm (1in) long, with purple veins and yellow palates, from the upper leaf axils. † 15–20cm (6–8in), ↔ 20–30cm (8–12in). Pyrenees, E. central Spain. \*\*\* (borderline)

## APHELANDRA

ACANTHACEAE

Genus of about 170 species of evergreen shrubs and subshrubs from moist woodland in tropical North, Central, and South America. They are grown for their attractive flowerheads and opposite pairs of simple, fleshy, glossy leaves produced on stout or slender stems. Terminal, occasionally axillary, 4-sided spikes with long-lasting, overlapping, brightly coloured bracts and a succession of short-lived, tubular, red to yellow flowers are usually borne sporadically throughout the year. In frost-prone areas, grow in a temperate or warm greenhouse or as houseplants; elsewhere, use for bedding and for a border. Plants in containers grow to only about a third of the dimensions given below.

• **HARDINESS** Frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with additional leaf mould, one-third by volume; grow in full light with filtered light in summer. Water freely with soft water when in growth, more sparingly in winter. Apply a balanced liquid fertilizer every 2 weeks in summer, and monthly in winter. Outdoors, grow in moderately fertile, humus-rich, well-drained soil in partial shade.

• **PROPAGATION** After flowering, cut back the main stems to a strong pair of leaves to encourage sideshoots. When these are 8–10cm (3–4in) long, detach them and root at 21°C (70°F). Propagate regularly, as older specimens deteriorate rapidly.

• **PESTS AND DISEASES** New growth is prone to infestation by aphids, scale insects, and mealybugs.

**A. aurantiaca** ■ syn. *A. fascinator*. Erect shrub with slender stems and ovate to elliptic, deep green leaves, 10–15cm (4–6in) long, flushed or mottled with silver. In winter, bears dense, terminal spikes, to 45cm (18in) long, of overlapping bracts and protruding, orange-scarlet or vermillion flowers, 4–5cm (1½–2in) long. † 0.75–1.3m (2½–4½ft) ↔ 0.6–1.2m (2–4ft). Mexico to Colombia. ☼ (min. 7°C/45°F). 'Roetzlii' has wavy and puckered, grey-green leaves with bold silver markings, and scarlet flowers.

**A. fascinator** see *A. aurantiaca*.

**A. squarrosa** (Saffron-spike, Zebra plant). Compact shrub with stout stems and ovate to elliptic, dark green leaves, to 30cm (12in) long, with white, silver, or yellow veins and mid-ribs. Produces terminal spikes, to 20cm (8in) long, of waxy yellow flowers, 2.5–3cm (1–1¼in) long, and maroon-tinged yellow bracts. † 1.5–2m (5–6ft), ↔ 1.5m (5ft).

A



Aphelandra aurantiaca

Tropical and subtropical America.

☼ (min. 7–10°C/45–50°F; optimum 19°C/66°F). 'Dania' has ovate to ovate-elliptic leaves with very prominent white veins that are feathered at the margins. Flowers, rarely produced, are yellow or orange-yellow, and 2.5cm (1in) long; †↔ 30cm (12in). 'Louisae' ■ ♀ has leaves with prominent white midribs and bold cross-bands of white around the veins. Bears spikes, 8–10cm (3–4in) long, of waxy, green-tipped, golden yellow flowers, resembling those of 'Dania'. Produces smaller flowerheads from the leaf axils just below the main spike; † to 45cm (18in), ↔ 30cm (12in). 'Snow Queen' is erect, with ovate, dark green leaves, which have silvery white veins. Flowers are pale lemon-yellow; † to 45cm (18in), ↔ 30cm (12in).

**A. tetragona.** Spreading shrub with slender stems bearing broadly ovate, dark green leaves, 22cm (9in) long. Produces axillary and terminal spikes, 5–8cm (2–3in) long, of small orange bracts and hooded, bright red flowers, 3.5–8cm (1½–3in) long, with curved tubes. †↔ 1.2m (4ft). West Indies, Central America, N. South America. ☼ (min. –10°C/45–50°F; optimum 19°C/66°F)



Aphelandra squarrosa 'Louisae'



## APHYLLANTHES

APHYLLANTHACEAE/LILIACEAE

Genus of one species of densely tufted or clump-forming perennial occurring on hot, dry hillsides in S.W. Europe and Morocco. It has rush-like stems, and leaves that are reduced to membranous, basal sheaths. Attractive, saucer-shaped, deep to pale blue flowers are borne on slender stems in early summer. *A. monspeliensis* is suitable for a rock garden or an alpine house.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Under glass, grow in a mix of 1 part each loam and grit with 2 parts leaf mould or peat. Water freely during the growing season; keep just moist when dormant. Outdoors, grow in sharply drained, sandy, peaty soil in full sun, with shelter from cold winds.
- **PROPAGATION** Sow seed in containers in a cold frame when ripe, or in spring; plant out seedlings as soon as possible, as young seedlings do not transplant well and larger plants resent disturbance. Divide with care in early spring.
- **PESTS AND DISEASES** Trouble free.

*A. monspeliensis*. Tufted or clump-forming, fibrous-rooted perennial with stiff, ribbed stems. In early summer, the stems bear deep blue to pale blue, dark-veined flowers, to 2.5cm (1in) across, singly or in groups of 2 or 3, above papery, reddish brown bracts. ↑ 10–25cm (4–10in), sometimes to 40cm (16in), ↔ 10–15cm (4–6in). S.W. Europe, Morocco. \* \*

## APONOGETON

APONOGETONACEAE

Genus of 44 species of rhizomatous, submerged aquatic perennials from temperate and tropical regions of Africa, S.E. Asia, and N. and E. Australia. The linear to elliptic or lance-shaped, floating leaves are produced from a tuber-like rhizome. Compound panicles or simple, forked racemes of tiny, often scented flowers, with 1–6 tepals and 6 or more stamens, are borne, mainly in summer, from a spathe-like bract just above the water surface. Some species will grow in water to 1m (3ft) deep. *A. distachyos* and *A. madagascariensis* are the most commonly cultivated species and are suitable for a pond outdoors, although in frost-prone areas *A. madagascariensis* is best in an aquarium.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow *A. distachyos* in soil at the bottom of a pond, or in aquatic planting baskets, at least 30cm (12in) across, in water 30–90cm (12–36in) deep. Prefers full sun, but will tolerate partial shade. Grow *A. madagascariensis* outdoors in a shady pool in frost-free regions or, in frost-prone areas, in an aquarium with filtered light, in water up to 50cm (20in) deep, at 23–28°C (73–82°F); the flowers last longer in the high humidity of a closed aquarium. Remove dying foliage after the growing season. See also pp.52–53.
- **PROPAGATION** Sow seed as soon as ripe, or seed that has been kept moist since collection, in small containers, covered by 5–7cm (2–3in) of water, at 13–16°C (55–61°F) for *A. distachyos*



*Aponogeton distachyos*

and 19–24°C (66–75°F) for *A. madagascariensis*. Divide rhizomes of large clumps when dormant.

- **PESTS AND DISEASES** Young leaves are often eaten by water snails and the larvae of the brown china-mark moth. Algae may easily smother the delicate leaves of *A. madagascariensis*.

*A. distachyos* □ (Cape pondweed, Water hawthorn). Aquatic perennial with oblong-lance-shaped, bright green floating leaves, to 20cm (8in) long, which are almost evergreen in mild winters. Small, hawthorn-scented white flowers, 3cm (1¼in) across, with purplish brown anthers, are enclosed in white spathes, to 2cm (¾in) long, and borne in racemes with forked branches, 10cm (4in) long, above the water surface in spring and autumn. ↔ 1.2m (4ft). Southern Africa. \* \*

*A. madagascariensis* (Lace plant, Lattice leaf plant). Aquatic perennial with unusual, skeletonized foliage reduced to a network of veins with no tissue in between. Leaves, to 55cm (22in) long, with very long leaf-stalks, are elliptic, light green, and submerged below the water surface. In summer, bears small white flowers, with white anthers, in compound panicles of white-spathed spikes, 2.5–5cm (1–2in) long. After fertilization, the flowers turn mauve. ↔ 30–35cm (12–14in). Madagascar. ☉ (min. 15°C/59°F)

## APOROCACTUS

Rat's tail cactus

CACTACEAE

Genus of 2 species of perennial, often epiphytic cacti found in sparsely wooded areas of S. Mexico and N. Central America. They are cultivated for their trailing stems, sometimes up to 2m (6ft) long, and colourful flowers. The pencil-like, pendent, fleshy stems have low ribs and closely arranged areoles bearing short, fine spines. The irregular, tubular to funnel-shaped, diurnal, bright red or purple flowers, with stamens longer than the petals, are borne singly, mainly on more mature growth. They are followed by spherical, soft-bristly red berries, containing numerous small, reddish brown seeds. In frost-prone areas, they are excellent for hanging baskets in a temperate greenhouse or conservatory. In frost-free areas, they are best grown outdoors in hanging baskets, epiphytically, or cascading over rocks.



*Aporocactus flagelliformis*

- **HARDINESS** Frost tender.
- **CULTIVATION** Grow in epiphytic cactus compost in bright filtered light. During the growing season, water moderately and apply a high potash liquid fertilizer monthly; keep just moist at other times of the year. Outdoors, grow in sharply drained, gritty, humus-rich soil in a sheltered site in partial shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) as soon as ripe; keep just moist and provide filtered light. Root stem cuttings in early summer.
- **PESTS AND DISEASES** Young or new growth is particularly vulnerable to mealybugs.

*A. conzattii* see *A. martianus*.

*A. flagelliformis* □ syn. *Cereus flagelliformis*. Pendent, perennial cactus producing greyish green stems with 10–14 ribs, and areoles each bearing reddish brown spines (8–12 radials and 3 or 4 centrals). Narrowly tubular, funnel-shaped, purple-red flowers, 8cm (3in) long, with narrow, reflexed outer petals and wider, spreading inner ones, are borne in late spring and early summer. ↑ 10cm (4in), ↔ to 1.5m (5ft). S. Mexico, N. Central America. ☉ (min. 7–10°C/45–50°F)

*A. mallisonii* see *x Aporoheliocereus smithii*.

*A. martianus*, syn. *A. conzattii*, *Eriocereus martianus*. Pendent or creeping, perennial cactus producing grey-green stems with 8 ribs and yellow-spiny areoles, each bearing 6–8 radial spines and 2 or more centrals. Funnel-shaped, bright scarlet flowers, 10cm (4in) long, are borne in early summer. ↑ 10–12cm (4–5in), ↔ to 1m (3ft). S. Mexico. ☉ (min. 7–10°C/45–50°F)

## X APOROHELIOCEREUS

CACTACEAE

Hybrid genus, a cross between *Aporocactus* and *Heliocereus*, of one creeping, pendent, perennial cactus, whose parents originate from wooded areas in Mexico. It has pencil-like, fleshy stems, often up to 2m (6ft) long, closely set, fine-spiny areoles, and solitary, large, funnel-shaped flowers that form mainly on mature growth. In frost-prone climates, *x A. smithii* is excellent in a hanging basket in a temperate greenhouse or conservatory. In frost-free regions, it is effective trailing over a wall.

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow in epiphytic cactus compost in bright filtered light. When in growth, water moderately and apply a high potash liquid fertilizer monthly; keep just moist at other times. Outdoors, grow in sharply drained, gritty, humus-rich soil in a sheltered site in partial shade. See also pp.48–49.

- **PROPAGATION** Take stem cuttings in early summer.

- **PESTS AND DISEASES** Vulnerable to mealybugs.

*x A. mallisonii* see *x A. smithii*.

*x A. smithii*, syn. *Aporocactus mallisonii*, *x Aporoheliocereus mallisonii*. Pendent, perennial cactus with dark green stems with 6–8 prominent ribs, brown areoles, and radiating dark yellow spines. In summer, funnel-shaped, diurnal red flowers, to 7cm (3in) long, are produced mainly on the upper parts of the stems. ↑ 15cm (6in), ↔ to 75cm (30in). Garden origin. ☉ (min. 7–10°C/45–50°F)

▷ **Apple** see *Malus*

**Balsam** see *Clusia major*

**Chinese may** see *Podophyllum pleanthum*

**Crab** see *Malus*

**Dwarf** see *Angophora hispida*

**Kangaroo** see *Solanum aviculare*, *S. laciniatum*

**Love** see *Mandragora officinarum*

**May** see *Podophyllum peltatum*

▷ **Apple berry**,

**Common** see *Billardiera scandens*

**Purple** see *Billardiera longiflora*

▷ **Apple of Peru** see *Nicandra, N.*

*physalodes*

▷ **Aprica arachnoidea** see *Haworthia arachnoidea*

▷ **Apricot, Japanese** see *Prunus mume*

## APTENIA

AIZOACEAE

Genus of 2 species of prostrate, perennial succulents from arid regions of South Africa. They have opposite, lance- or heart-shaped, fleshy and papillose leaves. In summer and autumn, small, daisy-like red flowers, solitary or borne in threes, are produced terminally or laterally from the leaf axils, and are followed by ovoid, 4-celled red fruits. In frost-prone areas, use in a hanging basket or as ground cover in a temperate greenhouse border; in warmer areas, grow in a desert garden.

- **HARDINESS** Frost tender.



*Aptenia cordifolia*



- **CULTIVATION** Under glass, grow in standard cactus compost with added sharp sand in full light. Water moderately when flowering and in growth; keep completely dry in winter. Apply a low-nitrogen fertilizer in early spring. Outdoors, grow in any gritty, sharply drained soil in partial shade. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 20–25°C (68–77°F) in early spring. Take stem cuttings in early spring.
- **PESTS AND DISEASES** Trouble free.

**A. cordifolia** ■ syn. *Litocarpus cordifolia*, *Mesembryanthemum cordifolium*. Freely branching, perennial succulent with cylindrical, greyish green stems, to 60cm (24in) long, and broadly ovate, fleshy, bright green leaves, 2.5cm (1in) long. Solitary, terminal or lateral, red-purple flowers, to 1.5cm (½in) across, are borne in summer or autumn. ↑ 5cm (2in), ↔ indefinite. E. South Africa. ☉ (min. 6–7°C/43–45°F). 'Variegata' has leaves with creamy white margins.

▷ **Aquatic plants** see pp.52–53

## AQUILEGIA

Columbine

RANUNCULACEAE

Genus of about 70 species of clump-forming perennials from meadows, open woodland, and mountainous areas in the N. hemisphere. They produce basal rosettes of long-stalked, deeply 3-lobed or ternate to 3-ternate, often glaucous, blue-green leaves; the leaflets are mostly obovate or rounded, wedge-shaped at the bases, and often shallowly or deeply divided into 2 or 3 lobes. Distinctive, mainly bell-shaped flowers, usually 2.5–10cm (1–4in) long, with colourful tepals and spurred petals, are borne singly or in short panicles on branched, leafy stems.

Biedermeier Group, McKana Hybrids, and Mrs. Scott-Elliott Hybrids are all complex hybrids of *A. canadensis*, *A. longissima*, *A. vulgaris*, and possibly also other species. The larger species and cultivars, including *A. canadensis* and *A. vulgaris*, are effective in light woodland or in a herbaceous border. Most alpine species, such as *A. jonesii* and *A. saximontana*, require sharp drainage and will thrive in a scree bed or alpine house; they prefer cool conditions in summer. Contact with sap may irritate skin.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, preferably moist but well-drained soil in full sun or partial shade. Grow alpine species in gritty, humus-rich, moist but sharply drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or in spring. Seed of alpine species may take 2 years to germinate. All aquilegias self-seed profusely but also hybridize freely. Grown in isolation, *A. vulgaris* 'Nivea', 'Nora Barlow', and Vervaeneana Group cultivars produce a good proportion of true seedlings. Divide named cultivars in spring, although they are slow to recover as the rootstocks resent disturbance.
- **PESTS AND DISEASES** Susceptible to powdery mildew, aphids, leaf miners, sawflies, and caterpillars.

**A. akitensis** see *A. flabellata*.

**A. alpina** ■ syn. *A. montana* (Alpine columbine). Upright perennial with finely divided, ternate or 2-ternate, bluish green leaves divided into leaflets, 3cm (1¼in) long. Bears terminal, leafy racemes of 2 or 3 nodding blue flowers, sometimes with white petal tips, and with straight or curving spurs, to 2.5cm (1in) long, in late spring. Prefers rich soil in sun or partial shade. ↑ 45cm (18in), sometimes more, ↔ 30cm (12in). Alps. \*\*\*

**A. bertolonii** ♀ syn. *A. reuteri*. Delicate, upright perennial with finely divided, 2-ternate, smooth, dark green leaves with leaflets, to 2cm (¾in) long. From spring to early summer, each stem bears terminal, leafy racemes of 2–4 nodding, deep violet flowers, with incurved spurs, to 1.5cm (½in) long. ↑ to 30cm (12in), ↔ 10cm (4in). S. France, Italy. \*\*\*

**A. Biedermeier Group**. Short-stemmed perennials with 2-ternate, bluish green leaves divided into leaflets, 1–3cm (½–1¼in) long. From late spring to midsummer, they bear dense, terminal, leafy racemes of many almost upward-facing flowers, 3.5cm (1½in) long, with spurs to 3cm (1¼in) long, in colours that include white, deep pink, lilac, and shades of purple or blue. ↑ 50cm (20in), ↔ 30cm (12in). \*\*\*

**A. caerulea** ♀ Upright perennial with 2-ternate, mid-green leaves with deeply lobed leaflets, 1–3cm (½–1¼in) long, usually hairy beneath. Terminal, leafy racemes of upright, bicoloured flowers with wide-spreading blue sepals and usually white petals with slender spurs, to 5cm (2in) long, are borne from late



*Aquilegia chrysantha* 'Yellow Queen'

spring to midsummer. ↑ 60cm (24in), ↔ 30cm (12in). USA (mountains of S.W. Montana to N. Arizona, and N. New Mexico). \*\*\*

**A. canadensis** ♀ Airy perennial with 2-ternate, fern-like, dark green leaves divided into leaflets, 1–2cm (½–¾in) long. Bears terminal, leafy racemes of up to 20 nodding flowers from mid-spring to midsummer. The sepals are scarlet and forward-pointing; lemon-yellow petals taper into straight, erect red spurs, 1.5cm (½in) long; the stamens and styles extend outwards and downwards. ↑ 60–90cm (24–36in), ↔ 30cm (12in). E. Canada to S. USA (Florida, Texas, New Mexico). \*\*\*

**A. chrysantha**. Vigorous, erect perennial with 3-ternate, fern-like, mid-green leaves divided into leaflets, 1–3cm

(½–1¼in) long. Produces axillary and terminal, leafy racemes of 4–12 upward- or horizontal-facing flowers from late spring to late summer. Sepals are wide-spreading and light to golden yellow, sometimes tinged pink. Petals, paler than the sepals, have gently curving spurs, 4–7cm (1½–3in) long. ↑ 90cm (36in), ↔ 60cm (24in). S. USA to N. Mexico. \*\*\*. 'Yellow Queen' ■ has soft, golden yellow flowers.

**A. 'Crimson Star'**. Upright perennial with 2-ternate, mid-green leaves comprising leaflets, 1–3cm (½–1¼in) long. Each stem bears 2 or 3 terminal, pendent flowers with red sepals and creamy white petals and spurs, to 5cm (2in) long, from late spring to mid-summer. Breeds almost true from seed. ↑ 60cm (24in), ↔ 30cm (12in). \*\*\*

**A. flabellata** ♀ syn. *A. akitensis*.

Strong-growing perennial with ternate or 2-ternate, bluish green leaves divided into leaflets, 1.5–4cm (½–1½in) long. In early summer, bears terminal, semi-erect to nodding, soft blue-purple flowers, 1 or 2 per stem, with white or cream petal tips and incurved spurs, to 2cm (¾in) long. Requires moist soil and partial shade. ↑ 10–30cm (4–12in), ↔ 10–15cm (4–6in). E. Asia, Japan. \*\*\*. var. *pumila f. alba* ♀ syn. 'Nana Alba', is compact, with 1–3 white flowers per stem; ↑ to 10cm (4in).

**A. formosa**. Airy perennial producing 2-ternate, blue-green leaves with deeply divided leaflets, 2–4cm (¾–1½in) long. Axillary and terminal, leafy racemes of pendent flowers, produced in late spring and early summer, have wide-spreading orange sepals, and yellow petals with red lobes and upright, reddish orange spurs, 1–2cm (½–¾in) long. ↑ 60–90cm (24–36in), ↔ 45cm (18in). W. North America (Alaska to California, Montana, Utah). \*\*\*

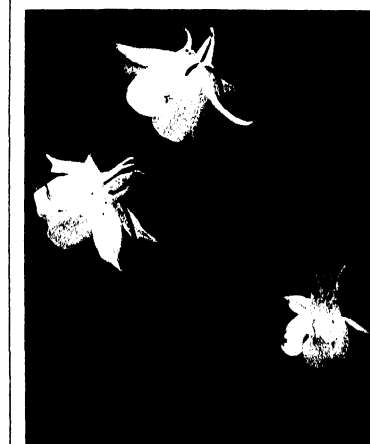
**A. fragrans** ■ syn. *A. glauca*. Upright perennial with 2-ternate, finely divided, glaucous, blue-green leaves with deeply lobed leaflets, 2–4cm (¾–1½in) long. Each stem bears 1–3 terminal, nodding, fragrant white or cream, sometimes blue-tinted flowers, with spurs to 2cm (¾in) long, in early summer. Needs rich soil, and will tolerate partial shade. ↑ 15–40cm (6–16in), ↔ 15–20cm (6–8in). W. Himalayas. \*\*\*

**A. glauca** see *A. fragrans*.

**A. 'Hensol Harebell'** ♀ Upright perennial with 2-ternate, mid-green leaves, purplish green when young, with deeply incised leaflets, 1–4cm (½–1½in)



*Aquilegia alpina*



*Aquilegia fragrans*



*Aquilegia McKana Hybrids*

long. Terminal, nodding, soft blue flowers, with spurs, 3.5cm (1½in) long, are borne, 2 or 3 per stem, from late spring to midsummer. Other colour variations are sometimes offered incorrectly under this name. †75cm (30in), ↔ 30cm (12in). \*\*\*

**A. jonesii.** Densely tufted perennial with tight clusters of 2-ternate, softly hairy, blue-grey leaves with lobed leaflets, 1-2cm (½-¾in) long. Bears terminal, solitary, upturned, blue to violet flowers, with short spurs, to 1cm (½in) long, in early summer. Thrives in a scree or raised bed. Rarely flowers freely. †2-10cm (¾-4in), ↔ to 10cm (4in). USA (Rocky Mountains in Montana, Wyoming). \*\*\*

**A. longissima.** Short-lived, upright perennial with fern-like, 3-ternate, mid-green leaves with deeply lobed leaflets, 2-4cm (¾-1½in) long. Produces terminal, leafy racemes of 4-12 semi-erect, scented flowers with slender, backward-pointing, bright yellow spurs, to 15cm (6in) long. Petals and spreading sepals are pale yellow. †60-90cm (24-36in), ↔ 45cm (18in). USA (mountains of S. Arizona and W. Texas), Mexico. \*\*\*

**A. McKana Hybrids** ■ Vigorous but short-lived, erect perennials with 3-ternate, mid-green leaves divided into leaflets, 1-4cm (½-1½in) long. From late spring to midsummer, they produce terminal, leafy racemes of 3-15 upright and pendent flowers with very long spurs, to 10cm (4in) long, self-coloured or bicoloured in shades of blue, yellow, and red. †75cm (30in), ↔ 60cm (24in). \*\*\*



*Aquilegia saximontana*

**A. montana** see *A. alpina*.

**A. 'Mrs. Scott-Elliott'** see *A. Mrs. Scott-Elliott Hybrids*.

**A. Mrs. Scott-Elliott Hybrids** syn. *A. 'Mrs. Scott-Elliott'*. Vigorous perennials with 2-ternate, mid-green leaves divided into leaflets, 1-4cm (½-1½in) long. Bear nodding and upright flowers in a variety of shades, including red-yellow and blue-white bicolours, with spurs to 5cm (2in) long, in terminal, leafy racemes of 5-11 blooms, from late spring to midsummer. †90cm (36in), ↔ 60cm (24in). \*\*\*

**A. reuteri** see *A. bertolonii*.

**A. saximontana** ■ (Rocky Mountain columbine). Densely tufted perennial with tight clusters of 2-ternate, slightly crinkled, bluish green leaves with leaflets, 1-2cm (½-¾in) long. In late spring and early summer, bears terminal, nodding, deep lavender-blue flowers, 1-2 per stem, with yellowish white petals and short, hooked spurs, to 7mm (¼in) long. Will tolerate partial shade. †10-15cm (4-6in), ↔ to 15cm (6in). USA (Rocky Mountains of Utah, Colorado). \*\*\*

**A. 'Schneekönigin'**, syn. *A. 'Snow Queen'*. Strong-growing, erect perennial bearing 2-ternate, glaucous, grey- or blue-green leaves with leaflets, 1-4cm (½-1½in) long. Produces terminal, leafy racemes of 5-15 nodding white flowers with long spurs, 5-8cm (2-3in) long, from late spring to midsummer. †75cm (30in), ↔ 30cm (12in). \*\*\*

**A. scopulorum.** Tufted perennial with dense clusters of 2-ternate, blue-green leaves, with leaflets 0.5-1.5cm (¼-½in) long. Stems with 1-5 upright flowers, 3-4cm (1¼-1½in) across, with slender spurs, 2.5-3cm (1-1¼in) long, are borne in early summer. The flowers are usually lavender-blue to violet, but may vary from pale blue to deep blue, pink, or white, with white or cream petals. †8-15cm (3-6in), ↔ to 10cm (4in). W. USA. \*\*\*

**A. 'Snow Queen'** see *A. 'Schneekönigin'*.



*Aquilegia vulgaris 'Nivea'*



*Aquilegia vulgaris 'Nora Barlow'*

**A. viridiflora.** Upright, short-lived perennial with 2-ternate, mid-green leaves divided into leaflets, 1-3cm (½-1¼in) long. In late spring and early summer, bears stems of 2 or 3 terminal, nodding, fragrant flowers with dark green sepals and purplish brown petals with spurs, to 1.5cm (½in) long. †20-30cm (8-12in), ↔ 15-20cm (6-8in). Russia (E. Siberia), W. China. \*\*\*

**A. vulgaris** (Granny's bonnet). Upright, reliable perennial with 2-ternate, mid-green leaves, glaucous beneath, divided into lobed leaflets, 1-4cm (½-1½in) long. In late spring and early summer, many-branched, stiff stems bear terminal, leafy racemes of 5-15 pendent to horizontal flowers with short, hooked spurs, to 2cm (¾in) long, in colours ranging from deep violet and blue to pink and white. †90cm (36in), ↔ 45cm (18in). Europe. \*\*\*. **var. clematiflora** see **var. stellata**. 'Gisela Powell' has yellow-orange flowers.

'Munstead White' see 'Nivea'. 'Nivea' ■ ♀ syn. 'Munstead White', is vigorous, with greyish green foliage, pale green stems, and pure white flowers. 'Nora Barlow' ■ ♀ has double pompon flowers with numerous narrow, spurless, quilted tepals in pale green and red. **var. stellata**, syn. **var. clematiflora**, has spurless flowers with spreading tepals, in white or shades of blue or pink.

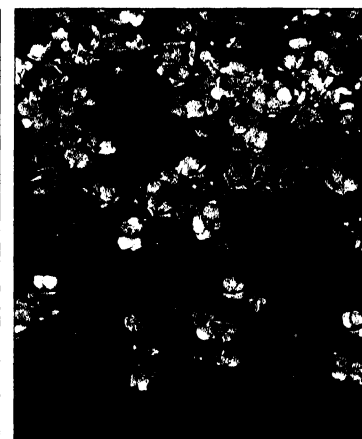
**Vervaeckiana Group** cultivars have variegated leaves, mottled and streaked yellow, and bear white, reddish pink, and purple flowers.

## ARABIS

Rock cress

BRASSICACEAE/CRUCIFERAE

Genus of some 120 species of annuals and mainly evergreen perennials, mostly from rocky, mountainous areas of Europe, Asia, and North America. They are erect or mat- or cushion-forming, with branching, often woody-based stems. The leaves are simple, toothed or



*Arabis x arendsii 'Rosabella'*

entire, and sometimes hairy. Small, cruciform, 4-petalled, white to purple flowers are borne in racemes, 3-8cm (1¼-3in) long. Rock cress are easily cultivated, and are useful for growing in a rock garden, dry bank, or at the edge of a border; they are also suitable for crevice plantings in a retaining wall. *A. caucasica* is effective ground cover.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any well-drained soil in full sun. Will tolerate hot, dry conditions and poor, infertile soils. Protect *A. blepharophylla* 'Frühlingszauber' from winter wet, or grow in an alpine house in a mix of equal parts loam, leaf mould, and sharp sand; water freely when in growth, sparingly in winter. Vigorous species such as *A. caucasica* will swamp smaller plants, so site with care. Trim after flowering to maintain compactness.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. *A. blepharophylla* 'Frühlingszauber' is best raised from seed. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Prone to downy mildew, aphids, and white blister. The arabis midge causes malformation of flowering shoots, which should be removed and burned if affected.

**A. albida** see *A. caucasica*.

**A. alpina subsp. caucasica** see *A. caucasica*.

**A. x arendsii 'Rosabella'** ■ syn.

*A. caucasica* 'Rosabella'. Compact, mat-forming, evergreen perennial with rosettes of elliptic to ovate, hairy, grey-green leaves, 3-5cm (1¼-2in) long.



*Arabis blepharophylla 'Frühlingszauber'*



*Arabis caucasica* 'Variegata'

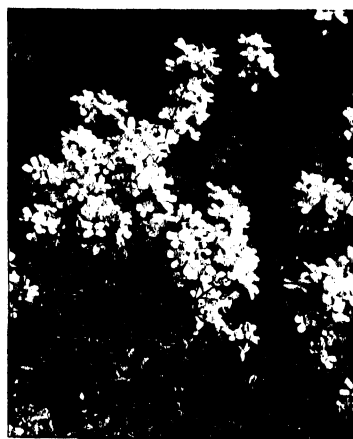
Bears short racemes of deep rose-pink flowers, to 1.5cm (½in) across, in late spring and early summer. † 5–10cm (2–4in), ↔ 20–30cm (8–12in). \*\*\*  
**A. billardieri** see *A. caucasica*.

**A. blepharophylla** 'Frühlingszauber' [♀] syn. *A. blepharophylla* 'Spring Charm'. Mat- or cushion-forming, evergreen, short-lived perennial with loose rosettes of obovate, toothed, dark green leaves, 3–5cm (1¼–2in) long, with grey-hairy margins. Compact racemes of fragrant, deep pink-purple flowers, to 1.5cm (½in) across, are produced in late spring and early summer. Dislikes winter wet. † to 10cm (4in), ↔ to 20cm (8in). \*\*\*

**A. blepharophylla** 'Spring Charm' see *A. blepharophylla* 'Frühlingszauber'.

**A. bryoides**. Densely tufted, evergreen perennial with rosettes of elliptic-ovate, grey-green, white-hairy leaves, to 1.5cm (½in) long, and short, compact racemes of white flowers, to 1cm (½in) across, in late spring and early summer. † 2–6cm (¾–2½in), ↔ to 8cm (3in). Greece, Balkan Peninsula. \*\*\*

**A. caucasica**, syn. *A. albida*, *A. alpina* subsp. *caucasica*, *A. billardieri*. Vigorous, mat-forming, evergreen perennial with loose rosettes of obovate, toothed, grey-green leaves, 3–5cm (1¼–2in) long. Loose racemes of fragrant white flowers, to 1cm (½in) across, open in late spring. † 15cm (6in), ↔ 50cm (20in) or more. S. Europe. \*\*\*. **'Flore Pleno'** ♀ syn. 'Plena', produces double, pure white flowers. **'Plena'** see 'Flore Pleno'. **'Rosabella'** see *A. x arendsii* 'Rosabella'. **'Variegata'** [♀] has green leaves, boldly margined pale yellow.



*Arabis procurrens* 'Variegata'

**A. ferdinandi-coburgi** 'Variegata' see *A. procurrens* 'Variegata'.

**A. procurrens** 'Variegata' [♀] syn. *A. ferdinandi-coburgi* 'Variegata'. Mat-forming, evergreen or semi-evergreen perennial with flattened rosettes of narrowly oblong to lance-shaped, glossy, mid-green, sometimes pink-tinged leaves, 2–3cm (¾–1¼in) long, with creamy white margins. Numerous loose racemes of white flowers, 8–10mm (⅓–½in) across, are produced in late spring. Remove any stems that revert to the green-leaved form. † 5–8cm (2–3in), ↔ 30–40cm (12–16in). \*\*\*

## ARACHNIS

Scorpion orchid

ORCHIDACEAE

Genus of 6 or 7 species of evergreen, monopodial orchids, often initially terrestrial but becoming epiphytic, from S.E. Asia, New Guinea, and the Philippines, occurring mainly on trees or rocks in wet areas. They are robust plants with long, branching stems, 2-ranked, strap-shaped, thick, fleshy leaves, and axillary racemes of attractive, highly coloured, fragrant flowers. Cultivated mainly in a lath house in tropical regions, where they are grown for use as cut flowers, they require full, year-round sun to flower regularly. In frost-prone areas, grow scorpion orchids in a warm greenhouse. They seldom flower well outside their native areas.

• **HARDINESS** Frost tender.

• **CULTIVATION** Warm-growing orchids. Grow in terrestrial orchid compost, either in containers or in a greenhouse border. Provide full light, ample water, and high temperatures and humidity all year round. In summer, apply a balanced liquid fertilizer at every third watering. Outdoors, in humid, tropical areas, grow in coarse, moist, humus-rich soil. Grow in a lath house to shelter from wind, heavy rain, and the hottest sun. See also p.46.

• **PROPAGATION** Root stem cuttings, at least 60cm (24in) long, or divide when the plant outgrows its container.

• **PESTS AND DISEASES** Aphids, red spider mites, whiteflies, and mealybugs may be a problem.

**A. flos-aeris**. Evergreen, terrestrial orchid with dark green leaves, 18cm (7in) long. Fragrant, yellow-green flowers, horizontally striped or spotted maroon, to 10cm (4in) across, are borne in arching panicles or racemes, 1.2m (4ft) high, in late summer. † 5m (15ft), ↔ 4m (12ft). Malaysia and Singapore to the Philippines. ☉ (min. 18°C/64°F; max. 30°C/86°F)

## ARAEOCOCCUS

BROMELIACEAE

Genus of 5 species of rosette-forming, evergreen, mostly epiphytic perennials (bromeliads). They occur in areas ranging from low foothills to terrain over 500m (1,500ft) and rainforest, in S. Central America, N. and E. South America, and the West Indies. The slender leaves have scales pressed close to one or both surfaces, and smooth or spiny margins. The inflorescence, borne in late summer, consists of few-flowered spikes of small, tubular flowers. Where

temperatures fall below 19°C (66°F), grow in a warm greenhouse. In tropical regions, grow epiphytically outdoors.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow epiphytically or in epiphytic bromeliad compost. Keep moist, and provide shade and moderate humidity at all times. Apply a nitrogen-based fertilizer every month from early spring to late autumn. In tropical areas, grow epiphytically in a shady, humid site. See also p.47.

• **PROPAGATION** Root offsets in spring.

• **PESTS AND DISEASES** Susceptible to root mealybugs and scale insects.

**A. flagellifolius**. Epiphytic bromeliad with smooth, grass-like leaves, over 1m (3ft) long, the spiny sheaths forming a bulbous base to the few-leaved rosette. Produces pyramidal inflorescences, to 30cm (12in) long, of white or greenish white flowers in late summer. † 1m (3ft), ↔ 15cm (6in) or more. S.E. Colombia, Amazonian Brazil. ☉ (min. 19°C/66°F)

## ARALIA

ARALIACEAE

Genus of about 40 species of vigorous, deciduous and evergreen trees and shrubs, and rhizomatous perennials, from S. and E. Asia, Malaysia, and North, Central, and South America, found mainly in mountain woodland. The striking, large leaves are simple or pinnate to 3-pinnate, and are sometimes covered in large bristles. Numerous white or greenish white flowers are borne in terminal panicles of spherical umbels or cymes, and are followed by spherical, usually black fruits. Aralias are suitable for a shady border in a large garden (to which they can lend an exotic air) or for woodland or a streambank.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, humus-rich, moist soil in an open or partially shaded site, sheltered from strong winds, which may damage the large leaves. In very fertile soil, they may produce

vigorous but soft growth, which is vulnerable to frost damage. Pruning group 1 for trees and shrubs. Remove suckers at any time to control their spread; variegated forms may send out suckers with green foliage, which should be removed completely. Cut perennials to the ground after fruiting in autumn.

• **PROPAGATION** Sow seed in containers in a cold frame when ripe, or stratify and sow in spring. Divide rhizomatous perennials in spring. Insert root cuttings of woody species in winter. Transplant suckers of trees and shrubs in early spring or winter. Graft variegated cultivars of *A. elata* in winter.

• **PESTS AND DISEASES** Aphids may attack the relatively soft flower-stalks.

**A. chinensis** of gardens see *A. elata*.

**A. elata** ♀ [♀] syn. *A. chinensis* of gardens (Japanese angelica tree). Vigorous, suckering, upright then spreading, deciduous tree with stout, spiny stems. The large, 2-pinnate leaves, to 1.2m (4ft) long, have 80 or more ovate leaflets, dark green above, and paler beneath, turning yellow, orange, or purple in autumn. In late summer and early autumn, bears small white flowers, in large, spreading, panicle-like, compound umbels, to 60cm (24in) long, followed by spherical black fruit, to 6mm (¼in) across. †↔ 10m (30ft). E. Asia. \*\*\*.

**'Albomarginata'** see 'Variegata'.

**'Aureovariegata'** [♀] is less vigorous, with leaflets broadly and irregularly margined yellow, becoming paler with age; †↔ 5m (15ft). **'Variegata'** [♀] [♀] syn. 'Albomarginata', is similar to 'Aureovariegata', but has leaflets irregularly margined with creamy white.

**A. elegantissima** see *Schefflera elegantissima*.

**A. japonica** see *Fatsia japonica*.

**A. papyrifera** see *Tetrapanax papyrifera*.

**A. racemosa**. Spreading, rhizomatous perennial with tall stems producing pinnate, mid-green leaves, to 75cm (30in) long, with 3–5 ovate leaflets, which are toothed but not bristly.



*Aralia elata* 'Variegata' (inset: leaf detail)

Umbels of small, greenish white flowers are borne in imposing spike-like inflorescences, 20–40cm (8–16in) long, in late spring and early summer, followed by spherical, dark purple fruit, 3mm (1/8in) across. ↑ to 3m (10ft), ↔ 1.2m (4ft). C., E., and S.W. North America. \*\*\*

*A. sieboldii* see *Fatsia japonica*.

*A. spinosa* △ (American angelica tree, Devil's walking stick, Hercules' club). Upright, suckering, deciduous tree or shrub with stout, spiny stems. Large, 2-pinnate leaves, to 1.5m (5ft) long, with 80 or more ovate leaflets, are dark green above and glaucous beneath. Umbels of white flowers are borne in conical, terminal panicles, to 60cm (24in) long, in summer, followed by spherical black fruit, to 6mm (1/4in) across. ↑ 10m (30ft), ↔ 5m (15ft). E. USA. \*\*\*

#### ▷ Aralia,

**False** see *Schefflera elegantissima*

**Fern-leaf** see *Polyscias filicifolia*

**Geranium** see *Polyscias guilfoylei*

**Japanese** see *Fatsia japonica*

**Lace** see *Polyscias guilfoylei* 'Victorica'

## ARAUCARIA

### ARAUCARIACEAE

Genus of 18 species of evergreen, coniferous trees from tropical rainforest with a pronounced dry season in New Guinea, Australia, New Hebrides, New Caledonia, Norfolk Island, and South America. The leaves are spirally arranged and usually broadly triangular to needle-like. Male and female cones are green, maturing to brown, and are normally borne on separate trees. The female cones are spherical, ovoid, or ellipsoid, conical, fused to the bract scale; the male cones are cylindrical. They are all elegant specimen trees and, except for *A. araucana*, require a warm, temperate climate. In colder areas, grow young plants in a cool conservatory or greenhouse. *A. heterophylla* may be grown as a houseplant.



*Araucaria araucana*

• **HARDINESS** Half hardy to frost tender, except *A. araucana*, which is fully hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer every 2 weeks; keep just moist in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in an open site with shelter from cold, drying winds.

• **PROPAGATION** Sow seed in a seedbed as soon as ripe. Take cuttings, 7–10cm (3–4in) long, of vertical shoot tips in midsummer and root in a cold frame; cuttings of the horizontal side branches will never form an erect tree.

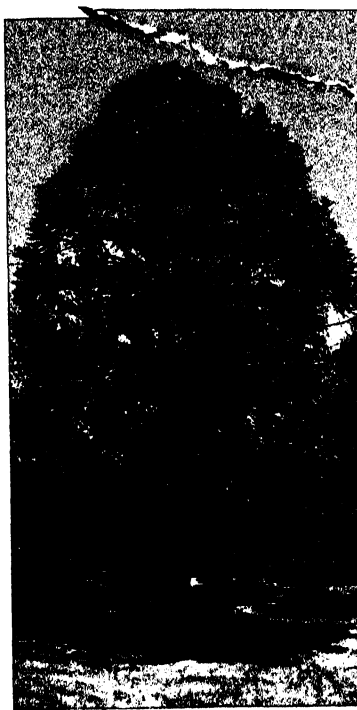
• **PESTS AND DISEASES** Honey fungus may be a problem.

*A. araucana* □♂–♀ syn. *A. imbricata* (Chilean pine, Monkey puzzle).

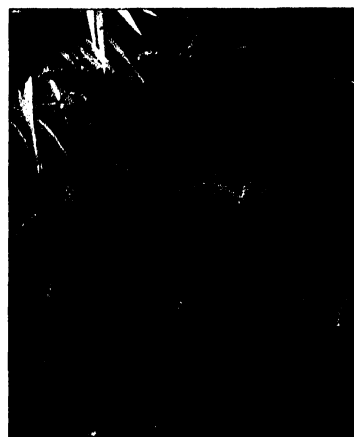
Coniferous tree with whorled branches, conical when young, becoming rounded and losing its lower branches when old, with tough, horizontally ridged, dark grey-brown bark. The radially arranged, triangular-ovate, leathery, bright then dark green leaves are sharply pointed, 3–5cm (1 1/4–2in) long, and persist for up to 10 years. Female cones are ovoid, to 15cm (6in) long, and ripen over 2–3 years. Male cones are cylindrical to ovoid and to 15cm (6in) long. Seeds are edible. ↑ 15–25m (50–80ft), ↔ 7–10m (22–30ft). Volcanic slopes of Chilean Andes and into Argentina. \*\*\*

*A. bidwillii* □△–♀ (Bunya-bunya).

Coniferous tree with whorled branches, conical when young, eventually becoming rounded and losing its lower branches. It has blackish brown bark and flattened, spreading, glossy, mid-green leaves, 2–5cm (3/4–2in) long; these are oblong-lance-shaped and spirally arranged in 2 rows when young; leaves on mature trees are 2–3cm (3/4–1 1/4in) long, lance-shaped, twisted, and overlapping. Female cones, to 27cm (11in) long, are spherical; male cones, 10–18cm (4–7in) long, are cylindrical.



*Araucaria bidwillii*



*Araucaria heterophylla*

↑ 30–45m (100–150ft), ↔ 6–10m (20–30ft). Australia (S.E. Queensland). ♀ (min. 5°C/41°F)

*A. columnaris* ♀ syn. *A. cookii* (Cook pine, New Caledonian pine). Conical to columnar, coniferous tree with whorled branches when young. Lateral branches are soon lost and replaced by short, epicormic shoots on the main stem, producing a narrow column of foliage. The alternate, ovate, light green leaves are to 1.5cm (1/2in) long on young trees; on mature trees, leaves are 6–8mm (1/4–1/8in) long and closely overlapping. Female cones, to 15cm (6in) long, are ellipsoid; male cones, 2.5–6cm (1–2 1/2in) long, are conical. ↑ 30–50m (100–160ft), ↔ 3–6m (10–20ft). New Caledonia. ♀ (min. 5°C/41°F)

*A. cookii* see *A. columnaris*

*A. cunninghamii* ♀ (Hoop pine, Moreton Bay pine). Columnar or conical, coniferous tree with red-brown, horizontally peeling bark, and whorled branches with tufts of young shoots at the tips, and rising either side of the branches. On young trees, the mid-green leaves are needle-like to ovate, flattened, spirally arranged, and to 1.5cm (1/2in) long; on mature trees, they are crowded and overlapping, incurved, scale-like, and to 6–8mm (1/4–1/8in) long. Female cones, to 10cm (4in) long, are ovoid; male cones, 5–8cm (2–3in) long, are cylindrical. ↑ to 50m (160ft), ↔ to 6m (20ft). Australia (Queensland, N. New South Wales). ♀ (min. 5°C/41°F)

*A. excelsa* of gardens see *A. heterophylla*.

*A. heterophylla* □♀△ syn. *A. excelsa* of gardens (Norfolk Island pine). Conical, coniferous tree with distinctive, whorled branches of fan-like foliage. On young trees, leaves are narrowly wedge-shaped, light green, and to 1.5cm (1/2in) long; on mature trees, they are crowded, scale-like, incurved, and to 5mm (1/4in) long. Spherical female cones are to 10cm (4in) long; cylindrical male cones are 4–7cm (1 1/2–3in) long. ↑ 25–45m (80–150ft), ↔ 6–8m (20–25ft). Norfolk Island. \*

*A. imbricata* see *A. araucana*.

## ARAUJIA

### ASCLEPIADACEAE

Genus of 4 species of evergreen, twining climbers, growing wild in scrub and at forest margins in dry, warm-temperate to tropical areas of South America, and cultivated for the flowers and foliage. The opposite leaves are simple. The



*Araujia sericifera*

tubular-based, 5-petalled flowers, borne in terminal racemes, may be either bell-shaped or salverform. The stems contain a white latex. In frost-prone areas, grow in a cool greenhouse; in frost-free areas, grow on a pergola, arbour, or wall, or through a strong-growing shrub.

• **HARDINESS** Most are frost tender, but *A. sericifera* may survive short spells down to 0°C (32°F).

• **CULTIVATION** Under glass, grow in coarse, loam-based potting compost (J1 No.2) in full light. In growth, water moderately, and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, moderately fertile soil in sun or partial shade. Pruning group 11, in early spring.

• **PROPAGATION** Sow seed in containers in a cold frame when ripe or in spring. Root semi-ripe cuttings of lateral shoots with bottom heat in late summer.

• **PESTS AND DISEASES** Red spider mites may be a problem.

*A. sericifera* □ (Cruel plant). Twining-stemmed climber with wavy, lance-shaped leaves, to 10cm (4in) long, mid-to pale green above, and thinly felted with hairs beneath. From late summer to autumn, bears racemes, 5–10cm (2–4in) long, of oblong-bell-shaped, fragrant, white or pale pink flowers, 2.5cm (1in) across, and swollen at the bases. Sticky pollen masses temporarily trap visiting moths, giving rise to the common name. ↑ 7–10m (22–30ft). South America. \* (borderline)

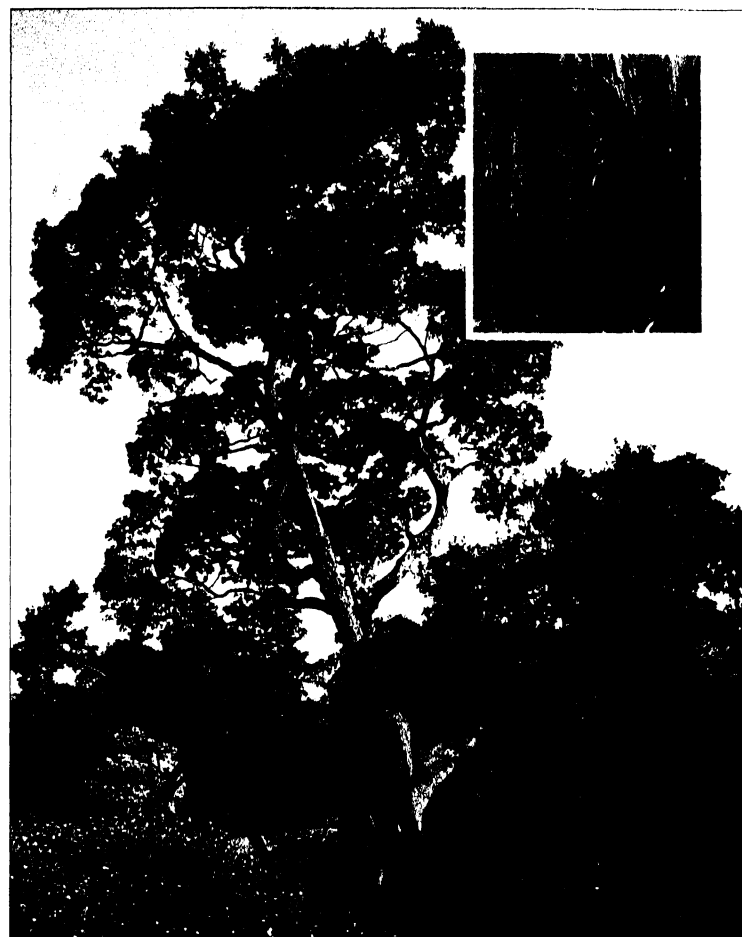
▷ **Arborvitae** see *Thuja*

## ARBUTUS

*Manzanita, Strawberry tree*

### ERICACEAE

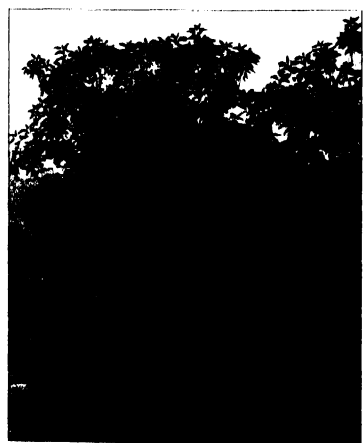
Genus of about 14 species of evergreen trees or shrubs, favouring rocky habitats, from Portugal to Turkey, Cyprus, and Lebanon, and from W. North America to Mexico and Guatemala. They have often attractive, peeling, red-brown bark, and simple, toothed or entire, leathery leaves, variable in length, and arranged alternately. The small, pitcher-shaped, white or pink flowers, 6–8mm (1/4–1/8in) long, are borne in terminal panicles, followed by strawberry-like fruits, 1–3cm (1/2–1 1/4in) across. They are excellent for a large shrub border, for a woodland garden, or as specimen trees. In frost-prone climates, grow half-hardy species in a cool greenhouse.



*Arbutus x andrachnoides* (inset: bark detail)

- **HARDINESS** Fully hardy when mature (young plants less so) to frost hardy; a few rare species are half hardy.
- **CULTIVATION** Grow in fertile, humus-rich, well-drained soil, in a sheltered site in full sun. Protect from cold winds, even when mature. *A. andrachne*, *A. x andrachnoides*, and *A. unedo* will tolerate alkaline soils. *A. menziesii* (and other species) need acid soils. Pruning group 1; but keep pruning to a minimum.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Leaf spot and aphids may be a problem.

*A. andrachne* ♀ (Grecian strawberry tree). Spreading, sometimes shrubby tree with smooth, peeling, red-brown bark.



*Arbutus menziesii*

Ovate to ovate-oblong, glossy, dark green leaves, 5–10cm (2–4in) long, are usually entire, occasionally finely toothed. White flowers are produced in leafy, erect panicles, to 10cm (4in) long, in late spring, followed by spherical, warty, orange-red fruit, 1–2cm (½–¾in) across, which ripen in the autumn of the following year. ↑→ 6m (20ft). S.E. Europe, Turkey, Lebanon. \*\*\*  
*A. x andrachnoides* ♀♂ (♂ *A. andrachne* x *A. unedo*). Broadly upright, then often spreading, sometimes shrubby tree with peeling, red-brown bark and ovate to lance-shaped, finely toothed, glossy, mid-green leaves, to 10cm (4in) long, and glaucous beneath. Semi-pendent panicles, to 8cm (3in) long, of small white flowers, sometimes pink-tinged, are borne from autumn to



*Arbutus unedo*

spring. Fruit are rarely produced. ↑→ 8m (25ft). S.E. Europe, S.W. Asia. \*\*\*  
*A. menziesii* ♀♂ (Madroño). Spreading, sometimes shrubby tree with peeling, red-brown bark. Oval, toothed leaves, 5–15cm (2–6in) long, are glossy, dark green, glaucous beneath. White flowers in erect panicles, to 20cm (8in) tall, are borne freely in early summer, followed by spherical, warty, orange-red fruit, 1cm (½in) across, which ripen in autumn the following year. ↑→ 15m (50ft). W. North America. \*\*\*  
*A. unedo* ♀♂ (Strawberry tree). Spreading, sometimes shrubby tree with rough, shredding, red-brown bark and oval to obovate, shallowly toothed, glossy, mid-green leaves, to 10cm (4in) long. Small white flowers, sometimes pink-tinged, open in pendent panicles, to 5cm (2in) long, in autumn: spherical, warty red fruit, 2cm (¾in) across, ripen in the following autumn. ↑→ 8m (25ft). S.E. Europe, Turkey, Lebanon. \*\*\*  
 'Elfin King' is compact, flowering and fruiting freely when small. ↑ 2m (6ft), ↔ 1.5m (5ft). f. *rubra* ♀ has dark pink flowers.

▷ **Arbutus, Trailing** see *Epigaea repens*  
 ▷ **Archangel** see *Angelica archangelica*

## ARCHONTOPHOENIX

King palm

ARECACEAE/PALMAE

Genus of 2 species of single-stemmed palms from rainforest in E. Australia. Large, pinnate leaves are arranged in a terminal tuft above a prominent crown-shaft, and large panicles or racemes of monoecious, cup-shaped flowers are borne beneath them. Where temperatures fall below 10–13°C (50–55°F), grow young plants in a temperate greenhouse or conservatory; in warmer areas, grow as specimen trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright, filtered light with moderate humidity



*Archontophoenix alexandrae*

A

When in growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in partial shade to prevent leaf scorch.

- **PROPAGATION** Sow seed in spring at 24–27°C (75–81°F).
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*A. alexandrae* ♀♂ syn. *Ptychosperma alexandrae* (Alexander palm, Northern bangalow palm). Tall, fast-growing palm with a slender trunk, swollen at the base and covered in ring-like leaf scars. Arching, pinnate leaves, 2–4m (6–12ft) long, have numerous narrowly lance-shaped leaflets, pale green or purple-flushed above, silver to grey beneath. In summer, cream to yellow flowers open in large panicles, to 80cm (32in) long, followed by ellipsoid to almost spherical, pinkish red fruit. ↑ to 25m (80ft). ↔ 5–7m (15–22ft). Australia (Queensland). ☼ (min. 10–13°C/50–55°F)

*A. cunninghamiana* ♀♂ (Bangalow palm, Illawarra palm, Piccabeen palm). Slender-stemmed palm with a ringed trunk and arching, pinnate leaves, 2–4m (6–12ft) long, comprising many lance-shaped, grey-green or light green leaflets. When mature, produces small lilac flowers in large, pendent racemes, to 60–90cm (24–36in) long, in summer, followed by ovoid red fruit. ↑ 15–20m (50–70ft), ↔ 2–5m (6–15ft). Australia (Queensland). ☼ (min. 10–13°C/50–55°F)

▷ *Arcterica nana* see *Pieris nana*

## ARCTOSTAPHYLOS

syn. COMAROSTAPHYLIS

Bearberry, Manzanita

ERICACEAE

Genus of about 50 species of prostrate or upright shrubs, or small trees, all evergreen except for *A. alpina*, mainly from W. North America, particularly California. They are found in a range of moist or dry habitats from coastal scrub to mountain slopes, pine forest, and high moors. They have alternate, simple, entire or toothed leaves, and terminal panicles or racemes of tiny, urn-shaped flowers, 4–7mm (¼–¼in) long, followed by spherical fruits, 6–10mm (¼–½in) across. Use the prostrate and compact species as ground cover or in a rock garden. The more upright species, with their often attractive bark, are effective in open areas of a woodland garden. In frost-prone climates, grow half-hardy species in a cool greenhouse.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Grow in moist but well-drained, moderately fertile, lime-free soil in full sun or partial shade. Shelter less hardy species from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn (immerse seed in boiling water for 20 seconds before sowing), or root semi-ripe cuttings in summer. Layer in autumn. Prostrate species and hybrids often root

at the nodes, providing rooted pieces that may be removed and potted up.

• **PESTS AND DISEASES** Prone to leaf spot.

**A. alpina**, syn. *Arctous alpinus* (Alpine bearberry). Deciduous, creeping shrub with obovate to inversely lance-shaped, white-woolly, toothed leaves, 1.5–3cm (½–1¼in) long, bright green, turning red in autumn. In late spring, bears axillary racemes, 1–2cm (½–¾in) long, of pendent, pink-flushed white flowers, followed in autumn by small, spherical, red then purple-black fruit. ↑ 5cm (2in), ↔ to 20cm (8in). Mountain moors and heaths in N. circumpolar regions. \* \* \*

**A. densiflora** 'Howard McMinn'. Dense, mound-forming shrub with smooth, dark red bark and elliptic, glossy, mid-green leaves, 3cm (1¼in) long. Pink-tinged white flowers are borne in small racemes, to 4cm (1½in) long, in spring. ↑ 1.5m (5ft), ↔ 2m (6ft). \* \*

**A. diversifolia**, syn. *Comarostaphylis diversifolia* (Summer holly). Upright shrub with peeling or shredding bark and oblong to elliptic, toothed, glossy, dark green leaves, to 8cm (3in) long. Small white flowers are borne in racemes, to 6cm (2½in) long, in spring, and are followed by small, spherical, warty red fruit in autumn. ↑ 5m (15ft), ↔ 3m (10ft). USA (California). \*

**A. glandulosa** (Eastwood manzanita). Rounded shrub with smooth, red-brown bark. Ovate to lance-shaped, leathery, matt green leaves, to 5cm (2in) long, are covered with sticky hairs on both sides when young, becoming hairless when mature. Bears small white flowers in racemes, to 4cm (1½in) long, in late winter and early spring, followed by small, flattened-spherical, sticky, red-brown fruit in summer. ↑ 2m (6ft). USA (Oregon, California). \* \*

**A. glauca** (Bigberry manzanita). Rounded shrub, sometimes tree-like, with smooth, red-brown bark and elliptic to ovate, leathery, glaucous leaves, to 4cm (1½in) long. White or pink flowers open in racemes, to 8cm (3in) long, from spring to early summer, followed in late summer by spherical, sticky brown fruit. ↑ 6m (20ft). USA (California). \*

**A. hookeri** 'Monterey Carpet'. Low-growing, sometimes mat-forming shrub with purple-tinged branches and ovate to elliptic, narrow-pointed, glossy, pale green leaves, 2–4cm (¾–1½in) long. In early summer, produces racemes, 7cm (3in) long, of pinkish white flowers, followed by spherical scarlet fruit. ↑ to 20cm (8in), ↔ to 1m (3ft) or more. \* \* \* (borderline)

**A. manzanita** ♀ (Manzanita, Parry manzanita). Upright shrub or small tree with smooth, red-brown bark and ovate, leathery, bright green to grey-green leaves, to 5cm (2in) long, sometimes hairy on both sides. Dark pink, sometimes white flowers in racemes, to 4cm (1½in) long, are produced in late winter and early spring, followed by flattened-spherical white fruit, ripening to red, in autumn. ↑ 4m (12ft), ↔ 3m (10ft). USA (California). \* \*

**A. x media** 'Snow Camp', syn. *A. uva-ursi* 'Snow Camp'. Mat-forming shrub, closely resembling *A. uva-ursi*, with prostrate branches, erect or ascending stems, and obovate, dark



*Arctostaphylos patula*

green leaves, to 3cm (1¼in) long. In summer, bears a profusion of compact racemes, 5–10cm (2–4in) long, of pale pink flowers, followed by flattened-spherical red fruit. ↑ 10cm (4in), ↔ to 1m (3ft) or more. \* \* \*

**A. nevadensis** (Pine-mat manzanita). Prostrate, mat-forming shrub with spreading branches, often rooting at the nodes, and narrowly lance-shaped to obovate, sharply tipped, glossy, bright green leaves, 2–3cm (¾–1¼in) long. In early summer, bears erect, raceme-like clusters, 4–8cm (1½–3in) long, of white, sometimes pink-tinged flowers, followed by flattened-spherical, reddish brown fruit in autumn. ↑ to 30cm (12in), ↔ to 1m (3ft). USA (California, W. Oregon). \* \* \* (borderline)

**A. patula** ♂ (Greenleaf manzanita). Spreading shrub with smooth, red-brown bark and broadly ovate to rounded, leathery, hairless, bright green leaves, 2.5–4cm (1–1½in) long. Bears pink or white flowers in loose panicles, to 8cm (3in) long, from spring to early summer, followed by flattened-spherical, dark brown to black fruit in late summer. ↑ 2m (6ft). USA (California). \* \*

**A. pumila** ♂ (Dune manzanita). Trailing, dense, mat-forming shrub with upright branch tips and obovate to spoon-shaped, dark green leaves, 2cm (¾in) long, paler and sometimes white-downy beneath. Short, dense racemes, 4–8cm (1½–3in) long, of white flowers, sometimes pink-tinged, are borne in summer, followed by small, flattened-spherical, reddish brown fruit in autumn. ↑ 30cm (12in), ↔ 40cm (16in),



*Arctostaphylos pumila*



*Arctostaphylos uva-ursi* 'Wood's Red'

possibly reaching 75cm (30in) in cultivation. USA (California). \* \* \* (borderline)

**A. stanfordiana** (Stanford manzanita). Erect shrub with slender shoots and smooth, red-brown bark. Narrowly ovate, pointed, bright green leaves, to 6cm (2½in) long, held upright, are hairless and leathery. From spring to early summer, pink-flushed white flowers open in racemes, to 6cm (2½in) long, followed by flattened-spherical fruit, ripening to bright red in autumn. ↑ 2m (6ft). USA (California). \*

**A. uva-ursi** (Common bearberry, Kinnikinnick). Low-growing, intricately branched, sometimes mat-forming shrub with small, obovate, leathery, dark green leaves, 2–4cm (¾–1½in) long. Small racemes, 2–3cm (¾–1¼in) long, of pink-tinted white flowers are borne in summer, followed by spherical, bright scarlet fruit in autumn. ↑ to 10cm (4in), ↔ to 50cm (20in). N. Eurasia, North America. \* \* \*. 'Snow Camp' see *A. x media* 'Snow Camp'. 'Vancouver Jade' is a low, arching shrub with glossy leaves and small pink flowers; ↑ 15cm (6in), ↔ 45cm (18in). 'Wood's Red' ♂ is a dwarf cultivar with pink flowers and large, shiny red fruit.

## ARCTOTHECA

ASTERACEAE/COMPOSITAE

Genus of 4 species of low-growing, usually rosette-forming perennials from open, sandy areas in South Africa; some species have become naturalized in Portugal, Spain, and Australia. The leaves, often white-woolly, are pinnatifid with prominent lobes, toothed, or sometimes entire. The yellow, daisy-like flowerheads, with purplish black disc-florets in some species, are often tinged with bronze or purple, especially on the undersides; they are mostly solitary, but sometimes borne in twos or threes, on long, slender stems. Use for covering banks or for edging; usually treated as annuals in frost-prone areas.

• **HARDINESS** Half hardy but will survive short periods to -5°C (23°F).

• **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F), or divide in spring.

• **PESTS AND DISEASES** Trouble free.

**A. calendula** ♂ syn. *Cryptostemma calendulaceum*. Low-growing, rhizomatous perennial with rosettes of



*Arctotheca calendula*

oblong-obovate, pinnatifid, occasionally entire leaves, 15cm (6in) long, and white-woolly beneath. Flowerheads, to 4cm (1½in) across, with yellow ray-florets, tinged purple on the undersides, and purplish black disc-florets with yellow anthers, are borne in spring or early summer. ↑ 50cm (20in), ↔ indefinite. South Africa. \*

**A. populifolia**. Low-growing, rhizomatous perennial with alternate, elliptic to ovate, occasionally pinnatifid, mid-green leaves, 7cm (3in) long, and white-woolly beneath. From summer to autumn, bears flowerheads 1.5–2cm (½–¾in) across, with yellow ray-florets and yellow disc-florets. ↑ 30cm (12in), ↔ 60cm (24in). South Africa. \*

## ARCTOTIS

syn. x VENIDIOARCTOTIS, VENIDIUM  
African daisy

ASTERACEAE/COMPOSITAE

Genus of about 50 species of erect to spreading annuals and perennials, occasionally subshrubs, found in dry stony soils in South Africa. They form basal rosettes of entire to lobed, lance-shaped to elliptic, grey-green to silvery green leaves. Solitary, daisy-like, brightly coloured flowerheads are borne on long, thick, ribbed stems from midsummer to early autumn. Grow as an annual in bedding schemes, a gravel garden, or containers. The flowerheads of modern cultivars, bred for bedding display, tend to stay open longer than those of the original species, which close in mid-afternoon and in dull weather. African daisies are attractive, if short-lived, cut flowers.

• **HARDINESS** Frost tender.

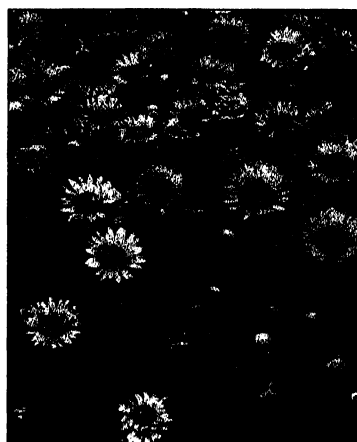
• **CULTIVATION** Grow in sharply drained but relatively moist, light soil in full sun.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in early spring or autumn. Prick out individually into 9cm (3½in) containers to avoid further root disturbance. Root stem cuttings of good colour selections at any time.

• **PESTS AND DISEASES** Aphids and leaf miners may be a problem.

**A. fastuosa** ♂ syn. *Venidium fastuosum* (Monarch of the veldt). Spreading perennial, usually cultivated as a half-hardy annual, with elliptic, deeply lobed, silvery white leaves, 12cm (5in) long, with a dense covering of woolly hairs. Rich orange flowerheads, to 10cm (4in) across, with deep purple or black



*Arctotis fastuosa*

disc-florets, are borne from midsummer to early autumn.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  30cm (12in). South Africa.  $\odot$  (min. 5°C/41°F). 'Zulu Prince'  $\blacksquare$  has intensely silvery white foliage and creamy yellow flowerheads, with a small black triangle with orange margins at the base of each ray-floret.

#### **A. Harlequin Hybrids**, syn.

*A. x hybrida*, *x Venidioarctotis*. Inter-specific hybrids bred for cultivation as half-hardy annuals or perennials. They have elliptic, wavy-margined, lobed, felted, silvery green leaves, to 12cm (5in) long. From midsummer to early autumn, they bear pink, orange, white, carmine-red, or apricot-yellow flowerheads, 8–9cm (3–3½in) across, with dark disc-florets, sometimes with darker markings on the ray-florets.  $\uparrow$  45–50cm (18–20in),  $\leftrightarrow$  to 30cm (12in).  $\odot$  (min. 5°C/41°F). A number of named cultivars, originally introduced under the name *x Venidioarctotis*, are very free-flowering and are propagated by cuttings; they include 'Bacchus', with reddish purple flowerheads, 'China Rose', with dusky pink flowerheads, and 'Flame', which has brilliant orange-red flowerheads.

*A. x hybrida* see *A. Harlequin Hybrids*.

*A. stoechadifolia* see *A. venusta*.

*A. venusta*, syn. *A. stoechadifolia* (Blue-eyed African daisy). Spreading perennial, often cultivated as a half-hardy annual, with elliptic-obovate, wavy-margined, lobed leaves, to 12cm (5in) long, dark green above, and silvery green beneath. Creamy white flowerheads, to 8cm (3in) across, with blue disc-florets, are borne from

*Arctotis fastuosa* 'Zulu Prince'

midsummer to early autumn.  $\uparrow$  60cm (24in),  $\leftrightarrow$  40cm (16in). South Africa.  $\odot$  (min. 5°C/41°F)

▷ *Arctous alpinus* see *Arctostaphylos alpina*

## ARDISIA

MYRSINACEAE

Genus of about 250 species of evergreen trees and shrubs from moist woodland in tropical and warm-temperate areas of Asia, Australasia, and North and South America. They are grown for their whorled or spiralled, mid- to dark green leaves, their panicles or umbel-like corymbs of white or pink flowers, and their showy red fruits. In frost-free areas, grow in woodland; *A. japonica* is good ground cover where temperatures do not fall below -5°C (23°F). In frost-prone areas, grow *A. crispa* in a temperate greenhouse or as a houseplant.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow *A. crispa* in loam-based potting compost (J1 No.3) in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water moderately at all other times. Outdoors, grow in moist but well-drained, humus-rich soil in a shady site, sheltered from strong winds. Pruning group 9; plants under glass need restrictive pruning.

• **PROPAGATION** Sow seed at 13°C

(55°F) in spring. Root semi-ripe

cuttings in summer. Divide runners of

*A. japonica* in spring.

• **PESTS AND DISEASES** Trouble free.

*A. crispa*  $\blacksquare$   $\varnothing$  Erect shrub with spiralled or alternate, lance-shaped, leathery, mid- to dark green leaves, 5–14cm (2–5½in) long, with shallowly scalloped margins. In summer, bears terminal, umbel-like corymbs, to 10cm (4in) long, of star-shaped pink flowers, 9–12mm (¾–½in) across, followed by spherical red berries, to 7mm (¼in) wide.  $\uparrow$  0.6–1.5m (2–5ft),  $\leftrightarrow$  45–60cm (18–24in). S.E. Asia. \*

*A. japonica* (Marlberry). Compact shrub with erect, clustered stems, underground runners, and whorls of toothed, ovate, glossy, mid- to dark green leaves, 4–9cm (1½–3½in) long. In summer, bears umbel-like corymbs, 3–8cm (1¼–3in) long, of pendent, star-shaped, white to pale pink flowers; 1.5cm (½in) across, followed by persistent, spherical red berries, 6mm (¼in) across.  $\uparrow$  45cm (18in),  $\leftrightarrow$  indefinite. China, Japan. \*\*

*Ardisia crispa*

## ARECA

ARECACEAE/PALMAE

Genus of 50–60 species of single-stemmed, monoecious palms found in woodland from Malaysia and Indonesia to the Solomon Islands. Linear or lance-shaped, 2-pinnate leaves are produced in a terminal tuft above a distinct crownshaft, with panicles of cup-shaped flowers borne beneath them. In frost-prone regions, grow young plants in a warm greenhouse. In frost-free climates, use arecas as specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in fertile, moist but well-drained soil in partial shade.

• **PROPAGATION** Sow seed at 24–27°C (75–81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*A. catechu*  $\blacksquare$   $\varnothing$  (Betel nut palm, Pinang). Slender palm with a trunk ringed with old leaf scars and topped by a crownshaft. Arching, pinnate leaves, 1–2m (3–6ft) long, have lance-shaped, soft-textured, truncate, mid-green leaflets. In summer, produces large panicles, to 60cm (24in) long, of pale yellow flowers, followed by orange to red fruit containing betel nuts, which are popular for chewing in some countries.  $\uparrow$  20–25m (70–80ft),  $\leftrightarrow$  2–4m (6–12ft). Probably mainland Malaysia, Singapore.  $\odot$  (min. 13–15°C/55–59°F)

*A. lutescens* see *Chrysalidocarpus lutescens*.

▷ *Arecastrum* see *Syagrus*

*A. romanzoffianum* see *S. romanzoffiana*

▷ *Areghia* see *Neoregelia*

*A. caroliniae* see *N. caroliniae*

*Areca catechu*

## ARENARIA

Sandwort

CARYOPHYLLACEAE

Genus of about 160 species of annuals and mainly low-growing perennials, some of which are evergreen, mostly from mountainous, arctic, and temperate regions of the N. hemisphere. They have opposite pairs of small, linear to ovate leaves and bear solitary or few-flowered cymes of 5-petalled, usually white flowers. Several *Arenaria* species are attractive mat- or cushion-forming plants for a rock garden, alpine house, or scree bed, or for growing in the crevices of a wall or paving.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, sandy, poor soil in full sun. *A. tetraquetra* requires very sharp drainage. *A. balearica* thrives in partial shade.

• **PROPAGATION** Sow seed in containers in an open frame in autumn, divide in spring, or root basal cuttings in early summer.

• **PESTS AND DISEASES** Trouble free.

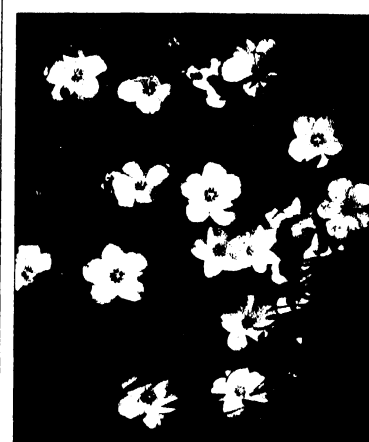
*A. balearica*  $\blacksquare$  (Corsican sandwort).

Prostrate, mat-forming, evergreen perennial with broadly ovate, shiny, light green leaves, 2–4mm (¼–½in) long. From late spring to summer, it is studded with solitary, star-shaped white flowers, 6–10mm (¼–½in) across.

$\uparrow$  1cm (½in),  $\leftrightarrow$  30cm (12in) or more.

W. Mediterranean islands. \*\*\*

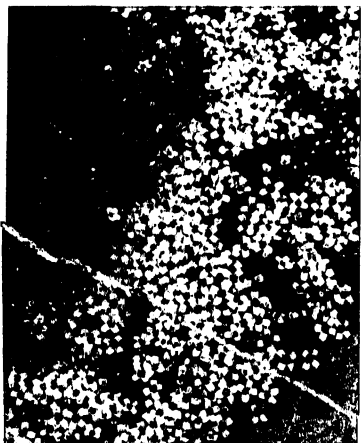
*A. montana*  $\blacksquare$   $\varnothing$  Vigorous, low-growing, evergreen perennial with wiry, prostrate stems and linear to lance-

*Arenaria balearica**Arenaria montana*





*Arenaria purpurascens*



*Arenaria tetraquetra*

shaped, greyish green leaves, 1–2cm (½–¾in) long. Shallowly cup-shaped white flowers, 1.5–2cm (½–¾in) across, are freely borne, singly or in few-flowered cymes, in early summer. Easily grown in a rock garden, or in crevices in a wall or paving. ↑ 2–5cm (¾–2in), ↔ 30cm (12in). Mountains of S.W. Europe. \*\*\*

***A. purpurascens*** ■ (Pink sandwort). Evergreen, mat- or cushion-forming perennial with elliptic to lance-shaped, sharp-pointed, glossy, dark green leaves, 6–9mm (¼–¾in) long, with hairy margins. In midsummer, bears profuse cymes of 2–4 star-shaped, deep pink flowers, to 1.5cm (½in) across. ↑ 2–5cm (¾–2in), ↔ 20cm (8in). Pyrenees and mountains of N. Spain. \*\*\*

***A. tetraquetra*** ■ Dense, cushion-forming, evergreen perennial with tiny, ovate, overlapping, grey-green leaves, 1–4mm (¼–½in) long, smothered with solitary, very short-stemmed, star-shaped white flowers, 6–10mm (¼–½in) across, in spring. Suitable for a scree bed, a trough, or an alpine house. ↑ 2.5–5cm (1–2in), ↔ 15–20cm (6–8in). Pyrenees and mountains of N. Spain. \*\*\*



*Arenga pinnata*

## ARENGA

ARECACEAE/PALMAE

Genus of 17 species of single- or cluster-stemmed palms from tropical lowland and hilly forest areas in S.E. Asia. Erect to arching, pinnate leaves are borne in a terminal tuft, with no crownshaft. The monoecious (rarely dioecious), cup-shaped flowers are produced only at the end of the tree's life, initially from the top leaf axils, then from all the lower ones. After fruiting, the tree usually dies. Where temperatures fall below 10–13°C (50–55°F), grow as a houseplant or in a temperate greenhouse. In tropical regions, grow as a specimen tree.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in fertile, moist but well-drained soil, ideally in partial shade when young.
- **PROPAGATION** Sow seed at 24–27°C (75–81°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

***A. pinnata*** ■ ♀ (Sugar palm). Tall, single-stemmed palm, the trunk clothed with leaf bases and the remains of fibrous black sheaths. Pinnate leaves, 6m (20ft) or more long, are composed of linear, rich green leaflets arranged in several ranks. Bears panicles, to 2m (6ft) long, of green to bronze flowers over a long period in summer, followed by black fruit. When tapped, the flowering stems yield a sweet sap, which is the basis of palm sugar. ↑ to 20m (70ft), ↔ to 12m (40ft) or more. Malaysian islands. ♀ (min. 10–13°C/50–55°F)

▷ *Arequipa hempeliana* see *Oreocereus hempelianus*

## ARGEMONE

Prickly poppy

PAPAVERACEAE

Genus of 28 species of vigorous, erect to spreading, usually prickly annuals, perennials, and one shrub, from scrub and wasteland in S. and S.E. USA, Central America, and the West Indies. The fleshy roots produce large clusters of mostly basal, entire to deeply lobed, smooth to prickly, glaucous leaves.

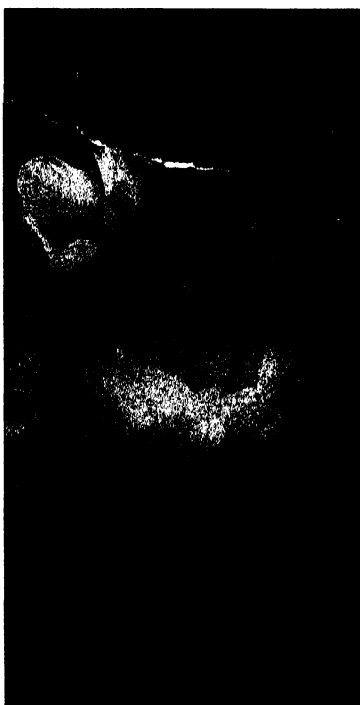


*Argemone grandiflora*

Paper-thin, poppy-like, white, yellow, or mauve flowers are borne singly or in corymbs in a long succession from summer to autumn. The flowers are followed by very prickly seed pods; the seeds may cause severe discomfort if ingested. The stems, when cut, exude a pale yellow to orange latex. Although some species are perennial, they are often cultivated as annuals. Grow in a gravel garden, or in a sunny mixed border. Prickly poppies self-seed freely.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in very poor, gritty, or stony soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed at 18°C (64°F) in early spring. Established plants resent disturbance.
- **PESTS AND DISEASES** Trouble free.

***A. grandiflora*** ■ Spreading, clump-forming annual or short-lived perennial with inversely lance-shaped to elliptic, deeply lobed, white-veined, blue-green leaves, to 12cm (5in) or more long; the leaves are often prickly beneath and have prickly-tipped margins. Showy, poppy-like, white or yellow flowers, to 10cm (4in) across, are borne singly or in few-



*Argemone mexicana*

flowered corymbs throughout the summer. ↑ to 1.5m (5ft), ↔ 30–40cm (12–16in). Mexico. \*

***A. mexicana*** ■ (Devil's fig, Prickly poppy). Spreading, clump-forming annual with inversely lance-shaped to elliptic, deeply lobed, silver-veined, blue-green leaves, to 12cm (5in) long, with spine-tipped teeth. In late summer and early autumn, bears solitary, poppy-like, slightly scented, pale to deep yellow flowers, to 8cm (3in) across. ↑ to 1m (3ft), ↔ 30–40cm (12–16in). S. USA to Central America. \*. 'White Lustre' has pure white blooms. 'Yellow Lustre' has yellowish orange flowers.

## ARGYRANTHEMUM

ASTERACEAE/COMPOSITAE

Genus of 23 species of procumbent or spreading to erect, evergreen subshrubs (sometimes offered as chrysanthemums) from the Canary Islands and Madeira. They occur in a wide range of habitats, from coastal beaches to light woodland and volcanic mountains, 2,300m (6,900ft) high. The opposite or alternate leaves are entire to finely dissected or coarsely lobed, usually 5–10cm (2–4in) long, and vary from green to intensely glaucous. Loose corymbs of daisy-like, single, sometimes anemone-centred or double flowerheads, in white, rose-pink, yellow, or apricot, are freely borne from late spring to early autumn. In frost-free areas, they are excellent for bedding or borders, as they may flower almost continuously. In frost-prone climates, grow as summer bedding or in containers.

- **HARDINESS** Frost hardy (in well-drained soil) to half hardy.
- **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun. Most species will tolerate sea winds. Where temperatures fall below -5°C (23°F), apply a deep, dry winter mulch, and take cuttings as insurance against winter losses; even if top-growth is frosted, plants often regenerate from the base



*Argyranthemum foeniculaceum*

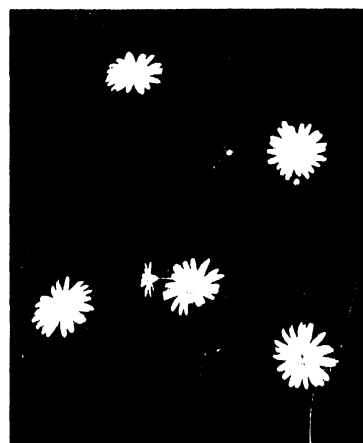
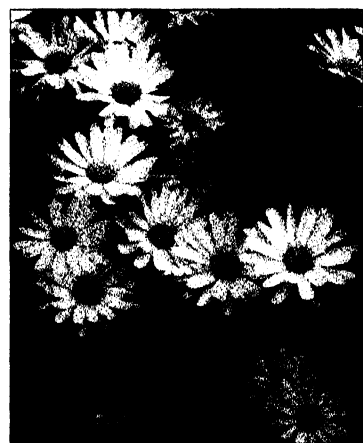
*Argyranthemum frutescens*

in spring. Pinch out the growing tips to encourage a compact habit. Pruning group 10, in early to mid-spring; may be trained as standards.

- **PROPAGATION** Root greenwood cuttings in spring, or semi-ripe cuttings of non-flowering shoots, 5–10cm (2–4in) long, in summer. Overwinter young plants in a cool greenhouse.
- **PESTS AND DISEASES** Coarse-leaved argyranthemums are prone to crown gall and chrysanthemum leaf miner.

*A. 'Chelsea Girl'* see *A. gracile* 'Chelsea Girl'.

*A. 'Cornish Gold'* ♀ Compact subshrub producing pinnatisect, toothed, mid-green leaves and yellow flowerheads, 5cm (2in) across, with yellow disc-florets. ⚬→ 60cm (24in). \*

*Argyranthemum gracile* 'Chelsea Girl'*Argyranthemum* 'Jamaica Primrose'*Argyranthemum* 'Mary Wootton'

*A. foeniculaceum* □ Compact subshrub with 2- or 3-pinnatisect, finely dissected, blue-grey leaves. Bears white flowerheads, 3cm (1¼in) across, with yellow disc-florets. ⚬→ 80cm (32in). Canary Islands (N.W. Tenerife). \*. *'Royal Haze'* ♀ has intensely blue-grey foliage. *A. frutescens* □ Variable, rounded subshrub producing pinnatisect or 2-pinnatisect, coarsely dissected, bright green leaves and profuse white flowerheads, to 2cm (¾in) across, with yellow disc-florets. ⚬→ 70cm (28in). Canary Islands. \*

*A. gracile* 'Chelsea Girl' □ ♀ syn. *A. 'Chelsea Girl'*. Compact subshrub producing pinnatisect, grey-green leaves, with fine, hair-like lobes, and white flowerheads, 3cm (1¼in) across, with yellow disc-florets. ⚬→ 60cm (24in). \*

*A. 'Jamaica Primrose'* □ ♀ Open subshrub with pinnatisect, coarsely toothed, greyish green leaves. Long, branching stems bear primrose-yellow flowerheads, 6cm (2½in) across, with darker yellow disc-florets. Easily trained as a standard. ⚬ 1.1m (3½ft), ↔ 1m (3ft). \*

*A. 'Jamaica Snowstorm'* see *A. 'Snowstorm'*.

*A. maderense* ♀ syn. *A. ochroleucum*. Compact subshrub with pinnatisect, deeply toothed, greyish green leaves. Bears lemon-yellow flowerheads, 3cm (1¼in) across, with yellow disc-florets. ⚬ 30cm (12in), ↔ 50cm (20in). Canary Islands (N. Lanzarote). \*

*A. 'Mary Cheek'* ♀ Compact subshrub with pinnatisect, narrow-lobed, grey-green leaves. Produces double, hemispherical, light pink flowerheads, 3cm (1¼in) across, with pink disc-florets. ⚬→ 40cm (16in). \*

*A. 'Mary Wootton'* □ Open subshrub with coarsely pinnatisect, greyish green leaves. Bears anemone-centred, light pink flowerheads, 5cm (2in) across, which fade almost to white, with pink disc-florets. Easily trained as a standard. ⚬ 1.1m (3½ft), ↔ 1m (3ft). \*

*A. ochroleucum* see *A. maderense*.

*A. 'Petite Pink'* ♀ syn. *A. 'Pink Delight'*. Neat, dome-shaped subshrub with finely pinnatisect, greyish green leaves and an abundance of light pink flowerheads, 2.5cm (1in) across, with yellow disc-florets. Excellent for bedding and containers. ⚬→ 30cm (12in). \*

*A. 'Pink Delight'* see *A. 'Petite Pink'*. *A. 'Snowstorm'* ♀ syn. *A. 'Jamaica Snowstorm'*. Compact subshrub with pinnatisect, grey-green leaves and white

*Argyranthemum* 'Vancouver' (inset: flower detail)

flowerheads, 3cm (1¼in) across, with yellow disc-florets. ⚬→ 30cm (12in). \*

*A. 'Vancouver'* □ ♀ Compact subshrub producing coarsely pinnatisect, greyish green leaves. Double, anemone-centred flowerheads, 5cm (2in) across, have rose-pink disc-florets, and mid-pink outer ray-florets fading to buff pink. Easily trained as a standard. ⚬ 90cm (36in), ↔ 80cm (32in). \*

## ARGYREIA

CONVOLVULACEAE

Genus of about 90 species of mainly woody-stemmed, evergreen climbers found in tropical rainforest and thickets from Asia to Queensland, Australia. The handsome, alternate leaves are large and usually broadly ovate; the funnel-shaped flowers are borne singly or in axillary cymes, followed by colourful berries. Where temperatures fall below 13°C (55°F), grow in a warm greenhouse. Elsewhere, grow on an arbour, pergola, or wall, or through a tree.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. From spring to autumn, water freely and apply a balanced liquid fertilizer monthly; reduce water in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 11, in late winter.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root softwood cuttings with bottom heat in spring.

• **PESTS AND DISEASES** Prone to red spider mites, whiteflies, and aphids.

*A. nervosa*, syn. *A. speciosa* (Woolly morning glory). Twining climber with white-downy young shoots and broadly ovate, silver-backed leaves, 18–27cm (7–11in) long, with heart-shaped bases. From summer to autumn, bears axillary cymes, to 15cm (6in) long, of flowers 6–7cm (2½–3in) long, which are white-downy in bud, opening lavender-blue with darker bases, and flushed red-purple inside. Berries are rich brown. ⚬ 8–10m (25–30ft). India (Assam), Bangladesh. ☉ (min. 13°C/55°F)

*A. speciosa* see *A. nervosa*.

▷ *Argyrocytisus* see *Cytisus*

*A. battandieri* see *C. battandieri*

## ARGYRODERMA

AIZOACEAE

Genus of about 10 species of dwarf, stemless, sometimes clustered, perennial succulents occurring in arid regions of South Africa. They have finger-like or kidney-shaped, fleshy, evergreen leaves, arranged in pairs; some species are briefly deciduous, the new leaves forming quickly as the old leaves die away. Solitary, short-stalked or stalkless, daisy-like, yellow, purple, red, or white flowers are borne in late summer. In frost-prone areas, grow in a cool or temperate greenhouse; in dry, frost-free areas, use in a desert garden.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. In summer, water moderately and apply a balanced liquid fertilizer monthly; water very sparingly in spring and autumn; keep dry in

*Argyroderma delaeitii**Argyroderma fissum*

winter. Outdoors, grow in poor, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring; provide partial shade until germinated, then give more light but maintain temperature.

• **PESTS AND DISEASES** Mealybugs and greenfly may be a problem.

*A. aureum* see *A. delaeitii*.

*A. blandum* see *A. delaeitii*.

*A. brevipes* see *A. fissum*.

*A. delaeitii* ■ syn. *A. aureum*, *A. blandum*. Usually unbranched succulent with a single pair of deciduous, kidney-shaped, silvery grey or bluish grey leaves, 2–5cm (¾–2in) long, united at the bases and partly sunken in the ground. The inner leaf surface is flat, and the outer

*Argyroderma pearsonii*

one convex. In late summer, bears white, pink-purple, or yellow flowers, 5cm (2in) across. ↓ 3cm (1¼in), ↔ 5cm (2in). South Africa. ☼ (min. 7°C/45°F)

*A. fissum* ■ syn. *A. brevipes*. Clump-forming succulent with pairs of finger-shaped, erect, deciduous, usually whitish green or grey-blue leaves, 5–10cm (2–4in) long, the upper surfaces rounded and smooth, and often red-tipped. Produces flowers 4cm (1½in) across, with white or yellow inner petals, and red or purple outer petals, in late summer. ↓ 12cm (5in), ↔ indefinite. South Africa. ☼ (min. 7°C/45°F)

*A. pearsonii* ■ syn. *A. schlechteri*. Usually unbranched succulent with a single pair of kidney-shaped, deciduous, greenish or brownish grey leaves, 2cm (¾in) or more long, united near their bases, each with a flattish inner surface and a rounded and partly keeled outer one. In summer, produces flowers 3cm (1¼in) across, varying from violet or violet-white to yellow flushed with violet or orange. ↓ 3cm (1¼in), ↔ 5cm (2in). South Africa. ☼ (min. 7°C/45°F)

*A. schlechteri* see *A. pearsonii*.

## ARIOCARPUS

### CACTACEAE

Genus of 5 or 6 species of slow-growing, spineless, perennial cacti from desert in Mexico. They have a long tap root, and a spherical, flat-topped stem, covered with lateral to semi-erect rosettes of triangular, rock-like tubercles. Solitary, funnel-shaped, diurnal, white, pink, yellow, or reddish purple flowers are borne in the centres of the crowns from

*Ariocarpus retusus*

autumn to winter, followed by ovoid green berries containing black seeds. Grow in a temperate greenhouse in frost-prone areas, or in a desert garden in frost-free areas.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. In the growing season, water moderately, and apply a balanced liquid fertilizer monthly; keep dry at other times. Outdoors, grow in poor, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 24°C (75°F) in early spring.

• **PESTS AND DISEASES** Mealybugs may be a problem.

*A. fissuratus*, syn. *Roseocactus fissuratus* (Living rock). Flat-topped cactus with blunt-tipped, grey-green tubercles, 2.5cm (1in) long and 2.5cm (1in) wide at the bases. In autumn, bears pink flowers to 4cm (1½in) across. ↓ 10cm (4in), ↔ to 15cm (6in). Mexico. ☼ (min. 10°C/50°F)

*A. retusus* ■ syn. *Anhalonium retusum*. Flat-topped cactus with grey-green tubercles, 1.5–4cm (½–1½in) long and 1–3cm (½–1¼in) wide. White to pink flowers, 4–5cm (1½–2in) across, are produced in autumn. ↓ 9cm (3½in), ↔ to 25cm (10in). Mexico. ☼ (min. 10°C/50°F)

*A. trigonus*, syn. *Anhalonium trigonum*. Perennial cactus with flat-topped, grey-green tubercles, to 5cm (2in) long and 2.5cm (1in) wide at the bases. Bears yellow flowers, 5cm (2in) across, in autumn. ↓ 13cm (5in), ↔ to 25cm (10in). Mexico. ☼ (min. 10°C/50°F)

## ARISAEMA

### ARACEAE

Genus of about 150 species of spring- or summer-flowering, rhizomatous or tuberous perennials from moist woodland and rocky wasteland. The species in cultivation are mainly from the Himalayas, China, Japan, and North America. They are cultivated for their attractive, sometimes unusually shaped spathes and simple, palmately lobed or palmate, mid-green leaves. Insignificant flowers are borne at the bases of slender, sometimes striking spadices, and are followed by dense clusters of spherical to oblong red berries. They are best grown outdoors in partial shade, but are suitable for a cold greenhouse in frost-prone climates.

*Arisaema candidissimum**Arisaema consanguineum*

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Plant tubers or rhizomes 15–25cm (6–10in) deep in winter or spring. Under glass, grow in deep clay containers in equal parts loam, leaf mould, and grit in bright indirect light. Water freely when in growth, applying a balanced liquid fertilizer monthly; keep cool and moist in winter. Outdoors, grow in moist but well-drained, neutral to acid, humus-rich soil in a cool, partially shaded site. *A. candidissimum*, *A. consanguineum*, and *A. flavum* will tolerate more sun. Mulch in winter; protect the leaves of spring-flowering species from late frosts. Do not allow dormant tubers to dry out completely.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Most species produce offsets, which may be removed in late summer.

• **PESTS AND DISEASES** Vulnerable to slugs and vine weevils.

*A. amurense*. Tuberous perennial with a purple stem and usually a solitary leaf, divided into 5 radiating, oblong to linear-lance-shaped leaflets, 10–18cm (4–7in) long. In spring, bears hooded spathes, 8–12cm (3–5in) long, with dark purple and white stripes. ↓ 45cm (18in), ↔ 15cm (6in). N. Asia. \*\*

*A. atrorubens* see *A. triphyllum*.

*A. candidissimum* ■ ♀ Tuberous perennial bearing a conspicuous, sweetly scented, pink-striped white spathe, 8–15cm (3–6in) long, in summer, followed by a solitary, 3-palmate leaf with broadly ovate leaflets, 10–20cm (4–8in) long. ↓ 40cm (16in), ↔ 15cm (6in). W. China. \*\*

*Arisaema costatum*

*Arisaema flavum*

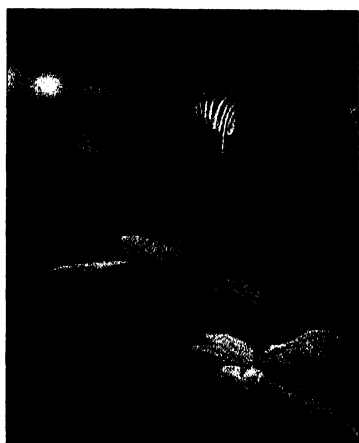
**A. consanguineum** ■ Tuberous perennial producing a hooded, white-striped, brown-ringed green spathe, 10–20cm (4–8in) long, in summer, followed by a large cluster of red berries. The spathe forms below a solitary leaf with 11–20 broadly to narrowly ovate leaflets, to 20cm (8in) or more long. ↑ 1m (3ft), ↔ 15cm (6in). E. Himalayas to C. China. \* \*

**A. costatum** ■ Tuberous perennial with a single, red-margined leaf divided into 3 ovate leaflets, to 40cm (16in) long. In early summer, produces a hooded, deep purple-brown spathe with white stripes, 10–15cm (4–6in) long, and a long, narrow, twisted spadix. ↑ 35–50cm (14–20in), ↔ 15cm (6in). Nepal. \* \*

**A. dracontium**. Tuberous perennial bearing a single, pedate leaf, 10–20cm (4–8in) long, deeply divided into 7–15 lance-shaped lobes. Produces a narrow, hooded green spathe, 5–7cm (2–3in) long, in spring. ↑ 80cm (32in), ↔ 15cm (6in). E. North America. \* \* \*

**A. flavum** ■ Tuberous perennial with 2 palmate leaves composed of 5–11 ovate to lance-shaped leaflets, 5–12cm (2–5in) long. Small but conspicuous, greenish yellow to bright yellow spathes, 2–4cm (¾–1½in) long, are borne in summer. ↑ 10–45cm (4–18in), ↔ 10cm (4in). Yemen to W. China. \* \* \*

**A. griffithii** ■ Tuberous perennial with 2 large leaves, divided into 3 ovate to diamond-shaped leaflets, to 20cm (8in) long. In early summer, bears a spathe, 10–25cm (4–10in) long, just above the ground; it is purple or green, heavily veined, and hooded like a cobra. ↑ 60cm (24in), ↔ 15cm (6in). E. Himalayas. \*

*Arisaema griffithii**Arisaema jacquemontii*

**A. helleborifolium** see *A. tortuosum*.

**A. jacquemontii** ■ Tuberous perennial producing a narrow, hooded, white-striped, light green spathe, 10–15cm (4–6in) long, in early summer. This is borne above the palmate or 2-palmate leaves, each divided into 3–9 ovate to inversely lance-shaped leaflets, 5–15cm (2–6in) long. ↑ 15–70cm (6–28in), ↔ 10cm (4in). Himalayas. \* \* \*

**A. japonicum** see *A. serratum*.

**A. ringens**. Tuberous perennial with 2 glossy leaves, each composed of 3 elliptic to ovate leaflets, 15–20cm (6–8in) long, with long, tapering points. Bears a large, hooded and curled, green-and-purple-striped, purple-lipped spathe, 10–15cm (4–6in) long, below the leaves in early summer. ↑ 30cm (12in), ↔ 10cm (4in). China, Korea, Japan. \* \*

**A. serratum**, syn. *A. japonicum*. Tall, tuberous perennial with 2 pedate leaves, each with 7–20 elliptic to lance-shaped lobes, 5–12cm (2–5in) long, on a mottled stem. In spring, bears a hooded spathe, 8–12cm (3–5in) long, varying from green to purple, and sometimes spotted or striped. ↑ 1m (3ft), ↔ 15cm (6in). China, Korea, Japan. \*

**A. sikokianum** ■ Tuberous perennial with usually 2 pedate leaves, one 3- and one 5-lobed, the divisions broadly ovate and 5–15cm (2–6in) long. In spring, bears a large, deep purple spathe, 20cm (8in) long, which is open at the mouth, revealing the club-like white spadix. ↑ 30–50cm (12–20in), ↔ 15cm (6in). Japan. \* \*

**A. speciosum**. Tuberous perennial with a hooded, trailing, white-striped purple spathe, 10–15cm (4–6in) long, borne in

*Arisaema sikokianum**Arisaema triphyllum*

spring or early summer below a solitary 3-palmate leaf on a mottled stem. The leaf has ovate to lance-shaped leaflets, 20–45cm (8–18in) long. ↑ 60cm (24in), ↔ 15cm (6in). E. Himalayas. \*

**A. tortuosum**, syn. *A. helleborifolium*. Tuberous perennial with 2 or 3 pedate leaves, each divided into 5–17 elliptic leaflets, 15–20cm (6–8in) long. Hooded green spathes, 10–18cm (4–7in) long, with long, erect then outward-curving, purple or sometimes green spadices, are borne above the leaves in spring or early summer. ↑ to 1.5m (5ft), ↔ 20cm (8in). Himalayas. \*

**A. triphyllum** ■ syn. *A. atrorubens* (Jack-in-the-pulpit). Tuberous perennial producing 1 or 2 leaves, each divided into 3 narrow, oblong to ovate leaflets, 8–15cm (3–6in) long. Bears hooded, green, sometimes purple-striped spathes, 10–15cm (4–6in) long, from spring to early summer, followed by clusters of red berries in autumn. ↑ 15–60cm (6–24in), ↔ 15cm (6in). E. USA. \* \* \*

## ARISARUM

ARACEAE

Genus of 3 species of rhizomatous or tuberous perennials from moist woodland or rocky ground and wetland in Europe. They are known for their small, hooded spathe, developing in winter or early to mid-spring, which enclose spadices that have minute flowers. The densely arranged, radical, ovate to arrow-shaped leaves, on long leaf-stalks, sometimes obscure the inflorescences. Ideal for an alpine house, or for a woodland or rock garden.

*Arisarum proboscideum*

- **HARDINESS** Fully hardy to half hardy. *A. vulgare* will tolerate short spells to -5°C (23°F) if well mulched.
- **CULTIVATION** Plant tubers or rhizomes 8cm (3in) deep in autumn. Under glass, grow in gritty, humus-rich, loamless potting compost in filtered light. Outdoors, *A. proboscideum* requires humus-rich, moist soil in partial shade. *A. vulgare* needs a more open site in full sun, in well-drained soil that is dry in summer.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide in autumn or winter.
- **PESTS AND DISEASES** Trouble free.

**A. proboscideum** ■ (Mouse plant). Rhizomatous perennial with mats of arrow-shaped, glossy, dark green leaves, 6–15cm (2½–6in) long. In spring, bears hooded, dark brown-purple spathes, 3–5cm (1¼–2in) long, each with a long, thin, curled tip, to 15cm (6in) long, which looks like a mouse's tail; the spadices are insignificant. Often forms large colonies. ↑ 15cm (6in), ↔ to 25cm (10in) or more. Italy, Spain. \* \* \*

**A. vulgare**. Tuberous perennial with arrow-shaped, mid- to yellowish green leaves, 5–12cm (2–5in) long, sometimes mottled with purple. In winter or early spring, produces small, hooded green spathes, 2.5–5cm (1–2in) long, striped brown or purple, with blackish brown spadices. Best grown in an alpine house. ↑ 15cm (6in), ↔ to 10cm (4in) or more. Mediterranean. \*

## ARISTEA

IRIDACEAE

Genus of 50 species of rhizomatous, evergreen, clump-forming, mostly spring- or summer-flowering perennials from coastal and mountain sites in W. and E. Africa, Madagascar, and South Africa. They have slender stems bearing spike-like, terminal panicles with lateral clusters of saucer-shaped flowers, each lasting only one day. The basal leaves, 10–70cm (4–28in) long, are erect and 2-ranked, and longer than the stem-clasping leaves. In frost-prone areas, grow in a cool greenhouse; in frost-free areas, grow in a border.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep moist at other

*Aristea major*

times. Outdoors, grow in well-drained, moderately fertile, humus-rich soil in full sun. They resent root disturbance.

- **PROPAGATION** Sow seed thinly at 13–16°C (55–61°F) in spring.
- **PESTS AND DISEASES** Trouble free.

**A. ecklonii.** Robust, clump-forming, evergreen, rhizomatous perennial with tufts of linear basal leaves, 30–45cm (12–18in) long, and smaller, linear stem-clasping leaves. Loose, spike-like panicles of saucer-shaped blue flowers, 2cm (¾in) across, are borne in summer. † 1m (3ft), ↔ 45cm (18in). C. Africa, South Africa. \*

**A. major** ■ syn. *A. thyrsoflora*. Clump-forming, evergreen, rhizomatous perennial with dense, spike-like panicles of saucer-shaped, blue or purple flowers, 3–4cm (1¼–1½in) across, in summer.

Basal leaves are lance-shaped and 30–50cm (12–20in) long; stem leaves are linear and smaller. † 1–1.5m (3–5ft), ↔ 45cm (18in). South Africa. \*

**A. thyrsoflora** see *A. major*.

## ARISTOLOCHIA

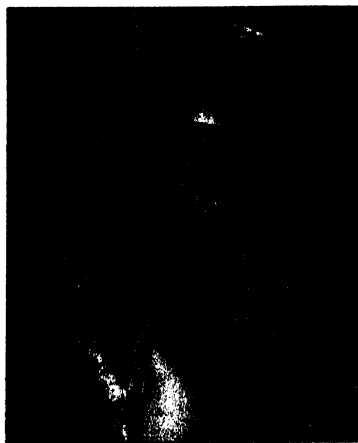
Dutchman's pipe

ARISTOLOCHIACEAE

Genus of about 300 species of evergreen and deciduous climbers, occasionally shrubs or scandent perennials, mostly from moist woodland in temperate and tropical regions of both hemispheres. The leaves are entire or lobed, and often heart-shaped. The petalless flowers,

mostly in white, purple, liver-brown, or maroon, veined or mottled with darker hues, have a curved or S-shaped calyx with an inflated base, resembling the shape of a Dutch pipe. Aristolochias are unusual and useful climbing plants for screening, but some have unpleasantly scented flowers and are best grown away from the house. In frost-prone regions, grow tender species in a temperate or warm greenhouse. Some species were formerly included in the genus *Isotrema*.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in fertile, well-drained soil in sun or partial shade. Hardy species overwinter most successfully in dry soils. Climbing species require strong support. Pruning group 11 or 12; prune after flowering.

*Aristolochia gigantea*

- **PROPAGATION** Sow seed of hardy species at 13–16°C (55–61°F) and tender species at 21–24°C (70–75°F), as soon as ripe or in spring. Divide perennials in spring, or insert root cuttings in winter. Root softwood cuttings of climbing or scandent species grown under glass in early spring, and of hardy species in midsummer.
- **PESTS AND DISEASES** Trouble free.

**A. clematitis** (Birthwort). Deciduous perennial with creeping, branched rhizomes, and heart-shaped, mid- to dark green leaves, 6–15cm (2½–6in) long, on erect, then scandent stems. Axillary clusters of 3–8 narrow, tubular, pale yellow, brown, or yellowish brown flowers, 2–3cm (¾–1¼in) long, with pointed, curved upper lips, are borne

from late spring to midsummer. Contact with sap may irritate skin. † 90cm (36in), ↔ 60cm (24in). Europe. \*\*\*

**A. durior** see *A. macrophylla*.

**A. elegans** see *A. littoralis*.

**A. gigantea** ■ Evergreen twiner with broadly triangular, dark green leaves, 5–10cm (2–4in) long. In summer, bears solitary, rounded, white, purple-veined flowers, white- or ivory-mottled maroon inside, to 16cm (6in) across. † 10m (30ft). Panama. ♀ (min. 10°C/50°F)

**A. gigas** see *A. grandiflora*.

**A. grandiflora**, syn. *A. gigas*. Vigorous, evergreen twiner with heart-shaped, dark green leaves, 20–25cm (8–10in) long. Solitary, rounded, long-tailed white flowers, 15–18cm (6–7in) across, with brownish purple veins and dark purple eyes, are borne in summer. † to 10m (30ft) or more. Mexico to Panama, West Indies. ♀ (min. 10°C/50°F)

**A. littoralis** ■ ♀ syn. *A. elegans* (Calico flower). Evergreen twiner with kidney- to heart-shaped, glaucous, pale green leaves, 5–10cm (2–4in) long. Solitary, rounded, purple-brown flowers, 10cm (4in) across, with white markings and veins, are borne in summer. † 5–8m (15–25ft). Brazil. ♀ (min. 7°C/45°F)

**A. macrophylla**, syn. *A. durior*, *A. siphon* (Dutchman's pipe). Strong-growing, deciduous twiner with broadly heart-shaped leaves, dark green above, lighter beneath, and 10–30cm (4–12in) long. In summer, bears solitary, rounded, mid-green flowers, 2.5cm (1in) across, mottled with yellow, purple, and brown, that are hidden among the leaves.

† 8–10m (25–30ft). S.E. USA. \*\*

**A. siphon** see *A. macrophylla*.

*Aristolochia littoralis*

## ARISTOTELIA

ELAEOCARPACEAE

Genus of 5 species of deciduous and evergreen trees and shrubs often found in woodland and scrub in South America, Australia, and New Zealand. They are cultivated for their attractive, alternate or near-opposite, usually ovate leaves, their spreading cymes of tiny flowers, and their autumn fruits. Male and female flowers are borne on separate plants, so both sexes must be grown together to obtain fruit. They tolerate sea winds and are useful for a coastal garden or shrub border.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade in a warm site, sheltered from cold, drying winds. Pruning group 9.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**A. chilensis**, syn. *A. macquii* (Macquii). Evergreen shrub with near-opposite or alternate, ovate, glossy, dark green leaves, to 12cm (5in) long. Greenish white flowers, 5mm (¼in) across, are borne in axillary cymes in summer.

Female plants produce small, spherical fruit, purple at first, ripening to black. † ↔ 5m (15ft). Chile, Argentina. \*\*

**A. macquii** see *A. chilensis*.

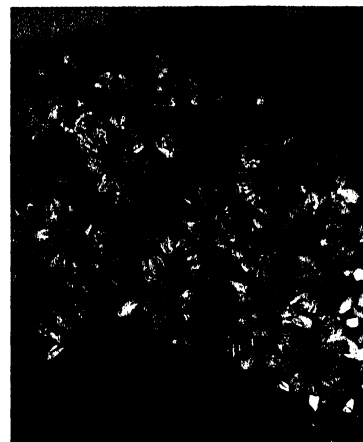
## ARMERIA

Sea pink, Thrift

PLUMBAGINACEAE

Genus of about 80 species of tufted or hummock- or cushion-forming, evergreen perennials or subshrubs, distributed widely from sea cliffs to mountainous areas in Europe, Turkey, N. Africa, and the Pacific coast of North and South America. They produce dense rosettes of linear to strap-shaped leaves and compact, spherical heads of small,

*Armeria* 'Bee's Ruby'

*Armeria juniperifolia*

saucer- or cup-shaped flowers on slender stems. They are ideal for a rock garden or trough, or for the front of a border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in an open situation in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring; the species cross freely and hybrids may result. Divide in early spring. Root semi-ripe, basal cuttings in summer.
- **PESTS AND DISEASES** Prone to red spider mites and aphids under glass.

*A. alliacea*, syn. *A. arenaria*, *A. plantaginea*. Robust, clump-forming perennial with narrow, inversely lance-shaped to linear, dark green leaves, to 15cm (6in) long. In summer, bears white to deep red-purple flowerheads, to 2cm (¾in) across, on wiry stems, 20–50cm (8–20in) long. ⚔ to 50cm (20in). Mountains of W. Europe. \*\*\*

*A. arenaria* see *A. alliacea*.

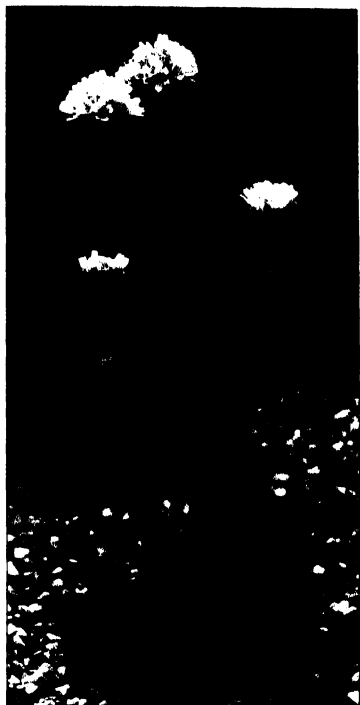
*A. atrosanguinea* of gardens see

*A. pseudarmeria*.

*A. 'Bee's Ruby'* [♀] Tufted, woody-based perennial with broadly strap-shaped, dark green leaves, to 15cm (6in) long. Deep, bright pink flowerheads, 3–4cm (1¼–1½in) across, are borne on strong stems, 20–30cm (8–12in) long, in early summer. ⚔ 30cm (12in), ↔ 25cm (10in). \*\*\*

*A. caespitosa* see *A. juniperifolia*.

*A. juniperifolia* [♀] syn. *A. caespitosa*. Hummock-forming subshrub with rosettes of linear, hairy, spine-tipped, grey-green leaves, to 1.5cm (½in) long. Purplish pink to white flowerheads, to

*Armeria maritima* 'Vindictive'*Armeria pseudarmeria*

1.5cm (½in) across, are borne on stems, 1–2cm (½–¾in) long, in late spring. ⚔ 5–8cm (2–3in), ↔ to 15cm (6in). Mountain pastures or rock crevices in C. Spain. \*\*\*. 'Bevan's Variety' ♀ is compact, with deep rose-pink flowers on very short stems; ⚔ to 5cm (2in).

*A. latifolia* see *A. pseudarmeria*.

*A. maritima* (Sea thrift). Variable, clump-forming perennial with linear, dark green leaves, 4–12cm (1½–5in) long. Stiff stems, to 20cm (8in) long, bear profuse, white, pink, or red-purple flowerheads, to 2.5cm (1in) wide, from late spring to summer. ⚔ to 20cm (8in), ↔ to 30cm (12in). Mountain and coastal areas in N. hemisphere. \*\*\*.

'Bloodstone' has dark, blood-red flowerheads. 'Vindictive' [♀] has stems to 15cm (6in) long, and rose-pink flowerheads to 2cm (¾in) wide.

*A. plantaginea* see *A. alliacea*.

*A. pseudarmeria* [♀] syn. *A. atrosanguinea* of gardens, *A. latifolia*. Clump-forming subshrub with lance-shaped, mid-green leaves, to 20cm (8in) long. In summer, bears white or pale pink flowerheads, 3–4cm (1¼–1½in) across, on stems 25–50cm (10–20in) long. ⚔ to 50cm (20in), ↔ 30cm (12in). Coastal pastures in W. Portugal. \*\*\*

## ARMORACIA

BRASSICACEAE/CRUCIFERAE

Genus of 3 species of erect perennials from a range of habitats at low altitudes, including wasteland, streamsides, and roadsides, in Eurasia and E. USA. They have simple or pinnatifid, dock-like, toothed, coarse, basal leaves arising from deep, woody or fleshy tap roots. Small, cruciform, 4-petaled white flowers are borne in large, terminal racemes or panicles on leafy, branching stems from late spring to late summer, and are followed by oblong to obovate fruits. *A. rusticana* (common horseradish) is widely grown for its pungent, fleshy roots, often used in sauces and relishes.

- **HARDINESS** Fully hardy.

- **CULTIVATION** Grow in full sun in light, fertile, moist but well-drained soil. Water freely during the growing season to prevent the roots becoming woody.
- **PROPAGATION** Divide or take root cuttings in winter. Roots left in place re-sprout vigorously and may be invasive.
- **PESTS AND DISEASES** Prone to black rot, clubroot, and turnip mosaic virus.

*A. rusticana*, syn. *Cochlearia armoracia* (Horseradish, Red cole). Clump-forming perennial with long-stalked, ovate-oblong, toothed, puckered, dark green leaves, 30–50cm (12–20in) long, arising from fleshy, branching, cream-coloured roots. Leafy, branched stems bear terminal panicles of white flowers, 5–8mm (¼–½in) across, from late spring to late summer. Contact with sap may irritate skin. ⚔ 1m (3ft), ↔ 45cm (18in) or more. S.E. Europe, but naturalized in Europe, New Zealand, and North America. \*\*\*

## ARNEBIA

BORAGINACEAE

Genus of about 25 species of erect to spreading annuals and perennials found in woodland and dry, rocky areas, or on grassy slopes, from N. Africa to C. Asia. Simple or branching stems produce hairy leaves, 3–15cm (1¼–6in) long. Blue to purple or yellow to cream flowers are borne in short, coiled, usually terminal cymes. Ideal for a rock garden, a border, or a woodland glade.

- **HARDINESS** Fully hardy.
- **CULTIVATION** *A. pulchra* is best in partial shade in moist but well-drained soil; will tolerate full sun if kept moist. Most other species prefer more sharply drained soil in an open, sunny site.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring or take root cuttings in winter.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*A. echioides* see *A. pulchra*.

*A. pulchra* [♀] syn. *A. echioides*, *F. longiflorum*, *Macrotomia echioides* (Prophet flower). Clump-forming perennial with lance-shaped to oblong, slightly hairy, light green leaves, to 15cm (6in) long. In summer, unbranched stems bear terminal cymes of trumpet-shaped yellow flowers, to 2.5cm (1in) across; each petal has a brown basal spot that fades with age. ⚔ to 30cm (12in). Caucasus, Turkey, N. Iran. \*\*\*

*Arnebia pulchra*

## ARNICA

ASTERACEAE/COMPOSITAE

Genus of about 32 species of clump-forming and rhizomatous perennials from pasture and open woodland in N. temperate and arctic regions. They have mainly basal leaves, 11–20cm (4½–8in) long, and daisy-like flowerheads borne on unbranched stems. They are suitable for a herbaceous border or a large rock garden. All parts may cause severe discomfort if ingested, and contact with sap may aggravate skin allergies.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich soil in full sun.
- **PROPAGATION** Sow seed in a cold frame in autumn, or divide in spring.
- **PESTS AND DISEASES** Caterpillars and slugs may be a problem.

*A. montana*. Clump-forming perennial with mainly basal, broadly obovate to inversely lance-shaped leaves, to 15cm (6in) long. In summer, produces solitary (occasionally 2 or 3), deep yellow or orange-yellow flowerheads, each 5–8cm (2–3in) across, on stems 25–50cm (10–20in) long. ⚔ to 50cm (20in), ↔ 30cm (12in). Europe, W. Asia. \*\*\*

## ARONIA

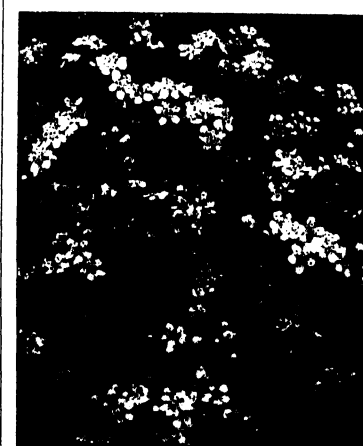
Chokeberry

ROSACEAE

Genus of 2 species of deciduous, suckering shrubs, sometimes classified as *Photinia*, from woodland clearings, scrub, and swamps in E. North America. They are grown for their white, sometimes pink-tinged flowers, borne in late spring in corymbs, to 6cm (2½in) wide; for their colourful autumn leaves, which are alternate, simple, lance-toothed, and 8–10cm (3–4in) long; and for their spherical red or black fruits. Excellent for a shrub border or as specimen plants.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist but well-drained soil (except shallow soil over chalk) in sun or partial shade. Pruning group 1 or 2.
- **PROPAGATION** Sow seed in a seedbed in autumn. Root softwood cuttings in early summer. Remove suckers when plants are dormant, and pot up.
- **PESTS AND DISEASES** Trouble free.

*A. arbutifolia* [♀] (Red chokeberry). Erect shrub with narrowly ovate, matt,

*Aronia arbutifolia*



*Aronia x prunifolia*

dark green leaves, densely grey-hairy beneath, which turn orange, red, and yellow in autumn. Corymbs of white, occasionally pink-tinged flowers, to 1.5cm (½in) across, are borne in late spring, and are followed by persistent red berries, to 6mm (¼in) across. ↑ 3m (10ft), ↔ 1.5m (5ft). E. North America. \*\*\*. 'Brilliant' see *A. x prunifolia* 'Brilliant'.

*A. melanocarpa* (Black chokeberry). Upright shrub with obovate, hairless, glossy, mid-green leaves, which turn dark purple-red in autumn. Corymbs of white, occasionally pink-tinged flowers, to 1cm (½in) across, are borne in late spring and early summer, and are followed by black berries, to 1cm (½in) across. ↑ 2m (6ft), ↔ 3m (10ft). E. North America. \*\*\*. 'Brilliant' see *A. x prunifolia* 'Brilliant'.

*A. x prunifolia* (A. *arbutifolia* x *A. melanocarpa*) (Purple chokeberry). Variable, erect shrub producing obovate, matt, dark green leaves, grey-hairy beneath, which turn dark purple-red in autumn. Corymbs of white, sometimes pink-tinged flowers, to 1.5cm (½in) across, are borne in late spring, and are followed by purple-black berries, to 8mm (⅜in) across. ↑ 3m (10ft), ↔ 2.5m (8ft). E. North America. \*\*\*. 'Brilliant', syn. *A. arbutifolia* 'Brilliant', *A. melanocarpa* 'Brilliant', has bright red leaves in autumn.

▷ *Arorangi* see *Olearia macrodonta*

## ARRABIDAEE

BIGNONIACEAE

Genus of about 50 species of evergreen, tendril climbers occurring in tropical and subtropical rainforest from Mexico to Argentina and the West Indies. They are cultivated mainly for their attractive flowers, which are salverform to bell-shaped, each with 5 petal lobes, often reddish purple or pink, and borne in terminal or axillary panicles. The opposite leaves are 3-palmate, or consist

of a pair of leaflets with a tendril between them. Where temperatures fall below 10–13°C (50–55°F), grow in a temperate or warm greenhouse. In warmer climates, train on a pergola or wall, or through a tree.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in full light. During the growing season, water freely and apply a balanced liquid fertilizer monthly; reduce water in winter. Outdoors, grow in moist but well-drained, reasonably fertile soil in sun or partial shade. Pruning group 11; prune in early spring or after flowering.
- **PROPAGATION** Sow seed in spring at not less than 16–18°C (61–64°F). Root semi-ripe cuttings in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*A. corallina*. Vigorous climber with mid-green leaves divided into 3 ovate leaflets, 3–11cm (1¼–4½in) long. In summer, produces terminal panicles, 10–30cm (4–12in) long, of bell-shaped, red-purple to lilac flowers, 5cm (2in) long, with spreading lobes and white throats. ↑ 5–8m (15–25ft). Mexico to Argentina. ☼ (min. 10°C/50°F)

*A. magnifica* see *Saritaea magnifica*.

## ARRHENATHERUM

Oat grass

GRAMINEAE/POACEAE

Genus of 6 species of deciduous, loosely tufted, perennial grasses from meadows and grassland in Europe, N. Africa, and N. and W. Asia. While most species have unattractive, coarse foliage, and some are invasive, *A. elatius* subsp. *bulbosum* 'Variegatum' is useful for planting among dark-leaved ground cover at the front of a border, or in a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, fertile soil in full sun or partial shade. Cut to ground level in midsummer; in fertile soil, a second flush of leaves will follow.
- **PROPAGATION** Every third year, divide plants from mid-spring to early summer, to maintain stocks.
- **PESTS AND DISEASES** Prone to rust.

*A. elatius* subsp. *bulbosum* 'Variegatum' (Bulbous oat grass, Onion couch). Loosely tufted perennial producing chains of small, usually pear-shaped "bulbs" (swollen stem bases), 1cm (½in) across, and erect, narrow, linear, grey-green leaves, to 25cm (10in) long, with bold, white-striped margins. Narrow, silvery green panicles, 20–30cm (8–12in) long, with open, oat-like spikelets, 1cm (½in) long, are borne from midsummer to early autumn. ↑ to 30cm (12in). \*\*\*

- ▷ **Arrow arum** see *Peltandra*
- Green see *P. virginica*
- White see *P. sagittifolia*
- ▷ **Arrowhead** see *Sagittaria*
- Japanese see *S. sagittifolia*
- ▷ **Arrowroot**, Florida see *Zamia pumila*
- Japanese see *Pueraria lobata*
- ▷ **Arrow-wood**, Southern see *Viburnum dentatum*

## ARTEMISIA

Mugwort, Sagebrush, Wormwood

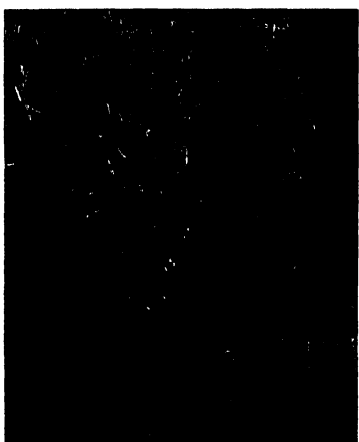
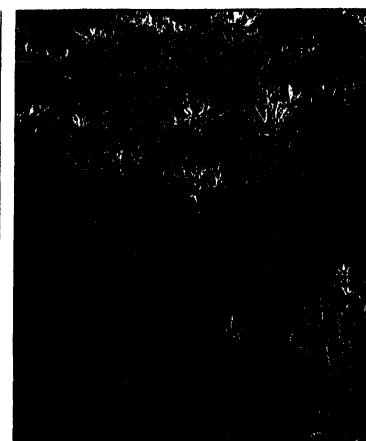
ASTERACEAE/COMPOSITAE

Genus of about 300 species of evergreen and deciduous shrubs, perennials, and annuals found in dry fields, prairies, and scrub in the N. hemisphere, with a few from South Africa and W. South America. Artemisias are cultivated for their alternate, variously shaped, often pinnatisect, usually aromatic, grey or silver leaves; the cylindrical flowerheads, 2–8mm (⅛–⅜in) across, occasionally solitary, but usually in terminal panicles or racemes, are generally of little interest. They are suitable for a rock garden or border; some have culinary uses and are grown in herb gardens.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in well-drained, fertile soil in full sun. A few, such as *A. lactiflora*, require fairly moist soil. Alpine species prefer sharp drainage; some, such as *A. glacialis*, are best grown in a scree or crevice. Most species die back in heavy, poorly drained soils and may be short-lived. Cut perennials to the bases in autumn; if necessary, cut shrubby species and cultivars back hard in spring to maintain a compact habit.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide in spring or autumn. Root greenwood cuttings or heel cuttings of side-shoots in early summer. *A. 'Powis Castle'* may not survive severe winters; maintain stocks by regular propagation from cuttings.
- **PESTS AND DISEASES** *A. absinthium*, its cultivars, and *A. 'Powis Castle'* are prone to aphids and gall. *A. lactiflora* is prone to powdery mildew in dry weather.

*A. abrotanum* (Lad's love, Old man, Southernwood). Erect, deciduous to semi-evergreen shrub producing aromatic, pinnatisect to 3-pinnatisect, grey-green leaves, to 5cm (2in) long, with thread-like lobes, grey-hairy beneath. Yellowish grey flowerheads are borne in dense panicles, 10–30cm (4–12in) long, in late summer. ↑ 1m (3ft). S. Europe. \*\*\*

*A. absinthium* (Absinth, Wormwood). Clump-forming, woody-based perennial producing 2- or 3-pinnatisect, aromatic, silky-hairy, silvery grey leaves, 6–10cm (2½–4in) long, with oblong lobes. Loose panicles, 5–12cm (2–5in) long, of greyish yellow flowerheads are borne

*Artemisia abrotanum**Artemisia alba 'Canescens'*

in late summer. ↑ 90cm (36in), ↔ 60cm (24in). Europe, temperate Asia. \*\*\*. 'Lambrook Silver' ♀ has deeply divided silver foliage; ↑ to 75cm (30in). *A. alba 'Canescens'* (♀ syn. *A. canescens*, *A. splendens*, *A. vulgaris* 'Canescens'). Clump-forming, semi-evergreen perennial producing pinnatisect to 3-pinnatisect silver leaves, 3–15mm (¼–½in) long, with slender, curling lobes. Insignificant, brownish yellow flowerheads are borne in panicles, 5–20cm (2–8in) long, in late summer. ↑ 45cm (18in), ↔ 30cm (12in). \*\*\*. *A. arborescens* (Upright, evergreen shrub with pinnatisect or 2-pinnatisect, aromatic, fern-like, silvery white leaves, to 10cm (4in) long, with linear lobes. Small yellow flowerheads, borne in one-sided panicles, 30cm (12in) long, in summer and autumn, are initially semi-pendent and later erect. Grow against a warm wall in cold areas. ↑ 1m (3ft), ↔ 1.5m (5ft). Mediterranean. \*\*\*. 'Brass Band' see *A. 'Powis Castle'*. *A. assoana* see *A. pedemontana*. *A. canescens* see *A. alba 'Canescens'*. *A. discolor* see *A. michauxiana*. *A. dracuncululus* (Tarragon). Clump-forming, subshrubby perennial with aromatic, lance-shaped, light to mid-green leaves, 10cm (4in) long. Insignificant, nodding, yellowish white flowerheads are borne in loose panicles, 5–35cm (2–14in) long, in late summer. The leaves are used for seasoning; European (French) tarragon has a finer flavour than the hardier and more vigorous Russian tarragon, but seldom sets seed. ↑ 1.2m (4ft), ↔ 30cm (12in). C. and E. Europe, S. Russia. \*\*\*

*Artemisia arborescens*



*Artemisia lactiflora*

**A. glacialis.** Low, densely tufted perennial with silver-hairy leaves, 1–3cm (½–1¼in) long, finely divided into 5 lobes, each 3-lobed. Bears insignificant yellow flowerheads in corymbs 0.5–2.5cm (¼–1in) across, in summer. Resents winter wet; best in an alpine house or scree bed. ↓ 5cm (2in), ↔ 15–20cm (6–8in). S.W. Alps. \*\*\*  
**A. kitadakensis** 'Guizhou' see *A. lactiflora* 'Guizhou'.  
**A. lactiflora** [M]♀ (White mugwort). Clump-forming perennial producing jaggedly cut, pinnatisect, dark green leaves, 20–25cm (8–10in) long, with broadly lance-shaped segments. Spreading panicles, to 60cm (24in) long, of long-lasting, creamy white flowerheads are borne from late summer to mid-autumn. Excellent for a border and for cut or dried flowers. ↓ 1.5m (5ft), ↔ 60cm (24in). W. China. \*\*\*  
**'Guizhou'**, syn. *A. kitadakensis* 'Guizhou', often has purple-flushed stems and young leaves, and bears widely branched white flowerheads.  
**A. lanata** see *A. pedemontana*.  
**A. ludoviciana**, syn. *A. palmeri*, *A. purshiana* (Western mugwort). Rhizomatous, clump-forming perennial

*Artemisia ludoviciana* var. *albula**Artemisia ludoviciana* 'Silver Queen'

with lance-shaped, downy, silvery white leaves, 10–12cm (4–5in) long, which become greener with age. Densely white-woolly panicles, to 20cm (8in) long, of brownish yellow flowerheads are produced from midsummer to autumn. ↓ 1.2m (4ft), ↔ 60cm (24in) or more. W. North America to Mexico. \*\*\*  
**var. albula** [M] has white-woolly leaves. **'Silver Queen'** [M]♀ produces slightly larger leaves than *A. ludoviciana*, and flowers less freely; ↓ 75cm (30in).  
**'Valerie Finnis'** ♀ has silvery grey leaves, which have sharply cut margins; ↓ 60cm (24in); USA (California).  
**A. michauxiana**, syn. *A. discolor*. Rhizomatous perennial, slightly woody at the base, producing pinnatisect or 2-pinnatisect leaves, to 3cm (1¼in) long, with slender, linear lobes, green above and white-hairy beneath. In summer, produces nodding yellowish flowerheads in narrow panicles, 5–25cm (2–10in) long. ↓ 45cm (18in), ↔ 60cm (24in). S.W. Canada, W. USA. \*\*\*  
**A. nutans** see *Scriphidium nutans*.  
**A. palmeri** see *A. ludoviciana*.  
**A. pedemontana**, syn. *A. assoana*, *A. lanata*. Evergreen or semi-evergreen, tufted, low-growing perennial producing silver-hairy, fern-like, pinnatifid leaves, 4–15mm (¼–½in) long, with linear lobes. Racemes, 3–15cm (1¼–6in) long, of brownish yellow flowerheads are borne in summer. ↓ to 30cm (12in), ↔ to 45cm (18in). C. Spain to S.E. Ukraine. \*\*\*  
**A. pontica** [M]♀ Vigorous, rhizomatous, aromatic, evergreen perennial forming a dense dome of erect, unbranched stems, with pinnatifid or 2-pinnatifid, woolly,

*Artemisia pontica**Artemisia* 'Powis Castle'

greyish green leaves, 3–4cm (1¼–1½in) long, with narrow, linear lobes. In early summer, greyish yellow flowerheads are produced in panicles 5–20cm (2–8in) long. It is excellent as ground cover in poor soils in full sun. ↓ 40–80cm (16–32in), ↔ indefinite. C. and E. Europe. \*\*\*  
**A. 'Powis Castle'** [M]♀ syn. *A. arborescens* 'Brass Band'. Woody-based perennial forming a dense, billowing clump of pinnatisect or 2-pinnatisect, feathery, silver-grey leaves, 6cm (2½in) long, with linear lobes. Panicles, to 15cm (6in) long, of silver, yellow-tinged flowerheads are borne in late summer. ↓ 60cm (24in), ↔ 90cm (36in). \*\*\*  
**A. purshiana** see *A. ludoviciana*.  
**A. schmidtiana** ♀ Low, rhizomatous, evergreen, tufted perennial, forming a silver carpet of 2-pinnatisect, silky-hairy leaves, 3–4.5cm (1¼–1½in) long, with very fine linear lobes. Panicles, to 10cm (4in) long, of small yellow flowerheads are borne in summer. ↓ 30cm (12in), ↔ to 45cm (18in). Japan. \*\*\*  
**'Nana'** [M]♀ is very similar, but smaller and more compact; ↓ 8cm (3in), ↔ 30cm (12in).  
**A. splendens** see *A. alba* 'Canescens'.  
**A. stelleriana** 'Boughton Silver' [M] syn. *A. stelleriana* 'Mori', *A. stelleriana* 'Silver Brocade'. Compact, almost prostrate, rhizomatous, evergreen perennial with stalkless, deeply toothed or pinnatifid, white-hairy, silvery grey leaves, 5–10cm (2–4in) long. Panicles, 3–8cm (1¼–3in) long, of insignificant yellow flowerheads are borne on erect white stems in late summer and early autumn. ↓ to 15cm (6in), ↔ 30–45cm (12–18in). \*\*\*

*Artemisia schmidtiana* 'Nana'*Artemisia stelleriana* 'Boughton Silver'

**A. stelleriana** 'Mori' see *A. stelleriana* 'Boughton Silver'.  
**A. stelleriana** 'Silver Brocade' see *A. stelleriana* 'Boughton Silver'.  
**A. tridentata** see *Scriphidium tridentatum*.  
**A. vulgaris** 'Canescens' see *A. alba* 'Canescens'.

## ARTHROPODIUM

ANTHERICACEAE/LILIACEAE

Genus of 12 species of evergreen or deciduous, rhizomatous, tufted perennials, found in a variety of open habitats, mainly in New Zealand and S. Australia. The radical, basally sheathing leaves are simple, entire, and linear to lance-shaped. Loose panicles or racemes of small flowers, with 6 spreading tepals and hairy anthers and filaments, are borne in summer. The hardier species, such as *A. candidum* and *A. milleflorum*, are excellent for a sunny rock garden. Grow half-hardy species, such as *A. cirratum*, in a cool greenhouse or conservatory in frost-prone areas.  
 • **HARDINESS** Most are frost hardy to half hardy. *A. candidum* and *A. milleflorum* are hardy to 10°C (44°F), with good drainage.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full light. Water moderately in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained, gritty soil in full sun; grow at the base of a warm, sunny wall in frost-prone areas.  
 • **PROPAGATION** Sow seed in containers in a cold frame in autumn or early spring, or divide in spring. Overwinter young plants under glass.  
 • **PESTS AND DISEASES** New growth is particularly vulnerable to slugs.

**A. candidum**, syn. *A. reflexum*. Deciduous, tuberous-rooted perennial with linear, mid-green leaves, 15–20cm (6–8in) long. In early and midsummer, bears small, rounded white flowers, 8mm (⅜in) across, with white-hairy anthers and white filaments, in panicles or racemes, 5–10cm (2–4in) long. ↓ to 20cm (8in), ↔ to 10cm (4in). New Zealand. \*\*\*  
**'Maculatum'** and **'Purpureum'** are names applied to variants that produce bronze foliage when raised from seed.  
**A. cirratum**, syn. *A. cirrhatum*. Tufted, evergreen perennial with short rhizomes

*Arthropodium milleflorum*

and linear to lance-shaped, channelled, grey-green leaves, 30–60cm (12–24in) long. Nodding, star-shaped white flowers, 2.5cm (1in) across, flecked purple and yellow, with white anthers and filaments are borne in lax panicles, 30cm (12in) long, in early summer. ↑90cm (36in), ↔30cm (12in). New Zealand. \*\*

**A. cirrhatum** see *A. cirrhatum*.

**A. milleflorum** [ ] syn. *A. millefoliatum*, *A. paniculatum*. Deciduous perennial with short rhizomes, fibrous roots, and lance-shaped, blue- or grey-green leaves, to 25cm (10in) or more long. In mid-summer, bears loose, branched panicles, 30–60cm (12–24in) long, of star-shaped, pale violet or blue flowers, 1.5cm (½in) across, with creamy white filaments and deep violet anthers. ↑to 50cm (20in), ↔to 20cm (8in). Australia (S.E. Australia, Tasmania). \*\*

**A. millefoliatum** see *A. milleflorum*.

**A. paniculatum** see *A. milleflorum*.

**A. reflexum** see *A. candidum*.

▷ **Artichoke, Globe** see *Cynara scolymus*

▷ **Artillery plant** see *Pilea microphylla*

## ARUM

Lords and ladies

ARACEAE

Genus of 26 species of mainly spring-flowering, tuberous perennials found in a range of partially shaded habitats in S. Europe, N. Africa, and W. Asia to the W. Himalayas. They have often attractively marked leaves, which may be spear-, arrow-, or heart-shaped, and which are normally produced in late autumn or winter. Large spathes enclose thin spadices of tiny flowers, either sweetly or unpleasantly scented; these are followed by spikes of red or orange berries. All parts may cause severe discomfort if ingested, and the sap may irritate skin on contact. Some species are good foliage plants for growing with shrubs. The leaves of *A. italicum*

'Marmoratum' are often used in flower arrangements. In frost-prone areas, half-hardy species are best grown under glass.

• **HARDINESS** Fully hardy to half-hardy.

• **CULTIVATION** Plant tubers 10–15cm (4–6in) deep in autumn or spring. Under glass, grow in coarse, loamless potting compost with additional grit, in full or filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; reduce water as the leaves wither, and keep almost dry

*Arum creticum*

when dormant. Outdoors, grow in well-drained, humus-rich soil in a sheltered site in sun or partial shade.

• **PROPAGATION** Sow seed in autumn: remove the outer pulp from the berries (it may be caustic) and sow seed in containers in a cold frame. Divide clumps of tubers after flowering.

• **PESTS AND DISEASES** Trouble free.

**A. creticum** [ ] Tuberous perennial bearing showy, creamy white or deep yellow spathes, 15–25cm (6–10in) long, in spring; they recurve at the tip to reveal stout, pale to deep yellow, sweetly scented spadices. The arrow-shaped leaves, 18–26cm (7–10in) long, are unmarked and dark green. Needs full sun. ↑30–50cm (12–20in), ↔15cm (6in). Greece (Crete). \*\*

*Arum italicum* 'Marmoratum'

**A. dioscoridis**. Variable, tuberous perennial bearing large, deep purple or pale green spathes, 15–35cm (6–14in) long, in spring; they are stained or spotted dark maroon-purple and have unpleasantly scented spadices. Narrow, arrow- to spear-shaped leaves, 27–45cm (11–18in) long, are dark green. Requires full sun. ↑20–30cm (8–12in), ↔15cm (6in). E. Mediterranean. \*\*

**A. dracunculus** see *Dracunculus vulgaris*.

**A. hygrophilum**. Tuberous perennial bearing green spathes, 5–13cm (2–5in) long, with purple-flushed margins and deep purple spadices, in late spring. The variable, spear-shaped leaves, 14–45cm (5½–18in) long, are light to mid-green. Best in a cool greenhouse in frost-prone areas. ↑15cm (6in), ↔15cm (6in). Morocco, Cyprus, Lebanon. \*\*

**A. italicum**. Tuberous perennial with arrow- to spear-shaped, mid-green, white-veined leaves, to 35cm (14in) long, lasting from winter to late spring. In early summer, bears pale greenish white spathes, 15–40cm (6–16in) long, followed by spikes of bright orange-red berries, which may last until new leaves develop. Produces largest leaves in a partially shaded site; needs an open, sunny site to flower well. ↑30cm (12in), ↔15cm (6in). Europe, Turkey, N. Africa. \*\*\*

**subsp. albispalum** has plain green leaves, to 20cm (8in) long, and white spathes; Crimea, Caucasus. 'Marmoratum' [ ] syn. 'Pictum', has pale green or cream-veined leaves.

**A. pictum**. Tuberous perennial bearing blackish purple spathes, 15–25cm (6–10in) long, with short spadices, in autumn. Arrow- to heart-shaped leaves,

30cm (12in) long, are leathery, glossy, dark green, often with fine creamy white veins. Best grown in an alpine house in frost-prone areas. ↑15–25cm (6–10in), ↔15cm (6in). Balearic Islands, France (Corsica), W. central Italy, Sardinia. \*

▷ **Arum**,

**Arrow** see *Peltandra*

**Bog** see *Calla palustris*

**Dragon** see *Dracunculus vulgaris*

**Golden** see *Zantedeschia elliotiana*

**Pink** see *Zantedeschia rehmannii*

**Umbrella** see *Amorphophallus konjac*

▷ **Arum lily** see *Zantedeschia*, *Z. aethiopica*

## ARUNCUS

ROSACEAE

Genus of 2 or 3 species of clump-forming perennials with short rhizomes, closely related to *Filipendula* and *Spiraea*, from moist woodland, often in mountainous areas, in the N. hemisphere. They have alternate, pinnate leaves with long leaf-stalks and boldly veined, toothed leaflets. Tiny, unisexual (occasionally bisexual), white or creamy white flowers, to 5mm (¼in) across, are borne in terminal panicles above the leaves, and are useful for cutting. Grow in a moist border or woodland garden.

• **HARDINESS** Fully hardy.

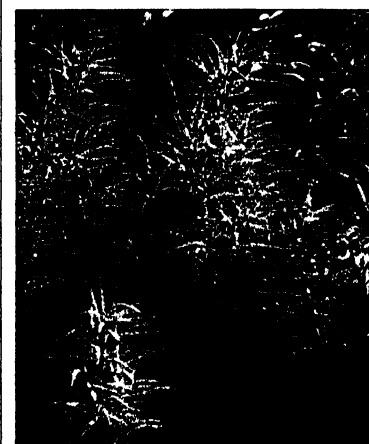
• **CULTIVATION** Grow in moist, fertile soil in full or partial shade. *A. dioicus* will tolerate drier conditions in full sun.

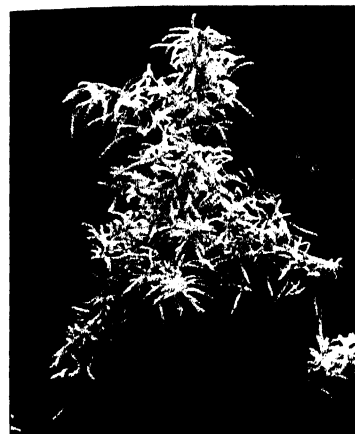
• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring; will self-seed freely unless dead-headed. Divide in early spring or autumn.

• **PESTS AND DISEASES** Blackfly and sawfly larvae may be a problem.

**A. aethusifolius**. Compact perennial with 3- or 4-pinnate, mid-green leaves, to 25cm (10in) long, with ovate, deeply cut leaflets, turning yellow in autumn. Bears panicles, 5–15cm (2–6in) long, of numerous tiny, creamy white flowers in early and midsummer. ↑to 25–40cm (10–16in). Korea. \*\*\*

**A. dioicus** [ ] syn. *A. sylvestris*, *Spiraea aruncus* (Goatsbeard). Dioecious perennial producing 2-pinnate, toothed, hairless, fern-like, mid-green leaves, to 1m (3ft) long, with ovate leaflets. Flowers are borne in loose, pyramidal panicles, to 50cm (20in) long, in early and midsummer. The male inflorescences are creamy white; the females are more pendent and greenish

*Aruncus dioicus*



*Aruncus dioicus* 'Kneiffii'

white. ↑ to 2m (6ft), ↔ 1.2m (4ft). Europe to E. Siberia, E. North America. \*\*\*. 'Kneiffii' ■ has very finely divided, fern-like leaves, and bears tiny, nodding cream flowers on arching, wiry stems; ↑ 1.2m (4ft), ↔ 45cm (18in). *A. sylvester* see *A. dioicus*.

## ARUNDINARIA

GRAMINEAE/POACEAE

Genus of 1 or 2 species of bamboo from swampy areas in S.E. USA. They have spreading rhizomes and stout, rigid canes, 1.5–10m (5–30ft) high, which are simple in the first year, then branching in the second. The persistent cane sheaths produce 3–6 leafy branches from each node. Lateral panicles of 5–15 flower spikelets are borne among the branches at various times of the year. Grow as a dense hedge or screen.

- **HARDINESS** Hardy to -12°C (10°F), but needs warmer conditions to thrive.
- **CULTIVATION** Grow in moist, fertile, humus-rich soil in a sheltered position in sun or partial shade.
- **PROPAGATION** Divide in spring.
- **PESTS AND DISEASES** Prone to aphids.

*A. anceps* see *Yushania anceps*.  
*A. auricoma* see *Pleioblastus auricomus*.  
*A. disticha* see *Pleioblastus pygmaeus* var. *distichus*.  
*A. falconeri* see *Himalayacalamus falconeri*.  
*A. fastuosa* see *Semiarundinaria fastuosa*.  
*A. fortunei* see *Pleioblastus variegatus*.  
*A. gigantea*, syn. *A. macrosperma*, *A. tecta* (Canebrake). Rapidly spreading bamboo with yellow-green canes, lance-shaped leaves, to 20cm (8in) long, and lateral panicles of purple spikelets. Shorter plants that develop flowering panicles directly from the rhizomes are sometimes also sold as *A. tecta*. ↑ to 10m (30ft), ↔ indefinite. S.E. USA. \*\*\*  
*A. humilis* see *Pleioblastus humilis*.  
*A. jaunsarensis* see *Yushania anceps*.  
*A. macrosperma* see *A. gigantea*.  
*A. muriei* see *Fargesia muriei*.  
*A. nitida* see *Fargesia nitida*.  
*A. pygmaea* see *Pleioblastus pygmaeus*.  
*A. quadrangularis* see *Chimonobambusa quadrangularis*.  
*A. simonii* 'Variegata' see *Pleioblastus simonii* 'Variegatus'.  
*A. tecta* see *A. gigantea*.  
*A. vagans* see *Sasa ramosa*.  
*A. variegata* see *Pleioblastus variegatus*.  
*A. viridistriata* see *Pleioblastus auricomus*.

## ARUNDO

GRAMINEAE/POACEAE

Genus of 2 or possibly 3 species of evergreen, rhizomatous, perennial grasses from riversides and ditches in warm-temperate regions of the N. hemisphere. They have alternate, broadly linear, flat leaves, borne on thick, reed-like stems, and terminal, feathery flower panicles. *A. donax* is grown for its attractive, bamboo-like foliage. In frost-prone areas, the variegated cultivars are ideal for a cool conservatory or greenhouse. In warmer areas, use as specimen plants or at the back of a large border.

- **HARDINESS** *A. donax* is hardy to about -12°C (10°F); variegated cultivars are half hardy.

• **CULTIVATION** Under glass, grow variegated cultivars in permanently moist, loamless potting compost in full light. Outdoors, *A. donax* grows well in any soil, but thrives in moist conditions in full sun, with protection from strong winds. For best foliage, cut back annually to the bases. To encourage flowering, cut down stems after their second year.

• **PROPAGATION** Sow seed of *A. donax* in containers in a cold frame in spring. Divide the rootstock from mid-spring to early summer. Root sections of stems in a water-filled tray from mid-spring to midsummer; pot up and keep moist.

- **PESTS AND DISEASES** Trouble free.

*A. conspicua* see *Chionochloa conspicua*.  
*A. donax* (Giant reed). Clump-forming, rhizomatous perennial with stout stems and arching, broadly linear, mid-green, glaucous leaves, to 60cm (24in) long. In mid- and late autumn, produces terminal panicles of light green to purple spikelets, to 60cm (24in) long. ↑ 5m (15ft), ↔ 1.5m (5ft) or more. S. Europe. \*\*\* (borderline). 'Variegata' see var. *versicolor*. 'Variegata Superba' has wide leaves, 4–6cm (1½–2½in) across, and to 30cm (12in) long, striped and margined white; ↑ to 1m (3ft), ↔ indefinite; \*.  
var. *versicolor*, syn. 'Variegata', produces white-striped leaves; ↑ to 1.8m (6ft), more in mild climates, ↔ 60cm (24in); \*.

▷ *Asarabacca* see *Asarum europaeum*

## ASARINA

SCROPHULARIACEAE

Genus of one species of trailing, evergreen perennial, with softly sticky-hairy leaves, occurring among shaded rocks in the Pyrenees. *A. procumbens* is cultivated for its attractive, 2-lipped flowers, which resemble those of snapdragons (*Antirrhinum*). They are produced singly from the upper leaf axils over long periods in summer. It will trail effectively over shady walls or rocks, the side of a raised bed, or a shady bank.

- **HARDINESS** Hardy to -10°C (14°F).
- **CULTIVATION** Grow in fertile, well-drained, sandy soil in partial shade.
- **PROPAGATION** Sow seed at 16°C (61°F) in early spring, or root tip cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*A. antirrhiniflora* see *Maurandella antirrhiniflora*.



*Asarina procumbens*

*A. barclayana* see *Maurandya barclayana*.

*A. erubescens* see *Lophospermum erubescens*.

*A. procumbens* ■ syn. *Antirrhinum asarina*. Trailing, evergreen perennial with opposite pairs of shallowly lobed, kidney-shaped, hairy, grey-green leaves, to 6cm (2½in) long, on brittle stems. Pale yellow "snapdragon" flowers, to 3.5cm (1½in) long, with deep yellow throats and light purple veining, are produced in summer. Tolerates partial shade. ↑ 5cm (2in), ↔ to 60cm (24in). Pyrenees. \*\*\*. 'Iberian Trail' is a seed-raised cultivar of the species.

*A. purpusii* see *Maurandya purpusii*.

## ASARUM

syn. *HETEROTROPA*, *HEXASTYLIS*  
 Wild ginger

ARISTOLOCHIACEAE

Genus of about 70 species of mainly evergreen, low-growing, rhizomatous perennials occurring in woodland in Europe, E. Asia, and North America. They have large, usually glossy, sometimes marbled leaves, concealing mildly malodorous, pitcher-shaped flowers, some with 3 slender, tail-like petal tips. Use as ground cover at the edge of a border or grow among shrubs. The rhizomes are aromatic, smelling rather like ginger.

- **HARDINESS** Fully hardy, but may shed leaves below -15°C (5°F).
- **CULTIVATION** Grow in partial to full shade in moderately fertile, humus-rich, moist but well-drained, preferably neutral to acid soil.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Some species self-seed freely. Divide in early spring.
- **PESTS AND DISEASES** Slugs and snails may be a problem, especially in spring.

*A. europaeum* ■ (*Asarabacca*). Evergreen, creeping, rhizomatous perennial, forming carpets of kidney-shaped, glossy, dark green leaves, 5–8cm (2–3in) long. These conceal small, narrowly bell-shaped, short-lobed, greenish purple then brown flowers, 1.5–2cm (½–¾in) long, borne in late spring. ↑ 8cm (3in), ↔ to 30cm (12in) or more. W. Europe. \*\*\*  
*A. hartwegii*, syn. *A. marmoratum*. Evergreen, prostrate, rhizomatous perennial with heart-shaped, pointed, dark green-bronze leaves, 6–12cm



*Asarum europaeum*

(2½–5in) long, attractively marbled silvery green along the veins. Broadly tubular, brownish purple flowers, to 5cm (2in) or more long, with long, slender lobes, are produced in early summer. ↑ 8cm (3in), ↔ to 30cm (12in) or more. USA (California, Oregon). \*\*\*

*A. marmoratum* see *A. hartwegii*.

*A. shuttleworthii*. Evergreen, prostrate, rhizomatous perennial with broadly heart-shaped, shiny, dark green, often silver-marbled leaves, 2.5–10cm (1–4in) long. Broadly tubular, purple-brown flowers, 1.5–4cm (½–1½in) long, with triangular lobes, patterned purple-red and cream within, are borne in early summer. ↑ 8cm (3in), ↔ to 30cm (12in) or more. S.E. USA. \*\*\*

## ASCLEPIAS

Milkweed, Silkweed

ASCLEPIADACEAE

Genus of about 110 species of evergreen or deciduous, clump-forming, sometimes spreading perennials, and a few subshrubs and shrubs, mainly from well-drained soils in scrub or grassland, some from marsh, wet scrub, and lakeside areas, in South Africa, temperate North America, and tropical North and South America. They have simple, narrowly elliptic to lance-shaped or ovate, opposite or alternate, sometimes spirally arranged leaves and umbel-like cymes of numerous small flowers, to 2.5cm (1in) across. The corolla lobes reflex to display the unusual, upright, horn-like, staminal appendages. The flowers are followed by pairs of spindle-shaped green fruits, variable in length, which ripen to yellowish brown, and split open to expose rows of seeds with long, silky white hairs, giving rise to the common name, silkweed. Asclepias are attractive to bees and are showy plants for a border or wildflower garden. In frost-prone areas, grow tender species in a cool or temperate greenhouse. Contact with the milky sap may irritate skin.

A

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (Jl No.2), with additional leaf mould, in full light. During the growing season, water freely and apply a balanced liquid fertilizer every 5–6 weeks; reduce water after flowering and keep almost dry in winter. Outdoors, grow in fertile, well-drained, loamy soil in full sun, although *A. incarnata* and *A. speciosa* prefer more moisture and will thrive near a pond or stream. Grow *A. hallii* and *A. syriaca* in a wildflower garden, because they spread by underground suckers and are unsuitable for a border.
- **PROPAGATION** Sow seed of tender species at 16–18°C (61–64°F) in late winter. Sow seed of perennials in containers in a cold frame in early spring, or divide in spring. Root basal cuttings in spring.
- **PESTS AND DISEASES** Whiteflies may be a problem under glass.

**A. curassavica** ■ (Blood flower, Indian root, Swallow-wort). Evergreen subshrub, often grown as an annual, with upright branches and opposite, elliptic-lance-shaped, mid-green leaves, to 15cm (6in) long. Axillary or near-terminal, umbel-like cymes, 5–10cm (2–4in) across, of red or orange-red flowers, sometimes yellow or white, with orange-yellow hoods, are borne from summer to autumn. They are followed by erect fruit, to 8cm (3in) long. ↓ 1m (3ft), ↔ 60cm (24in). South America. ☼ (min. 7°C/45°F)

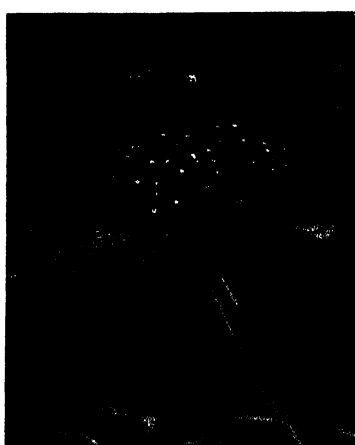
**A. fruticosa** see *Gomphocarpus fruticosus*.

**A. hallii**. Vigorous perennial with upright stems, spreading, fleshy roots, and alternate, lance-shaped, dark green leaves, 12cm (5in) long. Semi-pendent, terminal cymes, 5–8cm (2–3in) across, of deep pink flowers, are produced in mid- and late summer. The flowers are followed by erect fruit, to 15cm (6in) long. ↓ 90cm (36in), ↔ 60cm (24in). W. USA. \*\*\*

**A. in arnata** ■ (Swamp milkweed). Thick-stemmed perennial with dense branches and opposite, narrowly elliptic to ovate, mid-green leaves, 7–15cm (3–6in) long. Clustered, umbel-like cymes, 5cm (2in) across, of pinkish purple flowers, with paler "horns", are produced from the upper leaf axils from midsummer to early autumn. The flowers are followed by erect fruit, to 7cm (3in) long. ↓ 1.2m (4ft), ↔ 60cm (24in). N.E. to S.E. USA. \*\*\*



*Asclepias curassavica*



*Asclepias incarnata*

**A. lanceolata**. Erect, tuberous perennial with slender stems and opposite, lance-shaped, mid-green leaves, to 25cm (10in) long. Bears terminal, umbel-like cymes, 8–10cm (3–4in) across, of bright red flowers (orange or yellow in some garden cultivars) in mid- and late summer. They are followed by erect fruit, to 10cm (4in) across. ↓ 1.5m (5ft), ↔ 75cm (30in). S.W. USA. \*\*\*

**A. physocarpa** see *Gomphocarpus physocarpus*.

**A. speciosa**. Erect, softly hairy perennial with opposite, oblong-ovate, grey-white, woolly leaves, 8–20cm (3–8in) long. Numerous axillary, umbel-like cymes, 3–8cm (1¼–3in) across, of purple-pink flowers are borne in summer, and are followed by densely hairy, semi-pendent or pendent fruit, 6–10cm (2½–4in) long. ↓ 75cm (30in), ↔ 60cm (24in). W. and C. North America. \*\*\*

**A. syriaca**. Vigorous, softly hairy perennial with spreading, fleshy roots and upright stems with opposite, oblong-ovate leaves, 10–25cm (4–10in) long, mid-green above and blue-green beneath. In summer, bears scented, greenish purple and pink, occasionally white flowers in axillary, nodding, umbel-like cymes, 5cm (2in) across.



*Asclepias ruberosa*

These are followed by pendent, softly spiny fruit, to 12cm (5in) long. ↓ to 2m (6ft), ↔ indefinite. E. North America. \*\*\*

**A. tuberosa** ■ (Butterfly weed).

Tuberous, hairy perennial with stout, unbranched stems bearing numerous spirally arranged, lance-shaped to oblong-ovate, light to mid-green leaves, 10–14cm (4–5½in) long. Bears axillary and terminal, umbel-like cymes, 4–5cm (1½–2in) across, of orange-red, sometimes orange or yellow flowers, from midsummer to early autumn; they are followed by fruit 9–13cm (3½–5in) long, on nodding stalks. ↓ 90cm (36in), ↔ 30cm (12in). E. and S. North America. \*\*\*

## X ASCOCENDA

ORCHIDACEAE

Bigenic hybrid genus, a cross between *Ascocentrum* and *Vanda*, of several hundred compact, evergreen, epiphytic orchids, derived from species originally growing wild in Burma, India, and the Philippines. They have upright rhizomes producing semi-rigid, narrowly oval leaves, and axillary racemes of 6–8 delicate, open flowers, which are borne freely over long periods of the year, although mainly in winter. The flowers are often richly coloured and attractively overlaid with contrasting colours.

• **HARDINESS** Frost tender.

• **CULTIVATION** Warm-growing orchids. Grow in epiphytic orchid compost, ideally in slatted baskets. Provide full light and high humidity throughout the year, with shade from hot sun in spring and summer. In summer, water freely, mist twice daily, and apply a balanced liquid fertilizer at every third watering; water moderately in winter. See also p.46.

• **PROPAGATION** Plants occasionally produce basal shoots, which can be separated when rooted.

• **PESTS AND DISEASES** Aphids, red spider mites, and mealybugs may be a problem.

**x A. Dong Tarn** ■ (x *A. Eileen Beauty* x x *A. Medasand*). Compact, evergreen, epiphytic orchid producing alternate, 2-ranked, mid-green leaves. Upright racemes of many bright red flowers, 6cm (2½in) across, flecked deep maroon and touched magenta and yellow, are borne in winter. ↓ 30cm (12in), ↔ 23cm (9in). ☼ (min. 18°C/64°F; max. 30°C/86°F)



x *Ascocenda* Dong Tarn

## ASCOCENTRUM

ORCHIDACEAE

Genus of 5 species of evergreen, epiphytic, monopodial orchids from the Himalayas to S.E. Asia and the Philippines. They have upright stems and 2-ranked, rigid, linear or strap-shaped leaves. They are grown for their axillary racemes of numerous brightly coloured flowers, 1–2cm (½–¾in) across, borne in spring and summer.

• **HARDINESS** Frost tender.

• **CULTIVATION** Warm-growing orchids. Grow in epiphytic orchid compost in containers or slatted baskets. Provide full light and high humidity all year, with shade from hot sun in spring and summer. In summer, water freely, mist twice daily, and apply a balanced liquid fertilizer at every third watering; water moderately in winter. See also p.46.

• **PROPAGATION** Plants occasionally produce basal shoots, which can be separated when rooted.

• **PESTS AND DISEASES** Prone to aphids, red spider mites, and mealybugs.

**A. ampullaceum**. Evergreen, epiphytic orchid with strap-shaped, dark green leaves, 10–12cm (4–5in) long. In early summer, bears bright rose-pink, spurred flowers, 1–2cm (½–¾in) across, in racemes 10cm (4in) long. ↓ 12cm (5in), ↔ 20cm (8in). Himalayas, Burma, Thailand. ☼ (min. 16–18°C/61–64°F; max. 30°C/86°F)

▷ **Ash** see *Fraxinus*

**American mountain** see *Sorbus americana*

**Arizona** see *Fraxinus velutina*

**Claret** see *Fraxinus angustifolia* 'Raywood'

**Common** see *Fraxinus excelsior*

**Green** see *Fraxinus pennsylvanica*

**Korean mountain** see *Sorbus alnifolia*

**Manna** see *Fraxinus ornus*

**Mountain** see *Sorbus aucuparia*

**Narrow-leaved** see *Fraxinus angustifolia*

**One-leaved** see *Fraxinus excelsior* f. *diversifolia*

**Oregon** see *Fraxinus latifolia*

**Red** see *Fraxinus pennsylvanica*

**Velvet** see *Fraxinus velutina*

**Weeping** see *Fraxinus excelsior* 'Pendula'

**White** see *Fraxinus americana*

## ASIMINA

ANNONACEAE

Genus of 8 species of deciduous and evergreen shrubs or small trees found in rich, moist soils in thickets and woodland, mainly in southern parts of E. North America. Their leaves are entire and alternate. *A. triloba*, the only species cultivated, has striking foliage, curious, solitary flowers, borne on the previous year's shoots, and edible fruit. Suitable for a shrub border or a sunny woodland clearing, it needs long, hot summers to achieve tree stature, and to flower and fruit freely. In cooler climates, it is grown as a multi-stemmed foliage shrub.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, fertile, humus-rich, neutral to acid soil, in full sun. Pruning group 1.

- **PROPAGATION** Sow seed in autumn in a seedbed, or stratify in moist sand at 5°C (41°F) for 90 days, and sow in spring. Alternatively, layer in autumn or insert root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

**A. triloba** ☐ (Pawpaw). Deciduous shrub or small tree with obovate, mid-green leaves, to 30cm (12in) long, turning yellow in autumn. Cup-shaped flowers, 3–5cm (1¼–2in) across, each with 3 large calyx lobes surrounding 6 purple-brown petals (3 large and 3 small), are borne singly or in small clusters in late spring. Ovoid, bottle-shaped, edible fruit, to 12cm (5in) long, are yellow-green, ripening to yellow-brown. †↔ 6m (20ft). E. USA. \*\*\*

## ASPARAGUS

ASPARAGACEAE/LILIACEAE

Genus of about 300 species of evergreen and deciduous perennials, climbers, and subshrubs from sandy and coastal sites in Europe, Asia, and Africa. They usually have spindle-shaped tubers or tuber-like rootstocks. Arching and spreading or climbing stems bear scale-like true leaves and more prominent leaf-like stems, which in some species have straight or curved spines. Slightly scented, white or pink flowers, borne singly or in racemes or small clusters, are followed by red, orange, or purple berries, 1cm (½in) across. In frost-prone regions, grow as houseplants or in a cool or temperate greenhouse. In frost-free climates, grow in a border, or train climbers on a trellis. The foliage is useful for floral arrangements.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, with shade from hot sun. Water freely from early spring to mid-autumn, applying a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on in spring. Provide support for climbers. Outdoors, grow in fertile, moist but well-drained soil in a sheltered site in partial shade.
- **PROPAGATION** Sow seed at 16°C (61°F) in autumn or early spring. Divide clusters of tubers in early spring.
- **PESTS AND DISEASES** Red spider mites and scale insects may be a problem.

**A. densiflorus** (Asparagus fern). Evergreen, arching, tuberous perennial with feathery, linear, leaf-like, light green



*Asparagus densiflorus* 'Myersii'



*Asparagus scandens*

stems, to 1.5cm (½in) long. In summer, bears axillary racemes of small white flowers followed by bright red berries. † 60–90cm (24–36in), ↔ 1–1.2m (3–4ft). South Africa. ☼ (min. 7°C/45°F). 'Myersii' ☐♀ syn. *A. meyeri*.

*A. 'Myers'* (Foxtail fern), has dense, arching, foxtail-like fronds, 30–40cm (12–16in) long, of needle-like, leaf-like stems, each 2–2.5cm (¾–1in) long; † 40cm (16in). 'Sprengerii' ♀ syn. *A. sprengeri* (Emerald feather, Emerald fern), has arching then pendent stems, giving an open, loose appearance, and needle-like, leaf-like stems, 5–15mm (¼–½in) long, borne in groups of 3.

*A. meyeri* see *A. densiflorus* 'Myersii'.

*A. 'Myers'* see *A. densiflorus* 'Myersii'.

*A. plumosus* see *A. setaceus*.

*A. scandens* ☐ Scrambling or climbing perennial producing fern-like foliage, with 2, or whorls of 3, lance- to sickle-shaped, light green, leaf-like stems, to 1.5cm (½in) long. Tiny, nodding, white, sometimes pink-flushed flowers are produced singly from the leaf axils in summer, and followed by red berries. † 2m (6ft). South Africa. \*

*A. setaceus* ♀ syn. *A. plumosus* (Asparagus fern). Twining climber when mature (bushy at first), with feathery foliage, consisting of clusters of up to 20 bristle-like, leaf-like, deep green stems, 1cm (½in) long. Produces solitary, tiny, nodding white flowers from the leaf axils in summer, followed by purple-black berries. † 3m (10ft). South Africa. \*

*A. sprengeri* see *A. densiflorus*

'Sprengerii'.

▷ **Asparagus, Bath** see *Ornithogalum pyrenaicum*

▷ **Aspen** see *Populus*

**American** see *P. tremuloides*

**Bigtooth** see *P. grandidentata*

**Common** see *P. tremula*

**Quaking** see *P. tremuloides*

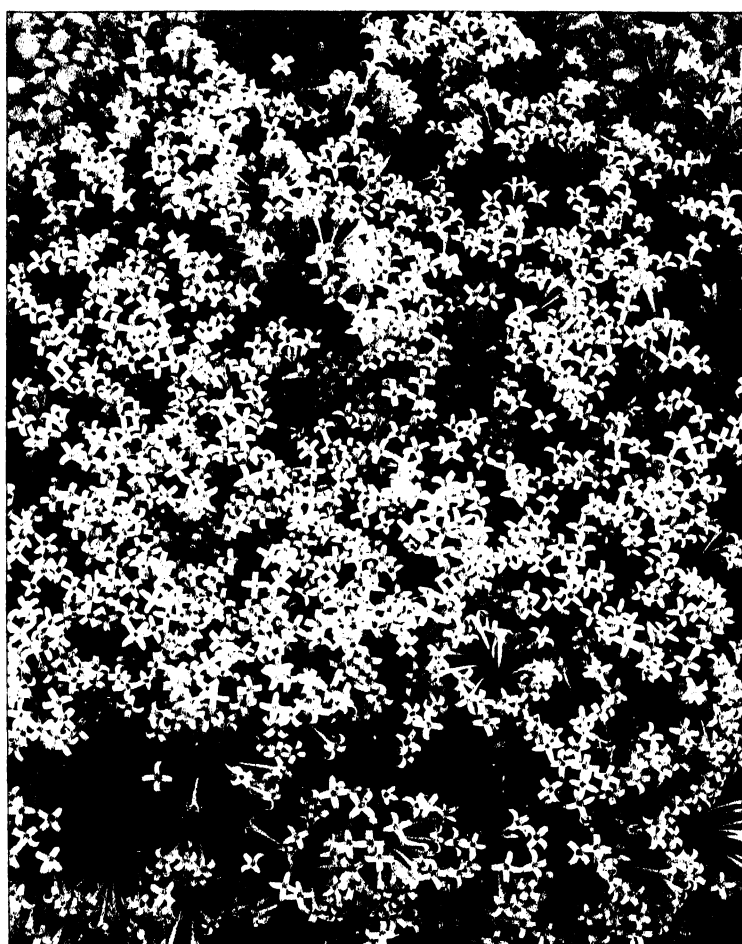
**Weeping** see *P. tremula* 'Pendula'

## ASPERULA

Woodruff

RUBIACEAE

Genus of about 100 species of annuals, evergreen or deciduous perennials, and dwarf shrubs, from woodland and mountain sites, mainly in Europe and Asia. The stalkless leaves are opposite or whorled. Tubular or funnel-shaped flowers, with widely spreading lobes, are borne in branched, terminal or axillary panicles or cymes in spring or summer.



*Asperula suberosa*

Grow dwarf shrub or perennial species in an alpine house, or in a rock garden, a trough, tufa, or a scree bed. *A. orientalis* is useful for an annual border, and for cut flowers.

- **HARDINESS** Fully hardy, if protected from winter wet.
- **CULTIVATION** All are lime-tolerant. Under glass, grow perennials and dwarf shrubs in gritty, loam-based potting compost (J1 No.1). Outdoors, grow in sharply drained, moderately fertile soil in sun or partial shade. Protect from excessive winter wet. Some perennials, especially *A. suberosa*, are very brittle.
- **PROPAGATION** Sow seed of perennials in an open frame in autumn; sow seed of annuals *in situ* in spring. Divide in spring or autumn, or root softwood cuttings in early summer.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*A. aristata* subsp. *thessala* see *A. sintenisii*.

*A. athoa* of gardens see *A. suberosa*.

*A. azurea* see *A. orientalis*.

*A. gussonei*. Densely tufted, mat-forming, woody-based, evergreen perennial with whorls of narrowly ovate-oblong to linear, glaucous green leaves, 5–10mm (¼–½in) long. Bears clusters of tubular, deep pink flowers, to 5mm (¼in) long, in late spring and early summer. † to 5cm (2in), ↔ to 15cm (6in). Italy (mountains in Sicily). \*\*\*

*A. nitida*. Tufted, cushion-forming, evergreen perennial with rosettes of whorled, linear to lance-shaped, rich green leaves, to 1.5cm (½in) long. Few-flowered, terminal cymes of narrowly

tubular pink flowers, to 8mm (⅓in) long, are produced in early summer. † 10cm (4in), ↔ to 20cm (8in).

Mountains of Greece and Turkey.

\*\*\*. subsp. *hirtella*. syn. subsp.

*puberula*, is very similar, but has leaves fringed with fine hairs. It is sometimes confused with *A. sintenisii*.

*A. odorata* see *Galium odoratum*.

*A. orientalis*. syn. *A. azurea*. Upright, then spreading annual with whorls of obovate to oblong-lance-shaped, bristly, mid-green leaves, to 2.5cm (1in) long. Powderpuff-like, flattened cymes of sweetly scented, tubular, bright blue, occasionally white flowers, 9mm (⅓in) long, are borne in summer. † 30cm (12in), ↔ 8–10cm (3–4in). Caucasus, Syria, Iran, Iraq. \*\*\*

*A. sintenisii* ♀ syn. *A. aristata* subsp. *thessala*. Tufted, cushion-forming,

evergreen perennial with rosettes of whorled, linear to oblong, glaucous, blue-green leaves, 4–8mm (⅓–⅓in) long. Bears paired or solitary, short-stemmed, narrowly tubular pink flowers, to 1cm (½in) long, in early summer. † 10cm (4in), ↔ to 20cm (8in). Mountains of Turkey. \*\*\*

*A. suberosa* ☐ syn. *A. athoa* of gardens. Clump-forming, evergreen perennial with whorled, inversely lance-shaped, white-hairy, glaucous leaves, 4–10mm (⅓–½in) long. Bears profuse clusters of tubular, bright pink flowers, to 6mm (¼in) long, in early summer. † to 8cm (3in), ↔ to 20cm (8in). Mountains of Greece, Bulgaria. \*\*\*

▷ **Asphodel** see *Asphodelus*

**Yellow** see *Asphodeline lutea*



*Asphodeline lutea*

## ASPHODELINE

Jacob's rod

ASPHODELACEAE/LILIACEAE

Genus of up to 20 species of biennials and perennials from sunny, rocky meadows and scrub on dry slopes from the Mediterranean and Turkey to the Caucasus. They have clustered, fleshy or fibrous rhizomes, grass-like basal and stem leaves, and star-shaped, yellow or white flowers in erect, narrow racemes on erect, unbranched stems. Grow in a border or on a dry, sunny bank.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, sandy, loamy, deep soil in full sun. Mulch in autumn in very cold areas.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in late summer and early autumn: tease apart the fleshy rhizomes, retaining 2 or 3 growing points on each piece.
- **PESTS AND DISEASES** Slugs, snails, and aphids may be a problem.

**A. liburnica.** Clump-forming perennial with narrowly triangular, blue-green leaves, to 25cm (10in) long, borne only on the lower part of the flower stems. In midsummer, bears slender racemes, 15–22cm (6–9in) long, of pale yellow flowers, 5cm (2in) wide, the backs of the tepals striped green, with narrowly ovate to lance-shaped bracts, 1.5cm (½in) long. ↑1m (3ft), ↔30cm (12in). S.E. Europe, E. Mediterranean. \*\*\*

**A. lutea** ■ (King's spear, Yellow asphodel). Clump-forming perennial with furrowed, narrowly triangular, blue-green leaves, 35cm (14in) long, produced all along the flower stems. In late spring, bears dense racemes, to 20cm (8in) long, of fragrant, bright yellow flowers, 3cm (1¼in) wide, with large, ovate bracts, 2.5cm (1in) long. ↑1.5m (5ft), ↔30cm (12in). C. and E. Mediterranean, W. Turkey. \*\*\*

## ASPHODELUS

Asphodel

ASPHODELACEAE/LILIACEAE

Genus of 12 species of annuals and perennials found in open woodland, meadows, and scrub in well-drained, sometimes barren, rocky soils from C. Europe and the Mediterranean to the Himalayas. They have fleshy, congested rhizomes and dense tufts of radical,



*Asphodelus albus*

linear, flat or cylindrical, sometimes keeled, basal leaves, 15–60cm (6–24in) long. Leafless stems bear dense racemes or panicles of flowers, mostly 3–4cm (1¼–1½in) across, surrounded by persistent, scaly, white or brown bracts. The white or pink tepals have green or brown central veins. The taller perennial species are striking in a sunny border or wildflower garden; grow *A. acaulis* in a scree bed or in an alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, well-drained, moderately fertile, sandy loam in a warm, sunny, dry position. Under glass, grow *A. acaulis* in gritty, loam-based potting compost (J1 No.1); outdoors, grow in a scree bed in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide in early spring. Raise the short-lived *A. fistulosus* annually from seed.
- **PESTS AND DISEASES** Prone to aphids.

**A. acaulis.** Evergreen, rhizomatous, stemless perennial with rosettes of flat, linear, light green leaves, to 20cm (8in) long. In late winter and early spring, produces congested racemes of open funnel-shaped, pale pink or white, green-veined flowers, to 4cm (1½in) wide, with white bracts, on short stems in the centre of the leaf rosettes. ↑to 15cm (6in), ↔20cm (8in). Atlas Mountains. \*\*\*

**A. aestivus.** syn. *A. microcarpus*. Clump-forming perennial with broad, linear, flat, thick and leathery, mid-green leaves, 20–40cm (8–16in) long. In mid- and late spring, bears star-shaped, white, sometimes pink-flushed flowers, 5–8cm (2–3in) across, with brown central veins and greenish white bracts, in branched panicles. ↑1m (3ft), ↔30cm (12in). Mediterranean, W. Turkey. \*\*\*

**A. albus** ■ Clump-forming perennial with linear, flat but keeled, mid-green leaves, 30–60cm (12–24in) long, and leafless flowering stems. Star-shaped white flowers, 2–4cm (¾–1½in) across, with pink central veins and white or

brown bracts (depending on the subspecies), are borne in occasionally branched racemes in mid- or late spring. ↑90cm (36in), ↔30cm (12in). C. and S. Europe, N. Africa. \*\*\*

**A. fistulosus.** syn. *A. tenuifolius*. Annual or short-lived perennial with a dense, basal clump of narrow, cylindrical, keeled, mid-green leaves, to 35cm (14in) long. In mid- and late summer, hollow, usually branched stems bear panicles of star-shaped, pinkish white flowers, to 2.5cm (1in) across, with brown central veins, surrounded by white bracts.

↑45cm (18in), ↔20cm (8in). S.W. Europe to S.W. Asia. \*\*\*

**A. microcarpus** see *A. aestivus*.

**A. tenuifolius** see *A. fistulosus*.

## ASPIDISTRA

CONVALLARIACEAE/LILIACEAE

Genus of 3 or more species of evergreen, rhizomatous perennials from woodland in the Himalayas, China, and Japan.

The long-lasting, leathery, glossy, basal leaves are elliptic to lance-shaped, pointed at the tips, and narrowed at the bases into long, slightly winged leaf-stalks. Solitary, 6- to 8-lobed, purple or grey-white flowers with purple markings, borne on the rhizomes at soil level, are pollinated by snails or slugs and mostly hidden by the foliage.

Aspidistras are valued for their tolerance of deep shade, fluctuating temperatures, and neglect. Although commonly grown as houseplants, they are also useful as ground cover in mild climates.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. Water moderately when in growth, sparingly in winter. Once established, apply a balanced liquid fertilizer monthly (variegated cultivars tend to revert if overfed). Grows best with a minimum of 7–10°C (45–50°F). Outdoors, grow in moist but well-drained, fertile, sandy loam with added leaf mould, in a sheltered site in full or partial shade.
- **PROPAGATION** Divide in spring.
- **PESTS AND DISEASES** Mealybugs, red spider mites, scale insects, thrips, and vine weevil larvae may be a problem under glass.

**A. elatior** ♀ (Cast-iron plant).

Rhizomatous perennial, usually grown as a houseplant, with ovate to lance-shaped, glossy, dark green leaves,



*Aspidistra elatior* 'Variegata'

30–50cm (12–20in) long, produced singly at short intervals along the rhizomes. Erect, fleshy, broadly bell-shaped, 8-lobed cream flowers, 2–3cm (¾–1¼in) across, and maroon inside, are borne singly along the rhizomes in early summer. ↑to 60cm (24in).

China. \*\*\*. **'Milky Way'** has white-speckled foliage. **'Variegata'** ■ ♀ has elliptic leaves, to 70cm (28in) long, with creamy white stripes or wider cream bands along the margins and down the leaf-stalks. Variegated areas on older leaves often turn brown in bright light.

**A. lurida** 'Irish Mist'. Rhizomatous perennial producing stiff, lance-shaped leaves, 15–20cm (6–8in) long, with 2 or 3 leaves per node. Leaves are dark green and develop yellow markings when mature. Solitary, bell-shaped, 8-lobed, deep purple-red flowers, 2–3cm (¾–1¼in) across, are borne along the rhizomes in early summer. ↑to 15–20cm (6–8in). \*\*

## ASPLENIUM

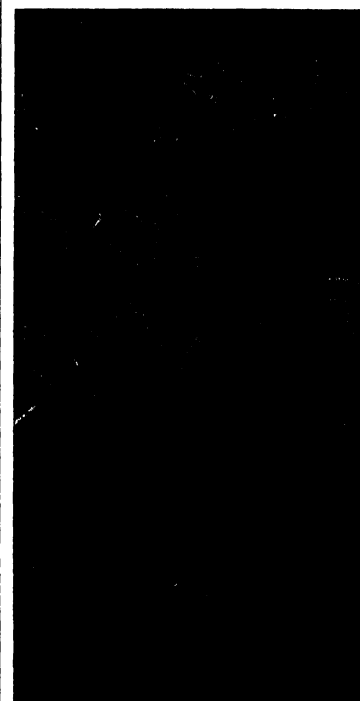
syn. CETERACH, PHYLITIS

Spleenwort

ASPLENIACEAE

Genus of over 700 species of evergreen or semi-evergreen, terrestrial and epiphytic ferns found in diverse habitats on all continents except Antarctica. Short, erect, occasionally creeping rhizomes produce tufts of fronds, which may be simple, or pinnate to 4-pinnate, or pinnatifid. Some aspleniums are "bird's-nest" ferns: striking epiphytes with long, entire fronds overlapping to form a "nest" in which organic matter collects. Sori are linear, and usually run parallel to each other from the midribs towards the margins of the fronds. Use smaller species in wall crevices, a rock garden, or an alpine trough. Grow larger species in woodland or among shrubs in a shady border. In frost-prone climates, grow tender species as houseplants or in a cool, temperate, or warm greenhouse.

- **HARDINESS** Fully hardy to frost tender.



*Asplenium bulbiferum*



*A. ceterach*, *A. scolopendrium*, *A. trichomanes*, and their cultivars are hardy to -30°C (-22°F).

• **CULTIVATION** Under glass, grow in a mix of equal parts loam, coarse leaf mould or peat substitute (or peat), sharp sand, and charcoal. Provide bright filtered light and moderate humidity. When in growth, water moderately and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil, with added grit, in partial shade. *A. rhizophyllum* needs alkaline soil; *A. ceterach*, *A. scolopendrium*, and *A. trichomanes* prefer alkaline conditions, but most other terrestrial species must be kept lime-free.

• **PROPAGATION** Sow spores as soon as ripe at 15°C (59°F) for hardy species, and at 21°C (70°F) for tender species. Divide hardy species in spring. Some species, such as *A. bulbiferum*, produce plantlets that may be potted up when 3 or 4 leaves have formed. See also p.51.

• **PESTS AND DISEASES** *A. scolopendrium* is prone to rust in wet winters. Bird's-nest ferns are vulnerable to scale insects.

***A. australasicum*** (Bird's-nest fern). Evergreen, terrestrial or epiphytic fern with short, erect rhizomes, producing a "nest" of lance-shaped, entire to slightly wavy, bright green fronds, 2m (6ft) long. Sometimes confused with *A. nidus*. ↑ to 2m (6ft), ↔ 1.2m (4ft). Australia to Polynesia. ☼ (min. 10°C/50°F)

***A. bulbiferum*** (Hen-and-chicken fern, Mother spleenwort). Evergreen or semi-evergreen, terrestrial or epiphytic fern with short, erect rhizomes and 2- or 3-pinnate, ovate, triangular, or lance-shaped to oblong, dark green fronds, 1.2m (4ft) long. The lance-shaped to oblong segments bear numerous plantlets. ↑↔ 1.2m (4ft). Australia, New Zealand. ★★ (borderline)

***A. ceterach*** (Rusty-back fern). Evergreen, terrestrial fern with short, erect rhizomes and tufts of narrowly lance-shaped, pinnate or deeply pinnatifid fronds, to 20cm (8in) long, with oblong to rounded pinnae, dark green above, covered with rusty brown scales beneath. Sori are intermixed with the scales. ↑ 15cm (6in), ↔ 20cm (8in). Widespread in much of Europe to Caucasus, W. Asia, Himalayas, N. Africa. ★★

***A. dimorphum***. Evergreen, terrestrial fern with 2- or 3-pinnate to pinnatifid, mid-green fronds, 90cm (36in) long,

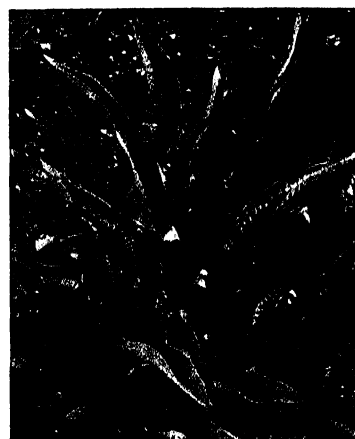
arising from short, erect rhizomes. Sterile and fertile pinnae may occur on the same frond. Sterile pinnae are coarsely divided into ovate segments; fertile pinnae are lacy and finely divided. ↑ to 80cm (32in), ↔ 60–80cm (24–32in). Australia (Norfolk Island). ☼ (min. 10°C/50°F)

***A. musifolium***. Evergreen, epiphytic fern with short, erect rhizomes, producing "nests" of simple, broadly ovate to lance-shaped, glossy, bright green fronds, 1.2m (4ft) long, similar to those of *A. nidus*, but much wider. ↑ to 1.5m (5ft), ↔ 1m (3ft). Tropical S.E. Asia. ☼ (min. 10°C/50°F)

***A. nidus*** (Bird's-nest fern). Slow-growing, evergreen, epiphytic fern with "nests" of ovate to lance-shaped, entire, glossy, bright green fronds, 1.5m (5ft) long, and short, erect rhizomes. Commonly cultivated, and has given rise to a number of cultivars. Several species have similar frond characteristics and may be confused with *A. nidus*. ↑ to 1.5m (5ft), ↔ 1m (3ft). Widespread in tropical areas. ☼ (min. 10°C/50°F)

***A. oblongifolium*** (Shining spleenwort). Evergreen, terrestrial or epiphytic fern with short, erect rhizomes and ovate to elliptic, pinnate, mid-green fronds, 60cm (24in) long, with elongated, ovate to elliptic pinnae, borne on purplish black stalks. ↑ to 1m (3ft), ↔ 80cm (32in). New Zealand. ★

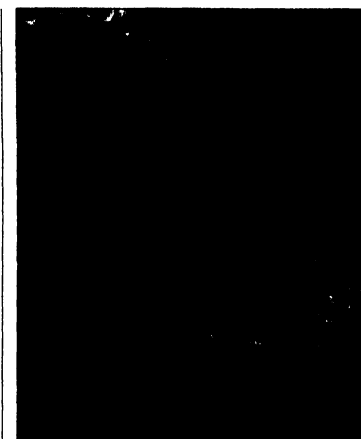
***A. rhizophyllum***, syn. *Camptosorus rhizophyllum* (Walking fern). Semi-evergreen or deciduous, terrestrial fern with short, erect rhizomes. Tapered, triangular-lance-shaped or linear, simple fronds, are 30cm (12in) long, heart-



*Asplenium scolopendrium*

shaped, and sometimes pinnatifid at the bases, with short, reddish green stalks. The elongated frond tips curve over and root where they touch the ground, quickly producing new plantlets and forming large colonies. ↑ to 23cm (9in), ↔ indefinite. North America. ★

***A. scolopendrium*** (Syn. *Phyllitis scolopendrium*, *Scolopendrium vulgare* (Hart's tongue fern). Terrestrial, evergreen fern with erect to shortly creeping rhizomes. It produces irregular, shuttlecock-like crowns of strap-shaped, leathery, glossy, bright green fronds, to 40cm (16in) or more long, which are heart-shaped at the bases and often have wavy margins. Sori are arranged in herringbone fashion. ↑ 45–70cm (18–28in), ↔ 60cm (24in). Europe, W. Asia, North America (as var.



*Asplenium scolopendrium* 'Crispum'

*americanum*). ★★. 'Crispum' (Maidenhair spleenwort) has mid-green fronds with strongly wavy margins, and is usually sterile.

**Cristatum Group** cultivars have fronds that are fertile and crested at the tips; ↑ 60cm (24in), ↔ 80cm (32in).

**Marginatum Group** contains variants that have fertile fronds with toothed or irregular margins and often fleshy ridges of tissue running along the undersides, close to the margins; ↑ 35cm (14in), ↔ 45cm (18in). **Ramocristatum Group** cultivars produce many-branched fronds, with each division lightly crested at the tip, eventually forming a ball of shining green foliage; ↑ 30cm (12in), ↔ 50cm (20in). **Ramomarginatum Group** cultivars have branched fronds with toothed or irregular margins, often with fleshy ridges running along the undersides, close to the margins; ↑ 30cm (12in), ↔ 50cm (20in). **Undulatum** has fertile fronds with wavy margins, the undulations less regular than those of 'Crispum'; ↑ 30cm (12in), ↔ 50cm (20in).

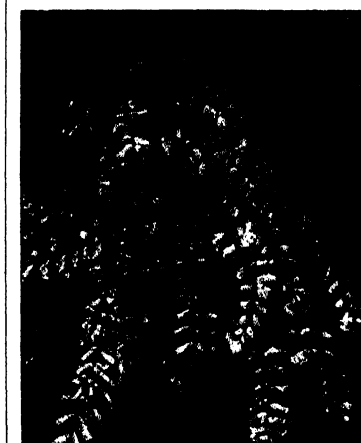
***A. trichomanes*** (Maidenhair spleenwort). Evergreen or semi-evergreen, terrestrial fern with erect, sometimes creeping rhizomes producing narrowly lance-shaped, pinnate, dark green fronds, usually 10–20cm (4–8in) long, on glossy black or dark brown stalks. Pinnae are distinctly stalked, elliptic or oblong, and rounded at the tips. ↑ 15cm (6in), ↔ 20cm (8in). Most temperate regions. ★★. **subsp. quadrivalens** is cultivated more frequently than *A. trichomanes*, and has fronds with short-stalked pinnae, which are squarer at the tips and closer together.



*Asplenium ceterach*



*Asplenium nidus*



*Asplenium trichomanes*



# ASTELIA

ASTELIACEAE/LILIACEAE

Genus of about 25 species of evergreen perennials with short rhizomes, mostly from subalpine or mountainous areas, in boggy, peaty soil, in New Guinea, Australasia, Hawaii, and southern areas of South America. They form large clumps of arching, usually keeled, linear leaves covered in silvery white scales, sometimes losing these at maturity. In spring or summer, they bear panicles of small, unisexual, pale-hued, often green, yellow, or brownish purple flowers. The 6 tepals may be spreading or reflexed, and often persist below the orange or red berries. *A. chathamica* and *A. nervosa* have particularly attractive foliage. In frost-free climates, grow in a peat bed or rock garden. In frost-prone regions, they are best grown in a cool greenhouse or conservatory.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loamless potting compost in full light with shade from hot sun and with good ventilation. Water freely during the growing season; keep just moist in winter. Outdoors, grow in moist, fertile, peaty soil in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or divide in spring.
- **PESTS AND DISEASES** Trouble free.

*A. chathamica* [L] ♀ syn. *A. nervosa* var. *chathamica*. Clump-forming perennial producing arching, leathery, silver-scaly leaves, to 1.5m (5ft) long. Long-stalked panicles of pale yellowish green flowers, 8mm (½in) across, with reflexed tepals, are borne in mid- and late spring. The flowers are followed by orange berries on female plants. ‡ 1.2m (4ft), ↔ to 2m (6ft). New Zealand (Chatham Islands). \*\*\*

*A. nervosa*. Clump-forming perennial with tufts of arching foliage, green and silver-woolly above, bronze to white and scaly beneath, with green midribs. Leaves are usually 60cm (24in) long, sometimes to 2m (6ft). Long-stalked, open panicles of greenish yellow or brownish purple flowers, 7–8mm (¼–½in) across, with spreading tepals, are borne in summer; female plants produce orange or red berries. ‡ 60cm (24in), ↔ to 2m (6ft). New Zealand. \*\*\*. var. *chathamica* see *A. chathamica*.



*Astelia chathamica*

# ASTER

syn. CRINITARIA, MICROGLOSSA

ASTERACEAE/COMPOSITAE

Genus of about 250 species of annuals, biennials, perennials, and subshrubs from a variety of habitats, including well-drained, mountainous sites to moist woodland, in the N. hemisphere, particularly North America. The few shrubby species are mainly from South Africa. Most asters have alternate, entire, simple, lance-shaped leaves, some hairless, some softly hairy. The daisy-like flowerheads are either solitary or borne in terminal corymbs, racemes, or panicles on erect to spreading, usually branched stems; they have strap-shaped, female ray-florets in white, pink, blue, or purple, and tubular, hermaphrodite, usually yellow disc-florets. There are asters for almost all garden situations, including borders and rock gardens, streamsides, dry sites, and wildflower gardens. In frost-prone areas, grow the tender, shrubby species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Asters have varying cultivation requirements. For ease of reference, these are grouped as follows:
  1. Well-cultivated, fertile, moist soil in sun or partial shade.
  2. Well-drained, open, moderately fertile soil in full sun.
  3. Moist, moderately fertile soil in partial shade.

Mulch all asters annually after cutting back in late autumn. Stake taller perennials, 75–90cm (30–36in) or more high, from early spring. To maintain vigour and flower quality, divide cultivars of *A. novae-angliae* and *A. novi-belgii* every third year.

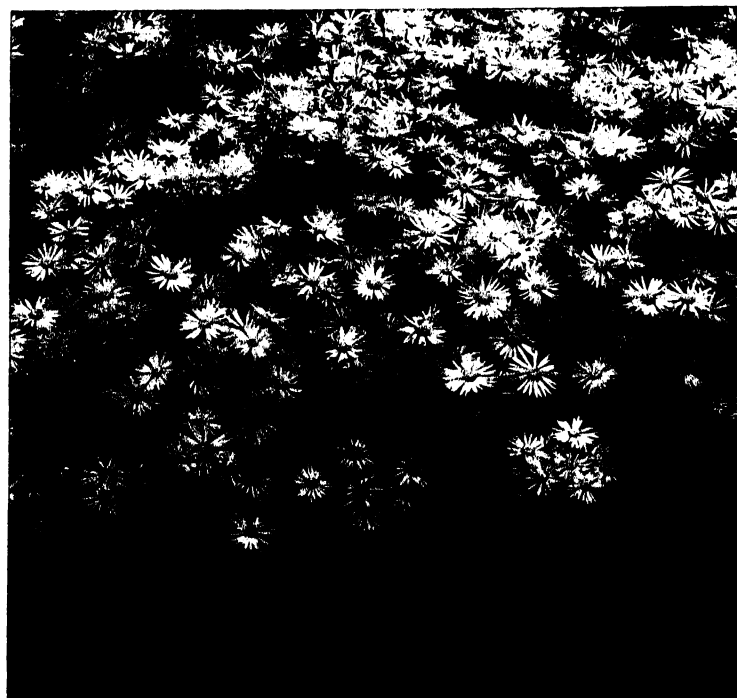
• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide or separate runners, preferably in spring, otherwise in autumn; replant only vigorous, young shoots. Root basal cuttings of *A. amellus*, *A. x frikartii*, and *A. thomsonii* in spring.

• **PESTS AND DISEASES** Vulnerable to eelworms, aphids, slugs, snails, *Fusarium* wilt, leaf spot, and grey mould (*Botrytis*). *A. novi-belgii* cultivars are prone to powdery mildew and tarsonemid mites.

*A. acris* see *A. sedifolius*.

*A. albenscens*, syn. *Microglossa albenscens*. Open, spreading, deciduous subshrub with lance-shaped, tapered, toothed, aromatic, mid-green leaves, to 12cm (5in) long. In mid- and late summer, mauve-blue or white flowerheads, 9mm (¾in) across, with yellow disc-florets, are borne in flattened corymbs, to 10cm (4in) across. Cultivation group 2. ‡ 1.2m (4ft), ↔ 2m (6ft). Himalayas. \*\*\*

*A. alpinus* [L] ♀ Spreading, clump-forming perennial with short-stalked, spoon-shaped to narrowly lance-shaped, mid-green leaves, to 9cm (3½in) long. Bears solitary violet flowerheads, to 5cm (2in) across, with deep yellow disc-florets, on erect stems in early and mid-summer. Cultivation group 2. ‡ to 25cm (10in), ↔ 45cm (18in). Alps. \*\*\*. Several outstanding cultivars are available, the ray-florets varying in colour, but all with deep yellow disc-florets. Suitable for the front of a border or a large rock garden. ‘Dark Beauty’



*Aster amellus* ‘Sonia’

see ‘Dunkle Schöne’. ‘Dunkle Schöne’, syn. ‘Dark Beauty’, has deep purple flowerheads. var. *himalaicus* see *A. himalaicus*. ‘Wargrave Variety’, syn. ‘Wargrave Park’, has pale pink, purple-ringed flowerheads. ‘White Beauty’ has white flowerheads.

*A. amelloides* see *Felicia amelloides*.

*A. amellus*. Clump-forming, erect or semi-decumbent, hairy perennial with lance-shaped, mid-green leaves, 3–5cm (1¼–2in) long. Loose corymbs, to 15cm (6in) across, of lilac-blue flowerheads, each 3–5cm (1¼–2in) wide, with yellow disc-florets, open from late summer to autumn. Cultivation group 2; thrives in alkaline soil. ‡ 30–60cm (12–24in), ↔ 45cm (18in). C. and E. Europe to W. Russia and Turkey. \*\*\*.

‘Brilliant’ has bright pink flowerheads; ‡ 75cm (30in). ‘King George’ [L] ♀ has large violet-blue flowerheads; ‡ 45cm (18in). ‘Mauve Beauty’ has large violet flowerheads; ‡ 60–90cm (24–36in).

‘Nocturne’ [L] has deep lilac flowerheads; ‡ 75cm (30in). ‘Peach Blossom’ is peach-pink; ‡ 70cm (28in). ‘Pink Zenith’ see ‘Rosa Erfüllung’. ‘Rosa Erfüllung’, syn. ‘Pink Zenith’, has soft pink flowerheads. ‘Rudolph Goethe’ has deep lavender-blue flowerheads. ‘Sonia’ [L] has light pink flowerheads.

‘Veilchenkönigin’ ♀ syn. ‘Violet Queen’, has violet-purple flowerheads. ‘Violet Queen’ see ‘Veilchenkönigin’.

*A. capensis* see *Felicia amelloides*.

*A. coelestis* see *Felicia amelloides*.

*A. ‘Coombe Fishacre’* ♀ Clump-forming, erect perennial, a hybrid of *A. lateriflorus*, with lance-shaped, finely toothed, dark green leaves, 6–10cm (2½–4in) long. From midsummer to mid-autumn, produces pink-flushed white flowerheads, 1.5cm (½in) across, with brownish yellow disc-florets, in corymbs to 20cm (8in) across. Cultivation group 3, but tolerates well-drained soil in full sun. ‡ 90cm (36in), ↔ 30cm (12in). \*\*\*

*A. cordifolius*. Clump-forming, erect perennial with long-stalked, broadly

ovate to heart-shaped, mid-green leaves, to 12cm (5in) long. From late summer to mid-autumn, produces loose panicles, 25cm (10in) across, of pale to deep blue flowerheads, to 2cm (¾in) across, with yellow disc-florets. Cultivation group 3. ‡ 0.6–1.5m (2–5ft), ↔ 45cm (18in). E. North America. \*\*\*.

‘Silver Spray’ [L] has pale pink, white-tinged flowerheads, to 3cm (1¼in) across; ‡ 1.2m (4ft).

‘Sweet Lavender’ ♀ has arching sprays of lavender-blue flowerheads on lax stems; ‡ 1–1.2m (3–4ft).

*A. corymbosus* see *A. divaricatus*.

*A. diffusus* see *A. lateriflorus*.

*A. divaricatus*, syn. *A. corymbosus*.

Clump-forming, rhizomatous perennial with arching, wiry, blackish purple stems bearing mid-green leaves, 6–12cm (2½–5in) long, the upper ones ovate-lance-shaped, the lower ones heart-shaped. Bears loose corymbs, 10cm (4in) across, of white flowerheads, to 1cm (½in) across, with brownish yellow disc-florets, from midsummer to mid-autumn. Cultivation group 3. ‡ 60cm (24in). E. North America. \*\*\*

*A. ericoides*. Clump-forming, bushy perennial with slender, freely branched stems and small, linear-lance-shaped, mid-green leaves, to 7cm (3in) long. Bears white flowerheads, to 1cm (½in) across, sometimes shaded pink or blue, with yellow disc-florets, in loose panicles, 20cm (8in) across, from late summer to late autumn. Cultivation group 2. ‡ 1m (3ft), ↔ 30cm (12in). Canada, C. and E. USA. \*\*\*.

‘Brimstone’ ♀ has cream flowerheads with bold yellow disc-florets. ‘Esther’ [L] is bushy, with small pink flowerheads; ‡ 70cm (28in). ‘Golden Spray’ [L] ♀ is bushy, with pink-tinged white flowerheads and bold, golden yellow disc-florets. ‘Pink Cloud’ ♀ bears a mass of small, pale pink flowerheads, each 1.5cm (½in) across. ‘White Heather’ [L] is upright, with compact panicles of white flowerheads; ‡ 90cm (36in).

*A. x frikartii* (*A. amellus* x *A. thomsonii*). Upright perennial with oblong-ovate,

rough, dark green leaves, 5–8cm (2–3in) long. In late summer and early autumn, bears loose corymbs, 20cm (8in) across, of light to dark violet-blue flowerheads, 5–8cm (2–3in) across, with orange disc-florets. Cultivation group 2.  $\uparrow$  70cm (28in),  $\leftrightarrow$  45cm (18in). Garden origin.  $\star\star\star$  **'Flora's Delight'** has dense, bushy growth, greyish green foliage, and long-lasting lilac flowerheads;  $\uparrow$  50cm (20in),  $\leftrightarrow$  30cm (12in). **'Mönch'**  $\square\varnothing$  has long-lasting, clear lavender-blue flowerheads on stout stems;  $\uparrow$  70cm (28in),  $\leftrightarrow$  35–40cm (14–16in). **'Wunder von Stäfa'**  $\square\varnothing$  is similar to 'Mönch', with stout stems and long-lasting blue flowerheads;  $\uparrow$  70cm (28in),  $\leftrightarrow$  35–40cm (14–16in).

**A. himalaicus**, syn. *A. alpinus* var. *himalaicus*. Rhizomatous, clump-forming perennial with obovate to spoon-shaped, mid-green leaves, to 5cm (2in) long. In early summer, bears erect, unbranched stems of solitary flowerheads, 3–8cm (1¼–3in) across, with lilac or purple-blue ray-florets and brownish yellow disc-florets. Cultivation group 2.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 30cm (12in). China to E. Himalayas.  $\star\star\star$

**A. lateriflorus**, syn. *A. diffusus*, *A. vimineus*. Clump-forming perennial with slender, hairy stems, spreading branches, and linear- or oblong-lance-shaped, mid-green leaves, to 15cm (6in) long. Corymbs, to 15cm (6in) across, of white to pale lilac flowerheads, to 1.5cm (½in) across, with rose-pink disc-florets, are produced from midsummer to mid-autumn. Cultivation group 3.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  30cm (12in). North America.  $\star\star\star$  **'Delight'** has greyish green foliage and white flowerheads with pinkish brown disc-florets;  $\uparrow$  60cm (24in). **'Horizontalis'**  $\square\varnothing$  has widely spreading branches and small leaves, to 8cm (3in) long. It bears white, sometimes pink-tinged flowerheads with pink-brown disc-florets;  $\uparrow$  60cm (24in).

**A. linosyris**  $\square$  (Goldilocks). Clump-forming perennial with unbranched, erect stems and linear mid-green leaves,

5–8cm (2–3in) long. In late summer or early autumn, bears tiny flowerheads, 2–4mm (¼–½in) across, with golden yellow disc-florets and no ray-florets, in dense corymbs, 3–15cm (1¼–6in) across. Cultivation group 2.  $\uparrow$  70cm (28in),  $\leftrightarrow$  30cm (12in). Europe.  $\star\star\star$  **A. 'Little Carlow'**  $\square\varnothing$  Clump-forming, erect perennial, a hybrid of *A. cordifolius*, with ovate to heart-shaped, toothed, dark green leaves, 10–12cm (4–5in) long. Produces loose panicles, 20cm (8in) across, of violet-blue flowers, to 2cm (¾in) across, with yellow disc-florets, in early and mid-autumn. Cultivation group 3, but will tolerate well-drained soil in full sun.  $\uparrow$  90cm (36in),  $\leftrightarrow$  45cm (18in).  $\star\star\star$

**A. 'Little Dorrit'**. Clump-forming perennial, a hybrid of *A. cordifolius*, with erect stems bearing ovate to heart-shaped, toothed, dark green leaves, 10–12cm (4–5in) long. In early and mid-autumn, bears pink, sometimes mauve-shaded flowerheads, to 2cm (¾in) across, with yellow disc-florets, in loose panicles 20cm (8in) across. Cultivation group 3, but will tolerate well-drained soil in full sun.  $\uparrow$  1m (3ft),  $\leftrightarrow$  45cm (18in).  $\star\star\star$

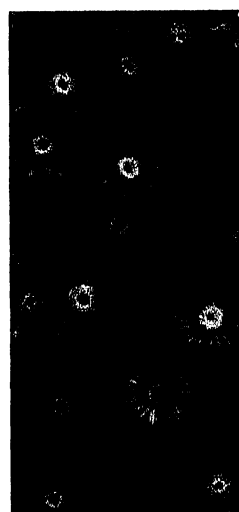
**A. natalensis** see *Felicia rosulata*. **A. novae-angliae** (New England aster). Clump-forming, hairy perennial with short rhizomes and stout stems, densely covered with stalkless, stem-clasping, lance-shaped, mid-green leaves, to 12cm (5in) long. From late summer to mid-autumn, strong, almost woody stems bear terminal, corymb-like sprays, to 25cm (10in) across, of violet-purple flowerheads, to 5cm (2in) across, with yellow disc-florets. Cultivation group 1.  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  60cm (24in). E. North America.  $\star\star\star$  **'Andenken an Alma Pötschke'**  $\square\varnothing$  syn. 'Alma Pötschke', has bright salmon-pink flowerheads;  $\uparrow$  1.2m (4ft). **'Andenken an Paul Gerber'** has dark red flowerheads in late summer and early autumn;  $\uparrow$  1.5m (5ft). **'Autumn Snow'** see 'Herbstschnee'. **'Barr's Pink'**  $\square$  has semi-double, bright rose-pink flowerheads in early autumn;  $\uparrow$  1.3m (4½ft). **'Barr's Violet'** bears deep violet-blue flowerheads;  $\uparrow$  1.5m (5ft). **'Harrington's Pink'**  $\square\varnothing$  has clear, light pink flowerheads;  $\uparrow$  1.2m (4ft). **'Herbstschnee'**, syn. 'Autumn Snow', bears large white flowerheads, to 7cm (3in) across;  $\uparrow$  1.2m (4ft). **'Lye End Beauty'** is lilac-pink;  $\uparrow$  1.7m (5½ft). **'Septemberrubin'**, syn. 'September Ruby', bears deep rose-pink flowerheads;  $\uparrow$  1.2m (4ft). **'September Ruby'** see 'Septemberrubin'.

**A. novi-belgii** (Michaelmas daisy, New York aster). Clump-forming, rhizomatous, hairless perennial with slender, branched stems and stalkless, lance-shaped, mid-green leaves, 5–10cm (2–4in) long. From late summer to mid-autumn, bears corymb-like panicles, 10–30cm (4–12in) across, of violet flowerheads, to 6cm (2½in) across, with yellow disc-florets. Cultivation group 1.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  90cm (36in). North America.  $\star\star\star$  **'Ada Ballard'** bears large, lavender-blue flowerheads, 7cm (3in) across;  $\uparrow$  90cm (36in). **'Alice Haslam'** has rose-red flowerheads;  $\uparrow$  25cm (10in),  $\leftrightarrow$  45cm (18in). **'Apple Blossom'**  $\square$  has flowerheads in creamy pink;  $\uparrow$  90cm (36in). **'Audrey'** has lavender-blue flowerheads;  $\uparrow$  35cm



*Aster linosyris*

5–8cm (2–3in) long. In late summer or early autumn, bears tiny flowerheads, 2–4mm (¼–½in) across, with golden yellow disc-florets and no ray-florets, in dense corymbs, 3–15cm (1¼–6in) across. Cultivation group 2.  $\uparrow$  70cm (28in),  $\leftrightarrow$  30cm (12in). Europe.  $\star\star\star$  **A. 'Little Carlow'**  $\square\varnothing$  Clump-forming, erect perennial, a hybrid of *A. cordifolius*, with ovate to heart-shaped, toothed, dark green leaves, 10–12cm (4–5in) long. Produces loose panicles, 20cm (8in) across, of violet-blue flowers, to 2cm (¾in) across, with yellow disc-florets, in early and mid-autumn. Cultivation group 3, but will tolerate well-drained soil in full sun.  $\uparrow$  90cm (36in),  $\leftrightarrow$  45cm (18in).  $\star\star\star$



*Aster alpinus*



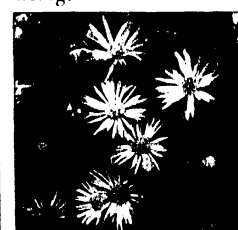
*Aster amellus* 'King George'



*Aster amellus* 'Nocturne'



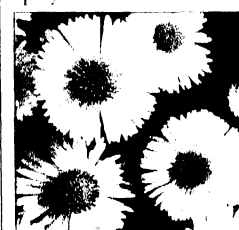
*Aster cordifolius* 'Silver Spray'



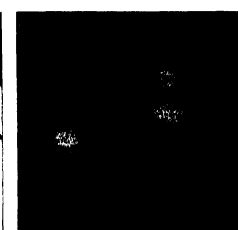
*Aster ericoides* 'Esther'



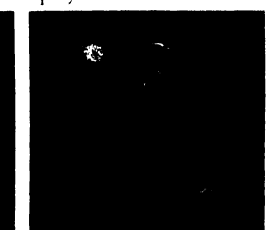
*Aster ericoides* 'Golden Spray'



*Aster ericoides* 'White Heather'



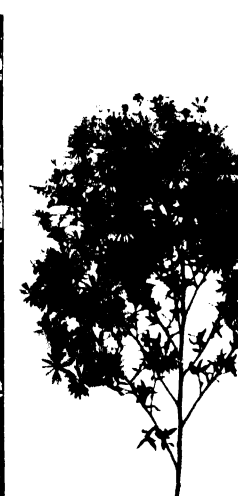
*Aster x frikartii* 'Mönch'



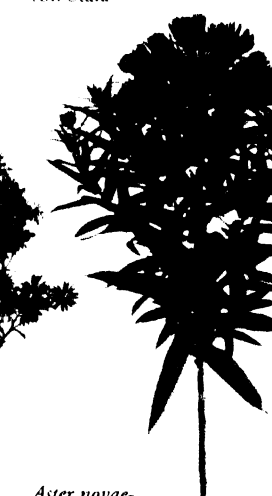
*Aster x frikartii* 'Wunder von Stäfa'



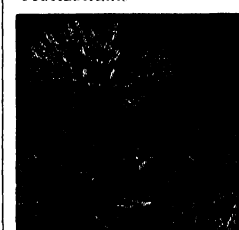
*Aster lateriflorus* 'Horizontalis'



*Aster Little Carlow*



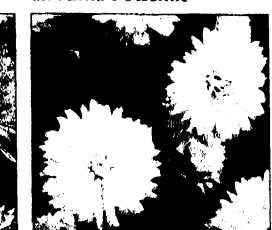
*Aster novae-angliae* 'Andenken an Alma Pötschke'



*Aster novae-angliae* 'Barr's Pink'



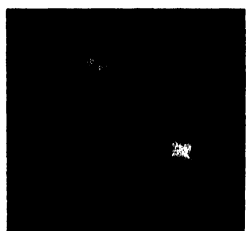
*Aster novae-angliae* 'Harrington's Pink'



*Aster novi-belgii* 'Apple Blossom'



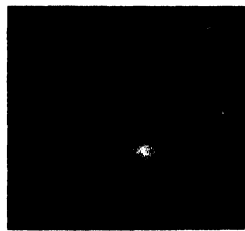
*Aster novi-belgii* 'Carnival'



*Aster novi-belgii* 'Chequers'



*Aster novi-belgii* 'Fellowship'



*Aster novi-belgii* 'Jenny'



*Aster novi-belgii* 'Kristina'



*Aster novi-belgii* 'Lassie'



*Aster novi-belgii* 'Marie Ballard'



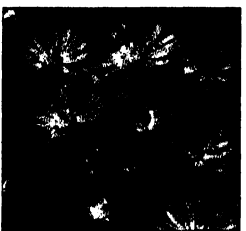
*Aster novi-belgii* 'Orlando'



*Aster novi-belgii* 'Patricia Ballard'



*Aster novi-belgii* 'Peace'



*Aster novi-belgii* 'Professor Anton Kippenberg'



*Aster novi-belgii* 'Royal Ruby'



*Aster novi-belgii* 'Royal Velvet'



*Aster novi-belgii* 'Sandford White Swan'



*Aster* 'Ringdove'



*Aster sedifolius*



*Aster thomsonii* 'Nanus'



*Aster turbinellus*

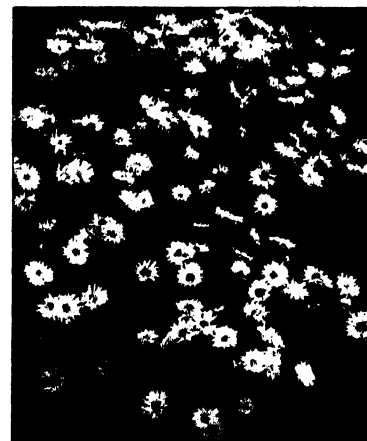
(14in), ↔ 45cm (18in). '**Beechwood Challenger**' has crimson flowerheads; ↑ 90cm (36in). '**Blandie**' bears semi-double ivory flowerheads, becoming pink-tinged; ↑ 90cm (36in). '**Blue Gown**' bears mid-blue flowerheads. '**Carnival**' □ bears bright cerise flowerheads; ↑ 60cm (24in). '**Chequers**' □ has purple flowerheads; ↑ 60cm (24in). '**Climax**' has light lavender-blue flowerheads. '**Coombe Rosemary**' has double, violet-purple flowerheads; ↑ 90cm (36in). '**Crimson Brocade**' has semi-double crimson flowerheads; ↑ 90cm (36in). '**Ernest Ballard**' has large, carmine-red flowerheads; ↑ 90cm (36in). '**Fellowship**' □ has large, double flowerheads, 7cm (3in) across, in deep pink; ↑ 90cm (36in). '**Freda Ballard**' bears semi-double, rich rose-red flowerheads; ↑ 90cm (36in). '**Gayborder Royal**' has bright crimson flowerheads; ↑ 90cm (36in). '**Harrison's Blue**' has violet-blue flowerheads; ↑ 90cm (36in). '**Heinz Richard**' has pink flowerheads, 7cm (3in) across; ↑ 30cm (12in), ↔ 45cm (18in). '**Helen Ballard**' bears dusky red flowerheads; ↑ 60cm (24in), ↔ 45cm (18in). '**Jean**' produces double, deep violet flowerheads; ↑ ↔ 45cm (18in). '**Jenny**' □ bears double, red-purple flowerheads; ↑ 30cm (12in), ↔ 45cm (18in). '**Kristina**' □ has large, semi-double white flowerheads; ↑ 30cm (12in), ↔ 45cm (18in). '**Lassie**' □ has large flowerheads in clear pink; ↑ 90cm (36in), ↔ 45cm (18in). '**Little Pink Beauty**' has semi-double, soft pink flowerheads; ↑ 30cm (12in), ↔ 45cm (18in). '**Margaret Rose**' has light pink flowerheads; ↑ 30cm (12in), ↔ 45cm (18in). '**Marie Ballard**' □ has double, pale blue flowerheads; ↑ 90cm (36in). '**Melbourne Belle**' bears bright pink flowerheads; ↑ 75cm (30in). '**Mount Everest**' has white flowerheads; ↑ 90cm (36in). '**Orlando**' □ has deep pink flowerheads with golden yellow disc-florets; ↑ 1m (3ft). '**Patricia Ballard**' □ has semi-double, dark pink flowerheads; ↑ 90cm (36in). '**Peace**' □ has mauve flowerheads, 7cm (3in) across. '**Percy Thrower**' has double, deep violet-blue flowerheads; ↑ 90cm (36in). '**Professor Anton Kippenberg**' □ bears mid-blue flowerheads; ↑ 35cm (14in), ↔ 45cm (18in). '**Prosperity**' has large, semi-double flowerheads, 7cm (3in) across, in rose-pink; ↑ 1.1m (3½ft). '**Raspberry Ripple**' has cerise flowerheads; ↑ 75cm (30in). '**Rosenwichtel**' has deep pink flowerheads; ↑ 20cm (8in), ↔ 35cm (14in). '**Royal Ruby**' □ has semi-double, rich red flowerheads; ↑ 50cm (20in). '**Royal Velvet**' □ has deep violet flowerheads. '**Sandford White Swan**' □ has white flowerheads; ↑ 90cm (36in). '**Sarah Ballard**' has narrow, pointed violet flowerheads; ↑ 90cm (36in). '**Schneekissen**', syn. 'Snow Cushion', has white flowerheads; ↑ 30cm (12in), ↔ 45cm (18in). '**Snow Cushion**' see 'Schneekissen'. '**Snowsprite**' □ has pink buds opening white; ↑ 25–30cm (10–12in), ↔ 45cm (18in). '**The Cardinal**' bears deep rose-red flowerheads. '**Thundercloud**' has deep purple flowerheads; ↑ 90cm (36in). '**Winston S. Churchill**' has double, dark ruby-red flowerheads; ↑ 90cm (36in). *A. pappi* see *Felicia amoena*. *A. pringlei* '**Monte Cassino**' □ ♀ Clump-forming perennial with sparsely

branched, upright stems and narrow oblong to lance-shaped, pale to mid-green leaves, to 7cm (3in) long. From late summer to late autumn, bears open sprays, to 10cm (4in) long, of white flowerheads, 8–10mm (¾–½in) across, with yellow disc-florets. Cultivation group 1 or 3. ↑ to 1m (3ft), ↔ 30cm (12in). \*\*\*

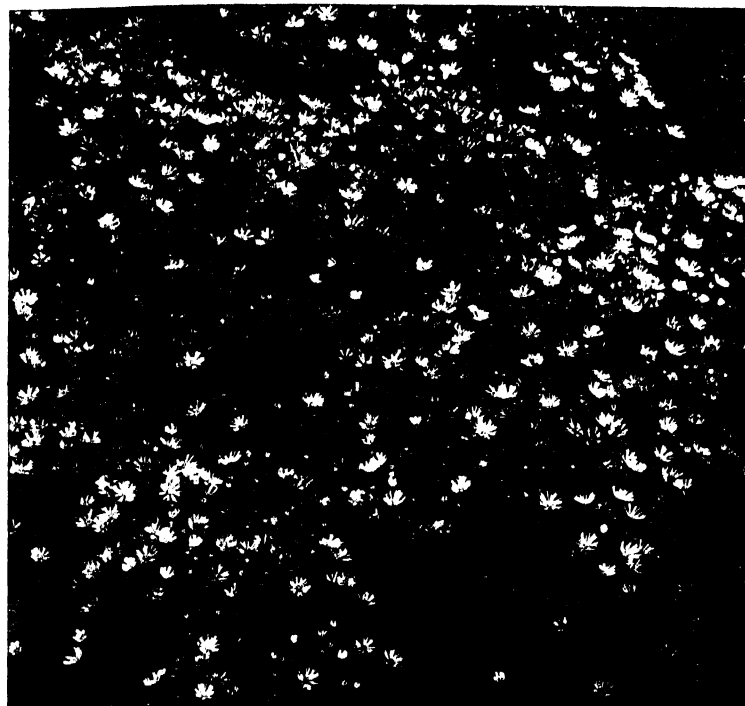
*A. 'Ringdove'* □ ♀ Clump-forming, erect perennial, a hybrid of *A. ericoides*, with linear-lance-shaped, stalkless, mid-green leaves, to 7cm (3in) long. Bears numerous pale mauve flowerheads, to 1cm (½in) across, with yellowish brown disc-florets, in panicles, to 18cm (7in) long, in autumn. Cultivation group 2. ↑ 90cm (36in), ↔ 30cm (12in). \*\*\* *A. sedifolius* □ syn. *A. acris*. Clump-forming perennial with weakly branched stems and stalkless, lance-shaped, mid-green leaves, 5–6cm (2–2½in) long. Terminal sprays, 5–15cm (2–6in) wide, of flowerheads to 4cm (1½in) across, are borne in late summer and early autumn. Ray-florets are widely spaced and blue-purple, lilac or lilac-pink, with yellow disc-florets. Cultivation group 2. ↑ to 1.2m (4ft), ↔ 60cm (24in). C., S., and E. Europe. \*\*\*. '**Nanus**' is compact, bearing flowerheads with darker blue ray-florets; ↑ 45cm (18in).

*A. thomsonii*. Clump-forming perennial with erect, slender stems and ovate to elliptic, coarsely toothed, mid-green leaves, to 10cm (4in) long. Lilac-blue flowerheads, 4–5cm (1½–2in) across, with yellow disc-florets, are borne in terminal sprays, 5–15cm (2–6in) across, from midsummer to early autumn. Cultivation group 3. ↑ 60–75cm (24–30in), ↔ 50cm (20in). W. Himalayas. \*\*\*. '**Nanus**' □ has long-lasting, star-shaped, lilac-blue flowerheads; ↑ 45cm (18in), ↔ 25cm (10in).

*A. tongolensis*. Rhizomatous, mat-forming perennial with elliptic, softly hairy, mostly basal, dark green leaves, to 9cm (3½in) long. In early summer, erect, stout, almost leafless stems bear solitary flowerheads, to 6cm (2½in) across, with violet-blue ray-florets and orange-yellow disc-florets. Cultivation group 2, but will tolerate moister soil. ↑ 45cm (18in), ↔ 30cm (12in). W. China, Himalayas. \*\*\*. The following cultivars bear profuse, large flowerheads, to 8cm (3in) across, which are useful for cutting. '**Berggarten**' has flowerheads with lavender-blue ray-florets and orange disc-florets; ↑ 40cm (16in). '**Napsbury**' has flowerheads with



*Aster novi-belgii* 'Snowsprite'



*Aster pringlei* 'Monte Cassino'

violet-blue ray-florets and bright orange disc-florets; † 50cm (20in).

**A. turbinellus** ■ ♀ Clump-forming perennial with slender, erect, dark green stems and lance-shaped, mid-green leaves, 8–10cm (3–4in) long. In early and mid-autumn, bears airy panicles, to 15cm (6in) wide, of pale violet flowerheads, to 2cm (¾in) across, with yellow disc-florets. Cultivation group 2. † 1.2m (4ft), ↔ 60cm (24in). C. and E. USA. \*\*\*

**A. vimineus** see *A. lateriflorus*.

▼ **Aster,**

**Beach** see *Erigeron glaucus*

**China** see *Callistephus*

**Hairy golden** see *Heterotheca villosa*

**New England** see *Aster novae-angliae*

**New York** see *Aster novi-belgii*

**Stokes'** see *Stokesia*

## ASTERANTHERA

GESNERIACEAE

Genus of one species of evergreen, climbing or creeping shrub from humid, temperate forest in Chile and Argentina. Grown for its brightly coloured flowers, *A. ovata* is best trained against a shady wall, or grown in woodland against a tree trunk. In very cold areas, grow in a cool greenhouse or conservatory.

• **HARDINESS** Frost hardy, but thrives only in cool, humid climates.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, shaded from hot sun. Provide moderate humidity. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist, lime-free, moderately fertile, humus-rich soil in partial shade; shelter from cold, drying winds.

• **PROPAGATION** Surface-sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings in late summer. Detach and pot up rooted pieces in spring.

• **PESTS AND DISEASES** Trouble free.

**A. ovata.** Freely branching, evergreen, climbing or creeping shrub with opposite, ovate-rounded, toothed, bristly, deep green leaves, to 4cm (1½in) long, on white-hairy stems. Solitary, long-tubed, bright deep reddish pink flowers, to 6cm (2½in) long, each with 5 spreading lobes forming a 2-lipped mouth, are produced from the leaf axils in summer. † 4m (12ft), ↔ 2m (6ft). Chile, Argentina. \*\*

## ASTILBE

SAXIFRAGACEAE

Genus of about 12 species of densely clump-forming, rhizomatous perennials from moist sites in mountain ravines, woodland, and streambanks in S.E. Asia and North America. Astilbes are grown for their striking, plume-like panicles, 18–35cm (7–14in) long, of tiny, red, pink, purple, or white flowers, borne mainly in summer. The dry flowerheads fade to decorative shades of brown in autumn, providing continued interest throughout the winter. They are attractive as cut flowers, but quickly fade. The handsome leaves, usually 23–75cm (9–30in) long, are 2- or 3-ternate, with each leaflet further divided into 3–5 toothed lobes. Grow in a damp border or a woodland garden, or use for waterside plantings.

Numerous *Astilbe* hybrids have been raised. They are the result of often complex crosses between *A. x arendsii*, *A. astilboides*, *A. chinensis*, *A. chinensis* var. *daurica*, *A. chinensis* var. *taquetii*, *A. japonica*, *A. simplicifolia*, and *A. thunbergii*. *A. x arendsii* hybrids are 50–120cm (20–47in) tall, with ovate to lance-shaped, 2- or 3-ternate leaves, 20–75cm (8–28in) long, and panicles to 45cm (18in) long in the largest cultivars. *A. chinensis* and *A. chinensis* var. *daurica* hybrids are either low-growing, 15–25cm (6–10in) high, or tall, growing to 80–130cm (32–54in) high. They have elliptic-ovate, 3-ternate leaves, 15–50cm (6–20in) long, and

slender panicles, 10–20cm (4–8in) long. *A. japonica* hybrids are 50–100cm (20–39in) tall, with ovate to ovate-lance-shaped, 2- or 3-ternate leaves, 15–60cm (6–24in) long, and erect, branched panicles, 10–20cm (4–8in) long. *A. simplicifolia* hybrids are usually 30–50cm (12–20in) tall, occasionally dwarf, with ovate to narrowly ovate, 2-ternate leaves, 13–55cm (5–22in) long, and small, arched panicles, 10–20cm (4–8in) long. *A. thunbergii* hybrids are 50–80cm (20–32in) tall, with ovate to lance-shaped, 2-ternate leaves, 20–55cm (8–22in) long, and open panicles, 20–30cm (8–12in) long, of white or pink flowers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, humus-rich soil or boggy sites in full sun; in drier soils, grow in partial shade. Astilbes prefer fertile soil and will not thrive in chalky or clay soils that dry out in summer. Divide and replant every 3 or 4 years to maintain vigour and flower quality, discarding old, woody rhizomes. The flowers and young foliage may be damaged by late frosts.

• **PROPAGATION** Divide in winter or early spring when dormant; either replant the divisions immediately or pot them up to plant out in early summer when re-established.

• **PESTS AND DISEASES** Powdery mildew and leaf spot may be a problem.

**A. 'Amethyst'.** Tall *A. x arendsii* hybrid with 3-ternate, mid-green leaves and open panicles of lilac-pink flowers in early summer. † 80–100cm (32–39in), ↔ 60–90cm (24–36in). \*\*\*

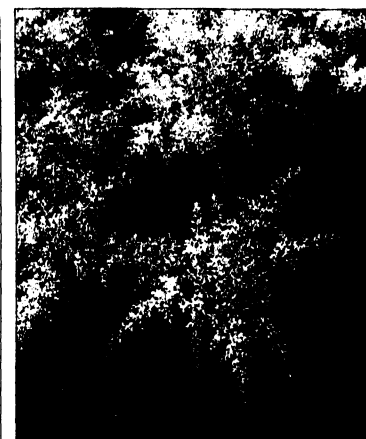
**A. 'Aphrodite'** ■ Clump-forming *A. simplicifolia* hybrid bearing panicles of red flowers above bronze foliage in midsummer. † 40–60cm (16–24in), ↔ 60cm (24in). \*\*\*

**A. 'Brautschleier'** ♀ syn. *A. 'Bridal Veil'*. Clump-forming *A. x arendsii* hybrid producing elegant sprays of nodding white flowers. They open in midsummer from bright green buds above bright green leaves, and fade to creamy yellow. † 75cm (30in). \*\*\*

**A. 'Bressingham Beauty'.** Tall *A. x arendsii* hybrid with spreading, bronze-flushed, mid-green leaves and panicles of bright pink flowers in midsummer. † 90cm (36in), ↔ 60cm (24in). \*\*\*

**A. 'Bridal Veil'** see *A. 'Brautschleier'*.

**A. 'Bronze Elegance'** ♀ syn. *A. 'Bronze Elegance'*. Clump-forming *A. simplicifolia* hybrid with dark green



*Astilbe* 'Deutschland'

leaves. Panicles of pink-red flowers are produced on reddish green stems in late summer. † 30cm (12in), ↔ 25cm (10in). \*\*\*

**A. 'Bronze Elegance'** see *A. 'Bronze Elegance'*.

**A. chinensis.** Vigorous perennial with 3-ternate, toothed, softly hairy, dark green leaves. In late summer, bears panicles of pinkish white flowers. † 60cm (24in). Siberia, China, Korea.

\*\*\* **var. davidii**, syn. *A. davidii*, has bronze-tinted leaves and short, almost erect branches bearing slender panicles of purple-pink flowers. Thrives in sun or shade; † to 2m (6ft), ↔ 60cm (24in); China. **var. pumila** ♀ is dwarf, with red-green leaves and broad, dense, conical panicles of reddish pink flowers; † to 25cm (10in), ↔ to 20cm (8in). **var. taquetii** 'Purpurlanze' see *A. 'Purpurlanze'*.

**A. 'Cologne'** see *A. 'Köln'*.

**A. x crispa 'Gnom'** see *A. 'Gnom'*.

**A. x crispa 'Perkeo'** see *A. 'Perkeo'*.

**A. davidii** see *A. chinensis* var. *davidii*.

**A. 'Deutschland'** ■ Clump-forming *A. japonica* hybrid with erect panicles of pure white flowers above bright green foliage in late spring. † 50cm (20in), ↔ 30cm (12in). \*\*\*

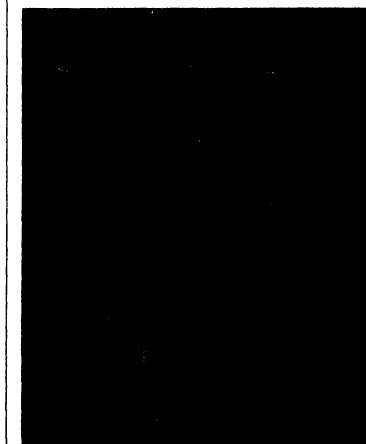
**A. 'Drayton Glory'** see *A. 'Peach Blossom'*.

**A. 'Europa'**. Clump-forming *A. japonica* hybrid with mid-green leaves and dense panicles of light pink flowers in late spring and early summer. † 60cm (24in), ↔ 45cm (18in). \*\*\*

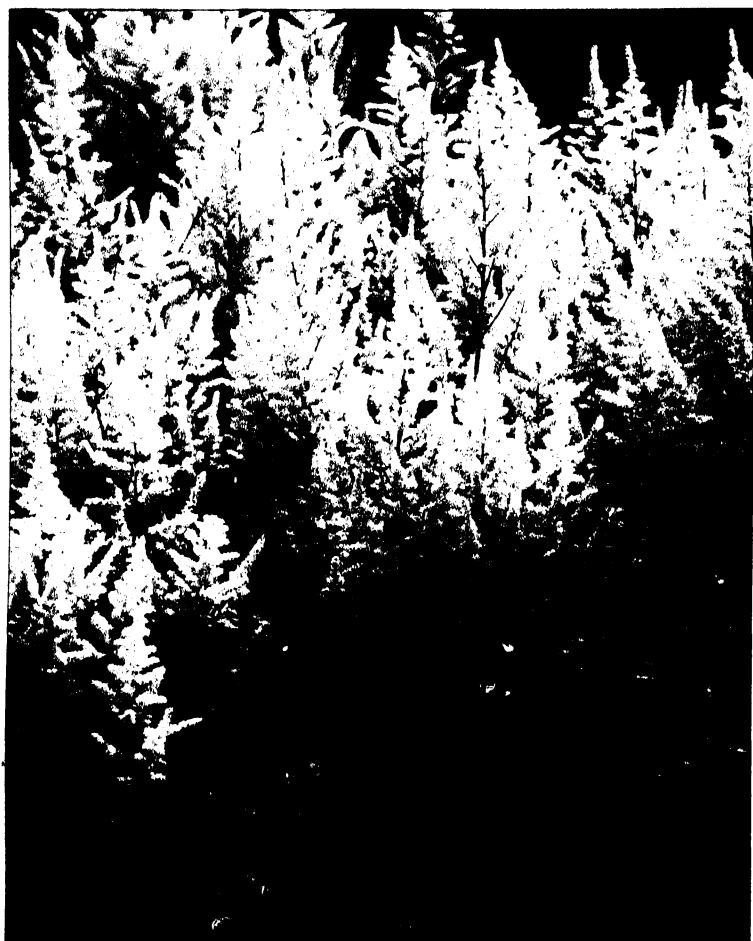
**A. 'Fanal'** ■ ♀ Clump-forming *A. x arendsii* hybrid producing dark green foliage. Dense panicles of long-lasting,



*Astilbe* 'Aphrodite'



*Astilbe* 'Fanal'



Astilbe 'Irrlicht'

dark crimson flowers are borne in early summer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'Federsee'**. Strong-growing *A. × arendsii* hybrid bearing dense, conical panicles of deep rose-pink flowers over mid-green foliage in mid- and late summer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'Gertrud Brix'**. Clump-forming *A. × arendsii* hybrid producing panicles of deep red flowers over mid-green foliage in early and midsummer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. glaberrima var. saxatilis** ♀ syn. *A. japonica* var. *terrestris*. Dwarf, clump-forming perennial with toothed, 2-ternate, deep green leaves, red-tinted beneath. Spikes, 8–10cm (3–4in) long, of white-tipped mauve flowers are borne

in summer. Thrives in moist soil. †to 8cm (3in), ↔ 15cm (6in). Japan. \*\*\*

**A. 'Gnom'**, syn. *A. × crispa* 'Gnom', *A. simplicifolia* 'Gnome'. Arching, clump-forming *A. simplicifolia* hybrid with basal rosettes of deeply cut, reddish green leaves with wavy leaflets. Produces tiny pink flowers in dense spikes, 15cm (6in) long, in summer. †to 15cm (6in), ↔ to 20cm (8in). \*\*\*

**A. 'Granat'**. *A. × arendsii* hybrid bearing pyramidal panicles of deep red flowers over dark green foliage in midsummer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'Hyacinth'** see *A. 'Hyacinth'*.

**A. 'Hyacinth'**, syn. *A. 'Hyacinth'*. Tall *A. × arendsii* hybrid with compact panicles of lilac-pink flowers over bright green foliage in mid- and late summer. †1m (3ft), ↔ 45cm (18in). \*\*\*



Astilbe 'Purpurlanze'

**A. 'Irrlicht'** □ Clump-forming *A. × arendsii* hybrid bearing elegant panicles of white flowers over dark green foliage in late spring and early summer. †to 50cm (18in). \*\*\*

**A. japonica** var. *terrestris* see *A. glaberrima* var. *saxatilis*.

**A. 'Jo Ophorst'**. Tall *A. chinensis* var. *dauidii* hybrid producing dense, erect panicles of lilac-tinted pink flowers over mid-green foliage in late summer. †to 1.4m (4½ft), ↔ 60cm (24in). \*\*\*

**A. 'Koblentz'**. Clump-forming *A. japonica* hybrid with bronze-tinted, dark green leaves and open panicles of deep salmon-pink flowers in midsummer. †60cm (24in), ↔ 50cm (20in). \*\*\*

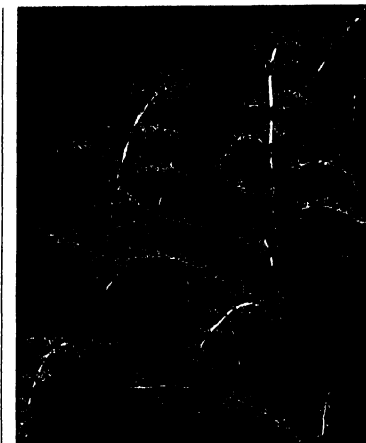
**A. 'Köln'**, syn. *A. 'Cologne'*. Clump-forming *A. japonica* hybrid with bronze-suffused, dark green leaves and panicles of deep pink flowers in midsummer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'Montgomery'**. Clump-forming *A. japonica* hybrid bearing tapering panicles of deep red flowers over finely cut, dark red-bronze foliage in midsummer. †60–70cm (24–28in), ↔ 45cm (18in). \*\*\*

**A. 'Ostrich Plume'** see *A. 'Straussenfeder'*.

**A. 'Peach Blossom'**, syn. *A. 'Drayton Glory'*. *A. japonica* hybrid producing peach-pink flower panicles over mid-green foliage in midsummer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**A. 'Perkeo'** □ ♀ syn. *A. × crispa* 'Perkeo'. Compact, clump-forming perennial with finely cut, dark green leaves, bronze-tinted when young. Bears pyramidal spires, 15–20cm (6–8in) long, of small, deep pink flowers in



Astilbe 'Straussenfeder'

summer. Suitable for a border or a rock garden. †to 20cm (8in). \*\*\*

**A. 'Professor van der Wielen'** □

Graceful *A. thunbergii* hybrid bearing open, arching plumes of white flowers over mid-green foliage in midsummer. †1.2m (4ft), ↔ to 100cm (39in). \*\*\*

**A. 'Purple Lance'** see *A. 'Purpurlanze'*.

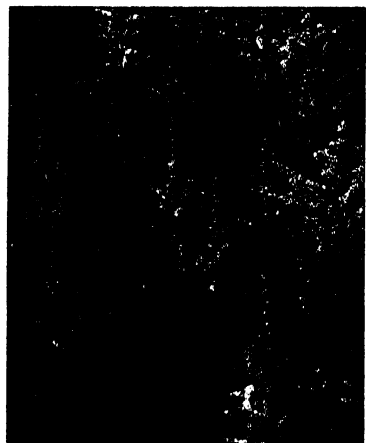
**A. 'Purpurlanze'** □ syn. *A. chinensis* var. *taquetii* 'Purpurlanze', *A. 'Purple Lance'*. Tall, vigorous *A. chinensis* hybrid bearing panicles of purple-red flowers over mid-green foliage in late summer and early autumn. Will tolerate drier conditions than most cultivars. †1.2m (4ft), ↔ 90cm (36in). \*\*\*

**A. 'Red Sentinel'**. Clump-forming *A. japonica* hybrid producing panicles of deep crimson-red flowers over dark green foliage in early summer. †1m (3ft), ↔ 50cm (20in). \*\*\*

**A. 'Rheinland'** ♀ Clump-forming *A. japonica* hybrid with mid-green foliage, and compact, upright panicles of rich pink flowers throughout summer. †50cm (20in), ↔ 45cm (18in). \*\*\*

**A. simplicifolia 'Gnome'** see *A. 'Gnom'*.

**A. 'Sprite'** □ ♀ Clump-forming *A. simplicifolia* hybrid with broad, mid-



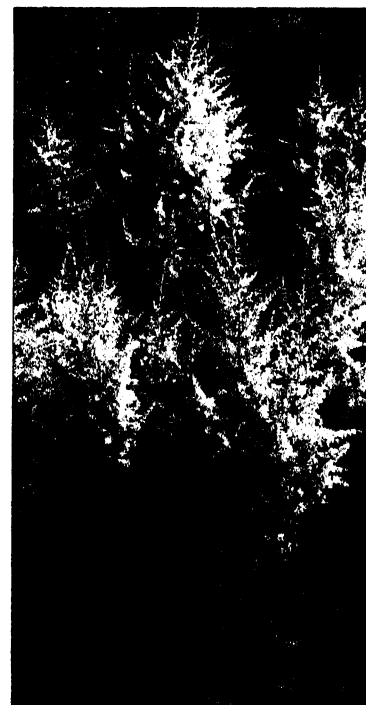
Astilbe 'Perkeo'



Astilbe 'Professor van der Wielen'



Astilbe 'Sprite'



Astilbe 'Venus'



Astilbe 'William Buchanan'

green leaves composed of narrow leaflets. Bears feathery spikes of small, shell-pink flowers in summer. † 50cm (20in), ↔ 1m (3ft). \*\*\*

**A. 'Straussenfeder'** ■ ♀ syn. *A. 'Ostrich Plume'*. Vigorous *A. thunbergii* hybrid with bronze-tinted young foliage and open, arching sprays of rich coral-pink flowers in late summer and early autumn. Requires ample moisture in the growing season. † 90cm (36in), ↔ 60cm (24in). \*\*\*

**A. 'Venus'** ■ Tall *A. x arendsii* hybrid bearing tapering, feathery panicles of bright pink flowers over bright green foliage in early summer. † 1m (3ft), ↔ 45cm (18in). \*\*\*

**A. 'Weisse Gloria'**, syn. *A. 'White Glory'*. Strong-growing *A. x arendsii* hybrid with mid-green leaves, and large panicles of white flowers in late summer and early autumn. † 1m (3ft), ↔ 45cm (18in). \*\*\*

**A. 'White Glory'** see *A. 'Weisse Gloria'*.  
**A. 'William Buchanan'** ■ Dwarf *A. simplicifolia* hybrid producing red-tinted leaves and panicles of white flowers with red stamens, appearing pink overall, in mid- and late summer. † 23–30cm (9–12in), ↔ 20cm (8in). \*\*\*

## ASTILBOIDES

SAXIFRAGACEAE

Genus of one species of perennial from moist woodland on the banks of lakes and streams in E. Asia. It produces panicles to 1.5m (5ft) tall, of numerous small, creamy white flowers above rounded clumps of large, lobed leaves. *A. tabularis* is an architectural plant,



Astilboides tabularis

suitable for a woodland garden or for growing beside a pond or stream.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in cool, moist, humus-rich soil in partial shade. If grown beside water, plant with the roots above water level; it will not tolerate either waterlogging or drought.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or divide in spring as growth begins.
- **PESTS AND DISEASES** Slugs may eat the large resting buds.

**A. tabularis** ■ syn. *Rodgersia tabularis*. Clump-forming perennial with long-stalked, rounded, peltate, shallowly but often sharply lobed, softly hairy, light green leaves, to 90cm (36in) long. In early and midsummer, bears plume-like panicles of numerous tiny, creamy white flowers. † 1.5m (5ft), ↔ 1.2m (4ft). N.E. China, N. Korea. \*\*\*

## ASTRANTIA

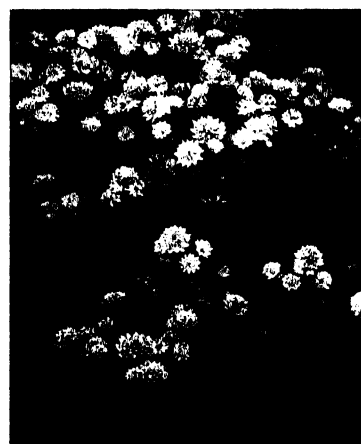
Hattie's pincushion, Masterwort

APIACEAE/UMBELLIFERAE

Genus of about 10 species of clump-forming perennials found in alpine woods and meadows from Europe to W. Asia. They have loose, basal rosettes of palmately lobed or palmate leaves. Erect umbels of small, 5-petalled flowers, surrounded by ruff-like involucre of showy, papery bracts, are borne in sprays above the foliage. Astrantias will thrive in a woodland garden, on a streambank, or in a moist border. The flowerheads are useful for dried flower arrangements.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, fertile, preferably humus-rich soil in sun or partial shade. Most variants of *A. major* will tolerate drier conditions; they also self-seed prolifically unless dead-headed before the seed is ripe. *A. major* 'Sunningdale Variegated' needs full sun to obtain the best leaf colour.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Slugs, aphids, and powdery mildew may be a problem.

**A. major** ■ Clump-forming, variable perennial with deeply 3- to 7-lobed, toothed, basal leaves, 8–15cm (3–6in) long. Green-veined white bracts, occasionally pink-tinted, surround the small, green or pink, occasionally deep purple-red flowers, which are borne in



Astrantia major



Astrantia major 'Hadspen Blood'

umbels, 2–3cm (¾–1¼in) or occasionally more across, in early and midsummer. † 30–90cm (12–36in), ↔ 45cm (18in). C. and E. Europe. \*\*\*. **subsp. carinthiaca** see subsp. *involuta*. **'Hadspen Blood'** ■ has dark red bracts and flowers. **subsp. involutata** ■ syn. subsp. *carinthiaca*, var. *involutata*, has green and white bracteoles, twice as long as the umbel width. **'Margery Fish'** see 'Shaggy'. **'Rosensinfonie'** has rose-pink flowerheads. **'Shaggy'** ♀ syn. 'Margery Fish', has very long bracts with prominent green tips, and deeply cut leaves. **'Sunningdale Variegated'** ■ ♀ syn. 'Variegated', has pale pink bracts and attractive leaves unevenly margined creamy yellow. **'Variegated'** see 'Sunningdale Variegated'.



Astrantia major subsp. involutata



Astrantia major 'Sunningdale Variegated'



Astrantia maxima

**A. maxima** ■ Clump-forming perennial producing basal leaves, 3–10cm (1¼–4in) long, deeply divided into 3–5, occasionally almost separate lobes. Umbels, 4–6cm (1½–2½in) across, with sharp-pointed, broad pink bracts, each to 3cm (1¼in) long, surrounding tiny, soft pink flowers, are borne singly, or occasionally in twos or threes, in early and midsummer. † 60cm (24in), ↔ 30cm (12in). Caucasus, Turkey, Iran. \*\*\*

## ASTROPHYTUM

CACTACEAE

Genus of 4–6 species of slow-growing, perennial cacti occurring in dry, arid areas of the USA (S. Texas), and N. and C. Mexico. They have spherical or hemispherical, ribbed stems, some becoming columnar when mature, with woolly, occasionally spiny areoles. Solitary, large, funnel-shaped, diurnal yellow flowers, some with red-tinted throats, are produced in summer. They are followed by ovoid, green or red berries containing boat-shaped, black or brown seeds. Where temperatures fall below 10°C (50°F), grow in a temperate greenhouse. In warmer climates, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost, with added limestone chippings, in bright filtered light. Water moderately in the growing season; keep dry when dormant. Apply a low-nitrogen liquid fertilizer monthly from mid-spring to late summer. Outdoors, grow in sharply drained, poor, slightly alkaline soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in early spring.
- **PESTS AND DISEASES** Vulnerable to mealybugs.

**A. asterias**, syn. *Echinocactus asterias* (Sand dollar cactus, Sea-urchin cactus). Hemispherical cactus with 6–10 flat, purplish brown ribs with straight grooves between. Prominent, spineless white areoles are set along the ribs. Red-throated, bright yellow flowers, 3–7cm (1¼–3in) long, are borne in summer. †↔ 10cm (4in). USA (Texas), N.E. Mexico. ☼ (min. 10°C/50°F)

**A. capricorne**, syn. *Echinocactus capricornis* (Goat's horn cactus). Spherical to ovoid cactus with 7–9 white-flecked, pale green ribs, with deep



*Astrophytum myriostigma**Astrophytum ornatum*

grooves between. Areoles bear long, twisted, yellowish brown spines. Red-centred yellow flowers, 6–10cm (2½–4in) long, are produced in summer. ↓ 20–25cm (8–10in), ↔ 10cm (4in). N. Mexico. ☼ (min. 10°C/50°F)

**A. myriostigma** ☐ ♀ syn. *Echinocactus myriostigma* (Bishop's cap). Spherical or occasionally columnar cactus with usually 4–8 ribs covered with minute, white-woolly scales. Areoles are brown and spineless. Yellow, often red-centred flowers, 4–6cm (1½–2½in) long, are produced in summer. ↓ 23cm (9in), ↔ 20–30cm (8–12in). N.E. Mexico. ☼ (min. 10°C/50°F)

**A. ornatum** ☐ syn. *Echinocactus ornatus*. Spherical to columnar cactus with 6–8 ribs, straight or occasionally spiralled, and cross-banded with woolly scales. Close-set areoles bear brown or yellow spines. Yellow flowers, 7–10cm (3–4in) long, are produced in summer. ↓ 35cm (14in) or more, ↔ 15cm (6in). Central E. Mexico. ☼ (min. 10°C/50°F)

▷ *Arystasia* see *Mackaya*

*A. bella* see *M. bella*

## ATHEROSPERMA

MONIMIACEAE

Genus of one species of evergreen tree occurring in woodland in S.E. Australia, including Tasmania. In its natural habitat, *A. moschatum* grows to 20–30m (70–100ft) tall, but it is much smaller in cultivation, when it is best grown in sheltered woodland. Both the opposite, simple, aromatic leaves and the white flowers produced in spring (the male

and female blooms on different plants) are attractive. In very cold areas, grow in a cool greenhouse.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, shaded from hot sun. Water freely when in growth, applying a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained, humus-rich, lime-free soil in sun or partial shade, sheltered from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**A. moschatum** △ (Australian sassafras). Conical tree with lance-shaped, nutmeg-scented, dark green leaves, to 10cm (4in) long, glaucous on the reverse. Solitary, saucer-shaped, fragrant, creamy white flowers, 2.5cm (1in) across, are produced from the upper leaf axils in early spring. ↓ 6m (20ft), ↔ 3m (10ft) in cultivation. S.E. Australia, including Tasmania. \*\*

## ATHROTAXIS

Tasmanian cedar

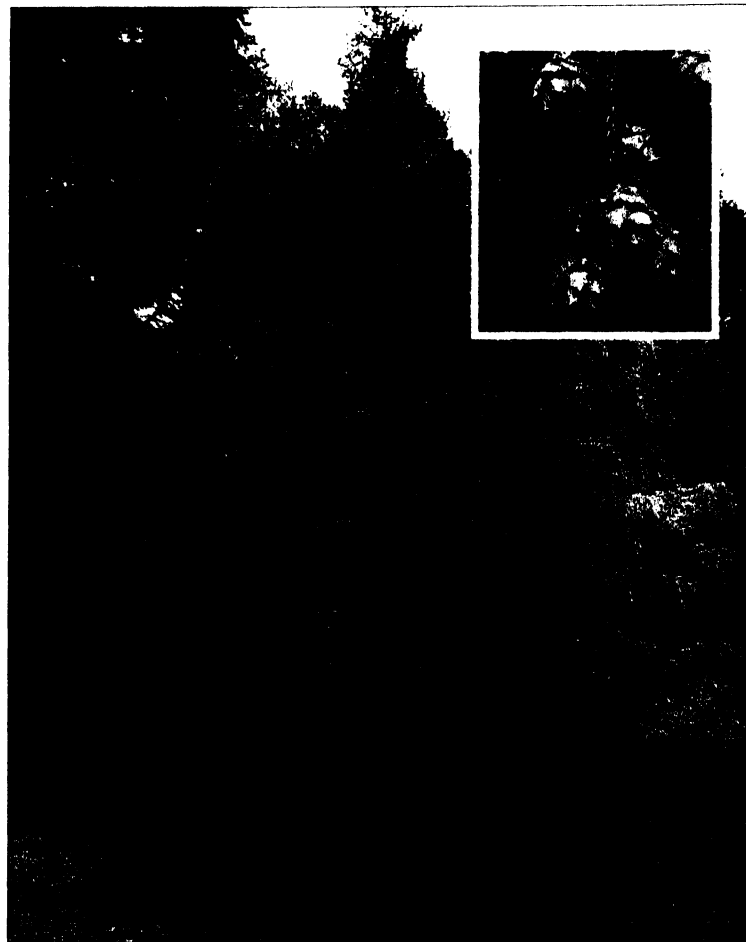
TAXODIACEAE

Genus of 2 species and 1 natural hybrid of evergreen, coniferous trees, restricted to mountainous areas of W. Tasmania, Australia, where they grow in rocky gullies, on exposed ridges, or around lakes. They have fissured, red- to grey-brown bark, flaking in long shreds, and scale-like or ovate leaves, arranged in spirals, and lying flat to the shoots or spreading. Cones are spherical or ovoid, and green, ripening to brown at the end of the first year. The female cones have 10–16 scales. Useful as small specimen trees, these conifers thrive in areas with cool, humid summers.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich, preferably slightly acid soil in full sun, with shelter from cold, dry winds.
- **PROPAGATION** Sow seed in a seedbed or in containers in a cold frame in late winter or early spring. Root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

**A. x laxifolia** ☐ ♂–△ (*A. cupressoides* x *A. selaginoides*) (Tasmanian cedar). Coniferous, narrowly to broadly conical tree with an open crown and shaggy, fissured reddish brown bark. Glossy, dark green leaves, yellowish green when young, are ovate, 4–6mm (¼–¼in) long, spreading and horizontally arranged along the shoots. Bright green, ovoid cones, 2–2.5cm (¾–1in) long, turn orange-yellow then brown as they ripen. ↓ 10–20m (30–70ft), ↔ 4–6m (12–20ft). Australia (W. Tasmania). \*\*\*

**A. selaginoides** ♂ (King William pine). Conical, coniferous tree with an open crown and fissured, shredding, reddish brown bark. Similar to *A. laxifolia*, except that the ovate leaves, to 1.5cm (½in) long, spread more widely, and are bright green with blue-white bands along their length; the bark is thicker and the spherical cones are larger, to

*Athrotaxis x laxifolia* (inset: cone detail)

3cm (1¼in) long, becoming orange-brown when ripe. It requires a moister site than *A. x laxifolia*. ↓ 15–30m (50–100ft), ↔ 4–8m (12–25ft). Australia (W. Tasmania). \*\*

## ATHYRIUM

Lady fern

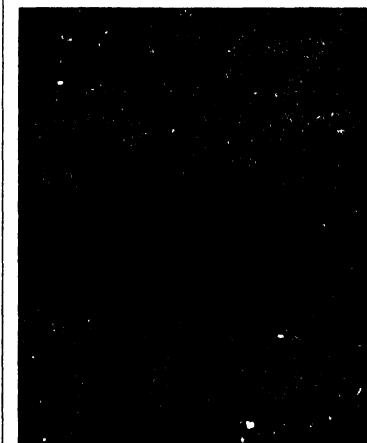
ATHYRIACEAE/DRYOPTERIDACEAE/  
WOODSIACEAE

Genus of 180 species of deciduous, terrestrial ferns found mainly in moist woodland or forest in temperate and tropical regions of the world. They have erect or creeping, sometimes branched rhizomes. Fronds are normally pinnate to 3-pinnate or pinnatifid, but in a few species are simple. Sori form in 2 rows and are usually covered by J-shaped indusia. Lady ferns tolerate all but dry conditions, and are useful for a range of sites, from a shady border to a woodland setting. In frost-prone areas, grow the tropical species as houseplants or in a warm greenhouse. *A. niponicum* is also suitable for a cool greenhouse or conservatory.

- **HARDINESS** Fully hardy to frost tender. *A. filix-femina* is hardy to -30°C (-22°F).
- **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal; 2 parts sharp sand; and 3 parts coarse leaf mould. Provide bright filtered light and high humidity. In growth, water freely and apply a half-strength fertilizer monthly; water sparingly in winter. Outdoors, grow in moist, fertile, neutral to acid soil, enriched with leaf mould or garden compost, in a shaded, sheltered site.

- **PROPAGATION** Sow spores as soon as ripe at 21°C (70°F) for tender species, and 15–16°C (59–61°F) for hardy ones. Divide in spring. See also p.51.
- **PESTS AND DISEASES** Trouble free.

**A. filix-femina** ♀ (Lady fern). Variable, deciduous fern with erect rhizomes and usually lance-shaped, 2- or 3-pinnate or pinnatifid, light green fronds, 1m (3ft) long, sometimes with red-brown stalks, borne like upright shuttles and arching outwards with age. Pinnae are variably sized, but usually elliptic with long, pointed tips; segments are lance-shaped to oblong. ↓ to 1.2m (4ft), ↔ 60–90cm (24–36in). Widespread in temperate regions of N. hemisphere. \*\*\*. **Cruciatum Group** cultivars have crested fronds, 30–50cm (12–20in)

*Athyrium filix-femina* 'Frizelliae'





*Athyrium niponicum*

long, with each pinna branching at the midrib, producing the effect of a row of crosses; ↑ 90cm (36in); often sold incorrectly as 'Victoriae' (Queen Victoria's lady fern), a very rare cultivar with pinnae and segments branching to form crosses. 'Frizelliae' (Mrs. Frizell's lady fern, Tatting fern) has fronds 10–20cm (4–8in) long, and pinnae reduced to rounded lobes along each side of the midribs, resembling tatting (handmade lace); ↑ 20cm (8in), ↔ 30cm (12in). 'Minutissimum' is smaller than the species, and forms dense clumps; ↑ 30cm (12in), ↔ 40cm (16in). **Plumosum Cristatum Group** cultivars have finely cut fronds that are also crested; ↑ 90cm (36in).

**Plumosum Group** cultivars have 3- or 4-pinnate fronds with finely cut segments; ↑ 1.2m (4ft), ↔ 90cm (36in). 'Vernoniae' has narrowly triangular, crisped segments; ↑ 75cm (30in).

*A. goeringianum* see *A. niponicum*.

*A. niponicum* (syn. *A. goeringianum*, *A. nipponicum* (Japanese painted fern). Deciduous fern with creeping red-brown rhizomes and 2- or 3-pinnate to pinnatifid, lance-shaped, silvery grey-green or mid-green fronds, to 35cm (14in) long, with red-purple midribs. Segments are lance-shaped to oblong or ovate, sometimes with notched or lobed margins. Frond colouring is variable; if growing from spores, select plants with the strongest silver markings. ↑ 20–30cm (8–12in), ↔ indefinite. Japan. \*\*\*. **var. pictum** ♀ syn. 'Pictum', f. *metallicum*, has fronds with purplish red stalks and silver-grey segments, sometimes flushed purple-red.

*A. nipponicum* see *A. niponicum*.

▷ *Atragene* see *Clematis*

## ATRIPLEX

CHENOPODIACEAE

Genus of about 100 species of evergreen or semi-evergreen shrubs, subshrubs, annuals, and perennials, found on coasts and in saltmarshes, salt flats, and deserts worldwide. They have alternate or opposite, often grey or silver leaves and insignificant flowers. *A. halimus* is an attractive foliage shrub for a border, and also useful for hedging in coastal areas. Use the edible leaves of coloured variants of *A. hortensis* to provide contrast in summer bedding, or as a colourful addition to salads.

• **HARDINESS** Frost hardy to half hardy.

- **CULTIVATION** Grow shrubs in well-drained, dry, poor to moderately fertile soil in full sun, sheltered from cold, dry winds. Pruning group 1. Grow *A. hortensis* in moist but well-drained, fertile soil in full sun; water freely during dry periods to inhibit bolting.
- **PROPAGATION** Sow seed of *A. hortensis* *in situ* in succession from spring to early summer. Root softwood cuttings of shrubs in summer.
- **PESTS AND DISEASES** Trouble free.

*A. halimus* (Tree purslane). Dense, semi-evergreen shrub with alternate, ovate or diamond-shaped, sometimes toothed, leathery, silvery grey leaves, to 6cm (2½in) long. In late summer, bears tiny, greenish white flowers in terminal panicles, to 30cm (12in) long. Tolerates full exposure to sea winds. ↑ 2m (6ft), ↔ 2.5m (8ft). S. Europe. \*\*

*A. hortensis* (Red mountain spinach, Red orache). Erect annual grown for its spinach-like, succulent, alternate or opposite, lance-shaped, green to purple-brown leaves, to 18cm (7in) long; they are slightly downy when young, and may be shallowly toothed or entire. Green or red-brown flowers are borne in tall, foxtail-like, terminal racemes, to 20cm (8in) long, in summer. ↑ 1.2m (4ft), ↔ 30cm (12in). Asia, also naturalized widely in Europe and North America. \*. **Plume Series** contains variants selected for their yellow, green, or burgundy-red flowerheads and foliage. **var. rubra** has blood-red or purple-red foliage and flowering spikes.

▷ *Aubretia* see *Aubretia*

## AUBRIETA

*Aubretia*

BRASSICACEAE/CRUCIFERAE

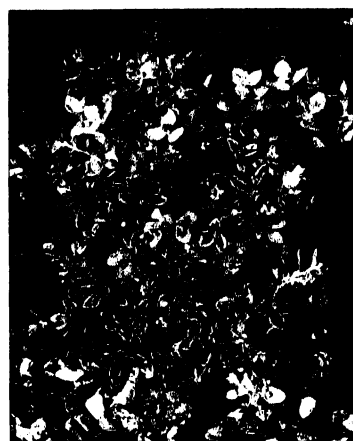
Genus of about 12 species of evergreen, mound- or carpet-forming perennials, occurring among rocks, in scree, and in coniferous woodland from Europe to C. Asia. They have small, obovate to oblong, entire or toothed, hairy, mid-green leaves, and few-flowered racemes of cross-shaped, 4-petalled, colourful flowers, usually borne in abundance in spring. Grow on walls, as ground cover on a sunny bank, or in a rock garden.

• **HARDINESS** Fully hardy.

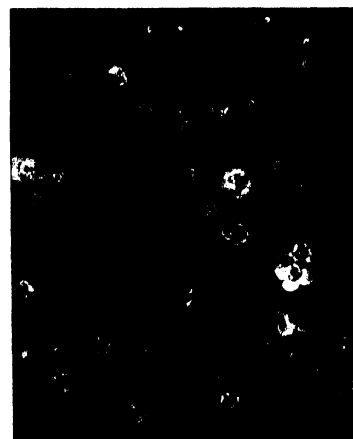
• **CULTIVATION** Grow in moderately fertile, well-drained, preferably neutral or alkaline soil in full sun. Cut back after flowering to maintain compactness.



*Aubrieta x cultorum* 'Argenteovariegata'



*Aubrieta x cultorum* 'Aureovariegata'

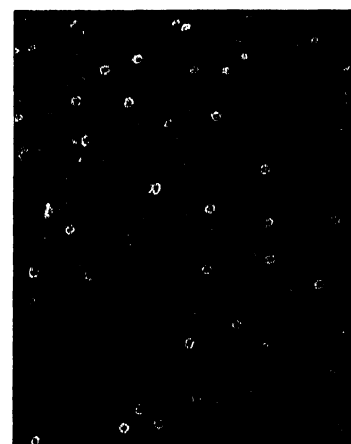


*Aubrieta x cultorum* 'Joy'

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring; seed germinates freely, but rarely comes true from cultivated plants. Root softwood cuttings in early summer, or semi-ripe cuttings in midsummer. Division of clumps in autumn is less successful than taking cuttings.

• **PESTS AND DISEASES** Prone to aphids, cecidworms, flea beetles, and white blister.

*A. x cultorum*. Mat-forming perennials of complex hybrid origin, usually grown in preference to the species. They are available in a wide range of colours, with single or double flowers, to 1.5cm (½in) across, borne in profusion in spring. All are often listed under *A. deltoidea*. ↑ 5cm (2in), ↔ to 60cm (24in) or more. \*\*\*. 'Albomarginata' see 'Argenteo-



*Aubrieta x cultorum* 'J.S. Baker'

variegata'. 'Argenteovariegata' (syn. 'Albomarginata', has soft, mid-green leaves, margined silvery white, and single, pinkish mauve flowers.

'Aureovariegata' (syn. 'Aureovariegata', but has irregularly gold-margined leaves and single mauve-pink flowers. 'Barker's Double' has double, pink-tinged purple flowers. 'Bressingham Pink' bears large heads of double pink flowers. 'Carnival' see 'Hartwood Purple'. 'Greencourt Purple' has single purple flowers.

'Hartwood Purple', syn. 'Carnival', has large, single violet flowers. 'Joy' (syn. 'J.S. Baker' produces single purple flowers with white eyes.

## AUCUBA

CORNACEAE

Genus of 3 or 4 species of evergreen, dioecious shrubs from a wide variety of habitats from the Himalayas to E. Asia. While cultivated for their bold, alternate leaves and large fruits, aucubas are most valued for their tolerance of full shade, dry soils, pollution, and salt winds. Use as specimen plants, for hedges and screens, or to fill a dark corner where little else will flourish. They are also suitable for containers outdoors and as large houseplants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any but waterlogged soil, in full sun or partial or full shade; variegated plants prefer partial shade. All are best in shade where summers are very hot. In containers, grow in loam-based potting compost (J1 No.2). When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pruning group 1. Trim hedges and cut back shrubs hard in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*A. japonica* (Spotted laurel).

Rounded, evergreen shrub with elliptic to ovate, glossy, mid-green leaves, to 20cm (8in) long, usually with a few marginal teeth. In mid-spring, bears small, red-purple flowers, the males with yellow anthers, in erect panicles to 10cm (4in) long. Female plants produce bright red berries, to 1cm (½in) across, in autumn. All parts may cause mild stomach upset if ingested. ↑ 3m (10ft).



*Aucuba japonica*



*Aucuba japonica*  
'Crotonifolia'

Japan. \*\*\*. '**Crassifolia**' is male, with large, leathery, dark green leaves, to 25cm (10in) long. '**Crotonifolia**' ♀ is female, with yellow-speckled leaves. '**Gold Dust**' is female, with leaves heavily speckled golden yellow. '**Hillieri**' is female, with glossy, dark green leaves, to 25cm (10in) long. '**Lance Leaf**' is male, with lance-shaped, entire leaves. '**Picturata**' is female, and has leaves marked yellow in the centres; it often reverts. '**Rozannie**' is compact, with broadly elliptic, dark green leaves and bisexual flowers; † 1m (3ft). '**Salicifolia**' is female, with slender leaves. '**Sulphurea Marginata**' is female, with yellow-margined leaves.

## AURINIA

BRASSICACEAE/CRUCIFERAE

Genus, closely allied to *Alyssum*, of 7 species of clump-forming biennials or woody-based, evergreen perennials, found in rocky, mountainous areas from C. and S. Europe, eastwards to Russia and Turkey. They bear rosettes of hairy, usually inversely lance-shaped to spoon-shaped leaves, and racemes or panicles of 4-petalled, yellow or white flowers. They are robust plants for a rock garden, the front of a border, or a sunny bank.

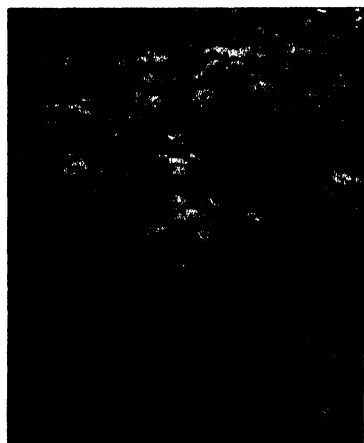
- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile soil in full sun. Ensure good drainage. Cut back after flowering to maintain compactness.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or root softwood cuttings in early summer.
- **PESTS AND DISEASES** Prone to aphids.



*Aurinia saxatilis*



*Aurinia saxatilis* 'Dudley Nevill'



*Aurinia saxatilis* 'Variegata'

*A. saxatilis* ♀ syn. *Alyssum saxatile* (Gold dust). Evergreen, mound-forming perennial with rosetted, obovate, occasionally pinnatifid, toothed, hairy, grey-green leaves, 3–7cm (1¼–3in) long, sometimes to 12cm (5in) long. Dense panicles of bright yellow flowers, to 1cm (½in) across, are borne in late spring and early summer. † 20cm (8in), ↔ to 30cm (12in). C. and S.E. Europe. \*\*\*. '**Citrina**' ♀ bears abundant panicles of lemon-yellow flowers. '**Dudley Nevill**' ♀ bears soft yellowish buff flowers. '**Variegata**' ♀ has leaves with irregular creamy margins.

▷ **Austrian briar** see *Rosa foetida*

## AUSTROCEDRUS

CUPRESSACEAE

Genus of one species of evergreen, coniferous tree from the Andes of Chile and Argentina, where it grows on steep, dry mountain slopes with winter rain or snow and a prolonged dry season. *A. chilensis* forms a small, columnar tree, with flattened, moss- or fern-like sprays of foliage, similar to *Calocedrus*. The solitary cones each have 4 scales, hinged at the bases; only the central pair are fertile. Grow as a specimen tree.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any moist but well-drained, moderately fertile soil in full sun. Shelter from cold, dry winds.
- **PROPAGATION** Sow seed in containers in a cold frame or in a seedbed in late winter or early spring. Root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.



*Austrocedrus chilensis*

*A. chilensis* ♀ syn. *Libocedrus chilensis* (Chilean incense cedar). Narrowly columnar, densely branched tree with greyish green foliage and dark brown to orange-grey bark. Scale-like leaves are to 5mm (¼in) long, with long, decurrent bases, and are arranged in sets of 2 unequal pairs, often with glaucous bands on the reverse. Produces ovoid-oblong brown cones, to 1.5cm (½in) long. † to 15m (50ft), ↔ to 4m (12ft). Andes of Chile and Argentina. \*\*\*

▷ **Autograph tree** see *Clusia major*

▷ **Avena candida** see *Helictotrichon sempervirens*

▷ **Avena sempervirens** see *Helictotrichon sempervirens*

▷ **Avens** see *Geum*

▷ **Mountain** see *Dryas, D. octopetala*

▷ **Azalea** see *Rhododendron*

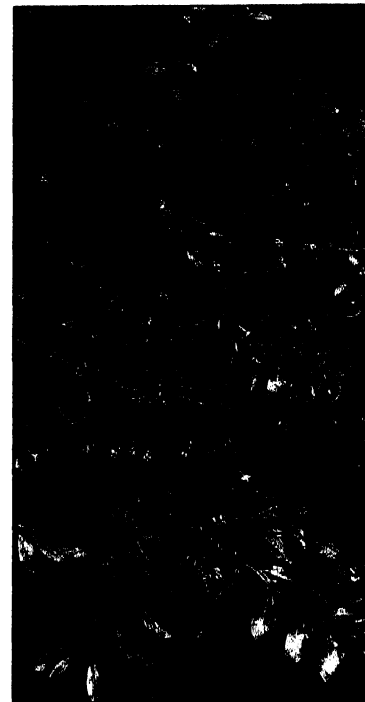
▷ **Alpine** see *Loiseleuria*

▷ **Trailing** see *Loiseleuria*

## AZARA

FLACOURTIACEAE

Genus of 10 species of evergreen shrubs and small trees from South America, often found at woodland margins and lakesides. They have simple leaves, alternate or in unequal pairs, and usually glossy, entire or toothed. The fragrant flowers are small and petalless, but with showy stamens, and are borne in axillary spikes, clusters, or corymbs. They are followed in hot summers by pale mauve or white berries, to 6mm (¼in) across. Grow in a shrub border, in a sheltered, sunny site, or against a wall. In frost-prone areas, grow in a cool greenhouse.



*Azara integrifolia*

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. Water freely when in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist, fertile, humus-rich soil, in sun or partial shade, sheltered from cold winds. Pruning group 8, or 13 if wall-trained.
- **PROPAGATION** Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*A. dentata* ♀ Arching, evergreen shrub or small tree with ovate, toothed, glossy, dark green leaves, to 4cm (1½in) long, densely hairy beneath. In late spring, bears branching, dense corymbs, to 4cm (1½in) across, of fragrant, dark yellow flowers. † to 3m (10ft). Chile. \*\*

*A. integrifolia* ♀ Upright, evergreen shrub or small tree with obovate or diamond-shaped, usually entire, hairless, glossy, dark green leaves, to 5cm (2in) long. From midwinter to early spring, fragrant yellow flowerheads are borne in mimosa-like clusters, 1cm (½in) wide. † 5m (15ft), ↔ 3m (10ft) sometimes more. Chile, Argentina. \*\*



*Azara lanceolata*

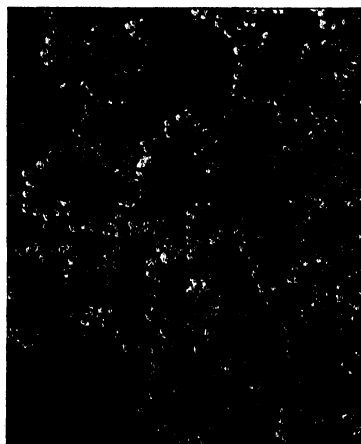
- A. lanceolata** ■ Evergreen shrub with arching, fern-like branches and lance-shaped, sharply toothed, hairless, bright green leaves, to 6cm (2½in) long. Bears fragrant, bright yellow flowers in small, rounded, corymb-like clusters, to 2cm (¾in) across, in mid- and late spring. ↑↔ 5m (15ft). Chile, Argentina. \*\*\*
- A. microphylla** ♀♂ Upright, evergreen tree or large shrub with semi-pendent shoots and small, obovate, entire or toothed, hairless, very dark green leaves, to 2.5cm (1in) long. In late winter and spring, produces tiny, vanilla-scented, greenish yellow flowers in clusters, to 1cm (½in) across, from leaf axils on the undersides of the shoots. Hardest of the species, it tolerates full shade and grows well against a wall. ↑ 10m (30ft), ↔ 4m (12ft). Chile, Argentina. \*\*\*
- A. petiolaris** ♀ Arching, evergreen shrub or sometimes small tree, bearing ovate, leathery, hairless, dark green leaves, to 8cm (3in) long, with a few large marginal teeth. In mid- and late spring, bears fragrant, pale creamy yellow flowers in nodding, catkin-like racemes, to 2.5cm (1in) long. ↑ 5m (15ft), ↔ 4m (12ft). Chile. \*\*\*
- A. serrata** Evergreen shrub with downy branches and oval, toothed, glossy, dark green leaves, hairless beneath, to 6cm (2½in) long. Fragrant, dark yellow flowers open in dense, spherical, umbel-like corymbs, to 2cm (¾in) across, in midsummer. ↑ 4m (12ft), ↔ 3m (10ft). Chile. \*\*\*

## AZOLLA

AZOLLACEAE

Genus of 8 species of floating, aquatic ferns found in lakes, ponds, and slow-flowing streams in both hemispheres. They have pinnately branched, floating rhizomes, with frail roots, producing 2-lobed, light green, scale-like fronds, which turn reddish brown in autumn. On a pool, they provide fast-growing surface cover, which partially suppresses algae and helps clear the water. In frost-prone areas, only *A. filiculoides* is suitable for outdoor pools; grow tender species in indoor pools in a cool or temperate conservatory or terrarium.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, scatter plants on the water surface in spring and provide full light. Outdoors, scatter on the pool surface when any danger of frost has passed, in full sun or partial shade. Where temperatures do not fall



*Azolla filiculoides*

below -5°C (23°F), plants overwinter as resting buds that sink to the pool bottom after the foliage is frosted, rising to the surface in spring. In frost-prone areas, remove before the first frosts and overwinter in frost-free conditions in a saucer of moist soil. See also pp.52-53.

- **PROPAGATION** Scatter small bunches of young plants on the water surface in early summer.
- **PESTS AND DISEASES** May be eaten by waterfowl.

**A. caroliniana** see *A. filiculoides*.

**A. filiculoides** ■ syn. *A. caroliniana* (Fairy moss, Mosquito plant). Aquatic perennial forming an attractive cover of soft foliage on the water surface. Pairs of delicate, lacy, light green fronds, 1mm (⅛in) long, are 2-ranked, and support single strands of fine roots, to 1.5cm (½in) long. ↔ indefinite. North and South America. \*

## AZORELLA

APIACEAE/UMBELLIFERAE

Genus of about 70 species of evergreen, mat- or cushion-forming perennials from open, rocky areas in New Zealand and South America. They produce attractive mounds of foliage, comprising rosettes of toothed or lobed, leathery leaves, 0.5-1.5cm (¼-½in) long. Umbels of small flowers are borne in late spring or summer. Grow in a raised bed or scree bed, or in an alpine house. Often confused with the genus *Bolax*.

- **HARDINESS** Fully hardy, given good drainage.
- **CULTIVATION** Grow in gritty loam-based potting compost (J1 No.1) in an alpine house in full light. Outdoors, grow in gritty, poor to moderately fertile, sharply drained soil in full sun.
- **PROPAGATION** Sow seed in containers in an open frame in autumn, or root rosettes as cuttings in spring.
- **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

**A. glebaria** see *Bolax gummiifera*.

**A. nivalis** see *A. trifurcata*.

**A. trifurcata** ■ syn. *A. nivalis*. Dense, cushion-forming perennial with rosettes of overlapping, glossy, dark green leaves, to 1.5cm (½in) long, deeply cut into 3 (occasionally 5) sharp-tipped, triangular lobes. Inconspicuous umbels of tiny, creamy white flowers are borne in summer. ↑ to 10cm (4in) or more, ↔ to 20cm (8in). Chile, Argentina. \*\*\*



*Azorella trifurcata*



*Azorina vidalii*

## AZORINA

CAMPANULACEAE

Genus of one species of erect, sparsely branched, evergreen shrub from volcanic cliffs or scree in the Azores. It has ridged stems and alternate, mid-green leaves, and bears racemes of bell-shaped flowers in late summer. In frost-prone areas, *A. vidalii* is an attractive plant for a cool conservatory or greenhouse. In frost-free climates, it is best grown among shrubs or in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. Provide good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun with some midday shade.
- **PROPAGATION** Sow seed at 13-16°C (55-61°F) in spring, or root softwood or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**A. vidalii** ■ syn. *Campanula vidalii*. Soft-stemmed, evergreen shrub with spoon-shaped, toothed, veined, glossy, mid-green leaves, 5-1.5cm (2-6in) long, crowded towards the stem tips. In late summer, bears loose racemes of up to 50 pendent, waisted, bell-shaped, white or pink flowers, 5cm (2in) long, with orange bases. ↑↔ 40-60cm (16-24in). Azores. ☀ (min. 5°C/41°F)

## AZTEKIUM

CACTACEAE

Genus of one species of very slow-growing, tuberous-rooted, perennial cactus, occurring on scree slopes in N.E. Mexico. It has prominently ribbed stems and produces areoles in rows along the ribs. It occasionally forms compact colonies. In frost-prone regions, grow *A. ritteri* in a temperate greenhouse: in

frost-free climates, it is suitable for a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. Water moderately in growth; keep dry at all other times of the year. Outdoors, grow in sharply drained, gritty, poor soil in full sun. See also pp.48-49.
- **PROPAGATION** Sow seed at 13-16°C (55-61°F) in spring, or root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Mealybugs and root mealybugs may be a problem.

**A. ritteri** ■ syn. *Echinocactus ritteri*. Perennial cactus with a flattened-spherical, 8- to 11-ribbed, minutely furrowed, olive-green stem. Tiny areoles each bear 1-4 flat, papery, curved, yellow to grey spines, which fall once an areole produces flowers. Funnel-shaped, diurnal, white or pink flowers, 1cm (½in) long, are borne from new areoles at the centre of the stem from spring to autumn. ↑↔ 5cm (2in). N.E. Mexico. ☀ (min. 7-10°C/45-50°F)

▷ *Azureocereus* see *Browningia*  
*A. bertlingianus* see *B. bertlingiana*



*Aztekium ritteri*

## B

## BABIANA

IRIDACEAE

Genus of 50–60 species of cormous perennials from open grassland and hill-sides in South Africa. They have ribbed or pleated, often hairy, lance-shaped, mid- to bright green leaves and spikes of funnel-shaped, often strongly scented flowers, 2–4cm (¾–1½in) across, borne mainly in spring. In frost-prone areas, grow in a cool greenhouse; in warmer climates, plant in a sunny border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, plant corms in autumn in loam-based potting compost (J1 No.2), and grow in full light. When in growth, water freely and apply a weak balanced liquid fertilizer every 3 weeks before flowering; dry off as the leaves die down in summer. Outdoors, plant 20cm (8in) deep, in light, rich, well-drained soil in full sun in autumn. Dormant corms are sometimes offered for spring planting in frost-prone areas to bloom in summer. If left in the soil, they revert to winter growing (if they survive).
- **PROPAGATION** Sow seed at 13–15°C (55–59°F) as soon as ripe. Remove offsets when dormant.
- **PESTS AND DISEASES** Red spider mites may be a problem.

*B. disticha* see *B. plicata*.

*B. nana*. Cormous perennial with hairy leaves, 3.5–6cm (1½–2½in) long. In spring, bears spikes of 2–6 scented, blue, lilac, or pink flowers, the lower lobes marked with white and mauve or with yellow. †12cm (5in), ↔ 5cm (2in). South Africa. ☼ (min. 5°C/41°F)

*B. plicata*, syn. *B. disticha*. Cormous perennial with hairy leaves, 8–12cm (3–5in) long. Spikes of 4–10 scented, pale lilac to violet flowers, often with a paler mark on the lower lobes, are borne in spring. †7–20cm (3–8in), ↔ 5cm (2in). South Africa. ☼ (min. 5°C/41°F)



*Babiana stricta*

*B. rubrocyanea* ☐ Cormous perennial with hairy leaves, 15cm (6in) long. Bears spikes of 5–10 scarlet and blue flowers in spring. †5–20cm (2–8in), ↔ 5cm (2in). South Africa. ☼ (min. 5°C/41°F)

*B. stricta* ☐ Variable, cormous perennial with hairy leaves, 4–12cm (1½–5in) long. In spring, bears spikes of 4–8 sometimes scented, purple, mauve, blue, or yellow flowers, occasionally with dark red centres. †10–30cm (4–12in), ↔ 5cm (2in). South Africa. ☼ (min. 5°C/41°F). 'Zwanenburg's Glory' has alternate blue and white flower segments.

*B. villosa*. Cormous perennial with hairy leaves, 5–12cm (2–5in) long. In spring, bears spikes of 4–8 deep red flowers, with large, purple-black anthers. †12–20cm (5–8in), ↔ 5cm (2in). South Africa. ☼ (min. 5°C/41°F)

▷ **Baby blue-eyes** see *Nemophila menziesii*

▷ **Baby's breath** see *Gypsophila paniculata*

▷ **Baby's tears** see *Soleirolia soleirolii*

## BACCHARIS

ASTERACEAE/COMPOSITAE

Genus of about 350 species of dioecious, deciduous or evergreen shrubs and herbaceous perennials from coasts, salt marshes, riverbanks, high mountains, and woodland margins in North, Central, and South America. Leaves are alternate or absent; flowerheads are borne in axillary panicles or corymbs. In frost-prone areas, grow tender species in a cool greenhouse. *B. halimifolia* is valued as a windbreak, especially near the sea, and for its silver seed heads.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in fertile soil in full sun. Pruning group 1 or 4.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*B. halimifolia* (Bush groundsel, Sea myrtle). Vigorous, upright, deciduous shrub with obovate to oval, grey-green leaves, to 8cm (3in) long, with large, marginal teeth. In autumn, bears axillary clusters of small white flowerheads in corymbs to 15cm (6in) across. Female plants produce thistle-like, silky white fruit. †→ 4m (12ft). E. USA, S. central USA, Mexico, West Indies. \*\*\*

▷ **Bachelor's buttons** see *Ranunculus aconitifolius*, *Craspedia*, *C. globosa*, *C. uniflora*

**White** see *Ranunculus aconitifolius* 'Flore Pleno'

## BACKHOUSIA

MYRTACEAE

Genus of 7 species of evergreen shrubs and trees found mainly in subtropical and tropical rainforest in Australia. Ovate, elliptic, or lance-shaped, aromatic leaves are borne in opposite pairs. Small flowers, with 4 petals and conspicuous stamens, are borne in cymes, umbels, or panicles. In frost-prone areas, grow in a temperate greenhouse; elsewhere, grow in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in equal parts loam, peat, and sand in full light. Pot on or top-dress in spring. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, humus-rich, neutral to acid soil in full sun. Pruning group 9.
- **PROPAGATION** Surface-sow seed at 13–15°C (55–59°F) in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*B. citriodora* ♀ (Lemon ironwood, Lemon-scented myrtle). Shrub or bushy tree with broadly lance-shaped, hairy, reddish green leaves, 5–12cm (2–5in) long, maturing to glossy, deep green. From summer to autumn, bears umbels, 10–15cm (4–6in) or more across, of creamy white flowers. †3–15m (10–50ft), ↔ 2–6m (6–20ft). Australia (Queensland). ☼ (min. 5–7°C/41–45°F)

## BACTRIS

Spiny club palm

ARECACEAE/PALMAE

Genus of over 230 species of single- or cluster-stemmed, usually spiny palms from dry, open sites in Mexico, the West Indies, and South America. Pinnate or simple, cleft leaves are borne in terminal tufts, with no crownshafts, and 3-petalled flowers are produced in panicles among them. In frost-prone areas, grow in a warm greenhouse. In frost-free areas, use as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in well-drained, loam-based potting compost (J1 No.2) in bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil with some midday shade.
- **PROPAGATION** Sow seed at 25–30°C (77–86°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*B. gasipaes* ♀ (Peach palm). Medium-sized or tall palm, usually single-stemmed, bearing rings of sharp spines. Pinnate, deep green leaves, to 3m (10ft) long, with many slender leaflets, are paler beneath. Bears light green flowers in upright then pendent panicles in summer, followed by edible, orange-red fruit. † to 20m (70ft), ↔ to 6m (20ft). Possibly Peru. ☼ (min. 15°C/59°F)

## BAECKEA

MYRTACEAE

Genus of about 70 species of evergreen shrubs and small trees occurring in scrub in subtropical to subalpine areas in China, Malaysia, Australia, and New Caledonia. Linear to narrowly lance-shaped, usually entire leaves are borne in opposite pairs. Saucer-shaped, 5-petalled flowers are produced singly or in umbels in summer. In frost-prone climates, grow in a cool greenhouse. In warmer climates, grow in a border, at the base of a warm, sunny wall, or as ground cover.

- **HARDINESS** Frost tender; but may tolerate short periods of light frost.
- **CULTIVATION** Under glass, grow in neutral to acid, loam-based potting compost in bright light, with some shade from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in neutral to acid, well-drained soil in full sun. Pruning group 9.
- **PROPAGATION** Surface-sow seed at 13–15°C (55–59°F) in spring and keep moist. Root semi-ripe cuttings in a propagating case in late summer.
- **PESTS AND DISEASES** Trouble free.

*B. virgata* ♀ (Twiggy baeckea). Prostrate to erect, bushy shrub or small tree with narrowly oblong to lance-shaped, dark green leaves, to 2.5cm (1in) long. In summer, numerous white flowers, to 6mm (¼in) across, are produced in umbels of 2–9 near the ends of the branchlets. †0.3–3m (1–10ft) or more, ↔ 1–3m (3–10ft). E. Australia. ☼ (min. 5°C/41°F)

▷ **Baeckea, Twiggy** see *Baeckea virgata*

▷ **Baldmoney** see *Meum athamanticum*

▷ **Balloon flower** see *Platycodon*

## BALLOTA

LABIATAE/LAMIACEAE

Genus of 30–35 species of clump- or mat-forming perennials and evergreen subshrubs from rocky and waste ground in the Mediterranean, Europe, and W. Asia. The leaves are opposite, toothed to scalloped, and aromatic, sometimes unpleasantly so. Whorls of 2-lipped flowers, often with prominent, saucer- or funnel-shaped calyces, are produced from the leaf axils of terminal shoots. Grow in a sunny border.

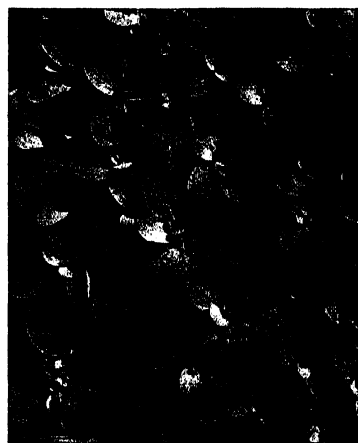
- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in poor, dry, freely draining soil in full sun. Pruning group 10; cut back subshrubs in mid-spring to keep compact.
- **PROPAGATION** Divide perennials in spring. For subshrubs, root softwood cuttings in late spring or early summer, or semi-ripe cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

*Ballota acetabulosa*

**B. acetabulosa** ■ Compact, bushy subshrub with upright, white-woolly shoots and heart-shaped, round-toothed, grey-green leaves, to 5cm (2in) long. Small, 2-lipped, white-marked, purple-pink flowers, 1.5–2cm (½–¾in) long, with open funnel-shaped green calyces, to 2cm (¾in) across, are produced in mid- and late summer. † 60cm (24in), ↔ 75cm (30in). S.E. Greece, Crete, W. Turkey. \*\*

**B. 'All Hallows Green'** ■ Bushy subshrub with heart-shaped, woolly, lime-green leaves, to 5cm (2in) long. Small, 2-lipped, pale green flowers with open funnel-shaped, green calyces, to 2cm (¾in) across, are produced in mid- and late summer. † 60cm (24in), ↔ 75cm (30in). \*\*\* (borderline)

**B. pseudodictamnus** ■ Mound-forming subshrub with ovate, yellowish grey-green leaves, to 3cm (1¼in) long, on sparsely branched, erect, woody-based, white-woolly stems. In late spring and early summer, bears 2-lipped, white or pinkish white flowers, 1.5cm (½in) long, with open funnel-shaped, pale green calyces, 2cm (¾in) wide. † 45cm (18in), ↔ 60cm (24in). Greece, Crete, W. Turkey. \*\*\* (borderline)

*Ballota* 'All Hallows Green'*Ballota pseudodictamnus*

- ▷ **Balm** see *Melissa*
- Bastard** see *Melittis*
- Bee** see *Melissa officinalis*, *Monarda didyma*
- Lemon** see *Melissa officinalis*
- ▷ **Balm of Gilead** see *Cedronella canariensis*, *Populus x candicans*
- ▷ **Balsam** see *Impatiens*
- ▷ **Balsam apple** see *Clusia major*
- ▷ **Balsamita** see *Tanacetum*
- B. major** see *T. balsamita*

## BALSAMORHIZA

Balsam root

ASTERACEAE/COMPOSITAE

Genus of 10–14 species of perennials with fleshy, balsam-scented roots, from gravelly banks and cliffs in W. North America. Erect stems bear opposite, simple or pinnate leaves, mainly in basal rosettes, and solitary yellow flowerheads. Grow in a border or rock garden.

- **HARDINESS** Fully hardy, but liable to die back in wet winters.
- **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun.
- **PROPAGATION** Sow seed in a cold frame in autumn. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

**B. sagittata.** Clump-forming perennial with simple, heart- to arrow-shaped, entire, very white-hairy leaves, 15–50cm (6–20in) long, later almost hairless, with conspicuous midribs and long leaf-stalks. Flowerheads, 8–10cm (3–4in) across, with yellow disc- and ray-florets, and white-woolly involucres, are borne in late spring and early summer. † 25–60cm (10–24in), ↔ 30cm (12in). Canada, N.W. USA. \*\*\*

- ▷ **Balsam root** see *Balsamorhiza*
- ▷ **Bamboo** see *Bambusa*
- Anceps** see *Yushania*, *Y. anceps*
- Black** see *Phyllostachys nigra*
- Buddha's belly** see *Bambusa ventricosa*
- Fishpole** see *Phyllostachys aurea*
- Fountain** see *Fargesia nitida*
- Giant timber** see *Phyllostachys bambusoides*
- Golden** see *Phyllostachys aurea*
- Heavenly** see *Nandina domestica*
- Hedge** see *Bambusa multiplex*
- Narihira** see *Semiarundinaria fastuosa*
- Noble** see *Himalayacalamus falconeri*
- Pygmy** see *Pleiochloa pygmaeus*
- Square-stemmed** see *Chimonobambusa quadrangularis*

- ▷ **Bamboo cont.**
- Umbrella** see *Fargesia murielae*
- Yellow-groove** see *Phyllostachys aureosulcata*
- Zigzag** see *Phyllostachys flexuosa*
- ▷ **Bamboos** see p. 54

## BAMBUSA

Bamboo

GRAMINEAE/POACEAE

Genus of 100–120 species of clump-forming, evergreen bamboos, occurring in forest and woodland in tropical and subtropical Africa, Asia, and Central and South America. Smooth, usually hollow canes produce slender branches at each node, bearing linear-lance-shaped leaves. They are cultivated for their foliage and, in some species, such as *B. ventricosa*, for their curious, swollen internodes. In frost-prone climates, grow in a temperate greenhouse or conservatory. In frost-free climates, *B. multiplex* is useful as a hedge or windbreak.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright indirect light. Maintain high humidity, and water moderately. To produce the swollen internodes, confine *B. ventricosa* and its allies to 13–18cm (5–7in) containers; water and fertilize sparingly. Outdoors, grow in moist, fertile, humus-rich soil, in a sheltered position in full sun or partial shade.
- **PROPAGATION** Divide established clumps in spring.
- **PESTS AND DISEASES** Emerging shoots are vulnerable to slugs.

**B. glaucescens** see *B. multiplex*.  
**B. multiplex**, syn. *B. glaucescens* (Hedge bamboo). Variable bamboo with slender, arching canes, and up to 20 crowded, paired, linear-lance-shaped, mid-green leaves, to 15cm (6in) long, silvery beneath. † 3–15m (10–50ft) (much smaller in containers), ↔ indefinite. China. \*. 'Fernleaf', syn. 'Wang Tsai', has fern-like whorls of about 20 leaves, 2.5–4.5cm (1–1½in) long. 'Wang Tsai' see 'Fernleaf'.  
**B. ventricosa** (Buddha's belly bamboo). Very vigorous bamboo with strong canes bearing whorls of 10–20 linear-lance-shaped, dark green leaves, to 12cm (5in) long. The internodes swell under poor growing conditions. † 5–25m (15–80ft) outdoors, 2.5m (8ft) or more in containers, ↔ indefinite. S. China. ☉ (min. 7°C/45°F)

- ▷ **Banana** see *Musa*
- Abyssinian** see *Ensete ventricosum*
- Edible** see *Musa acuminata*
- 'Dwarf Cavendish'
- Ethiopian** see *Ensete ventricosum*
- Flowering** see *Musa ornata*
- Japanese** see *Musa basjoo*
- Scarlet** see *Musa coccinea*
- ▷ **Baneberry** see *Actaea*
- Red** see *A. rubra*
- White** see *A. alba*

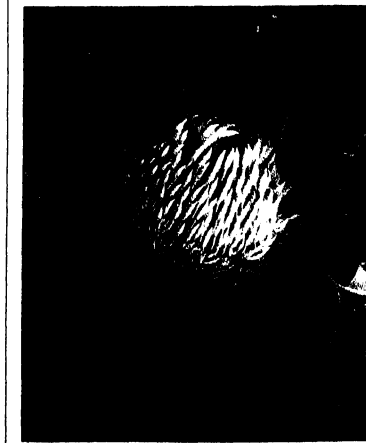
## BANKSIA

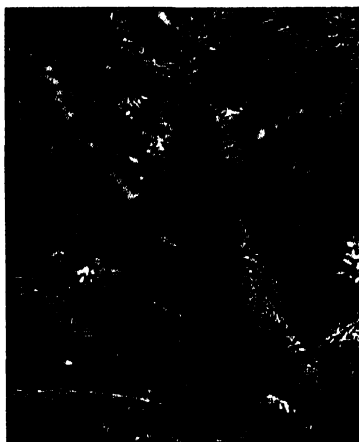
PROTEACEAE

Genus of about 70 species of evergreen trees and shrubs, occurring in temperate to tropical scrub and forest, mainly in Australia, with one in New Guinea. They are cultivated for their foliage and flowers. Alternate or whorled, linear to ovate or pinnate, leathery leaves are often boldly lobed or toothed. Cone-like flowerheads of crowded, slender florets are followed by woody fruit. In frost-prone areas, grow in a cool greenhouse. In frost-free areas, grow in a border or as specimen plants.

- **HARDINESS** Half hardy to frost tender. Many will survive short spells around 0°C (32°F).
- **CULTIVATION** Under glass, grow in equal parts loam-based potting compost (J1 No.1), grit, and peat (or peat substitute), in full light and with good ventilation. In the growing season, water moderately and apply a half-strength, phosphate-free liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained, neutral to acid soil, low in phosphates and nitrates, in full sun. Pruning group 1 or 8.
- **PROPAGATION** Sow seed singly in small containers at 18°C (64°F) in spring. Take semi-ripe cuttings of smooth-leaved species in summer and root with bottom heat.
- **PESTS AND DISEASES** Outdoors, *Phytophthora* root rot may be fatal; plants may become chlorotic if soil contains too much phosphate or lime.

**B. baxteri** ■ Dense to loosely spreading shrub with alternate, fan-shaped leaves, 7–17cm (3–7in) long, with acutely triangular, brownish red lobes, maturing to deep green. From summer to autumn, produces spherical, greenish yellow flowerheads, 5–8cm (2–3in) across. † 2–4m (6–12ft). Australia (Western Australia). \*

*Banksia baxteri*

*Banksia ericifolia*

***B. coccinea*** (Scarlet banksia). Erect, sparsely branched shrub with alternate, broadly heart-shaped, oblong to inversely heart-shaped, toothed leaves, to 10cm (4in) long, deep green above, white-downy beneath. Cylindrical scarlet flowerheads, to 8cm (3in) long, are produced from spring to summer. † 4–8m (12–25ft), ↔ 1.5–4m (5–12ft). Australia (Western Australia). \*

***B. ericifolia*** (Heath banksia). Bushy shrub with crowded, alternate, linear, entire leaves, 2cm (¾in) long, glossy, mid- to deep green above, silvery beneath. Cylindrical, orange-yellow to orange-red or russet flowerheads, to 20cm (8in) long, are produced in autumn or winter. † 3–6m (10–20ft), ↔ 2–4m (6–12ft). Australia (New South Wales). \*

*Banksia serrata*

***B. integrifolia*** (Coast banksia). Variable, vigorous, erect shrub or large tree, sparsely to moderately branched. Whorled, elliptic to obovate, entire, velvety, light brown leaves, to 10cm (4in) long, mature to mid-green above, white beneath. Cylindrical, pale yellow flowerheads, to 12cm (5in) long, are borne from late summer to autumn. † 5–25m (15–80ft), ↔ 3–8m (10–25ft). Australia (Queensland to Victoria). \*

***B. menziesii*** (Firewood banksia, Menzies' banksia). Erect, then spreading, bushy shrub or tree with very downy young stems. Thick, alternate, narrowly oblong leaves, 15–30cm (6–12in) long, with shallow, irregular teeth and rust-red hairs, mature to semi-glossy or matt, deep or grey-green. From autumn to late spring, produces short,

cylindrical to broadly ovoid flowerheads, 10–15cm (4–6in) long, varying from red ageing to yellow, to pink or bronze. † 5–15m (15–50ft), ↔ 5–10m (15–30ft). Australia (Western Australia). (min. 3–5°C/37–41°F)

***B. serrata*** (Saw banksia). Erect then spreading shrub or tree with alternate, narrowly obovate to oblong, toothed leaves, 8–15cm (3–6in) long, downy and light red or reddish brown at first, then leathery, smooth, and semi-glossy, deep green. Cylindrical, greenish yellow to creamy grey flowerheads, 9–15cm (3½–6in) long, are produced from summer to late autumn. † 3–20m (10–70ft), ↔ 2–8m (6–25ft). Australia (New South Wales, Victoria). \*

#### ▷ **Banksia,**

**Coast** see *Banksia integrifolia*

**Firewood** see *Banksia menziesii*

**Heath** see *Banksia ericifolia*

**Menzies' see** *Banksia menziesii*

**Saw** see *Banksia serrata*

**Scarlet** see *Banksia coccinea*

▷ **Banyan** see *Ficus benghalensis*

**Australian** see *F. macrophylla*

**Malay** see *F. microcarpa*

▷ **Baobab tree** see *Adansonia digitata*

## BAPTISIA

*False indigo, Wild indigo*

LEGUMINOSAE/PAPILIONACEAE

Genus of 20 or more species of erect or spreading perennials occurring in dry woodland and grassland in E. and S. USA, with a few in river valleys. They have alternate, fully divided, 3-palmate leaves and tall, branched stems bearing terminal or axillary racemes of pea-like flowers. The flowers are followed by large, often inflated pods. Grow in a border, wild garden, or dry, sunny bank.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in open, porous, preferably sandy soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in early spring.

• **PESTS AND DISEASES** Trouble free.

***B. alba***. Erect, bushy perennial with palmate leaves, consisting of 3 obovate to narrowly elliptic-lance-shaped, glaucous leaflets, 2–5cm (2in) long. In early summer, bears racemes of up to 20 white flowers, to 2cm (¾in) long, sometimes with purple-marked standard petals. † 60–120cm (2–4ft), ↔ 60cm (24in). S.E. USA. \*\*\*

*Baptisia australis*

***B. australis*** (Gentle spreading to erect perennial with glaucous stems and palmate, mid- to deep green leaves, each consisting of 3 ovate to inversely lance-shaped leaflets, to 4cm (1½in) long. In early summer, bears many-flowered racemes of dark blue flowers, to 3cm (1¼in) long, often flecked white or cream. † 1.5m (5ft), ↔ 60cm (24in). E. USA. \*\*\*

▷ ***Barbacenia elegans*** see *Vellozia elegans*

▷ ***Barbados pride*** see *Caesalpinia pulcherrima*

## BARBAREA

*St. Barbara's herb*

BRASSICACEAE/CRUCIFERAE

Genus of about 12 species of biennials and perennials found in damp habitats in fertile, slightly acid to moderately alkaline soils, in temperate regions of the N. hemisphere. They have basal rosettes of entire or pinnatisect radical leaves and clasping stem leaves, and produce terminal racemes of cross-shaped, 4-petalled yellow flowers. A few are used as salad plants, and the double-flowered and variegated cultivars of *B. vulgaris* may be grown as ornamental plants at the front of a border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any moist but well-drained soil in full sun or partial shade.

• **PROPAGATION** Sow seed of biennials *in situ* as soon as ripe. Divide perennials in spring, or root softwood cuttings in early summer. *B. vulgaris* 'Variegata' breeds almost true from seed; discard green-leaved plants.

• **PESTS AND DISEASES** Flea beetles may damage the leaves.

***B. vulgaris* 'Variegata'**. Rosette-forming biennial or short-lived perennial with 4- to 10-lobed basal leaves and simple stem leaves, both 5–12cm (2–5in) long, and mid- to deep green, variably splashed yellow. Cross-shaped yellow flowers are produced in racemes from early spring to early summer. Remove flowers unless seed is required. † 25–45cm (10–18in), ↔ to 20cm (8in). \*\*\*

▷ ***Barbed-wire plant*** see *Tylecodon reticulatus*

▷ ***Barberry*** see *Berberis*

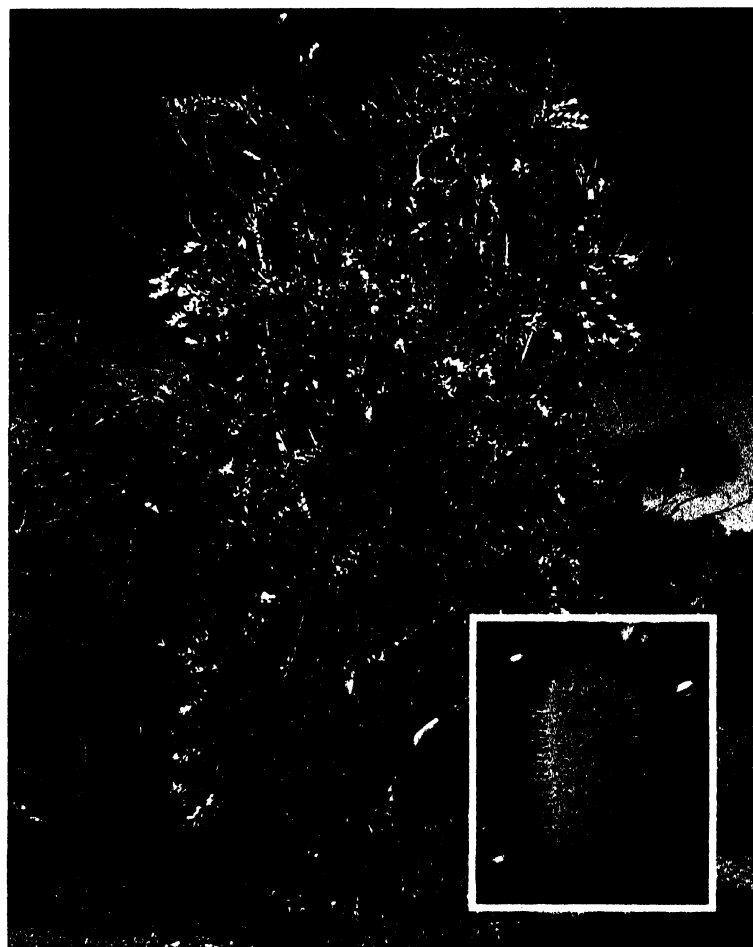
## BARKERIA

ORCHIDACEAE

Genus of about 10 species of deciduous, epiphytic orchids found at an altitude of 1,900–2,500m (6,200–8,000ft) in Central America. They produce stem-like, cylindrical or spindle-shaped pseudobulbs, with alternate, broadly linear to broadly ovate, slightly fleshy leaves and copious aerial roots. Flowers are borne in narrowly pyramidal or cylindrical, terminal racemes, rarely panicles, in early summer.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in a slatted basket. In summer, provide moist, shady conditions, water freely, applying fertilizer at every third watering, and mist once or twice a day.

*Banksia integrifolia* (inset: flower detail)



Provide full light and keep dry in winter. See also p.46.

- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**B. lindleyana.** Epiphytic orchid with cylindrical pseudobulbs and lance-shaped to oblong-lance-shaped, grey-green leaves, 15cm (6in) long, with sharp-pointed tips. Bears white, lilac, or deep purple flowers, 6–7cm (2½–3in) across, in loose, terminal racemes in winter. †30cm (12in), ↔ 15cm (6in). Mexico to Costa Rica. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F)

**B. skinneri.** Epiphytic orchid with cylindrical pseudobulbs and elliptic to elliptic-lance-shaped, long, sharp-pointed, pale green leaves, 15cm (6in) long. Bears rich magenta to lilac flowers, 4cm (1½in) across, in terminal racemes or panicles, in winter. †30cm (12in), ↔ 15cm (6in). Guatemala. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F)

## BARLERIA

ACANTHACEAE

Genus of about 250 species of evergreen perennials and shrubs occurring in scrub and forest in tropical and subtropical Africa and Asia, grown mainly for their spikes of tubular, 2-lipped flowers, which frequently have spiny bracts. The leaves are oblong, elliptic, or lance-shaped and are borne in opposite pairs. In frost-prone regions, grow in a temperate greenhouse. In frost-free areas, grow in a border or against a warm, sunny wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with additional well-rotted compost, in full light, with shade from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in a sunny site. Pruning group 2.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root softwood cuttings in late spring, or semi-ripe cuttings from non-flowering shoots in summer, with bottom heat.
- **PESTS AND DISEASES** Prey to red spider mites, whiteflies, and aphids under glass.

**B. cristata** ■ (Philippine violet). Erect to spreading, bushy, bristly-hairy shrub with oblong-elliptic, mid- to deep green leaves, to 10cm (4in) long. Bears small, stalkless, axillary spikes of light violet-blue, pink, or white flowers in summer. †90–120cm (3–4ft), ↔ 45–70cm (18–28in). India, Burma. ☼ (min. 10°C/50°F)

**B. lupulina** (Hop-headed barleria). Erect, bushy shrub with spiny stem nodes, and narrowly lance-shaped, bright green leaves, 10cm (4in) long, with pink to red main veins. In summer, bears terminal spikes, 4–8cm (1½–3in) long, with ovate bracts and yellow flowers. †60cm (24in), ↔ 40–60cm (16–24in). Mauritius. ☼ (min. 10°C/50°F)

▷ **Barleria, Hop-headed** see *Barleria lupulina*



*Barleria cristata*

- ▷ **Barley** see *Hordeum*
- ▷ **Barosma pulchella** see *Agathosma pulchella*
- ▷ **Barrenwort** see *Epimedium*
- ▷ **Bartlettina sordida** see *Eupatorium sordidum*
- ▷ **Bartonia aurea** see *Mentzelia lindleyi*
- ▷ **Basil** see *Ocimum basilicum*
- ▷ **Greek bush** see *O. basilicum* var. *minimum*
- ▷ **Sweet** see *O. basilicum*

## BASSIA

CHENOPODIACEAE

Genus of about 26 species of annuals and perennials from disturbed land in S. Europe, Asia, and North America. They are cultivated for their habit, the feathery effect created by their alternate, very narrow, usually entire leaves, and their autumn tints. The flowers are inconspicuous. Plant in small groups in a bedding scheme, or to make a temporary low screen.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in a sheltered position in full sun. Trim untidy plants in summer.
- **PROPAGATION** Surface-sow seed at 16°C (61°F) in early or mid-spring, or sow *in situ* in late spring.
- **PESTS AND DISEASES** Trouble free.

**B. scoparia** f. *trichophylla* ♀ syn. *Kochia trichophylla* (Burning bush, Summer cypress). Fast-growing, bushy, cone-shaped annual with close-set, narrowly lance-shaped to oblong, light green leaves, 5–8cm (2–3in) long, turning bright red or purple in late summer or autumn. †0.3–1.5m (1–5ft), ↔ 30–45cm (12–18in). Asia, North America. \*

- ▷ **Basswood** see *Tilia americana*
- ▷ **Carolina** see *T. caroliniana*
- ▷ **Bat flower** see *Tacca chantrierei*, *T. integrifolia*
- ▷ **Bats-in-the-belfry** see *Campanula trachelium*

## BAUERIA

CUNONIACEAE

Genus of 3 species of evergreen shrubs occurring in light woodland in E. Australia. They are erect or prostrate, with slender, sometimes hairy branches bearing opposite, fully divided, 3-palmate, mid- or deep green leaves. Baueras are cultivated for their small,

bowl-shaped, 4- to 10-petalled flowers, which are produced singly from the upper leaf axils. In frost-prone climates, grow in a cool greenhouse. In frost-free climates, they provide effective ground cover around shrubs and beneath trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand, in full light with shade from hot sun. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in humus-rich, neutral to acid soil in partial shade. Pruning group 8.
- **PROPAGATION** Sow seed at 20–24°C (68–75°F) in spring. Root semi-ripe cuttings during late summer. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

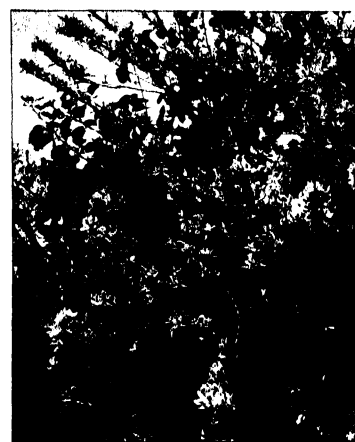
**B. rubioides.** Mat-forming to low, spreading, bushy, evergreen shrub growing glossy, 3-palmate, deep green leaves, to 4cm (1½in) long, consisting of oblong to lance-shaped, often toothed leaflets. Solitary, bowl-shaped, pink or white flowers, to 2cm (¾in) across, are produced on long flower-stalks from the upper leaf axils, mainly from spring to summer. †0.15–3m (½–10ft), ↔ 0.6–3m (2–10ft). Australia (Queensland to Tasmania). ☼ (min. 3–5°C/37–41°F)

## BAUHINIA

LEGUMINOSAE/PAPILIONACEAE

Genus of at least 250 species of evergreen or deciduous trees, shrubs, and perennial climbers from damp to dry forest and grassland in tropical and subtropical regions, grown mainly for their orchid-like flowers with 5 irregular petals. Leaves are alternate, simple, and often 2-lobed. In frost-prone areas, grow in a warm greenhouse; elsewhere, use as specimen plants or in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in full growth, water freely and apply a balanced liquid fertilizer monthly; reduce water in winter. Pot on or top-dress in late winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Water freely during drought. Pruning group 12 for climbers; pruning group 1 (or 13 if wall-grown) for trees and shrubs.



*Bauhinia variegata*

- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings in summer with bottom heat. Layer in spring.
- **PESTS AND DISEASES** Whiteflies, red spider mites, mealybugs, and aphids may be troublesome under glass.

**B. corymbosa** (Phanera). Evergreen, tendril climber with rust-red-hairy young shoots. Leaves, to 4cm (1½in) long, are rounded with heart-shaped bases and deeply 2-lobed tips, mid-green above, pale green beneath. In summer, produces dense, terminal racemes of fragrant, white or pink flowers, 3cm (1¼in) across. †4m (12ft) or more. S. China. ☼ (min. 7°C/45°F)

**B. galpinii** ■ syn. *B. punctata*.

Spreading or semi-climbing, evergreen shrub with oval, notched or 2-lobed, light green leaves, 5cm (2in) long. Produces orange or red flowers, to 8cm (3in) across, in short, axillary racemes from spring to autumn. †2–3m (6–10ft), ↔ 1–3m (3–10ft). South Africa. ☼ (min. 7°C/45°F)

**B. punctata** see *B. galpinii*.

**B. variegata** ■ ♀ (Mountain ebony, Orchid tree). Spreading, deciduous tree bearing rounded, rich green leaves, 10–20cm (4–8in) long, with heart-shaped bases and deeply 2-lobed tips. From winter to summer, bears short, terminal racemes of light magenta to purple-blue flowers, 8–12cm (3–5in) across, sometimes white-variegated. †8–12m (25–40ft), ↔ 3–8m (10–25ft). E. Asia. ☼ (min. 7°C/45°F). 'Candida' bears pure white flowers, occasionally suffused green.



*Bauhinia galpinii*



- ▷ **Bay**,  
**Bull** see *Magnolia grandiflora*  
**Loblolly** see *Gordonia lasianthus*  
**Sweet** see *Laurus nobilis*, *Magnolia virginiana*  
▷ **Bay laurel** see *Laurus nobilis*  
▷ **Bayonet, Spanish** see *Yucca aloifolia*  
▷ **Bayonet plant** see *Aciphylla*  
▷ **Bead plant** see *Nertera granadensis*  
▷ **Bead-tree** see *Melia azedarach*  
▷ **Bean**,  
**Egyptian** see *Lablab purpureus*  
**Indian** see *Lablab purpureus*  
**Snail** see *Vigna caraccalla*  
▷ **Bean tree**,  
**Black** see *Castanospermum australe*  
**Indian** see *Catalpa bignonioides*  
**Lucky** see *Erythrina caffra*,  
*E. lysistemon*  
▷ **Bearberry** see *Arctostaphylos*  
**Alpine** see *A. alpina*  
**Common** see *A. uva-ursi*  
▷ **Bear's breeches** see *Acanthus*  
▷ **Bear's foot** see *Helleborus foetidus*

## BEUCARNEA

AGAVACEAE/DRACAENACEAE

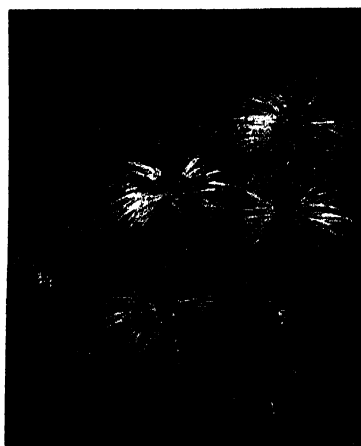
Genus of about 24 species of evergreen shrubs and trees found in semi-desert and scrub from S. USA to Guatemala. Most have an expanded base and unbranched, palm-like stems with terminal tufts of strap-shaped, leathery leaves. They bear 6-tepalled flowers in terminal panicles. In frost-prone areas, grow in a temperate greenhouse. In frost-free, dry climates, grow as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light. Water moderately in growth, sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, sharply drained soil in full sun.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) or root offsets in spring.
- **PESTS AND DISEASES** Prey to scale insects and red spider mites under glass.

**B. recurvata** ■ ♀♂ syn. *Nolina recurvata*, *N. tuberculata* (Bottle palm, Elephant foot tree, Ponytail). Evergreen tree with a flask-shaped base and an erect trunk that branches sparingly with age. Rosetted, mid- to deep green leaves, to 1.8m (6ft) long, are channelled and recurved. Tiny, mauve-tinted, creamy white flowers are produced in panicles 1m (3ft) long in summer. †4–8m (12–25ft), ↔ 2–4m (6–12ft). S.E. Mexico. ☀ (min. 7°C/45°F)



*Beaucarnea recurvata*



*Beaufortia sparsa*

## BEAUFORTIA

MYRTACEAE

Genus of 18 species of evergreen shrubs occurring mainly on poor soils in scrub and forest in warm-temperate areas of Australia. They are cultivated for their terminal, brush-like heads of numerous small flowers, each consisting largely of a tuft of coloured stamens. Leaves are small, simple, and borne in opposite pairs, in most species tightly packed and overlapping to conceal the stems. In frost-prone regions, grow beaufortias in a cool greenhouse. In frost free climates, plant in a border or at the base of a warm, sunny wall; they may also be used as low windbreaks.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam, peat, and sand in full light, with good ventilation. Water freely during the growing season, sparingly in winter. Pot on or top-dress in early spring, or apply a half-strength, balanced liquid fertilizer monthly from spring to autumn. Outdoors, grow in poor, well-drained, neutral to acid soil in full sun. Pruning group 9.
- **PROPAGATION** Surface-sow seed at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Prone to chlorosis and die-back in phosphate-rich soil.

**B. sparsa** ■ (Swamp bottlebrush). Erect to spreading, evergreen shrub with upright to recurved, oval, mid- to deep green leaves, 1cm (½in) long. Bright orange-red flowerheads, 5–7cm (2–3in) long, are produced from summer to autumn. †2–3m (6–10ft), ↔ 1–2m (3–6ft). Australia (Western Australia). ☀ (min. 5°C/41°F)

## BEAUMONTIA

APOCYNACEAE

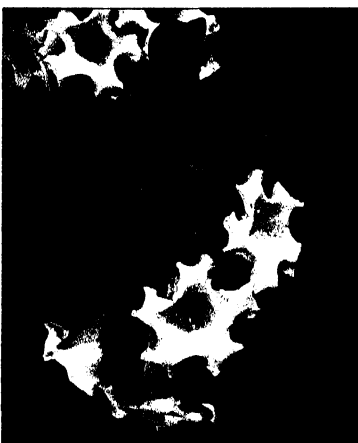
Genus of 9 species of evergreen climbers occurring in temperate and tropical forest and scrub in China and from India to Vietnam. They are cultivated for their foliage and attractive, scented flowers. The leaves are opposite, entire, and usually oblong-ovate to ovate. The large, trumpet-shaped or bell-shaped flowers are produced in small, terminal and axillary corymbs, from late spring to summer. In frost-prone regions, grow beaumontias in a temperate or warm greenhouse. In frost-free regions, train

them over a pergola or arbour, against a house wall, or through a tree.

- **HARDINESS** Frost tender, although *B. grandiflora* may survive short spells around 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress in spring. Provide strong supports for the heavy, twining growth. Keep warm and humid in summer, but cool in winter, with night temperatures down to 7°C (45°F) to initiate flower-bud formation. Outdoors, grow in moist, fertile, humus-rich soil in full sun. Prune after flowering; pruning group 11 or 12.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings, preferably with a heel, in a propagating case with bottom heat in late summer. Layer in autumn or spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**B. grandiflora** ■ (Herald's trumpet). Vigorous, evergreen, twining climber with broadly oblong-ovate, downy, reddish brown leaves, 10–25cm (4–10in) long, maturing to glossy, deep green. Trumpet-shaped, fragrant white flowers, 8–13cm (3–5in) long, with green bases, are borne in terminal and axillary corymbs from late spring to summer. †5–15m (15–50ft). India to Vietnam. ☀ (min. 5°C/41°F)

- ▷ **Beauty berry** see *Callicarpa*
- ▷ **Beauty bush** see *Kolkwitzia*
- ▷ **Bedstraw** see *Galium*
- ▷ **Beech** see *Fagus*  
**American** see *Fagus grandifolia*  
**Antarctic** see *Nothofagus antarctica*  
**Black** see *Nothofagus solandri*  
**Common** see *Fagus sylvatica*  
**Copper** see *Fagus sylvatica*  
*f. purpurea*  
**Fern-leaved** see *Fagus sylvatica*  
*'Aspleniifolia'*  
**Japanese** see *Fagus crenata*  
**Mountain** see *Nothofagus solandri*  
*var. cliffortioides*  
**Myrtle** see *Nothofagus cunninghamii*  
**Oriental** see *Fagus orientalis*  
**Silver** see *Nothofagus menziesii*  
**Southern** see *Nothofagus*  
**Weeping** see *Fagus sylvatica*  
*f. pendula*
- ▷ **Beefsteak plant** see *Iresine herbstii*
- ▷ **Beet** see *Beta*



*Beaumontia grandiflora*

## BEGONIA

BEGONIACEAE

Genus of about 900 species and many cultivars of more or less fleshy annuals, herbaceous perennials, evergreen shrubs, and climbers, including some succulents and epiphytes. They are widespread in tropical and subtropical regions, between approximately 15°N. and 15°S. of the equator. Begonias are variable in habit and may be fibrous-rooted, rhizomatous, or tuberous, the tubers becoming dormant in winter. Some are cultivated for their colourful flowers and others for their decorative, alternate, generally asymmetric, simple to compound leaves. The flowers are usually borne in axillary or terminal cymes or racemes. All begonias have flowers of both sexes on the same inflorescence: male flowers with 2–4 unequal petals, female flowers with 2–6 equal petals. In frost-prone areas, grow begonias as container plants in the home or conservatory; the Semperflorens and Tuberhybrida groups may be used for summer bedding. Most begonias are suitable for permanent outdoor cultivation only in relatively humid, tropical and subtropical regions, where they are grown in a bed or border. For ease of reference, begonias may be divided into 7 informal groupings, based broadly on their growth habit and slightly differing cultivation needs.

### Cane-stemmed begonias

Woody, fibrous-rooted, usually upright, evergreen perennials grown for their habit, foliage, and flowers. The species involved in their parentage are mostly from Brazil. The stems are slender and bamboo-like, with regularly spaced, swollen nodes. The often beautifully marked leaves are asymmetric, more or less ovate, and often deeply toothed to lobed. Showy flowers are borne mainly from early spring to summer. These begonias will not tolerate continuous, direct sunlight and tend to shed their lower leaves, especially if overwatered. To keep clothed to the base, cut back overlong canes to 2 or 3 buds in spring or early summer. Propagate by tip, leaf, or stem cuttings.

### Rex-cultorum begonias

Mainly evergreen, usually rhizomatous perennials of variable habit, derived from crosses with *B. rex* and related species. Some involve crosses with tuberous begonias, and are not truly rhizomatous, showing a tendency to winter dormancy. They are grown for their foliage. The brilliantly coloured, obliquely ovate to ovate-lance-shaped leaves sometimes have spirally arranged basal lobes. Relatively inconspicuous single flowers, 1.5–2cm (½–¾in) across, are mainly borne in early spring. Grow in bright indirect light at an optimum of 21–24°C (70–75°F). Bright light deepens red leaf coloration, while lower light levels enhance the metallic sheen of many cultivars. To minimize the risk of rhizome rot, water by immersion of the containers. Propagate by seed, sections of rhizome, or leaf cuttings.

### Rhizomatous begonias

Variable, mostly evergreen perennials with creeping, erect, or subsurface rhizomes, and small, single flowers

usually borne in winter or early spring. They are grown for their leaves, which are usually 7–30cm (3–12in) long, sometimes with spirally arranged basal lobes, and may be smooth, crested, or puckered, green or brown, often marked with silver. Hybrids derived from *B. bowerae*, the "eyelash begonia", have coloured leaves with fringed margins, and those derived from *B. imperialis* have unusual leaf surfaces and colours. Grow in bright filtered light with shade from hot sun, at an optimum of 19°C (66°F). To minimize the risk of rhizome rot, water by immersion of the containers. Some grow actively throughout the year; if so, continue watering moderately. Propagate by seed, leaf cuttings, or sections of rhizome.

#### Semperflorens begonias

Bushy, usually compact, fibrous-rooted, evergreen perennial hybrids, derived from *B. cucullata* var. *hookeri*, *B. schmidtiana*, and other species. They are grown for their leaves and flowers. Freely branching, soft, succulent stems bear generally rounded, bronze or green leaves, 3–10cm (1¼–4in) long. Single or double flowers, 1–2.5cm (½–1in) across, are borne throughout summer. In cold climates, plant when risk of frost has passed, in fertile, well-drained, humus-rich soil. These begonias flower well in partial shade, but tolerate all but direct overhead sunlight. Keep container plants just moist and well-ventilated in winter, at 10–15°C (50–59°F). In frost-free climates, treat as perennials and provide similar conditions outdoors, but lift and divide annually in spring. Propagate by seed or basal cuttings.

#### Shrub-like begonias

Mostly bushy, sometimes succulent, evergreen perennials with freely branching, erect or semi-erect stems. They are grown mainly for their leaves, which are hairless, hairy, or warty, with glossy or matt surfaces. The single, often small flowers are borne mainly from spring to summer. Under glass, maintain a winter minimum of 17°C (63°F) and provide moderate to bright winter light to enhance foliage colour; hairless and glaucous species and cultivars tolerate higher light levels than those with hairy leaves; all need shade from hot summer sun. To encourage compact growth, pinch out the growing tips twice during the growing season. Propagate by seed, or by tip, stem, or leaf cuttings.

#### Tuberous begonias (including the Tuberhybrida, Multiflora, and Pendula begonias)

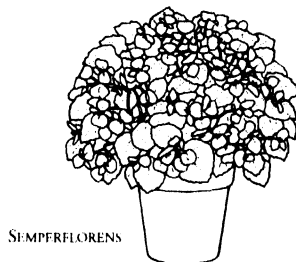
Mostly upright, bushy, tuberous, winter-dormant perennials grown for their foliage and flowers. *Tuberhybrida* begonias (*B. x tuberhybrida*) are derived from Andean species, including *B. boliviensis*, *B. gracilis*, *B. pearcei*, and *B. veitchii*. They vary from pendent to upright, with sparsely branched, succulent stems, and pointed, glossy, bright to dark green leaves. Most are summer flowering and mainly double-flowered. The flowers are borne in small clusters consisting of 2 small female flowers and one showy, frequently double male flower. They produce flowers and top-growth annually from winter-dormant tubers. Several poorly defined subgroups are sometimes recognized, including the **Multiflora**

#### BEGONIA GROUPS

Begonias are very varied in habit. The genus includes trailing, pendent, shrub-like, upright, and climbing species. Based partly on these habits, they may be divided into 7 broad groups.



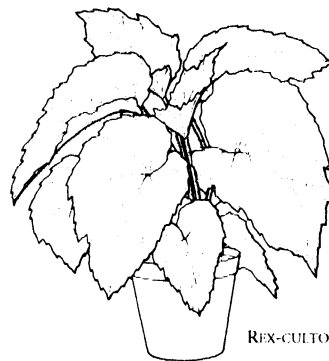
CANE-STEMMED



SEMPERFLORENS



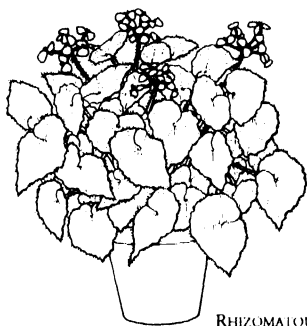
SHRUB-LIKE



REX-CULTORUM



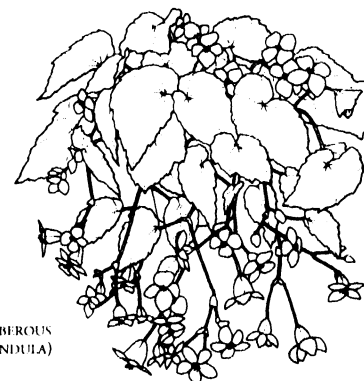
WINTER-FLOWERING



RHIZOMATOUS



TUBEROUS (MULTIFLORA)



TUBEROUS (PENDULA)

begonias, with many small, single to double flowers, and the **Pendula** begonias, with trailing or pendulous stems. Under glass, provide bright, filtered light and good ventilation. Reduce humidity when flowering and pinch out small female flowers to prolong flowering. Treat bedding cultivars as for the Semperflorens begonias, but lift tubers in autumn before first frosts, and dry off. Dust with fungicide and store dormant tubers at 5–7°C (41–45°F). In spring, replant tubers, hollow side uppermost, in free-draining potting compost at 16–18°C (61–64°F). Propagate by seed, basal cuttings, or stem cuttings of side shoots. Some species may be increased by bulbils. Prone to vine weevil infestation.

#### Winter-flowering begonias

Low-growing, compact, bushy, usually fibrous-rooted, evergreen perennials grown for their habit, foliage, and flowers. They have slender, succulent stems and asymmetric, green or bronze-flushed leaves, 5–8cm (2–3in) long, and bear a profusion of single, semi-double, or double flowers, generally from late autumn to early spring. Two broad groups are recognized: the **Lorraine**, **Cheimanth**, or **Christmas** begonias

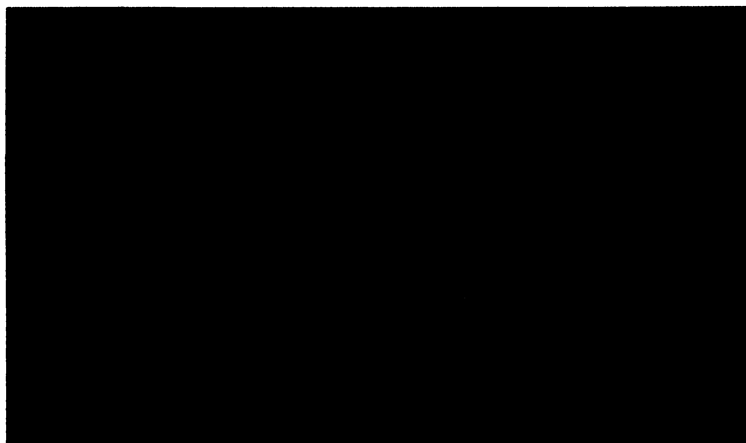
(*B. x cheimanth*), which are derived from *B. dregei* and *B. socotrana* and are usually single-flowered; and the **Elatior** and **Rieger** begonias which result from crosses between *B. socotrana* and various tuberous begonias. Grow in bright, filtered light, with the maximum available light in winter, at an optimum of 15–20°C (59–68°F), with relatively low humidity and good ventilation. Propagate by basal cuttings. Some winter-flowering begonias are very prone to mildew although the Rieger begonias show some resistance to this disease.

- **HARDINESS** Most are frost tender; a few are half hardy.
- **CULTIVATION** Under glass, grow all begonias in light, well-drained, neutral to slightly acid, loamless or loam-based potting compost (J1 No.2) in bright light, with shade from direct sun. Water moderately when in growth, sparingly in winter; ensure the potting compost is never wet or waterlogged. Apply a balanced liquid fertilizer at alternate waterings when in full growth. Pot on annually in spring. For optimum growth, maintain at 19–23°C (66–73°F), with moderate humidity. Most will survive short periods at or just

below 10°C (50°F), especially in dry compost, but all growth will cease and many will shed their leaves. Succulent begonias need a more porous medium, higher light levels, and drier conditions. The smallest begonias, including *B. imperialis* and *B. pustulata*, thrive in the high humidity and diffused light of a terrarium. Outdoors, grow begonias in fertile, well-drained, humus-rich, neutral to slightly acid soil in partial shade or good light, but out of direct sun. Further cultivation details are given under the individual groups.

- **PROPAGATION** Sow seed of species at 21°C (70°F) as soon as ripe, and seed of *Tuberhybrida* and *Semperflorens* hybrids in early spring. Root stem, tip, or leaf cuttings in spring or summer in a propagating case, in partial shade. Cut rhizomes into sections in summer. Root basal cuttings from tuberous begonias in spring, from winter-flowering begonias in early summer. Surface-sow bulbils on damp moss peat in spring. For further information, see the individual groups.

- **PESTS AND DISEASES** Vulnerable to caterpillars, mealybugs, mites, thrips, vine weevils, aphids, grey mould (*Botrytis*), powdery mildew, stem rot, and rhizome rot.

*Begonia* 'Azotus'

**B. aconitifolia** [ ] syn. *B. sceptrum*. Cane-stemmed begonia bearing ovate, palmately 4- to 6-lobed leaves, 20cm (8in) long, which are dark green splashed with silver, with sunken red veins on the undersides. Panicles of pendent, pale pink or white flowers, to 5cm (2in) across, are produced in autumn. ↑ 1m (3ft), ↔ 30cm (12in). Brazil. ☼ (min. 10°C/50°F). 'Metallica', syn. 'Hildegard Schneider', produces bronze-tinted leaves with more pronounced silver markings.

**B. albopicta** [ ] (Guinea-wing begonia). Semi-pendent to upright, freely branching cane-stemmed begonia. Ovate-lance-shaped, wavy-margined leaves, 8cm (3in) long, are glossy green and covered in silver spots above, pale green beneath. Produces panicles of pendent, green-white flowers, to 2cm (¾in) across, in summer. ↑ 60-100cm (24-39in), ↔ 30cm (12in). Brazil. ☼ (min. 10°C/50°F).

**B. 'All Round'**. Semperflorens begonia with rounded, green or bronze leaves. In summer, produces weather-resistant, single flowers, 2cm (¾in) across, in pink, rose-pink, or white. ↑↔ to 40cm (16in). ☼ (min. 10-15°C/50-59°F).

**B. 'Ambassador'**. Semperflorens begonia with rounded, mid-green leaves. Produces single, pink, scarlet, salmon-pink, rose-pink, or coral-pink flowers throughout summer. ↑↔ to 20cm (8in). ☼ (min. 10-15°C/50-59°F).

**B. angularis** see *B. stipulacea*.

**B. 'Anniversary'** [ ] Upright, strongly branched Tuberhybrida begonia with oval, mid-green leaves, to 20cm (8in) long. Golden flowers, 17cm (7in) across, with many broad, overlapping, slightly toothed petals, are produced in cymes in summer. ↑ 60cm (24in), ↔ 45cm (18in). ☼ (min. 10°C/50°F).

**B. 'Apricot Cascade'** [ ] Pendent Tuberhybrida begonia with oval, emerald-green leaves, to 20cm (8in) long. Double, pale apricot flowers, 7cm (3in) across, with toothed petals, are produced from early summer to mid-autumn. ↑↔ 60cm (24in). ☼ (min. 10°C/50°F).

**B. 'Apricot Delight'** [ ] Upright Tuberhybrida begonia bearing oval, mid-green leaves, to 20cm (8in) long. Pale apricot-orange flowers, 17cm (7in) across, with numerous, broad, delicately toothed, overlapping petals, are produced from early summer to mid-autumn. ↑ 60cm (24in), ↔ 45cm (18in). ☼ (min. 10°C/50°F).

**B. x argenteoguttata** [ ] (*B. albopicta* x *B. albia*) (Trout-leaved begonia). Shrub-like begonia with slender, strongly branched stems, and obovate, toothed, dark green leaves, to 15cm (6in) long, covered with silver spots above. Cream flowers, to 3-4cm (1¼-1½in) across, are freely produced in panicles, to 6cm (2½in) across, from spring to autumn. Garden origin. ↑ 75cm (30in), ↔ 60cm (24in). ☼ (min. 10°C/50°F).

**B. 'Azotus'** [ ] Winter-flowering begonia with ovate, dark green leaves. Double, cerise-pink flowers, to 4cm (1½in) across, are produced from late autumn to early spring. ↑ 20cm (8in), ↔ 15cm (6in). ☼ (min. 10°C/50°F).

**B. 'Baby Perfection'**. Dwarf rhizomatous begonia with creeping rhizomes and ovate, deeply lobed, black-margined, pale green leaves, 4cm (1½in) long. Light pink flowers, 5mm (¼in) across, are profusely borne in spring. ↑ 10cm (4in), ↔ 18cm (7in). ☼ (min. 10°C/50°F).

**B. 'Barcos'** [ ] Winter-flowering begonia with ovate, very dark green leaves. Fully double, dark crimson flowers, to 4cm (1½in) across, are produced from late autumn to early spring. ↑ 23cm (9in), ↔ 20cm (8in). ☼ (min. 10°C/50°F).

**B. 'Beatrice Haddrell'**. Vigorous rhizomatous begonia with star-shaped, almost black leaves, 13cm (5in) long, with green veins. Pink flowers, 4cm (1½in) across, are freely produced in winter. ↑ 20cm (8in), ↔ 22cm (9in). ☼ (min. 10°C/50°F).

**B. 'Bethlehem Star'** [ ] Rhizomatous begonia with ovate, entire, black-green leaves, 5cm (2in) long, each with a cream star at the centre. Light pink flowers, to 3cm (1¼in) across, are freely borne in winter. ↑ 25cm (10in), ↔ 30cm (12in). ☼ (min. 10°C/50°F).

**B. 'Billie Langdon'** [ ] Upright Tuberhybrida begonia with oval, mid-green leaves, to 20cm (8in) long. Pure white flowers, 18cm (7in) across, with broad, attractively veined petals, are freely borne in summer. ↑ 60cm (24in), ↔ 45cm (18in). ☼ (min. 10°C/50°F).

**B. 'Bokit'**. Rhizomatous begonia with ovate, palmately lobed, dark green leaves, 7cm (3in) long, striped with dark brown and with spirally arranged basal lobes. Pinkish white flowers, to 4cm (1½in) across, are sparsely produced in winter. ↑ 26cm (10in), ↔ 35cm (14in). ☼ (min. 10°C/50°F).

**B. bowerae** [ ] (Eyelash begonia). Rhizomatous begonia with ovate, entire,

light green leaves, to 5cm (2in) long, marked with chocolate-brown and fringed with hairs. White flowers, 2cm (¾in) across, are produced in cymes from winter to early spring. ↑ 25cm (10in), ↔ 18cm (7in). Mexico. ☼ (min. 10°C/50°F).

**B. 'Bridal Cascade'**. Pendent Tuberhybrida begonia with oval, mid-green leaves, to 20cm (8in) long. White flowers, to 8cm (3in) across, with narrow red margins, are produced in summer. ↑ 10cm (4in), ↔ 60cm (24in). ☼ (min. 10°C/50°F).

**B. 'Burle Marx'** see *B. glazioui*.

**B. 'Can-can'** [ ] Upright Tuberhybrida begonia with oval, mid-green leaves, to 20cm (8in) long. Rich yellow flowers, 18cm (7in) across, composed of toothed petals with broad, red-picotee margins, are produced in summer. ↑ 90cm (36in), ↔ 45cm (18in). ☼ (min. 10°C/50°F).

**B. 'Caravan'**, syn. *B. 'Serlis'*. Shrub-like begonia with upright stems and peltate, broadly ovate, soft, mid-green leaves, 20cm (8in) long, with a slightly felted appearance, and veins marked pale green. Small white flowers, 1cm (½in) across, are produced from early spring to late summer. ↑ 45cm (18in), ↔ 20cm (8in). ☼ (min. 10°C/50°F).

**B. 'Carol Wilkins of Ballarat'**. Robust, upright Tuberhybrida begonia with oval, mid-green leaves, to 20cm (8in) long. Dark salmon-pink flowers, 13-15cm (5-6in) across, with broad, glaucous petals and rosebud centres, are freely borne in summer. ↑ 60cm (24in), ↔ 45cm (18in). ☼ (min. 10°C/50°F).

**B. 'City of Ballarat'** [ ] Strong-growing, upright Tuberhybrida begonia with oval, mid-green leaves, to 20cm (8in) long. In summer, produces bright orange flowers, 18cm (7in) across, with broad, slightly wavy, glaucous petals. ↑ 60cm (24in), ↔ 45cm (18in). ☼ (min. 10°C/50°F).

**B. coccinea** (Angelwing begonia). Cane-stemmed begonia, a parent of many hybrids. Ovate leaves, to 15cm (6in) long, are green with red margins above, dull red beneath. Coral-red flowers, to 3cm (1¼in) across, are profusely borne in red-stalked, pendent racemes in spring. Is an excellent houseplant if provided with sufficient light. ↑ 1.2m (4ft), ↔ 30cm (12in). Brazil. ☼ (min. 10°C/50°F).

**B. Cocktail Series** [ ] Weather-resistant Semperflorens begonias with rounded bronze leaves. Single flowers, in a wide range of reds, pinks, and whites,

*Begonia* Cocktail Series

including single colours and bicolours, are produced throughout summer.

↑ 20-30cm (8-12in), ↔ 30cm (12in). ☼ (min. 13°C/55°F).

**B. compta** see *B. stipulacea*.

**B. 'Corallina de Lucerna'** see *B. 'Lucerna'*.

**B. 'Crestabruchii'** (Lettuce leaf begonia). Rhizomatous begonia with ovate, acute, mid-green leaves, 20cm (8in) long, with heavily crested margins. Small pink flowers, 5-8mm (¼-⅜in) across, are produced in late winter. ↑ 23cm (9in), ↔ 25cm (10in). ☼ (min. 10°C/50°F).

**B. dichroa**. Low-growing, somewhat pendent cane-stemmed begonia with ovate, bright green leaves, 12cm (5in) long. Orange flowers, 3cm (1¼in) across, are borne in panicles throughout the year. ↑ 35cm (14in), ↔ 25cm (10in). Brazil. ☼ (min. 10°C/50°F).

**B. disticha** see *B. stipulacea*.

**B. dregiei** [ ] (Maple-leaf begonia). Tuberous begonia with tall, flexible stems that have swollen nodes and break easily unless supported. Palmately lobed, maple-like leaves, to 7cm (3in) long, are green with purple veins above, red beneath, occasionally silver-speckled when young. Cymes of single white flowers, to 1.5cm (½in) across, cover the plant in late summer. ↑ 75cm (30in), ↔ 60cm (24in). South Africa. ☼ (min. 10°C/50°F), but may shed its leaves below 13°C (55°F).

**B. 'Duartei'** [ ] Rex-cultorum begonia with spirally arranged, obovate, red-hairy, dark green leaves, 17cm (7in) long, with darker green margins and a banding of silver streaks. Pink flowers are produced in spring. ↑↔ 60cm (24in). ☼ (min. 10°C/50°F).

**B. 'Emerald Giant'**. Rex-cultorum begonia with creeping rhizomes and ovate, vibrant green leaves, 45cm (18in) long, banded with shades of brown. Pink flowers are produced in summer. ↑↔ 75cm (30in). ☼ (min. 10°C/50°F).

**B. 'Enech'**. Rhizomatous begonia with ovate, entire, velvety, almost black leaves, 8cm (3in) long, with green veins, red bases, and maroon undersides. Small white flowers are produced in small sprays in spring. ↑ 15cm (6in), ↔ 18cm (7in). ☼ (min. 10°C/50°F).

**B. 'Erythrophylla'**, syn. *B. 'Feastii'* (Beefsteak begonia). Rhizomatous begonia with thick, rounded, hairless leaves, 15cm (6in) long, glossy, mid-to dark green above and dark reddish brown beneath. Light pink flowers, to 2cm (¾in) across, are produced well above the foliage in late winter and early spring. Seldom attacked by pests. ↑ 20cm (8in), ↔ 30cm (12in). ☼ (min. 10°C/50°F).

**B. 'Feastii'** see *B. 'Erythrophylla'*.

**B. 'Flamboyant'** [ ] Upright Tuberhybrida begonia with heart-shaped, mid-green leaves, to 15cm (6in) long. Single, dark scarlet flowers, 5cm (2in) across, are produced freely in summer. ↑ 17cm (7in), ↔ 15cm (6in). ☼ (min. 10°C/50°F).

**B. foliosa** [ ] Shrub-like begonia with pendent stems, 45cm (18in) long, densely clothed with ovate, notched, mid-green leaves, 8mm (⅜in) long. White flowers, to 1.5cm (½in) across, are produced in panicles in autumn and spring. ↑ 45cm (18in), ↔ 30cm (12in). Colombia, Venezuela. ☼ (min.



*Begonia* Illumination Series  
'Illumination Orange'

10°C/50°F). **var. *miniata*** see *B. fuchsioides* var. *miniata*.

**B. *fuchsioides*** ♀ (Fuchsia begonia). Shrub-like begonia with slender stems and oblong-ovate to sickle-shaped, toothed, shiny, mid-green leaves, 2.5cm (1in) long, flushed red when young. Fuchsia-like, pink to red flowers, to 3cm (1¼in) across, are produced in panicles in winter. ↓ 75cm (30in), ↔ 45cm (18in). Venezuela. ☀ (min. 10°C/50°F).

**var. *miniata***, syn. *B. foliosa* var. *miniata*, is smaller, and produces bright red flowers; ↓ 45cm (18in), ↔ 30cm (12in).

**B. 'Futta'** ☐ Winter-flowering begonia with ovate, mid-green leaves. Semi-double, mid-yellow flowers, to 4cm (1½in) across, with peach-pink margins, are produced from late autumn to early spring. ↓ 20cm (8in), ↔ 18cm (7in). ☀ (min. 10°C/50°F).

**B. *glazioui*** ♀ syn. *B. 'Burl Marx'*. Rhizomatous begonia bearing obovate, mid-green leaves, 15cm (6in) long, with shiny, warty surfaces, which turn brown if grown in high light levels. White flowers, to 2cm (¾in) across, are produced in panicles, borne well above the foliage, in spring. ↓ 75cm (30in), ↔ 60cm (24in). Brazil. ☀ (min. 4°C/39°F).

**B. 'Gloire de Lorraine'**. Winter-flowering begonia of the Lorraine group with inversely lance-shaped, shiny, bright green leaves. In winter, produces panicles, 15cm (6in) long, of mostly male, single, clear pink flowers, 2.5cm (1in) long. ↓ 45cm (18in), ↔ 60cm (24in). ☀ (min. 10°C/50°F).

**B. *goegoensis***. Rhizomatous begonia with horizontal rhizomes and erect stems. Ovate-rounded, peltate, puckered, bronze-green leaves, 15cm (6in) or more long, have lighter green veins. From summer to autumn, produces small cymes of pink flowers, to 1cm (½in) across. ↓ 25cm (10in), ↔ 30cm (12in). Indonesia (Goego Island). ☀ (min. 10°C/50°F).

**B. *gracilis* var. *martiana***, syn. *B. martiana* (Hollyhock begonia). Tuberous begonia with sparsely branched stems bearing obliquely heart-shaped, sharp-pointed, toothed, brownish green leaves, 4cm (1½in) long. Fragrant, rose-pink or white flowers, to 5cm (2in) across, are produced in racemes in summer. ↓ 75cm (30in), ↔ 35cm (14in). Mexico, Guatemala. ☀ (min. 10°C/50°F).

**B. *grandis* subsp. *evansiana***. Tuberous begonia with bulb-like tubers, and branched stems bearing ovate, notched leaves, 10cm (4in) long, olive-green above, and pale green, occasionally red beneath. Bears pendent cymes of fragrant, pink or white flowers, to 3cm (1¼in) across, in summer. Axillary bulbils are produced in late summer. ↓ 50cm (20in), ↔ 30cm (12in). China to Malaysia, Japan. ✱. **var. *alba*** ☐ has erect cymes of pinkish white flowers.

**B. *haageana*** see *B. scharffii*.

**B. 'Helene Harms'**. Upright Tuberhybrida begonia with ovate, mid-green leaves, to 20cm (8in) long. Produces a mass of semi-double, rich coppery yellow flowers, 5-7cm (2-3in) across, in summer. ↓ 13cm (5in), ↔ 15cm (6in). ☀ (min. 10°C/50°F).

**B. 'Helen Lewis'** ☐ Upright Rex-cultorum begonia with ovate, silver-banded, dark wine-red leaves, to 15cm (6in) long. Creamy white flowers are produced in summer. ↓ 60cm (24in), ↔ 35cm (14in). ☀ (min. 10°C/50°F).

**B. *heracleifolia***. Rhizomatous begonia with a short, thick rhizome, and rounded, palmately 7-lobed leaves, 15cm (6in) long, which are bronze-green above, red-green beneath. Fragrant, pinkish white flowers, 2.5-4cm (1-1½in) across, are profusely borne in panicles from spring to autumn. ↓ 45cm (18in), ↔ 35cm (14in). Mexico, Guatemala, El Salvador, Honduras. ☀ (min. 10°C/50°F).

**var. *longipila*** has leaves which are dark reddish brown-green above, with pale green along the veins, and rust-red with pink veins beneath. **var. *nigricans*** has black-margined, mid-green leaves and red leaf-stalks. **var. *punctata*** has metallic-tinted leaves with dark brown marks above; Mexico. **'Sunderbruckii'** has bronze-streaked leaves with green along the veins, dark purple beneath, and pink flowers from winter to spring.

**B. Hi Fi Series**. Very floriferous Semperflorens begonias with rounded, mid-green leaves. Single flowers, in pink, red, white, or brilliant rose-pink, are produced in summer. ↓ 20cm (8in). ☀ (min. 10°C/50°F).

**B. Illumination Series**. Pendulous Tuberhybrida begonias with oval, mid-to dark green leaves, to 18cm (7in) long. Bears double, flattened, pale pink or orange flowers, to 8cm (3in) across, in arching cascades in summer. ↓ 60cm (24in), ↔ 30cm (12in). ☀ (min. 10°C/50°F). **'Illumination Orange'** ☐ ♀ bears vivid orange flowers.

**B. *imperialis*** ☐ Rhizomatous begonia with ovate, toothed, light green leaves, 10cm (4in) long, with silvery green splashes along the main veins; the warty upper surfaces are covered with very fine hairs. White flowers, to 1.5cm (½in) across, are sparsely produced in panicles during winter. ↓ 13cm (5in), ↔ 23cm (9in). Mexico. ☀ (min. 10°C/50°F).

**B. *incana*** see *B. peltata*.

**B. 'Ingramii'** ☐ Shrub-like begonia with erect, slender stems, pendent at the tips, and slender, ovate-lance-shaped, toothed, shiny, mid-green leaves, 7cm (3in) long. Produces dark pink flowers, to 3cm (1¼in) across, more or less continuously if grown in good light. Foliage burns if the light intensity is too high. ↓ 75cm (30in), ↔ 45cm (18in). ☀ (min. 10°C/50°F).



*Begonia aconitifolia*



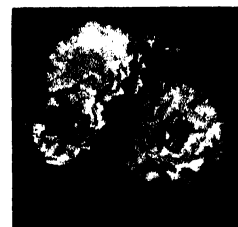
*Begonia albopicta*



*Begonia* 'Anniversary'



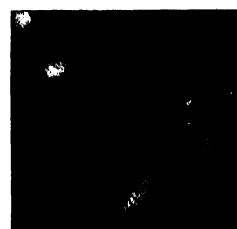
*Begonia* 'Apricot Cascade'



*Begonia* 'Apricot Delight'



*Begonia* x *argenteoguttata*



*Begonia* 'Barcos'



*Begonia* 'Bethlehem Star'



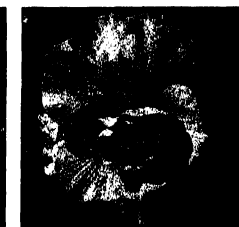
*Begonia* 'Billie Langdon'



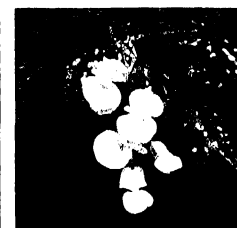
*Begonia bowerae*



*Begonia* 'Can-can'



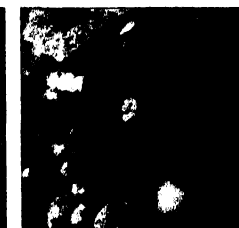
*Begonia* 'City of Ballarat'



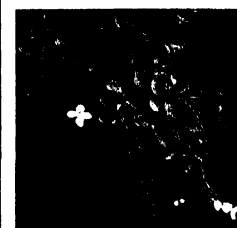
*Begonia dregei*



*Begonia* 'Duartei'



*Begonia* 'Flamboyant'



*Begonia foliosa*



*Begonia*  
'Futta'



*Begonia grandis* subsp.  
*evansiana* var. *alba*



*Begonia* 'Helen Lewis'



*Begonia imperialis*



*Begonia* 'Ingramii'

**B. 'Irene Nuss'** [♀] Cane-stemmed begonia with ovate-oblique, wavy-margined, deeply lobed leaves, 20cm (8in) long, bronze above and red beneath. Dark coral-pink flowers, to 4cm (1½in) across, are freely produced in large, pendent panicles throughout summer. †75cm (30in), ↔ 60cm (24in). ♀ (min. 10°C/50°F)

**B. 'Iron Cross'** see *B. masoniana*.

**B. 'Jill Adair'**. Very compact shrub-like begonia with ovate-acute, slightly pleated, rich dark green leaves, 6cm (2½in) long, red-tinted beneath. White flowers, 2.5cm (1in) across, are freely produced well above the foliage throughout the year. †↔ 30cm (12in). ♀ (min. 10°C/50°F)

**B. 'Kathleen Meyer'**. Miniature cane-stemmed begonia with lance-shaped-ovate, light green leaves, 5cm (2in) long, heavily splashed with white. Pink flowers, 5–8cm (2–3in) across, are freely produced from spring to summer. †35cm (14in), ↔ 23cm (9in). ♀ (min. 10°C/50°F)

**B. 'Kleo'** [♂] Winter-flowering begonia with ovate, dark green leaves. Semi-double, coral-pink flowers, to 4cm (1½in) across, with a hint of orange, are produced from late autumn to early spring. †20cm (8in), ↔ 18cm (7in). ♀ (min. 10°C/50°F)

**B. 'Lime Swirl'**. Compact rhizomatous begonia with spirally arranged, deeply cut, bright green leaves, 13cm (5in) long, with wavy margins. Light pink flowers, 2.5–4cm (1–1½in) across, are freely produced in cymes, 15cm (6in) across, in very early spring. †35cm (14in), ↔ 30cm (12in). ♀ (min. 10°C/50°F)

**B. 'Looking Glass'**. Cane-stemmed begonia with ovate, gently wavy-margined leaves, 15cm (6in) long, shallowly lobed, especially when young, glistening silvery bronze above, with olive-green veins, and burgundy-red beneath. Pink flowers, to 2cm (¾in) across, are sparsely produced in early summer. †90cm (36in), ↔ 45cm (18in). ♀ (min. 10°C/50°F)

**B. 'Love Me'**. Winter-flowering begonia from the Lorraine Group with obovate, mid-green leaves. Single, coral-pink flowers, 2–4cm (¾–1½in) across, are profusely borne from late autumn to early spring. †45cm (18in), ↔ 25cm (10in). ♀ (min. 10°C/50°F)

**B. 'Lucerna'**, syn. *B. 'Corallina de Lucerna'*. Vigorous cane-stemmed begonia with ovate, olive-green leaves, 20cm (8in) long, heavily marked with silvery white spots. Very large panicles, 25cm (10in) or more across, of single, rose-pink flowers, to 4cm (1½in) across, are borne mainly in summer. Remove the growing point to restrict height to about 1.5m (5ft), if required. †2–2.2m (6–7ft), ↔ 35cm (14in). ♀ (min. 10°C/50°F)

**B. 'luxurians'** (Palm-leaf begonia). Shrub-like begonia with slightly hairy, mid-, dark, or bronze-green leaves, 25cm (10in) across, each with up to 16 lance-shaped leaflets. Leaves are borne, umbrella-like, at the top of erect, largely unbranched stems, to 15cm (6in) tall. From spring to summer, bears cymes, 10cm (4in) across, of many slightly fragrant, yellowish white flowers, 6mm (¼in) across. †75cm (30in), ↔ 60cm (24in). Brazil. ♀ (min. 10°C/50°F)

**B. 'Mac's Gold'**. Creeping rhizomatous begonia with ovate, 5- to 7-palmate, light chocolate-brown and emerald-green leaves, 5cm (2in) across. Small, pale pink flowers are sparsely produced throughout the year. †20cm (8in), ↔ 25cm (10in). ♀ (min. 10°C/50°F)

**B. 'Magic Lace'** [♂] Rhizomatous begonia with spirally arranged, ovate, copper leaves, 10cm (4in) long, splashed silvery green. Light pink flowers, 3cm (1¼in) across, are produced in early spring. †25cm (10in), ↔ 30cm (12in). ♀ (min. 10°C/50°F)

**B. 'Maid Marion'**. Upright Rex-cultorum begonia with spirally arranged, rounded, silvery pink leaves, 12cm (5in) long, which darken in colour when exposed to high light intensity. Sprays of small pink flowers are produced in early winter. †25cm (10in), ↔ 30cm (12in). ♀ (min. 10°C/50°F)

**B. 'manicata'** [♂] (Leopard begonia). Upright rhizomatous begonia characterized by a collar of red hairs around the stalks below the leaf-blades. Ovate to heart-shaped, toothed, glossy, light green leaves, 15cm (6in) long, are fringed with hairs. Panicles, to 5cm (2in) across, of pale pink flowers, to 1.5cm (½in) across, are produced well above the foliage in late winter. †60cm (24in), ↔ 35cm (14in). Mexico. ♀ (min. 10°C/50°F)

**B. 'Aureomaculata'** has glossy, light green leaves splashed with yellow. **'Crispa'**, syn. **'Cristata'**, has leaves with crested margins.

**B. 'Margaritacea'**. Cane-stemmed begonia with ovate-acute, slightly wavy-margined, red-hairy, purple leaves, 12cm (5in) long, with a distinct silvery sheen. Pink flowers, to 2cm (¾in) across, are produced in late autumn. The very slender stems require staking. †60cm (24in), ↔ 45cm (18in). ♀ (min. 10°C/50°F)

**B. 'martiana'** see *B. gracilis* var. *martiana*.

**B. 'masoniana'** [♀] syn. *B. 'Iron Cross'* (Iron-cross begonia). Rhizomatous begonia with ovate, sharp-pointed, warty, mid- to deep green leaves, 20cm (8in) long, which are red-hairy and overlaid with a black-brown mark resembling the German Iron Cross. Cymes of green-white flowers, to 2cm (¾in) across, are freely produced in summer. †50cm (20in), ↔ 45cm (18in). New Guinea. ♀ (min. 10°C/50°F)

**B. 'mazae'**. Fibrous-rooted begonia with very slender, spreading, pendent stems. Ovate, sharp-pointed, bronze-green leaves, 7cm (3in) long, have pronounced red-brown markings along the veins. Fragrant pink flowers, to 1.5cm (½in) across, are profusely borne in cymes, to 10cm (4in) long, which cover the plant in early spring. †25cm (10in), ↔ indefinite. Mexico. ♀ (min. 10°C/50°F)

**f. 'viridis'** (Stitched-leaf begonia) has light green leaves with a pronounced, stitch-like, dark brown mark where each vein meets the margin.

**B. 'Medora'**. Shrub-like begonia with strong, slender stems bearing lance-shaped, mid-green leaves, 6cm (2½in) long, marked with silver spots. Small panicles of pink flowers are freely produced in late summer. Prune regularly to restrict height to about 45cm (18in) and to encourage bushy growth. †90cm (36in), ↔ 30cm (12in). ♀ (min. 10°C/50°F)



*Begonia manicata*

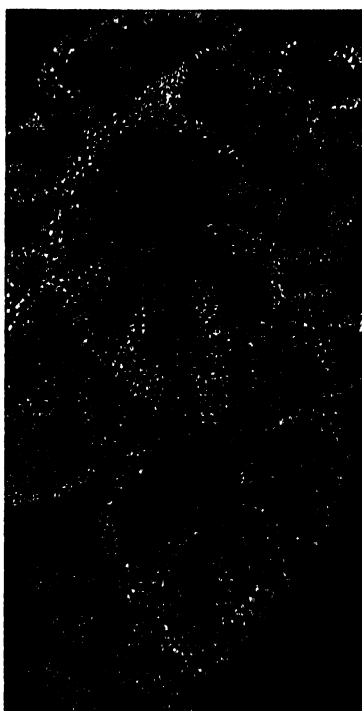
**B. 'Merry Christmas'** [♀] syn.

*B. 'Ruhrtal'*. Rex-cultorum begonia with ovate, glossy, deep pink leaves, 20cm (8in) long, outlined in emerald-green, with darker red centres and margins. Pale rose-pink flowers are produced from autumn to early winter. †25cm (10in), ↔ 30cm (12in). ♀ (min. 10°C/50°F)

**B. 'metallica'** [♀] (Metallic-leaf begonia). Shrub-like begonia with ovate, red-hairy, dark green leaves, 18cm (7in) long, with a bright metallic sheen and sunken, dark reddish brown veins. Red-hairy, pink flowers, to 3.5cm (1½in) across, are produced in cymes in autumn. †90cm (36in), ↔ 60cm (24in). Brazil. ♀ (min. 10°C/50°F)

**B. 'Midnight Sun'** [♂] Compact shrub-like begonia with ovate leaves, 10cm (4in) long, pink when young and maturing to bright green. Sprays of white flowers, 4cm (1½in) across, are produced in summer. †30cm (12in), ↔ 45cm (18in). ♀ (min. 10°C/50°F)

**B. 'Mini Merry'**. Miniature Rex-cultorum begonia with ovate, bright red leaves, to 7cm (3in) long, outlined in emerald-green, with darker red centres and margins. Pink flowers are produced



*Begonia masoniana*

in autumn. †12cm (5in), ↔ 15cm (6in). ♀ (min. 10°C/50°F)

**B. 'Mme Richard Galle'**. Upright Tuberhybrida begonia with oval, mid-green leaves, to 18cm (7in) long. Numerous double, pink-orange flowers, 5–7cm (2–3in) across, are produced in summer. †25cm (10in), ↔ 20cm (8in). ♀ (min. 10°C/50°F)

**B. 'Munchkin'** [♀] Rhizomatous begonia with ovate leaves, 13cm (5in) long, bronze with dark green veins above, red beneath, and with crested margins covered in fine white hairs. Pink flowers, 1–2cm (½–¾in) across, are produced in cymes, to 10cm (4in) across, above the foliage in early spring. †↔ 20cm (8in). ♀ (min. 10°C/50°F)

**B. 'nelumbiifolia'** [♂] Rhizomatous begonia with rounded, peltate, mid-green leaves, to 30cm (12in) long, hairy beneath. Pinkish white flowers, to 1.5cm (½in) across, are sparsely produced in cymes in late winter. †45cm (18in), ↔ 60cm (24in). Mexico to Colombia. ♀ (min. 10°C/50°F)

**'Red Veined'** has leaves with red veins.

**B. 'Non Stop Series'** [♀] Upright, compact Tuberhybrida begonias with heart-shaped, mid-green leaves, 10–15cm (4–6in) long. Solitary, double flowers, to 8cm (3in) across, in apricot, bright red, orange, pink, white, or yellow, are borne in summer. †↔ 30cm (12in). ♀ (min. 10°C/50°F)

**B. 'Norah Bedson'** [♂] Rhizomatous begonia with red-speckled stems and ovate, sharp-pointed leaves, 5cm (2in) long, mottled chocolate and green, with red splashes beneath and tiny white hairs at the margins. Pink flowers, 3cm (1¼in) across, are produced in spring. †23cm (9in), ↔ 25cm (10in). ♀ (min. 10°C/50°F)

**B. 'Oliver Twist'** [♂] Rhizomatous begonia with ovate, crested, ruffled, mid-green leaves, 15cm (6in) long, with brown markings along the veins. Pink flowers, 4cm (1½in) across, are produced in winter. †45cm (18in), ↔ 25cm (10in). ♀ (min. 10°C/50°F)

**B. 'olsoniae'** [♂] Compact shrub-like begonia with ovate, blunt-based, bronze-tinted, lush green leaves, 12–20cm (5–8in) long, with prominent, creamy white veins and brownish red undersides. Pinkish white flowers, to 3cm (1¼in) across, are borne in cymes, 5cm (2in) across, well above the foliage at almost any time of year. †22cm (9in), ↔ 30cm (12in). Brazil. ♀ (min. 10°C/50°F)

**B. 'Olympia White'** [♂] Compact, weather-resistant Semperflorens begonia, a selection from the Olympia Series, with rounded, mid-green leaves. Neatly formed, single, pure white flowers, to 4cm (1½in) across, are borne in summer. †↔ to 20cm (8in). ♀ (min. 13°C/55°F)

**B. 'Orange Cascade'**. Pendent Tuberhybrida begonia with freely branching stems and ovate, mid-green leaves, to 15cm (6in) long. Fully double, bright orange flowers, 7cm (3in) across, are profusely borne in summer. †↔ 60cm (24in). ♀ (min. 10°C/50°F)

**B. 'Orange Rubra'** [♂] Cane-stemmed begonia with lance-shaped, emerald-green leaves, 12cm (5in) long, sometimes faintly spotted with silver. Vivid orange flowers, 2–3cm (¾–1¼in) across, are produced at any time of year.

‡60cm (24in), ↔45cm (18in). ☼ (min. 10°C/50°F)

**B. 'Organdy'** ☐ Weather-resistant Semperflorens begonia with rounded, green or bronze leaves. In summer, bears single flowers, to 2cm (¾in) across, in a mix of white, pink, rose-pink, and scarlet. ‡15cm (6in). ☼ (min. 13°C/55°F)

**B. 'Orpha C. Fox'** ☐ Cane-stemmed begonia with ovate leaves, 15cm (6in) long, grey-green splashed with silver, and maroon beneath. Single, rose-pink flowers, to 3cm (1¼in) across, are produced throughout the year, but mainly in summer. ‡90cm (36in), ↔30cm (12in). ☼ (min. 10°C/50°F)

**B. 'Pandora'** ☐ Rex-cultorum begonia with ovate, dark green leaves, 13cm (5in) long, splashed with pink and silver. Produces pink flowers in autumn. ‡25cm (10in), ↔23cm (9in). ☼ (min. 10°C/50°F)

**B. Party Fun Series.** Tall-growing, open Semperflorens begonias with rounded, mid-green leaves, to 12cm (5in) long. Single flowers, to 4cm (1½in) across, in scarlet, white, pink, and rose-pink, mixed and single, are produced in summer. ‡ to 30cm (12in). ☼ (min. 13°C/55°F)

**B. paulensis.** Rhizomatous begonia with rounded, peltate, glossy, mid-green leaves, 20cm (8in) long, with the surfaces between the radial veins covered with cross-veins. Creamy white flowers, 3.5–5cm (1½–2in) across, with red hairs, are produced in racemes to 10cm (4in) across in spring. ‡ to 30cm (12in). Brazil. ☼ (min. 13°C/55°F)

**B. peltata**, syn. *B. incana*. Fibrous-rooted, succulent, perennial begonia with slightly swollen, erect stems. Peltate, fleshy, ovate, mid-green leaves, 20cm (8in) long, have small, well-spaced, marginal teeth, and are densely white-hairy beneath. In spring, bears white or pink-flushed flowers, to 2.5cm (1in) across, in pendent panicles. ‡60cm (24in), ↔40cm (16in). Mexico, Guatemala. ☼ (min. 10°C/50°F)

**B. 'Phyllomanica'** (Crazy-leaf begonia). Fibrous-rooted shrub-like begonia with thick, branched, shaggy-hairy stems and obliquely heart-shaped, toothed leaves, 15cm (6in) long, fringed with hairs, light green above, paler and with a few red hairs beneath. In winter or early spring, bears pale pink flowers, to 2cm (¾in) across, in panicles 8cm (3in) across. The adventitious plantlets on the stems, leaf-stalks, and leaves may be used for propagation. ‡1m (3ft), ↔45cm (18in). ☼ (min. 10°C/50°F)

**B. 'Pickobeth'** ☐ Compact cane-stemmed begonia with ovate, mid-green leaves, to 15cm (6in) long, heavily freckled with white spots, and bunched together along the stems. Rose-pink flowers, to 6cm (2½in) across, are borne in panicles in mid- and late spring. ‡75cm (30in), ↔35cm (14in). ☼ (min. 10°C/50°F)

**B. 'Pink Avalanche'** ☐ Loose, cascading Semperflorens begonia with rounded, mid-green leaves. Sterile, single pink flowers, to 4cm (1½in) across, are profusely and continuously produced throughout summer. ‡ to 30cm (12in). ☼ (min. 13°C/55°F)

**B. 'Pin-up'** ☐ Erect, compact Tuberhybrida begonia with ovate, mid-green leaves, to 15cm (6in) long. Single white flowers, to 8cm (3in) across, with

dark pink, picotee margins, are profusely borne in summer. ‡25cm (10in), ↔20cm (8in). ☼ (min. 13°C/55°F)

**B. 'Potpourri'** ☐ Trailing, pendent begonia with stems to 90cm (36in) long, and heart-shaped, vivid green leaves, 7cm (3in) long. Cascading panicles of fragrant white flowers, 3cm (1¼in) across, suffused salmon-pink towards the margins, are borne in winter. ‡ to 30cm (12in). ☼ (min. 10°C/50°F)

**B. 'Princess of Hanover'** ☐ Rex-cultorum begonia with spirally arranged, ovate leaves, 20cm (8in) long, which are very dark green with a broad band of silvery white spots. Small, pale pink flowers are produced in autumn. ‡ to 25–30cm (10–12in). ☼ (min. 10°C/50°F)

**B. prismatocarpa.** Rhizomatous begonia with obliquely ovate, lobed, bright green leaves, 3cm (1¼in) long. Produces cymes of small yellow flowers, to 2cm (¾in) across, throughout the year. ‡15–20cm (6–8in), ↔20–25cm (8–10in). Tropical West Africa. ☼ (min. 10°C/50°F)

**B. procumbens** see *B. radicans*.

**B. pustulata.** Rhizomatous begonia with broadly ovate, dark green, basal leaves, to 15cm (6in) long, which are warty and covered with tiny white hairs. Rose-pink flowers, to 1cm (½in) across, are borne in cymes in early summer. ‡15–20cm (6–8in), ↔20–25cm (8–10in). Mexico, Guatemala. ☼ (min. 10°C/50°F)

**'Argentea'** ☐ syn. *B. 'Silver'*, has leaves with silvery white markings, and produces white flowers. ‡15–20cm (6–8in), ↔20–25cm (8–10in). Mexico, Guatemala. ☼ (min. 10°C/50°F)

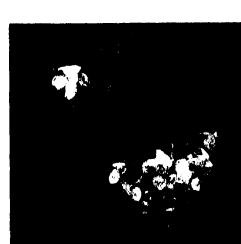
**B. radicans** ♀ syn. *B. procumbens* (Shrimp begonia). Shortly rhizomatous begonia with slender, trailing stems, to 45cm (18in) long. Ovate to heart-shaped, acute, shiny leaves, 7cm (3in) across, are blue-green with white spots above, purple beneath, with slightly wavy margins. In midwinter, bears coral-red flowers, 2.5cm (1in) across, in panicles to 10cm (4in) across. Pinch out growing tips to encourage branching. ‡45cm (18in), ↔30cm (12in). Brazil. ☼ (min. 10°C/50°F)

**B. 'Rajah'** ☐ Rhizomatous begonia with ovate to heart-shaped, sharp-pointed, rich reddish brown leaves, to 10cm (4in) long, with deeply sunken green veins and puckered surfaces. Leaves become green in strong light. Pink flowers, 2cm (¾in) across, are produced in summer. Best maintained at 13–16°C (55–61°F). ‡15cm (6in), ↔18cm (7in). ☼ (min. 10°C/50°F)

**B. rex** (King begonia, Painted-leaf begonia). Rhizomatous begonia, the parent of the Rex-cultorum begonias. Ovate, warty leaves, 20cm (8in) long, are sparsely hairy and rich metallic-green, with a broad zone of silvery white above; the veins beneath and leaf-stalks are red and hairy. Bears panicles of pink flowers, to 2cm (¾in) across, in winter. N. India (Himalayas). ‡25cm (10in), ↔30cm (12in). ☼ (min. 10°C/50°F)

**B. 'Roy Hartley'** ☐ Upright Tuberhybrida begonia with ovate, mid-green leaves, to 15cm (6in) long. Double, soft pink flowers, 10cm (4in) across, tinged with salmon-pink, and with slightly toothed petals, are produced in summer. ‡60cm (24in), ↔45cm (18in). ☼ (min. 10°C/50°F)

**B. 'Ruhrtal'** see *B. 'Merry Christmas'*. **B. scepterum** see *B. aconitifolia*.



*Begonia* 'Irene Nuss'



*Begonia* 'Kleo'



*Begonia* 'Magic Lace'



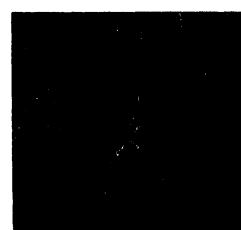
*Begonia* 'Merry Christmas'



*Begonia metallica*



*Begonia* 'Midnight Sun'



*Begonia* 'Munchkin'



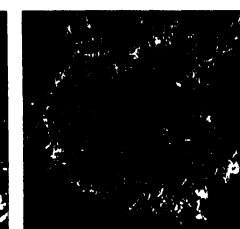
*Begonia nelumbifolia*



*Begonia* Non Stop Series



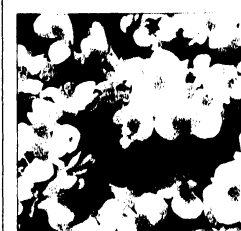
*Begonia* 'Norah Bedson'



*Begonia* 'Oliver Twist'



*Begonia olsoniae*



*Begonia* 'Olympia White'



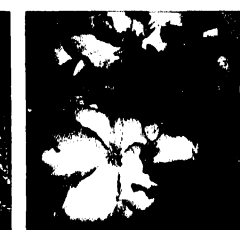
*Begonia* 'Orange Rubra'



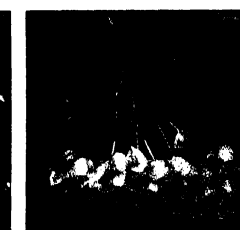
*Begonia* 'Organdy'



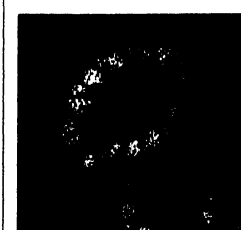
*Begonia* 'Orpha C. Fox'



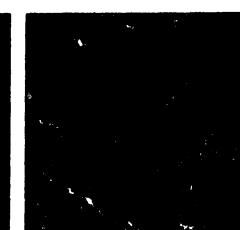
*Begonia* 'Pin-up'



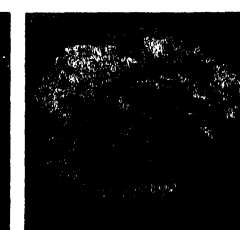
*Begonia* 'Potpourri'



*Begonia* 'Princess of Hanover'



*Begonia pustulata* 'Argentea'



*Begonia* 'Roy Hartley'



B

*Begonia serratifolia*

**B. scharffii** ■ syn. *B. haageana*. Shrub-like begonia with obovate, tapered leaves, to 25cm (10in) long, bronze-green with red veins above, red beneath. Stems and leaves are covered with tiny white hairs. From winter to spring, bears panicles of pink-hairy, pink-white flowers, to 5cm (2in) across. ↑ 1.2m (4ft), ↔ 60cm (24in). Brazil. ☼ (min. 10°C/50°F)

**B. 'Serlis'** see *B. 'Caravan'*.

**B. serratifolia** ■ Shrub-like begonia bearing ovate, deeply toothed, reddish brown leaves, 8cm (3in) long, with wavy margins, slightly arched main veins, and raised pink spots. Single, rose-pink flowers, 2–3cm (¾–1¼in) across, are sparsely borne in panicles throughout the year. Water sparingly. ↑↔ 45cm (18in). New Guinea. ☼ (min. 13°C/55°F)

**B. 'Silver'** see *B. pustulata* 'Argentea'.

**B. 'Silver Queen'** ■ Rex-cultorum begonia with an erect rhizome bearing ovate, mainly silver leaves, 20cm (8in) long, with metallic purple centres. The leaves become dull purple in bright

light. Pink flowers are produced in autumn. ↑ 30cm (12in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**B. 'Sophie Cecile'** ♀ Cane-stemmed begonia with ovate-acute, slightly wavy-margined, deeply or palmately 7- to 9-lobed leaves, 20cm (8in) long, glossy green splashed with silver. Slightly fragrant pink flowers, 4cm (1½in) across, are freely produced in panicles from spring to summer. ↑ 1.3m (4½ft), ↔ 60cm (24in). ☼ (min. 10°C/50°F)

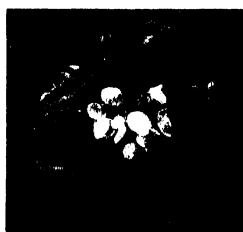
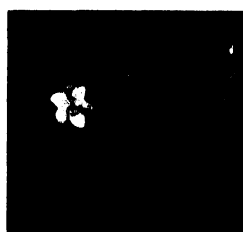
**B. stipulacea**, syn. *B. angularis*, *B. compta*, *B. disticha*, *B. zebrina*. Cane-stemmed begonia with slender, angular stems that require staking to remain erect. Ovate, sharp-pointed leaves, 10–15cm (4–6in) long, are fringed with hairs and slightly toothed, bright green above, but paler beneath. White flowers, to 1.5cm (½in) across, are freely produced in cymes throughout the year. ↑ 60cm (24in), ↔ 45cm (18in). Brazil. ☼ (min. 10°C/50°F)

**B. sutherlandii** ■ ♀ Tuberous begonia with long, slender, trailing stems and ovate-lance-shaped, slightly toothed, bright green leaves, to 15cm (6in) long, often with red veins. Orange flowers, to 2.5cm (1in) across, are freely produced in pendent panicles throughout summer. ↔ 45cm (18in). South Africa (KwaZulu/Natal), Tanzania. \* (borderline)

**B. 'Thurstonii'** ■ ♀ Shrub-like begonia with ovate, sharp-pointed leaves, 15cm (6in) long, glossy green above, with sunken main veins, rich reddish brown beneath. The green colouring is lost in strong light. Panicles of small, single pink flowers, 4cm (1½in) across, are sparsely borne in summer. ↑ 2m (6ft), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**B. 'Tingley Mallet'**. Cane-stemmed begonia with ovate, toothed, reddish brown leaves, to 13cm (5in) long, with slightly puckered surfaces, brown shading, fine hairs, and, frequently, silvery pink spots. Bears panicles, 6cm (2½in) across, of dark pink flowers, in early summer. ↑ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F)

**B. 'Tiny Bright'** ■ Dwarf Rex-cultorum begonia with ovate-acute leaves, 8cm (3in) long, with red, green, and bronze bands. Pale pink flowers are sparsely produced from late summer to autumn. ↑ 10cm (4in), ↔ 12cm (5in). ☼ (min. 10°C/50°F)

*Begonia scharffii**Begonia 'Thurstonii'**Begonia 'Tiny Bright'**Begonia venosa**Begonia 'Weltoniensis'**Begonia 'Yellow Melody'**Begonia 'Silver Queen'*

**B. 'Tiny Gem'**. Shrub-like begonia with slender, semi-pendent stems bearing narrowly ovate, wavy-margined, mid-green leaves, 5cm (2in) long. Cascading umbels of small pink flowers, 2cm (¾in) across, are produced throughout the year. ↑ 17cm (7in), ↔ 22cm (9in). ☼ (min. 10°C/50°F)

**B. 'Tweed'**. Rex-cultorum begonia bearing ovate leaves, 13cm (5in) long, with gently wavy and slightly lobed margins. A broad silver band separates the dark green centre of each leaf from a green-red marginal area, and the surface is covered with fine silvery hairs. Pink flowers are sparsely produced from late summer to autumn. ↑ 22cm (9in), ↔ 25cm (10in). ☼ (min. 10°C/50°F)

**B. venosa** ■ Shrub-like begonia with stout, branched, succulent stems covered with persistent, veined stipules. Slightly convex, kidney-shaped, fleshy, white-hairy leaves, 6–7cm (2½–3in) long, have a frosted appearance. Long-stalked, fragrant white flowers, 1cm (½in) or more long, are produced in racemes, mainly from late summer to spring. ↑ 60–90cm (24–36in), ↔ 60cm (24in). Brazil. ☼ (min. 10°C/50°F)

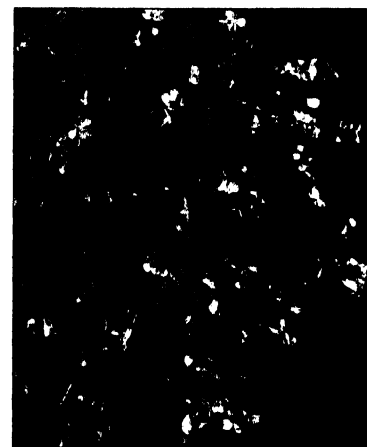
**B. versicolor**. Rhizomatous begonia with ovate leaves, to 10cm (4in) long, with overlapping basal lobes; both surfaces are reddish brown, apple-green, and silver, with veins marked dark maroon, and very fine red hairs. Bears cymes of salmon-pink flowers, to 5cm (2in) across, sparsely and intermittently throughout the year. ↑ 15cm (6in), ↔ 30cm (12in). China. ☼ (18°C/64°F)

**B. Victory Series**. Semperflorens begonias with rounded, mid-green

leaves. Single flowers, to 4cm (1½in) across, are available in pink, rose-pink, scarlet, and white, or in a mix of these colours, and are borne in summer. ↑↔ to 25cm (10in). ☼ (min. 13°C/55°F)

**B. 'Weltoniensis'** ■ (Maple-leaf begonia). Upright, semi-tuberous begonia with lance-shaped, bright-green leaves, 7cm (3in) long, resembling maple leaves, with purple-red veining. Single pink flowers, to 3cm (1¼in) across, are profusely borne from early summer to mid-autumn. ↑ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F)

**B. 'Yellow Melody'** ■ Winter-flowering begonia of the Elatior group bearing ovate, mid-green leaves, to 15cm (6in) long. Single, primrose-yellow flowers, 5cm (2in) across, with dark orange-yellow centres, are

*Begonia sutherlandii*



## BEGONIA

produced from late autumn to early spring. ↑ 20cm (8in), ↔ 18cm (7in). ☼ (min. 10°C/50°F)

**B. zebrina** see *B. stipulacea*.

### ▷ Begonia

- Angelwing** see *Begonia coccinea*
- Beefsteak** see *Begonia*  
'*Erythrophylla*'
- Crazy-leaf** see *Begonia*  
'*Phyllomanica*'
- Eyelash** see *Begonia bowerae*
- Fuchsia** see *Begonia fuchsoides*
- Guinea-wing** see *Begonia albopicta*
- Hollyhock** see *Begonia gracilis* var.  
*martiana*
- Iron-cross** see *Begonia masoniana*
- King** see *Begonia rex*
- Leopard** see *Begonia manicata*
- Lettuce leaf** see *Begonia*  
'*Crestabruchii*'
- Maple-leaf** see *Begonia dregei*,  
*B. 'Weltoniensis'*
- Metallic-leaf** see *Begonia metallica*
- Painted-leaf** see *Begonia rex*
- Palm-leaf** see *Begonia luxurians*
- Shrimp** see *Begonia radicans*
- Stitched-leaf** see *Begonia mazarie f.*  
*viridis*
- Trout-leaved** see *Begonia x*  
*argenteoguttata*

## BELAMCANDA

### IRIDACEAE

Genus of 2 species of short-lived perennials with slender rhizomes, from sandy, coastal meadows and grassland in India, China, former USSR, and Japan.

They have fans of sword-shaped leaves and branching stems that bear showy flowers with 6 tepals. Grow in a herbaceous border or large rock garden.

• **HARDINESS** Frost hardy; will tolerate short spells to -10°C (14°F) if given a deep, protective mulch in winter.

• **CULTIVATION** Grow in humus-rich, moist but well-drained soil that does not dry out in summer, in full sun or partial shade.

• **PROPAGATION** Sow seed in a cold frame in spring. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**B. chinensis** (Blackberry lily, Leopard lily). Clump-forming perennial with mid- to deep green leaves, 20cm (8in) long. In summer, bears a succession of up to 12 wide-opening flowers, 4cm (1½in) across, bright yellow to orange-red with maroon spots, followed by large black seeds. ↑ 45–90cm (18–36in), ↔ 20cm (8in). India, China, E. former USSR, Japan. ✱✱

▷ **Belladonna lily** see *Amaryllis belladonna*  
▷ **Belle de nuit** see *Ipomoea alba*

## BELLEVALIA

### HYACINTHACEAE/LILIACEAE

Genus of 45 species of bulbous perennials from scrub and maquis in S. Europe and Asia, with strap-shaped, mid- to grey-green, basal leaves. They are valued for their racemes of bell-shaped flowers, similar to grape hyacinths (*Muscari*) but usually with constricted mouths, which are borne in spring and are mostly white, lilac, or violet-blue, often fading to brown. Grow in a rock garden or sunny border.

• **HARDINESS** Fully hardy to frost hardy.



*Bellevalia hyacinthoides*

- **CULTIVATION** Plant 10cm (4in) deep in autumn in any well-drained soil in full sun. Divide congested clumps to maintain vigour. Most prefer to be kept dry in summer. *B. atroviolacea* and *B. hyacinthoides* are best in a bulb frame.
- **PROPAGATION** Sow seed in a cold frame in autumn. Remove offsets from mature bulbs while dormant in summer.
- **PESTS AND DISEASES** Trouble free.

**B. atroviolacea**. Bulbous perennial bearing strap-shaped, mid-green leaves, 10–30cm (4–12in) long. Dense racemes of deep violet-blue flowers, 1cm (½in) long, are produced in spring. ↑ 15–20cm (6–8in), ↔ 5cm (2in). Afghanistan. ✱✱✱

**B. hyacinthoides** [■] syn. *Strangweja spicata*. Bulbous perennial with strap-shaped, fleshy, mid-green leaves, 15–45cm (6–18in) long, during autumn and winter. In spring, produces loose racemes of a few wide-opening flowers, 7–10mm (¼–½in) long, pale blue with deeper blue veins. ↑ 5–15cm (2–6in), ↔ 5cm (2in). Greece. ✱✱

**B. pycnantha** [■] syn. *Muscari paradoxum* of gardens, *M. pycnantha*. Robust, bulbous perennial with strap-shaped, greyish green leaves, 15–45cm (6–18in) long. Navy-blue flowers, 7mm (¼in) long, with yellowish white rims, are produced in racemes in spring. ↑ 30cm (12in), ↔ 5cm (2in). Caucasus, E. Turkey, Iraq, Iran. ✱✱✱

**B. romana**, syn. *Hyacinthus romanus*. Bulbous perennial with strap-shaped, mid-green leaves, 15–30cm (6–12in) long. In spring, bears white flowers, to 8mm (⅓in) long, tinged green or



*Bellevalia pycnantha*

brown, in loose, conical racemes. ↑ 30cm (12in), ↔ 5cm (2in). Mediterranean (S. France to Greece). ✱✱✱

### ▷ Bellflower see *Campanula*

- Adriatic** see *Campanula garganica*
- Bearded** see *Campanula barbata*
- Canary** see *Canarina canariensis*
- Chilean** see *Lapageria rosea*
- Chimney** see *Campanula pyramidalis*
- Clustered** see *Campanula glomerata*
- Dalmatian** see *Campanula portenschlagiana*
- Giant** see *Ostrouskia*
- Italian** see *Campanula isophylla*
- Milky** see *Campanula lactiflora*
- Nettle-leaved** see *Campanula trachelium*
- Peach-leaved** see *Campanula persicifolia*

### ▷ Bell heather see *Erica cinerea*

## BELLIS

### Daisy

### ASTERACEAE/COMPOSITAE

Genus of 15 species of rosette-forming, carpeting perennials from grassland in Europe and Turkey. They have oval to spoon-shaped leaves and solitary, long-stalked, white, pink, or deep reddish pink flowerheads. *B. perennis* has given rise to many cultivars, most commonly grown as biennials for spring bedding.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun or partial shade. Dead-head to avoid self-seeding. For winter-flowering container plants, grow in loam-based potting compost (J1 No.1), water moderately, and maintain at 4–7°C (39–45°F).

• **PROPAGATION** Sow seed in shallow drills outdoors in early summer, or at 10–13°C (50–55°F) in early spring. Divide in early spring or after flowering.

• **PESTS AND DISEASES** Trouble free.

**B. perennis** (Common daisy). Stoloniiferous perennial with inversely lance-shaped to obovate or spoon-



*Bellis perennis* Tasso Series

## BERBERIDOPSIS

shaped, bright green leaves, 1–6cm (½–2½in) long. From late winter to late summer, produces flowerheads, 1–3cm (½–1¼in) across, with white ray-florets, often tinged maroon or pink, and yellow disc-florets. ↑ 5–20cm (2–8in). Europe, Turkey. ✱✱✱. **Habanera Series** cultivars bear pink, white, or red, long-petalled flowerheads, to 6cm (2½in) across, in early summer.

**Pomponette Series** ♀ cultivars bear double, pink, white, or red flowerheads, to 4cm (1½in) across, with quilled petals. **Roggli Series** cultivars flower early and prolifically, with semi-double, red, rose-pink, salmon-pink, or white flowerheads, to 3cm (1¼in) across. **Tasso Series** [■] cultivars have double, pink, white, or red flowerheads, to 6cm (2½in) across, with quilled petals.

▷ **Bell pepper** see *Capsicum annuum*  
Grossum Group

▷ **Bells of Ireland** see *Moluccella laevis*

▷ **Beloperone** see *Justicia*

**B. guttata** see *J. brandegeana*

▷ **Bent, Velvet** see *Agrostis canina*

## BERBERIDOPSIS

### FLACOURTIACEAE

Genus of one species of woody, evergreen, scandent climber from moist woodland in Chile, cultivated mainly for its clusters and racemes of spherical flowers. The leaves are ovate or heart-shaped, spiny, and alternate. Grow against a wall or train into a tree.

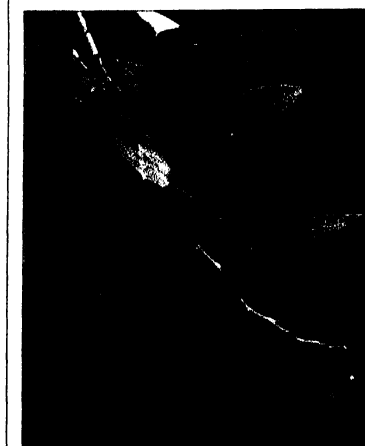
• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in humus-rich, neutral to acid, moist but well-drained soil, in a partially shaded, sheltered site. Protect the roots from frost with an autumn mulch. Pruning group 11, in spring, but only if essential.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in late summer. Layer in autumn.

• **PESTS AND DISEASES** Trouble free.

**B. corallina** [■] (Coral plant). Weakly twining climber with ovate or heart-shaped, dark green leaves, to 10cm (4in) long, glaucous beneath, with small marginal spines. Spherical, dark red flowers, 1.5cm (½in) across, with stalks 5cm (2in) long, are produced both in pendent, terminal racemes and in 2- or 3-flowered clusters from the upper leaf axils from summer to early autumn. ↑ 5m (15ft). Chile. ✱✱



*Berberidopsis corallina*

## B

## BERBERIS

Barberry

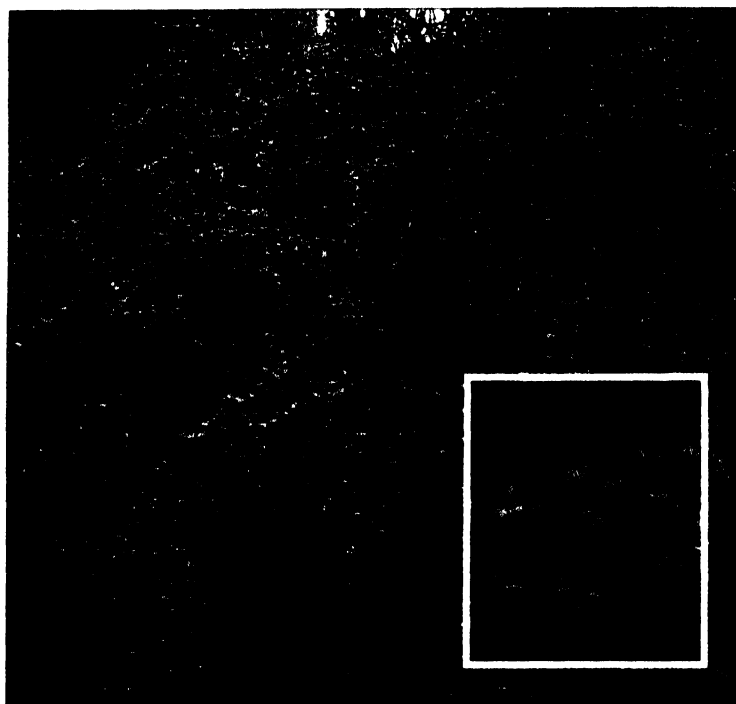
BERBERIDACEAE

Genus of about 450 species of evergreen or deciduous shrubs from all parts of the N. hemisphere, N. and tropical Africa, and South America, that prefer rocky soils in mountain areas. Linear to very broadly ovate or obovate, entire or spine-toothed leaves are produced in the axils of stem spines, which are often borne in groups of 3, and persist on old, leafless stems. Barberries are cultivated for their foliage (ornamental or giving good autumn colour); racemes, panicles, or axillary clusters of yellow to dark orange flowers, cup-shaped with usually reflexed sepals; and colourful autumn fruits. They range from dwarf species and cultivars, suitable for a rock garden, to large shrubs that are effective in a border, as specimen shrubs, or as a hedge. All parts may cause mild stomach upset if ingested; contact with the spines may irritate skin.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in almost any well-drained soil in full sun or partial shade. Fruiting and autumn colour are better in sun. Evergreen species, pruning group 8; deciduous species, pruning group 2. Trim hedges after flowering.
- **PROPAGATION** Sow seed in a seedbed in early spring; many species cross freely in gardens, so seed-raised plants are often hybrids. Root softwood cuttings of deciduous barberries in summer; take semi-ripe cuttings of deciduous and evergreen ones in summer.
- **PESTS AND DISEASES** Powdery mildew and aphids may be troublesome.

**B. aggregata.** Compact, deciduous shrub with oblong-ovate, olive-green leaves, to 3cm (1¼in) long, sparsely toothed at the tips, blue-green beneath, and turning red in autumn. Pale yellow flowers, 7mm (¼in) across, are borne in dense axillary panicles, to 4cm (1½in) long, in late spring and early summer, followed by spherical to ovoid, grey-glaucous, red fruit, to 7mm (¼in) long. ↑ 1.5m (5ft), ↔ 2m (6ft). W. China (Gansu, Sichuan). \*\*\*

**B. x bristolensis** (B. calliantha x B. verruculosa). Dense, mound-forming, evergreen shrub with elliptic, spine-toothed leaves, to 4cm (1½in) long, glossy, dark green above, intensely glaucous beneath, some turning red in



*Berberis buxifolia* (inset: flower detail)

autumn or winter. Yellow flowers, 1cm (½in) or more across, are produced singly or in twos or threes from the leaf axils in late spring, followed by oblong-ovoid, blue-black fruit, 9mm (¾in) long. ↑ 1.5m (5ft), ↔ 2m (6ft). Garden origin. \*\*\*

**B. buxifolia** (B. Upright, evergreen or semi-evergreen shrub with arching branches and elliptic, spine-tipped, leathery, dark green leaves, to 2.5cm (1in) long. In mid- and late spring, dark orange-yellow flowers, to 1.5cm (½in) across, are produced singly or in pairs from the upper leaf axils, on stalks 2–2.5cm (¾–1in) long. They are followed by spherical, dark purple fruit, to 6–8mm (¼–⅓in) across. ↑ 2.5m (8ft), ↔ 3m (10ft). Chile, Argentina. \*\*\*

**'Pygmaea'**, syn. var. *nana* of gardens, is compact, lacks spines, has leaves to 3cm (1¼in) long, and rarely produces flowers. ↑ 30cm (12in), ↔ 45cm (18in).

**B. calliantha** (B. Compact, evergreen shrub with holly-like, elliptic to oblong, spine-toothed leaves, to 6cm (2½in) long, glossy, dark green above, waxy-white beneath, and borne on red young shoots. Pale yellow flowers, to 2.5cm (1in) across, are produced singly,

occasionally in twos or threes, from the upper leaf axils in late spring, followed by ovoid, blue-glaucous, black fruit, 1cm (½in) or more long. ↑ 75cm (30in), ↔ 90cm (36in). China (S.E. Tibet). \*\*\*

**B. candidula.** Dense, mound-forming, evergreen shrub with elliptic to ovate, entire, spine-tipped leaves, to 3cm (1¼in) long, with inrolled margins, glossy, dark green above, waxy-white beneath. Produces solitary, bright yellow flowers, to 1.5cm (½in) across, from the upper leaf axils in late spring, followed by ovoid, white-glaucous, purple fruit, to 1cm (½in) long. ↑ 60cm (24in), ↔ 1.2m (4ft). W. China (Hubei). \*\*\*

**B. x carminea** (B. aggregata x B. wilsoniae). Vigorous, semi-evergreen



*Berberis x carminea* 'Pirate King'

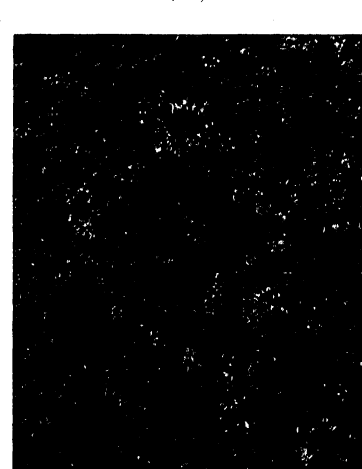
shrub with arching branches and narrowly obovate, slightly spiny, often greyish green leaves, to 3cm (1¼in) long. Bears spherical yellow flowers, to 7mm (¼in) across, in 10- to 16-flowered panicles, to 5cm (2in) long, in late spring and early summer, followed by dense clusters of ovoid-spherical, usually red or orange fruit, 1cm (½in) across. Garden origin. ↑ 1.5m (5ft), ↔ 2.5m (8ft). \*\*\*

**'Barbarossa'** has bright red fruit. **'Buccaneer'** bears spherical, glowing red fruit. **'Pirate King'** has bright scarlet-red fruit. **B. 'Chenault'** see B. 'Chenaultii'. **B. 'Chenaultii'**, syn. B. 'Chenault'. Spreading, dense, evergreen shrub with lance-shaped, wavy-margined, spine-toothed leaves, to 4cm (1½in) long, that are glossy, dark green above and glaucous beneath, often turning bronze in winter. Spherical yellow flowers, 1.5cm (½in) across, are produced in axillary clusters of 2–4 in late spring, followed by ovoid, blue-black fruit, 1cm (½in) long. ↑ 1.5m (5ft). \*\*\*

**B. 'Cherry Ripe'**. Rounded, deciduous shrub with obovate, mainly entire leaves, to 2.5cm (1in) long, that are dull green above, grey-green beneath. Umbel-like clusters, to 10cm (4in) across, of 2–8 yellow flowers, to 1cm (½in) across, are produced freely in early summer. Broadly ovoid, creamy pink fruit, to 1cm (½in) long, turn bright cerise and last well into winter. ↑ 1.5m (5ft), ↔ 2m (6ft). \*\*\*

**B. coxii.** Vigorous, dense, evergreen shrub with elliptic to ovate-elliptic, spine-toothed leaves, to 5cm (2in) long, that are glossy, dark green above and intensely glaucous beneath. Produces clusters of 3–6 pale yellow flowers, to 1cm (½in) across, in late spring, followed by oblong-ovoid, blue-glaucous, black fruit, 1cm (½in) long. ↑ 2m (6ft) or more, ↔ 3m (10ft). N.E. Burma. \*\*\*

**B. darwinii** (B. Vigorous, upright, evergreen shrub with obovate, spine-toothed, glossy, dark green leaves, 2–4cm (¾–1½in) long. Pendent racemes, to 5cm (2in) long, of 10–30 dark orange flowers, 5mm (¼in) across, are borne profusely in mid- and late spring, sometimes again in autumn, and are succeeded by spherical, blue-glaucous, black fruit, 7mm (¼in) across. ↑ 3m (10ft). Chile, Argentina. \*\*\*



*Berberis darwinii*



*Berberis x bristolensis*



*Berberis x carminea* 'Buccaneer'

*Berberis dictyophylla*

***B. dictyophylla*** [V] Vigorous, upright, deciduous shrub with reddish brown shoots covered in white bloom, and obovate to elliptic, entire or sometimes spine-toothed leaves, to 2cm (¾in) long, mid-green above, white beneath, and turning red in autumn. Bears pale yellow flowers, to 1.5cm (½in) across, singly or in twos from the upper leaf axils in late spring, followed by ellipsoid, white-glaucous, red fruit, to 1cm (½in) long. ↑ 2m (6ft), ↔ 1.5m (5ft). W. China (Yunnan, W. Sichuan). \*\*\*

***B. empetrifolia*** [V] Spreading, evergreen shrub with arching shoots and linear-elliptic, spine-tipped leaves, to 2.5cm (1in) long, dark green above, greyish beneath. Deep golden yellow flowers, 1cm (½in) across, are produced singly or in twos from the upper leaf axils in late spring, followed by spherical, blue-glaucous, black fruit, 7mm (¼in) across. ↑ 45cm (18in), ↔ 60cm (24in). Chile, Argentina. \*\*\*

***B. x frikartii* 'Amstelveen'** ♀ (*B. candidula* x *B. verruculosa*).

Vigorous, compact, evergreen shrub with arching shoots and lance-shaped, glossy leaves, to 3cm (1¼in) long, dark green above, grey-white beneath. Yellow flowers, 1.5cm (½in) across, are produced in clusters of 2–4 from the upper leaf axils in late spring, followed by ovoid, blue-glaucous, black fruit, 1cm (½in) long. ↑ 1m (3ft), ↔ 1.5m (5ft). \*\*\*. 'Telstar' ♀ is flat-topped when mature; ↑ to 1.2m (4ft).

***B. gagnepainii* of gardens** see

***B. gagnepainii* var. *lanceifolia***

***B. gagnepainii* var. *lanceifolia*** [V] syn. *B. gagnepainii* of gardens. Dense,

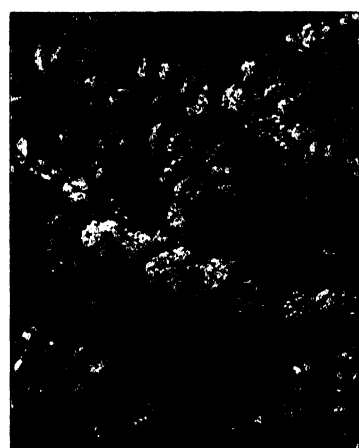
*Berberis gagnepainii* var. *lanceifolia*

evergreen shrub with spreading, semi-pendent branches and linear-lance-shaped, dark green leaves, to 10cm (4in) long, spine-toothed and wavy at the margins. Golden yellow flowers, 1cm (½in) across, are produced in clusters of 2–5 from the upper leaf axils in late spring and early summer, followed by oblong-ovoid, blue-black fruit, to 1cm (½in) long. Useful for hedging. ↑ 1.5m (5ft), ↔ 2m (6ft). W. China (Hubei, Sichuan). \*\*\*

***B. 'Goldilocks'*** [V] Very vigorous, upright then spreading, evergreen shrub with oblong-ovate, entire or slightly toothed leaves, to 5cm (2in) long, glossy, dark green above, paler beneath. Red-stalked, dark golden yellow flowers, 4mm (¼in) across, are profusely borne in dense clusters, to 4cm (1½in) across, in mid- and late spring, followed by spherical, blue-black fruit, 8mm (¾in) across. ↑ 4m (12ft), ↔ 3m (10ft). \*\*\*

***B. x hybrido-gagnepainii* cultivars** (*B. candidula* x *B. gagnepainii*). Evergreen shrubs with ovate to oblong-ovate or lance-shaped, bright green leaves, 2–5cm (¾–2in) long, sometimes tinted bluish or reddish green beneath. Clusters of yellow flowers, to 1cm (½in) across, are produced in late spring, followed by ovoid, grey-glaucous, black fruit, to 7mm (¼in) long. ↑ to 1.5m (5ft), ↔ to 2m (6ft). \*\*\*. 'Minikin' is compact, with slightly twisted, lance-shaped, bright green leaves, to 2cm (¾in) long, that are white beneath; ↑ 50cm (20in), ↔ 80cm (32in).

'Tottenham' is more vigorous than 'Minikin', with arching shoots and oblong-ovate leaves, to 4cm (1½in)

*Berberis julianae*

long, some turning red in autumn; ↔ 1.5m (5ft).

***B. hypokerina***. Evergreen shrub with arching, spineless, reddish green shoots, and rigid, elliptic, triangular-spined, grey-green leaves, to 15cm (6in) long, often white beneath. Produces lemon-yellow flowers, 1cm (½in) across, in dense clusters of 4–18 (rarely up to 25) in early summer, followed by ellipsoid, blue-glaucous, black fruit, to 1cm (½in) long. Grow in lime-free soil.

↑ 0.6–2.5m (2–8ft). W. China (Yunnan). \*\*

***B. x interposita* 'Wallich's Purple'**

Densely mound-forming, evergreen shrub with arching shoots and elliptic, sparsely spiny, glossy, mid-green leaves, to 2.5cm (1in) long, grey-green beneath, bronze-purple when young. Clusters of yellow flowers, 1.5cm (½in) across, are produced in late spring, followed by ellipsoid, slightly blue-glaucous, black fruit, 5cm (2in) long. ↑ 1.5m (5ft), ↔ 2m (6ft). \*\*\*

***B. jamesiana***. Vigorous, upright, deciduous shrub with ovate, entire to finely toothed, olive-green leaves, to 10cm (4in) long, glaucous grey beneath, turning red in autumn. Pendent racemes, to 10cm (4in) long, of 20–40 yellow flowers, 5mm (¼in) across, are borne in early summer, followed by spherical, coral-red fruit, 1cm (½in) across. ↑ 2m (6ft), ↔ 1.5m (5ft). W. China (N.W. Yunnan). \*\*\*

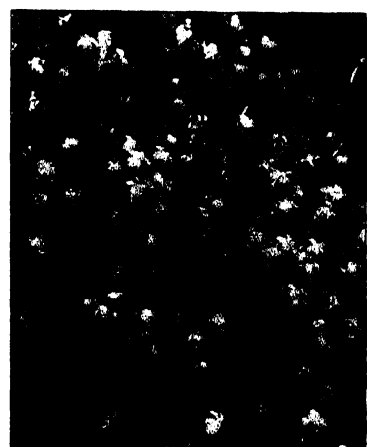
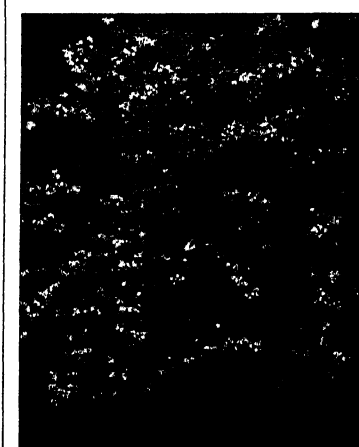
***B. julianae*** [V] Dense, upright, evergreen shrub with rigid, obovate to elliptic leaves, to 4–8cm (1½–3in) long, that are glossy, deep green above, pale green beneath, with strongly spined margins. Up to 20 yellow or red-tinged flowers, 1cm (½in) across, are produced in clusters in late spring, and are succeeded by oblong, white-glaucous, black fruit, 8mm (¾in) long. ↑ 3m (10ft). China. \*\*\*. 'Lombart's Red' has leaves tinged red beneath.

***B. linearifolia***. Upright, stiffly branched, evergreen shrub with obovate to inversely lance-shaped, glossy, dark green leaves, to 5cm (2in) long. Bears clusters of 2–4 rich orange to apricot flowers, 2cm (¾in) across, in late spring, followed by ellipsoid, blue-glaucous, black fruit, 1cm (½in) long. Chile, Argentina. ↑ 2m (6ft), ↔ 1.5m (5ft). \*\*\*. 'Jewel' [V] has clusters of 4–6 dark orange flowers that open from scarlet buds. 'Orange King' [V] is vigorous, with arching shoots, leaves to 6cm (2½in) long, and less deeply

*Berberis linearifolia* 'Jewel'*Berberis linearifolia* 'Orange King'

coloured, slightly larger flowers than 'Jewel'; ↑ 2.5m (8ft).

***B. x lologensis*** (*B. darwinii* x *B. linearifolia*). Strong-growing, spreading, evergreen shrub with arching shoots and spoon-shaped, spine-toothed, glossy, dark green leaves, to 5cm (2in) long. Clusters of 8–12 rich orange flowers, 3cm (1¼in) across, are produced in late spring, and often again from summer to autumn, followed by spherical, blue-black fruit, to 7mm (¼in) across. ↑ 4m (12ft). Argentina. \*\*\*. 'Apricot Queen' ♀ bears umbel-like racemes, to 5cm (2in) long, of 3–7 dark orange flowers in late spring and sporadically throughout summer; ↔ 3m (10ft). 'Mystery Fire' bears abundant bright orange-yellow flowers. 'Stapchill' [V] bears abundant rich orange flowers.

*Berberis empetrifolia**Berberis* 'Goldilocks'*Berberis x lologensis* 'Stapchill'

*Berberis x ottawensis* 'Silver Mile'

***B. x ottawensis*** (*B. thunbergii* x *B. vulgaris*). Rounded, deciduous shrub with obovate, mainly entire, mid-green leaves, to 3cm (1¼in) long. Clusters of up to 10 red-tinged, pale yellow flowers, 8mm (⅜in) across, are borne in spring, followed by ovoid red berries, 8mm (⅜in) long. ♂↔ 2.5m (8ft). Garden origin. \*\*\*. 'Purpurea' see 'Superba'. 'Silver Mile' ■ has dark red-purple leaves, flushed silvery grey, turning red in autumn. 'Superba' ■♀ syn. 'Purpurea', is vigorous, with red-purple leaves, turning crimson in autumn. Often used as a rootstock; grafted plants may produce purple-leaved basal shoots. ***B. panlanensis*** see *B. sanguinea*. ***B. 'Park Jewel'*** see *B. 'Parkjuweel'*. ***B. 'Parkjuweel'*** ♀ syn. *B. 'Park Jewel'*. Compact, semi-evergreen shrub with

*Berberis x stenophylla*

oblong-ovate, entire or slightly toothed, very glossy, mid- to dark green leaves, to 3cm (1¼in) long, some turning red in autumn. In late spring, bears yellow flowers, 8mm (⅜in) across, singly or in small clusters, to 2.5cm (1in) across. ♂ 2m (6ft), ↔ 2.5m (8ft). \*\*\*

***B. polyantha*** of gardens see *B. prattii*. ***B. prattii***, syn. *B. polyantha* of gardens. Deciduous shrub with arching branches and densely clustered, obovate leaves, to 3cm (1¼in) long, that are glossy, mid-green above, grey beneath, with spine-tipped teeth. Bears lax, upright panicles, to 20cm (8in) long, of 8 yellow flowers in summer, followed by long-lasting, spherical, bright pink fruit, to 6mm (¼in) long. ♂↔ 3m (10ft). W. China (Sichuan). \*\*\*

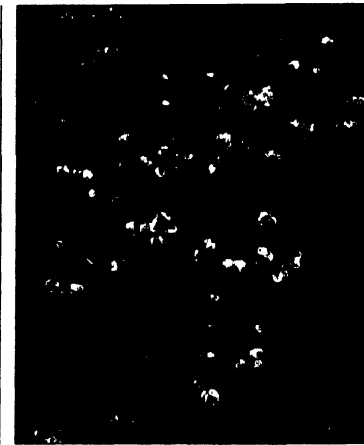
***B. 'Red Jewel'*** ♀ Compact, semi-evergreen shrub (a sport of *B. 'Parkjuweel'*) with oblong-ovate, entire or slightly toothed leaves, to 3cm (1¼in) long, dark bronze-red when young, mid- to dark green when mature. Yellow flowers, 8mm (⅜in) across, borne singly or in small clusters, to 2.5cm (1in) across, are produced in late spring. ♂ 2m (6ft), ↔ 2.5m (8ft). \*\*\*

***B. x rubrostilla*** see *B. 'Rubrostilla'*. ***B. 'Rubrostilla'*** ♀ syn. *B. x rubrostilla*. Rounded, deciduous shrub with narrow, obovate, bright mid-green leaves, to 3cm (1¼in) long, with small, marginal spines. Umbel-like racemes of 2-4 yellow flowers, 7-9mm (¼-⅜in) across, on stalks 2.5cm (1in) long, are borne in profusion along the branches in summer, followed by oblong-ovoid, translucent, coral-red fruit, 1.5cm (½in) long. ♂ 1.5m (5ft), ↔ 2.5m (8ft). \*\*\*

***B. sanguinea***, syn. *B. panlanensis*. Slow-growing, very dense, evergreen shrub with arching shoots and linear-lance-shaped, spine-toothed, grey-green leaves, to 6cm (2½in) long. Yellow flowers, to 1cm (½in) across, are borne in clusters of 2-7 in spring, followed by oblong black fruit, to 8mm (⅜in) long. ♂ 2.5m (8ft), ↔ 4m (12ft). W. China (Sichuan). \*\*\*

***B. sargentiana***. Dense, upright, evergreen shrub with rigid, narrowly elliptic to oblong, strongly spined, glossy leaves, to 10cm (4in) long, dark green above and yellowish green beneath. Greenish yellow, sometimes red-tinged flowers, to 1cm (½in) across, are produced in clusters of 4-8 in late spring, and are succeeded by oblong-ellipsoid, blue-black fruit, to 6mm (¼in) long. ♂↔ 2m (6ft). W. China (Sichuan, Hubei). \*\*\*

***B. x stenophylla*** ■♀ (*B. darwinii* x *B. empetrifolia*). Vigorous, evergreen shrub with long, arching branches and linear to narrowly elliptic, spine-tipped, dark green leaves, to 2.5cm (1in) long. Short, clustered racemes of 7-14 deep yellow flowers, to 1cm (½in) across, are borne profusely along the branches in late spring, followed by spherical, blue-glaucous, black fruit, to 7mm (¼in) long. An excellent plant for hedging. ♂ 3m (10ft), ↔ 5m (15ft). Garden origin. \*\*\*. 'Claret Cascade' produces red young shoots and bronze-green young leaves; ♂↔ 1.2m (4ft). 'Coccinea' is compact, with red flower buds and red-tinged flowers borne in clusters of 4-8; ♂ 1.2m (4ft), ↔ 1.5m (5ft). 'Corallina Compacta' ■♀ is

*Berberis thunbergii* f. *atropurpurea*

compact, with leaves 6-8mm (¼-⅜in) long, and red-budded, light orange flowers; ♂↔ to 30cm (12in). 'Cornish Cream' see 'Lemon Queen'. 'Cream Showers' see 'Lemon Queen'. 'Irwinii' is compact, with sharply toothed, glossy leaves and orange flowers; ♂↔ 1.5m (5ft). 'Lemon Queen', syn. 'Cornish Cream', 'Cream Showers', has dark green leaves, and produces creamy white flowers. 'Pink Pearl' has leaves variegated white and pink, and pink flowers. Cut out reverted shoots as they occur; ♂↔ 1.5m (5ft).

***B. temolaica***. Very distinctive, deciduous shrub with arching stems, white-glaucous at first, later purple, and obovate to oblong, entire or few-spined, grey-green leaves, to 4.5cm (1¾in) long. Solitary, pale yellow flowers, 1.5cm (½in) across, are produced on stalks, 1.5cm (½in) long, in late spring, and are succeeded by ellipsoid, white-glaucous, red fruit, 1cm (½in) long. ♂ 2m (6ft), ↔ 3m (10ft). China (S.E. Tibet). \*\*\*

***B. thunbergii*** ♀ Dense, rounded, deciduous shrub with obovate, entire leaves, to 3cm (1¼in) long, fresh green above and bluish green beneath, turning orange and red in autumn. Umbel-like racemes of 2-5, rarely solitary, red-tinged, pale yellow flowers, 1cm (½in) long, are produced along the branches in mid-spring, and are succeeded by ellipsoid, glossy red fruit, to 8mm (⅜in) long. Excellent for hedging. ♂ 1m (2ft) occasionally more, ↔ 2.5m (8ft). Japan. \*\*\*. f. *atropurpurea* ■ produces dark red-purple or purplish bronze foliage, turning red in autumn. 'Atropurpurea Nana' ♀ syn. 'Crimson'

*Berberis x ottawensis* 'Superba'*Berberis x stenophylla* 'Corallina Compacta'*Berberis thunbergii* 'Aurea'

*Berberis thunbergii* 'Bagatelle'

Pygmy', 'Little Favourite', has red-purple foliage;  $\uparrow$  60cm (24in),  $\leftrightarrow$  75cm (30in). 'Aurea'  $\square$  has bright yellow young foliage;  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  2m (6ft). 'Bagatelle'  $\square$  is very compact, with deep red-purple foliage;  $\uparrow$  30cm (12in),  $\leftrightarrow$  40cm (16in). 'Crimson Pygmy' see 'Atropurpurea Nana'. 'Dart's Red Lady'  $\square$  has very dark red-purple foliage, turning bright red in autumn. 'Erecta' is upright when young, becoming open with age;  $\uparrow$   $\leftrightarrow$  1.5m (5ft). 'Golden Ring'  $\square$  has purple leaves narrowly margined with golden yellow, turning red in autumn, and produces red fruit. 'Green Ornament' is similar in habit to 'Erecta', with bronze young foliage and a profusion of red fruit. 'Helmond Pillar'  $\square$  is narrowly upright and has dark red-purple foliage;  $\uparrow$  1.5m

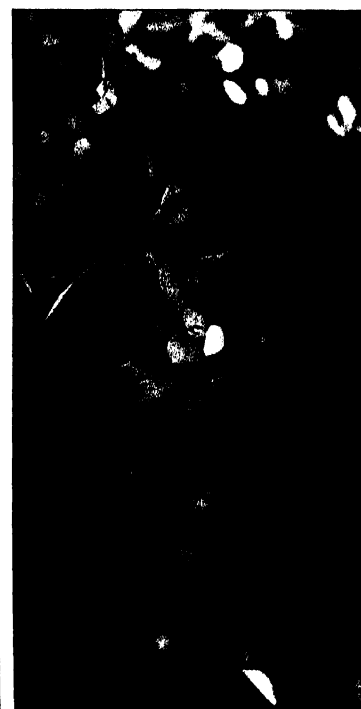
*Berberis thunbergii* 'Helmond Pillar'

(5ft),  $\leftrightarrow$  60cm (24in). 'Kobold' is very compact and fruits freely;  $\uparrow$  40cm (16in),  $\leftrightarrow$  60cm (24in). 'Little Favourite' see 'Atropurpurea Nana'. 'Pink Queen' is similar to 'Rose Glow', but with more conspicuously variegated foliage. 'Red Pillar' is similar in habit to 'Erecta', and has red-purple foliage. 'Rose Glow'  $\square$  has red-purple leaves flecked with white; but the first growth of the season shows no variegation. 'Silver Beauty' is slow growing, with leaves mottled with creamy white;  $\uparrow$  60cm (24in),  $\leftrightarrow$  90cm (36in). 'Sparkle' is compact, with arching branches and good autumn colour, and fruits freely;  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  1.5m (5ft).

*B. verruculosa*  $\square$  Compact, evergreen shrub with arching shoots and obovate to elliptic, spine-tipped leaves,

*Berberis verruculosa*

2–3cm ( $\frac{3}{4}$ –1 $\frac{1}{4}$ in) long, glossy, dark green above, grey-white beneath. Bears solitary, golden yellow flowers, 2cm ( $\frac{3}{4}$ in) across, in late spring, followed by oblong-ovoid, white-glaucous, dark purple fruit, to 1cm ( $\frac{1}{2}$ in) long.  $\uparrow$   $\leftrightarrow$  1.5m (5ft). W. China. \*\*\*  
*B. wilsoniae*  $\square$  Dense, mound-forming, very spiny, semi-evergreen shrub with spreading, arching branches and obovate-spoon-shaped, usually entire, grey-green leaves, to 2.5cm (1in) long, that turn red and orange in autumn. Bears short panicles or clusters of 4–7 pale yellow flowers, 7–10mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) across, in summer, followed by spherical, translucent, coral-pink to pinkish red fruit, to 6mm ( $\frac{1}{4}$ in) across.  $\uparrow$  1m (3ft),  $\leftrightarrow$  2m (6ft). W. China. (W. Sichuan, Yunnan) \*\*\*. 'Graciella',

*Berberis wilsoniae*

syn. 'Marianne', has pale green leaves and red fruit;  $\uparrow$  50cm (20in),  $\leftrightarrow$  90cm (36in). 'Marianne' see 'Graciella'. 'Orangeade' has carmine-red and orange-red fruit, 1cm ( $\frac{1}{2}$ in) across.

## BERCHEMIA

### RIAMNACEAE

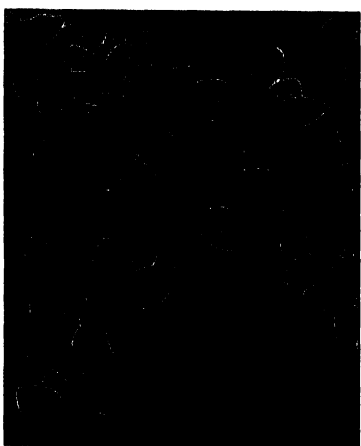
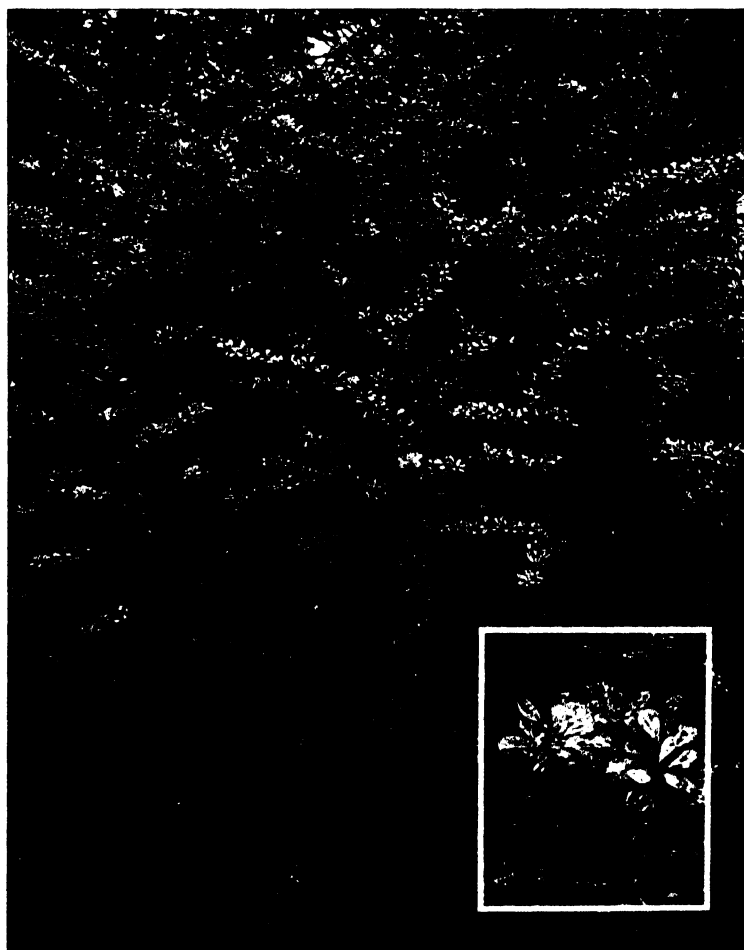
Genus of about 12 species of deciduous climbers, rarely shrubs, from woodland in East Africa, E. Asia, and North and Central America. They have attractively veined, alternate, ovate to elliptic leaves, and terminal or axillary panicles of small flowers in summer. The fruits are fleshy. Train against a wall, fence, or pergola.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in fertile soil in full sun or partial shade. Pruning group 11, in late winter or early spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root semi-ripe cuttings in summer, or take root cuttings in winter. Layer in autumn or winter.
- **PESTS AND DISEASES** Trouble free.

*B. racemosa*. Twining, woody climber or spreading shrub, bearing ovate leaves, to 8cm (3in) long, dark green above, lighter or bluish green beneath, each with 7–9 pairs of prominent, parallel veins. Produces panicles, to 15cm (6in) long, of tiny green flowers in summer, followed by oblong red fruit, 10mm ( $\frac{1}{2}$ in) long, that ripen to black.  $\uparrow$  4m (12ft). Japan. \*\*\*. 'Variegata' has white-variegated leaves.

*B. scandens* (Rattan vine, Supple Jack). Vigorous, twining, woody climber bearing ovate, mid-green leaves, to 8cm (3in) long, each with 9–12 pairs of prominent, parallel veins. Bears panicles, 5cm (2in) long, of tiny green flowers in summer, followed by oblong, blue-black fruit, to 8mm ( $\frac{3}{8}$ in) long.  $\uparrow$  5m (15ft). S. USA to Central America. \*\*\*

▷ *Bergamot* see *Monarda*, *M. didyma*  
Wild see *M. fistulosa*

*Berberis thunbergii* 'Dart's Red Lady'*Berberis thunbergii* 'Golden Ring'*Berberis thunbergii* 'Rose Glow' (inset: leaf detail)

**BERGENIA** *syn. MEGASEA**Elephant-eared saxifrage, Elephant's ears*  
SAXIFRAGACEAE

Genus of 6–8 species of clump-forming, evergreen perennials from meadows, rocky moorland, and moist woodland in Central and E. Asia. They have tough, thick rhizomes and distinctive rosettes of alternate, simple, entire or toothed, obovate or oblong to broadly ovate, leathery, glossy leaves, many colouring well in winter. Panicle-like cymes of shallowly funnel-shaped to bell-shaped, 5-petalled flowers, usually 1.5–2.5cm (½–1in) across, on short, branched, often red or purple flower stems, are produced mainly in spring. Grow in a woodland garden or border.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in full sun or partial shade. Most dislike extremes of heat and drought, but will tolerate exposure and poor soil, which enhances their winter leaf colour. Mulch in autumn. Frost may damage early flowers, and the foliage of some species may die back in winter.
- **PROPAGATION** Seed-raised plants in gardens usually produce hybrids. Divide deteriorating clumps, or root rhizome sections from them, every 3–5 years in autumn or spring. Root sections of young rhizomes with one or more leaf rosettes after flowering or in autumn, in a sand frame or the open ground.
- **PESTS AND DISEASES** Susceptible to slugs, snails, and some caterpillars. Vine weevil and leaf spot may be a problem. Dry brown rot may affect the rhizomes.

**B. 'Abendglut'**, *syn. B. 'Evening Glow'*. Clump-forming perennial with obovate, red-tinted, mid- to dark green leaves, 15cm (6in) long, ruby-red beneath, rich maroon in winter. Produces semi-double, magenta-crimson flowers on red flower stems in mid- and late spring. ‡ 20–30cm (8–12in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Baby Doll'**. Clump-forming perennial with obovate, bronze-tinted, mid-green leaves, 10cm (4in) long. In mid- and late spring, bears soft pink flowers, which darken with age. ‡ 30cm (12in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Ballawley'** ■ Clump-forming perennial with very broadly ovate, glossy, mid-green leaves, to 30cm (12in) long, turning bronze-purple in winter.

*Bergenia ciliata*

Red flower stems bear bright crimson flowers in mid- and late spring. Prefers a sheltered site. ‡ 60cm (24in), ↔ 45–60cm (18–24in). \*\*\*

**B. beesiana** *see B. purpurascens.*

**B. 'Beethoven'**. Free-flowering perennial with spoon-shaped, mid-green leaves, 25cm (10in) long. Produces white flowers, with red to greenish pink calyces, in mid- and late spring. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Bell Tower'** *see B. 'Glockenturm'*.

**B. 'Bressingham Bountiful'**. Compact perennial with broadly obovate to ovate, thin, dark green leaves, 18cm (7in) long, liable to frost damage but attractively margined with maroon, especially in winter. Bears nodding, rose-pink flowers in mid- and late spring, darkening as they age. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Bressingham Salmon'**. Clump-forming perennial with obovate, bronze-tinted, deep green leaves, 15–18cm (6–7in) long, turning dark red in winter. Produces bright salmon-pink flowers in mid- and late spring. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Bressingham White'** ♀ Clump-forming perennial with robust, broadly obovate, deep green leaves, 15–18cm (6–7in) long. Pure white flowers are freely produced in mid- and late spring. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. ciliata** ■ Clump-forming perennial with very broadly obovate, hairy, mid-green leaves, to 35cm (14in) long. In early spring, flower stems bear more or

less erect flowers, that are pink, or white fading to pinkish white, with rose-pink calyces. In frost-prone areas, foliage dies back in winter. ‡ 30cm (12in), ↔ 45cm (18in). Himalayas, India (Assam).

\*\*\* (borderline). **f. ligulata** has leaves with hairy margins and almost hairless surfaces, and produces very pale pink flowers with rose-red calyces.

**B. cordifolia**. Clump-forming perennial with rounded to heart-shaped, sometimes puckered, mid- to deep green leaves, 30cm (12in) long, tinted purple in winter. Bears pale rose-red to dark pink flowers on red flower stems in late winter and early spring. ‡ 60cm (24in), ↔ 75cm (30in). Russia (Siberia). \*\*\*

**'Purpurea'** ♀ has magenta-purple flowers and thicker, redder leaves.

**B. crassifolia**. Clump-forming perennial with oblong, obovate or broadly ovate, mid-green leaves, 9–18cm (3½–7in) long, with toothed margins, becoming red-tinted in exposed positions, especially in winter. Branched, reddish green flower stems bear nodding, pinkish purple flowers in late winter and early spring. ‡ 45cm (18in). Russia (Siberia). \*\*\* **var. pacifica** has slightly broader leaves and larger, red-purple flowers; ‡ 30cm (12in), ↔ 20cm (8in); Russia (Sikhote Alin mountains).

**B. 'Eric Smith'**. Vigorous perennial with rounded-ovate, puckered, bronze-flushed, mid-green leaves, 20cm (8in) long, turning bronze-red in winter. Bears deep coral-pink flowers on strong, upright flower stems in mid- and late spring. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Evening Glow'** *see B. 'Abendglut'*.

**B. 'Glockenturm'**, *syn. B. 'Bell Tower'*. Free-flowering perennial with obovate-oblong, mid-green leaves, 15–18cm (6–7in) long. Deep reddish pink flowers are produced in mid- and late spring. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. milesii** *see B. stracheyi.*

**B. 'Morgenröte'** ■ ♀ *syn. B. 'Morning Red'*. Clump-forming perennial with broadly obovate, deep green leaves, 13–15cm (5–6in) long. Bright reddish pink flowers are borne on strong red flower stems in mid- and late spring; repeat-flowers in cool summers. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Morning Red'** *see B. 'Morgenröte'*.

**B. 'Pugsley's Pink'**. Clump-forming perennial with obovate leaves, 15cm

*Bergenia 'Silberlicht'*

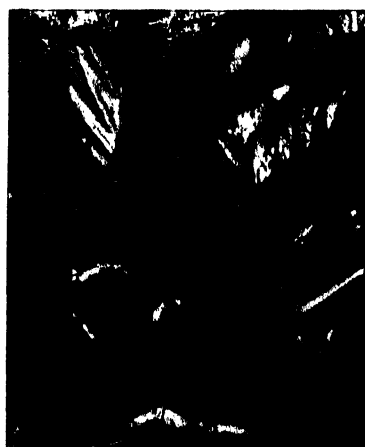
(6in) long, mid-green above, reddish green beneath. Produces pink flowers, with brownish pink calyces, in mid- and late spring. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. purpurascens** ♀ *syn. B. beesiana.* Clump-forming perennial with elliptic or ovate-elliptic, deep green leaves, 7–25cm (3–10in) long, purple-red beneath, turning deep purple or beetroot-red in winter. Upright, reddish brown flower stems bear nodding to pendent, rich purple-red flowers in mid- and late spring. ‡ 45cm (18in), ↔ 30cm (12in). E. Himalayas, W. China, N. Burma. \*\*\*

**B. x schmidtii** ■ ♀ (*B. ciliata* x *B. crassifolia*). Vigorous perennial with broadly obovate to obovate-elliptic, rich green leaves, to 25cm (10in) long, narrowed at the base, with toothed margins, very sparsely fringed with hairs, and long leaf-stalks. Bright rose-pink flowers, nodding at first, then horizontal to erect, are borne in dense, short, panicle-like cymes in late winter and early spring. ‡ 30cm (12in), ↔ 60cm (24in). Garden origin. \*\*\*

**B. 'Schneekönigin'**, *syn. B. 'Snow Queen'*. Clump-forming perennial with rounded-obovate, mid-green leaves, 18–20cm (7–8in) long, with irregularly curled margins. Pale pink flowers are borne profusely in early and mid-spring, and darken as they age. ‡ 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Silberlicht'** ■ ♀ *syn. B. 'Silver Light'*. Clump-forming perennial with broadly obovate, mid-green leaves, to 20cm (8in) long, with shallowly

*Bergenia 'Ballawley'**Bergenia 'Morgenröte'**Bergenia x schmidtii**Bergenia stracheyi*



*Bergenia* 'Sunningdale'

scalloped margins. Bears white flowers, ageing to pink, with pink sepals, in early and mid-spring. † 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Silver Light'** see *B. 'Silberlicht'*.

**B. 'Snow Queen'** see

*B. 'Schneekönigin'*.

**B. stracheyi** [ ] syn. *B. milesii*. Clump-forming perennial with erect, obovate, mid-green leaves, 6–20cm (2½–8in) long, wedge-shaped at the bases and hairy-margined. Nodding, fragrant pink flowers are produced on short flower stems in early spring. † 15–30cm (6–12in), ↔ 30cm (12in). Tajikistan, Afghanistan, W. Himalayas. \*\*\*

**f. alba**, syn. 'Alba', bears white flowers.

**B. 'Sunningdale'** [ ] Clump-forming perennial with rounded-obovate, mid-to deep green leaves, 15–18cm (6–7in) long, red beneath, becoming copper-red in winter, especially in a sunny, exposed site. Rich lilac-magenta flowers are borne on red flower stems in early and mid-spring. † 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

**B. 'Winter Fairy Tale'** see

*B. 'Wintermärchen'*.

**B. 'Wintermärchen'**, syn. *B. 'Winter Fairy Tale'*. Clump-forming perennial with obovate to narrowly ovate, deep green leaves, 15cm (6in) long, red-purple beneath, with slightly twisted leaf-blades, red-tinged in winter. Bears dark rose-red flowers in early and mid-spring. † 30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\*\*

## BERGEROCACTUS

CACTACEAE

Genus of one species of perennial cactus from semi-desert areas of S. California, USA, and N.W. Mexico. It has funnel-shaped flowers produced laterally from the upper part of the stems in summer, and spherical, spiny fruit. In frost-prone areas, grow *B. emoryi* in a warm greenhouse for its golden-spined shoots. In warmer areas, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost with additional sharp sand, in full light. During the growing season, water moderately and apply a nitrogen- and potash-based fertilizer monthly; keep completely dry in winter. Outdoors, grow in slightly enriched, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 24°C (75°F) in early spring. Root 15cm- (6in-) long basal cuttings of new shoots in early or mid-spring, with bottom heat; keep barely moist.

• **PESTS AND DISEASES** Susceptible to mealybugs and root mealybugs.

**B. emoryi**, syn. *Cereus emoryi*. Perennial cactus branching freely from the base. Slender, erect or decumbent, pale green stems produce 14–20 or more, densely spiny, slightly warty ribs. Close-set areoles each produce 10–30 golden yellow spines, including 1–4 centrals. In summer, bears diurnal yellow flowers, 2–4cm (¾–1½in) across, with wool and spines in the axils of the ovaries and the short, scaly tubes. † 60cm (24in), ↔ 45cm (18in). USA (S. California), N.W. Mexico. ☉ (min. 16°C/61°F)

## BERKHEYA

ASTERACEAE/COMPOSITAE

Genus of about 80 species of rosette-forming, often spiny-leaved biennials, perennials, evergreen subshrubs, and shrubs, found in open grassland and rocky areas in tropical Africa and South Africa. They are grown for their unusual foliage and long flowering period. Berkheya are woody-based or tap-rooted, with pinnatisect, pinnatifid, or pinnate, prickly, thistle-like leaves, often white-hairy beneath, and spiny, involucre bracts. The daisy-like flower-heads are usually yellow. Grow in a sunny border or against a warm wall.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil, in a sheltered position in full sun. Protect from winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring; the divisions re-establish slowly.

• **PESTS AND DISEASES** Trouble free.

**B. macrocephala** [ ] Rosette-forming perennial with pinnatisect, narrowly oblong-ovate, very spiny, mid-green leaves, 30–45cm (12–18in) long, pale green beneath. In midsummer, erect,



*Berkheya macrocephala*

branched stems bear a succession of bright yellow flowerheads, 10cm (4in) across, with paler yellow disc-florets and spiny bracts. † 50–90cm (20–36in). South Africa (Kwazulu/Natal). \*\*

**B. purpurea**. Rosette-forming perennial with oblong-lance-shaped, pinnatifid, spiny, mid-green basal leaves, to 45cm (18in) long, white-woolly beneath; upper stem leaves are pale green beneath and often slightly woolly. Corymbs of purple flowerheads, 7cm (3in) across, are produced in midsummer.

† 40–75cm (16–30in). South Africa (Orange Free State, Kwazulu/Natal, Eastern Cape), Lesotho. \*\*

## BERTOLONIA

MELASTOMATACEAE

Genus of about 14 species of low-growing, often creeping, evergreen perennials from forest in tropical South America, grown primarily for their variegated foliage. The leaves are simple, stalked, mostly ovate or ovate-oblong, prominently veined, velvety, and colourful, with scalloped margins. Shallowly cup- or saucer-shaped flowers, with 4 or 5 petals, are borne in corymb-like, terminal cymes. In frost-prone areas, grow in a bottle garden, terrarium, or warm greenhouse; elsewhere, use as low ground cover in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost with added grit, in bright filtered light. In growth, water freely and maintain high humidity, but keep foliage dry. Keep just moist in winter. Outdoors, grow in humus-rich soil in partial shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root tip cuttings in spring, in a closed propagating case with bottom heat.

• **PESTS AND DISEASES** Trouble free.

**B. marmorata**. Decumbent or mound-forming perennial with ovate-oblong, hairy, bright green leaves, 5–8cm (2–3in) long, irregularly marked or banded with white, and deep purple beneath. Leaves may also be copper-green. Cymes, 10–13cm (4–5in) long, of saucer-shaped purple flowers, 2cm (¾in) across, are produced irregularly throughout the year. † 10–15cm (4–6in), ↔ 25cm (10in) or more. Brazil. ☉ (min. 16–19°C/61–66°F)

## BESCHORNERIA

AGAVACEAE

Genus of about 7 species of clump-forming, rosetted, perennial succulents from semi-arid areas of Mexico. Leaves are linear to lance-shaped, arching, and often glaucous, with fleshy keels and very fine marginal teeth. Slightly arching, red-bracted racemes or panicles of pendent, tubular flowers are borne in late spring or summer. In frost-prone areas, grow in a temperate greenhouse; elsewhere, grow as specimen plants.

• **HARDINESS** Frost tender; may stand short periods down to 0°C (32°F).

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From late spring to autumn, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in sharply



*Beschorneria yuccoides*

drained, humus-rich loam in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Root offsets in early spring.

• **PESTS AND DISEASES** Scale insects may be a problem.

**B. tubiflora**. Perennial succulent with compact rosettes of slender, lance-shaped, fleshy, greyish green leaves, to 30cm (12in) long, roughened on both surfaces. Racemes, to 1m (3ft) long, with purplish red bracts and reddish green flowers, 4cm (1½in) long, are borne in late spring. † 1m (3ft), ↔ 65cm (26in). Mexico. ☉ (min. 7°C/45°F)

**B. yuccoides** [ ] Perennial succulent with compact rosettes of lance-shaped, fleshy, grey-green leaves, 50cm (20in) long, becoming glaucous with age. In summer, bears panicles, 1–1.5m (3–5ft) or more long, of vivid red bracts and yellow-tinged, bright green flowers, 7cm (3in) or more long, with spreading lobes. † 1.5m (5ft), ↔ 1m (3ft) or more. Mexico. \* (borderline)

## BESSERA

ALLIACEAE/LILIACEAE

Genus of 2 species of cormous perennials from rocky slopes, scrub, and grassland in Mexico. They are grown for their pendent, conical, brightly coloured flowers, produced in terminal umbels in summer or autumn. Leaves are basal and narrowly linear. In frost-prone areas, grow in a cool conservatory or at the base of a warm, sunny wall. In frost-free areas, grow in a sunny, open border.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. Water moderately in growth; keep dry once leaves die down. Outdoors, plant 6cm (2½in) deep in well-drained soil in full sun in spring. Keep dormant corms dry in winter.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring, or remove offsets in autumn or winter.

• **PESTS AND DISEASES** Trouble free.

**B. elegans** (Coral drops). Cormous perennial with linear leaves, 60–80cm (24–32in) long. In late summer or autumn, bears umbels of up to 9 bright scarlet flowers, 3–4cm (1¼–1½in) across, creamy white within and with projecting stamens. † 60cm (24in), ↔ 5cm (2in). S.W. and S.C. Mexico. \*





*Beta vulgaris* subsp. *cicla* 'MacGregor's Favourite'

## BETA

Beet

CHENOPODIACEAE

Genus of 5 or 6 species of rosette-forming perennials and biennials from grassland and seashores in Europe and the Mediterranean. They have ovate to triangular-ovate, glossy, light or mid-green or reddish purple basal leaves, and lance-shaped stem leaves produced on stout leaf-stalks. Spike-like cymes of insignificant green flowers are produced in summer, with flowering accelerated by hot, dry conditions. The most commonly cultivated species of beet are grown as annual vegetables or fodder plants (mangold, beetroot, and chard), forming massively swollen roots. Some selections of *B. vulgaris* subsp. *cicla* produce attractive, ornamental foliage, and are useful for summer and winter colour contrast in a mixed border or annual bedding scheme.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in rich, light but moisture-retentive soil in full sun or partial shade. Water thoroughly during periods of drought in order to reduce the likelihood of flower and seed production (bolting).
- **PROPAGATION** Sow seed *in situ* in early spring or late summer.
- **PESTS AND DISEASES** Downy mildew and leaf spotting may be a problem in wet or humid conditions.

*B. vulgaris* subsp. *cicla* (Swiss chard). Ornamental biennial, grown as an annual for the decorative effect of its foliage. Produces clusters of upright, then arching, narrow, sometimes puckered, glossy, light or mid-green leaves, 23–30cm (9–12in) long, with bright red midribs and, in some selections, with the leaf-blades also red or purple-red. † 23cm (9in), ↔ to 45cm (18in). \*\*\*. 'Bull's Blood' produces dark red foliage; † to 45cm (18in). 'MacGregor's Favourite' ■ has brilliant blood-red foliage, and is less liable to bolt than most other cultivars. 'Vulcan' has brilliant red foliage; † to 45cm (18in).

▷ *Betonica* see *Stachys*

• *B. officinalis* see *S. officinalis*

▷ *Betony* see *Stachys*

• *Water* see *Scrophularia auriculata*

• *Wood* see *Stachys officinalis*

## BETULA

Birch

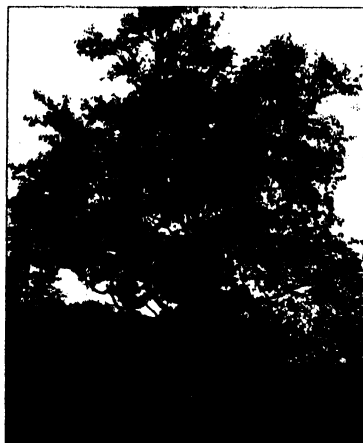
BETULACEAE

Genus of about 60 species of deciduous trees and shrubs found in diverse habitats, including woodland, moors, mountains, and heathland, throughout the N. hemisphere. Leaves are alternate, toothed, usually ovate, and mid- to dark green. Male and female flowers are borne in separate catkins on the same plant in spring, the male catkins usually yellow-brown, pendent, and longer than the females, which are erect at first, becoming pendent. Birches are grown for their ornamental bark, colourful autumn foliage, attractive male catkins, and graceful, open habit. Many are suitable for a small garden, either as isolated specimens or in small groups.

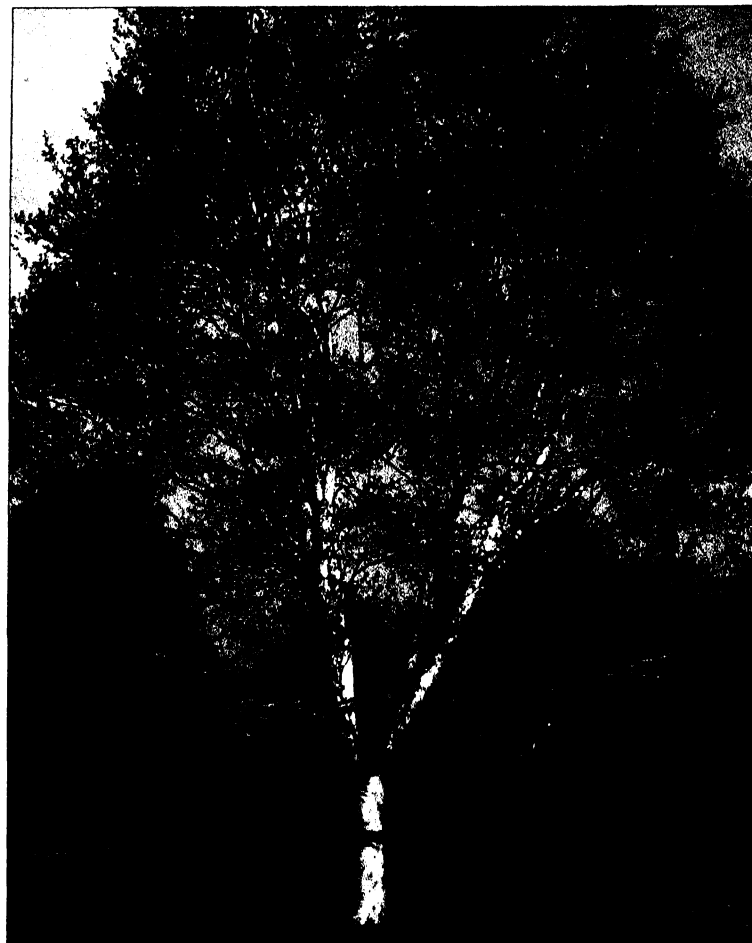
- **HARDINESS** Fully hardy; most are tolerant of very exposed positions.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or light dappled shade. *B. alleghaniensis*, *B. grossa*, *B. lenta*, and *B. maximowicziana* prefer sheltered, woodland conditions. Pruning group 1.
- **PROPAGATION** Sow seed, of known wild origin only (most seed from cultivated plants will produce hybrids), in a seedbed in autumn. Root softwood cuttings in summer, or graft in winter.
- **PESTS AND DISEASES** Birch borers, birch leaf mining sawfly, birch rust, aphids, honey fungus, and mildew may cause problems. Leaves may become chlorotic on poor, shallow, chalky soil.

*B. albosinensis* ■ ♀ △ (Chinese red birch). Conical tree with peeling, orange-brown or brown bark, cream when newly exposed, often covered with a white-glaucous bloom when young. Ovate, tapered, glossy leaves, to 7cm (3in) long, are deep green above, lighter beneath, turning yellow in autumn. Yellow-brown male catkins, to 6cm (2½in) long, open with the young leaves. † 25m (80ft), ↔ 10m (30ft). W. China. \*\*\*. var. *septentrionalis* ♀ has orange-brown bark and paler, dull leaves.

*B. alleghaniensis* △ syn. *B. lutea* (Yellow birch). Conical tree with peeling, yellow-brown bark. Ovate, matt, yellow-green leaves, to 14cm (5½in) long, become yellow in autumn and are borne on aromatic shoots. Yellow-brown male catkins, to 10cm



*Betula albosinensis*



*Betula ermanii*

(4in) long, are borne in early spring. † 25m (80ft), ↔ 10m (30ft). E. North America. \*\*\*

*B. costata* of gardens see *B. ermanii* 'Grayswood Hill'.

*B. ermanii* ■ △ (Erman's birch). Conical tree with rough, warty shoots and pinkish or creamy white bark with conspicuous lenticels. Ovate, tapered, dull, dark green leaves, 10cm (4in) long, are glandular beneath and turn yellow in autumn. Yellow-brown male catkins, to 10cm (4in) long, open as the young leaves emerge. † 20m (70ft), ↔ 12m (40ft). Russia (Kamchatka), Japan, Korea. \*\*\*. 'Grayswood Hill' ♀ syn. *B. costata* of gardens, is a vigorous clone, with pure white bark.

*B. grossa* △ (Japanese cherry birch). Conical tree with peeling, reddish grey

bark, becoming dark grey on mature plants. Ovate, sharply toothed, matt, dark green leaves, to 10cm (4in) long, are borne on aromatic shoots and turn golden yellow in autumn. Produces yellow-brown male catkins, to 8cm (3in) long, in early spring. † 25m (80ft), ↔ 10m (30ft). Japan. \*\*\*

*B. jacquemontii* see *B. utilis* var. *jacquemontii*.

*B. lenta* △ (Cherry birch, Sweet birch). Conical tree with dark red bark that becomes grey and scaly on mature trunks. Aromatic shoots bear ovate, matt, yellow-green leaves, to 10cm (4in) long, which turn yellow in autumn. Produces yellow-brown male catkins, to 8cm (3in) long, in early spring. † 15m (50ft), ↔ 12m (40ft). E. USA. \*\*\*

*B. lutea* see *B. alleghaniensis*.



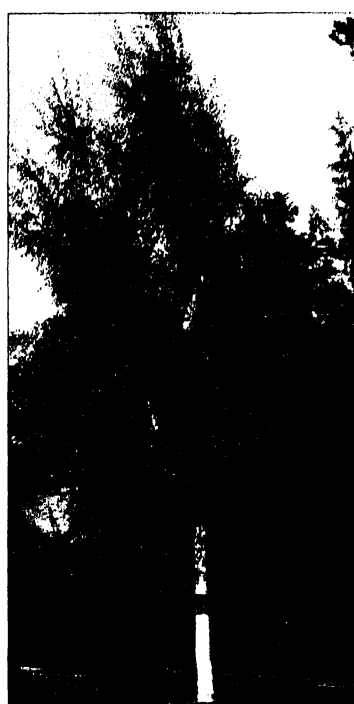
*Betula medwedewii*

*Betula nana*

***B. maximowicziana*** △ (Monarch birch). Broadly conical tree with pink-tinged, grey-white bark, peeling in horizontal strips, with conspicuous lenticels. Heart-shaped, deep green leaves, to 15cm (6in) long, turn yellow in autumn. Yellow-brown male catkins, to 12cm (5in) long, are produced in early spring. ‡ 25m (80ft), ↔ 12m (40ft). Japan, Kurile Islands. \*\*\*  
***B. medwedewii*** □ ♀ (Transcaucasian birch). Compact shrub with upright branches spreading with age and bearing conspicuous, pointed, glossy winter buds. Ovate, glossy, dark green leaves, to 10cm (4in) long, turn yellow to yellow-brown in autumn. Produces yellow-brown male catkins, to 10cm (4in) long, in spring. ‡ 5m (15ft). Caucasus. \*\*\*

*Betula papyrifera*

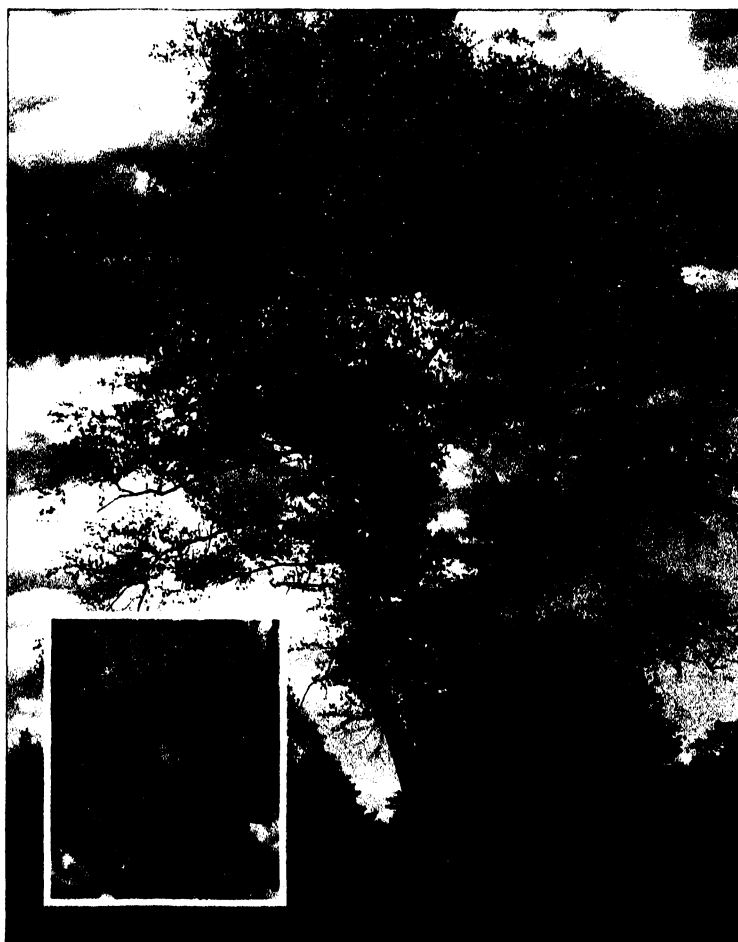
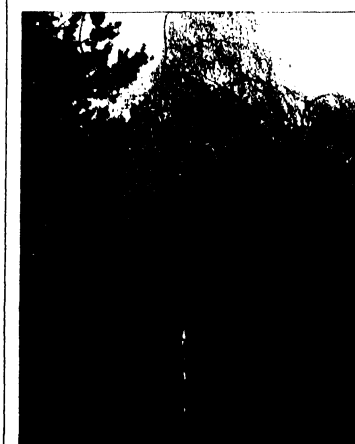
***B. nana*** □ (Arctic birch, Dwarf birch). Spreading shrub with rounded to kidney-shaped, finely toothed, glossy, mid-green leaves, to 2cm (¾in) long, turning yellow or red in autumn. Bears yellow-brown male catkins, to 1cm (½in) long, in spring. ‡ 60cm (24in), ↔ 1.2m (4ft). Subarctic N. America and Eurasia. \*\*\*  
***B. nigra*** □ ♀ △ (Black birch, River birch). Conical to spreading tree with shaggy, red-brown bark, peeling in layers when young, becoming blackish or grey-white and fissured on old trees. Diamond-shaped, glossy, mid- to dark green leaves, to 8cm (3in) long, glaucous beneath, turn yellow in autumn. Bears yellow-brown male catkins, to 8cm (3in) long, in early spring. ‡ 18m (60ft), ↔ 12m (40ft). E. USA. \*\*\*

*Betula pendula* 'Laciniata'

***B. papyrifera*** □ △ (Canoe birch, Paper birch). Conical tree with white bark, peeling in thin layers and pale orange-brown when newly exposed. Ovate, dark green leaves, to 10cm (4in) long, turn yellow to orange in autumn. Produces yellow male catkins, to 10cm (4in) long, in early spring. ‡ 20m (70ft) or more, ↔ 10m (30ft). North America. \*\*\*  
***B. pendula*** ♀ △ syn. *B. verrucosa* (Silver birch). Narrowly conical tree with pendent, warty branchlets and peeling white bark, which becomes marked with dark, rugged cracks at the base on older trees. Diamond-shaped, sharply toothed, mid-green leaves, to 6cm (2½in) long, turn yellow in autumn. Bears yellow-brown male catkins, to 6cm (2½in) long, in early spring. ‡ 25m (80ft), ↔ 10m (30ft). Europe, Russia (W. Siberia) \*\*\*. '**Dalecarlica**' of gardens see '**Laciniata**'. '**Fastigiata**' ♀ has upright branches; ‡ 20m (70ft), ↔ 6m (20ft). '**Golden Cloud**' has yellow foliage. Very hot sun may scorch the leaves; ‡ 6m (20ft), ↔ 5m (15ft). '**Laciniata**' □ ♀ syn. '**Dalecarlica**' of gardens, has very pendulous branchlets and deeply cut leaves. '**Purpurea**' has purple-tinged bark and dark purple leaves; ‡ 10m (30ft), ↔ 3m (10ft). '**Tristis**' □ ♀ has slender branchlets and bark remaining white at the base. '**Youngii**' □ ♀ △ (Young's weeping birch) is dome-shaped; ‡ 8m (25ft).  
***B. platyphylla* var. *japonica*** △ Narrowly conical tree with slightly pendent, warty branchlets, and bark creamy white to the base. Diamond-shaped, sharply toothed, yellowish green leaves, to 10cm (4in) long, are hairless beneath, and turn yellow in autumn. Bears yellow-brown male catkins, to 8cm (3in) long, in early spring. ‡ 20m (70ft), ↔ 12m (40ft). Japan. \*\*\*.  
**var. *szechuanica*** see *B. szechuanica*. '**Whitespire**' is conical, with chalk-white bark, and is somewhat resistant to birch borer.  
***B. populifolia*** △ (Grey birch). Narrowly conical, sometimes multi-stemmed tree,

*Betula pendula* 'Tristis'

which is fast-growing, but usually short-lived. Branchlets are pendent and warty, and the grey-white bark, remaining white at the base, does not peel. Diamond-shaped, sharply toothed, glossy, yellowish green leaves, to 10cm (4in) long, end in long, slender points, and turn yellow in autumn. Bears yellow-brown male catkins, to 8cm (3in) long, in early spring. ‡ 10m (30ft), ↔ 3m (10ft). E. North America. \*\*\*  
***B. pubescens*** △ (Downy birch). Narrowly conical tree with ascending branches, downy shoots, and peeling bark with conspicuous lenticels; bark remains white at the base. Diamond-shaped, sharply toothed, mid-green leaves, to 6cm (2½in) long, turn yellow in autumn. Produces pendent, yellow-brown male catkins, to 6cm (2½in) long, in early spring. Tolerates poor or wet, acid soils. ‡ 20m (70ft), ↔ 10m (30ft). Europe, N. Asia. \*\*\*  
***B. szechuanica*** △ syn. *B. platyphylla* var. *szechuanica* (Szechuan birch). Vigorous, conical tree with chalk-white bark when mature, and ovate, leathery, dark bluish green leaves, to 10cm (4in) long, turning golden yellow in autumn. Bears yellow-green male catkins, to 8cm

*Betula nigra* (inset: bark detail)*Betula pendula* 'Youngii'

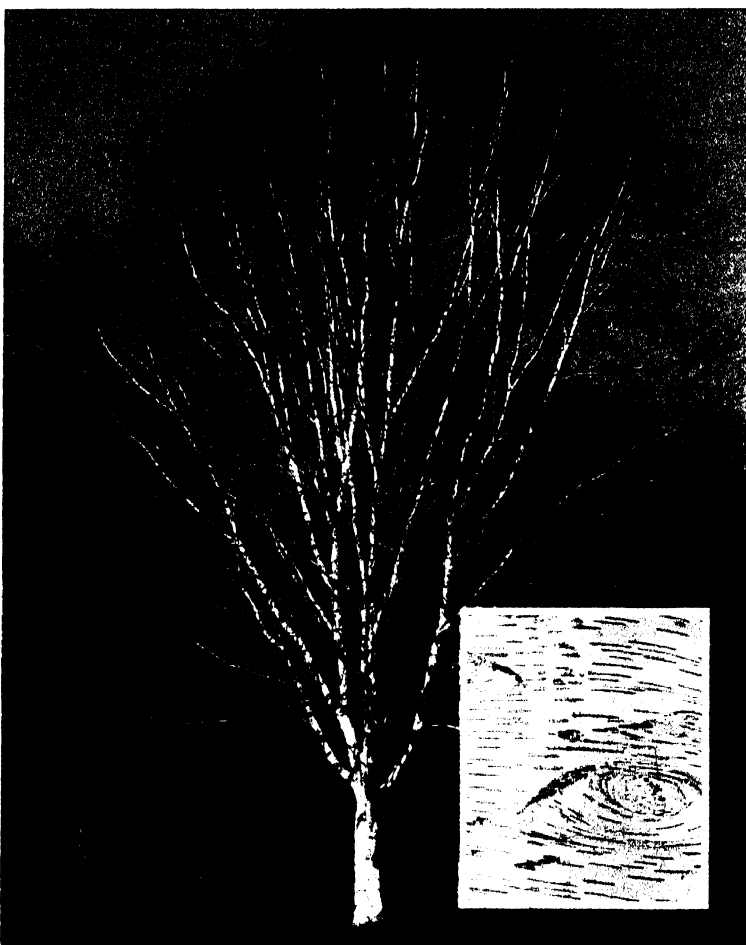


*Betula utilis* var. *jacquemontii* 'Jermyns'

(3in) long, in early spring. † 20m (70ft), ↔ 10m (30ft). S.W. China. \*\*\*

**B. 'Trost's Dwarf'**. Slender-stemmed shrub with gracefully arching branches and ovate, mid-green leaves, to 5cm (2in) long, finely cut and divided into long, slender lobes. Not known to produce catkins. †↔ 1.5m (5ft). \*\*\*

**B. utilis** △ (Himalayan birch). Variable tree with peeling, copper-brown or pinkish bark and ovate to oblong, tapered, dark green leaves, to 12cm (5in) long, that turn yellow in autumn. In early spring, produces yellow-brown male catkins, to 12cm (5in) long. † 18m (60ft), ↔ 10m (30ft). China, Himalayas. \*\*\*. Most often grown in one of the following forms. **var. jacquemontii** ♀ syn. *B. jacquemontii*, has white bark; Himalayas.



*Betula utilis* var. *jacquemontii* 'Silver Shadow' (inset: bark detail)

**var. jacquemontii** 'Grayswood Ghost' has brilliant white bark and very glossy leaves. **var. jacquemontii** 'Jermyns' □ is a vigorous clone, with pure white bark and larger catkins, 15cm (6in) or more long. **var. jacquemontii** 'Silver Shadow' □♀ has bright white bark and pendent, dark green leaves, to 13cm (5in) long.

**B. verrucosa** see *B. pendula*.

## BIARUM

ARACEAE

Genus of 15 species of small, tuberous perennials from open ground and maquis in the Mediterranean region and W. Asia. In autumn, they produce hooded, often malodorous spathe at ground level, followed by broadly ovate to spoon-shaped or lance-shaped leaves. They are best grown in a bulb frame or cold greenhouse, except *B. tenuifolium*, which may be grown outside at the base of a sunny wall, and increases rapidly.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Plant dormant tubers 5cm (2in) deep in summer. Under glass, grow in equal parts loam, leaf mould, and sharp sand or grit, in full light. Keep warm and dry when dormant in summer; water regularly but sparingly when in leaf. Tubers may rot if overwatered. *B. tenuifolium* may be grown outside in light, open, sharply drained soil in full sun.

• **PROPAGATION** Sow seed at 13°C (55°F) in autumn or spring, and prick out seedlings as soon as possible. Separate tubers in summer.

• **PESTS AND DISEASES** Trouble free.



*Biarum davisii*

**B. davisii** □ Tuberous perennial producing open flask-shaped, sweet-scented, pink-spotted cream spathe, 5–6cm (2–2½in) long, enclosing slightly protruding, reddish brown spadices, in autumn. Spathe is followed by ovate, wavy-margined leaves, 7cm (3in) long. † 7cm (3in), ↔ 5cm (2in). Crete, Turkey. \*\*

**B. eximium**. Tuberous perennial bearing almost prostrate, recurved, deep purple spathe, 10–15cm (4–6in) long, revealing nearly black spadices, in autumn. Spathe is followed by narrowly ovate leaves, 17cm (7in) long. † 8–10cm (3–4in), ↔ 5cm (2in). S. Turkey. \*\*

**B. tenuifolium**. Tuberous perennial bearing narrow, often twisted, purple-flushed, pale green spathe, to 10cm (4in) long, and nearly black spadices, in autumn. Spathe is followed by lance-shaped to spoon-shaped leaves, 5–20cm (2–8in) long. † 10–20cm (4–8in), ↔ 5cm (2in). Mediterranean. \*\*\*

## BIDENS

ASTERACEAE/COMPOSITAE

Genus of about 200 species of annuals, perennials, and deciduous shrubs occurring in grassland, wasteland, and among shrubs in Europe, tropical Africa, Asia, Australia, and temperate and tropical America. They have erect or spreading, opposite, simple or pinnate leaves, and flowerheads that are often terminal, or branched and cyme-like. Suitable for a container, hanging basket, gravel garden, or border. In frost-prone areas, grown as annuals.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in reasonably fertile, moist but well-drained soil in full sun. Under glass, container plants will flower from mid-spring through to winter if grown in frost-free conditions.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root stem cuttings of perennials in spring or autumn, or divide when growth begins in spring.

• **PESTS AND DISEASES** Trouble free.

**B. atrosanguinea** see *Cosmos atrosanguineus*.

**B. ferulifolia** □♀ Short-lived perennial, with 1- to 3-pinnate, fresh green leaves, to 8cm (3in) long, with lance-shaped leaflets. Slender, spreading stems produce daisy-like, golden yellow flowerheads, 3–4cm (1¼–1½in) across, from midsummer to autumn. † to 30cm



*Bidens ferulifolia*

(12in), ↔ indefinite. S. USA, Mexico.

\*\*\*. **'Golden Goddess'** has leaves with more slender segments and bears flowerheads 5cm (2in) across.

▷ **Bidi-bidi** see *Acaena*

▷ **Biennials** see pp.42–43

## BIGNONIA syn. DOXANTHA

Cross vine

BIGNONIACEAE

Genus of one species of evergreen climber from moist forest in warm-temperate or tropical regions of North America. It is grown for its cymes of 2–5 trumpet-shaped flowers. Train against a wall or over a pergola or tree; in frost-prone areas, grow in a cool greenhouse.

• **HARDINESS** Half hardy; will survive light frost if against a sheltered wall.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with good ventilation.

When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed at 18°C

(64°F) in spring. Root leaf-bud cuttings in a propagating case with bottom heat in summer. Layer in autumn or spring.

• **PESTS AND DISEASES** Prey to mealybugs and red spider mites under glass.

**B. capensis** see *Tecoma capensis*.

**B. capreolata**, syn. *Doxantha capreolata*. Vigorous climber with opposite leaves, to 18cm (7in) long, usually consisting of 2 oblong-ovate to lance-shaped, wavy-margined leaflets and one tendril. Bears orange-red flowers, 4–5cm (1½–2in) long, in summer. † 10m (30ft) or more. Canada (S. Ontario), E. USA. \*

**B. grandiflora** see *Campsis grandiflora*.

**B. jasminoides** see *Pandorea jasminoides*.

**B. pandorana** see *Pandorea pandorana*.

**B. radicans** see *Campsis radicans*.

**B. stans** see *Tecoma stans*.

**B. unguis-cati** see *Macfadyena unguis-cati*.

▷ **Big tree** see *Sequoiadendron giganteum*

▷ **Bilberry** see *Vaccinium*, *V. myrtillus*

**Dwarf** see *V. caespitosum*

▷ **Bilderdykia** see *Fallopia*

**B. aubertii** see *F. aubertii*

**B. baldschuanica** see *F. baldschuanica*

## BILLARDIERA

## PITTOSPORACEAE

Genus of 8 species of evergreen, twining, perennial climbers occurring at forest margins and in moist to dry scrub in temperate to subtropical regions of Australia. They are cultivated for their usually bell-shaped, 5-petalled flowers, produced on the current year's growth, either singly or in small clusters in the upper leaf axils, and for their beautifully coloured berries. Leaves are alternate, small, entire, and often lance-shaped. In frost-prone areas, grow in a cool greenhouse or conservatory; elsewhere, grow over a pergola, against a house wall, or allow to scramble over vigorous shrubs.

• **HARDINESS** Frost hardy to half hardy; survive short spells at 0°C (32°F) in sheltered sites, but may lose some leaves.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light. Water freely from spring to autumn, applying a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in late winter. Outdoors, grow in humus-rich, moist but well-drained, neutral to acid soil in a sunny or partially shaded, sheltered position. Pruning group 11; trim after flowering.

• **PROPAGATION** Sow seed at 13–15°C (55–59°F), ideally as soon as ripe in autumn, or in spring. Root softwood cuttings in early summer with bottom heat, or semi-ripe cuttings in late summer, both in a propagating case. Layer in autumn or spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*B. longiflora* ■ ♀ (Climbing blueberry. Purple apple berry). Slender, wiry-stemmed climber with linear-lance-shaped, deep green leaves, 1.5–4.5cm (½–1½in) long. In summer, produces solitary, pendent, narrowly bell-shaped, pale green flowers, 2–3cm (¾–1¼in) long, followed by oblong-ovoid berries, 2cm (¾in) long, usually deep purple-blue, but sometimes purple, red, pink, or white. ↑ 2–3m (6–10ft). Australia (New South Wales to Tasmania). \* \*

*B. scandens* (Common apple berry). Wiry-stemmed climber with ovate-lance-shaped, wavy-margined, deep green leaves, 1–5cm (½–2in) long. Solitary, bell-shaped, greenish yellow or violet to purple flowers, 1.5–2.5cm (½–1in) long, are produced mainly in



*Billardiera longiflora*

late spring and early summer, followed by ellipsoid, olive-green berries, 2–3cm (¾–1¼in) long, which are occasionally flushed red. ↑ 2–5m (6–15ft). E. Australia. \*

## BILLBERGIA

## BROMELIACEAE

Genus of about 60 species of rosette-forming, rhizomatous or suckering, evergreen, mainly epiphytic or rock-dwelling perennials (bromeliads) from scrub, woodland, and forest, up to an altitude of 1,700m (5,500ft), in S. Mexico, Central America, and N., E., and C. South America. They are cultivated for their erect or arching panicles or racemes of tubular, colourful but short-lived flowers. Many also have attractive leaves. In frost-prone areas, grow in a temperate greenhouse or as houseplants; in warm, humid areas, grow in a border.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow epiphytically or in containers of epiphytic bromeliad compost in bright indirect light. Keep the central funnel filled with fresh water. In growth, water freely and apply a well-balanced liquid fertilizer monthly; at other times, spray plants once a week with soft water. Outdoors, grow epiphytically or in humus-rich, sharply drained soil in partial shade. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Root offsets in summer.

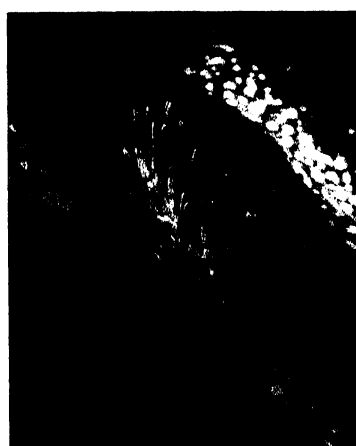
• **PESTS AND DISEASES** Scale insects may be troublesome.

*B. amoena*. Variable, rhizomatous bromeliad, generally epiphytic, with neat, tubular rosettes of 8–10 strap-shaped, mid-green, often white-spotted, sometimes red-flushed leaves, 30–60cm (12–24in) long. In summer, branched, arching, terminal inflorescences, 45cm (18in) long, with showy, deep red bracts, produce blue-tipped, green flowers, to 1.5cm (½in) long. ↑ to 60cm (24in), ↔ to 20cm (8in). E. Brazil. ☼ (min. 10°C/50°F)

*B. distachia*. Epiphytic bromeliad with short rhizomes and erect, cylindrical rosettes of 4 or 5 linear to lance-shaped, mid-green leaves, 25–90cm (10–36in) long, flushed purple, with short, widely spaced, marginal prickles. In summer, slightly arching panicles, 30cm (12in) long, bear short, lax branches of 7 or 8 green flowers, to 5cm (2in) long, with blue-tipped petals and sepals. ↑↔ 50cm (20in). E. Brazil. ☼ (min. 10°C/50°F)

*B. Fantasia Group* ■ ♀ (Marbled rainbow plant). Epiphytic bromeliads with urn-shaped rosettes of 6–8 narrowly lance-shaped, copper-green leaves, 30–45cm (12–18in) long, marbled creamy white and pink. Erect, white-felted, red-stalked inflorescences, to 40cm (16in) long, with red bracts, terminate in panicles, 12cm (5in) long, of violet-blue flowers, 6–8cm (2½–3in) long, in summer. ↑ 50cm (20in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

*B. nutans* ■ (Friendship plant, Queen's tears). Variable, epiphytic bromeliad with short rhizomes and narrowly funnel-shaped rosettes of 12–15 linear or strap-shaped, pointed, sometimes red-flushed, grey-green leaves, to 70cm



*Billbergia Fantasia Group*

(28in) long, with smooth or finely toothed margins. In summer, slender, short-branched, red-bracted flower stems, to 15cm (6in) long, bear panicles, to 5cm (2in) long, of flowers with pale green petals margined blue and tipped darker green, and reflexed, rose-pink sepals with greenish blue margins. ↑ 50cm (20in), ↔ indefinite. S. Brazil, Paraguay, N. Argentina, Uruguay. \* \*

*B. porteana*. Epiphytic bromeliad with short rhizomes and sturdy, tubular rosettes of 6–8 strap-shaped, grey-mottled, grey-green leaves, to 90cm (36in) long, with white cross-banding beneath and frequently spotted yellow. In summer, pendent, white-mealy racemes, to 40cm (16in) long, with papery red bracts, produce tubular, yellowish green flowers, 8cm (3in) long, with purple styles and stamens. ↑ 1m (3ft) or more, ↔ 50cm (20in). Brazil, Paraguay. ☼ (min. 10°C/50°F)

*B. pyramidalis* ■ ♀ Epiphytic bromeliad with tubular rosettes of 5–13 strap-shaped, minutely toothed, fresh green leaves, to 50cm (20in) long. Dense panicles of erect, pale red flowers, 1.5–2cm (½–¾in) long, with reflexed blue tips, are borne terminally on white-mealy flower stems, to 12cm (5in) long, in summer. ↑ 50cm (20in), ↔ 25cm (10in). Brazil. ☼ (min. 10°C/50°F)

*var. concolor* has deeper red flowers without any blue coloration.  
*B. rhodocyanea* see *Aechmea fasciata*.  
*B. vittata* ♀ Epiphytic bromeliad with tubular rosettes of 8–10 lance- to strap-shaped, olive-green or grey-green leaves, 40–90cm (16–36in) or more long, with reflexed, spiny tips and grey cross-



*Billbergia nutans*



*Billbergia pyramidalis*

banding. In summer, narrowly pyramidal, pendent, red- or orange-bracted inflorescences, to 75cm (30in) long, bear 20 or more flowers, to 6cm (2½in) long, with orange sepals, white or pale green petals, and dark blue tips. ↑ to 1m (3ft), ↔ 40cm (16in). S.E. Brazil. ☼ (min. 10°C/50°F)

*B. x windii* ♀ (*B. decora* x *B. nutans*). Epiphytic bromeliad with broadly tubular rosettes of about 10 narrowly strap-shaped, toothed, white-mealy, mid-green leaves, to 70cm (28in) long, banded grey beneath. In summer, arching inflorescences, to 45cm (18in) long, produce numerous tuberos, red-margined, purple-tipped, green flowers, to 5cm (2in) long, among bright rose-pink bracts. ↑ 50cm (20in), ↔ 25cm (10in) or more. Garden origin. ☼ (min. 10°C/50°F)

▷ **Billy buttons** see *Craspedia*

▷ **Bindweed** see *Convolvulus*

▷ **Biota orientalis** see *Thuja orientalis*

▷ **Birch** see *Betula*

Arctic see *B. nana*

Black see *B. nigra*

Canoe see *B. papyrifera*

Cherry see *B. lenta*

Chinese red see *B. albosinensis*

Downy see *B. pubescens*

Dwarf see *B. nana*

Ermann's see *B. ermannii*

Grey see *B. populifolia*

Himalayan see *B. utilis*

Japanese cherry see *B. grossa*

Monarch see *B. maximowicziana*

Paper see *B. papyrifera*

River see *B. nigra*

Silver see *B. pendula*

Sweet see *B. lenta*

Szechuan see *B. szechuanica*

Transcaucasian see *B. medwedewii*

Yellow see *B. alleghaniensis*

Young's weeping see *B. pendula*

'Youngii'

▷ **Bird catcher tree** see *Pisonia umbellifera*

▷ **Bird of paradise** see *Strelitzia*

▷ **Bird of paradise shrub** see

*Caesalpinia gilliesii*

▷ **Bird's eye** see *Gilia tricolor*

▷ **Bird's eye bush** see *Ochna*

▷ **Bird's nest** see *Sansevieria trifasciata* 'Hahnii'

▷ **Birth root** see *Trillium erectum*

▷ **Birthwort** see *Aristolochia clematidis*

▷ **Bishop's cap** see *Astrophytum myriostigma*, *Mitella*

▷ **Bishop's mitre** see *Epimedium*

▷ **Bishop's wort** see *Stachys officinalis*

- ▷ **Bistort** see *Persicaria amplexicaulis*, *P. bistorta*
- ▷ **Bistorta** see *Persicaria*
- ▷ **B. amplexicaulis** see *P. amplexicaulis*
- ▷ **Bittercress** see *Cardamine*
- ▷ **Trifoliate** see *C. trifolia*
- ▷ **Bitternut** see *Carya cordiformis*
- ▷ **Bitterroot** see *Lewisia rediviva*
- ▷ **Bittersweet** see *Celastrus*
- ▷ **American** see *C. scandens*
- ▷ **Climbing** see *C. scandens*
- ▷ **Oriental** see *C. orbiculatus*
- ▷ **Bitter vetch** see *Lathyrus linifolius* var. *montanus*
- ▷ **Bitterwort** see *Gentiana lutea*

## BIXA

### BIXACEAE

Genus of one species of evergreen tree from forest in tropical North and South America. It has alternate leaves and corymb-like panicles of dog-rose-like flowers, followed by bristly fruits. In frost-prone areas, grow *B. orellana* in a warm greenhouse or conservatory for its attractive fruit; in warmer climates, grow as a hedge or specimen tree, and for the seeds, which yield dye.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Water freely in growth, sparingly in winter. Outdoors, grow in fertile, well-drained, humus-rich loam in full sun. Clip hedges in early spring before new growth begins. Pruning group 8 or 9 under glass; group 1 when grown outdoors as a tree.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*B. orellana* ♀ (Achiote, Annatto, Lipstick tree). Intricately branched, evergreen tree with broad, ovate-heart-shaped, slender-pointed, smooth leaves, to 20cm (8in) long. From late summer to autumn, produces terminal panicles of 3–5 or more, open cup-shaped, 5-petaled, purple-tinted, white or pink flowers, to 5cm (2in) across, followed by ovoid, bristly, bright red or dark pink fruit, 5cm (2in) long, containing many dark red seeds. †7–10m (22–30ft), ↔ 3–5m (10–15ft), much less under glass. USA (Florida), West Indies, central and tropical South America. ☀ (min. 16–18°C/61–64°F)

- ▷ **Black-eyed Susan** see *Rudbeckia fulgida*, *R. hirta*, *Thunbergia alata*
- ▷ **Black pine**, **European** see *Pinus nigra*
- ▷ **Japanese** see *Pinus thunbergii*
- ▷ **Blackthorn** see *Prunus spinosa*
- ▷ **Blackwood** see *Acacia melanoxylon*
- ▷ **Bladdernut** see *Staphylea*, *S. pinnata*
- ▷ **Bladderpod** see *Physaria*
- ▷ **Bladderwort** see *Utricularia*

## BLANDFORDIA

Christmas bells

### BLANDFORDIACEAE/LILIACEAE

Genus of 4 species of rhizomatous perennials from swampy areas, acid heaths, and bogs on the Australian mainland and in Tasmania. They are cultivated for their racemes of showy, tubular flowers, produced in summer. The leaves are linear, sharp-pointed, and



*Blandfordia grandiflora*

grey-green. In frost-prone areas, grow in a cool or temperate greenhouse. In frost-free areas, grow in a rock garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, plant rhizomes 5cm (2in) deep in autumn, in clay pots filled with lime-free (ericaceous) potting compost with additional sharp sand. Provide full light and good ventilation. When in growth, water moderately and apply a balanced liquid fertilizer monthly; keep dry during winter dormancy. Outdoors, grow in well-drained, humus-rich, acidic soil in full sun.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Remove offsets after flowering.
- **PESTS AND DISEASES** Trouble free.

*B. grandiflora* ☀ Rhizomatous perennial with linear leaves, to 70cm (28in) long. In early summer, bears loose racemes of up to 10 red or red-and-yellow flowers, 4–6cm (1½–2½in) long. †60cm (24in), ↔ 15cm (6in). Australia. ☀ (min. 5°C/41°F)

*B. punicea* (Tasmanian Christmas bells). Rhizomatous perennial with linear leaves, to 35cm (14in) long. In summer, produces loose racemes of up to 25 flowers, 5cm (2in) long, pinkish red with yellow tips outside, yellow inside. †80–90cm (32–36in), ↔ 23cm (9in). Tasmania. ☀ (min. 5°C/41°F)

- ▷ **Blanket flower** see *Gaillardia*, *G. pulchella*
- ▷ **Blazing star** see *Liatris*, *Mentzelia lindleyi*

## BLECHNUM

Hard fern

### BLECHNACEAE

Genus of 150–200 species of usually evergreen, rhizomatous, terrestrial ferns found mostly in moist, sheltered, acid sites in temperate and tropical regions. The rhizomes are erect or creeping, often densely covered with black scales, and bear pinnate or pinnatifid, rarely simple, usually leathery fronds. Fertile fronds are generally erect, in the centres of the frond rosettes. Linear sori are arranged in 2 rows along the midrib of each frond lobe or segment. Some species form small "trunks". Grow in woodland, in a shady herbaceous border, or in a rock garden. In frost-prone areas, grow tender species in a warm greenhouse or conservatory.



*Blechnum gibbum*

- **HARDINESS** Fully hardy to frost tender. *B. discolor* survives to -10°C (14°F) with some protection.
- **CULTIVATION** Under glass, grow in a mix of 1 part each lime-free loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered or indirect light, and moderate to high humidity with good ventilation. Fronds discolour if air circulation is poor and, in a dry atmosphere, they may scorch in full sun. Water freely when in growth, moderately in winter. Outdoors, grow in moist, humus-rich, acid soil in humid, partial or deep shade.
- **PROPAGATION** Sow spores in late summer. Divide *B. penna-marina* and *B. spicant* in spring; divisions of other species take some time to re-establish. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*B. alpinum* see *B. penna-marina*.

*B. brasiliense*. Evergreen fern with upright, trunk-like rhizomes, to 30cm (12in) tall, and oblong-lance-shaped, pinnate, mid- to dark green fronds, 90cm (36in) tall, with finely toothed, linear pinnae. Fronds are reddish green when young. Similar to *B. gibbum*, but the fronds are narrower and the fertile fronds are similar to the sterile ones. †↔ 1–1.5m (3–5ft). Peru, Brazil. ☀ (min. 18°C/64°F)

*B. chilense*, syn. *B. cordatum*, *B. magellanicum*. Evergreen fern with a creeping rhizome, which may become erect and trunk-like. Ovate-lance-shaped, pinnate, dark green fronds, to 1m (3ft) long, have long, brown-scaly

stalks. Sterile fronds have oblong, toothed pinnae; fertile ones have linear-lance-shaped pinnae. Often confused with *B. tabulare*. †0.9–1.8m (3–6ft), ↔ indefinite. Chile, Argentina. \* \* \*

*B. cordatum* see *B. chilense*.

*B. discolor* (Crown fern). Evergreen fern with erect rhizomes, to 60cm (24in) tall, producing shuttlecocks of narrowly lance-shaped, lobed or pinnate to pinnatifid, glossy, dark green fronds, to 90cm (36in) long, in branching clusters. Sterile fronds have oblong pinnae and are whitish green beneath. Fertile fronds have ladder-like, narrow, linear pinnae, which are often wider and partially sterile towards the base of the fronds. Sometimes united with the closely related *B. nudum*. †↔ 0.3–1.2m (1–4ft). New Zealand. \* \*



*Blechnum penna-marina*

*Blechnum tabulare*

**B. gibbum** [■] syn. *Lomaria gibba*. Evergreen fern with upright, trunk-like rhizomes, to 90cm (36in) tall. Oblong-lance-shaped, pinnatisect, black-scaled, bright green fronds are usually 90cm (36in) long, but may reach 2m (6ft). Narrowly linear, entire lobes are erect, then spreading, each pair forming a V-shape along the frond. Sterile fronds have broader lobes than fertile ones. ↑→ to 90cm (36in) or more. Fiji. ☼ (min. 18°C/64°F)

**B. magellanicum** see *B. chilense*.

**B. nudum**. Evergreen fern with erect, occasionally trunk-like rhizomes, to 90cm (36in) tall, and lance-shaped-ovate, pinnate, mid- to dark green fronds. Sterile fronds are 40–100cm (16–39in) long, with narrowly linear pinnae. Fertile fronds are 20–70cm (8–28in) long, and are narrower, with more slender pinnae. Similar to *B. gibbum*, but pinnae are nearly perpendicular to the midribs. Sometimes united with the closely related *B. discolor*. ↑→ to 1m (3ft). Australia. \* \*

**B. penna-marina** [■] syn. *B. alpinum*. Evergreen fern with linear, pinnate or pinnatifid fronds arising in tufts from creeping rhizomes. Sterile fronds have oblong to triangular pinnae; fertile fronds have more widely spaced, narrowly linear to oblong pinnae. At least 2 variants are cultivated: one with glossy, dark green fronds, 20cm (8in) tall; the other smaller, 10–15cm (4–6in) tall, with matt, dark green fronds, which are reddish green when young. There is also a crested cultivar of the smaller form. ↑ 10–20cm (4–8in), ↔ indefinite. Australasia, S. South America. \* \* \*

**B. spicant** ♀ (Hard fern). Evergreen fern with short, creeping rhizomes. Produces tufts of narrowly lance-shaped, pinnate, sometimes partly pinnatifid, dark green sterile fronds, 20–50cm (8–20in) long, with oblong pinnae. As they age, sterile fronds spread semi-horizontally to form a rosette around the taller fertile fronds; these are 30–60cm (12–24in) long, and have very narrowly linear, well separated pinnae. ↑ 20–50cm (8–20in), ↔ 60cm (24in) or more. Europe, N. Asia, North America. \* \* \*

**B. tabulare** [■] ♀ Evergreen fern with erect rhizomes, to 60cm (24in) tall, and ovate, pinnate, dark green sterile fronds, 30–60cm (12–24in) long, with erect, then spreading, lance-shaped, paired pinnae, each pair forming a V-shape along the frond. Fertile fronds have linear, more closely set pinnae. ↑ to 1m

(3ft), ↔ 60–120cm (2–4ft). South Africa, Madagascar, Australia, Falkland Islands, West Indies. \* \*

▷ **Bleeding heart** see *Dicentra spectabilis*  
Wild see *D. formosa*

## BLETILLA

ORCHIDACEAE

Genus of 9 or 10 species of deciduous, terrestrial orchids occurring in cool to temperate regions of China, Taiwan, and Japan. They have short rhizomes that develop corm-like pseudobulbs, partially underground, each pseudobulb producing 3 or 4 linear to obovate, folded leaves. Upright, terminal racemes of up to 12 narrowly bell-shaped flowers are borne from spring to early summer. Grow outdoors in a woodland garden, peat bed, or lath house, or, where temperatures fall below 0°C (32°F), in an alpine house or a cold greenhouse.

• **HARDINESS** Half hardy to frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added leaf mould, in bright filtered or bright indirect light. In summer, water freely, applying a quarter-strength

*Bletilla striata*

balanced liquid fertilizer at every third watering. Keep dry in winter. Outdoors, grow in moist, well-drained, humus-rich soil in a sheltered site, with partial shade in summer. Mulch in winter, or lift and store dry and frost-free. See also p.46.

• **PROPAGATION** Divide in early spring.  
• **PESTS AND DISEASES** Red spider mites, aphids, whiteflies, and mealybugs may be troublesome.

**B. hyacinthina** see *B. striata*.

**B. striata** [■] syn. *B. hyacinthina*. Terrestrial orchid with flattened pseudobulbs and oblong-lance-shaped leaves, 30–45cm (12–18in) long. Produces magenta flowers, 2.5cm (1in) across, from spring to early summer. ↑→ 30–60cm (12–24in). China, Japan. \* **f. alba** has white flowers.

▷ **Blood flower** see *Asclepias curassavica*

▷ **Blood leaf** see *Iresine lindenii*

▷ **Bloodroot** see *Sanguinaria*

## BLOOMERIA

ALLIACEAE/LILIACEAE

Genus, related to *Allium* and *Brodiaea*, of 3 species of cormous perennials from scrub in North America. They have linear leaves with keeled tips and bear umbels of flattish, star-shaped flowers on leafless stems. Grow in a rock garden, on a raised bed, or in an alpine house.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant corms 8cm (3in) deep in autumn in light, fertile, sandy soil in full sun or partial shade. Provide ample water while in growth; keep dry in summer after flowering. Excessive moisture encourages corms to rot. Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets in autumn.

• **PESTS AND DISEASES** Trouble free.

**B. crocea**. Cormous perennial with linear leaves, 10–15cm (4–6in) long, that die down at flowering time. In late spring and early summer, bears large, lax, spherical umbels of deep golden yellow flowers, 1.5–2cm (½–¾in) across, with a green or purple midrib on each tepal. ↑ 15–30cm (6–12in), ↔ 8cm (3in). USA (California). \* \*

## BLOSSFELDIA

CACTACEAE

Genus, closely related to *Parodia*, of one species of miniature, perennial cactus from rocky hills in semi-desert regions of the Bolivian and Argentinian Andes. It has tuberous rootstocks and flattened-spherical stems, which frequently offset to form cushions. Spineless areoles are scattered across the ribless stems and, in summer, those close to the crown produce funnel-shaped, diurnal flowers. These are followed by spherical fruits containing tiny, brownish red seeds. In frost-prone areas, grow *B. liliputana* in a temperate greenhouse. In frost-free areas, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. When in growth, water moderately, applying half-strength, low-nitrogen fertilizer monthly; keep just moist from

*Blossfeldia liliputana*

mid-autumn to early spring. Excess moisture may encourage root rot. Outdoors, grow in gritty, loamy soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed in early spring, or remove offsets in late spring or early summer; keep both at 21°C (70°F).  
• **PESTS AND DISEASES** Susceptible to mealybugs.

**B. liliputana** [■] syn. *Parodia liliputana*. Cushion-forming cactus with greyish or dark green stems, 2cm (¾in) high, and minute, woolly grey areoles. Produces open funnel-shaped, yellowish white flowers, 1cm (½in) across, in summer. ↑ 3–5cm (1¼–2in), ↔ to 6cm (2½in). Bolivia, Argentina. ☼ (min. 17°C/63°F)

▷ **Bluebell** see *Hyacinthoides*

**Californian** see *Phacelia campanularia*

**English** see *Hyacinthoides non-scripta*

**New Zealand** see *Wahlenbergia albomarginata*

**Scottish** see *Campanula rotundifolia*

**Spanish** see *Hyacinthoides hispanica*

**Texan** see *Eustoma grandiflorum*

▷ **Bluebell creeper** see *Sollya heterophylla*

▷ **Blue bells** see *Mertensia pulmonarioides*

▷ **Blueberry** see *Vaccinium*

**Box** see *Vaccinium ovatum*

**Climbing** see *Billardiera longiflora*

**Creeping** see *Vaccinium crassifolium*

**Highbush** see *Vaccinium corymbosum*

**Lowbush** see *Vaccinium angustifolium* var. *laevifolium*

**Swamp** see *Vaccinium corymbosum*

▷ **Blueblossom** see *Ceanothus thyrsiflorus*

**Creeping** see *C. thyrsiflorus* var. *repens*

▷ **Bluebonnet, Texas** see *Lupinus texensis*

▷ **Blue-bottle** see *Centaurea cyanus*

▷ **Blue cohosh** see *Caulophyllum thalictroides*

▷ **Blue-eyed Mary** see *Omphalodes verna*

▷ **Blue-flowered torch** see *Tillandsia lindenii*

▷ **Blue lace flower** see *Trachymene coerulea*

▷ **Bluestem,**

**Big** see *Andropogon gerardii*

**Little** see *Schizachyrium scoparium*

▷ **Bluets** see *Hedyotis*

**Creeping** *H. michauxii*

▷ **Blushing bride** see *Serruria florida*

▷ **Bobie-bobie** see *Phebalium squameum*

▷ **Bocconia** see *Macleaya*

**B. cordata** see *M. cordata*



## BOENNINGHAUSENIA

RUTACEAE

Genus of one species of deciduous subshrub from woodland in the mountains of E. Asia. It is grown for its visually attractive, although unpleasantly scented leaves and its terminal panicles of small, delicate, 4-petalled flowers. Grow in a sheltered rock garden, in a shrub border, or against a warm wall.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in well-drained soil in full sun. In frost-prone areas, apply a deep winter mulch in autumn. Pruning group 6 in spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**B. albiflora.** Upright subshrub with alternate, 2- or 3-pinnate, dark green leaves, to 15cm (6in) long, consisting of 10–80 obovate leaflets. In late summer, produces cup-shaped, white or creamy white flowers, 1cm (½in) across, in panicles to 30cm (12in) long. ½–1m (3ft). Himalayas, China, Japan. \* \*

▷ **Boerboon, Weeping** see *Schotia brachypetala*

▷ **Bogbean** see *Menyanthes trifoliata*

▷ **Bog rosemary** see *Andromeda*

Common see *A. polifolia*

▷ **Bog star** see *Parnassia*

## BOLAX

APIACEAE/UMBELLIFERAE

Genus of 2 or 3 species of dense, cushion-forming, evergreen perennials, allied to *Azorella*, occurring in open, rocky areas of S. South America. They have tight rosettes of alternate, simple, very deeply 3-lobed leaves and umbels of insignificant, greenish white flowers. In the wild, they form large hummocks, to 60cm (24in) or more tall, by 1.2m (4ft) across, but seldom attain this size in cultivation. Grow as foliage plants in an alpine house, in a scree bed, or in tufa.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any very sharply drained soil in full sun.
- **PROPAGATION** Sow seed (although seldom produced) in containers in a cold frame as soon as ripe. Remove and pot up offsets in spring.
- **PESTS AND DISEASES** Susceptible to red spider mites and aphids under glass.



Bolax gummifera

**B. glebaria** see *B. gummifera*.

**B. gummifera** ■ syn. *Azorella glebaria*, *B. glebaria*. Slow-growing, compact perennial with rosettes of very deeply 3-lobed, leathery, dark blue-green leaves, to 6mm (¼in) long. The umbels, consisting of 3–20 tiny, greenish white flowers, borne in summer, are rarely produced. ½ to 5cm (2in), sometimes to 15cm (6in), ↔ to 15cm (6in), sometimes to 25cm (10in). S. Chile, S. Argentina, Falkland Islands. \* \* \*

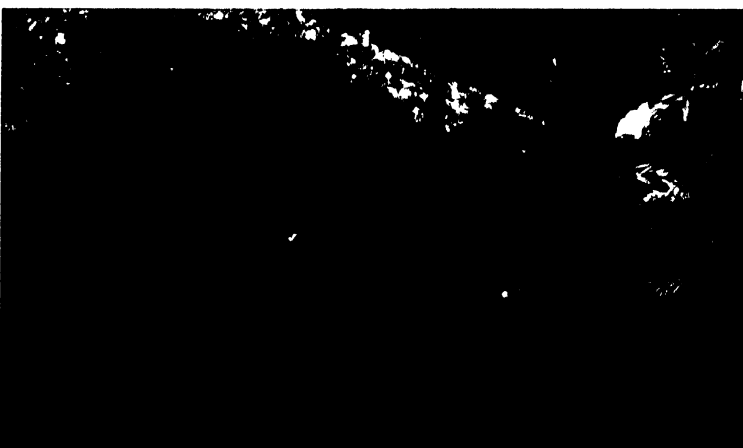
## BOLBITIS

LOMARIOPSIDACEAE

Genus of over 40 species of terrestrial, or almost scandent, epiphytic ferns usually found in flooded sites in tropical forest in Africa, Asia, and Central and South America. Creeping rhizomes produce entire and simple to pinnatifid or pinnate sterile fronds, often with plantlets near the tips. Fertile fronds are usually taller and narrower than sterile fronds, with black sporangia beneath. In frost-prone areas, they are best grown in the border of a warm greenhouse, to allow a free root run, but may also be grown in containers. In frost-free areas, grow in a bog garden or by a stream.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide low light and high humidity. Water freely when in growth, sparingly in winter. Outdoors, grow in moist, humus-rich soil in partial or deep shade, in a sheltered, humid site.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Root plantlets as soon as they appear. See also p.51.
- **PESTS AND DISEASES** Trouble free.

**B. heteroclita** ■ Variable, evergreen, rhizomatous, terrestrial or semi-epiphytic fern. Sterile, bright mid-green fronds, to 60cm (24in) or more long and usually elliptic, are simple, or pinnate with elliptic pinnae; most have a long, strongly developed, ovate-lance-shaped terminal segment, that produces a plantlet or roots down at the tip. Fertile fronds, 14–75cm (5½–30in) long, are usually pinnate, sometimes simple, with narrower pinnae than on sterile fronds; the lower surface is covered with felt-like sporangia. ½ to 1m (3ft), ↔ 60cm (24in) or more. Tropical Asia. ☉ (min. 16–21°C/61–70°F)



Bolbitis heteroclita



Boltonia asteroides

## BOLTONIA

ASTERACEAE/COMPOSITAE

Genus of about 8 species of perennials from sunny, moist sites in North America. Erect, hairless stems branch towards the apex and bear alternate, inversely lance-shaped to lance-shaped, stalkless, sometimes finely toothed, blue-green or mid-green leaves. Small flower-heads of white, lilac, or pinkish purple ray-florets and yellow disc-florets are borne in panicles. Grow in a border or wild garden, or for cut flowers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Divide every 2 or 3 years.
- **PROPAGATION** Sow seed in a cold frame in autumn. Divide in early spring.
- **PESTS AND DISEASES** Susceptible to mildew.

**B. asteroides** ■ Upright perennial with strong stems and inversely lance-shaped, finely toothed, slightly glaucous, blue-green leaves, 12cm (5in) long, becoming greener as they age. From late summer to mid-autumn, bears panicles, 10–15cm (4–6in) across, of flowerheads, 2cm (¾in) across, with white, lilac, or pinkish purple ray-florets. ½–2m (6ft), ↔ 1m (3ft). C. and E. USA. \* \* \*

**var. latistquama**, syn. *B. latistquama*, has flowerheads 2–3cm (¾–1¼in) across, with deep lilac-purple or white ray-florets. 'Snowbank' has pure white ray-florets; ½ to 1.5m (5ft).

**B. latistquama** see *B. asteroides* var. *latistquama*.

## BOLUSANTHUS

South African wisteria

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of deciduous tree from scrub and forest in Africa, grown mainly for its clustered racemes of brightly coloured, pea-like flowers. The alternate, pinnate leaves unfold after the flowers open. In frost-prone areas, grow *B. speciosus* in a cool greenhouse; it rarely flowers well in a container. In warmer regions, use as a specimen tree.

- **HARDINESS** Frost tender, but may survive short spells at 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water moderately and apply balanced liquid fertilizer monthly; keep just moist in winter. Top-dress in late winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

**B. speciosus** ♀ (Elephantwood). Spreading tree, briefly deciduous from late winter to spring, with silky-hairy, yellow-green leaves, to 15cm (6in) long, composed of 7–15 ovate-lance-shaped leaflets, maturing to glossy, pale green. Blue-violet flowers, 2cm (¾in) long, open in clustered racemes, to 25cm (10in) long, from late winter to spring. ½–4–6m (12–20ft), ↔ 2.5–4m (8–12ft). Angola, Zimbabwe, Mozambique, South Africa. ☉ (min. 5°C/41°F)

## BOMAREA

ALSTROEMERACEAE/LILIACEAE

Genus of about 120 species of tuberous-rooted, usually deciduous, rarely semi-evergreen, twining and scandent climbers from scrub and forest margins in Mexico and South America. Leaves are alternate or spiralling, simple, and generally narrow. Tubular to bell-shaped, 6-repalled flowers are borne in showy, terminal racemes or umbels. In frost-prone areas, grow in a cool greenhouse; elsewhere, use to clothe a pergola, arbour, or house wall. The naming of cultivated species is confused.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added sharp sand, in full light with shade from hot sun. Provide support. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in early spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Cut back dead growth and flowered stems to ground level in winter.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Divide established plants in late winter or in early spring as growth begins.
- **PESTS AND DISEASES** Prey to red spider mites, whiteflies, and aphids under glass.

**B. andimarcana**, syn. *B. pubigera* of gardens. Scandent, erect, deciduous climber with lance-shaped, white-downy leaves, 5–12cm (2–5in) long, which appear almost grey. Umbels of up to 10



*Bomarea caldasii*

pendent, tubular, pale yellow flowers, 4–5cm (1½–2in) long, suffused with light red and tipped with soft green, are produced intermittently from spring to autumn. ↑ 2–3m (6–10ft). Peru. \* \*

***B. caldasii*** [♀] syn. *B. kalbreyeri* of gardens. Erect, deciduous, twining climber with narrowly oblong, light to mid-green leaves, 7–15cm (3–6in) long. From late spring to autumn, bears almost spherical umbels of 40 or more narrowly funnel-shaped flowers, 4–5cm (1½–2in) long, brick-red to orange on the outside, orange to yellow inside, spotted red, brown, or green. ↑ 3–4m (10–12ft). Colombia to Ecuador. \*

***B. edulis***. Erect, deciduous, twining climber with lance-shaped, mid- to pale green leaves, 6–12cm (2½–5in) long, sometimes finely downy beneath. Loosely rounded umbels of 16–30 narrowly bell-shaped flowers, to 3.5cm (1½in) long, pink to light red on the outside, yellowish green flecked red inside, are produced from early summer to autumn. ↑ 2–3m (6–10ft). Mexico to Cuba, Peru. \* \* (borderline)

***B. kalbreyeri*** of gardens see *B. caldasii*. ***B. patacensis*** of gardens see *B. racemosa*.

***B. pubigera*** of gardens see *B. andimarcana*.

***B. racemosa***, syn. *B. patacensis* of gardens. Erect, red-stemmed, deciduous, twining climber with oblong-lance-shaped, mid-green leaves, to 13cm (5in) long, slightly hairy beneath. In summer, bears racemes of 40 or more narrowly bell-shaped, yellow-based, brown-spotted scarlet flowers, to 6cm (2½in) long. ↑ 3–5m (10–15ft). Colombia. \*

## BOMBAX

Silk cotton tree

BOMBACACEAE

Genus of 8 species of large, deciduous trees from moist tropical forest in Africa, Asia, and Australia. Alternate, fully divided, 3- to 7-palmate leaves, with stalked leaflets, unfold after the solitary, 5-petalled flowers open in spring. Oblong-ovoid fruit capsules, 15cm (6in) long, split to reveal silky seeds. In frost-prone areas, grow as foliage plants in a warm greenhouse (they seldom flower under glass). In warmer climates, grow as specimen trees and to provide shade.

• **HARDINESS** Frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light. From spring to summer,

*Bombax ceiba*

water freely and apply a balanced liquid fertilizer monthly; keep almost dry while leafless. Outdoors, grow in humus-rich, fertile soil in full sun, with plenty of moisture in the growing season. Pruning group 1; will tolerate hard pruning to restrict size under glass.

• **PROPAGATION** Sow seed at 21–25°C (70–77°F) in spring. Root semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

***B. ceiba*** [♂] syn. *B. malabaricum* (Red silk cotton tree). Erect to spreading tree with a spiny trunk when young and buttresses when mature. Rounded leaves, 30–50cm (12–20in) across, are divided into 3–7 obovate to lance-shaped leaflets. In spring, bears bright red flowers, 15cm (6in) across, with oblong-obovate, recurved, fleshy petals, each bloom with a dome-like brush of yellow-anthered stamens with pink filaments. ↑ to 25m (80ft), ↔ 12–15m (40–50ft). India to S.E. Asia, N. Australia. ☉ (min. 13°C/55°F)

***B. malabaricum*** see *B. ceiba*.

## BONGARDIA

BERBERIDACEAE

Genus of one species of tuberous perennial found in dry uplands from Greece and Turkey to Pakistan. It is grown for its curious, spreading, pinnate leaves and its sprays of 5-petalled yellow flowers. *B. chrysogonum* may be grown in a warm site in a rock garden and is also suitable for cultivation in a bulb frame or alpine house.

*Bongardia chrysogonum*

- **HARDINESS** Frost hardy.
- **CULTIVATION** Plant tubers 10–15cm (4–6in) deep in autumn in sharply drained, sandy soil in full sun. Water sparingly while in growth, and keep warm and dry when dormant. Tubers rot easily in wet conditions.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.
- **PESTS AND DISEASES** Trouble free

***B. chrysogonum*** [♂] Tuberous perennial with pinnate, red-zoned, mid-green leaves, to 20cm (8in) long, with obovate or wedge-shaped leaflets. Bears open-branched inflorescences of star-shaped yellow flowers, 1.5cm (½in) across, in spring. ↑ 20–50cm (8–20in), ↔ 15cm (6in). Greece, Turkey, C. Asia, Afghanistan, Pakistan. \* \*

▷ ***Bonifazia quezalteca*** see *Disocactus quezaltecus*

▷ **Boojum tree** see *Fouquieria columnaris*

▷ **Borage** see *Borago officinalis*

## BORAGO

BORAGINACEAE

Genus of 3 species of annuals and perennials from rocky places in W., C., and E. Europe, and the Mediterranean. They have hairy stems and simple, alternate, roughly hairy leaves. Nodding blue flowers are produced in branching cymes. *B. officinalis* is a useful plant for dry places. *B. pygmaea* grows well in gravel or in a rock garden. Both species self-seed freely.

• **HARDINESS** Fully hardy to frost hardy.

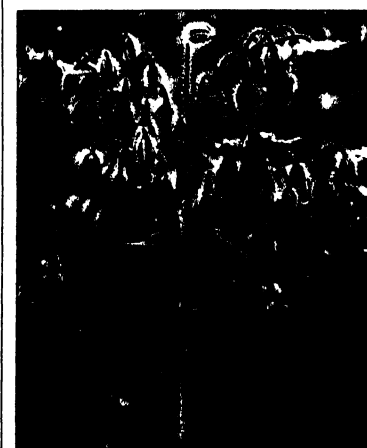
• **CULTIVATION** Grow *B. officinalis* in any reasonably drained soil in full sun or partial shade. Grow *B. pygmaea* in moist soil in partial shade.

• **PROPAGATION** Sow seed *in situ* in spring. Divide *B. pygmaea* in spring, or root cuttings of young sideshoots in summer, overwintering in a cold frame.

• **PESTS AND DISEASES** Susceptible to powdery mildew.

***B. laxiflora*** see *B. pygmaea*.

***B. officinalis*** [♂] (Borage). Robust, freely branching annual with lance-shaped to ovate, bristly, dull basal leaves and stalkless, lance-shaped stem leaves, to 15cm (6in) long. Branched cymes of 5-petalled, star-shaped, bright blue flowers, to 2.5cm (1in) across, are borne over a long period in summer. ↑ 60cm (24in), ↔ 45cm (18in). Europe. \* \* \*. ***f. alba*** bears white flowers.

*Borago officinalis*

***B. pygmaea***, syn. *B. laxiflora*. Short-lived, rosette-forming perennial with ovate to lance-shaped, mainly basal leaves, 5–20cm (2–8in) long, and branched, decumbent stems. Loose cymes of bell-shaped, clear pale blue flowers, 9–15mm (¾–½in) across, are produced from early summer to early autumn. ↑ to 60cm (24in). Corsica, Sardinia. \* \* \* (borderline)

## BORASSUS

ARECACEAE / PALMAE

Genus of 7 species of robust, single-stemmed palms occurring in forest and near rivers in Africa, Madagascar, Saudi Arabia, Kuwait to S.E. Asia, the Malaysian islands, New Guinea, and Australia. Fan-like leaves are arranged in dense, terminal heads, and panicles of 3-petalled flowers develop among them. In frost-prone areas, grow young plants for their foliage in a warm greenhouse. In frost-free areas, use as specimen trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in full light with shade from hot sun. In full growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun, with some midday shade when young.

• **PROPAGATION** Sow seed at 24–29°C (75–84°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

***B. flabellifer*** [♂] (Palmyra palm, Toddy palm, Wine palm). Tall palm

*Borassus flabellifer*

## BORASSUS

with a sturdy, mast-like stem, swollen at the base and often also about halfway up. Rounded to fan-shaped leaves, 2.5–3m (8–10ft) across, are composed of up to 80 slender, pointed, folded, rich green lobes. Bears cream flowers in panicles, to 1.5m (5ft) long, in spring or summer. † to 20m (70ft), ⇔ 5–6m (15–20ft). India, Sri Lanka, S.E. Asia, Malaysian islands, New Guinea. ☼ (min. 15–18°C/59–64°F)

## BORONIA

### RUTACEAE

Genus of about 95 species of evergreen shrubs from Australia, occurring on sandy heaths in scrub and light woodland. They are valued for their 4-petalled, cup- or bell-shaped, sometimes fragrant flowers, borne singly or in cymes or umbels. The opposite, lance-shaped to ovate, simple or compound leaves are often aromatic. In frost-prone areas, grow in a cool greenhouse and move outdoors during frost-free periods. In frost-free areas, grow in a border.

• **HARDINESS** Half hardy to frost tender; *B. megastigma* may survive short periods of light frost.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light with shade from hot sun. Provide good ventilation. When in growth, water moderately, applying phosphate-free liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in moist but well-drained, ideally sandy, neutral to acid soil in full sun or partial shade. *B. serrulata* prefers dappled shade; if grown in full sun, provide a cool root run. Pruning group 10, after flowering.

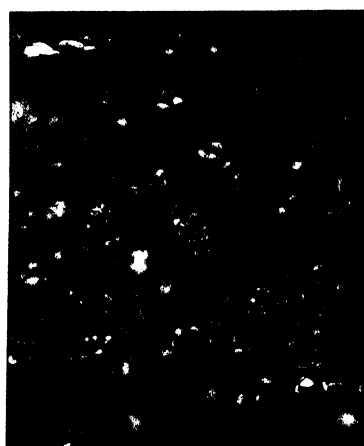
• **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings in a propagating case with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*B. megastigma* ■ (Brown boronia. Scented boronia). Erect, dense shrub with aromatic leaves, 2cm (¾in) long, composed of 3, rarely 5, linear, soft-textured, mid- to deep green leaflets. Solitary, fragrant, pendent, bell-shaped flowers, 1cm (½in) wide, yellow-green to dark or reddish brown outside, yellow to yellow-green inside, are borne from the upper leaf axils in spring. † 1–3m (3–10ft), ⇔ 1–2m (3–6ft). Australia (Western Australia). \* (borderline).



*Boronia megastigma*



*Boronia serrulata*

'Heaven Scent' has strongly scented, chocolate-brown flowers. 'Lutea' has strongly scented, clear greenish yellow flowers.

*B. serrulata* ■ (Sydney rock rose). Bushy, erect then spreading shrub with broadly ovate, simple, finely toothed, aromatic, rich green leaves, 2cm (¾in) long. From late winter to summer, bears usually profuse, dense, terminal cymes of bell-shaped, fragrant, rich purplish pink or occasionally white flowers, to 1.5cm (½in) across. † 45–90cm (18–36in), ⇔ 1–1.5m (3–5ft). Australia (New South Wales). ☼ (min. 5°C/41°F)

### ▷ *Boronia*,

**Brown** see *Boronia megastigma*  
**Scented** see *Boronia megastigma*

### ▷ *Borizacactus* see *Oreocereus*

*B. aurantiacus* see *O. aurantiacus*  
*B. celsianus* see *O. celsianus*

*B. haynei* see *O. haynei*

*B. leucotrichus* see *O. hempelianus*

### ▷ *Bothriochilus* see *Coelia*

*B. bellus* see *C. bella*

## BOTHRIOCHLOA

### GRAMINEAE/POACEAE

Genus of 30–40 species of spreading to erect, perennial grasses occurring in grassland in warm-temperate and tropical regions. The leaves are erect and lance-shaped, and the distinctive, finger-like, upright or ascending racemes vary from rich reddish purple to silver-grey. Suitable for a border. In frost-prone regions, grow as half-hardy annuals.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow in medium to light, well-drained soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide from mid-spring to early summer.

• **PESTS AND DISEASES** Trouble free.

*B. saccharoides* (Silver beard grass).

Tufted grass with upright then arching, lance-shaped, silver- or blue-grey leaves, to 1.2m (4ft) long. Produces softly hairy, silver-grey inflorescences, 15cm (6in) long, in dense, finger-like racemes in late summer and early autumn. † to 1.2m (4ft), ⇔ 60cm (24in). North America to Brazil. \*\*

### ▷ *Bo tree* see *Ficus religiosa*

### ▷ *Bottlebrush* see *Callistemon*

**Albany** see *Callistemon speciosus*

**Alpine** see *Callistemon pityoides*,  
*C. sieberi*

### ▷ *Bottlebrush* cont.

**Crimson** see *Callistemon citrinus*

**Granite** see *Melaleuca elliptica*

**Green** see *Callistemon viridiflorus*

**Lemon** see *Callistemon pallidus*

**Narrow-leaved** see *Callistemon linearis*

**Natal** see *Greyia sutherlandii*

**Pine** see *Callistemon pinifolius*

**Scarlet** see *Callistemon*

*macropunctatus*

**Stiff** see *Callistemon rigidus*

**Swamp** see *Beaufortia sparsa*

**Tonghi** see *Callistemon subulatus*

**Weeping** see *Callistemon viminalis*

**White** see *Callistemon salignus*

**Willow** see *Callistemon salignus*

### ▷ *Bottletree* see *Brachychiton*

## BOUGAINVILLEA

### NYCTAGINACEAE

Genus of 14 species of evergreen shrubs and trees, and evergreen or partly deciduous, sometimes thorny climbers, from forest and thickets in tropical and subtropical South America. They are grown for their small, tubular flowers, each surrounded by 3 colourful, petal-like bracts, borne in large, axillary and terminal clusters. The alternate leaves are mainly ovate, slender-pointed, and entire. In frost-prone areas, grow in a temperate greenhouse; elsewhere, use on a pergola, arbour, arch, or a house wall.

• **HARDINESS** Half hardy to frost tender.

*B. x buttiana*, *B. glabra*, and *B.*

*spectabilis* may survive short spells down to 0°C (32°F) if kept fairly dry in winter; some leaves may be lost.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. From spring to autumn, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in late winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 12: *B. x buttiana* and *B. glabra* in early spring; *B. spectabilis* after flowering.

• **PROPAGATION** Root softwood cuttings in early spring, or semi-ripe cuttings in summer, using a propagating case with bottom heat in frost-prone climates. In frost-free areas, root hardwood cuttings *in situ* in autumn. Layer in early autumn or spring.

• **PESTS AND DISEASES** Red spider mites, mealybugs, aphids, and whiteflies may be a problem under glass.

*B. 'Ailsa Lambe'* see *B. 'Mary Palmer'*.

*B. x buttiana* (*B. glabra* x *B. peruviana*).

Vigorous, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long, lighter below. Large clusters of strongly waved floral bracts, 3–5cm (1¼–2in) long, in shades of golden yellow, purple, or red, are produced mainly from summer to autumn. † 8–12m (25–40ft). Garden origin. \* (borderline). 'Apple Blossom' see 'Audrey Grey'. 'Audrey Grey', syn. 'Apple Blossom', 'Jamaica White', has large, rounded, dark green leaves, to 13cm (5in) long, and white bracts with pink-flushed margins.

'Bridal Bouquet' see 'Mahara Off-White'. 'California Gold' see 'Golden Glow'. 'Crimson Lake' see 'Mrs. Butt'. 'Golden Glow', syn. 'California Gold', 'Hawaiian Gold', has rich gold to pale yellow bracts. 'Hawaiian Gold' see 'Golden Glow'. 'Jamaica White' see

## BOUGAINVILLEA



*Bougainvillea glabra* 'Snow White'

'Audrey Grey'. 'Limberlost Beauty' see 'Mahara Off-White'. 'Mahara Off-White', syn. 'Bridal Bouquet', 'Limberlost Beauty', 'Tahitian Pink', has double, magenta-tipped white bracts. 'Mrs. Butt' ♀ syn. 'Crimson Lake', has crimson-shaded magenta bracts. 'Purple King' see 'Texas Dawn'. 'Robyn's Glory' see 'Texas Dawn'. 'Tahitian Pink' see 'Mahara Off-White'. 'Texas Dawn', syn. 'Purple King', 'Robyn's Glory', is a sport of 'Mrs. Butt', with light purplish pink bracts and long, stout thorns.

*B. glabra* ♀ Strong-growing, evergreen climber with elliptic, semi-glossy, mid- to deep green leaves, to 13cm (5in) long. Slightly wavy, white to magenta floral bracts, 4–6cm (1½–2½in) long, are borne mainly from summer to autumn. † 5–8m (15–25ft). Brazil. \* (borderline). 'Sanderiana' see 'Variegata'. 'Snow White' ■ has white bracts. 'Variegata' ■ syn. 'Sanderiana', has greyish green leaves margined with creamy white, and bright purple bracts. *B. 'Hawaiian Scarlet'* see *B. 'Scarlett O'Hara'*.

*B. 'Helen Johnson'* see *B. 'Temple Fire'*.



*Bougainvillea glabra* 'Variegata'



Bougainvillea 'Miss Manilla'

**B. 'Killie Campbell'** ♀ Vigorous, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long. Produces orange-bronze bracts, 3–5cm (1¼–2in) long, mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'La Jolla' of gardens.** Vigorous, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long, and bright red bracts, 3–5cm (1¼–2in) long, produced mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'Mary Palmer'**, syn. *B. 'Ailsa Lambe'*, *B. 'Snow Cap'*, *B. 'Surprise'*. Vigorous, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long; most leaves have a central yellow mark. Produces deep pink to white, or bicoloured bracts, 3–5cm (1¼–2in) long, mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'Miss Manilla'** □ syn. *B. 'Tango'*. Vigorous, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long. Produces pink bracts, 3–5cm (1¼–2in) long, mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'Raspberry Ice'** □ syn. *B. 'Tropical Rainbow'*. Vigorous, compact, evergreen climber with ovate, cream-margined, deep green leaves, 8cm (3in) long. Bears bright cerise bracts, 3–5cm (1¼–2in) long, mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'San Diego Red'** see *B. 'Scarlett O'Hara'*.

**B. 'Scarlett O'Hara'** □ syn. *B. 'Hawaiian Scarlet'*, *B. 'San Diego Red'*. Vigorous, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long. Produces bright scarlet-cerise bracts,



Bougainvillea 'Scarlett O'Hara'

3–5cm (1¼–2in) long, mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'Snow Cap'** see *B. 'Mary Palmer'*.

**B. 'spectabilis'**. Vigorous, evergreen or almost deciduous climber with stems bearing down-curving thorns and ovate, downy, mid-green leaves, 10cm (4in) long. Purple or pink bracts, 5–6cm (2–2½in) long, are produced from spring to summer. †7–12m (22–40ft). Brazil. \* (borderline). **'Lateritia'** produces brick-red bracts, 3–3.5cm (1¼–1½in) long.

**B. 'Surprise'** see *B. 'Mary Palmer'*.

**B. 'Tango'** see *B. 'Miss Manilla'*.

**B. 'Temple Fire'**, syn. *B. 'Helen Johnson'*, *B. 'Tom Thumb'*. Shrubby, evergreen climber with ovate, mid-green leaves, to 8cm (3in) long. Produces mauve-purple bracts, 3–5cm (1¼–2in) long, mainly from summer to autumn. †8–12m (25–40ft). \* (borderline)

**B. 'Tom Thumb'** see *B. 'Temple Fire'*.

**B. 'Tropical Rainbow'** see *B. 'Raspberry Ice'*.

▷ **Bouncing Bet** see *Saponaria officinalis*

▷ **Bourtree** see *Sambucus nigra*

▷ **Bougainvillia** see *Anredera*

*B. baselloides* of gardens see *A. cordifolia*

## BOUTELOUA

GRAMINEAE/POACEAE

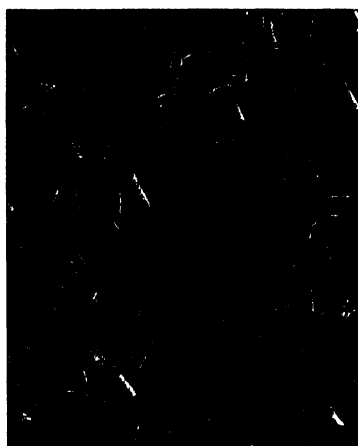
Genus of 24–30 species of deciduous, rhizomatous or stoloniferous, annual and perennial grasses, largely found in open grassland and prairies in North, Central, and South America. They are cultivated for their unusual ornamental inflorescences: the flowers are borne in branched panicles with flattened, horizontally held spikes, which are said to resemble mosquitoes. The leaves are linear, and flat or folded. Grow as specimen plants, or in groups in a mixed or herbaceous border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in medium to light, well-drained soil in full sun. Provide sharp drainage in areas where there is high winter rainfall; most species are intolerant of cold combined with winter wet. Cut back overwintered material in early spring, before new growth begins.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide clumps from mid-spring to early summer.

• **PESTS AND DISEASES** Trouble free.



Bouteloua gracilis

**B. gracilis** □ syn. *B. oligostachya*.

*Chondrosium gracile* (Blue grama, Mosquito grass, Signal-arm grass).

Clump-forming, perennial grass with short rhizomes and linear leaves, to 60cm (24in) long. In summer, produces panicles of 2–4 flower spikes, each with 40–90 tightly packed, brownish purple spikelets, to 5mm (¼in) long. † to 60cm (24in), ↔ 30cm (12in). S. and W. USA, Mexico. \*\*\*

**B. oligostachya** see *B. gracilis*.

## BOUVARDIA

RUBIACEAE

Genus of about 30 species of evergreen shrubs and perennials occurring in scrub, thickets, woodland, and forest margins from tropical and subtropical S. USA to South America. They are valued for their salverform flowers, with 4 petal lobes, borne singly or in cymes or corymbs. Ovate or lance-shaped to oblong leaves are opposite or in whorls of 3 or more. In frost-prone areas, grow in a cool greenhouse; elsewhere, grow at the base of a house wall, or in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in moist but well-drained, fertile soil in full sun with some midday shade. Pruning group 10, immediately after flowering.

• **PROPAGATION** Root softwood cuttings in spring, or semi-ripe cuttings in summer, in a propagating case with bottom heat.

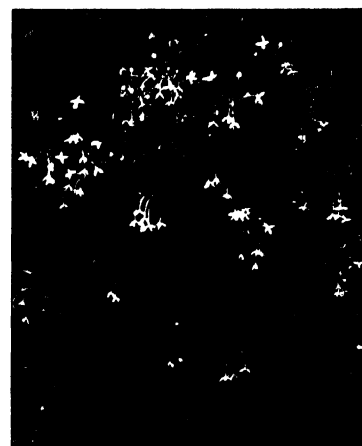
• **PESTS AND DISEASES** Whiteflies, mealybugs, and red spider mites may be troublesome under glass.

**B. humboldtii** see *B. longiflora*.

**B. longiflora** □ syn. *B. humboldtii*.

Erect to spreading, usually well-branched shrub with opposite, oblong to ovate leaves, to 4.5cm (1½in) long. Long-tubed, fragrant white flowers, to 9cm (3½in) long, are borne singly or in axillary or terminal corymbs from late summer to early winter. † 1m (3ft) or more, ↔ to 60cm (24in). Mexico. ☼ (min. 5°C/41°F)

**B. ternifolia** □ syn. *B. triphylla* (Scarlet trumpetilla). Variable, erect, moderately branched shrub with opposite or whorled, ovate to lance-shaped leaves,



Bouvardia longiflora



Bouvardia ternifolia

to 3cm (1¼in) long and softly hairy beneath. Bears dense, terminal corymbs of scarlet flowers, 3cm (1¼in) long, from late summer to winter. † 60–90cm (24–36in), ↔ 30–60cm (12–24in). USA (Texas), Mexico. ☼ (min. 5°C/41°F)

**B. triphylla** see *B. ternifolia*.

## BOWENIA

BOWENIACEAE/ZAMIACEAE

Genus of 2 species of evergreen perennials (cycads) from forest in Australia. They are cultivated for their long-stalked, 2-pinnate, fern-like, dark green leaves. The insignificant, cone-like flower spikes are produced at ground level. In frost-prone climates, grow bowenias as houseplants or in a warm greenhouse. In frost-free climates, grow at the base of a wall, or in a courtyard garden, sheltered from heavy rainfall.

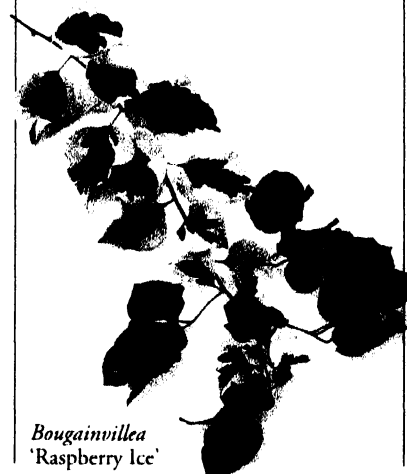
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts coarse bark, leaf mould, and sharp sand, in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained, humus-rich soil in full sun or partial shade.

• **PROPAGATION** Sow seed at 24–26°C (75–79°F) in spring.

• **PESTS AND DISEASES** Red spider mites and scale insects may be a problem under glass.

**B. spectabilis** (Byfield fern). Fern-like cycad with 2 subterranean, bulbous trunks topped at ground level by sparse,



Bougainvillea 'Raspberry Ice'

erect leaf rosettes, each leaf to 2m (6ft) long and composed of many obliquely ovate, entire, leathery, glossy, dark green leaflets. Produces ovoid to spherical green flowerheads in summer.  $\pm$  1–2m (3–6ft). Australia (Queensland).  $\bullet$  (min. 15–18°C/59–64°F)

▷ **Bower plant** see *Pandorea jasminoides*

## BOWIEA

HYACINTHACEAE/LILIACEAE

Genus of 2 or 3 species of perennial succulents occurring on low mountain-sides in E. Africa and South Africa. Slender, succulent shoots arise from scaly bulbs, which enlarge with age to 20cm (8in) or more across, and often become exposed above soil level. Each bulb initially produces 1 or 2 very short-lived, linear, basal leaves. Thin, thread-like, freely branching, scrambling or climbing stems are produced after the short-lived leaves have died. Diurnal, 6-petalled flowers are borne on short, fleshy stalks in terminal panicles, and are followed by ovoid, papery-coated fruits containing a few oblong, flattened, shiny black seeds. In frost-prone areas, grow bowieas in a warm greenhouse or as houseplants. In warmer climates, grow in a desert garden or in association with shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, plant the bulbs to one-quarter of their depth in standard cactus compost, in bright indirect light. When new growth is apparent, water sparingly; cease when the stems wither after flowering. Apply half-strength low-nitrogen fertilizer twice during the growing season. Outdoors, grow in sharply drained soil in full sun with some midday shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring.

• **PESTS AND DISEASES** Mealybugs and aphids may be troublesome.

**B. volubilis**  $\square$  Perennial succulent with a spherical brown bulb, which becomes pale green as it is exposed to light. Minute, linear leaves, 1mm ( $\frac{1}{16}$ in) long or less, soon disappear to be replaced by branching stems. Diurnal, star-shaped, greenish white flowers, 8mm ( $\frac{3}{8}$ in) across, are borne in twisting, terminal panicles in summer.  $\pm$  4m (12ft),  $\leftrightarrow$  indefinite. South Africa.  $\bullet$  (min. 13°C/55°F)



*Bowiea volubilis*

▷ **Bowman's root** see *Gillenia trifoliata*

▷ **Box** see *Buxus*

**Balearic** see *Buxus balearica*

**Brush** see *Lophostemon confertus*

**Christmas** see *Sarcococca*

**Common** see *Buxus sempervirens*

**Creeping** see *Mitchella repens*

**Himalayan** see *Buxus wallichiana*

**Red** see *Eucalyptus polyanthemus*

**Small-leaved** see *Buxus microphylla*

**Sweet** see *Sarcococca*

▷ **Box elder** see *Acer negundo*

▷ **Box thorn, Chinese** see *Lycium barbarum*

▷ **Boxwood** see *Buxus*

**African** see *Myrsine africana*

## BOYKINIA

SAXIFRAGACEAE

Genus of approximately 10 species of perennials with short rhizomes, occurring in moist woodland and mountainous areas of Japan and North America. They have alternate, rounded to kidney-shaped, mid- to dark green basal leaves, sometimes bronze-tinted when young, with long leaf-stalks, and shorter-stalked or unstalked stem leaves. Crimson or white, 5-petalled flowers are produced in lax, corymb-like panicles. Grow in a shady woodland garden or wild garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in lime-free, cool, moist, humus-rich soil in partial shade.

*B. jamesii* is best grown in an alpine house or in a crevice containing gritty but fertile, humus-rich, acid soil.

• **PROPAGATION** Sow seed in a cold frame as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**B. aconitifolia.** Clump-forming perennial with 5- to 7-lobed, glandular-hairy, mid-green leaves, 5–15cm (2–6in) long, with broadly toothed margins. In early and midsummer, bears shallowly bell-shaped white flowers, to 1cm ( $\frac{1}{2}$ in) across, with yellowish white centres.  $\pm$  15–60cm (6–24in),  $\leftrightarrow$  30cm (12in). E. USA. \*\*\*

**B. heucheriformis** see *B. jamesii*.

**B. jamesii**  $\square$  syn. *B. heucheriformis*, *Teleonix jamesii*. Mound-forming perennial with rosettes of slightly lobed, broadly toothed, glandular-hairy, mid-green leaves, 1–3cm ( $\frac{1}{2}$ –1 $\frac{1}{4}$ in) long. Bears open bell-shaped, frilled, pinkish red flowers, to 2cm ( $\frac{3}{4}$ in) across, with green centres, in mid- and late spring.  $\pm$  15cm (6in). USA (Colorado). \*\*\*



*Boykinia jamesii*

**B. major.** Clump-forming perennial with dark green leaves, 10–20cm (4–8in) long, with 5–7 coarsely cut lobes. Bears shallowly bell-shaped white flowers, 8–10mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) across, in midsummer.  $\pm$  60–90cm (24–36in),  $\leftrightarrow$  30cm (12in). W. USA. \*\*\*

**B. tellimoides** see *Peloboykinia tellimoides*.

▷ **Brachychilum** see *Hedychium*

**B. horsfieldii** see *H. horsfieldii*

## BRACHYCHITON

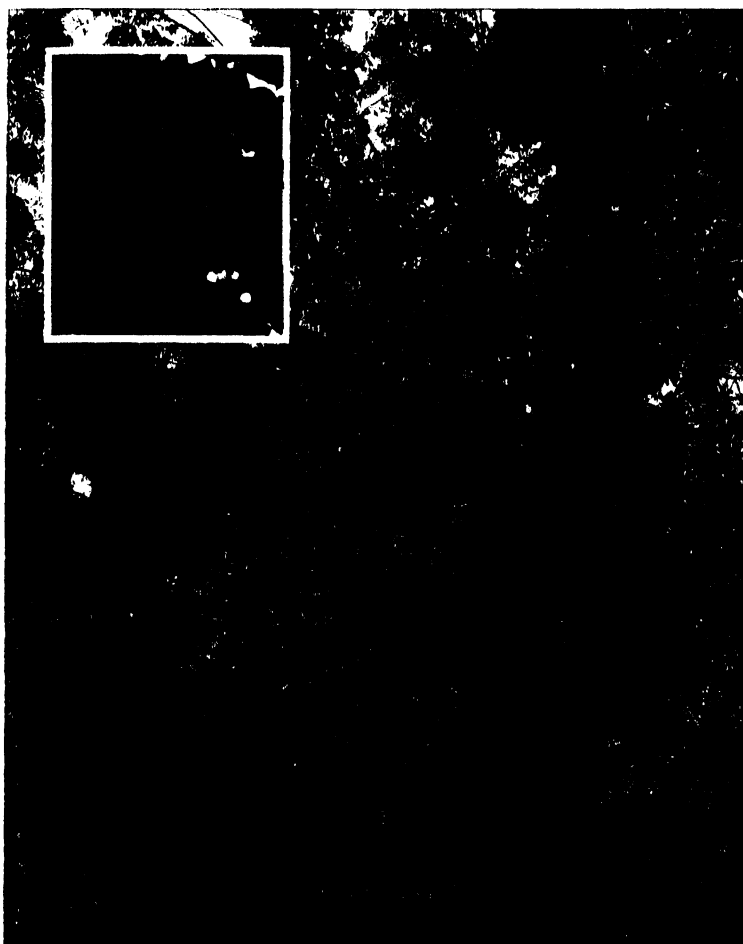
Bottle-tree, Kurrajong

STERCULIACEAE

Genus of about 30 species of evergreen or deciduous trees, some with bottle-shaped trunks, from seasonally dry to moist tropical forest in Australia and Papua New Guinea. The leaves are alternate and entire to shallowly or palmately lobed. Unisexual, petalless flowers have 5 or 6 sometimes colourful tepals and are profusely borne in axillary or terminal, panicle-like cymes. In frost-prone areas, grow in a temperate or warm greenhouse. Elsewhere, grow as flowering specimen or shade trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional sharp sand, in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in free-draining, fertile soil in full sun. Pruning group 1; need restrictive pruning under glass.



*Brachychiton acerifolius* (inset: leaf and flower detail)

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) as soon as ripe. Root semi-ripe cuttings in summer or hardwood cuttings in early autumn, both in a propagating case with bottom heat.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**B. acerifolius**  $\square$   $\diamond$  syn. *Sterculia acerifolia* (Flame kurrajong, Flame tree). Open-branched, evergreen or briefly deciduous tree with leathery, glossy, bright green leaves, 8–20cm (3–8in) long, which may be simple and ovate, or palmately 3- to 5-lobed, often on the same plant. Large, terminal, panicle-like cymes of bowl-shaped, bright coral-red flowers, 2cm ( $\frac{3}{4}$ in) across, are borne in summer, usually before the leaves.

$\pm$  15–35m (50–120ft),  $\leftrightarrow$  8–12m (25–40ft). Australia (Queensland, New South Wales).  $\bullet$  (min. 10°C/50°F)

**B. discolor**  $\square$   $\diamond$  (Kurrajong, Queensland lacebark). Erect, semi-evergreen to fully deciduous tree with spreading branches and a thick trunk with light grey bark. Long-stalked, broadly ovate, 3- to 7-lobed, hairy, matt, mid-green leaves, 10–20cm (4–8in) long, are white-woolly on the undersides. Dense, axillary, panicle-like cymes of bell-shaped, pink or red flowers, 5cm (2in) wide, are borne from early summer to autumn.  $\pm$  10–30m (30–100ft),  $\leftrightarrow$  5–15m (15–50ft). Australia (Queensland, New South Wales).  $\bullet$  (min. 10°C/50°F)

**B. populneus**  $\diamond$  syn. *Sterculia diversifolia* (Kurrajong). Broadly ovoid, densely branched, evergreen tree with ovate, lustrous, dark green leaves, 4–12cm

*Brachychiton discolor*

(1½–5in) long, varying from entire to 3- to 5-lobed on the same plant. In summer, produces terminal and axillary, panicle-like cymes of saucer-shaped, green, cream, or pink flowers, to 1.5cm (½in) across, spotted with brown or red and with spreading lobes. † 6–20m (20–70ft), ↔ 3–6m (10–20ft). Australia (Northern Territory, Queensland to Victoria). ☼ (min. 10°C/50°F)

▷ *Brachycome* see *Brachyscome*

## BRACHYLOTTIS

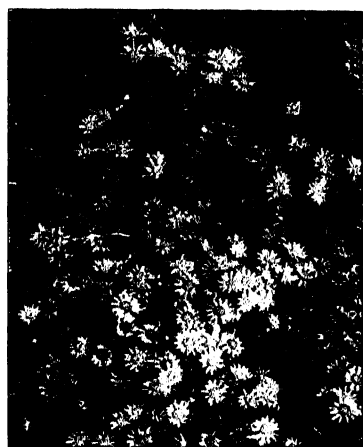
ASTERACEAE/COMPOSITAE

Genus of about 30 species of evergreen trees and shrubs, herbaceous perennials, and climbers, including several shrubby species once listed under *Senecio*, found in rocky places, scrub, grassland, and forest in New Zealand and Tasmania. They are cultivated for their attractive foliage and flowers: the alternate leaves are often dark green, frequently white- or buff-felted beneath; the daisy-like flowerheads, often with conspicuous ray-florets, are usually borne in racemes, corymbs, or panicles, rarely singly, in summer or autumn. Many are suitable for a shrub border, and the dwarfier species are ideal for a rock garden. Most thrive in coastal sites, where some are effective as hedges or as windbreaks.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in well-drained soil in full sun. Grow *B. hectoris* in fertile, moist soil in partial shade. Pruning group 8, if necessary.
- **PROPAGATION** Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*B. bidwillii*, syn. *Senecio bidwillii*. Slow-growing, compact shrub with stout shoots and elliptic-oblong to obovate-oblong, leathery leaves, to 2.5cm (1in) long, glossy, dark green above and densely white-felted beneath. In summer, produces small, rayless white flowerheads in panicles to 5cm (2in) across. † 1m (3ft), ↔ 1.2m (4ft). New Zealand (North Island). \*\*

*B. compacta*, syn. *Senecio compactus*. Compact, mound-forming shrub with obovate to oblong, wavy-margined, white-hairy leaves, to 4cm (1½in) long, becoming hairless and dull, dark green above. In summer, bright yellow flowerheads, 3cm (1¼in) across, with conspicuous ray-florets, are borne in

*Brachyglottis* Dunedin Hybrids 'Sunshine'

few-flowered racemes or singly. † 1m (3ft), ↔ 2m (6ft). New Zealand (North Island). \*\*

*B. Dunedin Hybrids*, syn. *Senecio Dunedin Hybrids*, *S. laxifolius* of gardens, *S. greyi* of gardens. Spreading, bushy, mound-forming shrubs with obovate to elliptic, often wavy-margined, white-hairy, later hairless, mid- to dark green leaves, to 7cm (3in) long. Bears loose, terminal panicles of bright yellow flowerheads, to 3cm (1¼in) across, with conspicuous ray-florets, from summer to autumn. † 1.5m (5ft), ↔ 2m (6ft) or more. \*\*\*

'*Moiria Read*', syn. *Senecio 'Moiria Read'*, has elliptic, shallowly scalloped leaves, to 5cm (2in) long, initially white-hairy, then dark green, with irregular yellow variegation above; \*\*. '*Sunshine*' ☼ ♀ syn. *Senecio 'Sunshine'*, has elliptic, white-hairy leaves with shallowly scalloped margins, becoming dark green above.

*B. elaeagnifolia* ☼ syn. *Senecio elaeagnifolius*. Vigorous, compact shrub with obovate to narrowly oblong, leathery, glossy, dark green leaves, to 9cm (3½in) long, distinctly veined and hairless above, white-felted below. Bears panicles, to 15cm (6in) across, of rayless yellow flowerheads, 1cm (½in) across, in summer. † 3m (10ft), ↔ 5m (15ft). New Zealand (North Island). \*\*

*B. greyi*, syn. *Senecio greyi*. Open, mound-forming shrub with ovate-oblong, shallowly scalloped leaves, to 8cm (3in) long, white-hairy at first, dark green above when mature. Bright yellow flowerheads, 3cm (1¼in) across, with

*Brachyglottis elaeagnifolia**Brachyglottis repanda*

conspicuous ray-florets, are produced in large, terminal corymbs from summer to early autumn. † 2m (6ft), ↔ 3m (10ft). New Zealand (North Island). \*\*

*B. hectoris*, syn. *Senecio hectoris*. Open, upright, semi-evergreen shrub with obovate, mid-green leaves, to 25cm (10in) long, lobed at the bases. Produces white flowerheads, 5cm (2in) across, with yellow disc-florets, in lax, terminal corymbs in midsummer. † 4m (12ft), ↔ 3m (10ft). New Zealand (South Island). \*\*

*B. huntii* ☐ syn. *Senecio huntii*. Upright-branched shrub or sometimes small tree with densely clustered, elliptic-oblong, mid-green leaves, to 10cm (4in) long. Yellow flowerheads, 2cm (¾in) across, with conspicuous ray-florets, are borne in panicles, to 12cm (5in) across, in summer. † 5m (15ft), ↔ 4m (12ft). New Zealand (Chatham Islands). \*\*

*B. laxifolia*, syn. *Senecio laxifolius*. Laxly branched, mound-forming shrub with elliptic, entire or slightly scalloped leaves, to 6cm (2½in) long, white-hairy at first, becoming hairless and dark green above. Vivid yellow flowerheads, 2cm (¾in) across, with conspicuous ray-florets, are borne in loose panicles from summer to autumn. † 1m (3ft), ↔ 2m (6ft). New Zealand (South Island). \*\*

*B. monroi*, syn. *Senecio monroi*. Dense, many-branched shrub with obovate-oblong, leathery, olive-green leaves, to 4cm (1½in) long, tightly crisped at the margins, white beneath. In summer, produces yellow flowerheads, 2cm (¾in) across, with conspicuous ray-florets, in terminal corymbs. † 1m (3ft), ↔ 2m (6ft). New Zealand (South Island). \*\*\*

*B. repanda* ☼ Spreading shrub with broadly oblong to ovate-oblong, wavy-margined, dark green leaves, to 25cm (10in) long, buff- or white-hairy beneath. Fragrant, creamy white flowerheads, 5mm (¼in) across, are produced in arching panicles, to 30cm (12in) long, in summer. † 3m (10ft), ↔ 3m (10ft) or more. New Zealand. \*

*B. rotundifolia* ☐ syn. *Senecio reinholdii*, *S. rotundifolius*. Compact shrub or small tree with ovate, leathery, glossy, dark green leaves, to 10cm (4in) long, buff- or white-felted beneath. In early and midsummer, bears rayless yellow flowerheads, 1cm (½in) wide, in panicles to 20cm (8in) across. † 1m (3ft). New Zealand (South Island). \*\*

## BRACHYSCOME

syn. BRACHYCOME

Swan river daisy

ASTERACEAE/COMPOSITAE

Genus of 60–70 species of annuals and deciduous and evergreen, often short-lived perennials, from damp grassland, bogs, and rocky habitats in alpine and subalpine areas of Australia, Tasmania, New Zealand, and New Guinea. They have very variable, often finely divided foliage, and produce masses of daisy-like flowerheads, with yellow disc-florets and usually purple, blue, or white ray-florets. Grow annuals in a border, in containers, for edging, or as bedding plants; use perennials in a rock garden. In frost-prone areas, grow half-hardy and frost-tender species in a cool greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) in full light. During the growing season, water freely and apply a balanced liquid fertilizer twice; keep moist in winter. Pinch out growing tips of young plants. Outdoors, grow in fertile, well-drained soil in a sheltered site in full sun.

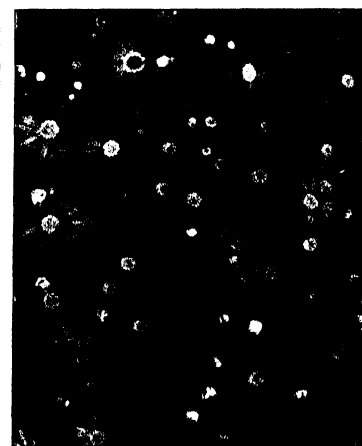
• **PROPAGATION** For annuals, sow seed at 18°C (64°F) in spring. For perennials, root basal cuttings in spring, or sow seed at 18°C (64°F) in spring or autumn, overwintering young plants under glass.

- **PESTS AND DISEASES** Slugs and snails may be a problem.

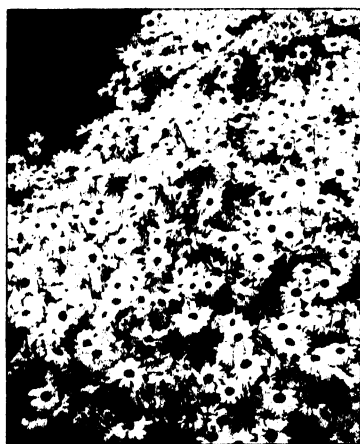
*B. aculeata*. Very variable, tufted, clump-forming, erect perennial with basal rosettes of spoon-shaped, mid-green leaves, 5–10cm (2–4in) long, and linear stem leaves, 2cm (¾in) long. Solitary, pale violet or white flowerheads, 2–2.5cm (¾–1in) across, are borne from midsummer to mid-autumn. † 15–65cm (6–26in), ↔ to 60cm (24in). Australia. \*\*

*B. angustifolia*. Prostrate to clump-forming, rhizomatous perennial with linear-elliptic to elliptic, entire or slightly lobed, mid-green, basal leaves, to 6cm (2½in) long. Bears solitary, blue, mauve, or pink flowerheads, to 2cm (¾in) across, from early spring to late summer. † 35cm (14in), ↔ 60cm (24in). Australia. \*\* var. *heterophylla* has pinnatisect leaves.

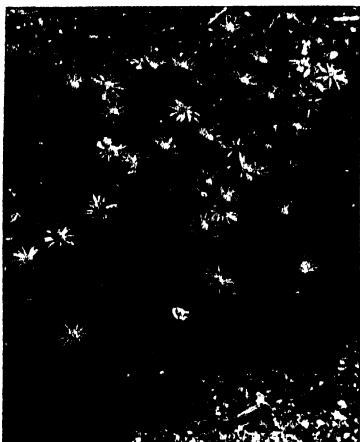
*B. iberidifolia* ☼ (Swan river daisy). Bushy or spreading, relatively drought-tolerant annual with pinnatisect, softly downy, grey-green leaves, to 14cm

*Brachyscome iberidifolia*

B



*Brachyscome iberidifolia* Splendour Series 'White Splendour'



*Brachyscome multifida* 'Break O'Day'

(5½in) long. Bears fragrant, usually blue-purple, sometimes violet-pink or white flowerheads, to 4cm (1½in) across, in summer. † to 45cm (18in). ↔ 35cm (14in). W. and S. Australia. \*  
Cultivars of **Splendour Series** have black-eyed, white, lilac-pink, or purple flowerheads; † to 30cm (12in). 'White Splendour' ■ has white flowerheads. *B. multifida* (Rock daisy). Spreading, wiry annual with finely pinnatisect or 2-pinnatisect, bright green leaves, to 7cm (3in) long. From midsummer to mid-autumn, bears solitary, blue, pink, purple, mauve, or white flowerheads, 2cm (¾in) across. † to 45cm (18in). S.E. Australia. \* 'Break O'Day' ■ has purple-pink flowerheads. 'Lemon Mist' has soft pale yellow flowerheads.

*B. nivalis*. Variable, rosette-forming, loosely tufted, rhizomatous perennial bearing irregularly pinnatisect, mid-green leaves, 5–10cm (2–4in) long. Solitary white flowerheads, 3–4.5cm (1¼–1¾in) across, are produced in summer. † to 20–30cm (8–12in), ↔ to 30cm (12in). Dry, rocky areas in Australia. \*\* *var. alpina*, syn. *B. tadgellii*, has spoon-shaped leaves, and grows in marshy, boggy areas. *B. rigidula*. Mound-forming, tufted, evergreen perennial with erect, branching stems and crowded, finely cut, mid-green leaves, 1–3cm (½–1¼in) long. Produces short-stemmed, pale to deep lavender-blue or purple-blue flowerheads, to 2.5cm (1in) across, from late spring to early autumn. † 15cm (6in), ↔ to 20cm (8in). E. Australia, including Tasmania. \*\*

*B. tadgellii* see *B. nivalis* var. *alpina*.

## BRACHYSEMA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 16 species of evergreen shrubs from sandy heaths, scrub, and light woodland in Australia. Alternate or opposite leaves are simple or reduced to scales or green stems. Inverted pea-like flowers are borne singly or in axillary clusters. In frost-prone areas, grow in a cool greenhouse. Elsewhere, grow in a shrub border or against a warm wall; use prostrate species for ground cover.

• **HARDINESS** Frost tender; may survive brief spells around 0°C (32°F).

• **CULTIVATION** Under glass, grow in loamless potting compost in full light. When in growth, water moderately and apply a low-phosphate liquid fertilizer monthly; water sparingly in winter.

Outdoors, grow in poor to moderately fertile soil, low in phosphates, in full sun. Pruning group 8. Tip prune unflowered shoots in late winter, to encourage a bushy habit.

• **PROPAGATION** Sow seed at 13–15°C (55–59°F) in spring, after scarifying or soaking in hot water. Root semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*B. acuminatum* see *B. celsianum*.

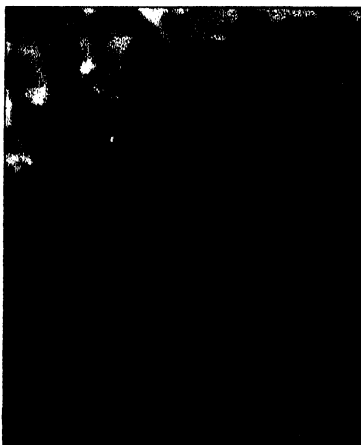
*B. celsianum*, syn. *B. acuminatum*, *B. lanceolatum* (Swan river pea). Bushy, prostrate or semi-scandent, drought-tolerant shrub with usually opposite, lance-shaped leaves, to 10cm (4in) long, deep greyish green above, silver-hairy beneath. Produces red flowers, 2.5cm (1in) long, with silver-hairy calyces, either singly or in clusters of 2 or 3. Blooms over long periods, mainly from winter to spring. † 0.3–1.5m (1–5ft), ↔ 1–2m (3–6ft). Australia (Western Australia). ♀ (min. 5°C/41°F)

*B. lanceolatum* see *B. celsianum*.

## BRACHYSTELMA

ASCLEPIADACEAE

Genus of about 50 species of perennial succulents from semi-arid areas of Africa and India. Most have fleshy, tuberous rootstocks and prostrate or erect, simple or branching stems with opposite, variably shaped leaves. In summer, star-shaped, 5-lobed flowers are borne singly, in pairs, or in few- to many-flowered, lateral or terminal umbels. In frost-prone areas, grow in a temperate



*Brachystelma barberae*



*Brachystelma foetidum*

greenhouse. In frost-free areas, grow in a desert garden or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in equal parts loam, leaf mould, and sharp sand in bright filtered light. In growth, water moderately and apply half-strength, low-nitrogen fertilizer 2 or 3 times; keep dry at other times.

Overwatering, particularly in winter, may encourage root rot. Outdoors, grow in gritty, humus-rich, sharply drained soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in late spring, keeping the soil barely moist.

• **PESTS AND DISEASES** Mealybugs and root mealybugs may be a problem.

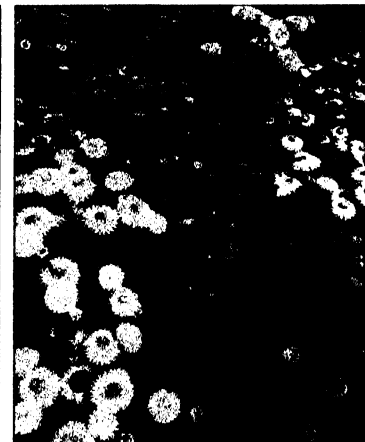
*B. barberae* ■ Very short-stemmed succulent with an ovoid-spherical rootstock, a flat, fleshy caudex, and linear, pointed, dark green leaves, 7–10cm (3–4in) or more long. In summer, bears spherical umbels, 10–12cm (4–5in) across, of 6 or more, yellow-centred, brownish purple flowers, 3cm (1¼in) across, with 3-angled lobes united at their tips. † 10cm (4in), ↔ 14cm (5½in). South Africa (Eastern Cape). ♀ (min. 10°C/50°F)

*B. foetidum* ■ Succulent with a flattened caudex bearing semi-erect, leafy stems with velvet-hairy branches clothed in ovate-spoon-shaped, pointed, wavy-margined, dark green leaves, 1–2.5cm (½–1in) long. Dark purplish brown flowers, 2.5–3cm (1–1¼in) across, are produced singly or in pairs in summer; the flower lobes are hairy on the outside, united to form a tube in the lower part, and narrowly triangular and spreading in the upper part. † 15cm (6in), ↔ 12cm (5in). South Africa (Northern Transvaal, Eastern Transvaal). ♀ (min. 10°C/50°F)

## BRACEANTHA

ASTERACEAE/COMPOSITAE

Genus of about 7 species of herbaceous perennials and annuals from open grassland and scrub in Australia. The stalkless, ovate to broadly lance-shaped, glandular-hairy leaves, 5–15cm (2–6in) long, are borne on erect, branching stems. Daisy-like flowerheads have papery, white, yellow, or pink involucre bracts and central yellow corollas. Grow in an annual border, or use to fill gaps in a mixed or herbaceous border. Low-growing cultivars may also be used for



*Bracteantha bracteata* Bright Bikinis Series

edging, or in a window-box. *B. bracteata* is often grown for cutting and drying.

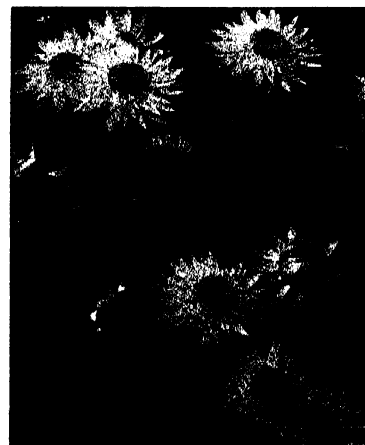
• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Cultivars 90cm (36in) or more tall require staking.

• **PROPAGATION** Sow seed at 18°C (64°F) in spring.

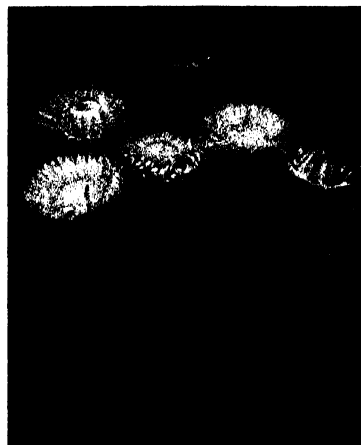
• **PESTS AND DISEASES** Susceptible to downy mildew.

*B. bracteata*, syn. *Helichrysum bracteatum* (Golden everlasting, Strawflower). Erect annual or short-lived perennial with broadly lance-shaped, grey-green leaves, to 12cm (5in) long. From late spring to autumn, bears terminal, solitary, papery, bright white,



*Bracteantha bracteata* 'Dargan Hill Monarch'





*Bracteantha bracteata* Monstrosum Series



*Bracteantha bracteata* 'Silvery Rose'

yellow, pink, or red flowerheads, 2.5–8cm (1–3in) across. † 1–1.5m (3–5ft), ↔ 30cm (12in). Australia. ★. Cultivars of **Bright Bikinis Series** ■ ♀ have double, red, pink, orange, yellow, or white flowerheads, to 8cm (3in) across; † to 30cm (12in). 'Dargan Hill Monarch' ■ has golden yellow flowerheads, 5–7cm (2–3in) across; ★★. 'Frosted Sulphur' ♀ has double, silvery, pale sulphur-yellow flowerheads; † to 1m (3ft). **King Size Series** cultivars have fully double flowerheads, to 10cm (4in) across, in yellow, orange, red, pink, or silvery white (in single colours or a mix); † 1m (3ft). **Monstrosum Series** ■ cultivars have fully double flowerheads, to 8cm (3in) across, in pink, red, orange, yellow, or white; † to 90cm (36in). 'Silvery Rose' ■ ♀ has double, silvery rose-pink flowerheads; † to 75cm (30in). 'Sky Net' has pink-flushed, creamy white flowerheads, to 8cm (3in) across. **Tetraploid Double Series** cultivars are very vigorous, with pink, crimson-red, yellow, orange, or white flowerheads, to 8cm (3in) across; † 1.5m (5ft).

## BRAHEA

Hesper palm

ARECACEAE/PALMAE

Genus of 16 species of usually single-stemmed palms occurring on dry, open forest slopes in S. California, USA, and from Mexico to Guatemala. Long panicles of 3-petalled, bell-shaped flowers develop among dense, terminal heads of fan-like leaves. In frost-prone areas, grow young specimens for their



*Brahea armata*

foliage, as houseplants, or in a temperate greenhouse or conservatory. In warmer regions, use as specimen trees.

- **HARDINESS** Frost tender, but will withstand short periods at 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained soil in full sun; will tolerate poor, dry soil.
- **PROPAGATION** Sow seed at 23–27°C (73–81°F) in spring.
- **PESTS AND DISEASES** Red spider mites and scale insects may be a problem.

*B. armata* ■ ♀ (Blue-fan palm, Blue hesper palm, Grey goddess palm). Erect palm with the trunk clothed in fibrous leaf bases. Fan-like, waxy-textured, blue-green leaves, 1–2m (3–6ft) across, with about 50 slender lobes, are borne on long, spiny stalks. In summer, bears arching panicles, 4m (12ft) long, of showy yellow flowers, 1.5cm (½in) across. † to 15m (50ft), ↔ to 7m (22ft). USA (S. California), Mexico. ☉ (min. 5–15°C/41–59°F).

*B. brandegei* ♀ (San Jose hesper palm). Slender palm with a tapered trunk. Fan-like leaves, 1m (3ft) or more across, with about 50 narrow lobes, rich green above, tinted blue-grey beneath, are borne on long, spiny stalks. In summer, bears cream flowers, 7–10mm (¼–½in) across, in narrow panicles that are as long as the leaves. † to 12m (40ft), ↔ to 5m (15ft). USA (S. California). ☉ (min. 5–15°C/41–59°F).

▷ **Brake** see *Pteris*

**Jungle** see *P. umbrosa*

**Painted** see *P. tricolor*

**Shaking** see *P. tremula*

**Silver** see *P. argyræa*

**Spider** see *P. multifida*

**Sword** see *P. ensiformis*

**Tender** see *P. tremula*

▷ **Brassaia** see *Schefflera*

*B. actinophylla* see *S. actinophylla*

## BRASSAVOLA

ORCHIDACEAE

Genus of up to 20 species of evergreen, upright or horizontal to pendent, epiphytic or lithophytic orchids, found from sea level to 1,800m (6,000ft) in Central and South America. They have woody, creeping rhizomes that produce stem-like, narrowly cylindrical pseudobulbs, each with one cylindrical, apical leaf. Long-lasting, night-scented, white, ivory-white, or green flowers are borne singly or in short, often pendent racemes of up to 7 blooms from the base of the leaf, usually in summer.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in a slatted basket, or epiphytically on a bark slab. Provide moist, unshaded conditions all year. In summer, water freely, applying fertilizer at every third watering, and mist twice daily. Keep dry in winter. See also p.46.
- **PROPAGATION** Divide when plants fill their pots and "flow" over the sides.
- **PESTS AND DISEASES** Red spider mites, aphids, and mealybugs may be troublesome.



*Brassavola nodosa*

*B. cucullata*. Epiphytic orchid with small, stem-like pseudobulbs and pendent, cylindrical, glossy, dark green leaves, 25cm (10in) long. Solitary, occasionally 2 or 3, narrow-segmented, white or greenish yellow flowers, 8cm (3in) long, with green-tipped lips, are produced from autumn to winter. † 40cm (16in), ↔ 30cm (12in). Mexico and West Indies, south to Ecuador. ☉ (min. 13°C/55°F; max. 30°C/86°F).

*B. nodosa* ■ Epiphytic or lithophytic orchid with very small, stem-like pseudobulbs and stout, upright, cylindrical-linear, mid-green leaves, to 18cm (7in) long. In summer, bears racemes, to 15cm (6in) long, of 3–5 light green, ivory, or white flowers, 8cm (3in) across, with white lips and maroon-spotted throats. †↔ 18cm (7in). Mexico to Panama, Venezuela. ☉ (min. 13°C/55°F; max. 30°C/86°F).

▷ **Brass buttons** see *Corula coronopifolia*

## BRASSIA

ORCHIDACEAE

Genus of about 50 species of evergreen, epiphytic orchids, found at altitudes of 750–1,600m (2,500–5,200ft) in tropical regions of North, Central, and South America. They have horizontal to upright rhizomes and compressed, ovoid-spherical to cylindrical pseudobulbs, each with 1–3 strap-shaped to oblong-lance-shaped leaves. Racemes of up to 12 spider-like, fragrant, long-petalled, yellow to green flowers are borne laterally from the pseudobulb bases from spring to early summer.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in a pot or slatted basket, or epiphytically on a bark slab. In summer, provide moist, partially shaded, well-ventilated conditions; water freely, applying fertilizer at every third watering; and mist twice daily. Keep unshaded and almost dry in winter. See also p.46.



## BRASSIA

- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides, or pot up backbulbs separately.
- **PESTS AND DISEASES** Vulnerable to red spider mites, aphids, and mealybugs.

**B. caudata.** Epiphytic orchid with linear to elliptic-oblong pseudobulbs and 2 elliptic-oblong to inversely lance-shaped leaves, 30cm (12in) long. In autumn and spring, bears light green to orange-yellow flowers, often marked red-brown, in a suberect to arching raceme, 40–80cm (16–32in) long.  $\pm$  45cm (18in). USA (Florida), Mexico to Panama, West Indies to Bolivia and N. Brazil.  $\odot$  (min. 11–13°C/52–55°F; max. 30°C/86°F)

**B. laurenceana** (Spider orchid). Epiphytic orchid with oblong-ovate to oblong pseudobulbs and 2 narrowly oblong to elliptic-lance-shaped leaves, 40cm (16in) long. In spring, bears green or yellow flowers, with red-purple spots, in arching or pendent racemes, often 40cm (16in) or more long.  $\pm$  45cm (18in). Venezuela, Guyana, Surinam, N.E. Peru, N. Brazil.  $\odot$  (min. 11–13°C/52–55°F; max. 30°C/86°F)

**B. verrucosa** ♀ Epiphytic orchid with narrowly ovoid to oblong pseudobulbs and 2 elliptic-oblong to inversely lance-shaped, bright green leaves, 30cm (12in) long. In early summer, bears upright then arching racemes, to 75cm (30in) long, of yellow to green flowers, spotted red-brown, with white lips spotted dark green or red-brown.  $\pm$  75cm (30in). S. Mexico to Venezuela.  $\odot$  (min. 11–13°C/52–55°F; max. 30°C/86°F)

## BRASSICA

BRASSICACEAE/CRUCIFERAE

Genus of 30 species of annuals and evergreen biennials, perennials, or rarely subshrubs, occurring on rocky slopes, and waste and disturbed ground from the Mediterranean to temperate Asia. Most are erect, branching, tap-rooted plants, with oblong-ovate to rounded,



*Brassica oleracea* Osaka Series

entire or pinnately lobed, hairless, more or less glaucous leaves. They bear terminal racemes of cross-shaped, yellow or white flowers with 4 clawed petals, followed by long, narrow, beaked fruits. *Brassica* species have been developed to produce many edible vegetables, including cabbage, sprouts, cauliflower, and broccoli (all variants of *B. oleracea*), and turnip, Chinese cabbage, and oilseed rape. Most are grown in the vegetable garden, although some ornamental cabbages – with variegated pink, white, or green foliage – are used in a border or for a bedding display.

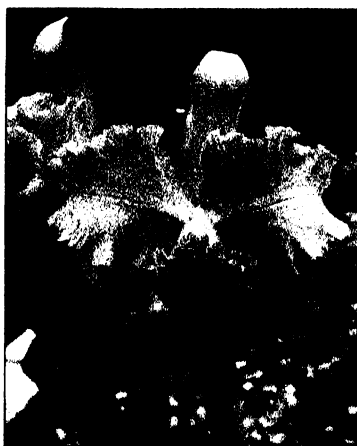
- **HARDINESS** Fully hardy, but flower-heads of edible vegetables may be damaged in severe winters.
- **CULTIVATION** Grow in fertile, well-drained, ideally lime-rich soil in full sun.
- **PROPAGATION** Sow seed *in situ* in spring, or under glass in early spring.
- **PESTS AND DISEASES** Susceptible to black leg, downy mildew, clubroot, aphids, whiteflies, root flies, flea beetles, caterpillars, leaf spots, powdery mildew, and white blister.

**B. oleracea cultivars.** Ornamental cabbage and kale cultivars grown as annuals for their rounded, loose rosettes of variously coloured foliage, suitable either for autumn or winter bedding or for containers. They are usually available as seed mixtures of rounded to ovate, plain or fringed, white, red, or pink leaves. Leaves produce the most vivid colours below 10°C (50°F).  $\pm$  45cm (12–18in). \*\*\*. **Osaka Series**  $\square$  cultivars are fast-growing, with wavy, bluish green outer leaves and compact, white, pink, or red centres;  $\pm$  30cm (12in). **'Tokyo'** has neat, rounded, blue-green outer leaves and soft, pink, red, or white centres;  $\pm$  25cm (10in).

## X BRASSOCATTLEYA

ORCHIDACEAE

Bigeneric hybrid genus, a cross of *Brassavola* and *Cattleya*, consisting of several hundred evergreen, epiphytic orchids derived from Central American species. They have stout, club-shaped, sheathed pseudobulbs and 1 or 2 semi-rigid, oblong to oblong-lance-shaped, leathery leaves. Showy, fragrant flowers, with frilled lips, are borne in racemes arising from sheaths at the leaf bases in spring or autumn; each scape produces 1 or 2 flowers. These orchids are often loosely referred to as cattleyas.



*X Brassocattleya* Mount Adams

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in containers. In summer, provide moist, partially shaded conditions and water freely, applying fertilizer at every third watering. Keep unshaded and almost dry in winter. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides, or pot up backbulbs separately.
- **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be troublesome.

**x B. Mount Adams**  $\square$  (x *B. Désse* x *Cattleya* Bob Betts). Epiphytic orchid with stout pseudobulbs and oblong-lance-shaped, mid-green leaves, 15cm (6in) long. Light rose-mauve flowers, 15cm (6in) across, with purple- and yellow-striped throats, are produced, usually in pairs, in spring or autumn.  $\pm$  30cm (12in),  $\pm$  45cm (18in).  $\odot$  (min. 13°C/55°F; max. 28°C/82°F)

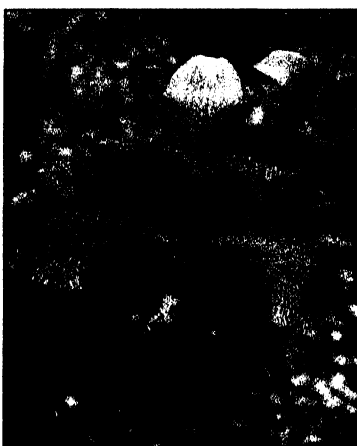
## X BRASSOLAEIO-CATTLEYA

ORCHIDACEAE

Trigeneric hybrid genus, a cross of *Brassavola*, *Laelia*, and *Cattleya*, consisting of several hundred evergreen, epiphytic orchids derived from Central and South American species. They have stout, club-shaped, sheathed pseudobulbs and 1 or 2 semi-rigid, oblong to oblong-lance-shaped, leathery leaves. Colourful, fragrant flowers are produced in short inflorescences arising from



*x Brassolaeliocattleya* Hetherington Horace 'Coronation'



*x Brassolaeliocattleya* St. Helier

## BREYNIA

sheaths at the leaf bases. *Brassolaeliocattleyas* resemble *brassocattleyas*, with which they are often associated.

- **HARDINESS** Frost tender.
- **CULTIVATION** As for *Brassocattleya*.
- **PROPAGATION** As for *Brassocattleya*.
- **PESTS AND DISEASES** As for *Brassocattleya*.

**x B. Hetherington Horace 'Coronation'**  $\square$  Epiphytic orchid with 1 or 2 oblong-lance-shaped, mid-green leaves, 15cm (6in) long. Soft lilac flowers, to 13cm (5in) across, with deep mauve lips and white-margined yellow throats, are produced in spring or autumn.  $\pm$  45cm (18in).  $\odot$  (min. 13°C/55°F; max. 28°C/82°F)

**x B. St. Helier**  $\square$  (x *B. Norman's Bay* x *B. Sussex*). Epiphytic orchid with 1 or 2 oblong-lance-shaped, mid-green leaves, 15cm (6in) long. Rich magenta flowers, 15–18cm (6–7in) across, 2 or 3 together, with mauve-purple and golden yellow lips, are produced in spring.  $\pm$  45cm (18in).  $\odot$  (min. 13°C/55°F; max. 28°C/82°F)

- ▷ *Bravoa geminiflora* see *Polianthes geminiflora*
- ▷ *Breadfruit*, Mexican see *Monstera deliciosa*
- ▷ *Brevoortia* see *Dichelostemma*
- ▷ *Brewer spruce* see *Picea breweriana*

## BREYNIA

EUPHORBIACEAE

Genus of about 25 species of evergreen shrubs and trees occurring in tropical forest and scrub in Asia, Australia, and the Pacific islands from New Caledonia to Hawaii. They are grown for their alternate, small, simple, colourful leaves, often in flattened, frond-like sprays. Insignificant, petalless flowers are succeeded by red berries. In frost-prone areas, grow as houseplants or in a warm greenhouse or conservatory; in warmer climates, plant in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. When in full growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, humus-rich soil, preferably in partial or light dappled shade. Pruning group 8; need restrictive pruning under glass. Pinch out stem tips when young.



*Breynia disticha*

## BREYNIA

- **PROPAGATION** Root softwood cuttings in summer with bottom heat.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and aphids may be a problem under glass.

**B. disticha** [ ] syn. *B. nivos*, *Phyllanthus nivosus* (Snow bush). Slender, evergreen shrub with zigzagged pink or red stems bearing ovate, dark green leaves, 2–5cm (¾–2in) long, with bold white variegation. † 1m (3ft) or more, ↔ 60–100cm (24–39in). Pacific islands. ☉ (min. 15°C/59°F). 'Roseopicta' has white- and pink-mottled leaves.

**B. nivos** see *B. disticha*.

### ▷ Briar,

**Austrian** see *Rosa foetida*

**Sweet** see *Rosa eglanteria*

▷ **Bridal bouquet** see *Porana paniculata*

▷ **Bridal wreath** see *Francoa, Spiraea*

'Arguta', *Stephanotis floribunda*

▷ **Bride's bonnet** see *Clintonia uniflora*

▷ **Bridgesia spicata** see *Ercilla volubilis*

## BRIGGSIA

### GESNERIACEAE

Genus of at least 20 species of evergreen perennials from moist woodland in India, S. China, and S.E. Tibet. They produce basal rosettes of obovate or narrowly elliptic to lance-shaped, hairy leaves. Axillary, tubular flowers with 5 short petal lobes are borne singly or in cymes. In frost-prone regions, grow in an alpine house or cool greenhouse. In frost-free areas, grow in a rock garden.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional leaf mould, in bright indirect light and with good ventilation. Water freely in summer, from below; keep moist in winter. Outdoors, grow in moist but well-drained, humus-rich soil in partial shade.

• **PROPAGATION** Surface-sow seed in containers of peaty seed compost in a cold frame in partial shade, in spring.

• **PESTS AND DISEASES** Susceptible to neck rot in winter, and aphids.

**B. muscicola**. Evergreen perennial with narrowly elliptic to lance-shaped, scalloped, pale green leaves, to 7cm (3in) long, clothed in silvery white hairs. In early summer, arching stems bear loose cymes of 2–6 tubular, soft yellow to orange-yellow flowers, to 2cm (¾in) long, marked purple within. † 5–8cm (2–3in), ↔ 15cm (6in). Bhutan, India (Assam), W. China. ☉ (min. 2°C/36°F)

## BRIMEURA

### HYACINTHACEAE/LILIACEAE

Genus of 2 species of bulbous perennials from meadows, maquis, and garigue in S.E. Europe. They are grown for their slender-stalked racemes of bell-shaped flowers, reminiscent of small bluebells, which are produced in spring. Leaves are basal and linear. Grow in a rock garden, beneath shrubs, or in an alpine house.

- **HARDINESS** Fully hardy.

• **CULTIVATION** Plant bulbs 5cm (2in) deep in autumn. Grow in humus-rich, well-drained soil in full sun or partial shade.



*Brimeura amethystina*

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide clumps in summer.

- **PESTS AND DISEASES** Trouble free.

**B. amethystina** [ ] syn. *Hyacinthus amethystinus*. Bulbous perennial with linear, channelled, bright green leaves, 10–30cm (4–12in) long. Bears loose, slender racemes of tubular-bell-shaped, pale to dark blue flowers, 1cm (½in) long, in spring. † 10–20cm (4–8in), ↔ 5cm (2in). Pyrenees. \*\*\*. var. *alba* bears white flowers.

▷ **Brittonastrum** see *Agastache*

**B. mexicanum** see *A. mexicana*

## BRIZA

### Quaking grass

### GRAMINEAE/POACEAE

Genus of 12–20 species of tufted, annual and perennial grasses occurring in open scrub and on a range of natural grassland in temperate regions of Europe and S.W. Asia. Attractive, long-lasting, loose or dense racemes or panicles of pendent, 4- to 20-flowered spikelets, animated by the slightest wind, are borne mostly in summer. The leaves are linear. Grow in a mixed or herbaceous border, or in a rock garden. The flower-heads are very popular for dried flower arrangements, used either in their natural colour or, very often, dyed.

- **HARDINESS** Fully hardy.

• **CULTIVATION** Grow annuals in any well-drained soil in full sun. Perennials tolerate a wide range of well-drained soil types in sun or partial shade.



*Briza maxima*

• **PROPAGATION** Sow seed *in situ* in spring or autumn. Divide perennials from mid-spring to midsummer.

- **PESTS AND DISEASES** Trouble free.

**B. maxima** [ ] (Greater quaking grass, Puffed wheat). Loosely tufted, erect, annual grass with linear, finely bristle-margined, pale green then straw-coloured leaves, to 20cm (8in) long. From late spring to late summer, produces loose, open panicles, to 10cm (4in) long, of 7- to 20-flowered, ovate to heart-shaped green spikelets, to 1cm (½in) long, which are tinged red-brown or purplish grey and become straw-coloured when ripe; they hang from hair-fine stalks. † 45–60cm (18–24in), ↔ 25cm (10in). Mediterranean. \*\*\*

**B. media** (Common quaking grass, Trembling grass). Perennial grass forming a dense tuft of linear, finely bristle-margined, blue-green leaves, to 15cm (6in) long. From late spring to midsummer, erect stems produce open, pyramidal panicles, to 18cm (7in) long, of 4- to 12-flowered, nodding, heart-shaped spikelets, to 1cm (½in) long; purple-tinted green at first, they later turn straw-coloured and are arranged like a rattlesnake's tail. † 60–90cm (24–36in), ↔ 30cm (12in). Europe, W. Asia. \*\*\*

**B. minor** (Lesser quaking grass). Erect, loosely tufted, annual grass with linear, finely bristle-margined, initially pale green, then straw-coloured leaves, to 15cm (6in) long. From early summer to early autumn, produces slender-stemmed panicles, to 20cm (8in) long, of 4- to 8-flowered, ovate spikelets, to 5mm (¼in) long; pale green initially and frequently purple-tinted, they later turn straw-coloured. † to 45cm (18in), ↔ 25cm (10in). Europe, W. Asia. \*\*\*

▷ **Broadleaf** see *Griselinia littoralis*

## BRODIAEA

### ALLIACEAE/LILIACEAE

Genus of 15 species of cormous perennials from grassland and dry woodland or scrub in W. USA and Mexico. They are grown for their funnel-shaped flowers, 2.5–4.5cm (1–1½in) long, borne in umbels in spring or early summer. Long, basal leaves, 5–15cm (2–6in) long, are linear, blue-green or mid-green, and often die back before the flowers appear. Many similar cormous perennials, once listed as *Brodiaea*, are now classified under *Bloomeria*, *Dichelostemma*, and *Triteleia*. Suitable for a herbaceous border or rock garden, or an alpine house or bulb frame.

- **HARDINESS** Frost hardy.

• **CULTIVATION** Plant corms in groups 8cm (3in) deep in autumn. Grow in well-drained, light, fertile, sandy loam in full sun or partial shade. Water freely when in growth; keep warm and dry in summer when the corms have died down. In frost-prone areas, protect with a winter mulch.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) as soon as ripe. Remove offsets once they have become dormant.

- **PESTS AND DISEASES** Trouble free.

**B. californica** [ ] Cormous perennial bearing large umbels of up to 12 widely funnel-shaped, violet, lilac, or pink



*Brodiaea californica*

flowers, on stalks 12cm (5in) long, in early summer. † 50cm (20in), ↔ 8cm (3in). USA (N. California). \*\*

**B. capitata** see *Dichelostemma pulchellum*.

**B. congesta** see *Dichelostemma congestum*.

**B. coronaria**, syn. *B. grandiflora*.

Cormous perennial producing umbels of a few funnel-shaped, pale to deep purple flowers, with conspicuous cream stamens, on stalks to 5cm (2in) long, in early summer. † 5–25cm (2–10in), ↔ 5cm (2in). W. USA. \*\*

**B. elegans**. Cormous perennial producing umbels of up to 12 funnel-shaped, deep purple flowers, with strongly recurved tips, on stalks 5mm (¼in) long, in early summer. † 10–50cm (4–20in), ↔ 5cm (2in). W. USA. \*\*

**B. grandiflora** see *B. coronaria*.

**B. hyacinthina** see *Triteleia hyacinthina*.

**B. ida-maia** see *Dichelostemma ida-maia*.

**B. ixioideis** see *Triteleia ixioideis*.

**B. lactea** see *Triteleia hyacinthina*.

**B. laxa** see *Triteleia laxa*.

**B. lutea** see *Triteleia ixioideis*.

**B. peduncularis** see *Triteleia peduncularis*.

**B. pulchella** see *Dichelostemma pulchellum*.

**B. volubilis** see *Dichelostemma volubile*.

▷ **Brodiaea, Twining** see *Dichelostemma volubile*

## BROMELIA

### BROMELIACEAE

Genus of at least 46 species of evergreen, rhizomatous or suckering, terrestrial, or rarely epiphytic perennials (bromeliads) occurring in woodland, scrub, or rocky areas, up to an altitude of 1,800m (6,000ft), in Central America, the West Indies, and South America. They form colonies of dense rosettes of linear to elliptic, rigid leaves with large, curved, marginal spines. Dense, cylindrical or conical inflorescences of white, red, or purple flowers are produced from the centres of the rosettes in summer, and are followed by ovoid yellow fruits containing large brown seeds. In frost-prone areas, grow in a warm greenhouse. In frost-free climates, they are suitable for a shady site or desert garden.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light. From spring to late autumn, water

B

*Bromelia balansae*

freely and apply a low-nitrogen fertilizer 2 or 3 times; keep just moist at other times. Outdoors, grow in gritty, humus-rich, neutral to acid, well-drained soil in full sun, with some midday shade in summer. See also p.47.

- **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Divide in late spring or early summer.
- **PESTS AND DISEASES** Scale insects may be a problem, especially on young leaves.

**B. balansae** ■ (Heart of flame). Variable, terrestrial bromeliad with rosettes of 25–30 linear, wide-spreading, laxly spiny, often red-suffused, grey-green leaves, 1m (3ft) or more long, hairless above, with pale scales beneath. In summer, bears short-branched, cylindrical inflorescences, to 25cm (10in) long, of erect, tubular or cylindrical, white-margined violet flowers, 4.5cm (1¾in) long, ↓ to 1m (3ft), ↔ indefinite. Colombia, Brazil, Bolivia, Paraguay, N. Argentina. ♀ (min. 15°C/59°F)

**B. laciniosa**. Rhizomatous, terrestrial bromeliad with rosettes of up to 80 sword-shaped, recurved, laxly spiny, deep green leaves, 1m (3ft) long, brown-scaly above and white-scaly beneath. The shorter inner leaves turn bright red in sun. In summer, bears cylindrical panicles, to 70cm (28in) long, of erect, tubular or cylindrical purple flowers, to 5cm (2in) long, ↓ 1m (3ft), ↔ indefinite. N.E. Brazil. ♀ (min. 15°C/59°F)

- ▷ **Bromeliad**,  
  **Bird's-nest** see *Nidularium*  
  **Blushing** see *Neoregelia caroliniae*,  
    *Nidularium fulgens*
- ▷ **Bromeliads** see p.47
- ▷ **Bromeliads**, **King of** see *Vriesea hieroglyphica*
- ▷ **Brooklime** see *Veronica beccabunga*
- ▷ **Broom** see *Cytisus*, *Genista*, *Ruscus*,  
  *Spartium*  
  **Butcher's** see *Ruscus aculeatus*  
  **Climbing butcher's** see *Semele*  
  **Common** see *Cytisus scoparius*  
  **Hedgehog** see *Erinacea anthyllis*  
  **Mount Etna** see *Genista aetnensis*  
  **Pineapple** see *Cytisus battandieri*  
  **Pink** see *Notospartium carmichaeliae*  
  **Portuguese** see *Cytisus multiflorus*  
  **Purple** see *Chamaecytisus purpureus*  
  **Spanish** see *Spartium*  
  **Warminster** see *Cytisus x praecox*  
    'Warminster'  
  **White Spanish** see *Cytisus multiflorus*

## BROUGHTONIA

## ORCHIDACEAE

Genus of 5 species (possibly only one variable one) of evergreen, epiphytic orchids from Jamaica and Cuba, where they grow from sea level to 800m (2,600ft). They have 2 semi-rigid, narrowly oblong, dark green leaves, very short rhizomes, and tightly clustered and flattened-spherical to cylindrical pseudobulbs. In summer, racemes of brilliant crimson flowers are borne on long stems from the base of the leaves.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in a small container or epiphytically on a bark slab. In summer, provide moist conditions in bright filtered light, and water freely, applying fertilizer at every third watering. Keep almost dry in winter. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

**B. sanguinea**. Epiphytic orchid with flattened, subcylindrical pseudobulbs and 2 narrowly oblong, dark green leaves, 15–18cm (6–7in) long. In summer, stems to 50cm (20in) long produce up to 15 bright crimson, occasionally white or yellow flowers, 2.5cm (1in) across, with rose-purple lips. ↓ 50cm (20in), ↔ 15cm (6in). Jamaica. ♀ (min. 13°C/55°F; max. 30°C/86°F)

## BROUSSONETIA

## MORACEAE

Genus of about 7 species of deciduous trees and shrubs from woodland in E. Asia and Polynesia. They have alternate, entire or lobed, toothed leaves. Male and female flowers are borne on separate plants. *B. papyrifera*, the only widely cultivated species, is grown for its large leaves, pendent male catkins, and unusual fruit. It needs hot summers to ripen its wood and achieve tree stature, and then may be an attractive isolated specimen. Its tolerance of pollution, heat, and poor soil has made it a popular tree for urban locations. In areas with cool summers, it grows as a large shrub and is suitable for a shrub border.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in almost any well-drained soil in full sun, sheltered from wind. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert semi-ripe cuttings in late summer, and hardwood or root cuttings in winter. Transplant suckers in winter.
- **PESTS AND DISEASES** Susceptible to canker and leaf spot.

**B. papyrifera** ■ ☐ (Paper mulberry). Rounded, suckering tree or large shrub with ovate to deeply lobed, grey-green leaves, to 20cm (8in) long, which are roughly hairy above, softly hairy below. Male flowers with creamy anthers are borne in stout, pendent catkins, to 7cm (3in) long, in late spring and early summer. Female flowers, with slender purple stigmas, are produced in spherical heads, to 2cm (¾in) across,

*Broussonetia papyrifera*

and develop into mulberry-like, sweet-tasting, edible, orange-red fruit in autumn. ↑→ 8m (25ft). China, Korea, Japan. \*\*\* (borderline)

## BROWALLIA

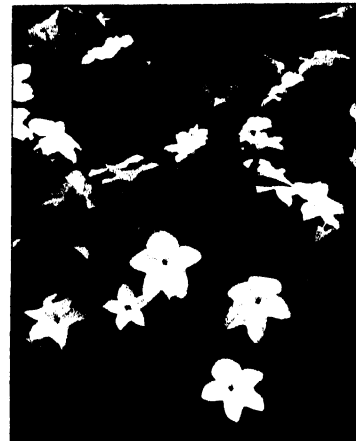
Amethyst violet, Bush violet

## SOLANACEAE

Genus of 6 upright, bushy annuals and subshubby perennials from damp, shady areas and woodland in N. South America and the West Indies. They have slender, ovate to elliptic leaves and salverform, violet, purple, blue, or white flowers, with 5 broad, unequal lobes. In frost-prone areas, grow as short-lived container plants in a conservatory or in the home. In tropical climates, grow in a border or container.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun and good ventilation. When in full growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pinch out the growing tips to encourage bushy plants. Outdoors, grow in fertile, well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed at 18°C (64°F) in early spring for summer-flowering plants and in late summer for winter- to spring-flowering plants.
- **PESTS AND DISEASES** Aphids and whiteflies may be a problem under glass.

**B. americana**, syn. *B. elata*. Variable, erect, bushy annual with usually ovate, pointed or blunt, slightly sticky, matt

*Browallia speciosa* 'White Troll'

leaves, to 10cm (4in) long. In summer, bears single- or several-flowered, axillary inflorescences of violet to blue or white flowers, 5cm (2in) across. ↑→ to 60cm (24in). Tropical South America. ♀ (min. 13–16°C/55–61°F)

**B. elata** see *B. americana*.

**B. speciosa** (Sapphire flower). Woody-based, bushy perennial, usually grown as an annual, with ovate or elliptic, rounded or pointed, slightly sticky, matt leaves, 10cm (4in) long. In summer, violet, blue, or white flowers, 5cm (2in) across, are borne singly or in small clusters from the leaf axils. ↓ 60cm (24in), ↔ 25cm (10in). Tropical South America. ♀ (min. 13–16°C/55–61°F). 'Blue Bells' is compact, with violet-blue flowers; ↓ to 20cm (8in). 'Blue Troll' is compact, with clear blue flowers; ↓ to 25cm (10in). 'Heavenly Bells' bears pale sky-blue flowers, 6–7cm (2½–3in) across; ↓ 30cm (12in). 'Silver Bells' is compact, with white flowers; ↔ 25–30cm (10–12in). 'Vanja' ■ has deep blue flowers, to 7cm (3in) across, with white eyes. 'White Troll' ■ has pure white flowers; ↓ to 25cm (10in).

## BROWNEA

## CAESALPINIACEAE/LEGUMINOSAE

Genus of at least 25 species of evergreen shrubs and trees found in tropical forest in South America, grown for their foliage and attractive flowerheads. Large, opposite, pinnate leaves emerge pink or red, speckled white, later turning deep green. Small, 4- or 5-petalled flowers are mixed with large coloured bracts in pompon-like, terminal inflorescences. In

*Browallia speciosa* 'Vanja'

*Brownea ariza*

frost-prone areas, grow in a warm greenhouse; elsewhere grow as specimens.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. They need to be grown in a large container in order to flower. In growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in early spring. Outdoors, grow in fertile, moist but well-drained soil in light dappled shade. Pruning group 1, but need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites, mealybugs, and whiteflies may be a problem under glass.

**B. ariza** ■ ♀ syn. *B. grandiceps*, *B. princeps*. Erect to spreading tree with pinnate leaves, 20–40cm (8–16in) long, consisting of 12 or more pairs of elliptic, bronze-red leaflets, pendent at first, then spreading. In summer, bears rounded, orange to red flowerheads, to 25cm (10in) across, with up to 50 flowers. ↑ 7–10m (22–30ft), ↔ 3–7m (10–22ft). Colombia. ☼ (min. 15°C/59°F)  
**B. grandiceps** see *B. ariza*.  
**B. princeps** see *B. ariza*.

## BROWNINGIA

syn. AZUREOCEREUS

CACTACEAE

Genus of about 10 species of erect, tree-like, perennial cacti from hilly or low mountainous regions, principally in Peru and Chile. They branch freely towards the trunk base or from nearer the crown, like candelabra, with semi-pendent branches. The tubercled ribs produce prominently spiny areoles. Funnel-shaped, nocturnal flowers have short, rounded petals and densely scaly, often curved tubes. They are followed by spherical to ovoid, dry or juicy green fruits containing brown or black seeds. In frost-prone areas, grow in a conservatory or warm greenhouse; in warmer areas, use in a mixed cactus border or desert garden. They are large, architectural specimens when mature.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 4 parts standard cactus compost and 1 part lime chippings, in full light. From mid-spring to late summer, water

freely and apply a low-nitrogen fertilizer every 3–4 weeks; keep completely dry at other times. Outdoors, grow in sharply drained, alkaline soil in full sun. See also pp.48–49.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in early spring.
- **PESTS AND DISEASES** Aphids and mealybugs may be troublesome.

**B. bertlingiana**, syn. *Azureocereus bertlingianus*. Slow-growing cactus with a trunk, to 30cm (12in) thick, that generally branches, once it is 1m (3ft) tall, into thick, ascending, bluish green branches with 18 or more ribs. Tufted, grey-felted, yellowish brown areoles produce pale brown spines (4–7 radials, 1–3 centrals). Funnel-shaped purple flowers, 5cm (2in) across, white inside, are borne from the areoles near the stem tips in summer. ↑ 8m (25ft), ↔ to 1.5m (5ft). Peru, Chile. ☼ (min. 13°C/55°F)

## BRUCKENTHALIA

ERICACEAE

Genus of one species of small, evergreen shrub occurring on lime-free soil in woodland and subalpine pastures in S.E. Europe. It has needle-like foliage, and bears terminal racemes of bell-shaped flowers from late spring to summer. Cultivated for its neat habit and attractive flowers, *B. spiculifolia* is suitable for a rock garden, and also associates well with heathers (*Calluna*, *Erica*), to which it is closely related.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, peaty, acid soil in full sun. Pruning group 10, after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in a closed propagating case with gentle bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

**B. spiculifolia** (Spike heath). Compact, evergreen shrub with whorls of linear, glossy, dark green leaves, to 5mm (¼in) long, which are borne on stiff, sparsely branched, upright stems. Dense, terminal racemes, to 3cm (1¼in) long, of bell-shaped, pale to deep pink, occasionally white flowers, 2–3cm (¾–1¼in) long, are produced from late spring to summer. Balkans. ↑ 15cm (6in), ↔ to 20cm (8in). \*\*\*. 'Balkan Rose' has deep pink flowers.

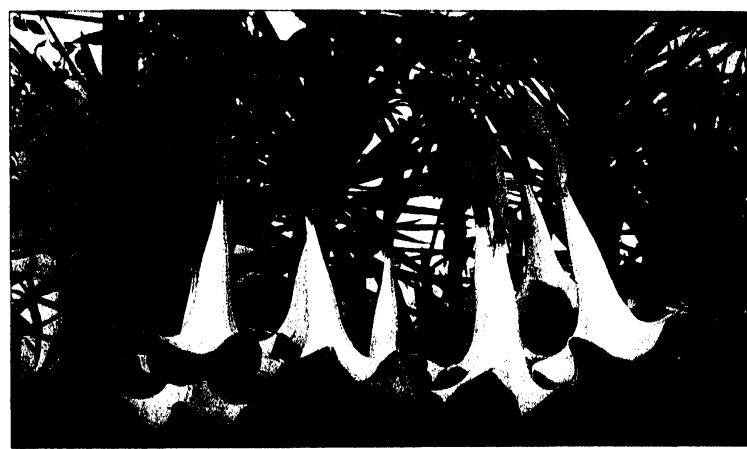
## BRUGMANSIA

Angels' trumpets

SOLANACEAE

Genus of 5 species of evergreen shrubs and trees found in scrub and along streamsides from S. USA to South America. They are cultivated for their large, usually scented, solitary, pendent, tubular or trumpet-shaped flowers, with 5 usually reflexed, pointed lobes, borne from late spring to autumn. The leaves are alternate, simple, often toothed, and sometimes lobed. In frost-prone areas, grow in a temperate greenhouse or conservatory, and stand outside or plunge in a border for the summer. In milder areas, grow as specimen plants. All parts are highly toxic if ingested.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3)

*Brugmansia suaveolens* (yellow form)

in full light. From spring to autumn, water freely and apply a balanced liquid fertilizer every 3–4 weeks; keep just moist in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 9, or 7 if required.

- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be a problem under glass.

**B. arborea** ♀ syn. *B. versicolor* of gardens, *Datura arborea* (Common angels' trumpets). Open shrub or tree with robust stems and elliptic-oblong to ovate, entire or coarsely toothed leaves, 15–30cm (6–12in) long. Trumpet-shaped, scented white flowers, to 15cm (6in) long, are borne from late spring to autumn. ↑ 2–4m (6–12ft) or more, ↔ 1.5–2.5m (5–8ft). Ecuador to N. Chile (Andes). ☼ (min. 7°C/45°F)

**B. aurea** ♀ syn. *Datura aurea*. Open shrub or tree with ovate leaves, 15–25cm (6–10in) long, coarsely toothed on young plants, entire on mature ones. Trumpet-shaped, night-scented, golden yellow to white flowers, to 24cm (10in) long, are borne mainly from summer to autumn. ↑ 5–10m (15–30ft), ↔ 2–4m (6–12ft). Colombia to Ecuador (Andes). ☼ (min. 7°C/45°F)

**B. x candida** ♀ (*B. aurea* x *B. versicolor*), syn. *Datura x candida*. Open shrub or tree with oblong-elliptic, entire to coarsely toothed, wavy-margined leaves, 30–60cm (12–24in) long. From summer to autumn, bears trumpet-shaped, night-scented flowers, to 30cm (12in) long, that may be white or soft yellow, ageing to white or, rarely, pink. ↑ 3–5m (10–15ft), ↔ 1.5–2.5m (5–8ft). Garden origin. ☼ (min. 7°C/45°F). 'Double White' bears double white flowers. 'Grand Marnier' ♀ bears apricot flowers. 'Knightii' ♀ syn. 'Plena', bears hose-in-hose blooms. 'Plena' see 'Knightii'.

**B. rosei** of gardens see *B. sanguinea*. **B. sanguinea** ♀ ♀ ♀ syn. *B. rosei* of gardens, *Datura rosei* of gardens (Red angels' trumpets). Open shrub or tree with ovate-oblong, wavy-margined, coarsely toothed to entire leaves, to 18cm (7in) long. Tubular, unscented flowers, 15–25cm (6–10in) long, orange-red with yellow veins, are borne from late spring to autumn. ↑ 3–10m (10–30ft), ↔ 2–3m (6–10ft). Colombia to N. Chile. ☼ (min. 7°C/45°F)

*Brugmansia suaveolens* (pink form)*Brugmansia sanguinea*

**B. suaveolens** ♀ ♀ ♀ Vigorous shrub or tree with ovate-oblong to narrowly elliptic, hairless or hairy, entire leaves, to 20cm (8in) long. Tubular-bell-shaped, night-scented, white, sometimes yellow or pink flowers, 30cm (12in) long, are produced from early summer to autumn. ↑ to 5m (15ft), ↔ 2.5–3m (8–10ft). S.E. Brazil. ☼ (min. 7°C/45°F)  
**B. versicolor** ♀ Open shrub or tree with oblong-elliptic, hairless or slightly hairy, entire leaves, 20–50cm (8–20in) long. From late spring to autumn, produces trumpet-shaped flowers, 40cm (16in) or more long, that are usually white, but sometimes age to orange or peach-pink. ↑ 2–5m (6–15ft), ↔ 1.5–2.5m (5–8ft). Ecuador. ☼ (min. 7°C/45°F)

**B. versicolor** of gardens see *B. arborea*.

## BRUNFELSIA

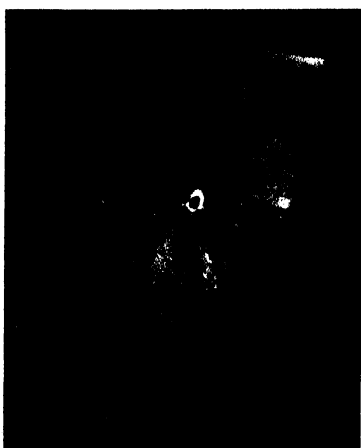
SOLANACEAE

Genus of approximately 40 species of evergreen shrubs and small trees growing in light woodland and thickets in tropical North, Central, and South America. They are cultivated for their large, tubular, salverform flowers, each with 5 broad petal lobes. The alternate, simple leaves are elliptic to ovate, oblong, or spoon-shaped. In frost-prone climates, grow in a cool or temperate greenhouse. In frost-free climates, plant in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright indirect or filtered light. When in growth, water freely and apply a balanced liquid fertilizer every 3–4 weeks; water sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil, in full sun with some midday shade. Pruning group 8; pinch out stem tips of young plants to promote branching.
- **PROPAGATION** Root softwood cuttings in spring or summer.
- **PESTS AND DISEASES** Susceptible to red spider mites and mealybugs under glass.

**B. americana** ♀ (Lady of the night). Erect to spreading shrub or small tree with elliptic to obovate, mid- to deep green leaves, 5–13cm (2–5in) long. Solitary, night-scented flowers, 8cm (3in) long, which age from white to creamy yellow, are produced during summer. † 2–5m (6–15ft), ↔ 1–3m (3–10ft). West Indies. ☼ (min. 7°C/45°F)

**B. calycina** see *B. pauciflora*.  
**B. eximia** see *B. pauciflora*.  
**B. pauciflora** ♀ syn. *B. calycina*, *B. eximia* (Yesterday, today, and tomorrow). Bushy shrub with elliptic to oblong-lance-shaped, leathery, glossy, deep green leaves, 7–15cm (3–6in) long. Terminal or axillary cymes of up to 10 wavy-margined, pansy-like flowers, 3.5–5cm (1½–2in) across, opening purple and ageing almost to white, are borne from spring to summer. † 1–3m (3–10ft), ↔ 0.5–1.5m (1½–5ft). Brazil. ☼ (min. 7°C/45°F). 'Floribunda' is spreading, with freely borne flowers that open violet and age to purple; † to 1.5m (5ft). 'Macrantha' has very large flowers, to 8cm (3in) across.



*Brunfelsia pauciflora* 'Macrantha'



*Brunnera macrophylla* 'Dawson's White'

## BRUNNERA

BORAGINACEAE

Genus of 3 species of rhizomatous perennials from woodland in E. Europe and N.W. Asia, valued for their flowers and ground-covering foliage. They have usually ovate, rough-hairy basal leaves and lance-shaped to ovate stem leaves. Terminal, cyme-like panicles of forget-me-not-like, purple-blue, rarely white flowers are borne in mid- and late spring. Grow in woodland or a border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil, in a cool site.
- **PROPAGATION** In early spring, sow seed in containers in a cold frame, or divide. Take root cuttings of *B. macrophylla* in winter.
- **PESTS AND DISEASES** Trouble free.

**B. macrophylla** ♀ syn. *Anchusa myosotidiflora*. Rhizomatous perennial with softly hairy, mid- to deep green leaves. Basal leaves are ovate-heart-shaped, sharp-pointed, 5–20cm (2–8in) long, with long leaf-stalks; stem leaves are lance-shaped to elliptic-ovate. In mid- and late spring, produces bright blue flowers, to 7mm (¼in) across, in panicles 20cm (8in) or more long. † 45cm (18in), ↔ 60cm (24in). Caucasus. \*\*\*. 'Betty Bowring' bears white flowers. 'Dawson's White' □ syn. 'Variegata', has wide, irregular, creamy white leaf margins. 'Hadspen Cream' ♀ has irregular, creamy white leaf margins, narrower than those of 'Dawson's White'. 'Langtrees' has leaves regularly spotted with silvery grey. 'Variegata' see 'Dawson's White'.

- ▷ **x Brunsdonna** see *x Amarygia*
- x B. parkeri** see *x A. parkeri*

## BRUNSVIGIA

AMARYLLIDACEAE/LILIACEAE

Genus of about 20 species of bulbous perennials from grassland in South Africa, producing showy, terminal umbels of funnel-shaped flowers from late summer to autumn. Strap-shaped to oblong-ovate, basal leaves appear after or with the flowers. In frost-prone areas, grow in a cool greenhouse; in warmer areas, plant in a warm, sunny border or at the base of a warm, sunny wall.

- **HARDINESS** Half hardy to frost tender.

- **CULTIVATION** Under glass, plant in autumn in loam-based potting compost (J1 No.2), with the neck of the bulb well above soil level. Provide full light, but shade lightly when in bloom. Water freely when in growth and sparingly as leaves wither; keep warm and dry when dormant. Repot or remove offsets only when congested. Outdoors, grow in sandy, sharply drained soil in full sun.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) as soon as ripe in sandy potting compost. Remove offsets in autumn before bulbs start into growth.
- **PESTS AND DISEASES** Vulnerable to leaf scorch, narcissus eelworm, mealybugs, aphids, whiteflies, and red spider mites.

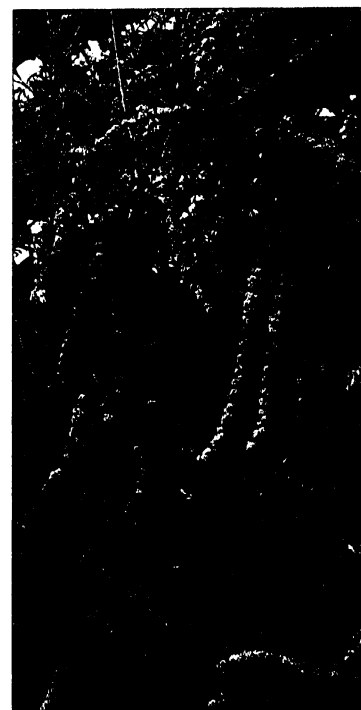
**B. josephinae**. Perennial with very large bulbs. In autumn, bears umbels of up to 30 red flowers, 7cm (3in) long, with recurved tips. Strap-shaped, dark green leaves, 60–90cm (24–36in) long, appear after the flowers. † 45–90cm (18–36in), ↔ 30cm (12in). South Africa. \*

- ▷ **Bryophyllum** see *Kalanchoe*
- B. daigremontianum** see *K. daigremontiana*
- B. tubiflorum** see *K. delagoensis*
- B. uniflorum** see *K. uniflora*
- ▷ **Buckeye** see *Aesculus*
- Bottlebrush** see *A. parviflora*
- California** see *A. californica*
- Ohio** see *A. glabra*
- Red** see *A. pavia*
- Yellow** see *A. flava*
- ▷ **Buckler fern** see *Dryopteris*
- Broad** see *D. dilatata*
- Narrow** see *D. carthusiana*
- ▷ **Buckthorn**,  
**Alder** see *Rhamnus frangula*  
**Common** see *Rhamnus cathartica*  
**Italian** see *Rhamnus alaternus*  
**Sea** see *Hippophae rhamnoides*
- ▷ **Buckwheat**,  
**Saffron** see *Eriogonum crocatum*  
**Wild** see *Eriogonum*

## BUDDLEJA syn. BUDDLEIA

BUDDLEJACEAE/LOGANIACEAE

Genus of about 100 species of evergreen, semi-evergreen, and deciduous shrubs, sometimes trees and climbers, and a few herbaceous perennials, from riversides, rocky areas, and scrub in Asia, Africa, and North and South America. They are cultivated for their panicles of



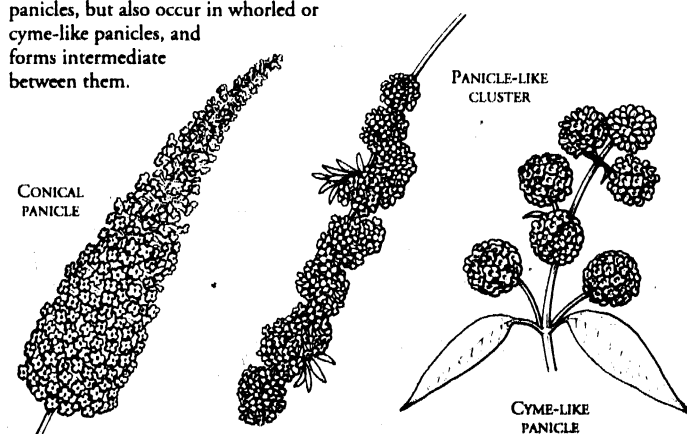
*Buddleja alternifolia*

small, tubular, usually fragrant flowers, and sometimes for their lance-shaped to broadly ovate, usually opposite leaves. All except the climbers are suitable for a mixed or shrub border; the frost-hardy species generally grow and flower best against a warm, sunny wall. In frost-prone areas, grow half-hardy and tender species in a cool greenhouse. *B. davidii* and several other species, such as *B. alternifolia* and *B. crispa* are attractive to insects.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with good ventilation. Water freely when in growth, sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 6 for most; group 2 for *B. alternifolia*, *B. colvilei*, *B. farreri*, and *B. globosa* (although the last 3 need minimal pruning). Pruning group 13 for wall-trained plants: after flowering for those that bloom in spring or early summer, in spring for late-summer and autumn-flowering species.

## BUDDLEJA INFLORESCENCES

Flowers are usually borne in dense, conical panicles, but also occur in whorled or cyme-like panicles, and forms intermediate between them.



*Buddleja colvilei* 'Kewensis'

• **PROPAGATION** Root semi-ripe cuttings in summer. Root hardwood cuttings of *B. davidii* in autumn.

• **PESTS AND DISEASES** Prey to capsid bugs, caterpillars, figwort weevil, mullein moth, and red spider mites.

***B. alternifolia*** [♀♂] Deciduous shrub or small tree with slender, arching shoots and alternate, lance-shaped, dark green, occasionally silvery green leaves, to 7cm (3in) long. Dense, rounded clusters, 4cm (1½in) long, of intensely fragrant lilac flowers wreath the branches of the previous year's growth in early summer. Trained as a standard, it is an excellent specimen plant. 1→4m (12ft). China. \*\*\*

***B. asiatica*** ♀ Evergreen shrub with arching white- or grey-woolly shoots and lance-shaped, dark green leaves, to 30cm (12in) long. Fragrant white flowers are produced in cyme-like panicles, to 25cm (10in) long, in late winter and early spring. 1→3m (10ft). Himalayas to S.E. Asia. \*\*

***B. auriculata***. Upright, evergreen shrub with narrowly ovate-oblong, glossy, dark green leaves, to 12cm (5in) long, white beneath. Small, strongly fragrant, creamy white flowers, with orange or pink centres, are produced in axillary and terminal, cyme-like panicles, to 5cm (2in) long, from autumn to winter. 1→3m (10ft). South Africa. \*\*

***B. colvilei*** [♀] Upright, stoutly branched, deciduous (sometimes semi-evergreen) shrub or small tree with elliptic-lance-shaped, dark green leaves, 12cm (5in) or more long. Bears tight, pendent, terminal, occasionally axillary

*Buddleja davidii* 'Empire Blue'

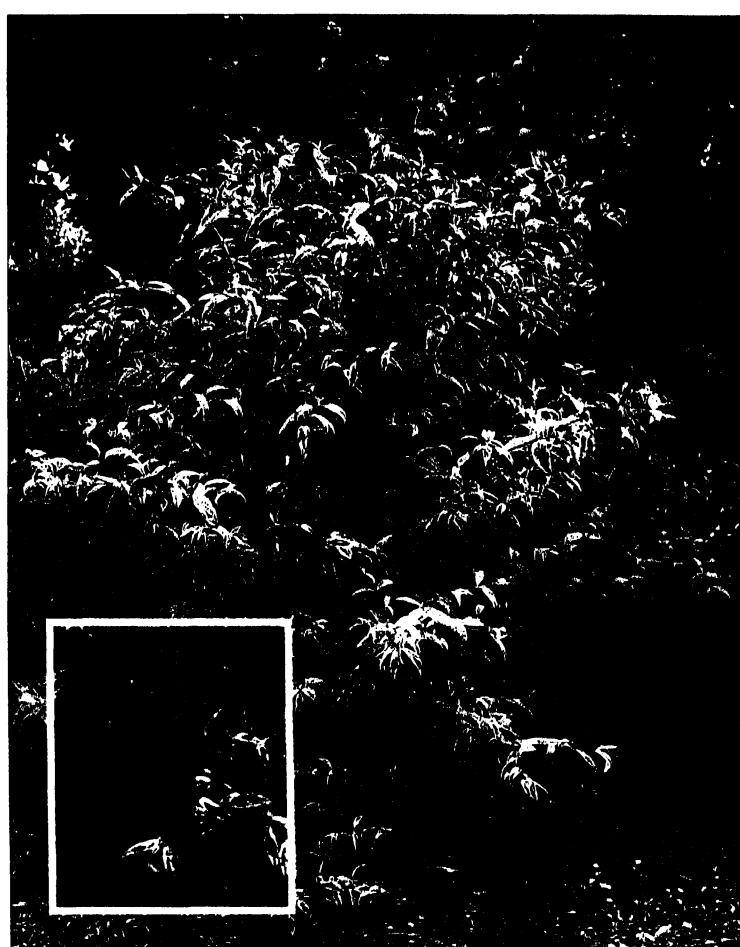
panicles, to 20cm (8in) long, of dark pink or red flowers in early summer. 1→6m (20ft). Himalayas. \*\*\*.

'**Kewensis**' [♂] bears dark red flowers.

***B. crispa*** [♂] Arching, deciduous shrub with white-woolly young shoots and broadly ovate-triangular, white-hairy leaves, to 12cm (5in) long. Fragrant, lilac-pink flowers are produced in dense, whorled, cyme-like, terminal and axillary panicles, to 10cm (4in) long, in mid- and late summer. 1→3m (10ft). Himalayas. \*\*\* (borderline)

***B. davidii*** (Butterfly bush). Variable, fast-growing, deciduous shrub with long, arching shoots and lance-shaped, pointed, mid-green to grey-green leaves, to 25cm (10in) long. From summer to autumn, bears dense panicles, 30cm (12in) or more long, of fragrant, lilac to purple flowers. 1→3m (10ft), 1→5m (15ft). China, Japan. \*\*\*. '**Black Knight**' ♀ bears dark purple-blue flowers. '**Charming**' bears lavender-pink flowers. '**Dartmoor**' ♀ has slender leaves with deeply cut margins and reddish purple flowers in open-branched panicles. '**Empire Blue**' [♂] ♀ has violet-blue flowers with orange eyes.

'**Fascinating**' [♂] bears lilac-pink flowers in broad, tight panicles, 10cm (4in) or more across. '**Fortune**' bears soft lilac-blue flowers in slender panicles, to 40cm (16in) long. '**Glasnevin Blue**' see *B. 'Glasnevin'*. '**Harlequin**' [♂] has leaves that are yellow-margined when young, cream-margined when mature, and dark red-purple flowers. '**Nanho Blue**', syn. '**Petite Indigo**', has slender leaves and narrow panicles, to 15cm (6in) long, of pale lilac-blue flowers. '**Peace**' produces

*Buddleja davidii* 'Harlequin' (inset: flower detail)

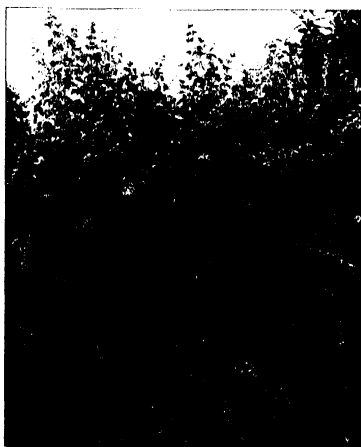
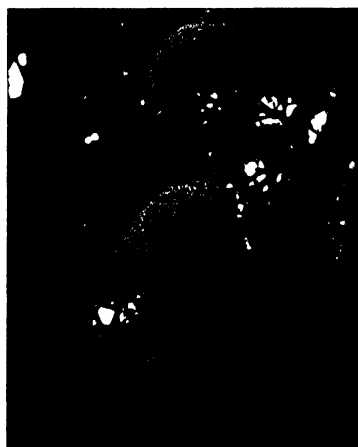
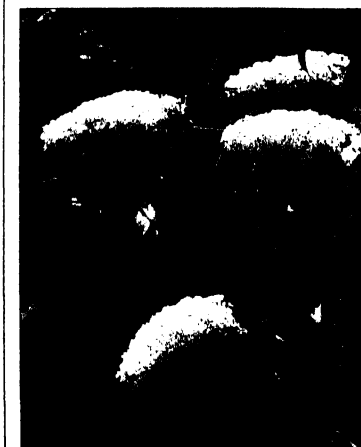
panicles, to 50cm (20in) long, of white flowers with orange eyes. '**Petite Indigo**' see '**Nanho Blue**'. '**Pink Delight**' ♀ (a hybrid of *B. davidii*) has panicles, to 30cm (12in) long, of bright pink flowers with orange eyes. '**Pink Pearl**' has lilac-pink flowers with orange eyes. '**Royal Red**' [♂] ♀ has dark red-purple flowers in panicles to 50cm (20in) long. '**White Harlequin**' has leaves margined creamy white, and white flowers. '**White Profusion**' [♂] ♀ has yellow-eyed white flowers in panicles, to 40cm (16in) long. ***B. fallowiana***. Deciduous shrub with arching stems and lance-shaped, grey-white leaves, to 12cm (5in) long, mid-green beneath, and densely white-felted, particularly when young. Bears panicles, to 15cm (6in) long, of very fragrant, pale lavender-blue flowers, with orange

eyes, from late summer to early autumn. 1→2m (6ft), 1→3m (10ft). W. China.

\*\*\*. **var. *alba*** ♀ has white flowers.

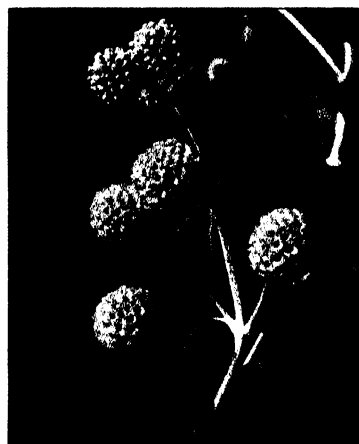
***B. farreri***. Vigorous, upright, deciduous shrub with white-woolly young shoots and ovate-heart-shaped, dark green leaves, 20cm (8in) long, scalloped at the margins, white beneath. Produces panicles, to 20cm (8in) long, of fragrant, lilac-pink flowers in spring. 1→3m (10ft). China. \*\*

***B. 'Glasnevin'***, syn. *B. davidii* '**Glasnevin Blue**'. Spreading, semi-evergreen shrub with lance-shaped, dark green leaves, 20cm (8in) long, densely white-woolly beneath, grey-hairy when young. From late summer to autumn, bears fragrant, dark lilac-pink flowers in dense panicles, to 30cm (12in) long. 1→2.5m (8ft), 1→3m (10ft). \*\*\*

*Buddleja crispa**Buddleja davidii* 'Fascinating'*Buddleja davidii* 'Royal Red'*Buddleja davidii* 'White Profusion'



B

*Buddleja globosa*

**B. globosa** [♀] (Orange ball tree). Rounded, stiffly branched, deciduous or semi-evergreen shrub with lance-shaped, deeply veined, dark green leaves, to 20cm (8in) long. Bears dense, rounded clusters, to 2cm (¾in) across, of fragrant, dark orange and yellow flowers in open panicles in early summer. ↑→ 5m (15ft). Chile, Argentina. \*\*

**B. lindleyana** [♀] Upright, somewhat arching, slender-branched, deciduous shrub with ovate, dark green leaves, 10cm (4in) long, borne on square stems. Distinctly curved, dark violet flowers, 2cm (¾in) long, are borne in nodding panicles, to 20cm (8in) long, in late summer. ↑→ 2m (6ft). China. \*\*

**B. 'Lochin'** [♀] Spreading, vigorous, deciduous shrub with long, arching, grey-hairy shoots and lance-shaped, white-hairy, mid-green leaves, to 20cm (8in) long, that become greener with age. From late summer to autumn, bears fragrant, orange-eyed, violet-blue flowers in panicles to 20cm (8in) long. ↑ 2.5m (8ft), ↔ 3m (10ft). \*\*

**B. madagascariensis** [♀] syn. *B. nicodemii*, *Nicodemia madagascariensis*. Vigorous, strongly branched, evergreen shrub or lax climber with lance-shaped, deep green leaves, 5–14cm (2–5½in) long, white-felted beneath. From autumn to spring, bears bright orange-yellow flowers in slender, terminal panicles, 15–25cm (6–10in) long, sometimes followed by small, amethyst-purple berries. ↑→ 2–4m (6–12ft). Madagascar. ☉ (min. 5–7°C/41–45°F)

**B. nicodemii** see *B. madagascariensis*. **B. nivea**. Vigorous, upright, deciduous shrub with stout, densely white-woolly

*Buddleja madagascariensis*

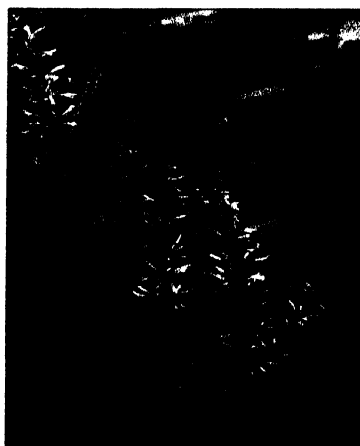
shoots and narrowly ovate leaves, to 20cm (8in) long, dark green above, white below. In late summer, bears slender panicles, to 15cm (6in) long, of pale lilac-blue or violet-blue flowers. ↑ 3m (10ft), ↔ 2.5m (8ft). China. \*\*

**B. officinalis**. Upright, evergreen or semi-evergreen shrub with arching shoots and narrowly lance-shaped, dark green leaves, 15cm (6in) long, grey beneath. From winter to early spring, bears fragrant, yellow-eyed, lilac-pink flowers in arching panicles, to 30cm (12in) long. ↑→ 2.5m (8ft). China. \*\*

**B. x pikei 'Hever'**. Spreading, branched, deciduous shrub with slender, arching shoots and opposite or alternate, ovate to oblong, grey-green leaves, to 15cm (6in) long, maturing to dark green. Fragrant, lilac-mauve flowers, with orange centres, are produced in arching panicles, to 30cm (12in) long, in late summer. ↑→ 3m (10ft). \*\*

**B. salviifolia** (South African sage wood). Arching, semi-evergreen shrub with sage-like, lance-shaped, grey-green leaves, to 10cm (4in) long, borne on very short stalks. Fragrant, pale lilac-blue flowers are produced in panicles, to 15cm (6in) long, in late autumn and early winter. ↑ 3m (10ft), ↔ 3m (10ft) or more. E. Africa, South Africa. \*\*

**B. 'West Hill'** [♀] Vigorous, deciduous shrub with long, arching, grey-hairy shoots and lance-shaped, white-hairy, mid-green leaves, 20cm (8in) long. Fragrant, orange-eyed, pale lavender-blue flowers are produced in slender, arching panicles, to 20cm (8in) long, from late summer to autumn. ↑ 2.5m (8ft), ↔ 3m (10ft). \*\*

*Buddleja lindleyana**Buddleja 'West Hill'**Buddleja x weyeriana 'Sungold'*

**B. x weyeriana** (*B. davidii* x *B. globosa*). Spreading, deciduous shrub with long, arching shoots and lance-shaped, mid-green leaves, to 20cm (8in) long, both grey-hairy when young. Rounded clusters of fragrant yellow to violet flowers are produced in open, terminal panicles, to 30cm (12in) long, from summer to autumn. ↑ 4m (12ft), ↔ 3m (10ft). Garden origin. \*\*

**'Golden Glow'** is vigorous, with loose clusters of mauve-flushed, orange-yellow flowers. **'Sungold'** [♀] has dense heads of dark orange-yellow flowers.

▷ **Buffalo berry** see *Shepherdia argentea*

▷ **Buffalo-wood** see *Burchellia*

▷ **Bugbane** see *Cimicifuga*

▷ **Bugle** see *Ajuga*

**Blue** see *A. genevensis*

**Pyramidal** see *A. pyramidalis*

**Upright** see *A. genevensis*

## BUGLOSSOIDES

### BORAGINACEAE

Genus, similar to *Lithospermum*, of about 15 species of hairy annuals, perennials, and evergreen or semi-evergreen subshrubs from sunny scrub and rocky slopes in W. and S. Europe, N. Africa, and parts of W. Asia. They have erect or decumbent stems, which sometimes root at the tips, and produce variable, simple, rough-hairy, mid- to dark green leaves and terminal cymes of small, salverform flowers. Grow in a border, rock garden, or wild garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, fertile, neutral to alkaline soil in full sun with some midday shade.

• **PROPAGATION** Sow seed of annuals and perennials in containers in a cold frame in autumn or spring. Divide perennials in early spring. Root softwood cuttings of subshrubs in midsummer.

• **PESTS AND DISEASES** Trouble free.

**B. gastonii**. Rhizomatous perennial with erect stems and ovate-lance-shaped to lance-shaped, rough, mid-green leaves, to 6cm (2½in) long. In early summer, bears cymes of initially purple, later blue flowers, to 1.5cm (½in) long, with white throats. ↑ 30–45cm (12–18in), ↔ 30cm (12in). W. Pyrenees. \*\*

**B. purpureocaulis** [♀] syn. *Lithospermum purpureocaulis*. Rhizomatous perennial with tip-rooting,

*Buglossoides purpureocaulis*

decumbent, non-flowering stems and lance-shaped, dark green leaves, to 8cm (3in) long. In late spring and early summer, erect stems bear cymes of initially purple, later gentian-blue flowers, 1–2cm (½–¾in) long. ↑ to 60cm (24in), ↔ variable. W. Europe to N. Iran. \*\*

## BULBINE

### ASPHODELACEAE/LILIACEAE

Genus of about 30 species of clump-forming, succulent and non-succulent, occasionally slightly woody-stemmed, sometimes bulbous or tuberous perennials, and one annual, occurring in desert grasslands in E. and South Africa, and Australia. They have linear to broadly lance-shaped, mid- to blue-green, basal leaves. Dense, terminal racemes of small, star-shaped to shallowly cup-shaped flowers, with conspicuously hairy stamens, are borne in spring or summer. In frost-prone areas, grow in a cool greenhouse. In frost-free areas, grow in a rock garden.

• **HARDINESS** Half hardy to frost tender; some withstand occasional light frost.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional sharp sand, in full light with good ventilation. Water freely when in growth; keep dry in winter. Outdoors, grow in well-drained, sandy loam in full sun. Bulbines are tolerant of poor, dry soil.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring. Divide or root offsets in spring. Root stem cuttings of *B. frutescens* in summer.

• **PESTS AND DISEASES** Trouble free.

**B. alooides**. Clump-forming perennial with compact rosettes of lance-shaped, fleshy, mid-green leaves, 15–22cm (6–9in) long. Racemes, 20–30cm (8–12in) long, of star-shaped yellow flowers, to 4mm (¼in) across, are produced in late spring. ↑ 30cm (12in), ↔ 15cm (6in). South Africa. ☉ (min. 5°C/41°F)

**B. caulescens** see *B. frutescens*.

**B. frutescens**, syn. *B. caulescens*.

Succulent, branching, slightly woody-stemmed perennial with lance-shaped, blue-green, basal leaves, 4–22cm (1½–9in) long. Racemes, 15–30cm (6–12in) long, of star-shaped yellow flowers, 7–10mm (¼–½in) across, are borne in summer. ↑→ 40cm (16in). South Africa. ☉ (min. 5°C/41°F)



*Bulbinella hookeri*

## BULBINELLA

ASPHODELACEAE/LILIACEAE

Genus of 20 species of robust perennials from grassland in South Africa and New Zealand. They have fleshy roots, and basal rosettes of succulent, grass-like leaves, 15–45cm (6–18in) long. In late winter, spring, or summer, they bear dense, terminal racemes of star-shaped or shallowly cup-shaped, occasionally monoecious flowers, usually to 1.5cm (½in) across. Grow in a rock garden or peat garden. In frost-prone areas, grow *B. cauda-felis* in an alpine house.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Grow in moist but well-drained, neutral to acid soil in full sun or partial shade. Mulch with leaf mould in winter. In an alpine house, grow in a mix of equal parts loam, leaf mould, and sharp sand.
- **PROPAGATION** Sow seed in a cold frame as soon as ripe. Divide in autumn.
- **PESTS AND DISEASES** Prey to whiteflies, red spider mites, and aphids under glass.

*B. cauda-felis*, syn. *B. setosa*. Robust perennial with leaves to 20cm (8in) long and racemes of bisexual yellow flowers, ageing to reddish brown, borne in late winter and early spring. †30cm (12in), ↔15cm (6in). South Africa. \*

*B. hookeri* ■ Robust perennial with leaves 30cm (12in) long and racemes of bisexual yellow flowers borne from spring to summer. †60cm (24in), ↔30cm (12in). New Zealand. \*\*

*B. rossii*. Robust perennial with leaves to 30cm (12in) long and racemes of unisexual yellow flowers produced in spring. †1.2m (4ft), ↔45cm (18in). New Zealand. \*\*

*B. setosa* see *B. cauda-felis*.

## BULBOCODIUM

COLCHICACEAE/LILIACEAE

Genus, related to *Colchicum*, of 2 species of cormous perennials from alpine meadows and dry grassland in S. and E. Europe. The funnel-shaped flowers, each with a single style, divided at the tip, and 6 free, clawed tepals, are borne in spring, just before or with the linear to lance-shaped, dark green leaves. Grow in a rock garden, or naturalize in turf.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Plant corms 8cm (3in) deep in autumn, in humus-rich, well-drained soil in full sun.

*Bulbocodium vernum*

- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Remove offsets in summer.
- **PESTS AND DISEASES** Trouble free.

*B. vernum* ■ Cormous perennial with 2 narrowly linear, glossy, dark green leaves, to 15cm (6in) long. Pinkish purple flowers, 4–8cm (1½–3in) long, are produced in spring. †4–8cm (1½–3in), ↔5cm (2in). Pyrenees, S.W. and W. central Alps. \*\*\*

## BULBOPHYLLUM

ORCHIDACEAE

Genus of 1,000–1,200 species of very variable, evergreen, epiphytic orchids from a range of habitats throughout tropical and subtropical regions. They have creeping or pendent rhizomes with angular pseudobulbs bearing 1 or 2 apical, ovate, oval, oblong-oval, or lance-shaped leaves. Flowers are borne at various times of the year, in basal racemes or umbels, occasionally singly. Many are pungent or sweet-smelling.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in a half-pot or slatted basket, or epiphytically on bark. In summer, provide high humidity and partial shade; water freely, applying fertilizer at every third watering, and mist twice daily. In winter, admit full light and keep dry. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and “flows” over the sides.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*Bulbophyllum careyanum*

*B. careyanum* ■ Epiphytic orchid with spherical to oblong pseudobulbs, each with one oblong or linear-oblong leaf, to 25cm (10in). In summer, bears dense, cylindrical, arching to pendent racemes, to 20cm (8in) long, of small, fragrant, orange-yellow or green flowers, suffused red-brown or purple, with violet lips.

†25cm (10in), ↔30cm (12in). E. Himalayas, Burma, Thailand. ☼ (min. 13°C/55°F; max. 30°C/86°F)

*B. guttulatum*, syn. *Cirrhopetalum guttulatum*. Epiphytic orchid with ovoid pseudobulbs, each with one narrowly ovate leaf, 10cm (4in) long. Upright, umbel-like panicles, 15–25cm (6–10in) tall, of several small, purple-spotted, straw-yellow or green flowers, with pale purple lips, are produced in summer.

†25cm (10in). India. ☼ (min. 13°C/55°F; max. 30°C/86°F)

*B. lobbii*. Epiphytic orchid with ovoid pseudobulbs, each with one narrowly oval leaf, 10cm (4in) long. In early summer, bears solitary, red-speckled, ochre-yellow flowers, 7–10cm (3–4in) across. †15cm (6in), ↔23cm (9in).

N.E. India, S.E. Asia to the Philippines. ☼ (min. 13°C/55°F; max. 30°C/86°F)

*B. medusae*, syn. *Cirrhopetalum medusae*. Epiphytic orchid with ovoid pseudobulbs, each with one narrowly lance-shaped leaf, 15cm (6in) long. In summer, produces erect or arching flower stems bearing terminal umbels, to 15cm (6in) long, of small, white or cream flowers, spotted red or yellow.

†20cm (8in), ↔23cm (9in). Thailand, Malaysia to Borneo and the Philippines. ☼ (min. 13°C/55°F; max. 30°C/86°F)

† **Bulbous plants** see pp.44–45

† **Bulrush** see *Typha*, *T. latifolia*

† **Lesser** see *Typha angustifolia*

† **Bunny ears** see *Opuntia microdasys* var. *pallida*

† **Bunya-bunya** see *Araucaria bidwillii*

## BUPHTHALMUM

ASTERACEAE/COMPOSITAE

Genus of 2 species of perennials found on rocky slopes, open woodland, and meadows in Europe and W. Asia. They have alternate, lance-shaped to obovate, entire or toothed leaves, and produce daisy-like yellow flowerheads from early summer to early autumn. Suitable for a border, a wild garden, or a grassy bank.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor, dry soil in full sun.

*Buphthalmum salicifolium*

- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide in early spring.

- **PESTS AND DISEASES** Trouble free.

*B. salicifolium* ■ Clump-forming perennial with narrowly obovate to lance-shaped, willow-like, dark green leaves, to 10cm (4in) long. From early summer to early autumn, erect, slender stems produce deep yellow flowerheads, 5–7cm (2–3in) across; these last well when cut. †60cm (24in), ↔45cm (18in). C. Europe. \*\*\*

*B. speciosum* see *Telekia speciosa*.

## BUPLEURUM

Theridaceae

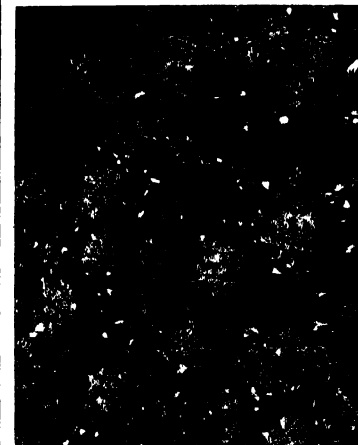
APIACEAE/UMBELLIFERAE

Genus of about 100 species of annuals, perennials, and evergreen or semi-evergreen shrubs. They are widely distributed in the N. hemisphere, with some species in southern Africa, and occur on dry, upland scrub, in moist areas, and among rocks. The variably shaped leaves are alternate, simple, and entire, often with conspicuous parallel veins. Umbels of star-shaped, yellow or green flowers are usually surrounded by involucre of leafy bracts. Grow in a flower border or shrub border. Plant the smaller species in a rock garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun. Dead-head to avoid self-seeding. Grow *B. fruticosum* in a warm, sheltered site. Pruning group 9, if required; tolerates hard pruning.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide perennials in spring. Root semi-ripe cuttings of shrubs in summer.
- **PESTS AND DISEASES** Trouble free.

*B. angulosum*. Clump-forming, semi-evergreen perennial with linear-lance-shaped, blue-green basal leaves, 10–35cm (4–14in) long, and broader, heart-shaped, blue-green stem leaves, to 5cm (2in) long, clasping the upright, branching stems with their bases. In mid- and late summer, bears terminal umbels, 1cm (½in) across, comprising rings of 4–6 ovate, jade-green bracts surrounding clusters of tiny, star-shaped, yellowish or creamy green flowers. †30cm (12in). Pyrenees, N.E. Spain. \*\*\*

*B. fruticosum* ■ (Shrubby hare's ear). Open, spreading but dense, evergreen

*Bupleurum fruticosum*

## BUFLEURUM

shrub with long, slender, mainly unbranched, erect shoots and narrowly obovate, blue-green leaves, to 8cm (3in) long. Small, star-shaped yellow flowers are borne in domed, terminal umbels, to 4cm (1½in) across, from midsummer to early autumn. Suitable for a coastal garden. ‡2m (6ft), ↔2.5m (8ft). Mediterranean. \*\*\* (borderline)

**B. rotundifolium.** Bushy, yellow-stemmed annual or short-lived perennial with stem-clasping, ovate to elliptic, or rounded, glaucous, mid-green leaves, 2–5cm (¾–2in) long, slightly pink-flushed when young. In summer, bears umbels, to 3cm (1¼in) across, of 4–8 greenish yellow bracts surrounding tiny, star-shaped, yellow-green flowers. ‡45–60cm (18–24in), ↔30cm (12in). C. and S. Europe, C. Asia. \*\* **'Green Gold'**, syn. **'Leprechaun Green Gold'**, has light green leaves and yellow flowers; ‡to 45cm (18in).

## BURCHARDIA

Milkmaids

COLCHICACEAE/LILIACEAE

Genus of 5 species of perennials from dry woodland and swamps in temperate Australia, grown for their umbels of 5–20, sometimes fragrant, star-shaped flowers. They have small corms, thick tuberous roots, and 1–5 linear, basal leaves, with a few leaves on the scapes in some species. In frost-prone areas, grow in a warm greenhouse or conservatory, or grow outdoors in a sunny border and lift and pot for winter storage. In warmer climates, grow in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in equal parts loam, leaf mould, and sharp sand in full light. Water freely when in growth, then sparingly as leaves wither, to store dry in winter. Pot on in spring. Outdoors, grow in humus-rich, moist but well-drained soil in full sun.
- **PROPAGATION** In spring, sow seed at 15–18°C (59–64°F) or pot up offsets.
- **PESTS AND DISEASES** Trouble free.

**B. umbellata.** Fleshy-rooted perennial with 1 or 2 linear, basal leaves, 4.5–6cm (1¾–2½in) long. In late spring and early summer, bears umbels of 2–9 fragrant, greenish white to white flowers, often tinged red outside, with purple anthers. ‡10–65cm (4–26in), ↔10–15cm (4–6in). Australia (except Northern Territory). ☼ (min. 10–13°C/50–55°F)

## BURCHELLIA

Buffalo-wood

RUBIACEAE

Genus of one species of evergreen shrub from warm-temperate forests of South Africa, grown for its small, terminal heads of flowers. The leaves are opposite and ovate. In frost-prone climates, grow *B. bubalina* in a cool greenhouse; in warmer areas, grow in a border.

- **HARDINESS** Frost tender, but will tolerate short spells around 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with full light and good ventilation. Water moderately throughout the year, applying a balanced liquid fertilizer monthly from spring to autumn. Pot on or top-dress in late winter. Outdoors,

*Burchellia bubalina*

grow in moist but well-drained, fertile soil in full sun. Pruning group 8.

- **PROPAGATION** Root semi-ripe cuttings in a propagating case in summer, with gentle bottom heat.
- **PESTS AND DISEASES** Red spider mites, whiteflies, aphids, and mealybugs may be a problem under glass.

**B. bubalina** ☐ syn. *B. capensis* (Wild pomegranate). Erect to spreading shrub with ovate, glossy, dark green leaves, to 12cm (5in) long. From spring to summer, bears terminal clusters of 3–12 narrowly bell-shaped or tubular flowers, 2.5cm (1in) long, with 5 orange or scarlet petal lobes, ageing to red. These are followed by spherical, red to brown berries, 1.5cm (½in) across. ‡2–5m (6–15ft), ↔1–3m (3–10ft). South Africa. ☼ (min. 5°C/41°F)

**B. capensis** see *B. bubalina*.

▷ **Burnet** see *Sanguisorba*

**Canadian** see *S. canadensis*

**Greater** see *S. officinalis*

▷ **Burning bush** see *Bassia scoparia* f. *trichophylla*, *Dictamnus albus*

▷ **Burr, New Zealand** see *Acaena*

▷ **Burrawong** see *Macrozamia communis*

## BURSERA

BURSERACEAE/PITTOSPORACEAE

Genus of about 40 species of variable, semi-evergreen, shrub- and tree-like perennials found in low, often hilly terrain from the Colorado Desert, USA, south to tropical Central America. They usually have stout trunks or stems; the succulent species are relatively fleshy. Pinnate, alternate leaves are clustered near the stem tips. Insignificant, usually white flowers are borne singly or in few-flowered cymes at the stem tips in summer, followed by single-seeded, capsular or fleshy fruits. Burseras may be treated as bonsai plants. In frost-prone areas, grow in a temperate greenhouse; in warmer areas, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 4 parts standard cactus compost and 1 part lime chippings in full light. When in growth, water freely and apply half-strength balanced liquid fertilizer monthly; keep completely dry in winter. Outdoors, grow in sharply drained, ideally alkaline soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Root stem

cuttings in late spring or early summer with bottom heat.

- **PESTS AND DISEASES** Aphids and, rarely, mealybugs may be troublesome.

**B. microphylla** (Elephant tree). Tree-like, perennial succulent with a stout, fleshy trunk and papery white bark, which readily peels off and exudes a milky white sap. Fern-like, pinnate leaves, 7–10cm (3–4in) long, have 30 or more oblong-linear leaflets, in opposite pairs. Cymes of star-shaped, yellow or white flowers, 1cm (½in) across, are produced in summer. ‡to 5m (15ft), ↔to 1.5m (5ft). USA (Colorado Desert). ☼ (min. 7–10°C/45–50°F)

▷ **Busy Lizzie** see *Impatiens*, *I. walleriana*

## BUTEA

LEGUMINOSAE/PAPILIONACEAE

Genus of 4 species of deciduous trees, shrubs, and climbers from tropical forest in India, Sri Lanka, Burma, and Malaysia. They have large, long-stalked, alternate, fully divided, 3-palmate leaves and colourful, pea-like flowers in showy, terminal racemes or panicles. Only the trees are usually grown. In frost-prone areas, grow in a warm greenhouse; in warmer climates, use as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with high humidity. When in growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Top-dress or pot on in spring. Outdoors, grow in moderately fertile soil in full sun. Pruning group 1, but need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Root semi-ripe cuttings in a propagating case with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**B. frondosa** see *B. monosperma*.

**B. monosperma** ♀ syn. *B. frondosa* (Dhak, Flame of the forest, Palas). Strongly branched tree, twisting with age. Leathery, silky-backed leaves consist of 3 diamond-shaped to rounded leaflets, 10–20cm (4–8in) long, borne on stalks almost as long. Racemes, to 15cm (6in) long, of silver-hairy, rich vermilion flowers, 3–4cm (1¼–1½in) long, are borne along the bare branches from winter to spring. ‡to 15m (50ft), ↔3–5m (10–15ft). India, Sri Lanka, Burma. ☼ (min. 16°C/61°F)

## BUTIA

ARECACEAE/PALMAE

Genus of 8–12 species of monoecious, single-stemmed palms from cool, dry areas of S. Brazil, Paraguay, Uruguay, and Argentina. They bear panicles of 3-petalled, male and female flowers among dense, terminal heads of pinnate leaves. In frost-prone areas, grow young butias as houseplants or in a cool greenhouse or conservatory. In frost-free areas, grow as specimen trees.

- **HARDINESS** Half hardy to frost tender; withstand short periods near 0°C (32°F) in very dry, sunny climates.

*Butia capitata*

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed at 24–29°C (75–84°F) in spring.
- **PESTS AND DISEASES** Prey to red spider mites and scale insects under glass.

**B. capitata** ☐♀ syn. *Cocos capitata* (Jelly palm). Slow-growing palm with a sturdy trunk often clothed with leaf bases. Strongly arching, narrowly elliptic to elliptic, blue-green-tinted, grey-green leaves, 2m (6ft) or more long, are comprised of many slender, leathery leaflets. Yellow flowers are borne in panicles, to 1.5m (5ft) long, in summer, followed by spherical to ovoid, yellow to purple fruit. ‡4–6m (12–20ft), ↔3–5m (10–15ft). S. Brazil, Uruguay, Argentina. ☼ (min. 5–10°C/41–50°F). **var. nehrlingiana** bears red-purple, female flowers and red fruit. **var. pulposa** has pulpy, edible yellow fruit.

## BUTOMUS

Flowering rush, Water gladiolus

BUTOMACEAE

Genus of one species of rhizomatous, aquatic perennial widely distributed in Europe and W. Asia, often found at the margins of ponds or in shallow water with reedmaces (*Typha*). It produces long, twisted leaves and fragrant flowers. *B. umbellatus* is ideal for a large, decorative pond or wildlife pool.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in rich mud at the margins of ponds, or in water to 25cm (10in) deep, in full sun. If grown in a container, divide regularly to maintain free flowering. See also pp.52–53.
- **PROPAGATION** Sow seed in moist soil in a container half submerged in shallow water, in summer; after germination,

submerge the seedlings to a depth of 1cm (½in). Divide rhizomes in early spring when dormant. Remove root bulbils of divided plants in early spring and grow on in small containers of soil half submerged in water.

• **PESTS AND DISEASES** Water lily aphid may be troublesome.

**B. umbellatus** ♀ Rush-like, marginal, aquatic perennial with long, twisted, radical, mid-green leaves, 1cm (½in) wide, turning bronze-purple then dark green as they extend, with sheathed, triangular bases. Spreading umbels, to 10cm (4in) across, of many cup-shaped, fragrant, rose-pink flowers, 1–2.5cm (½–1in) across, are borne well above the water in late summer. † to 1.5m (5ft), ↔ 45cm (18in). Eurasia. \* \* \*

▷ **Butterbur** see *Petasites*

▷ **Buttercup** see *Ranunculus*

**Bulbous** see *R. bulbosus*

**Double creeping** see *R. repens* 'Pleniflorus'

**Giant** see *R. hyalii*

**Meadow** see *R. acris*

**Persian** see *R. asiaticus*

▷ **Butterfly bush** see *Buddleja davidii*

▷ **Butterfly flower** see *Schizanthus*

▷ **Butterfly weed** see *Asclepias tuberosa*

▷ **Butternut** see *Juglans cinerea*

▷ **Butter tree** see *Tylecodon paniculatus*

▷ **Butterwort** see *Pinguicula*

▷ **Buttonbush** see *Cephalanthus occidentalis*

▷ **Buttons, Blue** see *Succisa pratensis*

▷ **Button-willow** see *Cephalanthus occidentalis*

▷ **Buttonwood** see *Platanus occidentalis*

## BUXUS

Box, Boxwood

BUXACEAE

Genus of about 70 species of evergreen shrubs and trees found in habitats ranging from rocky hills to woodland in Europe, Asia, Africa, and Central America. The leaves are opposite, linear-lance-shaped to almost rounded, entire, and leathery. In spring, small, axillary, star-shaped, yellow-green flowers of both sexes are borne on the same plant; several male flowers, with conspicuous yellow anthers, surround one female. Boxes are grown mainly for their foliage, which may be variegated, and for their ability to withstand clipping, which makes them ideal for hedging and topiary. Use dwarf boxes for edging,



*Buxus harlandii* of gardens



*Buxus microphylla* 'Green Pillow'

for ground cover, or in a rock garden. Contact with box sap may irritate skin.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in any fertile, well-drained soil, preferably in partial shade. They are tolerant of sun, but the combination of full sun and dry soil may encourage poor, dull foliage colour or scorching. Pruning group 8; trim hedges and edging plants in summer. Tolerant of hard, rejuvenative pruning in late spring, if followed by an application of fertilizer and a mulch.

• **PROPAGATION** Sow seed of *B. wallichiana* in containers in a cold frame in autumn. Root semi-ripe cuttings in summer. Graft in winter.

• **PESTS AND DISEASES** Box sucker and red spider mites may be troublesome.

**B. balearica** ♀ (Balearic box). Vigorous, broadly upright shrub or small tree with ovate to ovate-oblong, glossy, bright green leaves, to 4cm (1½in) long, † 3m (10ft), ↔ 2.5m (8ft). Spain, Sardinia. \* \*

**B. 'Green Mountain'**. Dense, conical shrub with narrow, inversely lance-shaped, glossy, dark green leaves, 1.5cm (½in) long, somewhat blue-tinged at first. Excellent as a low hedge. † 1.5m (5ft), ↔ 1m (3ft). \* \* \*

**B. harlandii** of gardens □ syn.

*B. microphylla* var. *japonica*. Slow-growing, very dense, upright shrub with narrowly lance-shaped, mid- to deep green leaves, to 3cm (1¼in) long. The plant grown under this name is not the true *B. harlandii*, which is tender and native to S. China and Hong Kong. † 1.5m (5ft), ↔ 1.2m (4ft). \* \* \*



*Buxus sempervirens* 'Handsworthensis'



*Buxus sempervirens* 'Latifolia Maculata'

**B. microphylla** (Small-leaved box).

Slow-growing, dense, rounded shrub with elliptic-oblong to inversely lance-shaped, dark green leaves, to 2cm (¾in) long, turning bronze in winter. † 75cm (30in), ↔ 1.5m (5ft). Probably of garden origin. \* \* \*. **'Compacta'** is very compact, dense, and slow-growing, with obovate, slightly recurved leaves, to 5mm (¼in) long; † to 30cm (12in). **'Curly Locks'** has an open habit, and pale green leaves on twisted shoots; † 1m (3ft), ↔ 1.2m (4ft). **'Green Jade'** has broadly ovate to rounded, pale green leaves, which are deeply notched at the tips; † 60cm (24in), ↔ 1m (3ft). **'Green Pillow'** □ is very compact, dense, and slow-growing, with obovate, slightly recurved leaves; † 45cm (18in), ↔ 1m (3ft). var. *japonica* see *B. harlandii* of gardens. var. *koreana*, syn. *B. sinica* var. *insularis*, is very hardy; † 60cm (24in), ↔ 75cm (30in); Korea, China. **'Morris Dwarf'** is slow-growing, forming a low, compact mound; † 30cm (12in), ↔ 45cm (18in). **'Wintergreen'** is very hardy, and retains the dark green colour of its foliage in winter.

**B. sempervirens** ♀ (Common box). Bushy, rounded shrub or small tree with



*Buxus sempervirens* 'Marginata'



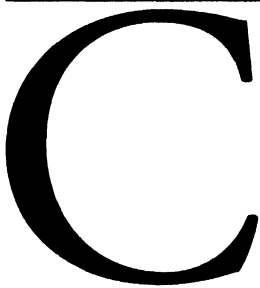
*Buxus sempervirens* 'Suffruticosa'

ovate to oblong, glossy, dark green leaves, to 3cm (1¼in) long, which are notched at the tips. † 5m (15ft), ↔ 5m (15ft) or more. Europe, N. Africa, Turkey. \* \* \*. **'Aureomarginata'** see **'Marginata'**. **'Elegantissima'** ♀ is very dense, with narrow, white-margined leaves, to 2cm (¾in) long; † to 1.5m (5ft). **'Handsworthensis'** □ is dense and upright, with leaves to 4cm (1½in) long. Very good as a hedge. **'Latifolia Maculata'** □ ♀ is compact, with bright yellow young foliage, maturing to dark green marked yellow; † 2.5m (8ft), ↔ 2m (6ft). **'Marginata'** □ syn. **'Aureomarginata'**, has yellow-margined, dark green leaves; † 2.5m (8ft), ↔ 3m (10ft). **'Suffruticosa'** □ ♀ is compact and very slow-growing. Excellent as a hedge; † 1m (3ft), ↔ 1.5m (5ft). **'Vardar Valley'** forms a flat-topped mound, and has very dark green leaves; † 1.5m (5ft).

**B. sinica** var. *insularis* see

*B. microphylla* var. *koreana*.

**B. wallichiana** (Himalayan box). Open shrub with narrowly ovate-lance-shaped, glossy, bright green leaves, to 6cm (2½in) long, notched at the tips and borne on 4-angled shoots. † to 2.5m (8ft). N.W. Himalayas. \* \*



- ▷ **Cabbage palm** see *Cordyline, Livistona australis*  
**New Zealand** see *Cordyline australis*  
**Saw** see *Acoelorrhaphe wrightii*  
 ▷ **Cabbage tree** see *Cordyline*

## CABOMBA

CAOMBACEAE

Genus of 7 species of submerged aquatic perennials found in still water in tropical and subtropical areas of North and South America. Long, thin, branching stems produce opposite or whorled submerged leaves, divided into linear lobes, and alternate, peltate floating leaves with broadly ovate to narrowly elliptic leaf-blades. The solitary flowers, 1–4cm (½–1½in) across, are borne above the water on long stems. They are attractive aquarium oxygenators, valued for their feathery foliage.

- **HARDINESS** Frost tender.
- **CULTIVATION** In an aquarium, grow in full light in pots of coarse sand or grit in lime-free water without air-diffusers, as they dislike water movement. Most require a minimum temperature of 22°C (72°F), and water no deeper than 40cm (16in). *C. caroliniana* will overwinter at 18°C (64°F). See also pp.52–53.
- **PROPAGATION** Take stem tip cuttings, to 30cm (12in) long, in spring or early summer. Insert bunches of 5 or 6 cuttings into the aquarium soil.
- **PESTS AND DISEASES** Trouble free.

**C. caroliniana** ■ (Carolina water shield). Aquatic perennial with fan-shaped, sharp-pointed, dark green submerged leaves, to 7cm (3in) long,

divided into 5 leaflets. The ovate, inversely lance-shaped to linear-oblong, sharp-pointed, mid-green floating leaves are 2cm (¾in) long. In summer, saucer-shaped, white or purple-pink flowers, 3–4cm (1¼–1½in) across, with 2 yellow spots at the base of each petal, are produced singly from the leaf axils, just above the water. ↔ indefinite. C. and S.E. USA. ☼ (min. 18°C/64°F)

- ▷ **Calalia** see *Emilia*  
**C. coccinea** see *E. coccinea*  
**C. sagittata** see *E. coccinea*  
**C. sonchifolia** see *E. sonchifolia*  
 ▷ **Cacti** see pp.48–49  
 ▷ **Cactus,**  
**Christmas** see *Schlumbergera, S. x buckleyi*  
**Cotton-pole** see *Opuntia vestita*  
**Crab** see *Schlumbergera truncata*  
**Dumpling** see *Lophophora williamsii*  
**Easter** see *Hatiora rosea*  
**Goat's horn** see *Astrophytum capricorne*  
**Golden barrel** see *Echinocactus grusonii*  
**Gold lace** see *Mammillaria elongata*  
**Grizzly bear** see *Opuntia erinacea* var. *ursina*  
**Mistletoe** see *Rhipsalis baccifera*  
**Old lady** see *Mammillaria hahniana*  
**Old man** see *Cephalocereus senilis*  
**Orchid** see *Epiphyllum*  
**Peanut** see *Echinopsis chamaecereus*  
**Rat's tail** see *Aporocactus*  
**Saguaro** see *Carnegiea gigantea*  
**Sand dollar** see *Astrophytum asterias*  
**Scarlet ball** see *Parodia haselbergii*  
**Sea-urchin** see *Astrophytum asterias*  
**Silver ball** see *Parodia scopa*  
**Snowball** see *Mammillaria bocasana*  
**Snowball cushion** see *Mammillaria candida*  
**Starfish** see *Orbea variegata*  
**Toad** see *Orbea variegata*  
**Turk's cap** see *Melocactus*

## CAESALPINIA

CAESALPINIACEAE/LEGUMINOSAE

Genus of 70 or more evergreen species of trees, scandent to climbing shrubs, and perennials found in scrub, lowland rainforest, and on rocky mountain slopes in tropical and subtropical areas. They are grown for their terminal racemes or panicles of 30–40 flowers, each 5-petalled and with protruding stamens, 5–7cm (2–3in) long, and for their alternate, 2-pinnate, fern-like leaves. In frost-prone areas, grow in a cool or temperate greenhouse. In frost-free regions, grow in a shrub border or as specimen plants.

- **HARDINESS** Half hardy to frost tender; *C. gilliesii* and *C. pulcherrima* may survive short spells around 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with additional leaf mould, in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in moist but well-drained, fertile soil in full sun. Pruning group 8, or group 13 if wall-trained; plants under glass may need restrictive pruning after the first flush of flowers.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, after soaking in warm water for 24 hours. Root soft-



*Caesalpinia pulcherrima*

wood cuttings in spring, or greenwood cuttings in summer.

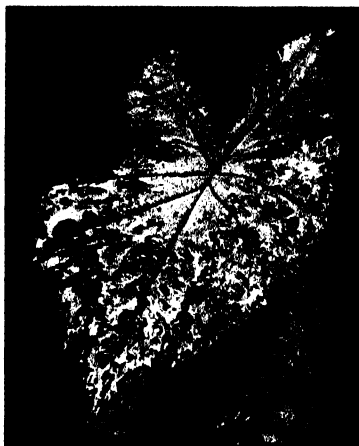
- **PESTS AND DISEASES** Prone to red spider mites, whiteflies, and mealybugs.

**C. gilliesii** ♀ syn. *Poinciana gilliesii* (Bird of paradise shrub). Erect to spreading shrub or small tree with 2-pinnate, mid- to dark green leaves, 20cm (8in) long, consisting of numerous oblong leaflets, 8mm (¼in) long. Erect racemes, 15–30cm (6–12in) long, of up to 40 yellow flowers, to 3.5cm (1½in) across, with scarlet stamens, are borne in summer. ↑ 2–3m (6–10ft) or more, ↔ 1–2.5m (3–8ft). Argentina, Uruguay. ★ (borderline)  
**C. pulcherrima** ■/△ syn. *Poinciana pulcherrima* (Barbados pride). Erect shrub or small tree with long-stalked, 2-pinnate, light green leaves, 30cm (12in) or more long, composed of numerous elliptic to obovate leaflets, 8mm (¼in) long. From spring to autumn, bears erect racemes, to 20cm (8in) long, of up to 40 irregularly bowl-shaped flowers, 3–4cm (1¼–1½in) across, with orange-yellow or yellow petals, orange-red sepals, and red stamens. ↑ 3–6m (10–20ft), ↔ 2–4m (6–12ft). Probably West Indies. ★ (borderline)

## CALADIUM

ARACEAE

Genus of 7 species of tuberous-rooted perennials from woodland margins in tropical South America. They are grown for their long-stalked, peltate, ovate to elliptic, broadly arrow- or lance-shaped leaves, which are variegated white, pink,



*Caladium bicolor* 'Pink Beauty'

or red. The greenish white spathes and spadices with green flowers are followed by white berries. In frost-prone areas, grow in a warm greenhouse; elsewhere, use as specimens in containers. Contact with all parts may irritate skin, and may cause mild stomach upset if ingested.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. Pot up tubers in spring and provide high humidity at 21°C (70°F), not less than 13°C (55°F) when leaves develop. During the growing season, maintain high humidity, water freely, and apply a balanced liquid fertilizer monthly; reduce water in autumn. Keep dormant tubers almost dry at 13–16°C (55–61°F). Outdoors, grow in moist but well-drained, humus-rich, slightly acid soil in partial shade.
- **PROPAGATION** Divide tubers in spring; dust cut portions with fungicide.
- **PESTS AND DISEASES** Trouble free.

**C. bicolor**, syn. *C. x hortulanum* (Angel wings, Elephant's ears, Heart of Jesus). Tuberous-rooted perennial, the spherical tubers producing slender stems, 15cm (6in) long, with peltate, arrow- or lance-shaped, dark green leaves, 15–30cm (6–12in) long, streaked or spotted white, pink, or red. In spring, bears greenish white spathes to 23cm (9in) long, ↑ 15–30cm (6–12in), ↔ 13–20cm (5–8in). Garden origin. ☼ (min. 13°C/55°F). 'Cadidum' has white foliage with dark green veins. 'John Peed' has leaves with dark red centres fading to broad, dark green margins. 'June Bride' has silvery white leaves with green veins. 'Pink Beauty' ■ has red-veined leaves, pink in the centres, with bright green, pink-speckled margins. 'Red Flash' has white-marked green leaves with red veins and wide green margins.

**C. x hortulanum** see *C. bicolor*.

## CALAMAGROSTIS

Reed grass, Smallweed

GRAMINEAE/POACEAE

Genus of about 250 species of sturdy, tufted, rhizomatous, perennial grasses widely distributed in temperate zones of the N. hemisphere, where they occur in marshland and damp woodland. They have linear, flat or channelled leaves and dense inflorescences borne in branching panicles. Ornamental cultivars are useful in a herbaceous or mixed border for their long-lasting, elegant inflorescences and architectural form. Some species may be invasive.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, humus-rich soil in sun or partial shade, although they will tolerate all but the poorest soils. In early spring, before new growth begins, cut down to the ground all stems that were left for winter effect.
- **PROPAGATION** Divide in mid-spring.
- **PESTS AND DISEASES** Trouble free.

**C. x acutiflora** (*C. arundinacea* x *C. epigejos*) (Feather reed grass). Slow-spreading, clump-forming, perennial grass with arching, linear, flat, slightly glossy, mid-green leaves, 45–90cm (18–36in) long. Stiff, erect, unbranched stems bear soft, silvery bronze to pale purple-brown inflorescences in narrow panicles, 15–30cm (6–12in) long, in



*Cabomba caroliniana*



*Calamagrostis x acutiflora* 'Overdam'

mid- and late summer; these persist throughout winter. \*\*\*.  $\uparrow$  0.6–1.8m (2–6ft),  $\leftrightarrow$  0.6–1.2m (2–4ft). Europe, Russia. 'Karl Foerster' has pink-bronze inflorescences that fade to buff or pale brown;  $\uparrow$  to 1.8m (6ft),  $\leftrightarrow$  60cm (24in). 'Overdam'  $\square$  has leaves with pale yellow margins and stripes, which fade to pink-flushed white with age. Bears purplish inflorescences that become greyish pink. Forms looser clumps than 'Karl Foerster';  $\uparrow$  to 1.2m (4ft).

*C. arundinacea* see *Stipa arundinacea*.

▷ **Calamint** see *Acinos*, *Calamintha*  
**Alpine** see *Acinos alpinus*  
**Lesser** see *Calamintha nepeta*

## CALAMINTHA

Calamint

LAMIACEAE/LAMIACEAE

Genus of 8 or more species of aromatic, sometimes rhizomatous perennials, some woody-based, found in grassland, scrub, and woodland in N. temperate regions. They have ovate to oblong, usually toothed leaves and bear axillary cymes of tubular, 2-lipped flowers, mainly in shades of blue, but pink or white in some species. Grow calamint in a rock garden, border, or an open woodland garden. The flowers attract bees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich soil in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide in early spring.
- **PESTS AND DISEASES** Powdery mildew may be a problem.

*C. alpina* see *Acinos alpinus*.

*C. corsica* see *Acinos corsicus*.

*C. grandiflora*, syn. *Clinopodium grandiflorum*. Rhizomatous, many-branched, bushy perennial with ovate, toothed leaves, 5cm (2in) long, dark green above and pale green beneath. Lax cymes of up to 5 pink flowers, 2.5–4cm

(1–1½in) long, are borne in summer. Thrives in dappled shade.  $\uparrow$  45cm (18in). S. and S.E. Europe to Caucasus, Ukraine (Crimea), Turkey, Iran. \*\*\*  
*C. nepeta* (Lesser calamint). Aromatic, low-growing, erect perennial with ovate, often shallowly toothed, hairy, dark green leaves, to 4cm (1½in) long. Bears mauve, occasionally pink flowers, to 1.5cm (½in) long, in 5- to 15-flowered, branched cymes in summer.  $\uparrow$  to 45cm (18in),  $\leftrightarrow$  50–75cm (20–30in). S. and C. Europe, N.W. Africa, N. Turkey, Caucasus, Ukraine (Crimea). \*\*\*

▷ **Calamondin** see *Citrofortunella microcarpa*

## CALAMUS

ARECACEAE/PALMAE

Genus of about 370 species of spiny, evergreen, usually climbing, occasionally shrub-like, dioecious palms found in tropical forest in Africa and Asia, New Guinea, and from N.E. Australia to Fiji. The pinnate leaves, sometimes ending in barbed whips, have lance-shaped leaflets. The inflorescences, borne among the leaf sheaths, have tubular, spiny, persistent bracts. Male flowers are solitary and symmetrical; female flowers are paired with sterile males, and are often larger and followed by spherical yellow fruits, 1–3cm (½–1¼in) across. Many species are used to make cane furniture. Grow through shrubs or trees. In frost-prone areas, grow young plants in a conservatory, as houseplants, or in a temperate greenhouse.

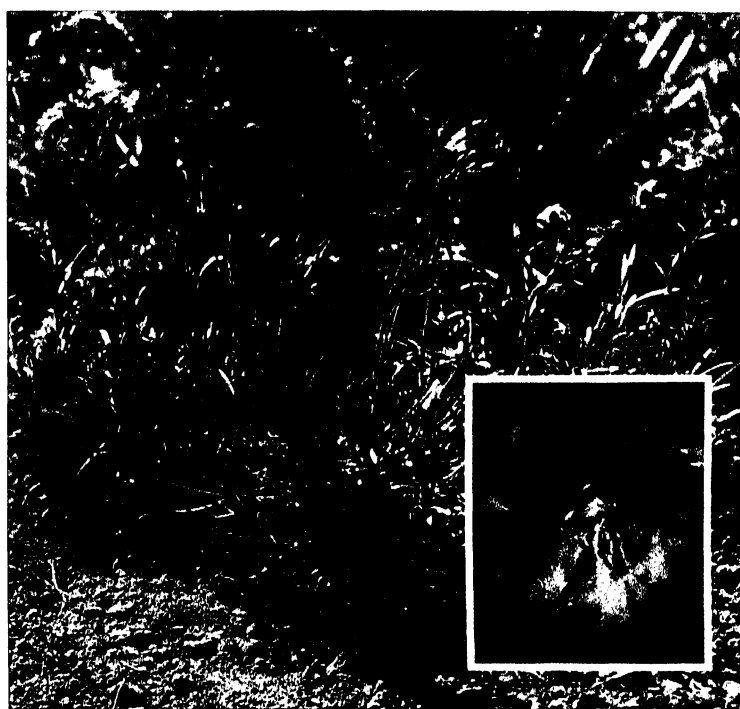
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light and high humidity. Throughout the summer, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in moist but well-drained soil in partial shade.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

*C. rotang* ♀–\* (Rattan cane). Erect or climbing palm with solitary or clustered stems and alternate or nearly opposite, pinnate, light to mid-green leaves, 80cm (32in) long, composed of lance-shaped leaflets. Star-shaped, 3-pointed cream flowers, 1.5cm (½in) long, may be produced at any time during the year.  $\uparrow$  10m (30ft),  $\leftrightarrow$  6–10m (20–30ft). S. India, Sri Lanka.  $\star$  (min. 10°C/50°F)

## CALANDRINIA

PORTULACACEAE

Genus of about 150 species of annuals and short-lived, tufted to clump-forming, evergreen perennials, a few of which are succulent. They occur in hot, dry, open, rocky areas, and sometimes grassy or bare alpine steppe or scree, in W. North America, Central America to N.W. and W. South America, and also S. Australia. Although they often appear rosetted, the narrow, entire, usually fleshy leaves are alternate. The 5- to 7-petalled flowers, with 2 large sepals, are usually red, reddish purple, or white, and may be solitary or borne in semi-erect or pendent racemes or panicles on long stalks. In frost-prone areas, treat



*Calandrinia umbellata* (inset: flower detail)

calandrinias as half-hardy annuals, or grow in a cool greenhouse. Elsewhere, grow on a sunny bank, or in a border, rock garden, scree bed, or alpine house.

- **HARDINESS** Frost hardy (but intolerant of winter wet) to frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam, peat, leaf mould, and sand in full light. Water moderately when in growth (the high alpine species in particular are very sensitive to excess water) and apply a dilute, balanced liquid fertilizer monthly in summer; keep just moist in winter. Outdoors, grow in slightly acid, humus-rich, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in early spring or autumn, or take stem cuttings in spring. Propagate regularly.
- **PESTS AND DISEASES** Prone to aphids and red spider mites under glass. Young plants are vulnerable to slugs and snails.

*C. caespitosa*. Cushion-forming, variable, evergreen perennial with fleshy, linear to inversely lance-shaped, mid-green leaves, 0.5–3cm (¼–1¼in) long. The best variants have compact cushions of small-leaved rosettes, and bear cup-shaped, glossy magenta flowers, 1.5cm (½in) across, with greenish gold disc-florets, singly on short stems in summer. Less compact variants with golden orange or pale pink flowers also occur.  $\uparrow$  to 7cm (3in),  $\leftrightarrow$  to 10cm (4in). Chile, Argentina, and Tierra del Fuego. \*\*\*  
*C. ciliata*. Semi-prostrate to semi-erect annual with fleshy, linear to spoon-shaped, grey-green leaves, 4cm (1½in) long, purple beneath, on spreading, erect stems. In late summer, bears solitary, purple, red, pink, or white flowers, to 2cm (¾in) across. Needs light soil in a sheltered site in full sun.  $\uparrow$  to 30cm (12in). Ecuador, Peru. \*  
*C. grandiflora*. Clump-forming perennial succulent, often grown as an annual, with thick, elliptic, pointed, flat, smooth-margined, bright green leaves,

to 20cm (8in) long. Racemes of numerous cup-shaped, pale reddish purple to magenta flowers, to 3cm (1¼in) across, are borne in summer.  $\uparrow$  to 1m (3ft),  $\leftrightarrow$  45cm (18in). Chile. \* (min. 6°C/43°F)

*C. megarrhiza* var. *nivalis* see *Claytonia megarrhiza* var. *nivalis*.

*C. spectabilis*. Shrubby, tufted perennial producing succulent branches, stems, and foliage. Pointed, softly hairy, smooth-margined, light to mid-green leaves, 3–4cm (1¼–1½in) long, are diamond- or spoon- to lance-shaped. In summer, bears solitary or paired, cup-shaped, vivid purple-red flowers, 5cm (2in) across.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). Chile. \* (min. 6°C/43°F)  
*C. umbellata*  $\square$  (Rock purslane). Variable, loose, mound-forming, evergreen perennial, often treated as an annual, with semi-upright, branching stems and linear to linear-lance-shaped, very hairy, blue- or grey-green leaves, 2–4cm (¾–1½in) long. Produces loose panicles of 6–30 upturned, cup-shaped, crimson-magenta flowers, to 2cm (¾in) across, in summer.  $\uparrow$  15–20cm (6–8in). Chile, Argentina. \*\*\*

## CALANTHE

ORCHIDACEAE

Genus of 120–150 species of evergreen, semi-evergreen, or deciduous, rhizomatous, terrestrial, occasionally epiphytic orchids from sites in tropical and temperate Asia, Polynesia, and Madagascar, ranging from sea level and lowland forest to altitudes over 3,000m (10,000ft). The deciduous species are usually found in woodland or among shaded rocks. They have corm-like, sometimes angular, oblong-ellipsoid pseudobulbs, often partially exposed above the soil surface, and basal clusters of 2–5 mid- to dark green, folded leaves. Erect, loose to dense-flowered racemes of spurred flowers, each with a 3-lobed lip, are borne in spring, summer, or winter. *C. discolor* and *C. discolor* var.



*Calanthe vestita*

*bicolor* are suitable for a rock garden or woodland garden; grow tender species in a warm greenhouse.

- **HARDINESS** Most are frost tender; *C. discolor* and its variants are frost hardy.
- **CULTIVATION** Cool- and warm-growing orchids. Under glass, grow in terrestrial orchid compost in bright filtered light and high humidity. In summer, water freely and apply a half-strength liquid fertilizer at every second or third watering. Avoid spraying the foliage, as it may become spotted. Water evergreen species sparingly in winter. Keep deciduous species completely dry when dormant, with a minimum of 10°C (50°F). Pot on annually. Outdoors, grow in coarse, well-drained, humus-rich soil in a sheltered site in partial or dappled shade. See also p.46.
- **PROPAGATION** For spring-flowering plants, divide pseudobulbs after flowering; otherwise, divide in early spring as new growth appears.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs under glass; protect from slugs outdoors.

*C. discolor*. Evergreen or semi-evergreen, terrestrial orchid producing narrowly obovate to oblong leaves, 20–30cm (8–12in) long. In spring, bears up to 10 purple-brown to green flowers, 2.5–4cm (1–1½in) across, with pale rose-pink or white lips, in erect racemes, 40cm (16in) long. †15–30cm (6–12in), ↔ 30cm (12in). Korea, Japan, Taiwan. \* \*. var. *bicolor*, syn. *C. striata*, *C. striata* var. *bicolor*, produces flowers 3–4cm (1¼–1½in) across, the tepals sometimes suffused yellow. f. *sieboldii*, syn. *C. sieboldii*, *C. sieboldii* var. *flava*, *C. striata* f. *sieboldii*, has clear yellow flowers. *C. sieboldii* see *C. discolor* f. *sieboldii*. *C. sieboldii* var. *flava* see *C. discolor* f. *sieboldii*. *C. striata* see *C. discolor* var. *bicolor*. *C. striata* var. *bicolor* see *C. discolor* var. *bicolor*. *C. striata* f. *sieboldii* see *C. discolor* f. *sieboldii*. *C. tricarinata*. Evergreen or semi-evergreen, terrestrial orchid producing broadly inversely lance-shaped to elliptic, strongly ribbed leaves, 18–30cm (7–12in) long. Racemes, 30–40cm (12–16in) long, of up to 15 nodding or pendent flowers, 2–4cm (¾–1½in) across, with greenish yellow to brown-green tepals, the lips purplish brown or red-brown, are borne from the leaf axils

in spring. †↔ 50cm (20in). Himalayas, China, Japan, Taiwan. ♀ (min. 9°C/48°F; max. 27°C/81°F). *C. Veitchii* (*C. rosea* x *C. vestita*). Deciduous, terrestrial orchid with large, narrowly ovate leaves, to 90cm (36in) long. Many rose-pink flowers, 5cm (2in) across, with bright red lips, are borne in arching racemes, to 90cm (36in) tall, in winter, before the leaves emerge. †1.1m (3½ft), ↔ 1m (3ft). Garden origin. ♀ (min. 18°C/64°F; max. 30°C/86°F). *C. vestita* □ Deciduous, terrestrial orchid with large, narrowly ovate to broadly lance-shaped leaves, to 90cm (36in) long. Arching racemes, to 90cm (36in) long, of up to 12 white or pale rose-pink flowers, 5cm (2in) across, with red to rose-pink or magenta lips, are borne in winter, before the leaves emerge. †1.1m (3½ft), ↔ 1m (3ft). Burma, Thailand, Cambodia, Laos, Vietnam, Indonesia (Sulawesi). ♀ (min. 18°C/64°F; max. 30°C/86°F).

## CALATHEA

MARANTACEAE

Genus of about 300 species of evergreen, rhizomatous perennials found in humid forest and at forest margins in tropical Central and South America, and the West Indies. Most are clump-forming, with ovate to elliptic, shiny, long-stalked, pale to dark green leaves, often attractively patterned and red on the reverse; young plants may differ from mature plants in the size and colour of their foliage. Flowers, rarely produced in cultivation, are tubular with extended upper and lower lips, and are borne in racemes in summer. They have dense spikes of sheathed bracts with pairs of small flowers developing from openings in the sheaths. In frost-prone areas, grow in a warm or temperate greenhouse, or as houseplants; they will tolerate fairly low light levels. In warmer areas, grow in a border or among shrubs.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright indirect or filtered light, with high humidity, draught-free conditions, and a constant temperature. When in growth, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pot on annually in late spring. Outdoors, grow in moist but well-drained, humus-rich soil in partial shade.
- **PROPAGATION** Divide clumps in late spring; keep plants in warm, humid conditions until re-established.
- **PESTS AND DISEASES** Aphids and red spider mites may be a problem. Bright light causes leaf scorch; dry air turns leaves brittle and brown at the margins.

*C. burle-marxii* 'Ice Blue'. Clump-forming perennial with slightly arching or spreading, ovate leaf-blades, to 75cm (30in) long, on leaf-stalks to 30cm (12in) long. The leaves are bright green above with yellow-green midribs, and grey-green beneath with yellow midribs. Well-established plants bear ovoid flower spikes, 12–18cm (5–7in) long, with blue bracts and purple flowers. †80–150cm (32–60in), ↔ 1.2m (4ft). ♀ (min. 16–21°C/61–70°F). *C. discolor* see *C. lutea*. *C. insignis* see *C. lancifolia*.



*Calathea louisae*

*C. lancifolia* ♀ syn. *C. insignis* (Rattlesnake plant). Clump-forming perennial with erect, linear to lance-shaped, wavy-margined leaf-blades, to 45cm (18in) long, on leaf-stalks to 30cm (12in) long. Leaves are pale green above, with darker green patches on either side of the midribs, and deep red-purple beneath. Yellow flowers are borne in conical spikes, 5–10cm (2–4in) long, in summer. †45–75cm (18–30in), ↔ 60cm (24in). Brazil. ♀ (min. 16–21°C/61–70°F). *C. lindeni*. Clump-forming perennial producing elliptic leaf-blades, 30–40cm (12–16in) long, on leaf-stalks to 30cm (12in) long. Leaves are dark green above with olive-green patches on each side of the midribs, green and red beneath. Pale yellow flowers are borne

in ellipsoid spikes, to 10cm (4in) long. †to 1m (3ft), ↔ 60cm (24in). Peru, N.W. Brazil. ♀ (min. 16–21°C/61–70°F). *C. louisae* □ Clump-forming perennial producing elliptic-ovate, dark green leaf-blades, red beneath, and 15cm (6in) long, with silver-green feathering around the midribs, on leaf-stalks to 20cm (8in) long. White flowers are borne in conical spikes, 3–6cm (1¼–2½in) long. †to 1m (3ft), ↔ 45cm (18in). Tropical Central and South America. ♀ (min. 16–21°C/61–70°F). *C. lutea*, syn. *C. discolor*. Clump-forming perennial producing ovate to obovate leaf-blades, 1.7m (5½ft) long, bright green above, grey beneath, with raised lateral veins, on leaf-stalks to 15cm (6in) long. Yellow flowers are borne in ovoid spikes, 8–12cm (3–5in) long. †to 2m (6ft), ↔ 1.2m (4ft). Tropical Central and South America. ♀ (min. 16–21°C/61–70°F). *C. majestica* 'Roseolineata', syn. *C. ornata* 'Roseolineata'. Robust, clump-forming perennial, producing elliptic, unequal-sided leaf-blades, 30–40cm (12–16in) long, erect at first, then spreading, on leaf-stalks 20cm (8in) or more long. Leaves are deep olive-green above, with pairs of thin, rose-red, lateral stripes on opposite sides of the midribs, becoming white with age; the undersides are purple. Bears ovoid spikes, 5–8cm (2–3in) long, of white flowers with violet petal lobes. †2m (6ft), ↔ to 1m (3ft). ♀ (min. 16–21°C/61–70°F). *C. majestica* 'Sanderiana' see *C. sanderiana*.



*Calathea makoyana*





*Calathea sanderiana*

***C. makoyana*** [♀] syn. *Maranta makoyana* (Cathedral windows, Peacock plant). Clump-forming, stemless perennial with erect, ovate leaf-blades, 20–30cm (8–12in) long, on leaf-stalks 15cm (6in) or more long. Leaves are pale green above, with oblong patches and fine lines of dark green along the lateral veins; the undersides are purple-tinged, with similar purple markings. Bears ovoid spikes, to 6cm (2½in) long, of white and purple flowers. ‡45cm (18in), ↔22cm (9in). E. Brazil. ☼ (min. 16–21°C/61–70°F)

***C. oppenheimiana*** see *Ctenanthe oppenheimiana*.

***C. ornata* 'Roscolineata'** see *C. majestica* 'Roscolineata'.

***C. ornata* var. *sanderiana*** see *C. sanderiana*.

***C. picturata***. Clump-forming perennial with elliptic leaf-blades, 20–25cm (8–10in) long, on leaf-stalks 20cm (8in) long. Leaves are deep olive-green above, marked with a wide silver line along each side of the midribs, and with a narrower, jagged silver line near the margins; the undersides are purple. White flowers are borne in cylindrical spikes, 10cm (4in) long. ‡→35–40cm (14–16in). N.W. Brazil. ☼ (min. 16–21°C/61–70°F). '**Argentea**' produces leaves silvery white above, bright rich purple beneath; they have dark green margins.

***C. roseopicta***. Clump-forming perennial with rounded leaf-blades, to 20cm (8in) long, on leaf-stalks 3–10cm (1¼–4in) long. Leaves are dark green with pink midribs and feathered, pink or cream stripes between the midribs



*Calathea zebrina*

and margins; the undersides are red. Bears cylindrical spikes, 9cm (3½in) long, of white and violet flowers. ‡24cm (10in), ↔15cm (6in). N.W. Brazil. ☼ (min. 16–21°C/61–70°F)

***C. sanderiana*** [♀] syn. *C. majestica* 'Sanderiana', *C. ornata* var. *sanderiana*, *C. 'Sanderiana'*. Robust, clump-forming perennial with broadly elliptic, unequal-sided leaf-blades, 60cm (24in) long, on leaf-stalks 20cm (8in) or more long. Deep olive-green leaves have pairs of thin, rose-red, lateral stripes on either side of the midribs, becoming white on older leaves; the undersides are purple. White and violet flowers are borne in conical spikes, 5–8cm (2–3in) long, in summer. ‡3m (6ft), ↔1m (3ft). Peru. ☼ (min. 16–21°C/61–70°F)

***C. 'Sanderiana'*** see *C. sanderiana*.

***C. veitchiana***. Clump-forming perennial with ovate-elliptic, unequal-sided leaf-blades, 30cm (12in) long, on leaf-stalks 10–20cm (4–8in) or more long. Dark green leaves have feathery markings in 4 or more shades of green, and red undersides. Violet-flecked white flowers are borne in conical spikes, 7cm (3in) long. ‡1m (3ft), ↔60cm (24in). S.E. Brazil. ☼ (min. 16–21°C/61–70°F)

***C. zebrina*** [♀] (Zebra plant). Clump-forming perennial with oblong-ovate to elliptic leaf-blades, 45cm (18in) or more long, on leaf-stalks 30cm (12in) long. Leaves are dark green and velvety above, purple-red beneath; they have yellow-green midribs, margins, and veins. Bears white to violet flowers in almost spherical spikes, 7–10cm (3–4in) long. ‡1m (3ft), ↔60cm (24in). S.E. Brazil. ☼ (min. 16–21°C/61–70°F)

'**Humilior**' is compact, producing leaves with areas around the lateral veins that are olive-green above, grey-green beneath.

## CALCEOLARIA

Pouch flower, Slipper flower, Slipperwort  
SCROPHULARIACEAE

Genus of some 300 species of annuals, biennials, perennials, and shrubs, some of them scandent, from diverse habitats ranging from dry scrub to alpine regions. They occur in temperate and tropical areas of Mexico, Central and South America (many in Peru and Chile), with some from the Falkland Islands. Leaves are opposite and whorled, or in rosettes. The slipper-like flowers are solitary or borne in few- to many-flowered panicles, racemes, corymbs, or cymes. They are usually yellow or purple, often heavily spotted in one or more contrasting colours, and 2-lipped, the upper lip small but often inflated, the lower lip large and pouched. In frost-prone areas, grow annuals, biennials, and shrubs in a temperate greenhouse or as summer bedding. The hardier, low-growing perennials (alpine species) are ideal for a rock garden, peat bed, or alpine house.

• **HARDINESS** Most are frost hardy to frost tender; some are fully hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light with good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer every 3–4 weeks; water sparingly in winter. Outdoors, grow in light, moderately fertile, acid soil in sun



*Calceolaria arachnoidea*

or partial shade. They require cool, moist conditions to flower freely. Grow alpine species outdoors in moist but well-drained, very gritty soil in partial shade; protect from winter wet. In an alpine house, grow in loam-based potting compost (J1 No.1), or in a mix of equal parts loam, leaf mould, and sharp sand; top-dress with grit. Pot on every second year in late spring.

• **PROPAGATION** Sow seed of hardy species in containers in a cold frame in autumn or early spring, or divide in spring. Root individual rosettes in early summer. Sow seed of *C. integrifolia* in spring or autumn, and seed of *C. mexicana* in late winter or early spring. Surface-sow seed of *C. Herbeohybrida* Group cultivars at 18°C (64°F) in late summer or spring. Root softwood cuttings of shrubby species in late spring or summer; increase good colour variants of *C. integrifolia* by rooting semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Under glass, especially in poorly ventilated conditions, prone to aphids, whiteflies, red spider mites, and fungal diseases, such as grey mould (*Botrytis*). Slugs and snails may be a problem outdoors.



*Calceolaria* Herbeohybrida Group 'Bright Bikinis'

*C. acurifolia* see *C. polyrhiza*.

***C. arachnoidea*** [♀] Evergreen, rhizomatous, cushion- or mat-forming perennial with rosettes of lance-shaped to oblong-spoon-shaped, white-hairy leaves, 4–10cm (1½–4in) long, with winged leaf-stalks. Bears compact cymes of 2–5 deep purple flowers, to 1.5cm (½in) long, on slender, branching stems, from summer to autumn. Best in an alpine house. ‡20–25cm (8–10in), ↔to 15cm (6in). Chile. \* \* (borderline)

***C. biflora***, syn. *C. plantaginea*.

Evergreen, mat-forming, rhizomatous perennial with rosettes of ovate-lance-shaped to oblong, obovate, or diamond-shaped, toothed, dark green leaves, 2.5–10cm (1–4in) long. Bears loose racemes of 2–8 short-stemmed, bright yellow flowers, each to 2cm (¾in) long, over several months in summer. Suitable for a peat bed or shaded rock garden. ‡15–25cm (6–10in), ↔to 20cm (8in). Chile, Argentina. \* \* \*

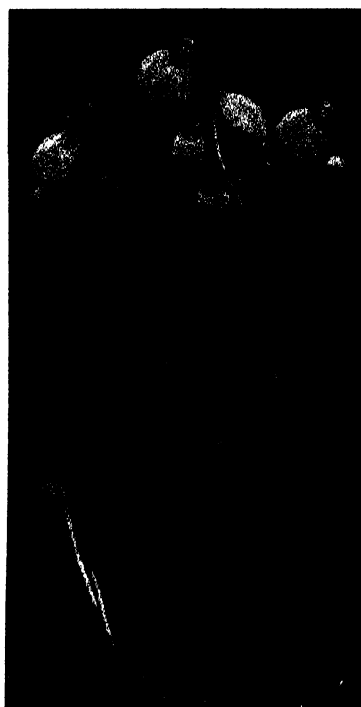
***C. darwinii***, syn. *C. uniflora* var. *darwinii*.

Rhizomatous, evergreen, rosetted perennial with oblong-spoon-shaped to diamond-shaped, wrinkled, glossy, dark green leaves, 3–4cm (1¼–1½in) long. In early summer, bears solitary yellow flowers, 2.5–3.5cm (1–1½in) long, each with a deep yellow lower lip, heavily freckled red-brown, and with a wide, horizontal white band at the junction of the throat and pouch. Best in an alpine house. ‡7–10cm (3–4in), ↔to 12cm (5in). Argentina (S. Patagonia), Tierra del Fuego. \* \* \*

***C. Fruticohybrida* Group** see *C. integrifolia* Fruticohybrida Group.

***C. Herbeohybrida* Group**. Bushy, compact biennials, normally grown as spring- or summer-flowering container plants, with opposite, ovate, softly hairy, mid-green leaves, 8–12cm (3–5in) or more long. ‡20–45cm (8–18in), ↔15–30cm (6–12in). \*. There are 2 main subgroups: Grandiflora group cultivars have compact cymes of 5–15 flowers, to 8cm (3in) long, in red, yellow, orange, and bicolours, often marked with purple, red, or other colours; Multiflora group cultivars have cymes of 3–12 smaller, more numerous flowers, to 5cm (2in) long, in a range of colours. **Anytime Series** (Multiflora group) are compact, and flower in less than 16 weeks from sowing, at any time of year, given suitable conditions; ‡to 20cm (8in). '**Bright Bikinis**' [♀] (Multiflora group) bears dense cymes of yellow, orange, or red flowers in

C

*Calceolaria polyrrhiza*

summer; ↑ 20cm (8in), ↔ 20cm (8in); \*\* **'Monarch'** (Grandiflora group) has light green leaves and red or yellow flowers, often marked orange-red or maroon; ↑ 30cm (12in), ↔ 25cm (10in). ***C. integrifolia*** ♀ syn. *C. rugosa*. Evergreen, subshrubby perennial, usually grown as an annual, with softly hairy young shoots. The opposite, linear-lance-shaped to ovate-lance-shaped leaves are finely toothed, grey-green, and 5cm (2in) or more long, frequently with reddish hairs beneath. Panicle-like cymes of 10–35 yellow flowers, to 2.5cm (1in) long, are borne over several months in summer. ↑ to 1.2m (4ft), ↔ 23–30cm (9–12in). Mexico. \* This species is the main parent of the **Fruticohybrida Group** of cultivars described below. **'Goldcut'** is tall-growing, and good for cut flowers; ↑ 30–40cm (12–16in). **'Golden Bunch'** is compact, with pale golden yellow flowers in early summer; excellent for containers or as bedding; ↑ to 25cm (10in). **'Midas'** is upright, bearing deep yellow, weather-resistant flowers in early summer; good for hanging baskets; ↑ to 25cm (10in). **'Sunshine'** ♀ is similar to 'Midas', but flowers in midsummer.

*Calceolaria tenella**Calceolaria* 'Walter Shrimpton'

Useful for bedding, hanging baskets, or containers; ↑ to 30cm (12in).

***C. mexicana***. Bushy, erect to spreading, softly hairy annual with opposite, ovate to lance-shaped, pinnatifid, mid-green leaves, 2–7cm (¾–3in) long, often ringed purple beneath. Cymes of 3–5 pale to bright yellow, unspotted flowers, to 1.5cm (½in) long, are produced in summer. ↑ 20–50cm (8–20in), ↔ to 30cm (12in). Mexico to Bolivia. \* ***C. pavonii***. Scandent, woody-based, evergreen, perennial climber with woolly stems. Winged leaf-stalks bear opposite, triangular-ovate, irregularly toothed, softly hairy, mid- to dark green leaves, 8–20cm (3–8in) long, heart-shaped at the bases. Cymes of 4–20 sulphur-yellow flowers, 2cm (¾in) long, with purple-marked throats, are borne in summer. ↑ 1.5–3m (5–10ft). Ecuador, Peru. \*

***C. plantaginea*** see *C. biflora*. ***C. polyrrhiza*** ♂ syn. *C. acutifolia*. Rhizomatous, mat-forming, evergreen perennial with opposite, oblong-ovate or lance-shaped, shallowly toothed, mid-green leaves, to 4.5cm (1¾in) long, crowded on the stems. In summer, bears cymes of 4–6 red-spotted yellow flowers, to 2.5cm (1in) long. ↑ 5cm (2in), ↔ to 20cm (8in). Chile, Argentina. \*\*\* ***C. rugosa*** see *C. integrifolia*. ***C. scabiosifolia*** see *C. tripartita*. ***C. Sunset Series***. Compact, rounded, evergreen, many-branched, sturdy-stemmed perennials producing opposite, ovate-lance-shaped, dark grey-green leaves, 10cm (4in) long. They bear red, yellow, orange, or bicoloured flowers, 2cm (¾in) long, from mid-spring to midsummer. ↑ to 30cm (12in), ↔ 23–30cm (9–12in). \*\* ***C. tenella*** ♂ Mat-forming, creeping, evergreen perennial with slender stems clothed in broadly ovate, finely toothed, pale yellowish green leaves, to 1cm (½in) long. In summer, bears solitary or branched cymes of 3 broadly pouched, red-spotted yellow flowers, 7–9mm (¼–¾in) long. ↑ 5cm (2in), ↔ to 30cm (12in) or more. Chile. \*\*\* ***C. tripartita***, syn. *C. scabiosifolia*. Erect, evergreen perennial, usually grown as an annual, with softly hairy stems and leaves. The opposite, ovate, pinnatifid, toothed, mid-green leaves are 2–9cm (¾–3½in) long. In summer, bears cymes of 5–12 pale to bright to deep yellow, unspotted flowers, 5mm (¼in) long. ↑ 60cm (24in), ↔ 30cm (12in). Mexico to Peru. \*

***C. uniflora* var. *darwinii*** see *C. darwinii*.

***C. 'Walter Shrimpton'*** ♂ Evergreen perennial, similar to *C. darwinii*, with rosettes of spoon- to diamond-shaped, glossy dark green leaves, 3–5cm (1¼–2in) long. In summer, bears cymes of 2–5 bronze-yellow flowers, to 2.5cm (1in) long, spotted rich brown, each with a horizontal white band at the junction of the throat and pouch, broader and bolder than in *C. darwinii*. ↑ 10cm (4in), ↔ 23cm (9in). \*\*\*

## CALENDULA

English marigold, Marigold, Pot marigold

ASTERACEAE/COMPOSITAE

Genus of 20–30 species of bushy, fast-growing annuals and woody-based, evergreen perennials, occurring in arable land, wasteland, and rocky habitats from S. Europe to North Africa. Leaves are alternate, simple, and aromatic. Daisy-like flowerheads, with orange or yellow ray-florets and yellow, orange, violet, purple, or brown disc-florets, are borne in a long succession over the summer and throughout autumn into mild winters. Many of the cultivars are excellent annuals for an informal border; the flowers last well when cut. They are also suitable for growing in containers in a cool conservatory.

• **HARDINESS** Fully hardy to half hardy.

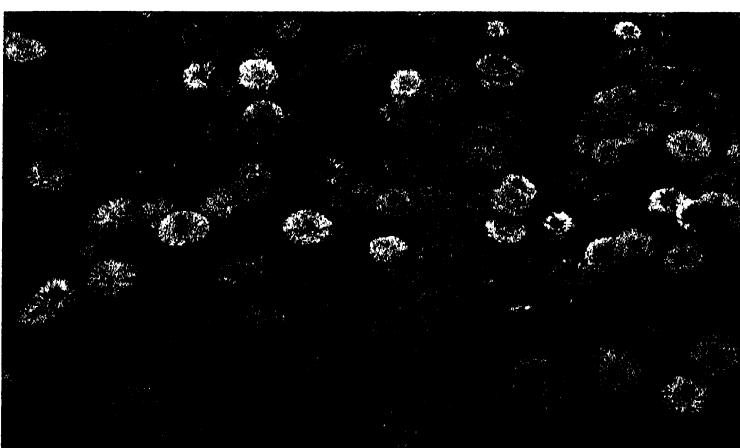
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light; water moderately.

Outdoors, grow in a well-drained, even poor soil in sun or partial shade. Dead-head to prolong flowering. If growing for cut flowers, pinch out terminal buds to encourage laterals.

• **PROPAGATION** Sow seed *in situ* in spring or autumn. Provide cloche protection for autumn-sown seedlings in frost-prone areas.

• **PESTS AND DISEASES** Aphids, powdery mildew, and cucumber mosaic virus may be a problem.

***C. officinalis* cultivars**. Fast-growing, erect, sometimes spreading annuals with inversely lance-shaped to spoon-shaped, softly hairy, aromatic leaves, to 15cm (6in) long. Daisy-like, single or double, orange, yellow, gold, cream, or apricot flowerheads, to 10cm (4in) across, many with dark disc-florets, are borne profusely from summer to autumn. ↑ 30–70cm (12–28in), ↔ 30–45cm (12–18in). \*\*\* **'Fiesta Gitana'** ♂ ♀

*Calendula officinalis* 'Fiesta Gitana'*Calendula officinalis* Pacific Beauty Series 'Lemon Queen'

is dwarf, with usually double flowerheads in pastel orange and yellow, including bicolors; ↑ to 30cm (12in). **Kablouna Series** cultivars are tall, with double orange, gold, or yellow flowerheads, each with a "crested" disc-floret of quilled petals; ↑ to 60cm (24in). **'Orange King'** has double, deep orange flowerheads; ↑ to 45cm (18in). **Pacific Beauty Series** cultivars have double flowerheads in an unusual colour range, including apricot-orange, primrose-yellow, cream, and bicolors, with red-brown disc-florets; ↑ to 60cm (24in); **'Lemon Queen'** ♂ has double, lemon-yellow flowerheads; ↑ to 45cm (18in). **Prince Series** cultivars have double, golden yellow or orange flowerheads; **'Indian Prince'** has dark orange flowerheads, tinted reddish brown on the petals; good for cutting; ↑ 75cm (30in).

## CALIBANUS

AGAVACEAE

Genus of one species of very slow-growing, perennial succulent from rocky grassland in C. and E. Mexico. It has a large, fibrous-rooted, spherical, corky-barked caudex, which, in the wild, sometimes grows partially above ground. The caudex develops tufts of grass-like, arching foliage, among which pinkish purple panicles of tiny flowers are borne. In frost-prone areas, grow *C. hookeri* in a temperate greenhouse; in warmer areas, grow outdoors in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost, with an



*Calibanus hookeri*

additional 25 per cent sharp sand, in full light. In the growing season, water freely and apply a low-nitrogen fertilizer monthly; keep just moist in winter. Outdoors, grow in very well-drained, gritty, alkaline, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring; keep moist.

• **PESTS AND DISEASES** Susceptible to scale insects in summer.

*C. hookeri* [ ] syn. *Dasyllirion hartwegianum*. Perennial succulent with a spherical caudex, 30cm (12in) or more across, covered in thick, corky bark, and producing rosettes of 10–15 upright, then recurved, linear leaves, to 30cm (12in) long. Panicles, 50–60cm (20–24in) long, of cup-shaped, pinkish purple flowers, 5–8mm (¼–⅜in) across, are borne in summer. ‡ to 90cm (36in), ↔ 30cm (12in) or more. C. and E. Mexico. ☼ (min. 10°C/50°F)

▷ **Calico bush** see *Kalmia latifolia*

▷ **Calico flower** see *Aristolochia littoralis*

▷ **Calico plant** see *Alternanthera bettzichiana*

## CALLA

ARACEAE

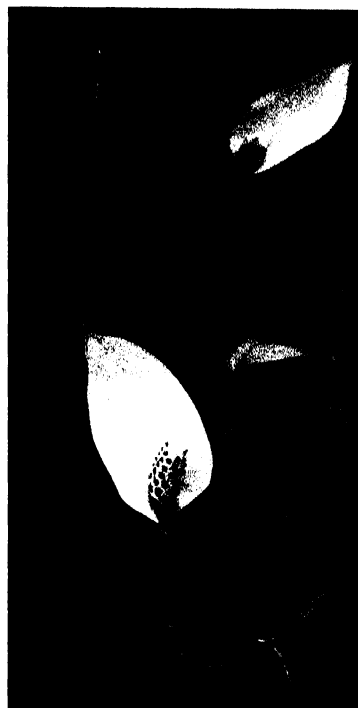
Genus of one species of deciduous or semi-evergreen, marginal aquatic perennial from swamps, and lake and stream edges, in temperate regions of the N. hemisphere. *C. palustris* has glossy, dark green leaves and bears showy spathes, followed by dull red berries. It seldom exceeds 20–24cm (8–10in) in height and is excellent for softening the margins of a small to medium-sized pool. At depths of 5–7cm (2–3in), it spreads through shallow water or mud by creeping rhizomes, which may extend to 15–50cm (6–20in) and thicken to 3cm (1¼in) in diameter. Contact with the foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in aquatic planting baskets in humus-rich, lime-free soil, or in mud in shallow, still or slow-moving water no deeper than 25cm (10in). Position in full sun to encourage flowering and fruiting. See also pp.52–53.

• **PROPAGATION** Sow seed in late summer in containers submerged to the rims in water. Divide rhizomes in spring.

• **PESTS AND DISEASES** Trouble free.



*Calla palustris*

*C. palustris* [ ] (Bog arum). Aquatic, rhizomatous perennial with upright, alternate, glossy, dark green leaves, to 20cm (8in) long, broadly ovate with heart-shaped bases. The basal leaves are arranged in 2 ranks on slender leaf-stalks growing from the rhizomes. In mid-summer, bears white-spathed inflorescences, 25cm (10in) tall; the spathes surround insignificant flower clusters. They are followed by clusters of dull red berries in autumn. ‡ 25cm (10in), ↔ 60cm (24in). N. and C. Europe, Asia, North America. \*\*\*

## CALLIANDRA

Powder-puff tree

LEGUMINOSAE/MIMOSACEAE

Genus of about 200 species of evergreen perennials, shrubs, and small trees from W. Africa, Madagascar, India, and tropical and subtropical North and South America, mainly found in dry sites at forest margins. Only the shrubs and trees are usually cultivated: they are valued for their attractive, alternate, pinnate or 2-pinnate leaves, and their spherical heads of few to many small, bell- or funnel-shaped flowers which have 10–100 colourful stamens, 1–4cm (½–1½in) long. In frost-prone areas, grow in a warm greenhouse; in warmer regions, grow in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. From early summer to autumn, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in well-drained, fertile soil in full sun. Pruning group 1, after flowering; plants under glass may need restrictive pruning.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Layer in spring.

• **PESTS AND DISEASES** Prone to red spider mites and mealybugs under glass.

*C. eriophylla* ♀ Low-growing shrub or small tree producing 2-pinnate leaves, 7–12cm (3–5in) long, each pinna subdivided into 1 or 2 pairs of elliptic to ovate, dark green leaflets, often softly hairy beneath. In summer, bears axillary, spherical heads, to 3cm (1¼in) across, of pale to deep pink flowers, 1.5cm (½in) long, with reddish purple, sometimes white stamens. ‡ 1m (3ft), ↔ 80cm (32in). N. South America. ☼ (min. 13°C/55°F)

*C. haematocephala* [ ] ♀ syn.

*C. inaequilatera*. Large, many-branched, spreading shrub or small tree with pinnate or 2-pinnate leaves, 30–45cm (12–18in) long; each leaf is composed of 5–10 pairs of sickle-shaped to elliptic, glossy, dark green leaflets. Axillary, spherical heads, to 7cm (3in) across, of usually red, sometimes pink or white flowers, 7–9mm (¼–⅜in) long, with prominent, bright red, pink, or white stamens, are borne in summer. ‡ 3–6m (10–20ft), ↔ 2–4m (6–12ft). Bolivia. ☼ (min. 13°C/55°F)

*C. inaequilatera* see *C. haematocephala*.

*C. surinamensis* ♀ Large, spreading shrub or small tree with 2-pinnate, pale green leaves, 10cm (4in) or more long, each pinna subdivided into 7–12 pairs of oblong-lance-shaped leaflets. Axillary heads, 5–8cm (2–3in) across, of yellow-green flowers, to 5mm (¼in) long, with conspicuous, white-based, deep red stamens, are produced from the leaf axils in summer. ‡ 3–8m (10–25ft), ↔ 2–5m (6–15ft). N. South America. ☼ (min. 13°C/55°F)

*C. tweedii* ♀ (Mexican flame bush). Large shrub or small tree producing 2-pinnate, mid-green leaves, 10–15cm (4–6in) long, each pinna divided into 15–20 pairs of narrowly oblong, often curved leaflets. Green or white flowers, to 5mm (¼in) long, with red stamens, are borne in axillary, spherical heads, 5–7cm (2–3in) across, from winter to spring. ‡ 2–5m (6–15ft), ↔ 1.5–2m (5–6ft), sometimes more. Brazil to Uruguay. ☼ (min. 13°C/55°F)

## CALLIANTHEMUM

RANUNCULACEAE

Genus of about 10 species of perennials from alpine grassland, stony slopes, or coniferous forest in the mountains of C. Asia and C. and S. Europe. They have short rhizomes and produce rosettes of finely divided, pinnate leaves. In late spring, they bear white, pink, or mauve, buttercup-like flowers with 5–20 petals, usually solitary, but sometimes in 2- or 3-flowered racemes. Grow in a rock garden, scree bed, or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) with additional grit. Outdoors, grow in moist, humus-rich, gritty soil in full sun.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame; keep cool and shaded until germination. Divide as growth begins in spring.

• **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

*C. coriandrifolium*, syn. *C. rutifolium*.

Prostrate perennial with erect rhizomes and rosettes of long-stalked, ovate-elliptic, pinnate leaves, 5–13cm (2–5in) long, with 5–7 linear-oblong, blue-green leaflets. In late spring, erect stems bear solitary (occasionally 2 or 3), 9- to 13-petalled white flowers, 2–3cm (¾–1¼in) wide, sometimes flushed pink outside, with greenish yellow centres. ‡ to 10–20cm (4–8in). Mountains from N.W. Spain to S. Carpathians. \*\*\*

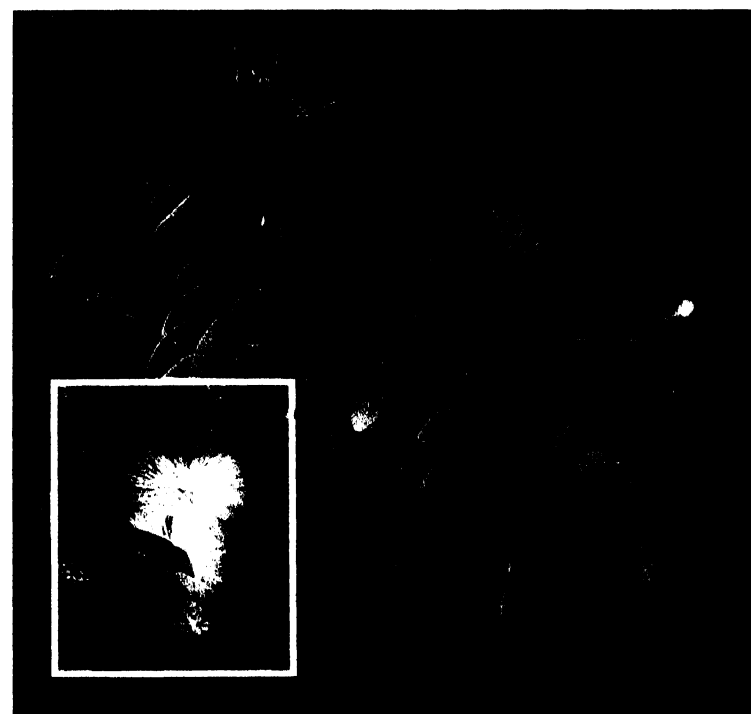
*C. rutifolium* see *C. coriandrifolium*.

## CALLICARPA

Beauty berry

VERBENACEAE

Genus of about 140 species of evergreen and deciduous shrubs and trees from woodland in mainly tropical and subtropical regions. They have opposite, simple leaves and bear dense, axillary cymes or panicles of numerous tiny,



*Calliandra haematocephala* (inset: variant with white stamens)



*Callicarpa bodinieri* var. *giraldui*



*Callicarpa bodinieri* var. *giraldui* 'Profusion'

white, pink, red, or purple flowers in summer. Grown mainly for their clusters of small but often highly coloured, spherical, bead-like fruits, 2–4mm ( $\frac{1}{16}$ – $\frac{1}{8}$ in) across, they are ideal for a shrub border; they fruit most prolifically in long, hot summers and if planted in groups. In frost-prone areas, grow tender and half-hardy species in a cool greenhouse and move outdoors in summer.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full or bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in sun or dappled shade. *C. dichotoma* thrives in areas with prolonged periods above 24°C (75°F). *C. japonica* 'Leucocarpa' may be cut back by severe weather but is seldom killed; it requires summer heat to ripen new wood. Pruning group 6.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root softwood cuttings in spring, or semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

*C. bodinieri* var. *giraldui* ■ Bushy, upright, deciduous shrub with elliptic to obovate, tapered, dark green leaves, to 18cm (7in) long. In midsummer, produces small pink flowers in cymes, to 3.5cm (1½in) across, from the leaf axils,

followed by violet fruit in autumn. ‡ 3m (10ft), ↔ 2.5m (8ft). W. and C. China. \*\*\*. 'Profusion' ■ has bronze young leaves and pale pink flowers; it freely produces dark violet fruit.

*C. dichotoma*. Dense, upright, deciduous shrub with ovate to elliptic, tapered, bright green leaves, to 10cm (4in) long. Pale pink flowers are borne in axillary cymes, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) across, in summer, followed by dark lilac fruit. ‡ 1.2m (4ft). China, Korea, Japan. \*\*\*

*C. japonica* 'Leucocarpa'. Bushy, deciduous shrub with narrowly oval to lance-shaped, tapered, pale green leaves, to 12cm (5in) long. White flowers are borne in axillary cymes, to 3cm (1¼in) across, in late summer, followed by white fruit. ‡ 1.5m (5ft). \*\*\*

*C. rubella*. Evergreen or semi-evergreen, erect, open shrub with obovate to lance-shaped, yellow-green leaves, 10–15cm (4–6in) long, and downy beneath. Bears axillary cymes, to 5cm (2in) across, of small, purplish pink flowers in summer, followed by bright pinkish purple fruit. ‡ 1–3m (3–10ft), ↔ 1–2m (3–6ft). India to China, Malaysia. \*

▷ *Calliopsis tinctoria* see *Coreopsis tinctoria*

## CALLIRHOE

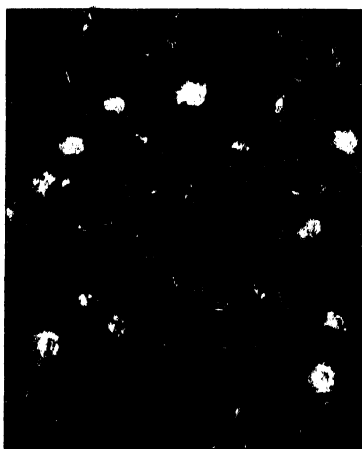
Poppy mallow

MALVACEAE

Genus of 8 species of annuals and taprooted perennials from prairies and grassland in the USA and Mexico. Their leaves are alternate and deeply palmately lobed. The 5-petalled, cup-shaped, mallow-like, brightly coloured flowers are produced from the upper leaf axils either singly or in short racemes. Poppy mallows will thrive in a hot, dry site in a border or rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, sandy, loam soil in full sun. Protect from winter wet. Avoid damage to the tap root when planting.
- **PROPAGATION** Sow seed of annuals *in situ* in spring. Sow seed of perennials *in situ* in early spring, or root softwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

*C. involucrata* ■ (Prairie poppy mallow). Low-growing perennial with a carrot-like tap root, giving rise to procumbent, hairy stems, 15cm (6in) or



*Callirhoe involucrata*

more long, with rounded, 3- to 7-lobed leaves, 2.5–5cm (1–2in) long. From late spring to midsummer, long flower-stalks bear numerous erect, axillary, usually solitary flowers, 4.5–6cm (1¾–2½in) across, the petals cerise to purplish red with white bases. ‡ 30cm (12in). USA (Missouri to Texas). \*\*\*

## CALLISIA syn. PHYODINA

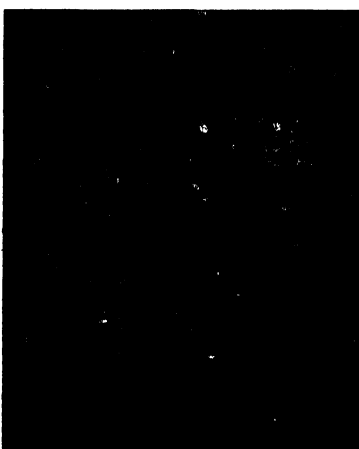
COMMELINACEAE

Genus, related to *Tradescantia*, of about 20 species of creeping, spreading, or suberect, evergreen perennials, and (rarely) annuals, from forest margins in S.E. USA, Mexico, and tropical North and South America. They are valued for their attractive, alternate, succulent leaves. The flowers, borne in pairs in curled cymes or terminal panicles, are white or pink, with 3 sepals and 3 petals. In frost-prone regions, grow in hanging baskets in a temperate greenhouse or as houseplants; elsewhere, use as ground cover in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in 2 parts loam-based potting compost (J1 No.2) to 1 part coarse grit in bright filtered or indirect light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on only when very root-bound. Outdoors, grow in gritty, well-drained soil in partial shade.
- **PROPAGATION** Root tip cuttings, 6–7cm (2½–3in) long, in spring. Pot up several cuttings in an 8cm (3in) container to produce dense foliage cover quickly.
- **PESTS AND DISEASES** Trouble free.

*C. elegans* ♀ syn. *Setcreasea striata* (Striped inch plant). Decumbent, succulent perennial with 2-ranked, oval, pointed, olive-green leaves, 5–10cm (2–4in) long, purple beneath, and with longitudinal white stripes. From autumn to winter, bears paired, stemless white flowers, 1cm ( $\frac{1}{2}$ in) across, in terminal panicles or curled cymes, to 15cm (6in) long. ‡ 15cm (6in), ↔ to 1m (3ft). Guatemala, Honduras. ♀ (min. 10°C/50°F)

*C. fragrans*, syn. *Spironema fragrans* (Chain plant). Stoloniiferous, succulent perennial with 2-ranked, elliptic to lance-shaped, shiny, light green leaves, purple beneath, and to 24cm (10in) long. Fragrant white flowers, 1cm ( $\frac{1}{2}$ in) across, are borne in terminal panicles,



*Callisia repens*

8cm (3in) long, from winter to spring. ‡ 1.5m (5ft), ↔ to 1.5m (5ft). Mexico. ♀ (min. 10°C/50°F)

*C. navicularis*, syn. *Tradescantia navicularis* (Chain plant). Slow-growing, succulent perennial with tufts of dense foliage and long, trailing shoots rooting at the internodes. Broadly ovate to lance-shaped leaves, 2.5cm (1in) long, are dull copper-green above and purple-striped beneath. From summer to autumn, bears bright magenta flowers, 1.5–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) across, in curled cymes, 5cm (2in) long. ‡ 10cm (4in), ↔ to 30cm (12in). N.E. and E. Mexico. ♀ (min. 10°C/50°F)

*C. repens* ■ Variable, trailing perennial with stems rooting at the nodes to form mats of broadly ovate, bright green leaves, 1–4cm ( $\frac{1}{2}$ –1½in) long. White flowers, to 1cm ( $\frac{1}{2}$ in) across, are borne in spike-like, curled cymes, 3cm (1¼in) long, in autumn. ‡ 10cm (4in), ↔ to 1m (3ft). USA (Texas) to Argentina. ♀ (min. 10°C/50°F)

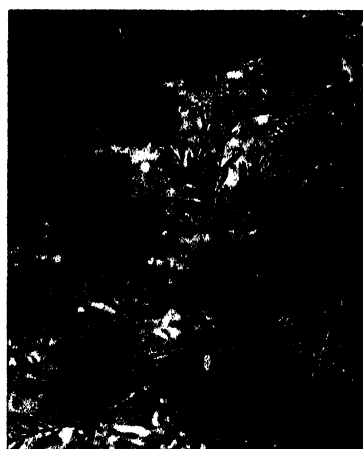
## CALLISTEMON

Bottlebrush

MYRTACEAE

Genus of 25 species or more of evergreen trees and shrubs from Australia, most occurring in moist soil in open or woodland sites. The simple, alternate, leathery leaves are cylindrical to broadly lance-shaped. Callistemons are grown for their colourful, terminal or axillary, bottlebrush-like spikes of numerous tiny, 5-petalled, long-stamened flowers, which may be red, purple, pink, white, green, or yellow. Grow at the base of a house wall or in a shrub border. In frost-prone climates, grow half-hardy and tender species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in moist but well-drained, neutral to acid, moderately fertile soil in full sun. Pruning group 8; tolerates hard pruning.
- **PROPAGATION** Surface-sow seed on to moist compost at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Red spider mites, mealybugs, and scale insects may be a problem, especially under glass.



*Callistemon citrinus* 'Austraflora Firebrand'

**C. 'Captain Cook'** ♀ syn. *C. viminalis* 'Captain Cook'. Dense, rounded shrub with lance-shaped, mid-green leaves, 2.5–4.5cm (1–1½in) long. Bright red flowers are borne in spikes, 10–15cm (4–6in) long, from early summer to autumn. ♂→ 2m (6ft). \* \*

**C. citrinus** (Crimson bottlebrush). Variable shrub, often with arching branches, producing lance-shaped, dark green leaves, to 10cm (4in) long, with prominent oil glands. Brilliant crimson-red flowers in spikes, 5–15cm (2–6in) long, are borne freely in spring and summer. ♂→ 1.5–8m (5–25ft). Australia (New South Wales, Victoria). \* \*

**f. albus** see 'White Anzac'. **'Austraflora Firebrand'** ♂ is low and spreading, producing silvery pink young shoots and bright crimson flowers; ♂ 1.5–2m (5–6ft), ↔ 4m (10–12ft). **'Splendens'** ♂♀ has silky, pinkish red young shoots, broad leaves, and crimson flowers; ♂ 2–8m (6–25ft), ↔ 1.5–6m (5–20ft). **'White Anzac'**, syn. f. *albus*, bears white flowers, often tinged pink when mature; ♂→ 1–3m (3–10ft).

**C. 'King's Park Special'**. Spreading, bushy shrub with lance-shaped, smooth, deep green leaves, 5–8cm (2–3in) long. Bright red flowers are produced in profuse spikes, to 10cm (4in) long, in summer. ♂→ 2–4m (6–12ft). \*

**C. linearis** ♀ (Narrow-leaved bottlebrush). Spreading, dense to open shrub with linear, rigid, sharp-pointed, thick, dark green leaves, to 12cm (5in) long. Bears rich, matt red flowers in spikes, to 12cm (5in) long, from late spring to autumn. ♂ 2–4m (6–12ft), ↔ 3–5m (10–15ft). Australia (New South Wales). \*

**C. macropunctatus** (Scarlet bottlebrush). Spreading, dense to open shrub with linear to narrowly oblong, pointed, glandular, mid-green leaves, 3–8cm (1¼–3in) long. Red flowers are borne in spikes, 10cm (4in) long, from early summer to autumn. ♂→ 2–4m (6–12ft). Australia (South Australia, New South Wales, Victoria). \*



*Callistemon*  
'Mauve Mist'

**C. 'Mauve Mist'** ♂ Spreading shrub with narrowly oblong, mid-green leaves, 3–6cm (1½–2½in) long, tapered at each end. Mauve-pink flowers, fading with age, are borne in spikes, 10cm (4in) long, in summer. ♂→ 2–4m (6–12ft). \*

**C. pallidus** ♂ (Lemon bottlebrush). Erect to spreading shrub producing downy shoots and lance-shaped to broadly lance-shaped, densely glandular, dark green or grey-green leaves, to 10cm (4in) long. Cream to greenish yellow flowers are borne in spikes, 10cm (4in) long, from late spring to midsummer. ♂→ 2–4m (6–12ft). Australia (Queensland to Tasmania). \* **'Candle Glow'**, syn. 'Austraflora Candleglow', produces spikes of lemon-yellow flowers. **C. paludosus** see *C. sieberi*.

**C. pinifolius** (Pine bottlebrush). Spreading shrub with rigid, linear, sharply pointed, dark green leaves, to 10cm (4in) long. Yellow flowers are produced in spikes, 5–8cm (2–3in) long, during summer. ♂ 1.5m (5ft), ↔ 2.5m (8ft). Australia (New South Wales). \* \*

**C. pityoides** (Alpine bottlebrush). Compact, usually upright shrub with densely arranged, linear, sharply pointed, dark green leaves, 2.5–4cm (1–1½in) long. Yellow flowers are produced in short spikes, 2–4cm (¾–1½in) long, in mid- and late summer. ♂ 1.5m (5ft), ↔ 1m (3ft). S.E. Australia. \* \* \*



*Callistemon pallidus*

**C. rigidus** (Stiff bottlebrush). Bushy, stiff-stemmed shrub with linear to lance-shaped, matt, dark green leaves, to 15cm (6in) long. In summer, bears deep red flowers in numerous spikes, to 5cm (2in) long. ♂ 1–2.5m (3–8ft), ↔ 2–3m (6–10ft). Australia (Queensland, New South Wales). \*

**C. salignus** ♀♂ (White bottlebrush, Willow bottlebrush). Erect to spreading shrub or small tree with papery white bark and willow-like, narrowly lance-shaped, pale green leaves, to 10cm (4in) long. Bears green or white, sometimes red, pink, or mauve flowers in spikes, 3–5cm (1¼–2in) long, from late spring to midsummer. ♂ 5–15m (15–50ft), ↔ 3–5m (10–15ft). Australia (South Australia, New South Wales). \*

**C. sieberi** ♀ syn. *C. paludosus* (Alpine bottlebrush). Small, spreading to semi-erect shrub with crowded, linear, rigid, dark green leaves, 4cm (1½in) long, with hard points. Bears creamy yellow flowers in spikes, 4–15cm (1½–6in) long, from late spring to summer. ♂→ 1–2m (3–6ft). Australia (Queensland to Victoria). \* \* **'Summer Pink'** bears pink flowers.

**C. speciosus** (Albany bottlebrush). Erect, open shrub with lance-shaped to broadly lance-shaped, mid- to dark green leaves, to 15cm (6in) long. Deep red flowers are borne in dense spikes, to 15cm (6in) long, from late spring to autumn. ♂ 2–4m (6–12ft), ↔ 1–2m (3–6ft). Australia (Western Australia). \*

**C. subulatus** (Tonghi bottlebrush). Evergreen shrub with arching shoots and linear, pointed, bright green leaves, to 4cm (1½in) long. Bright red flowers are borne in spikes, to 5cm (2in) long, in mid- and late summer. ♂ 1.5m (5ft), ↔ 2m (6ft). S.E. Australia. \* \* \*

**C. viminalis** ♂ (Weeping bottlebrush). Bushy shrub or small tree with arching or weeping stems and lance-shaped, glandular, mid- to dark green leaves, 2–6cm (¾–2½in) long. Bears bright red flowers in spikes, 10–20cm (4–8in) long, from late spring to midsummer. ♂ 2–10m (6–30ft), ↔ 1.5–4m (5–12ft). Australia (Queensland, New South Wales). \* **'Captain Cook'** see *C. 'Captain Cook'*. **'Rose Opal'** ♂ is compact, producing narrow leaves and spikes of deep red flowers that fade to rose-pink; ♂ 1.5–2m (5–6ft).

**C. viridiflorus** (Green bottlebrush). Compact shrub, usually of arching habit, with linear, sharply pointed, mid- to dark green leaves, 2–3cm (¾–1¼in)



*Callistemon viminalis* 'Rose Opal'

long, densely arranged around the stems. Yellow-green flowers are borne in dense spikes, to 8cm (3in) long, in mid- and late summer. ♂ 1.5m (5ft), ↔ 2m (6ft). Australia (Tasmania). \* \*

## CALLISTEPHUS

*China aster*

ASTERACEAE/COMPOSITAE

Genus of one species of erect, bushy, fast-growing annual from stony slopes, wasteland, and cultivated fields in China. It has alternate, ovate-triangular or ovate, coarsely toothed leaves and solitary, daisy-like, single, semi-double, or double flowerheads, borne from late summer to autumn. Modern cultivars produce chrysanthemum-like, single to double flowers over a long season, in colours from indigo-blue, purple, and crimson to white. Use for bedding, in annual or informal borders, or in containers. In a frost-free site, they will bloom until midwinter. The cultivars provide long-lasting cut flowers.

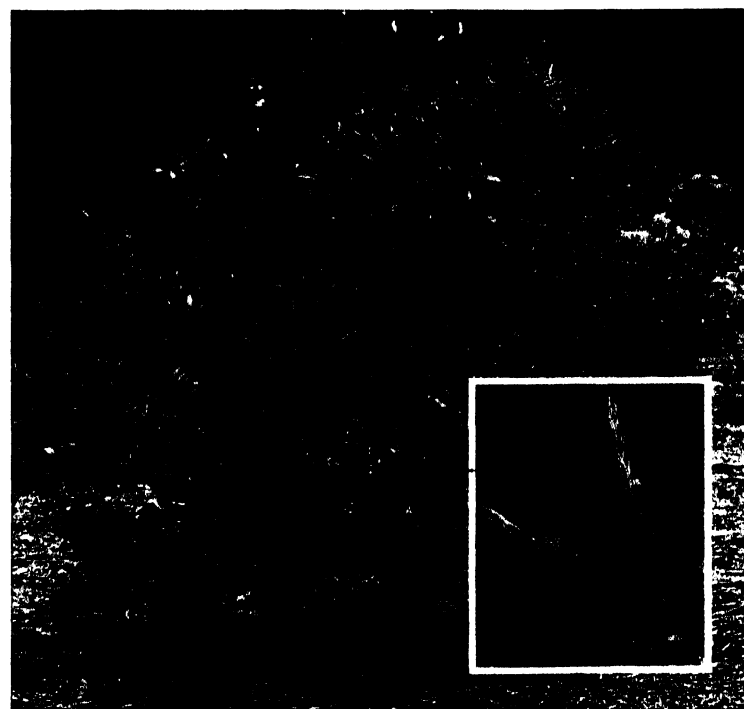
• **HARDINESS** Half hardy.

• **CULTIVATION** Grow in a sheltered site in fertile, neutral to alkaline, moist but well-drained soil in full sun. Water in dry periods. Dead-head to prolong flowering. Tall cultivars require staking. Grow medium and dwarf cultivars for autumn flowering in 13–18cm (5–7in) containers of loam-based potting compost (J1 No.2) in cool, well-ventilated conditions, with ample water.

• **PROPAGATION** Sow seed at 16°C (61°F) in early spring, or *in situ* in mid-spring. Sow seed for autumn-flowering container plants in early summer.

• **PESTS AND DISEASES** Prone to aster wilt, cucumber wilt, tomato spotted wilt, aphids, and cutworms.

**C. chinensis cultivars.** Selections from *C. chinensis* are fast-growing, bushy annuals with ovate-triangular or ovate, coarsely toothed, mid-green leaves, to 8cm (3in) long. From late summer to autumn, they bear branching stems of single to fully double, chrysanthemum-like flowerheads, 7–12cm (3–5in) across, sometimes with quilled ray-florets, mainly in shades of purple- and violet-blue, but also in crimson, rose-pink, white, or occasionally yellow. ♂ 20–60cm (8–24in), ↔ 25–45cm (10–18in). \* **Comet Series** cultivars are dwarf and early flowering, with large, spreading, quill-petalled, double flowerheads in a range of colours.



*Callistemon citrinus* 'Splendens' (inset: flower detail)



*Callistephus chinensis* Compliment Series  
'Compliment Light Blue'

including white, pink, blue, purple, scarlet, and yellow; good for containers; † to 24cm (10in), ↔ 20cm (8in).

**Compliment Series** cultivars have large, spreading, quill-petalled, long-stemmed, double flowerheads in salmon-pink, light blue, and white; good for cut flowers; † 70cm (28in), ↔ 20cm (8in); 'Compliment Light Blue' ■ has

double, pale violet-blue flowerheads with yellow disc-florets. **Duchesse Series** cultivars have incurved flowerheads in colours ranging from yellow to red and purple; good for cut flowers; † 70cm (28in), ↔ 30cm (12in). 'Kyoto Pompon' has small, weather-resistant, button-like, double flowerheads, in a range of colours, including yellow; † to 60cm (24in), ↔ 45cm (18in).

'Matsumoto' is tall and erect, bearing semi-double flowerheads with yellow disc-florets; it is good for cutting, weather-resistant, and partially wilt-resistant; † to 75cm (30in). **Milady Series** ■ ♀ cultivars are sturdy-branched, bearing rounded, double flowerheads in rose-pink, rose-red, scarlet, blue, white, and mixed colours; they are ideal for bedding and partially wilt-resistant; † to 30cm (12in), ↔ 25cm (10in). **Ostrich Plume Series** ■ cultivars have long stems and bear spreading, feathery, reflexed, double flowerheads, mainly in pinks and crimsons, from late summer to late autumn; good for cut flowers and partially wilt-resistant; † to 60cm (24in), ↔ 30cm (12in). **Pinocchio Series**

cultivars bear incurved, rounded, dense, double flowerheads in a wide colour range; good for bedding and edging; † to 20cm (8in), ↔ 20cm (8in). **Pommax Series** cultivars are vigorous, tall, and compact, with spreading, narrow-petalled, double flowerheads in a wide



*Callistephus chinensis* Milady Series



*Callistephus chinensis* Ostrich Plume Series



*Callistephus chinensis* Princess Series  
'Giant Princess'

colour range, including blue, yellow, scarlet, white, and yellow; † 60–70cm (24–28in), ↔ 30cm (12in). **Princess Series** cultivars have incurved, semi-double, quill-petalled flowerheads in a wide colour range; good for cutting and partially wilt-resistant; † to 60cm (24in), ↔ 30cm (12in); 'Giant Princess' is tall with semi-double, long-stemmed, red-purple flowerheads, their disc-florets tipped with yellow; † 75cm (30in).

## CALLITRICHE

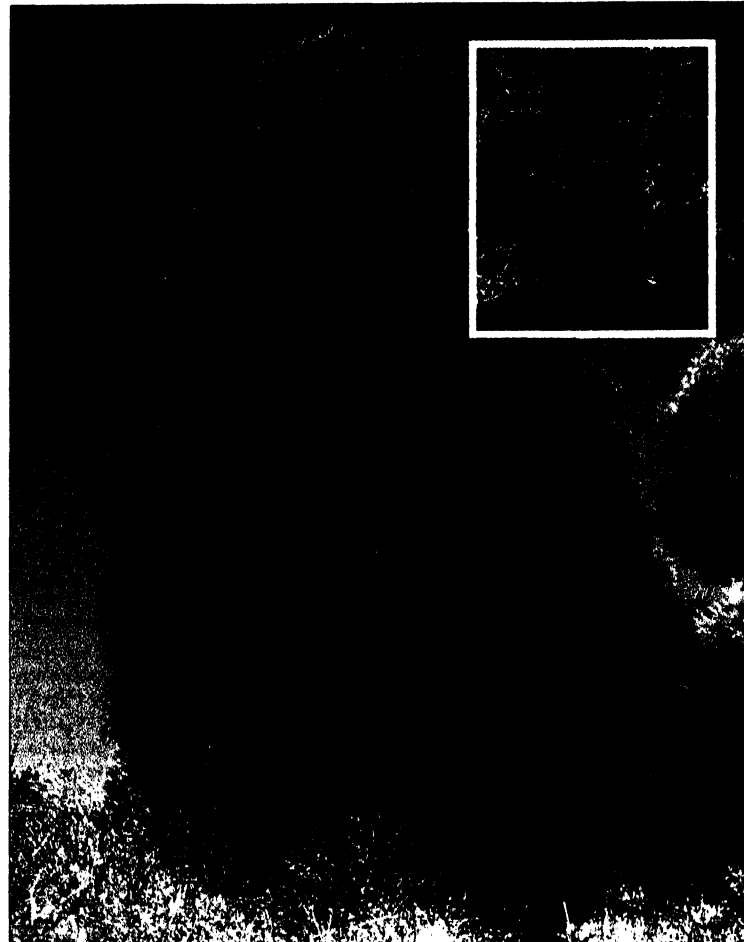
Water starwort

CALLITRICHACEAE

Genus of 25 species of aquatic, sometimes terrestrial, herbaceous perennials from bogs and marshes in Europe, Asia, and North America. They grow in tight, submerged clumps or form a turf-like surface on wet soil. The floating leaves are opposite, and linear or spoon-shaped to rounded. The tangled submerged leaves are linear, and almost translucent in deeper water. The name "starwort" arises from the rosette-like arrangement of the leaves of some species. Minute, solitary flowers are produced in summer from the axils of both the floating and submerged leaves. Grow as oxygenating plants in ponds and cold-water aquaria.

• **HARDINESS** Fully hardy.

• **CULTIVATION** To control spread, grow in baskets of loamy soil or loam-based potting compost (J1 No.1), topped with a layer of gravel, submerged 45–60cm (18–24in) deep, in sun or partial shade. In cold-water aquaria, grow in an inert medium in full light. See also pp.52–53.



*Callitris rhomboidea* (inset: foliage detail)

• **PROPAGATION** In summer, take softwood cuttings of terminal shoots, 15–20cm (6–8in) long; bunch and weight them near the bases, and insert them into an aquatic planting basket or at the muddy bottom of a pond.

• **PESTS AND DISEASES** Waterfowl may feed on young growth in spring.

*C. autumnalis* see *C. hermaphroditica*.  
*C. hermaphroditica*, syn. *C. autumnalis* (Autumn starwort). Submerged aquatic perennial producing linear, light green leaves, 3cm (1¼in) long, on thin, branching stems, to 50cm (20in) long. It does not develop floating "rosettes" and grows mainly towards the bottom of a pool. ↔ indefinite. Europe, North America. \*\*\*

## CALLITRIS

Cypress pine

CUPRESSACEAE

Genus of 14–17 species of evergreen, monoecious, coniferous large shrubs or trees from forest in Australia and New Caledonia. The scale-like adult leaves, 2–4mm (⅛–¼in) long, have free tips but lie flat along the shoots in whorls of 3; the decurrent parts of the leaves form ridges and furrows on the shoots. Young leaves, 0.8–1.5cm (⅓–½in) long, are needle-like and arranged in whorls. The small, ovoid-conical to spherical female cones of most species each have a single whorl of 6 scales, hinged at the bases; male cones are cylindrical or oblong and are borne singly or in groups of 2 or 3. In frost-prone areas, grow tender species in a cool greenhouse or conservatory.

In frost-free areas, grow cypress pines as windbreaks or specimen trees. They will tolerate drought, coastal conditions, and saline soils, and thrive in dry, temperate or warm Mediterranean climates.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, shaded from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in well-drained, sandy soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or take root cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*C. cupressiformis* see *C. rhomboidea*.  
*C. gunnii* see *C. oblonga*.

*C. oblonga* ♀ syn. *C. gunnii* (Tasmanian cypress pine). Symmetrical shrub or small tree with erect branches, a dense crown, and blue-green or mid-green, keeled leaves. Ovoid-conical, shiny black female cones, 1.5–2cm (½–¾in) long, with thick scales, are solitary or borne in groups. † to 8m (25ft), ↔ 2–3m (6–10ft). Australia (Tasmania). \*\*

*C. rhomboidea* ■ ♀ syn. *C. cupressiformis*, *C. tasmanica* (Oyster Bay cypress pine). Narrow, dense-crowned, large shrub or tree with bright green or blue-green leaves. Flattened-spherical, grey-brown female cones, 0.8–1.5cm (⅓–½in) across, with stout scales, are borne singly or in groups. † 9–15m (28–50ft), ↔ 2–3m (6–10ft). Australia (Queensland to Tasmania, South Australia). \*\*

*C. tasmanica* see *C. rhomboidea*



## CALLUNA

Heather, Ling

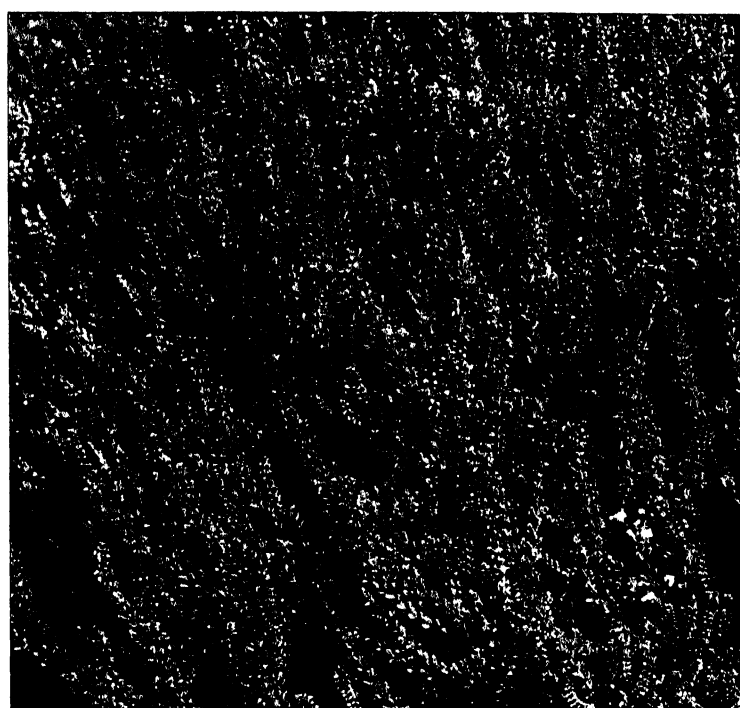
ERICACEAE

Genus of one species of evergreen shrub found on acid moorland and lowland heaths from N. and W. Europe to Siberia, Turkey, Morocco, and the Azores. It bears dense racemes of bell-shaped flowers, in shades of red, purple, pink, or white. The calyces are normally 4-lobed, and longer than the corollas, but usually the same colour – features that help to distinguish heathers (*Calluna*) from heaths (*Erica*). Racemes on young plants may be short, 1–5cm (½–2in) long; medium, 5–10cm (2–4in); or long, over 10cm (4in). As plants age, the racemes become shorter. The leaves, borne in opposite and overlapping pairs, lying flat along the stems, are linear, slightly fleshy, and usually dark green, becoming purple-tinged in winter. There are more than 500 cultivars, all of which are good ground-cover plants. Heathers are very attractive to bees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in an open site in well-drained, humus-rich, acid soil in full sun. Pruning group 10, in spring.
- **PROPAGATION** Root semi-ripe cuttings, 5cm (2in) long, in midsummer, or layer in spring.
- **PESTS AND DISEASES** Prone to fungal diseases, chiefly grey mould (*Botrytis*), *Phytophthora* root rot, and rhizoctonia, in warm wet conditions.

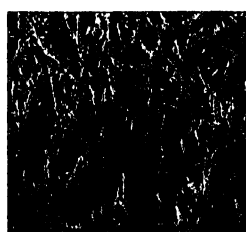
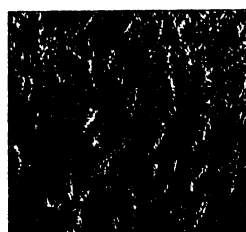
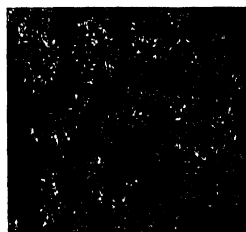
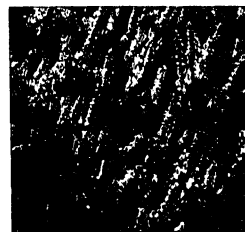
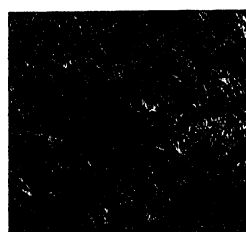
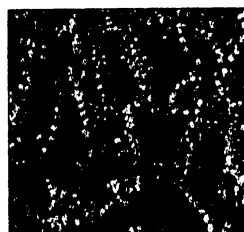
*C. vulgaris*, syn. *Erica vulgaris* (Ling, Scots heather). Variable, prostrate to erect shrub with green to grey, hairless or hairy leaves, 1–3mm (¼–½in) long. Bell-shaped or tubular flowers, to 4mm (¼in) long, are borne in short to long racemes from midsummer to late autumn. ↑ 10–60cm (4–24in), ↔ to 75cm (30in). N. and W. Europe to Russia (Siberia), Turkey, Morocco, the Azores. \*\*\*. Unless stated otherwise, the following cultivars are erect with dark green leaves and single flowers. **'Alison Yates'** is compact but vigorous, with silvery grey foliage and long racemes of white flowers; ↑ 45cm (18in), ↔ 60cm (24in). **'Allegra'** ♀ is compact and vigorous, with medium racemes of

ruby-red flowers; ↑ 50cm (20in), ↔ 60cm (24in). **'Annemarie'** ♀ bears long racemes of double, rose-pink flowers, good for cutting; ↑ 50cm (20in), ↔ 60cm (24in). **'Anthony Davis'** ♂ ♀ has green-grey leaves and long racemes of white flowers, good for cutting; ↑ 45cm (18in). **'Aureifolia'** see 'Hammondii Aureifolia'. **'Barbara Fleur'** produces medium racemes of pale crimson flowers; ↑ 45cm (18in), ↔ 55cm (22in). **'Beoley Gold'** ♂ ♀ has yellow foliage and medium racemes of white flowers; ↑ 35cm (14in). **'Beoley Silver'** has softly hairy silver foliage and medium racemes of white flowers; ↑ 40cm (16in), ↔ 60cm (24in). **'Blazeaway'** has gold foliage, turning bright red in winter, and medium racemes of lilac-mauve flowers; ↑ 35cm (14in), ↔ 60cm (24in). **'Boskoop'** ♂ has gold leaves, red-tinted orange in winter, and medium racemes of lilac-pink flowers. **'Clare Carpet'** is prostrate, with light green foliage and short racemes of pale pink flowers; ↑ 5cm (2in), ↔ 45cm (18in). **'County Wicklow'** ♂ ♀ is compact and semi-prostrate, with mid-green leaves and large, double, pale pink flowers in long racemes; ↑ 25cm (10in), ↔ 35cm (14in). **'Darkness'** ♂ ♀ has short racemes of crimson flowers; ↑ 25cm (10in), ↔ 35cm (14in). **'Dark Star'** ♀ is compact, with short racemes of semi-double, crimson flowers; ↑ 20cm (8in), ↔ 35cm (14in). **'Drum-ra'** has light green foliage and short racemes of white flowers; ↑ 20cm (8in). **'Elongata'** see 'Mair's Variety'. **'Elsie Purnell'** ♂ ♀ has grey-green leaves and long racemes of double, pale pink flowers, good for cutting; ↑ 40cm (16in), ↔ 75cm (30in). **'Firefly'** ♂ ♀ has terracotta foliage in summer, brick-red in winter, with short racemes of deep mauve flowers; ↑ 45cm (18in). **'Foxii Nana'** ♂ forms tight mounds of bright green foliage with short racemes of mauve flowers; ↑ 15cm (6in), ↔ 30cm (12in). **'Glenfiddich'** has copper-red leaves, turning bronze-red in winter, and medium racemes of mauve flowers; ↑ 40cm (16in). **'Golden Feather'** ♂ syn. 'Gold Feather', has gold foliage, turning reddish orange in winter, and bears short racemes of mauve flowers; ↑ 25cm (10in), ↔ 70cm (28in). **'Gold Haze'** ♂ ♀ syn. 'Golden Haze', has pale

*Calluna vulgaris* 'Firefly'

yellow foliage and medium racemes of white flowers; ↔ 45cm (18in). **'Hamlet Green'** has yellowish grey-green leaves, becoming orange-yellow and green in winter, and short racemes of mauve flowers. **'Hammondii Aureifolia'**, syn. 'Aureifolia', 'Hammondii Aurea', has light green foliage tipped with yellow from spring to early summer, and short racemes of white flowers; ↔ 40cm (16in). **'H.E. Beale'**, syn. 'Pink Beale', has long racemes of double, pale pink flowers, good for cutting. **'Hirta'** is prostrate, with golden yellow foliage, yellow-green in winter, and bears short racemes of pink flowers; ↑ 10cm (4in), ↔ 30cm (12in). **'Inshriach Bronze'** has lemon-yellow leaves in spring, gold in summer, and bronze in winter, and bears medium racemes of lilac-pink flowers; ↑ 25cm (10in), ↔ 35cm (14in). **'J.H. Hamilton'** ♂ ♀ is dwarf, with medium racemes of double, deep pink flowers; ↑ 10cm (4in), ↔ 25cm (10in). **'John F. Letts'**, syn. 'J.F. Letts', is prostrate, with gold foliage, turning

bronze then red and orange, and short racemes of pale lilac flowers; ↑ 10cm (4in), ↔ 25cm (10in). **'Johnson's Variety'** has mid-green leaves and medium racemes of purple-pink flowers from mid-autumn to midwinter; ↔ 60cm (24in). **'Joy Vanstone'** ♀ has straw-coloured foliage, turning orange in winter, and medium racemes of pink flowers. **'Kerstin'** has downy, deep lilac-grey leaves in winter, tipped pale yellow and red in spring, and short racemes of mauve flowers; ↔ 45cm (18in). **'Kinlochruel'** ♂ ♀ has bright green foliage, turning bronze in winter, and long racemes of double white flowers; ↑ 25cm (10in), ↔ 40cm (16in). **'Mair's Variety'** ♀ syn. 'Elongata', has mid-green leaves and long racemes of white flowers, good for cutting; ↑ 40cm (16in). **'Marinka'** see 'Red Carpet'. **'Marleen'** has medium racemes of purple-tipped white buds that do not open but persist late into autumn. **'Mullion'** ♀ has short racemes of lilac-pink flowers; ↑ 20cm (8in). **'Multicolor'** ♂ is compact with

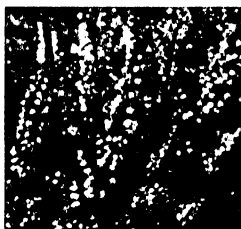
*Calluna vulgaris* 'Anthony Davis'*Calluna vulgaris* 'Beoley Gold'*Calluna vulgaris* 'Boskoop'*Calluna vulgaris* 'County Wicklow'*Calluna vulgaris* 'Darkness'*Calluna vulgaris* 'Elsie Purnell'*Calluna vulgaris* 'Foxii Nana'*Calluna vulgaris* 'Golden Feather'*Calluna vulgaris* 'Gold Haze'*Calluna vulgaris* 'J.H. Hamilton'*Calluna vulgaris* 'Kinlochruel'*Calluna vulgaris* 'Multicolor'



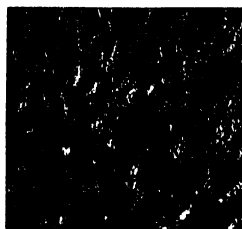
*Calluna vulgaris* 'Silver Knight'

copper foliage, usually flecked orange and red, and short racemes of mauve flowers; †10cm (4in), ↔ 25cm (10in). 'My Dream' ■ syn. 'Snowball', bears long racemes of double white flowers, good for cutting; †45cm (18in). 'Orange Queen' ♀ has bronze foliage in autumn, orange in winter, turning gold in summer, and bears short racemes of pink flowers. 'Peter Sparkes' ■ bears long racemes of double, rose-pink flowers, good for cutting, into late autumn; ↔ 55cm (22in). 'Pink Beale' see 'H.E. Beale'. 'Red Carpet', syn. 'Marinka', is semi-prostrate, and chiefly grown for its foliage, which is orange-red in winter, gold in summer; it produces short racemes of mauve-pink flowers; †20cm (8in), ↔ 45cm (18in). 'Red Fred' has brilliant red foliage in spring, persisting well into summer, and bears medium racemes of lilac-pink flowers; †35cm (14in), ↔ 45cm (18in). 'Red Star' ♀ has medium racemes of double, deep lilac-pink flowers in autumn; †40cm (16in), ↔ 60cm (24in). 'Robert Chapman' ■ ♀ has gold foliage in summer, turning red in winter and spring, and produces medium racemes of purple flowers; †25cm (10in), ↔ 65cm (26in). 'Roland Haagen' ♀ syn. 'Rowland Heagan', is grown for its golden yellow foliage, turning bright orange in winter; it produces medium racemes of lilac-pink flowers; †15cm (6in), ↔ 35cm (14in). 'Rosalind, Underwood's Variety' has

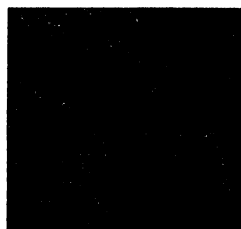
yellow-green foliage, with yellow tips in autumn, winter, and spring, and bears medium racemes of pink flowers; ↔ 55cm (22in). 'Serlei Aurea' ♀ has dense, yellow-green foliage, tipped yellow in summer and autumn, and produces short racemes of white flowers; ↔ 40cm (16in). 'Silver Knight' ■ has downy grey foliage, deepening to purple-grey in winter, and medium racemes of mauve pink flowers; †40cm (16in). 'Silver Queen' ■ ♀ is spreading with downy, silvery grey leaves, and short racemes of pale mauve flowers; †40cm (16in), ↔ 55cm (22in). 'Silver Rose' ♀ has silvery grey foliage, and bears medium racemes of lilac-pink flowers; †40cm (16in). 'Sir John Charrington' ♀ has golden yellow foliage in summer, turning orange and red in winter, and produces short racemes of mauve-pink flowers; †40cm (16in). 'Sirson' has gold leaves, turning bright orange-red in winter in cold, open sites, and bears medium racemes of pink flowers. 'Sister Anne' ♀ is compact and spreading, with grey-green foliage, becoming dull bronze in winter; it bears short racemes of mauve flowers; †10cm (4in), ↔ 25cm (10in). 'Snowball' see 'My Dream'. 'Spring Charm' see 'Spring Torch'. 'Spring Cream' ■ ♀ is compact, with mid-green leaves, cream-tipped in spring, and short racemes of white flowers; †35cm (14in), ↔ 45cm (18in). 'Spring Torch', syn. 'Spring Charm', produces mid-green leaves with cream, orange, and red tips in spring, and short racemes of mauve flowers; †40cm (16in), ↔ 60cm (24in). 'Sunset' ♀ has golden yellow leaves in spring, turning orange in summer and red in winter, and bears short racemes of mauve-pink flowers; †25cm (10in). 'Tib' ■ ♀ is fairly open in habit, bearing long racemes of double flowers in midsummer; ↔ 40cm (16in). 'Velvet Fascination' has silvery grey foliage, and produces medium racemes of pure white flowers; †50cm (20in), ↔ 70cm (28in). 'White Lawn' ♀ is prostrate and trailing, producing bright green foliage and medium racemes of white flowers; †5cm (2in), ↔ 40cm (16in). 'Wickwar Flame' ♀ has gold leaves, turning red in winter, and bears medium racemes of mauve-pink flowers; †50cm (20in), ↔ 65cm (26in).



*Calluna vulgaris* 'My Dream'



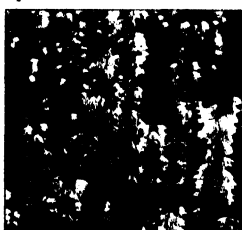
*Calluna vulgaris* 'Peter Sparkes'



*Calluna vulgaris* 'Robert Chapman'



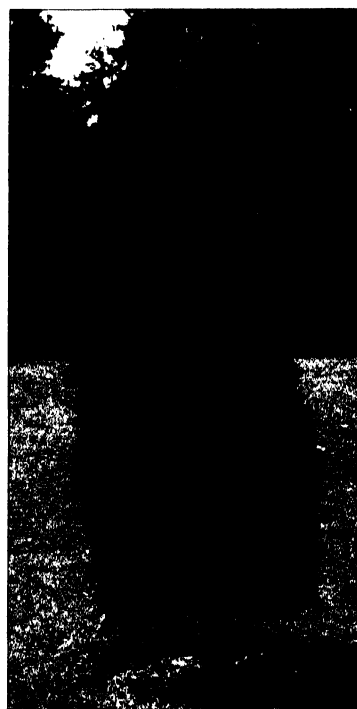
*Calluna vulgaris* 'Silver Queen'



*Calluna vulgaris* 'Spring Cream'



*Calluna vulgaris* 'Tib'



*Calocedrus decurrens*

## CALOCEDRUS

Incense cedar

CUPRESSACEAE

Genus of 3 species of evergreen, monoecious conifers from dry, warm-temperate forest in S. China, Taiwan, Vietnam, and W. North America. The branchlets are arranged in 2 flattened rows; the decurrent, scale-like leaves appear 4-ranked, but are arranged in 2 pairs. The female cones have 6 scales, hinged at the bases, of which only the central pair is fertile, each scale bearing 2 seeds. Grow as specimen trees. In frost-prone areas, grow less hardy species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any well-drained soil in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*C. decurrens* ■ ♀ ♂ syn. *Heyderia decurrens*, *Libocedrus decurrens* (Incense cedar). Narrow-crowned, columnar tree in cultivation, but often with a wide crown and horizontal branches in the wild. Produces flat sprays of linear, glossy, dark green leaves, to 1cm (½in) long, with free tips. Pendent shoots bear erect, ovoid, yellow-brown female cones, 2–2.5cm (¾–1in) long, ripening red-brown. †20–40m (70–130ft), ↔ 2–9m (6–28ft). W. North America (Oregon to Baja California). \*\*\*

*C. macrolepis* ♂ Narrow, conical tree with slightly larger and flatter, linear leaves than those of *C. decurrens*; they are 1.5cm (½in) long, bright green above, and glaucous beneath. Erect, ellipsoid, purple-tinted orange female cones, to 1.5cm (½in) long, are borne on pendent shoots. †30m (100ft), ↔ 8m (25ft). China (Yunnan, Hainan). \*\*

▷ *Caloccephalus* see *Leucophyta*  
*C. brownii* see *L. brownii*

## CALOCHONE

RUBIACEAE

Genus of 2 evergreen species, one a perennial climber, the other a shrub (not usually cultivated), found in forest in W. Africa. They have simple leaves, in opposite pairs, and are valued for their showy, tubular-based, 5-petalled flowers, which are borne in spherical heads at the ends of the shoots. Grow *C. redingii* in a warm greenhouse; in subtropical and tropical areas, it is suitable for training over large shrubs, through trees, or on house walls.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in moist but well-drained, humus-rich, fertile soil in full sun. Pruning group 11, after flowering.
- **PROPAGATION** Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. redingii*. Vigorous, twining climber producing ovate, bristly-hairy leaves, 15–20cm (6–8in) long, heart-shaped at the bases, and with wavy margins. Bears a profusion of flowers, 2cm (¾in) across, with greenish yellow tubes and bright-pink petals, from winter to spring. †10m (30ft) or more. Zaïre. ☼ (min. 15°C/59°F)

## CALOCHORTUS

Cat's ears, Fairy lantern, Mariposa tulip

LILIACEAE

Genus of about 60 species of bulbous perennials from grassland and open woodland in W. North America and Mexico. They are cultivated for their showy, tulip-like flowers, borne mainly in spring or early summer. The flowers have a distinctive nectary near the base of each inner petal, often with striking basal marks and conspicuous hairs inside. *C. luteus*, *C. superbis*, *C. venustus*, and *C. vestae* appear very similar, but differ in the shape of their nectaries. The leaves are mid- to grey-green; lower stem leaves are 20–70cm (8–28in) long, narrow, and linear to lance-shaped; upper stem leaves are



*Calochortus albus*



*Calochortus amabilis*

shorter, 10–30cm (4–12in) long. Best grown in a cold greenhouse or bulb frame as they are intolerant of wet when dormant in winter. In dry climates, grow in a mixed or herbaceous border.

• **HARDINESS** Frost hardy; *C. barbatus* is hardy to -10°C (14°F).

• **CULTIVATION** Plant bulbs 10–15cm (4–6in) deep in autumn. Under glass, grow in loam-based potting compost (J1 No.1) with added grit, in full light. Water freely when in growth; water sparingly as the leaves die back; provide warm, dry conditions when dormant in late summer and early autumn. Pot on just before growth begins in autumn. Outdoors, grow in an open site in well-drained, sandy, loam soil in full sun. Protect from rain when dormant and in winter.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or remove offsets in late summer. Some species produce bulbils in the leaf axils; plant these in late spring or early summer.

• **PESTS AND DISEASES** Trouble free.

*C. albus* ■ Bulbous perennial with leaves 30–70cm (12–28in) long. From spring to early summer, branched stems bear 2 or more nodding, spherical to bell-shaped, sparsely hairy white flowers, 2–3cm (¾–1¼in) long, with crescent-shaped nectaries. †10–50cm (4–20in), ↔ 5cm (2in). USA (California). \*\*

*C. amabilis* ■ Bulbous perennial producing leaves 20–50cm (8–20in) long. Branched stems bear 2 or more nodding, spherical to bell-shaped, deep yellow flowers, 1.5–2cm (½–¾in) long, from spring to early summer; the



*Calochortus luteus*



*Calochortus superbis*

conspicuous tepals, occasionally tinged green, have deeply crescent-shaped nectaries. †10–50cm (4–20in), ↔ 5cm (2in). USA (California). \*\*

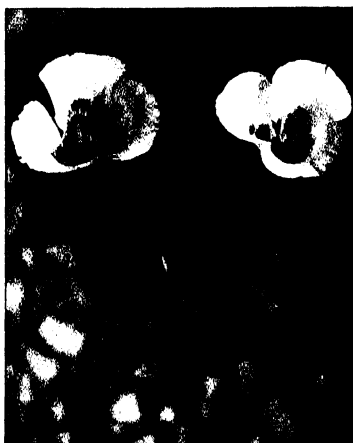
*C. barbatus*, syn. *Cyclobothra lutea*. Bulbous perennial with leaves 10–45cm (4–18in) long. In summer, branched, spreading stems bear 1 or 2 open cup-shaped flowers, 2–3cm (¾–1¼in) wide, usually mustard-yellow with purple hairs, but varying from yellow to purplish yellow. The nectaries are semi-circular. Sometimes produces bulbils. †15–30cm (6–12in), ↔ 5cm (2in). Mexico. \*\*

*C. luteus* ■ (Yellow mariposa). Bulbous perennial with leaves 10–45cm (4–18in) long. In spring, branched stems bear 1–7 open bell-shaped flowers, 4–6cm (1½–2½in) across. Flowers are deep yellow; the insides have sparse, slender hairs and red-brown lines and marks. The nectaries are crescent-shaped. †20–50cm (8–20in), ↔ 8cm (3in). USA (California). \*\*

*C. macrocarpus*. Bulbous perennial with leaves 20–50cm (8–20in) long. In summer, unbranched stems bear up to 3 erect, open cup-shaped purple flowers, 6–9cm (2½–3½in) across, usually with a deep purple ring inside, towards the bases of the petals. Narrow sepals extend beyond the petals. The nectaries are triangular. †20–50cm (8–20in), ↔ 5cm (2in). W. USA. \*\*

*C. superbis* ■ Bulbous perennial producing leaves 10–40cm (4–16in) long. In late spring, branching stems bear 1–3 erect, cup-shaped, sparsely hairy, white, cream, lavender-blue, or yellow flowers, 5–8cm (2–3in) across, with a brown mark above the yellow base of each petal. The nectaries are V-shaped. †40–60cm (16–24in), ↔ 8cm (3in). USA (California). \*\*

*C. uniflorus*. Bulbous perennial with very narrow leaves, 10–40cm (4–16in)



*Calochortus venustus*



*Calochortus vestae*

long. Up to 5 erect, saucer-shaped, pale lilac flowers, 3.5–4.5cm (1½–1¾in) across, sparsely hairy and often with darker lilac marks inside, are borne on long, unbranched stems in summer. Has oblong nectaries. †10–15cm (4–6in), ↔ 5cm (2in). W. USA. \*\*

*C. venustus* ■ Bulbous perennial with leaves 10–40cm (4–16in) long. From late spring to summer, branched stems bear 1–3 erect, cup-shaped flowers, 5–8cm (2–3in) across, varying from white to yellow, purple, or dark red, each with a yellow-ringed, dark red mark inside. The nectaries are rounded or diamond-shaped. †20–60cm (8–24in), ↔ 8cm (3in). USA (California). \*\*

*C. vestae* ■ Bulbous perennial with leaves 15–45cm (6–18in) long. From late spring to summer, branched stems bear 1–6 erect, cup-shaped white flowers, 5–8cm (2–3in) across, sometimes tinged purple, with a yellow-ringed maroon mark at the base of each petal. The nectaries are double crescent-shaped. †30–50cm (12–20in), ↔ 8cm (3in). USA (California). \*\*

## CALOMERIA syn. HUMEA

Incense plant

ASTERACEAE/COMPOSITAE

Genus of about 14 species of strongly aromatic annuals and perennials found in varying habitats, from coastal mudflats to mountain forest, in Africa, Madagascar, and S. Australia. They have simple, alternate leaves and, in summer, bear large, branched, pyramidal panicles of tiny, tubular flowerheads. In frost-prone climates, grow incense plants as biennials in a conservatory or cool greenhouse, or use for summer bedding. In warmer regions, grow in a border or in specimen groups.

• **HARDINESS** Frost tender.



*Calomeria amaranthoides*

• **CULTIVATION** Under glass, grow in borders or containers of loam-based potting compost (J1 No.3) in full light with good ventilation. When in growth, water moderately and apply a balanced liquid fertilizer every 3–4 weeks. Mist over to release fragrance. Keep just moist in winter. Outdoors, grow in fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe.

• **PESTS AND DISEASES** Trouble free.

*C. amaranthoides* ■ syn. *Humea elegans* (Incense plant, Plume plant). Erect, branching, smooth to slightly hairy, aromatic perennial, usually grown as a biennial, with almost stem-clasping, ovate to lance-shaped leaves, to 25cm (10in) long. In summer, bears feathery panicles, to 1.2m (4ft) tall, of tiny, brownish pink to red flowerheads. Contact with the leaves may aggravate skin allergies. †1.2–2m (4–6ft), ↔ to 1m (3ft). Australia (New South Wales, Victoria). ☼ (min. 4°C/39°F)

▷ *Calonyction aculeatum* see *Ipomoea alba*

## CALOSCORDUM

ALLIACEAE/LILIACEAE

Genus, related to *Allium*, of one species of bulbous perennial from mountainous regions of Asia. It has narrow leaves and bears umbels of tiny flowers in late summer, but does not have a pungent odour. *C. neriniflorum* is best grown in a sunny rock garden, or in an alpine house. In mild or frost-free areas, grow in thin grass on a sunny bank.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Plant bulbs 7cm (3in) deep in spring. Grow in well-drained soil in full sun. Protect from excess winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Remove offsets after flowering.

• **PESTS AND DISEASES** Trouble free.

*C. neriniflorum*, syn. *Allium neriniflorum*, *Nothoscordum neriniflorum*. Bulbous perennial with 2–6 linear, channelled, pale green leaves, 8–15cm (3–6in) long, which die back as flowers are produced in late summer. Up to 20 star-shaped flowers, 4–7mm (¼–¼in) across, the petals bright pink with dark midribs, are borne in erect, loose umbels, 5–7cm (2–3in) across. †25cm (10in), ↔ 5cm (2in). C. Asia, N. and W. China, Russia (Siberia). \*\*\*

## CALOTHAMNUS

Net bush

MYRTACEAE

Genus of about 25 species of evergreen shrubs found in Western Australia, usually in dry scrub and open forest. They are cultivated for their nodding flowers, 1–4cm (½–1½in) long, which have tiny petals and prominent, flattened bundles of long red stamens; they are produced in one-sided spikes or clusters, 2–25cm (¾–10in) long. The leaves are needle-like and leathery, and crowded on the stems, either irregularly or in whorls. In frost-prone regions, grow in a cool or temperate greenhouse; in warmer areas, grow in a shrub border.



*Calothamnus quadrifidus*

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with good ventilation. In the growing season, water moderately and apply a phosphate-free fertilizer every 4-6 weeks; water sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in well-drained, moderately fertile soil (very fertile soil diminishes flower production) in full sun. Pruning group 8, although pruning is seldom needed.
- **PROPAGATION** Surface-sow seed at 16-18°C (61-64°F) in spring. Root semi-ripe cuttings with bottom heat in late summer.
- **PESTS AND DISEASES** Scale insects may be a problem.

**C. quadrifidus** ■ (Common net bush). Erect to spreading shrub with linear, greyish to dark green or grey leaves, 3cm (1¼in) long. Bears irregular, axillary, one-sided spikes of rich red flowers, 2.5cm (1in) long, from late spring to autumn, often forming clusters, 20cm (8in) or more across, around the stems. ‡ 2-4m (6-12ft), ↔ 2-5m (6-15ft). Australia (Western Australia). ☼ (min. 5°C/41°F)

## CALPURNIA

LEGUMINOSAE/PAPILIONACEAE

Genus of 10 or more species of ever-green shrubs and small trees from mountain forest in Africa and India. They are cultivated for their pendent racemes of yellow, pea-like flowers, which are produced from the leaf axils or at the ends of the shoots. The leaves are alternate and pinnate, with 3 to many pairs of leaflets. In frost-prone areas, grow in a temperate greenhouse. Elsewhere, use as specimen plants or as a colourful addition to a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. During growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained, fertile soil in full sun. Pruning group 8; plants under glass may need restrictive pruning.
- **PROPAGATION** Sow seed at 13-18°C (55-64°F) in spring; prick out seedlings as soon as possible.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**C. aurea** ☉ (East African laburnum, Natal laburnum). Erect shrub or small tree, usually spreading in habit, with pinnate leaves, 10-24cm (4-10in) long, composed of 3-12 pairs of ovate, fine-tipped leaflets, dark green above, paler beneath. Racemes, 8-18cm (3-7in) long, of up to 30 bright yellow flowers are borne from winter to spring. ‡ 2-10m (6-30ft), ↔ 1-4m (3-12ft). South Africa (mainly Eastern Cape), S. India. ☼ (min. 7°C/45°F)

## CALTHA

Kingcup, Marsh marigold

RANUNCULACEAE

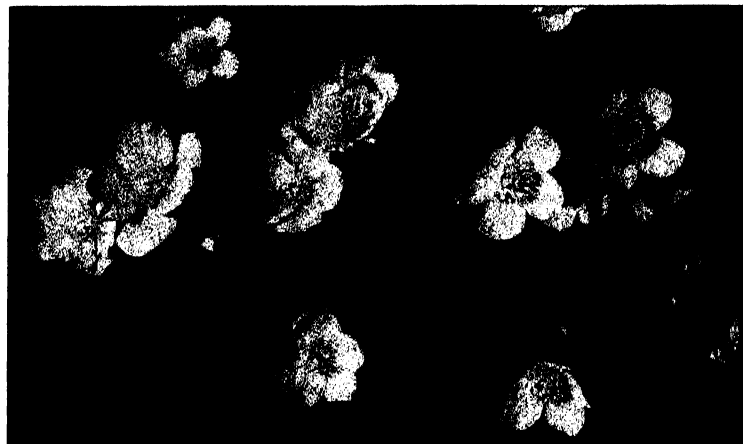
Genus of about 10 species of rhizomatous, marshland or marginal aquatic perennials and herbaceous, moisture-loving perennials, widespread in temperate and cold regions of the N. hemisphere. The leaves are generally heart- or kidney-shaped. Those grown as marginal water plants provide a display of cup-shaped, yellow or white flowers in spring. They are borne in terminal or axillary corymbs before the dense clumps of foliage are produced; a second flush of flowers is often produced in late summer. Although calthas are best grown at the water's edge, several will thrive in a mixed or herbaceous border, if the soil is kept moist. *C. introloba* is suitable for a peat bed, trough, or alpine house. There is considerable nomenclatural confusion over the limits of the species that are commercially available.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in an open site in rich, boggy soil in full sun at the water's edge; marsh marigolds will tolerate root restriction in aquatic planting baskets. *C. introloba* needs moist but well-drained, humus-rich soil in a cool site in partial shade. See also pp.52-53.
- **PROPAGATION** Sow seed as soon as ripe on permanently damp compost in a partially shaded cold frame. Divide in late summer or very early spring.
- **PESTS AND DISEASES** Prone to powdery mildew in summer.

**C. introloba**. Dwarf, tufted, marshland perennial with arrow-shaped, glossy, mid-green leaves, 2-2.5cm (¾-1in) long. In late winter, produces large, almost stemless white flowers, to 2.5cm (1in) across, flushed purple on the outside. ‡ 2.5cm (1in), ↔ to 7cm (3in). Mountains of Australia. \*\*\*  
**C. laeta** see *C. palustris* var. *palustris*.



*Caltha leptosepala*



*Caltha palustris*

**C. leptosepala** ■ Marginal aquatic perennial with heart-shaped, radical, dark green leaves, to 6cm (2½in) long. Silvery white flowers, 2-3cm (¾-1¼in) across, open on leafless stems, 15-20cm (6-8in) tall, in spring. ‡ 30cm (12in). North America (Alaska to Alberta, south to Oregon, Utah, New Mexico). \*\*\*  
**subsp. howellii** is compact, with broad leaves, to 8cm (3in) long, and white flowers, often in pairs; ‡ 20cm (8in); North America (Alaska to California).  
**C. palustris** ■ ♀ (Kingcup, Marsh marigold). Variable, marginal aquatic perennial with decumbent rhizomes that produce kidney-shaped, toothed, dark green leaves, 4-10cm (1½-4in) long. In spring, stems 30-45cm (12-18in) tall, bear waxy yellow flowers, 4cm (1½in) across. May grow in water to 23cm (9in) deep for short periods, but prefers very shallow water or bog conditions. ‡ 10-40cm (4-16in), ↔ 45cm (18in). N. temperate regions. \*\*\*  
**var. alba**, syn. 'Alba', is compact, bearing solitary white flowers with yellow stamens in early spring, often before the glossy foliage develops; ‡ 22cm (9in), ↔ 30cm (12in). 'Flore Pleno' ■ ♀ has double yellow flowers; ‡ 25cm (10in).  
**var. palustris**, syn. *C. laeta*, *C. polypetala* of gardens (Giant marsh marigold), has creeping or decumbent rhizomes, rounded leaves, heart-shaped at the bases, and flowers to 8cm (3in) across; ‡ 60cm (24in), ↔ 70-75cm (28-30in). North America (Alaska to Oregon).  
**C. polypetala** of gardens see *C. palustris* var. *palustris*

▷ **Caltrops, Water** see *Trapa natans*



*Caltha palustris* 'Flore Pleno'

## CALYCANTHUS

Allspice, Spicebush

CALYCANTHACEAE

Genus of 2 or 3 species of deciduous shrubs from woodland and streambanks in the USA. They are cultivated for their unusual, fragrant flowers, which have narrowly lance-shaped to elliptic petals and sepals, and resemble tiny water lilies; they are solitary, and are produced terminally or from the axils of the current year's shoots. The opposite, dark green leaves, 5-20cm (2-8in) long, are aromatic when crushed. Grow allspice in a shrub border or as specimen plants.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist, humus-rich soil in sun or, in warm climates, in partial shade. Some species may suffer frost damage in very cold winters. Pruning group 6.
- **PROPAGATION** Sow seed as soon as ripe or in autumn in an open frame. Root softwood cuttings in summer, layer in autumn, or remove suckers in spring.
- **PESTS AND DISEASES** Trouble free.

**C. chinensis** see *Sinocalycanthus chinensis*.

**C. floridus** (Carolina allspice, Common sweetshrub, Strawberry bush). Bushy, spreading shrub with oval or oblong, dark green leaves, to 12cm (5in) long, rough above, and sometimes turning yellow in autumn. Flowers, 4-5cm (1½-2in) across, with numerous strap-shaped, dark red petals, fading to brown at the tips, are borne in summer. ‡ 2.5m (8ft), ↔ 3m (10ft). S.E. USA. \*\*\*



*Calycanthus occidentalis*

**C. occidentalis** ■ (Californian allspice). Vigorous, spreading shrub with ovate to oblong-lance-shaped, dark green leaves, to 20cm (8in) long, rough above, and sometimes turning yellow in autumn. Dark red flowers, 5cm (2in) across, with linear, brown-tipped petals, are borne in summer. † 3m (10ft), ↔ 4m (12ft). USA (California). \*\*\*

## CALYMMANTHIUM

CACTACEAE

Genus of 2 species of columnar, perennial cacti from hilly lowlands in Peru. The pale green stems, occasionally many-branched, have 3- to 5-angled, warty or scalloped ribs and small, spiny areoles. Tubular-bell-shaped, nocturnal, white to red flowers develop from a small, stem-like, fleshy receptacle tube bearing spiny areoles. This tube encloses the inner parts of the flower, and is split by the emerging perianth. Elongated, 4- or 5-angled, pale green fruits contain ovoid seeds. In frost-prone areas, grow in a warm greenhouse; elsewhere, use in a semi-desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun. In growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep dry at other times. Outdoors, grow in sharply drained, humus-rich soil in full sun. See also pp.48-49.
- **PROPAGATION** Sow seed at 19-24°C (66-75°F) in late spring, or root stem cuttings in summer.
- **PESTS AND DISEASES** Vulnerable to scale insects, mealybugs, and aphids.

**C. substerile.** Shrub-like cactus with ribbed stems bearing white areoles, each with 3-8 white or pale yellow radials, to 1cm (½in) long, and 1-6 white centrals, 1-5cm (½-2in) long. Nocturnal white flowers, to 11cm (4½in) long, with reddish brown outer petals, are borne in summer. † 8m (25ft), ↔ 75cm (30in). N. Peru. ☉ (min. 13°C/55°F)

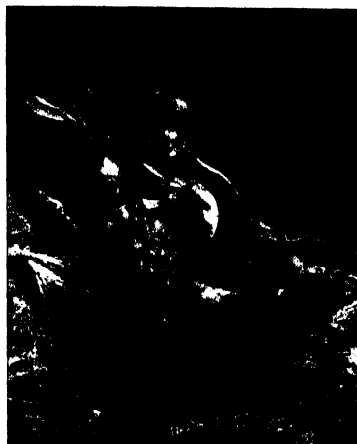
## CALYPSO

ORCHIDACEAE

Genus of one species of deciduous, terrestrial orchid from Europe, Asia, and North America, found in damp woodland, bogs, and marshes. The ovoid corm produces a single, pleated leaf. Solitary, terminal, slipper-shaped flowers are borne in summer. In frost-prone climates, grow in a cold greenhouse or alpine house; in warmer regions, use in a rock, bog, or woodland garden.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Cool-growing orchid. Under glass, grow in terrestrial orchid compost with added leaf mould and charcoal, in filtered light. Top-dress annually. Water freely in the growing season, more sparingly in winter. Outdoors, grow in moist, neutral to acid soil, enriched with leaf mould or bark chips, in partial shade. See also p.46.
- **PROPAGATION** Separate corms with great care in early spring.
- **PESTS AND DISEASES** Trouble free.

**C. bulbosa** ■ Small, terrestrial orchid with one elliptic to oblong leaf, 12cm (5in) long. In summer, a slender stem,



*Calypso bulbosa*

10-20cm (4-8in) tall, bears a solitary, nodding, fragrant flower, 2.5cm (1in) across; the reflexed sepals and petals are usually reddish purple, occasionally white; the lips are white. † 20cm (8in), ↔ 15cm (6in). Scandinavia, Russia, Asia, North America. \*\*

## CALYTRIX

Starflower

MYRTACEAE

Genus of about 70 species of prostrate to erect, evergreen shrubs, usually found in open scrub or light, eucalyptus forest in Australia. The crowded, tiny leaves are alternate, opposite, or whorled. The star-shaped, 5-petalled, white to pink, purple, or yellow flowers, are borne singly from the leaf axils, and are often clustered at the branch ends. In frost-prone areas, grow in a cool greenhouse; elsewhere, use in a shrub border or as ground cover.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with good ventilation. In the growing season, water freely, applying a phosphate-free liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in well-drained, neutral to acid soil in full sun. Pruning group 10, after flowering.
- **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

**C. alpestris** (Snow myrtle). Many-branched, arching shrub with linear, spreading or sometimes reflexed, hairy, dark green leaves, 1-5mm (¼-½in) long. Bears profuse, often pink-budded white flowers, 5-10mm (¼-½in) across, from late spring to summer. † 2-3m (6-10ft), ↔ 2-4m (6-12ft). Australia (South Australia, Victoria). \*

▷ **Camas, Death** see *Zigadenus venenosus*

## CAMASSIA

Quamash

HYACINTHACEAE/LILIACEAE

Genus of 5 or 6 species of bulbous perennials from damp, fertile meadowland in North America. Large, ovoid to spherical bulbs give rise to erect, narrow, linear, keeled, channelled, bright green, basal leaves. Loose or dense, terminal racemes of large, showy, star- or cup-shaped, blue, purple, or white flowers,

each with 6 tepals, are borne on leafless stems among the leaves from late spring to summer; the dead tepals sometimes persist after capsules develop. Grow in a border or a wildflower meadow. Good for cut flowers. The bulbs of *C. quamash* were once an important food source for native Americans.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Plant bulbs 10cm (4in) deep in autumn, in moist but well-drained, fertile, humus-rich soil in sun or partial shade. Do not allow soil to become waterlogged. Mulch in winter in areas with prolonged frosts.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets when dormant in summer.
- **PESTS AND DISEASES** Trouble free.

**C. cusickii.** Bulbous perennial bearing large racemes, 20-40cm (8-16in) long, of shallowly cup-shaped, pale to deep steel-blue flowers, 5cm (2in) across, in late spring. The wavy-margined, linear leaves are 40-80cm (16-32in) long. † 60-80cm (24-32in), ↔ 10cm (4in). USA (N.E. Oregon). \*\*

'Zwanenburg' ■ has deep blue flowers.

**C. esculenta** see *C. quamash*.

**C. fraseri** see *C. scilloides*.

**C. leichtlinii** ■ ♂ Bulbous perennial with linear leaves, 20-60cm (8-24in) long. In late spring, bears racemes, 10-30cm (4-12in) long, of star-shaped, creamy white flowers, 5-7cm (2-3in) wide; the flower segments twist together as they fade. † 60-130cm (24-54in), ↔ 10cm (4in). W. USA (Oregon). \*\*

'Semiplena' ■ is sterile, and bears semi-double, creamy white flowers in dense racemes, 20-50cm (8-20in) long.

**subsp. suksdorfii** bears blue to violet flowers; W. North America (British Columbia to California). **subsp. suksdorfii** 'Blau Donau', syn. **subsp. suksdorfii** 'Blue Danube', has violet flowers.

**C. quamash**, syn. *C. esculenta* (Quamash). Bulbous perennial with linear leaves, 20-50cm (8-20in) long,



*Camassia cusickii* 'Zwanenburg'

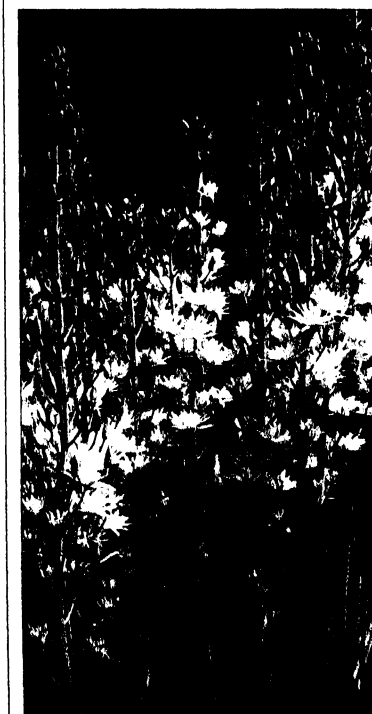


*Camassia leichtlinii*

Racemes, to 30cm (12in) long, of shallowly cup-shaped, bright blue flowers, 3-5cm (1¼-2in) across, are produced in late spring. Rapidly forms large clumps and is easily naturalized in grass, provided the soil is moist.

† 20-80cm (8-32in), ↔ 5cm (2in). Canada, USA. \*\* 'Orion' produces larger racemes, 10-40cm (4-16in) long, of dark blue flowers; † 60-80cm (24-32in).

**C. scilloides**, syn. *C. fraseri* (Wild hyacinth). Bulbous perennial producing linear leaves, 20-60cm (8-24in) long. Racemes, 8-15cm (3-6in) long, of star-shaped, violet, blue, or white flowers, 2-3cm (¾-1¼in) across, are borne in late summer. † 20-80cm (8-32in), ↔ 10cm (4in). C. and E. USA. \*\*



*Camassia leichtlinii* 'Semiplena'

## CAMELLIA

## THEACEAE

Genus of over 250 species of long-lived, evergreen shrubs and small trees, 1–20m (3–70ft) tall. They are found in acid soil in woodland areas from N. India and the Himalayas to China and Japan, and south to N. Indonesia, Java, and Sumatra. The usually glossy, mid- to dark green leaves are simple, alternate, and lance-shaped to elliptic, with toothed margins. Popular for their bold foliage and abundance of showy, white, pink, red, or yellow flowers, camellias have been extensively hybridized to produce a range of flower types (see panel, right). The flowers may be solitary, paired, or clustered, and are sometimes fragrant. In the following descriptions, flower sizes of cultivars have been defined as follows: miniature, to 6cm (2½in); small, 6–8cm (2½–3in); medium, 8–10cm (3–4in); large, 10–13cm (4–5in); very large, 13cm (5in) or more across.

Camellias are elegant shrubs for a border or a woodland garden; they also make excellent specimen plants, both outdoors in open ground or in containers. In frost-prone areas, grow half-hardy and tender species in a cool greenhouse. The flowers are suitable for cutting and exhibition.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light. When in growth, water freely with soft water; water more sparingly in winter. Apply a balanced liquid fertilizer in mid-spring and again in early summer. Top-dress annually with shredded bark. Container-grown plants may be moved outdoors in summer to a partially shaded, sheltered site. Outdoors, grow in moist but well-drained, humus-rich, acid (pH 5.5–6.5) soil; maintain a mulch, 5–7cm (2–3in) deep, of leaf mould or shredded bark.

Do not plant too deep; the top of the root ball should be level with the firmed soil. Position in partial or dappled shade, in a site sheltered from cold, dry winds and early morning sun; buds and flowers may be damaged by cold winds and late frosts. *C. sasanqua* cultivars will thrive in full sun once established,

provided that the roots are kept cool. Water established plants in dry weather to prevent bud drop. Apply a balanced liquid fertilizer in mid-spring and again, if necessary, in early summer; do not overfeed. Protect from prolonged winter frosts with a thatch of straw or bracken litter. Pruning group 8; camellias tolerate hard pruning.

• **PROPAGATION** Root leaf bud or semi-ripe cuttings of the current year's growth from late summer to late winter, or graft in late winter.

• **PESTS AND DISEASES** Susceptible to aphids, scale insects, and vine weevils. A harmless sooty mould may grow on the honeydew produced by aphids and scale insects on the leaves. Virus diseases and leafy gall may blemish flowers and leaves. Leaf spot and honey fungus may also be a problem.

**C. 'Black Lace'** ■ Slow-growing, dense, upright shrub with ovate, dark green leaves, 8cm (3in) long, and large, formal double, black-red flowers, borne from early to late spring. † 1.5–2.5m (5–8ft), ↔ 1–2.5m (3–8ft). \*\*\*

**C. 'Bonanza'**. Strong-growing, upright shrub with ovate, dark green leaves, 6cm (2½in) long, and medium, loose peony-form red flowers, produced from mid-autumn to late winter. † 1.8–3m (6–10ft), ↔ 1–2m (3–6ft). \*\*\*

**C. 'Chansonette'**. Strong-growing shrub with elliptic, dark green leaves, 7cm (3in) long. Bears miniature, formal double, bright pink flowers from late autumn to late winter. † 3–4m (10–12ft), ↔ 2–4m (6–12ft). \*\*\*

**C. *chrysantha*** see *C. nitidissima*.

**C. 'Cornish Snow'** ■ Fast-growing shrub with slender, arching branches and lance-shaped leaves, 5cm (2in) long, bronze when young, maturing to dark green. Bears a profusion of miniature, single white flowers, pink-tinged on opening, from midwinter to late spring. † 3m (10ft), ↔ 1.5m (5ft). \*\*\*

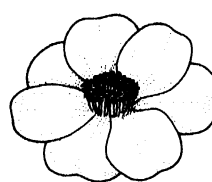
**C. *cuspidata***. Erect, slender shrub with dark green, copper-tinted, lance-shaped to elliptic leaves, 5–9cm (2–3½in) long. From late winter to mid-spring, bears single white flowers, to 4cm (1½in) across. † 3.5m (11ft). China. \*\*\*

**C. 'Dazzler'** ■ Spreading shrub with fan-shaped branches and elliptic, dark green leaves, 5–7cm (2–3in) long.

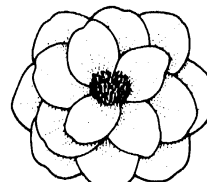
## CAMELLIA FLOWER FORMS

Camellia flowers may be **single**, with one row of up to 8 petals and prominent stamens, forming usually saucer-shaped, occasionally cup- or trumpet-shaped flowers; **semi-double**, with 2 or more rows of large outer petals, the centre regular, irregular, or composed of loose petals and stamens; **anemone-form**, with one or more rows of outer petals,

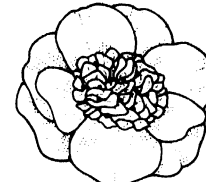
and intermingling petaloids and stamens in the centre; **peony-form**, with a convex mass of irregular petaloids, petals, and stamens, or with irregular petals and petaloids and hidden stamens; **rose-form double**, with overlapping petals showing stamens in a concave centre when fully open; or **formal double**, with rows of overlapping petals and no stamens visible.



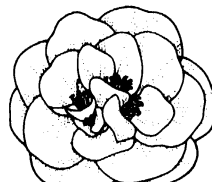
SINGLE



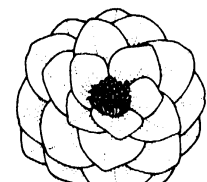
SEMI-DOUBLE



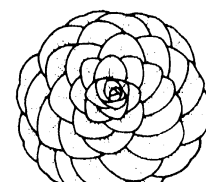
ANEMONE-FORM



PEONY-FORM



ROSE-FORM DOUBLE



FORMAL DOUBLE

Medium, semi-double to loose peony-form, rose-red flowers are borne from late autumn to late winter. † 2–3m (6–10ft), ↔ 1–2m (3–6ft). \*\*\*

**C. 'Dr. Clifford Parks'** ■ Upright shrub with oval, dark green leaves, 14cm (5½in) long, and very large, peony- or anemone-form, dark rose-red flowers, produced in mid-spring. † 4m (12ft), ↔ 2.5m (8ft). \*\*

**C. 'Dream Girl'**. Spreading shrub producing elliptic, dark green leaves, 16cm (6in) long. Large to very large, strongly scented, semi-double, salmon-pink flowers are borne from midwinter to early spring. Best grown in full sun. † 2–4m (6–12ft), ↔ 1.2–2.5m (4–8ft). \*\*\*

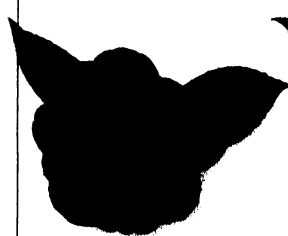
**C. 'El Dorado'**. Spreading shrub with elliptic, dark green leaves, 6–12cm (2½–5in) long, and large, loose peony-form, pale pink flowers, borne in early and mid-spring. † 2–4m (6–12ft), ↔ 1.5–3m (5–10ft). \*\*\*

**C. 'Flower Girl'**. Upright shrub with elliptic, dark green leaves, 12–18cm (5–7in) long, and large, scented, semi-double pink flowers, produced from midwinter to early spring. † 2–4m (6–12ft), ↔ 1.2–2.5m (4–8ft). \*\*\*

**C. 'Francie L.'** ■ Vigorous shrub with long, fan-shaped branches, ideal for training against a wall. Produces lance-shaped, dark green leaves, 6–10cm (2½–4in) long, and large, semi-double, salmon-red to deep rose-red flowers, from late winter to late spring. † 5m (15ft), ↔ 6m (20ft). \*\*\*

**C. *fraterna***. Dense shrub producing small, elliptic, dark green leaves, 4–8cm (1½–3in) long, and fragrant, single, lilac-tinted white flowers, 2–3cm (¾–1¼in) across, in late winter and early spring. † 5m (15ft), ↔ 1–3m (3–10ft). China. \*

**C. 'Freedom Bell'** ■ Small, dense, rounded shrub with oval, glossy, dark green leaves, 9cm (3½in) long. Bears



Camellia 'Black Lace'



Camellia 'Cornish Snow'



Camellia 'Dazzler'



Camellia 'Dr. Clifford Parks'



Camellia 'Francie L.'



Camellia 'Freedom Bell'



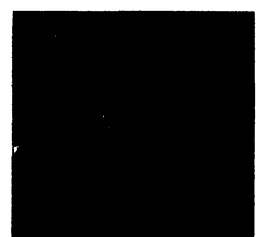
Camellia granthamiana



Camellia 'Inspiration'



Camellia japonica 'Adolphe Audusson'



Camellia japonica 'Alexander Hunter'



Camellia japonica 'Ave Maria'



Camellia japonica 'Berenice Boddy'



medium, deeply cup-shaped, semi-double, bright red flowers from late winter to late spring. Excellent for a small garden.  $\pm 2.2\text{m}$  (7ft). \*\*\*

**C. *granthamiana***  $\square \circ$  Large shrub or small tree producing distinctive, elliptic, dark green leaves, to 10cm (4in) long, with deeply impressed veins. Single white flowers, 12–14cm (5–5½in) across, open from brown buds in early and midwinter.  $\pm 3\text{m}$  (10ft),  $\pm 2\text{m}$  (6ft). Hong Kong. \*

**C. *grisei***. Bushy shrub with elliptic to oval, dark green leaves, to 8cm (3in) long. Bears single white flowers, 2–3cm (¾–1¼in) across, sometimes scented, with 2-lobed petals, in late winter.  $\pm 1\text{–}3\text{m}$  (3–10ft),  $\pm 0.75\text{–}2\text{m}$  (2½–6ft). China. \*

**C. 'Harold L. Paige'**. Upright shrub with large, oval, dark green leaves, 12cm (5in) long, and bearing very large, rose-form double, bright red flowers, in mid-spring.  $\pm 2\text{–}4\text{m}$  (6–12ft),  $\pm 1.5\text{–}3\text{m}$  (5–10ft). \*

**C. 'Inspiration'**  $\square \circ$  Upright shrub or small tree producing oval, dark green leaves, 8cm (3in) long, and medium, semi-double, deep pink flowers, from midwinter to late spring.  $\pm 4\text{m}$  (12ft),  $\pm 2\text{m}$  (6ft). \*\*\*

**C. *japonica***  $\circ$  (Common camellia). Upright to spreading shrub or small tree with broadly elliptic, glossy, dark green leaves, 5–8cm (2–3in) long, and single red flowers, 3–4.5cm (1¼–1¾in) across. The species flowers in early spring, its cultivars over a much longer period, in mid- and late spring unless stated otherwise.  $\pm 9\text{m}$  (28ft),  $\pm 8\text{m}$  (25ft). China, Korea, Japan. \*\*\*. **'Adolphe Audusson'**  $\square \circ$  is compact, bearing large, semi-double red flowers in early and mid-spring. **'Akashigata'**  $\square \circ$  syn. **'Lady Clare'**, is a dense, strong-growing, rounded shrub with very large, semi-double, deep pink flowers with yellow stamens, borne from early to late spring. **'Alba Plena'** is erect, with light green foliage and medium, formal double white flowers. **'Alba Simplex'** is bushy, bearing medium, flat, single white flowers with a few pink flecks. **'Alexander Hunter'**  $\square \circ$  is upright, with upward-sweeping branches, bearing medium, single or semi-double crimson flowers with yellow stamens in early and mid-spring. **'Apollo'** see 'Paul's Apollo'.

**'Augusto Leal de Gouveia Pinto'** is upright, bearing large, formal double, lavender-tinted red flowers, with white-edged petals, in early and mid-spring. In cooler climates, its flowers are more blue in colour. **'Ave Maria'**  $\square$  is upright, with downward-sweeping branches, and bears miniature, formal double, soft pink flowers from early to late spring. **'Berenice Boddy'**  $\square \circ$  is a strong, bushy, very hardy shrub, of arching habit. The large, semi-double, clear pink flowers are darker on the outer petals and are borne from late winter to late spring. **'Betty Sheffield Supreme'**  $\square$  is erect, with lance-shaped, slightly glossy leaves, 8–10cm (3–4in) long, and large, irregular, double white flowers, each petal margined in shades of rose-pink, borne in early and mid-spring;  $\pm 2\text{–}4\text{m}$  (6–12ft),  $\pm 1.5\text{–}3\text{m}$  (5–10ft). **'Bob Hope'**  $\circ$  is a large, upright shrub with vigorous, dense growth and large, semi-double or loose peony-form, dark red flowers;  $\pm 3\text{m}$  (10ft),  $\pm 2\text{m}$  (6ft). **'Bob's Tinsie'**  $\square \circ$  has a dense, upright habit, and produces miniature, anemone-form, brilliant red flowers from early to late spring;  $\pm 2\text{m}$  (6ft),  $\pm 1\text{m}$  (3ft). **'Bokuhan'**, syn. **'Tinsie'**, is dwarf with spreading branches, and miniature, anemone-form flowers with red petals around a centre of white petaloids, borne from early winter to late spring;  $\pm 1\text{m}$  (3ft),  $\pm 60\text{cm}$  (24in). **'Chandler's Elegans'** see 'Elegans'. **'Charlie Bettes'** is a large, dense, fast-growing shrub, bearing large, semi-double white flowers, with bright yellow stamens, from late winter to mid-spring. **'Charlotte de Rothschild'**  $\square$  is slow-growing and spreading, producing medium, single white flowers, with prominent pale gold stamens, from early to late spring. **'C.M. Hovey'**  $\circ$  is a large, arching shrub, with very large, flat, formal double, bright crimson or scarlet flowers. **'Commander Mulroy'** is upright and dense, with rounded to elliptic leaves and small, formal double, pure white flowers, pink in bud. It is an excellent container or patio plant. **'Contessa Lavinia Maggi'** see 'Lavinia Maggi'. **'Coquettii'**  $\square \circ$  syn. **'Glen 40'**, is an upright, slow-growing shrub with downward-sweeping branches. In early and mid-spring, bears profuse, medium to large, deep red flowers, sometimes



*Camellia japonica* 'Janet Waterhouse'

formal double, sometimes peony- or anemone-form. **'Dixie Knight'** is strong and bushy, with large, loose peony-form, dark red flowers. **'Dona Herzilia de Frietas Magalhaes'**, syn. **'Magellan'**, is a large, rounded shrub with medium, semi-double to anemone-form red flowers, variably suffused violet, borne in early and mid-spring. **'Donckelaeri'** see 'Masayoshi'. **'Dr. Burnside'** is moderately vigorous, with medium to large, semi-double or loose peony-form, dark red flowers, freely borne from early to late spring. **'Dr. Tinsley'**  $\circ$  is compact and upright, bearing medium white flowers, suffused light pink, more strongly towards the petal margins. The flowers vary from semi-double to loose peony-form or formal double, and open from pink buds in early and mid-spring. **'Elegans'**  $\square \circ$  syn. **'Chandler's Elegans'**, has spreading branches with wavy leaves, and bears large, anemone-form, rose-pink flowers. Leading branches should not be cut back. **'Elegans Supreme'**  $\square$  is similar to 'Elegans', with wavy leaves

and very large, anemone-form, deep salmon-pink flowers. **'Fimbriata'** is similar to 'Alba Plena', with medium, formal double white flowers with fringe-margined petals, borne in early and mid-spring. **'Glen 40'** see 'Coquettii'. **'Gloire de Nantes'**  $\square \circ$  is compact and upright, with medium, semi-double to incomplete double, rose-red flowers, borne from late autumn to late spring. **'Governor Mouton'** is vigorous, with medium, semi-double or loose peony-form red flowers, often marked white, in early and mid-spring. **'Grand Prix'**  $\circ$  is vigorous, with very large, semi-double, brilliant red flowers with yellow stamens. **'Grand Slam'**  $\circ$  is strong and upright, with large, mostly anemone-form, sometimes semi-double, dark red flowers. **'Guilio Nuccio'**  $\square \circ$  is a strong-growing, many-branched shrub with leaves 12–18cm (5–7in) long, and very large, semi-double, salmon-red flowers, with mustard-yellow stamens, borne from late winter to midsummer. **'Hagoromo'**  $\circ$  syn. **'Magnoliiflora'**, is erect, bearing medium, semi-double, pale pink flowers in mid-spring. Good as a patio plant. **'Janet Waterhouse'**  $\square$  is sturdy and upright, with medium white flowers, semi-double in hot climates or formal double in cooler conditions. **'Julia Drayton'**  $\square$  syn. **'Mathotiana Purple King'**, **'Mathotiana Rubra'**, is upright and bears large, rose-form double or formal double crimson, purple-tinted flowers. **'Julia France'** is upright, with bold leaves, 8–12cm (3–5in) long, and large, semi-double, light pink flowers. **'Jupiter'** see 'Paul's Jupiter'. **'Kramer's Supreme'**  $\square$  is compact and upright, bearing large to very large, flat, fragrant, full peony-form, rose-red flowers in late autumn and again in early and mid-spring. Grow in a cool greenhouse in winter and in cold areas; \*\*\* (borderline). **'Kumasaka'** is an upright shrub with formal double, occasionally peony-form, deep rose-pink flowers. **'Lady Clare'** see 'Akashigata'. **'Lady Loch'**  $\square$  is a leafy, rounded shrub, bearing medium, peony-form pink flowers, with white picotee-margined petals, in spring. **'Lady Vansittart'**  $\square$  is upright, with leaves 8–12cm (3–5in) long and medium, semi-double white flowers with rose-pink stripes; many specimens have

C



*Camellia japonica* 'Betty Sheffield Supreme'



*Camellia japonica* 'Bob's Tinsie'



*Camellia japonica* 'Charlotte de Rothschild'



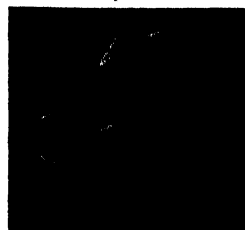
*Camellia japonica* 'Coquettii'



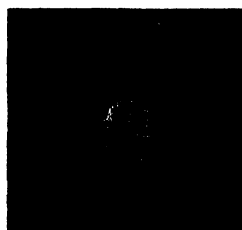
*Camellia japonica* 'Elegans'



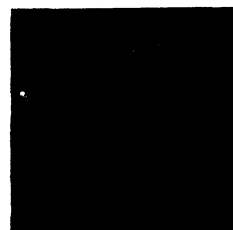
*Camellia japonica* 'Elegans Supreme'



*Camellia japonica* 'Gloire de Nantes'



*Camellia japonica* 'Guilio Nuccio'



*Camellia japonica* 'Julia Drayton'



*Camellia japonica* 'Kramer's Supreme'



*Camellia japonica* 'Lady Loch'



*Camellia japonica* 'Lady Vansittart'

stripes in 5 different colours, varying from white to red, on one shrub. The flowers are borne in early and mid-spring. **'Lavinia Maggi'** [♀] syn. **'Contessa Lavinia Maggi'**, is a vigorous, spreading shrub, bearing medium, formal double white flowers, with red and pink stripes, in early and mid-spring. **'Lovelight'** [♂] is vigorous and upright, with large leaves and large, semi-double white flowers, composed of broad petals around a small tuft of white and yellow stamens, from midwinter to mid-spring. **'Magellan'** see **'Dona Herzilia de Frietas Magalhaes'**. **'Magnoliiflora'** see **'Hagoromo'**. **'Man Size'** is spreading, bearing miniature, anemone-form white flowers in early and mid-spring. **'Margaret Davis Picotee'** [♂] is upright, producing peony-form or formal double white flowers, with a narrow red margin to each petal. **'Mary Costa'** is upright, bearing large anemone-form white flowers, with elongated centres of yellow petaloids among incurved petals, from late winter to late spring. **'Masayoshi'** ♀ syn. **'Donckelaeri'**, is a vigorous shrub with oval-lance-shaped, dark green leaves and large, irregularly double white flowers, strongly marbled red, with some petals red or white-marbled red. **'Mathotiana Purple King'** see **'Julia Drayton'**. **'Mathotiana Rubra'** see **'Julia Drayton'**. **'Miss Charleston'** ♀ is upright, bearing very large, rich red flowers, peony-form in cool climates or semi-double in warmer areas, from early to late spring. **'Miss Universe'** [♂] has a dense, spreading to upright habit, and from mid-spring to early summer bears large white flowers, which are formal double with notched petals in cool climates, and peony-form elsewhere. **'Mrs. D.W. Davis'** [♀] is a broad, strong, upright shrub with very large, nodding, semi-double, soft pink flowers, borne from late winter to mid-spring. Best grown in a cool greenhouse. **'Nuccio's Gem'** is upright and dense in habit, bearing large, formal double white flowers, with spirally arranged petals, from late winter to mid-spring. Best grown in a cool greenhouse in frost-prone regions; outdoors, in temperate climates, the flowers are often irregular peony-form or semi-double; \*\*\* (borderline). **'Paul's Apollo'** [♂] syn. **'Apollo'**, is

spreading, bearing an abundance of showy, miniature, semi-double, rose-red flowers with yellow stamens, from early to late spring. **'Paul's Jupiter'** [♂] syn. **'Jupiter'**, is a vigorous, upright shrub, bearing medium, single, carmine-rose flowers in early and mid-spring; the flowers have prominent yellow stamens with white filaments. **'Pink Perfection'** see **'C. rusticana 'Otome'**. **'Primavera'** is a strong, upright shrub with medium to large, formal double white flowers. **'R.L. Wheeler'** [♀] is a vigorous, rounded, open shrub with large, widely spaced leaves and very large, anemone-form or semi-double to incomplete double, brilliant red flowers, borne from early to late spring. **'Rubescens Major'** [♀] is dense and upright, with distinctive, broad, rounded leaves and large, formal double or rose-form double crimson flowers, produced in mid-spring. **'Rudolph'** is upright, with medium, peony-form, brilliant red flowers, borne in early and mid-spring. **subsp. rusticana cultivars** see **'C. rusticana cultivars'**. **'Shiro Chan'** is similar to **'Elegans'**, and best grown in a cool greenhouse to protect its large, flat, anemone-form white flowers, initially pink at the petal bases, borne from early to late spring; \*\*\* (borderline). **'Sieboldii'** see **'Tricolor'**. **'Something Beautiful'** is a strong, dense, erect shrub with miniature, formal double, pale pink flowers, the petals margined with burgundy-red, borne in early spring. **'Souvenir de Bahuaud-Litou'** ♀ is vigorous and upright, with medium, formal double, pale pink flowers in early spring. Best grown in a cool greenhouse; \*\*\* (borderline). **'Sylva'** is strong and upright, profusely bearing large, funnel-shaped, single, crimson-red flowers, with prominent, golden yellow stamens, in early spring. **'Tarô'an'** has a low, pendent habit, and medium, single, pale pink flowers, borne from late winter to mid-spring. Ideal for cascading over a bank, low wall, or stump. **'Tiffany'** is often vigorous and erect, but sometimes trailing, with large, peony-form, clear pink flowers. **'Tinsie'** see **'Bokuhan'**. **'Tricolor'** [♂] syn. **'Sieboldii'**, has bright green, crinkled, holly-like leaves, and produces medium, single or semi-double red flowers, striped pink and white, in early spring. Breeds almost



*Camellia japonica* 'Lovelight'

true from seed. **'Ville de Nantes'**, similar to **'Masayoshi'**, is slow-growing and bushy, producing medium to large, semi-double red flowers with deeply fringed, white-marked petals, from early to late spring. **'White Nun'** [♂] is a strong-growing shrub with slightly corrugated leaves and very large, flat, semi-double, pure white flowers, borne in mid-spring. **'Yours Truly'**, similar to **'Lady Vansittart'**, is upright, bearing small, trumpet-shaped flowers, crimson-streaked pink, with white-margined petals, in early and mid-spring. **'C. Jean Poursel'**, Strong-growing, upright shrub producing elliptic, dark green leaves, 15cm (6in) long. Very large, loose peony-form, purple-pink flowers are borne in mid-spring. † 2–5m (6–15ft), ↔ 1.2–2.5m (4–8ft). \* **'C. Lasca Beauty'** [♀] Open, stiffly branched, upright shrub with elliptic, dark green leaves, 13cm (5in) long, and very large, semi-double, pale pink flowers, borne in mid-spring. † 2–5m (6–15ft), ↔ 1.5–3m (5–10ft). \*

**'C. Leonard Messel'** [♀] Very hardy, large, rounded, spreading shrub with oval, matt, dark green leaves, 8–15cm (3–6in) long. Large, loose, semi-double to peony-form, clear pink flowers are borne from early to late spring. Flowers tend to be semi-double under glass. † 4m (12ft), ↔ 3m (10ft). \*\*\* **'C. Lila Naff'** [♂] Strong, spreading shrub with smooth, elliptic to oval, dark green leaves, 10cm (4in) long. In mid-spring, bears very large, semi-double, clear silvery pink flowers. † 2–7m (6–22ft), ↔ 1.2–2.5m (4–8ft). \* **'C. lutchuensis'** ♀ Spreading shrub or small tree with small, elliptic to oblong, bright green leaves, 4cm (1½in) long, covered with brown hairs. Bears scented, single white flowers, 1.5cm (½in) across, in late winter. † 2–3m (6–10ft), ↔ 2–4m (6–12ft). Japan, Taiwan. \* **'C. x maliflora'**, syn. **'C. maliiflora'**. Leafy shrub with elliptic, dark green leaves, 3.5–5cm (1½–2in) long. Bears peony-form flowers, 1.5–2cm (½–¾in) across, in 2 shades of pink, in early spring.



*Camellia japonica* 'Lavinia Maggi'



*Camellia japonica* 'Margaret Davis Picotee'



*Camellia japonica* 'Miss Universe'



*Camellia japonica* 'Mrs. D.W. Davis'



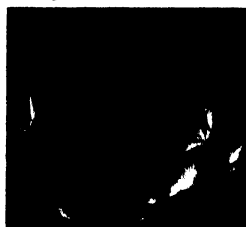
*Camellia japonica* 'Paul's Apollo'



*Camellia japonica* 'Paul's Jupiter'



*Camellia japonica* 'R.L. Wheeler'



*Camellia japonica* 'Rubescens Major'



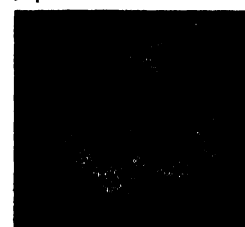
*Camellia japonica* 'Tricolor'



*Camellia japonica* 'White Nun'



*Camellia* 'Lasca Beauty'



*Camellia* 'Leonard Messel'

Good for training against a wall. ‡ 2.5m (8ft), ↔ 2m (6ft). Garden origin. \*\*\*  
***C. maliflora*** see *C. x maliflora*.

***C. 'Nicky Crisp'***. Compact, slow-growing, rounded shrub with elliptic, dark green leaves, 8cm (3in) long, and large, semi-double, lavender-pink flowers borne from late winter to mid-spring. ‡ 1–2m (3–6ft). \*\*\*

***C. 'Night Rider'***. Upright shrub with narrowly elliptic, dark green leaves, 7cm (3in) long. Bears small, semi-double, dark red flowers from late winter to late spring; the yellow stamens remain when the petals drop. Unusual in appearance, the plant appearing to be suffused red, although the leaves are green. ‡ 2–4m (6–12ft), ↔ 1.2–2.5m (4–8ft). \*\*\*

***C. nitidissima*** ■ syn. *C. chrysantha*. Large shrub producing oval, dark green leaves, 8–11cm (3–4½in) long, with deeply indented veins. Fragrant, single yellow flowers, 2.5–5cm (1–2in) across, are borne from the leaf axils from early to late winter. Requires a warm, humid site in partial shade. ‡ 2–3m (6–10ft), ↔ 3m (10ft). S. China, Vietnam.

⊙ (min. 7°C (45°F))

***C. oleifera*** ⊙ Small, erect tree with slender branches and elliptic, oblong-elliptic, or obovate leaves, 3.5–9cm (1½–3½in) long, dark green above, light green beneath. In mid- and late autumn, bears scented, single white flowers, 5–6cm (2–2½in) across, occasionally 8–9cm (3–3½in) across. ‡ 7m (22ft), ↔ 3–4m (10–12ft). China. \*\*\*

***C. reticulata*** ⊙ Open-branched small tree or large shrub with broadly elliptic to oblong-elliptic, leathery leaves, 8–11cm (3–4½in) long, dark green above, paler beneath. In spring, bears single, rose-red flowers, to 11cm (4½in) across. ‡ to 15m (50ft), ↔ 5m (15ft). China. ✱. Flowers of cultivars vary from single to semi-double to peony-form, and are pink, red, or white; they are borne in mid-spring unless stated otherwise. ***Arch of Triumph*** ■ ⊙ is shrubby, with strong, erect growth, large leaves, and very large, loose peony-form, orange-tinted, crimson-pink flowers, to 17cm (7in) across; ‡ to 3m (10ft). ***'Captain Rawes'*** ■ ⊙ is a large, spreading shrub or small tree with very large, semi-double to loose peony-form, carmine-rose flowers, 14–17cm (5½–7in) across, borne in mid- and late



*Camellia saluenensis*

spring; ‡ to 10m (30ft). ***'Curtain Call'*** is a strong, spreading shrub with large, semi-double, deep coral-pink flowers, 15–17cm (6–7in) across. ***'Elizabeth Johnstone'*** ⊙ forms a small, erect tree with large, single, rose-pink flowers, to 11cm (4½in) wide, borne in early and mid-spring. ***'Flore Pleno'*** see 'Songzilin'. ***'Mandalay Queen'*** ■ ⊙ is a large, widely branching, erect shrub with broad leaves, and large, semi-double, deep rose-pink flowers, to 14cm (5½in) wide. ***'Miss Tulare'*** ■ is a large, strong-growing, many-branched shrub, bearing large, peony-form or rose-form double flowers, to 13cm (5in) across, with waxy, brilliant rose-red petals. ***'Pagoda'*** see 'Songzilin'. ***'Robert Fortune'*** see 'Songzilin'. ***'Songzilin'***, syn. 'Flore Pleno', 'Pagoda', 'Robert Fortune', is an upright shrub bearing large, formal double or rose-form double, light red flowers, to 13cm (5in) across, in early and mid-spring. ***'William Hertrich'*** is a tall, open-growing shrub with very large, semi-double to loose peony-form, dark cherry-red flowers, to 17cm (7in) across.

***C. rosiflora***. Shrub of open, lax habit, producing elliptic to broadly elliptic leaves, 4.5–8cm (1¾–3in) long, dark green above, paler beneath. Single pink flowers, to 3.5cm (1½in) across, are borne in mid-spring. ‡ 2.5m (8ft), ↔ 1–2m (3–6ft). China. \*\*\*

***C. 'Royalty'*** ■ Open, lax shrub with elliptic, glossy, dark green leaves, 11cm (4½in) long. In mid- and late spring,

bears very large, semi-double, light red flowers. Train against a shady wall. ‡ 1m (3ft), ↔ 60cm (24in) ✱

***C. rusticana*** cultivars, syn. *C. japonica* subsp. *rusticana* cultivars (Snow camellia). Selections from the Japanese species *C. rusticana* have an erect to spreading habit and elliptic, dark green leaves, 5–12cm (2–5in) long. They bear single or double flowers, 3–4cm (1¼–1½in) across. ‡ 2–4m (6–12ft), ↔ 1–3m (3–10ft). \*\*\*. ***'Otome'***, syn. *C. japonica* 'Pink Perfection', *C. rusticana* 'Frau Minna Seidel', 'Pink Pearl', 'Usuotome', bears many-petalled, formal double, pale pink flowers from late winter to mid-spring. ***'Reigyoku'*** has variegated leaves with distinctive gold "feathers", and bears small, single red flowers in early and mid-spring.

***C. saluenensis*** ■ Freely branched shrub with narrowly ovate, glossy, dark green leaves, to 8cm (3in) long. In early and mid-spring, bears single, white, pink, pink-and-white, or pinkish red flowers, 3.5–5cm (1½–2in) across. ‡ 1–5m (3–15ft). China (Yunnan). \*\*\*

***C. sasanqua*** ⊙–⊙ Upright to spreading shrub or small tree with elliptic, oblong-elliptic, or broadly elliptic leaves, to 8cm (3in) long, dark green above, paler beneath. Bears fragrant, single, cup-shaped white flowers, 5–7cm (2–3in) across, in mid- and late autumn. Will tolerate sun; in cold areas may be grown in containers and taken indoors to flower. ‡ to 6m (20ft), ↔ to 3m (10ft). Japan. \*\*\*.

***'Cleopatra'*** is low and compact, bearing medium, semi-double, rose-pink flowers. ***'Mine-no-yuki'*** is vigorous, with a willowy, spreading habit, and dark green leaves, 4cm (1½in) long. Bears small, double white flowers from mid-autumn to early winter. ***'Narumigata'*** ■ ⊙ is erect, with small, fragrant, single white, pink-tinged flowers. ***'Navajo'*** is upright, with large, semi-double white, red-margined flowers. ***'Nodami-ushiro'*** is erect and bushy, bearing large, single and semi-double, deep pink flowers.

***'Shishigashira'*** ■ has small, semi-double to rose-form double, pinkish red flowers. ***'Yae-arare'*** is spreading, and produces large, single flowers with reflexed, long pink-tipped white petals.

***C. 'Satan's Robe'*** ■ ⊙ Vigorous, erect shrub with broadly elliptic, glossy, dark



*Camellia tsaii*

green leaves, 12–16cm (5–6in) long. Large, semi-double, bright carmine-red flowers, with yellow stamens, are borne from early to late spring. ‡ 3–5m (10–15ft), ↔ 2–3m (6–10ft). \*\*\*

***C. 'Shiro-wabisuke'*** ■ Rounded shrub with elliptic to oblong-elliptic, dark green leaves, 8–12cm (3–5in) long. From midwinter to early spring, bears small, fragrant, single white flowers. ‡ 1.4m (4½ft). \*\*\*

***C. 'Sparkling Burgundy'***. Spreading shrub with narrowly ovate, dark green leaves, 8–12cm (3–5in) long. Bears medium, peony-form, ruby-red flowers in early and midwinter. ‡ 1.5–3m (5–10ft), ↔ 1–2m (3–6ft). \*\*\*

***C. 'Spring Festival'*** ■ ⊙ Narrow, upright shrub with elliptic, dark green leaves, 8–12cm (3–5in) long. In mid- and late spring, bears small, formal double pink flowers. ‡ 2–4m (6–12ft), ↔ 0.6–2m (2–6ft). \*\*\*

***C. taliensis*** ⊙ Spreading shrub or small tree with elliptic to broadly elliptic, bright green leaves, 9–15cm (3½–6in) long. From midwinter to late spring, produces single white flowers, 5–6cm (2–2½in) across. ‡ 2–7m (6–22ft), ↔ 2–4m (6–12ft). China (Yunnan). ✱

***C. tsaii*** ■ ⊙ Large, pendent shrub or small tree with oblong-elliptic, glossy, dark green leaves with wavy margins, to 9cm (3½in) long. Miniature, cup-shaped, single white flowers, 2cm (¾in) across, are produced from the leaf axils in mid- and late winter. ‡ to 10m (30ft),



*Camellia 'Lila Naff'*



*Camellia nitidissima*



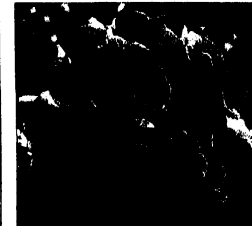
*Camellia reticulata* 'Arch of Triumph'



*Camellia reticulata* 'Captain Rawes'



*Camellia reticulata* 'Mandalay Queen'



*Camellia reticulata* 'Miss Tulare'



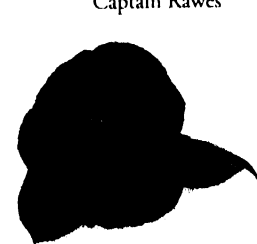
*Camellia 'Royalty'*



*Camellia sasanqua* 'Narumigata'



*Camellia sasanqua* 'Shishigashira'



*Camellia 'Satan's Robe'*



*Camellia 'Shiro-wabisuke'*



*Camellia 'Spring Festival'*

↔ to 5m (15ft). W. China, Burma, N. Vietnam. \*

**C. x vernalis cultivars.** Selections from *C. x vernalis* are erect to spreading shrubs with elliptic, dark green leaves, 5–14cm (2–5½in) long. They bear semi-double to double flowers, 6–8cm (2½–3in) across, in late winter and early spring (sometimes late autumn and early winter). †2–5m (6–15ft), ↔ 1–4m (3–12ft). \*\*\*. 'Dawn' see 'Ginryū'. 'Egao' bears semi-double, deep pink flowers with bold yellow stamens. 'Ginryū', syn. 'Dawn', has semi-double or formal double, pink-tinged white flowers, in late winter and early spring. 'Star above Star' bears semi-double flowers, with layers of reflexed, white or lavender-pink petals, in late winter and early spring. 'Yuletide' has dense foliage and bears a profusion of single red flowers, with bright yellow stamens, in late autumn and early winter.

**C. x williamsii cultivars.** Selections from *C. x williamsii* (*C. japonica* x *C. saluenensis*) are strong-growing shrubs with elliptic to broadly elliptic, glossy, bright green leaves, 6–10cm (2½–4in) long. They bear white to deep pink flowers in mid- and late spring, unless stated otherwise. They usually resemble *C. japonica* in their foliage and *C. saluenensis* in their flowers. †2–5m (6–15ft), ↔ 1–3m (3–10ft). \*\*\*. 'Anticipation' is a narrow, upright shrub bearing very large, peony-form crimson flowers in late winter and early spring; †4m (12ft), ↔ 2m (6ft). 'Bow Bells' is a dense shrub with small leaves, and profuse, medium, trumpet-shaped, single pink flowers borne from midwinter to mid-spring. Best grown against a shady wall; †4m (12ft). 'Bowen Bryant' is a wide, upright shrub with dark green foliage, and large, bell-shaped, semi-double, rose-pink



*Camellia x williamsii* 'Golden Spangles'

flowers borne from early to late spring. 'Brigadoon' is an open, rounded shrub with very large, semi-double, rose-pink, silver-tinged flowers with broad, downward-curving petals. 'Buttons 'n' Bows' is compact, bearing small, formal double flowers in 2 shades of pink, from late winter to mid-spring. 'Caerhays' is arching, with large leaves and large, anemone-form to loose peony-form, crimson-pink flowers, maturing purple; †2–4m (6–12ft), ↔ 1–3m (3–10ft). 'Debbie's Carnation' is compact and erect, with medium, full peony-form, cerise-pink flowers borne from early to late spring; they drop whole when still coloured; †1.5–3m (5–10ft), ↔ 1–2m (3–6ft). 'Donation' is compact and erect, bearing large, semi-double pink flowers from late winter to late spring. In partial shade, its flowers are deeper in colour and last longer; †5m (15ft), ↔ 2.5m (8ft). 'Dream Boat' has a spreading habit, and bears medium, formal double, pale purplish pink

flowers, with incurved petals, in mid-spring. 'E.G. Waterhouse' is a narrow, upright shrub with pale green foliage, and medium, formal double, pale pink flowers borne in mid-spring. 'Elsie Jury' is tall and upright, with well-spaced, spreading branches, and large, full peony-form pink flowers borne from early to late spring. 'E.T.R. Carlyon' has long, arching branches and bears medium, semi-double to rose-form, double white flowers. 'Francis Hanger' is upright, bearing medium, single white flowers, with gold stamens, in early and mid-spring; †1.5m (5ft), occasionally more. 'Galaxie' is a rounded shrub bearing medium, formal double, light pink flowers, with thin red stripes and streaks, in mid-spring. 'Garden Glory' is rounded and upright, with formal double or rose-form double, rich pink flowers produced in early and mid-spring. 'Gay Time' is upright, with large, semi-double to loose-peony-form, bright pink flowers, darker on the petal margins, borne in early and mid-spring. 'George Blandford' is vigorous, bearing medium, semi-double to peony-form, crimson-rose flowers; †4m (12ft), ↔ 4m (12ft). 'Golden Spangles' is a sport from 'Mary Christian', is upright, with a golden or yellow-green central zone on each leaf, and single, bright pinkish red flowers, 5–7cm (2–3in) across. 'J.C. Williams' has wide-sweeping branches and medium, single, pale pink flowers, with darker shading, in early and mid-spring. Good for training on a partially shaded wall. 'Joan Trehane' has strong, upright growth and large, rose-form double, rose-pink flowers. 'Julia Hamiter' is an open, spreading shrub, similar to 'Donation', bearing flat, medium, rose-form double flowers. The flowers have pink-flushed white petals, greenish-

white at the bases, surrounding cream petaloids. 'Jury's Yellow' is narrow and erect, bearing medium, anemone-form white flowers, with centres of yellow petaloids. 'Lady's Maid' is a vigorous shrub with medium, pendent, semi-double, bright pink flowers; †4m (12ft). 'Mary Christian' is upright, with dull, dark green foliage and trumpet-shaped, single, carmine-pink flowers, 5–7cm (2–3in) across, borne in late winter and early spring. 'Mary Larcom' is a large, rounded, open shrub with broadly elliptic, blunt-tipped, dark green leaves and medium, single pink flowers; †4m (12ft). 'Mary Phoebe Taylor' is strong-growing, with downward- and outward-sweeping branches and large, peony-form or semi-double, clear pink flowers. 'Mona Jury' is an open shrub with medium, loose peony-form, apricot-pink flowers. 'St. Ewe' is a rounded shrub bearing large, trumpet-shaped, single, rose-pink flowers, in early and mid-spring. 'Tiptoe' is an upright shrub producing medium, semi-double, pale pink flowers. 'Water Lily' is an upright shrub with large, formal double, deep rose-pink flowers. 'Wilber Foss' is rounded, with dark green foliage and large, broad, peony-form, brilliant pink-red flowers; † to 2m (6ft).

**C. yubisuenensis** is a rounded shrub or small tree with elliptic to oval, dark green leaves, to 9cm (3½in) long. Small, very fragrant, single white flowers, 5–7cm (2–3in) across, are produced in early and mid-spring. † to 3m (10ft), ↔ 0.75–2m (2½–6ft). China (Hunan). \*\*\*

#### ▷ Camellia,

Common see *Camellia japonica*

Snow see *Camellia rusticana* cultivars

▷ *Camellia rose* see *Rosa laevigata*



*Camellia x vernalis* 'Star above Star'



*Camellia x williamsii* 'Anticipation'



*Camellia x williamsii* 'Bow Bells'



*Camellia x williamsii* 'Brigadoon'



*Camellia x williamsii* 'Caerhays'



*Camellia x williamsii* 'Donation'



*Camellia x williamsii* 'Dream Boat'



*Camellia x williamsii* 'E.G. Waterhouse'



*Camellia x williamsii* 'Francis Hanger'



*Camellia x williamsii* 'George Blandford'



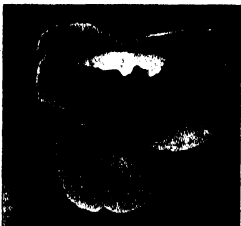
*Camellia x williamsii* 'J.C. Williams'



*Camellia x williamsii* 'Joan Trehane'



*Camellia x williamsii* 'Jury's Yellow'



*Camellia x williamsii* 'Mary Christian'



*Camellia x williamsii* 'Mary Larcom'



*Camellia x williamsii* 'St. Ewe'



*Camellia x williamsii* 'Water Lily'



*Camellia x williamsii* 'Wilber Foss'

# CAMPANULA

Bellflower

CAMPANULACEAE

Genus of about 300 species of annuals, biennials, and perennials, some of which are evergreen. They are distributed widely throughout temperate zones of the N. hemisphere, particularly in S. Europe and Turkey, and grow in diverse habitats, from high alpine rock crevices and scree to moorland, meadows, and woodland. Most species are easily cultivated and provide a long flowering display, blooming from late spring to late summer. The flowers are usually borne in panicles, racemes, or clustered heads, but are sometimes solitary. They vary from tubular to bell- or star-shaped, and may also be cup- or saucer-shaped. The entire or toothed leaves are alternate. Campanulas vary in habit from mat-forming, dwarf perennials to herbaceous species, 2m (6ft) tall.

Dwarf campanulas are ideal for a rock garden or alpine house, and many grow well on a wall or sunny bank. The taller perennials are excellent for a mixed or herbaceous border, or for naturalizing in a wildflower or woodland garden. In frost-prone regions, grow less hardy species, such as *C. isophylla*, in a conservatory or cool greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** For ease of reference, campanulas have been divided into the following cultivation groups:

1. Campanulas that need fertile, neutral to alkaline, moist but well-drained soil, in sun or partial shade; the delicate flower colours are best preserved in shade. *C. pyramidalis*, *C. sarmatica*, and *C. trachelium* thrive in dry soils, the first 2 in full sun, the last in partial shade. Taller species require staking. Cut back after flowering to prevent self-seeding and to encourage a second, less profuse flush of flowers.

2. Robust, rock-garden species, requiring moist but well-drained soil in sun or partial shade. Some thrive on a sunny wall or bank.

3. Species that enjoy the winter protection of deep, dry snow cover in their natural habitat and, in cultivation,



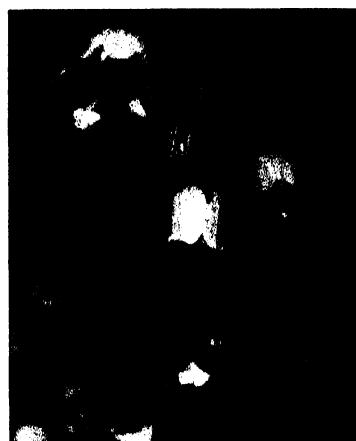
*Campanula alliariifolia*

will not tolerate winter wet. Grow in a scree bed, in tufa, in gritty, moist but sharply drained soil in a trough, or in an alpine house in loam-based potting compost (J1 No.1) with up to one-third by volume of grit.

4. Tender perennials. In frost-prone areas, grow under glass in loam-based potting compost (J1 No.2) in bright filtered light with good ventilation. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep moist in winter. In frost-free areas, grow outdoors in an open site in well-drained, fertile soil in sun or partial shade. Cut dead stems to the base before winter.

• **PROPAGATION** Sow seed in containers in a cold frame in spring, except for alpine species, which should be sown in an open frame in autumn. Divide in spring or autumn. Take basal cuttings of perennials in spring. To increase smaller species, take cuttings of new growth in early summer, or root rosettes of rosette-forming species in spring. Take tip cuttings of *C. isophylla* in early spring, and root with bottom heat.

• **PESTS AND DISEASES** Vulnerable to slugs and snails outdoors, and to aphids and red spider mites under glass. Some species, particularly *C. persicifolia* and its cultivars, are susceptible to rust. Vine weevil may affect *C. isophylla* and other tender species under glass. Powdery mildew may also be a problem.



*Campanula barbata*

*C. acutangula* see *C. arvensis*.

*C. alliariifolia* ■ (Ivory bells).

Vigorous, clump-forming perennial with heart-shaped, toothed, grey-hairy basal leaves, 8cm (3in) long. Leafy stems bear one-sided racemes of pendent, tubular-bell-shaped white flowers, 2cm (¾in) long, with sharply pointed petals, from midsummer to early autumn. Cultivation group 1. ↑ 30–60cm (12–24in), ↔ 45cm (18in). Caucasus, Turkey. \*\*\*

*C. amabilis* 'Planiflora' see *C. persicifolia* var. *planiflora*.

*C. arvensis* ♀ syn. *C. acutangula*.

Carpet-forming perennial with underground runners, and tufts of broadly ovate-heart-shaped, toothed, mid-green leaves, 5–8mm (¼–⅜in) long. Solitary, upturned, shallowly funnel-shaped, violet, pale blue, or white flowers, 2–4cm (¾–1½in) long, are borne on short stems in summer. Cultivation group 2. ↑ 8–10cm (3–4in), ↔ to 20cm (8in). N. Spain. \*\*\*

*C. aucheri*. Densely tufted perennial with clustered rosettes of spoon-shaped to oblong, toothed, hairy, mid-green leaves, to 8cm (3in) long. In summer, upturned, open bell-shaped, deep violet-blue flowers, 2–5cm (¾–2in) across, are borne singly on spreading stems. Cultivation group 2 or 3. ↑ to 10cm (4in), ↔ 20cm (8in). E. Caucasus, Turkey, N. Iran. \*\*\*



*Campanula* 'Birch Hybrid'

*C. barbata* ■ (Bearded bellflower).

Short-lived perennial or biennial with rosettes of narrowly lance-shaped to oblong, slightly toothed, hairy, pale to mid-green leaves, 6–8cm (2½–3in) long. In early summer, erect stems bear one-sided racemes of pendent, bell-shaped, lavender-blue, sometimes white flowers, 2–3cm (¾–1¼in) long, the petals fringed with white hairs. Cultivation group 2. ↑ to 30cm (12in), ↔ 20cm (8in). Mountains of Norway, Alps. \*\*\*

*C. bellardii* see *C. cochlearifolia*.

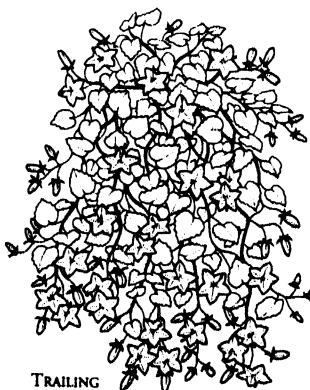
*C. betulifolia* see *C. betulifolia*.

*C. betulifolia* ♀ syn. *C. betulifolia*, *C. denticulata*. Tufted to clump-forming perennial with ovate to broadly ovate, toothed, dark green, purple-tinged leaves, 5–6cm (2–2½in) long. In early summer, corymbs of bell-shaped, pink-flushed white flowers, 2.5–3.5cm (1–1½in) long, with reflexed petal tips, open from pink or red buds. Cultivation group 2 or 3. ↑ to 8cm (3in), ↔ to 20cm (8in). Turkey (Anatolia). \*\*\*

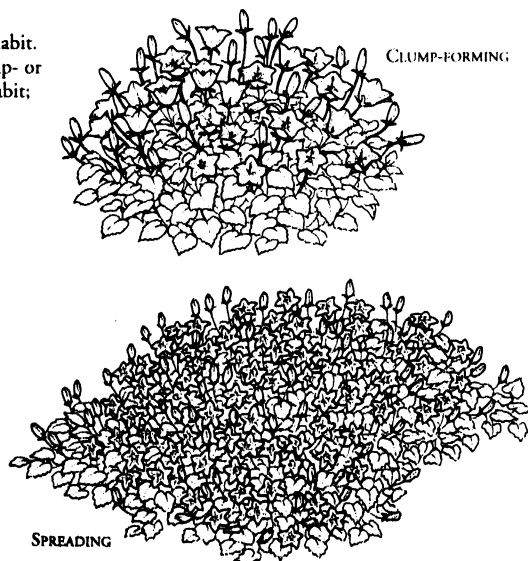
*C. 'Birch Hybrid'* ■ ♀ Vigorous, prostrate, evergreen perennial with underground runners, and small, ovate-heart-shaped, toothed, bright green leaves, 1cm (½in) long. Bears abundant short racemes of open bell-shaped, mauve-blue flowers, 2cm (¾in) across, in summer. Cultivation group 2. ↑ 10cm (4in), ↔ to 50cm (20in) or more. \*\*\*

## CAMPANULA HABITS

Campanulas vary greatly in size and habit. They may be low, with a tufted, clump- or mat-forming, trailing, or spreading habit; or they may be tall and erect.

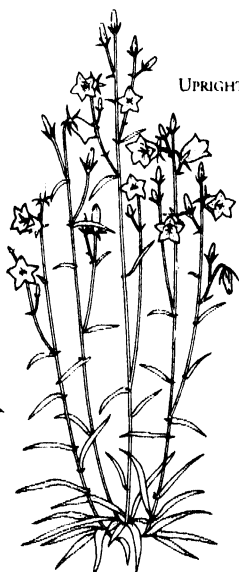


TRAILING



CLUMP-FORMING

SPREADING



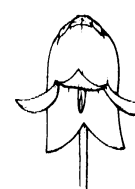
UPRIGHT

## CAMPANULA FLOWERS

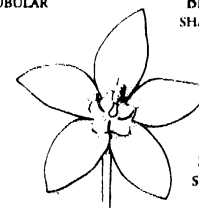
Campanulas bear flowers in a variety of shapes, including tubular, bell-, or star-shaped, and less clearly defined forms intermediate between the 3.



TUBULAR



BELL-SHAPED



STAR-SHAPED

C



*Campanula* 'Burghaltii'

**C. 'Burghaltii'** ■ ♀ (*C. latifolia* × *C. punctata*). Mound-forming perennial with stalked, heart-shaped, toothed, mid-green basal leaves, to 9cm (3½in) long, and stalkless, much narrower stem leaves. In midsummer, bears racemes of pendent, tubular-bell-shaped flowers, to 10cm (4in) long, in an unusual greyish lavender-blue. Cultivation group 1. ‡ 60cm (24in), ↔ 30cm (12in). \*\*\*

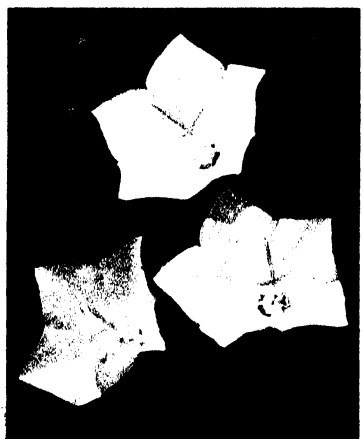
**C. *carpatica*** ♀ Clump-forming, variable perennial with rounded to ovate or heart-shaped, toothed, mid-green, basal leaves, 2.5–5cm (1–2in) long. Many long, branched stems bear usually solitary, large, upturned, open bell-shaped, blue, violet-purple, or white flowers, 3cm (1¼in) or more across, over several months in summer. Cultivation group 2. ‡ to 30cm (12in), ↔ 30–60cm (12–24in) or more. C. Europe (Carpathians). \*\*\*

**'Bressingham White'** ■ has large, pure white flowers, suffused blue-green at the bases; ‡ 15cm (6in). **'Jewel'** ■ is low-growing and compact, with bright purple-blue flowers; ‡ 10–15cm (4–6in). **'Turbinata'**, syn. var. *turbinata*, *C. turbinata*, is dwarf, with pale lavender-blue flowers borne singly on unbranched stems; ‡ 10–15cm (4–6in). **'Weisse Clips'**, syn. 'White Clips', produces abundant white flowers, and comes almost true from seed; ‡ 20cm (8in).

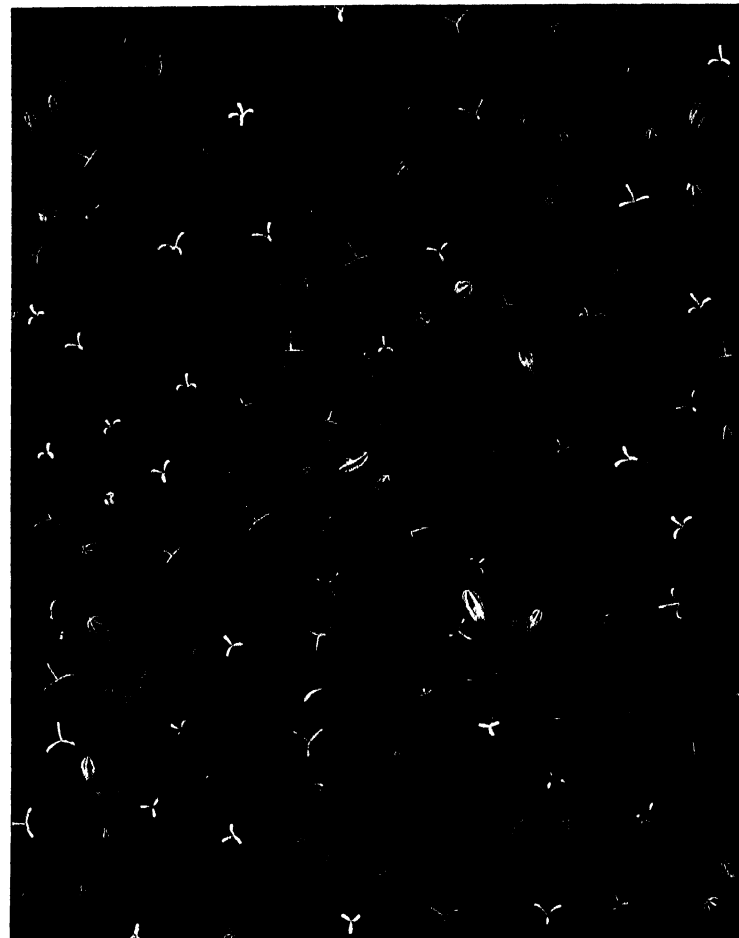
**C. *cashmeriana***. Delicate, tufted, woody-based perennial with obovate to oblong, toothed, very hairy, grey-green leaves, to 1cm (½in) long, on slender, semi-erect, zigzagged, freely branching stems. Nodding, narrowly bell-shaped, pale lilac to grey-blue flowers, 1–2.5cm

(½–1in) long, are produced singly from the leaf axils in summer. Best grown in an alpine house. Cultivation group 2 or 3. ‡ 10–15cm (4–6in), ↔ 15cm (6in). Afghanistan, India (Kashmir, Uttar Pradesh). \*\*\*

**C. *chamissonis***, syn. *C. dasyantha*, *C. pilosa*, *C. pilosa* var. *dasyantha*. Variable, rhizomatous perennial with rosettes of spoon-shaped to inversely lance-shaped, finely toothed, pale green leaves, to 4cm (1½in) long. In early summer, erect stems bear bell-shaped to tubular, blue, white-streaked flowers, 2–4cm (¾–1½in) long, usually singly but occasionally in few-flowered clusters. Cultivation group 2 or 3. ‡ 5–15cm (2–6in), ↔ to 20cm (8in). Japan to Alaska. \*\*\*. **'Superba'** ■ ♀



*Campanula carpatica* 'Bressingham White'



*Campanula carpatica* 'Jewel'

**C. *chamissonis***, syn. *C. dasyantha*, *C. pilosa*, *C. pilosa* var. *dasyantha*. Variable, rhizomatous perennial with rosettes of spoon-shaped to inversely lance-shaped, finely toothed, pale green leaves, to 4cm (1½in) long. In early summer, erect stems bear bell-shaped to tubular, blue, white-streaked flowers, 2–4cm (¾–1½in) long, usually singly but occasionally in few-flowered clusters. Cultivation group 2 or 3. ‡ 5–15cm (2–6in), ↔ to 20cm (8in). Japan to Alaska. \*\*\*. **'Superba'** ■ ♀

syn. 'Major', is very compact, with pale purple-blue flowers, to 4cm (1½in) long; ‡ 5cm (2in), ↔ 20cm (8in). **C. *cochleariifolia*** ■ ♀ syn. *C. bellardii*, *C. pusilla* (Fairies' thimbles). Creeping, tufted, rosette-forming perennial with slender rhizomes and oval to rounded-heart-shaped, toothed, bright green leaves, to 2cm (¾in) long. In summer, bears solitary, pendent, bell-shaped, white to lavender- or slate-blue flowers, 1.5cm (½in) long. Cultivation group 2. ‡ to 8cm (3in), ↔ to 30cm (12in) or more. European mountains. \*\*\*.

**'Elizabeth Oliver'** ■ produces double, pale lavender-blue flowers. **'Miranda'** bears single, grey-blue flowers. **'Miss Willmott'** has single, pale blue flowers, margined with silver.



*Campanula chamissonis* 'Superba'



*Campanula cochleariifolia*



*Campanula cochleariifolia* 'Elizabeth Oliver'

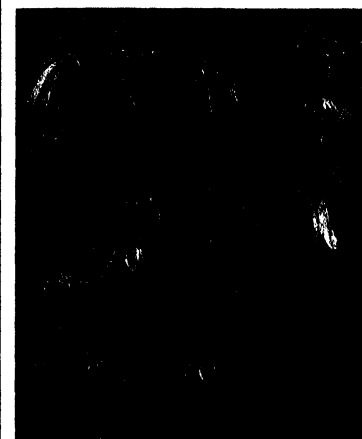
**C. *dasyantha*** see *C. chamissonis*.

**C. *denticulata*** see *C. betulifolia*.

**C. *elatines*** var. *garganica* see *C. garganica*.

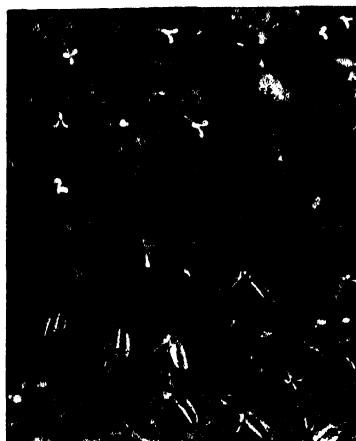
**C. 'Elizabeth'** ■ syn. *C. takesimana* 'Elizabeth'. Rhizomatous perennial with rosettes of heart-shaped, toothed, mid-green leaves, 8cm (3in) long. In mid- and late summer, bears racemes of pendent, bell-shaped cream flowers, 5cm (2in) or more long, flushed reddish purple outside and spotted red inside. Cultivation group 1. ‡ 35–40cm (14–16in), ↔ 40cm (16in). \*\*\*

**C. *excisa***. Creeping, loose mat-forming perennial with upright, wiry stems bearing linear-lance-shaped, slender-pointed, entire, light green leaves, 2cm (¾in) long. In midsummer, produces



*Campanula* 'Elizabeth'





*Campanula* 'G.F. Wilson'

solitary (sometimes 2 or 3), pendent, bell-shaped, violet to lilac flowers, to 2.5cm (1in) long, with a round hole at the base of each lobe. Cultivation group 2 or 3. ↑ to 10cm (4in), ↔ to 20cm (8in). S.W. and S. Central Alps. \*\*\*  
***C. garganica*** ♀ syn. *C. elatines* var. *garganica* (Adriatic bellflower). Spreading perennial with small, kidney-shaped or ovate-heart-shaped, toothed, mid-green basal leaves, 2.5–3.5cm (1–1½in) long, and heart-shaped, toothed stem leaves. Profuse racemes of star-shaped, bright blue to lilac flowers, 1–2cm (½–¾in) across, are produced in summer. Cultivation group 2. ↑ 5cm (2in), occasionally more, ↔ 30cm (12in) or more. S. Europe. \*\*\*. 'Aurea' see 'Dickson's Gold'. 'Dickson's Gold', syn. 'Aurea', has yellow leaves and blue flowers. 'W.H. Paine' ♀ bears deep lavender-blue flowers with white centres.  
***C. 'G.F. Wilson'*** ♂ Compact, mound-forming perennial with slender runners and oval, toothed, pale yellow-green leaves, 2.5–5cm (1–2in) long. Bears solitary, semi-erect or nodding, cup-shaped, deep violet flowers, to 2.5cm (1in) across, in mid- and late summer. Cultivation group 2. ↑ to 10cm (4in), ↔ to 20cm (8in). \*\*\*  
***C. glomerata*** (Clustered bellflower). Vigorous, variable, rhizomatous, hairy perennial, spreading to form clumps of erect, stiff stems and bearing numerous ovate to lance-shaped, round-toothed, dark green leaves, 5–10cm (2–4in) long. Dense, terminal racemes of tubular-bell-shaped flowers, 1.5–3.5cm (½–1½in) long, varying from violet to lavender-blue or white, are borne throughout



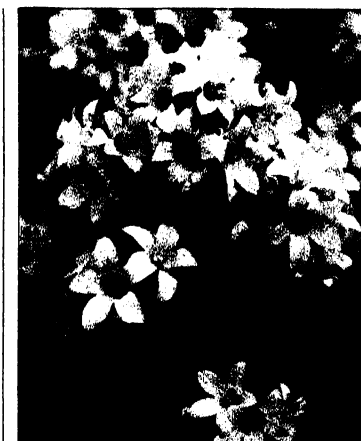
*Campanula glomerata* 'Superba'

summer. Cut back after flowering, to encourage a second flush. Cultivation group 1. ↑ 10–45cm (4–18in) or more, ↔ indefinite. Europe (excluding extreme N.), Turkey, W., C., and S. Asia. \*\*\*. 'Crown of Snow' see 'Schneekrone'. var. *dahurica* ♂ has wide, deep purple flowers; ↑ to 75cm (30in). 'Joan Elliott' has large violet flowers in early summer; ↑ 40cm (16in). 'Schneekrone', syn. 'Crown of Snow', bears dense clusters of white flowers, and breeds virtually true from seed; ↑ 50cm (20in). 'Superba' ♂ ♀ is vigorous, with purple-violet flowers; ↑ 60cm (24in). ***C. x haylodgensis*** see *C. x haylodgensis* 'Plena'. ***C. x haylodgensis*** 'Plena', syn. *C. x haylodgensis*. Spreading perennial with rounded to ovate or heart-shaped, toothed, mid-green leaves, 1–2cm (½–¾in) long. In mid- and late summer, bears clusters of rounded-bell-shaped, double, deep lavender-blue flowers, to 2.5cm (1in) across. Cultivation group 2. ↑ to 8cm (3in), ↔ 15cm (6in). Garden origin. \*\*\*. 'Warley White', syn. *C. warleyensis*, has open, semi-double or double white flowers, to 4cm (1½in) across.



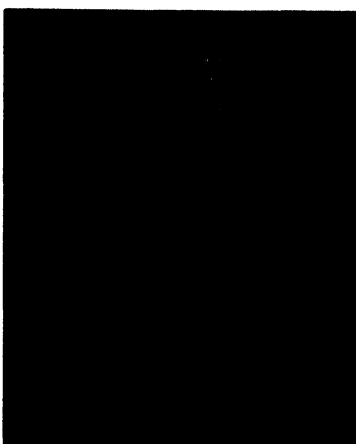
*Campanula isophylla* Kristal Hybrids 'Stella Blue'

***C. isophylla*** ♀ (Falling stars, Italian bellflower, Star-of-Bethlehem). Trailing perennial with soft stems, becoming slightly woody at the bases, and small, heart-shaped, toothed, light green leaves, 6cm (2½in) long. Loose corymbs of numerous, upright, saucer-shaped, pale blue or pure white flowers, 3.5cm (1½in) across, are produced in mid-summer; flowers for 2–3 months. Excellent for containers and hanging baskets. Cultivation group 4. ↑ 15–20cm (6–8in), ↔ to 30cm (12in). N. Italy. \*. 'Alba' ♂ ♀ produces pure white flowers. **Kristal Hybrids** are compact, long-blooming, and very free-flowering, producing strong stems and large flowers; they flower in early summer from late winter sowings. 'Stella Blue' ♂ is a compact Kristal Hybrid, producing star-shaped, bright violet-blue flowers; it is often cultivated as an annual for hanging baskets. 'Stella White' is a Kristal Hybrid bearing star-shaped white flowers.  
***C. 'Joe Elliott'*** ♀ Small, mound-forming perennial producing rounded-heart-shaped, slightly toothed, hairy, greyish green leaves, to 1.5cm (½in) long. Upright, bell- to funnel-shaped, lavender-blue flowers, 2–3cm (¾–1¼in) long, are borne singly or in small clusters of 2 or 3, just above the foliage in summer. Cultivation group 3. ↑ 8cm (3in), ↔ 20cm (8in). \*\*\*  
***C. lactiflora*** ♂ (Milky bellflower). Upright perennial producing thin, ovate to ovate-oblong, toothed, mid-green leaves, 5–12cm (2–5in) or more long. Conical panicles of open bell-shaped



*Campanula lactiflora* 'Loddon Anna'

flowers, 1.5–2.5cm (½–1in) across, are borne on strongly branched, leafy stems from early summer to early autumn. The flowers are usually white to pale blue, sometimes lavender-blue, deep lilac-blue, or violet. Self-seeds freely, producing seedlings with some colour variation. May need staking in exposed sites. Cultivation group 1. ↑ 1.2–1.5m (4–5ft), ↔ 60cm (24in). Caucasus, Turkey. \*\*\*. 'Alba' produces pure white flowers. 'Loddon Anna' ♂ ♀ bears soft lilac-pink flowers. 'Pouffe' is dwarf, forming a tight mound of foliage covered with profuse, pale lavender-blue flowers; ↑ 25cm (10in), ↔ 45cm (18in). 'Prichard's Variety' ♂ ♀ produces dark violet-blue flowers; ↑ to 75cm (30in). 'White Pouffe' is similar to 'Pouffe', but with white flowers.  
***C. latifolia***. Vigorous, upright perennial with stout, unbranched stems arising from basal clumps of ovate-oblong, long-stalked, rough-textured, toothed, mid-green leaves, 7–12cm (3–5in) long. Stem leaves are similar but stalkless and sharply pointed, decreasing in size towards the tops of the stems. In summer, flowers are produced singly or in twos or threes, from the axils of the upper leaves, forming narrow, leafy, spike-like racemes. The flowers are broadly tubular-bell-shaped, 4–6cm (1½–2½in) long, pale to deep violet or white, and have wide-spreading corolla lobes. Cultivation group 1. ↑ to 1.2m (4ft), ↔ 60cm (24in). Europe (except for the extreme N. and Mediterranean region), Caucasus, Turkey, Iran, W. Asia to India (Kashmir). \*\*\*.



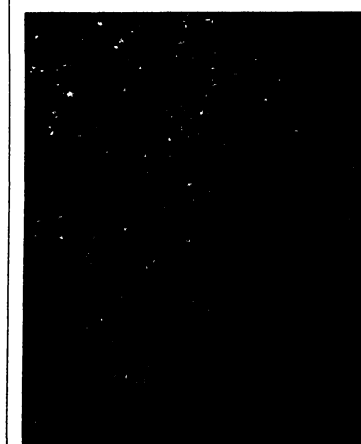
*Campanula glomerata* var. *dahurica*



*Campanula isophylla* 'Alba'



*Campanula lactiflora*



*Campanula lactiflora* 'Prichard's Variety'

C



*Campanula latifolia* 'Brantwood'

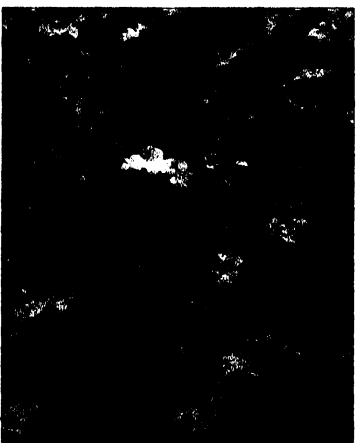
'Brantwood' ■ bears deep violet flowers, and breeds almost true from seed; †75cm (30in). 'Gloaming' produces pale smoke-blue flowers; †60cm (24in). var. *macrantha* has sparse foliage and dark blue flowers; †1m (3ft); Caucasus.

*C. latiloba*, syn. *C. persicifolia* subsp. *sessiliflora*. Clump-forming perennial with basal rosettes of broadly lance-shaped, toothed, mid-green leaves, 7–12cm (3–5in) long, and thick, erect stems. Short racemes of stalkless, shallowly cup-shaped, rich lavender-blue flowers, 3–5cm (1¼–2in) across, are borne in mid- and late summer. Cultivation group 1. †90cm (36in), ↔45cm (18in). N. Turkey. \*\*\*.

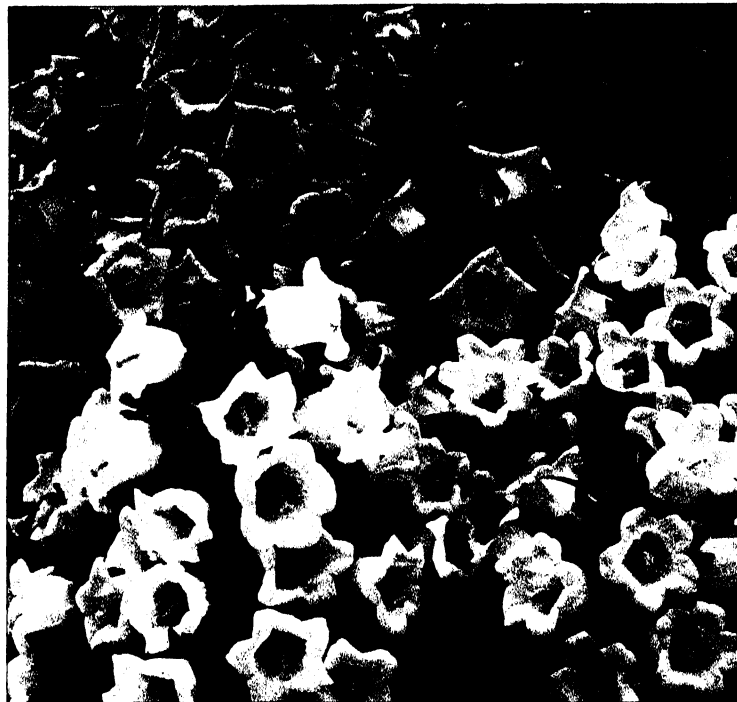
'Hidcote Amethyst' ■ has pale amethyst flowers with deeper purple shading. 'Percy Piper' ♀ produces rich lavender-blue flowers; †75cm (30in).

*C. medium* (Canterbury bells). Slow-growing, clump-forming, downy biennial producing lance-shaped to elliptic, toothed, mid-green basal leaves, 12–15cm (5–6in) long, and smaller stem leaves. Lax racemes of single or double, bell-shaped, white, pink, or blue flowers, 2.5–4cm (1–1½in) long, open from spring to summer. Cultivation group 1. †60–90cm (24–36in), ↔30cm (12in). S. Europe. \*\*\*.

'Bells of Holland' ■ is dwarf, bearing single flowers in a variety of colours. May be grown as an annual; †40–45cm (16–18in). 'Calycanthema', syn. var. *calycanthema* (Canterbury bells, Cup and saucer) has single or double flowers, each surrounded by a large calyx the same colour as the petals. An additional,



*Campanula latiloba* 'Hidcote Amethyst'



*Campanula medium* 'Bells of Holland'

flattened, lobed corolla forms a saucer-like rim at the base of the cup-like flowers; †75cm (30in).

*C. morettiana*. Small, tufted perennial with finely hairy, broadly ovate, coarsely toothed, mid-green leaves, to 2cm (¾in) long. Arching stems bear usually solitary, erect, tubular-bell-shaped, violet-blue flowers, 2–3cm (¾–1¼in) long, in late spring and early summer. Prefers alkaline soil. Cultivation group 3. †5cm (2in), ↔to 10cm (4in). Rock crevices, mountains of N. Italy, W. Austria (Tyrol). \*\*\*.

*C. muralis* see *C. portenschlagiana*.

*C. nitida* see *C. persicifolia* var. *planiflora*.

*C. nitida* 'Planiflora' see *C. persicifolia* var. *planiflora*.

*C. ossetica* see *Symphyandra pendula*.

*C. persicifolia* (Peach-leaved bellflower). Rosette-forming perennial with slender white rhizomes and evergreen, narrow, lance-shaped to oblong-ovate, toothed, bright green, basal leaves, 10–15cm (4–6in) long. Short, terminal racemes of 2 or 3, occasionally solitary, slightly pendent, cup-shaped flowers, to 5cm (2in) across, varying from white to lilac-blue, are produced on slender stems, or from the leaf axils, in early and midsummer. Cultivation group 1. †90cm (36in), ↔30cm (12in). S. Europe, to C. and S. Russia, W. and N. Asia. \*\*\*. 'Alba Coronata', syn. 'Alba Plena', bears semi-double flowers with 2 or 3 rows of petals and enlarged, petaloid stamens; †45cm (18in). 'Boule de Neige' bears double white flowers; †60cm (24in). 'Fleur de Neige' ♀ produces large, shallowly cup-shaped white flowers with 3 rows of petals and petaloid stamens; †70cm (28in). var. *planiflora*, syn. *C. amabilis* 'Planiflora', *C. nitida*, *C. nitida* 'Planiflora', *C. planiflora* (Willow-bell), is dwarf, with dense rosettes of inversely lance-shaped, wavy-margined, glossy, very dark green leaves, to 3cm (1¼in) long. In summer, bears erect racemes of widely bell-shaped blue flowers, 2–4cm (¾–1½in) across.

Cultivation group 2; †to 15cm (6in).

'Planiflora Alba' has white flowers.

Cultivation group 2; †to 15cm (6in).

'Pride of Exmouth' bears semi-double, "cup-in-cup", purple-blue flowers, and is remountant; †60cm (24in). subsp. *sessiliflora* see *C. latiloba*. 'Telham Beauty' ■ has light blue flowers, †7cm (3in) across; ↔90cm (36in).

*C. pilosa* see *C. chamissonis*.

*C. pilosa* var. *dasyantha* see *C. chamissonis*.

*C. piperi*. Slow-growing, tufted, rhizomatous perennial with rosettes of spoon- to lance-shaped, toothed, glossy mid-green leaves, to 2.5cm (1in) long. Solitary, shallowly bowl-shaped, bright blue flowers, 2cm (¾in) across, with red anthers, are borne in summer. Best



*Campanula persicifolia* 'Telham Beauty'

grown in an alpine house. Cultivation group 3. †to 5cm (2in), ↔to 15cm (6in). N.W. USA (Olympic Mountains, in rock crevices). \*\*\*.

*C. planiflora* see *C. persicifolia* var. *planiflora*.

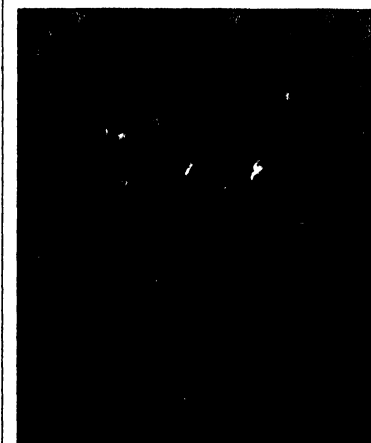
*C. portenschlagiana* ■ syn. *C. muralis* (Dalmatian bellflower). Robust, mound-forming, evergreen perennial with broadly kidney-shaped to ovate-heart-shaped, irregularly toothed, mid-green leaves, 2–4cm (¾–1½in) long. Erect or spreading, loosely branched panicles of tubular to funnel-shaped, deep purple flowers, to 2cm (¾in) long, are borne in mid- and late summer. Cultivation group 2. †to 15cm (6in), ↔50cm (20in) or more. Mountains of Croatia. \*\*\*.

*C. poscharskyana* ■ Vigorous perennial, spreading by underground runners, with toothed, rounded to ovate, mid-green leaves, to 2.5cm (1in) long, heart-shaped at the bases. Panicles of star-shaped, pale lavender flowers, 2–2.5cm (¾–1in) across, with white centres, are borne from summer to autumn. Cultivation group 2. †to 15cm (6in), ↔to 60cm (24in). Mountains of Croatia, Bosnia & Herzegovina. \*\*\*. 'Stella' has bright violet flowers.

*C. x pseudoraineri* (*C. carpatica* 'Turbinata' x *C. raineri*). Variable, dense, clump-forming perennial, resembling *C. carpatica*, with ovate to rounded, or heart-shaped, toothed, hairy, grey-green, basal leaves, 1–2.5cm (½–1in) long. Solitary, large, upturned, open bell-shaped blue flowers, 3cm (1¼in) across, are borne on erect stems throughout the summer. Cultivation group 2. †to 12cm (5in), ↔to 15cm (6in). Garden origin. \*\*\*.

*C. pulla*. Spreading perennial with underground runners and small rosettes of shallowly toothed, rounded-spoon-shaped, shiny, mid-green, basal leaves. Solitary, pendent, tubular-bell-shaped, deep violet or purple-blue flowers, to 2cm (¾in) long, are borne in late spring and early summer. Cultivation group 2 or 3. †to 5cm (2in), ↔to 30cm (12in). N.E. Alps, Austria. \*\*\*.

*C. punctata* ■ Clump-forming perennial with creeping rhizomes and rosettes of ovate, toothed, slightly hairy, dark green leaves, 10–12cm (4–5in) long, heart-shaped at the bases. In early summer, erect stems bear short racemes of pendent, tubular-bell-shaped, creamy white to dusky pink flowers, 5cm (2in) long, red-spotted and hairy inside. Will



*Campanula portenschlagiana*



*Campanula poscharskyana*

thrive in fertile, sandy loam. Cultivation group 1. †30cm (12in), ↔40cm (16in). Russia (Siberia), Japan. \*\*\*

*C. pusilla* see *C. cochleariifolia*.

*C. pyramidalis* (Chimney bellflower). Short-lived, erect perennial, best grown as a biennial. Loose rosettes of ovate-lance-shaped, toothed, light to mid-green leaves, 7–15cm (3–6in) long, give rise to tall stems with stalkless, lance-shaped leaves. Pyramidal racemes of cup-shaped, fragrant, light blue or white flowers, 4cm (1½in) across, are borne from late spring to summer. Prefers rich soil. Cultivation group 1. †to 3m (10ft), ↔60cm (24in). N. Italy, N.W. Balkans. \*\*\*. 'Alba' has white flowers.

*C. rainieri* [M] ♀ Slow-spreading perennial with underground runners and obovate, toothed, hairy, grey-green leaves, 1–2.5cm (½–1in) long. In summer, bears solitary, upturned, open bell-shaped, pale lavender flowers, 3–4cm (1¼–1½in) across. Cultivation group 3. †5–8cm (2–3in), ↔to 20cm (8in). Mountains of Switzerland, Italy. \*\*\*

*C. rotundifolia* (Harebell, Scottish bluebell). Variable perennial with underground runners, and long-stalked, rounded to heart-shaped, finely toothed, light green basal leaves, 1cm (½in) long, and linear stem leaves. In summer, erect, slender stems bear lax, branched panicles of nodding, bell-shaped, dark blue to white flowers, to 2cm (¾in) long. May be naturalized in short turf. Cultivation group 2. †to 12–30cm (5–12in). Temperate N. hemisphere. \*\*\*

*C. sarmatica*. Clump-forming perennial, similar to *C. alliariifolia* but less vigorous, with elongated, triangular-



*Campanula punctata*



*Campanula rainieri*

ovate, heart-shaped, toothed, wrinkled, grey-woolly, basal leaves, to 8cm (3in) long, with long leaf-stalks. Erect, unbranched, greyish green stems bear lax racemes of bell-shaped, hairy, light grey-blue flowers, 3–5cm (1¼–2in) long, from late spring to midsummer. Cultivation group 1. †50cm (20in), ↔40cm (16in). Caucasus. \*\*\*

*C. saxatilis* ♀ Tufted perennial with erect or spreading stems arising from a thick rootstock, and rosettes of spoon-shaped to inversely lance-shaped, entire or round-toothed, mid-green leaves, to 5cm (2in) long. In summer, long stems bear loose spikes or clusters of tubular, pale blue flowers, to 2cm (¾in) long, with darker veins. Cultivation group 3. †8cm (3in) or more, ↔to 20cm (8in). Crete (in rock crevices). \*\*\*

*C. takesimana*. Rapidly spreading, rhizomatous perennial with heart-shaped, toothed, glossy, mid-green leaves, to 8cm (3in) long, with winged leaf-stalks. In summer, bears arching, branched sprays of pendent, bell-shaped white flowers, 4–7cm (1½–3in) long, pink-flushed, and spotted maroon inside. Cultivation group 1. †to 50cm (20in), ↔to 1m (3ft). Korea. \*\*\*

*C. takesimana* 'Elizabeth' see *C. 'Elizabeth'*.

*C. thyrsoides*. Rosette-forming, bristly, monocarpic perennial or biennial with lance-shaped, wavy-margined, entire, mid-green leaves, 7–12cm (3–5in) long, the upper ones much narrower and stem-clasping. Dense, blunt-tipped, cylindrical spikes of cup-shaped, fragrant, lemon-yellow or creamy yellow flowers, 1.5–2.5cm (½–1in) long, are



*Campanula trachelium*



*Campanula trachelium* 'Bernice'

borne in mid- and late summer. Prefers light, alkaline soil. Cultivation group 1. †30–50cm (12–20in) or more, ↔23–30cm (9–12in). S. Europe. \*\*\*

*C. trachelium* [M] (Bats-in-the-belfry, Nettle-leaved bellflower, Throatwort). Upright, woody-based perennial with ovate, sharply toothed, nettle-like, bristly, mid-green leaves, 5–12cm (2–5in) long. Stout, sometimes red-tinged stems bear short racemes of tubular, short-stalked, mid-blue to lilac, or white flowers, 2–3cm (¾–1¼in) long, from the leaf axils, in mid- and late summer. Cultivation group 1. †45–90cm (18–36in), ↔30cm (12in). Europe to Turkey and W. Asia, also N. Africa. \*\*\*

'Alba Flore Pleno' has semi-double white flowers. 'Bernice' [M] bears double, lilac-blue flowers.

*C. turbinata* see *C. carpatica* 'Turbinata'.

*C. 'Van-Houttei'*. Clump-forming perennial with deeply notched, ovate to lance-shaped, scalloped, mid-green leaves, 9–10cm (3½–4in) long, with conspicuous veins. Pendent, tubular-bell-shaped mauve flowers, to 6cm (2½in) long, are produced on erect stems in early and midsummer. Cultivation group 1. †60cm (24in), ↔30cm (12in). \*\*\*

*C. vidalii* see *Azorina vidalii*.

*C. waldsteiniana*. Tufted, clump-forming perennial with small, ovate-elliptic, toothed, bright green leaves, 1.5cm (½in) long. In late summer and early autumn, bears loose racemes of 3–5 upturned, star-shaped, mid-blue flowers, 2cm (¾in) across, on wiry stems. Cultivation group 3. †to 10cm (4in), ↔to 20cm (8in). Rock crevices and mountains in S. Croatia. \*\*\*

*C. wanneri* see *Symphyandra wanneri*.

*C. warleyensis* see *C. x haylodgensis* 'Warley White'.

*C. zoysii* [M] Cushion-forming, tufted perennial producing small, obovate to ovate, toothed, glossy, mid-green leaves, 5–10mm (¼–½in) long. Erect stems each bear several pendent, tubular, clear blue to pale lavender-blue flowers, 1.5–2cm (½–¾in) long, contracted at the mouths, in midsummer. Needs very gritty, alkaline soil. Cultivation group 3. †to 5cm (2in), ↔to 10cm (4in). S.E. Alps. \*\*\*

▷ *Campelia zanonina* see *Tradescantia zanonina*

▷ *Camphor tree* see *Cinnamomum camphora*



*Campanula zoysii*

▷ *Campion* see *Lychnis*, *Silene*

**Alpine** see *Lychnis alpina*

**Double sea** see *Silene uniflora*

'Flore Pleno'

**Moss** see *Silene acaulis*

**Rose** see *Lychnis coronaria*

## CAMPIS

Trumpet creeper, Trumpet vine

BIGNONIACEAE

Genus of 2 species of vigorous, woody, deciduous climbers, usually climbing by aerial roots, found in woodland in China and North America. They have opposite, pinnate leaves, with ovate leaflets, and showy, trumpet-shaped or funnel-shaped flowers, 6–8cm (2½–3in) long, borne in terminal panicles or cymes from late summer to autumn. Train against a wall, fence, or pillar, or on a tree.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in any moderately fertile, moist but well-drained soil. In frost-prone gardens, trumpet creepers are best grown against a warm wall in full sun. In warmer climates, they will tolerate a more exposed and shady site. Pruning group 12, in late winter or early spring. It may take 2 or 3 seasons to establish the main framework; train and tie in the shoots until the aerial roots have taken hold.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root leaf-bud cuttings in spring or semi-ripe cuttings in summer. Graft or insert root cuttings in winter.

• **PESTS AND DISEASES** Powdery mildew, leaf spot, scale insects, mealybugs, and whiteflies may be a problem.

*C. chinensis* see *C. grandiflora*.

*C. grandiflora*, syn. *Bignonia grandiflora*, *C. chinensis*, *Tecoma grandiflora* (Chinese trumpet creeper, Chinese trumpet vine). Vigorous climber with pinnate, mid- to dark green leaves, to 30cm (12in) long, composed of 7–9 ovate, coarsely toothed leaflets. Pendent, terminal panicles of 6–12 open funnel-shaped, dark orange to red flowers, with spreading lobes, are borne from late summer to autumn. It produces relatively few aerial roots and may need to be tied permanently to its support. †10m (30ft). China. \*\*\*

*C. radicans*, syn. *Bignonia radicans*, *Tecoma radicans* (Common trumpet creeper). Vigorous climber with ovate, pinnate, dark green leaves, 2.5–10cm



*Campsis x tagliabuana* 'Mme Galen'

(1–4in) long, composed of 7–11 toothed, ovate leaflets. Bears terminal cymes of 4–12 slender, tubular-trumpet-shaped, orange to red flowers from late summer to autumn. ↑ 10m (30ft) or more. S.E. USA. \*\* *f. flava* ♀ syn. 'Yellow Trumpet', has yellow flowers. *C. x tagliabuana* 'Mme Galen' ♂ ♀ Vigorous climber with pinnate, dark green leaves, to 30cm (12in) long, composed of 7–11 ovate leaflets. From late summer to autumn, bears terminal panicles of 6–12 trumpet-shaped, orange-red flowers. ↑ 10m (30ft) or more. \*\*

▷ *Camptosorus rhizophyllus* see *Asplenium rhizophyllum*

## CANANGA

ANNONACEAE

Genus of 2 species of evergreen trees occurring in tropical and subtropical forest from India to Australasia and the Pacific islands. They have alternate, simple leaves and are valued for their 6-petalled, scented flowers, produced in pendent clusters from the leaf axils. In frost-prone areas, grow in a warm greenhouse. In tropical climates, they are attractive street and specimen trees, and are cultivated commercially for their perfumed oil, which is distilled from the flowers.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light with high humidity. Water freely in the growing season, applying a balanced liquid



*Cananga odorata*

fertilizer monthly from summer to autumn; water sparingly but regularly in winter. Pot on or top-dress in spring. Outdoors, grow in moist, moderately fertile, humus-rich soil in partial shade. Pruning group 1: plants under glass may need restrictive pruning.

- **PROPAGATION** Sow seed at 21°C (70°F) in spring.

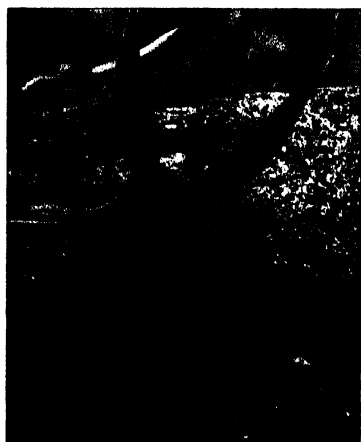
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. odorata* ♂ ♀ (Ilang-ilang, Macassar oil tree, Ylang-ylang). Spreading tree with arching to pendent branches and oblong-ovate, tapered, mid- to dark green leaves, 10–20cm (4–8in) long. Axillary, pendent clusters of strong-scented yellow flowers, 3–5cm (1¼–2in) across, with narrow, pointed petals, are borne in autumn. ↑ 10–20m (30–70ft), ↔ 4–8m (12–25ft). India to Australia (Queensland), Philippines. ☀ (min. 16°C/61°F)

## CANARINA

CAMPANULACEAE

Genus of 3 species of herbaceous climbers, with thick, tuberous roots, found in forest and at forest margins in the Canary Islands and E. Africa. The leaves are opposite and simple or lobed. Canarinas are valued for their pendent, bell-shaped flowers, with 6 petal lobes, produced singly or in clusters from the upper leaf axils. In frost-prone regions, grow in a container or border in a cool greenhouse or conservatory; elsewhere, grow against a house wall or allow to scramble through low shrubs.



*Canarina canariensis*

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light with good ventilation. Keep completely dry when foliage yellows in late spring; pot on in late summer while dormant and keep just moist until new growth begins; when in growth, water freely and apply a balanced liquid fertilizer every 2–3 weeks. Provide support. Outdoors, grow in fertile, well-drained soil in partial shade. Protect from summer rain when growth yellows, and keep the crowns dry until autumn.
- **PROPAGATION** Sow seed at 15–18°C (59–64°F) in autumn or spring. Take basal cuttings flush with the tubers in late winter or early spring as shoots are produced; root in a propagating case.
- **PESTS AND DISEASES** May be infested with whiteflies at high temperatures.

*C. campanula* see *C. canariensis*.

*C. canariensis* ♂ ♀ syn. *C. campanula* (Canary bellflower). Scrambling, deciduous climber producing branching, scandent, robust stems and lance-shaped or 3-angled, shallowly lobed, mid-green leaves, 4–8cm (1½–3in) long. The bell-shaped, orange-red to orange-yellow flowers, 3–6cm (1¼–2½in) long, are attractively veined, and borne singly from the upper leaf axils from late winter to late spring. ↑ 1–1.5m (3–5ft), ↔ 60–90cm (24–36in). Canary Islands. ☀ (min. 5°C/41°F)

▷ **Canary bird bush** see *Crotalaria agatiflora*

▷ **Canary creeper** see *Tropaeolum peregrinum*

▷ **Candle plant** see *Plectranthus oertendahlii*, *Senecio articulatus*

**Empress** see *Senna alata*

▷ **Candlewood** see *Rothmannia capensis*

▷ **Candollea** see *Hibbertia*

*C. cuneiformis* see *H. cuneiformis*

▷ **Candytuft** see *Iberis*

**Common** see *I. umbellata*

▷ **Cane, Rattan** see *Calamus rotang*

▷ **Canebrake** see *Arundinaria gigantea*

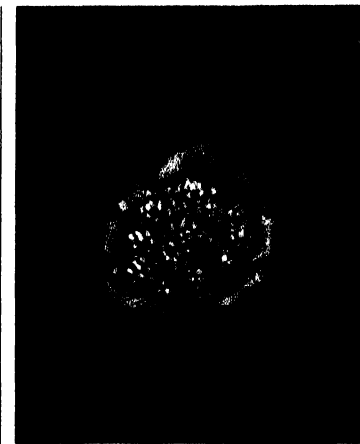
## CANISTRUM

BROMELIACEAE

Genus of 7 species of epiphytic or terrestrial, evergreen perennials (bromeliads) from forest in Brazil. The funnel-shaped leaf rosettes comprise strap-shaped, spiny-margined leaves, which are fine-scaly on the undersides. Dense, compound cymes, each consisting of a rounded flowerhead of green, yellowish green to white, yellow, or occasionally blue flowers in a "basket" of large, colourful bracts, are borne in summer. They are followed by spherical, greenish white fruits containing spindle-shaped seeds. In frost-prone climates, grow in a warm conservatory or greenhouse; in warmer areas, grow outdoors in a moist, shady site.

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow epiphytically, or in epiphytic bromeliad compost, in bright filtered light with moderate humidity. In the growing season, water freely, applying a low-nitrogen fertilizer 3 or 4 times; keep just moist at other times. Outdoors, grow epiphytically in a tree or in humus-rich, sandy soil in partial shade. See also p.47.



*Canistrum lindenii* var. *roseum*

- **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Remove offsets in early summer.
- **PESTS AND DISEASES** Scale insects may be a problem.

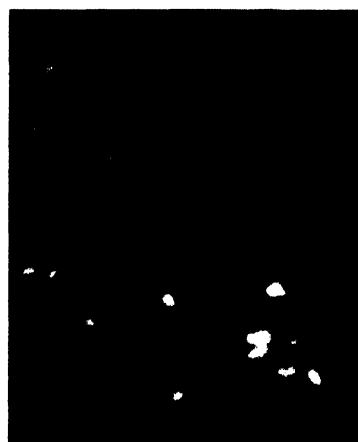
*C. lindenii*. Variable, epiphytic bromeliad with funnel-shaped rosettes, to 1m (3ft) across, of mid-green leaves, to 80cm (32in) long, often marked darker green. In summer, produces dense cymes of about 100 narrowly funnel-shaped, white-tipped green flowers surrounded by yellowish white or green bracts. ↑ to 1m (3ft) or more, ↔ 60–120cm (24–47in). Brazil. ☀ (min. 16°C/61°F). var. *roseum* ♂ has rose-pink to light red bracts.

## CANNA

Indian shot plant

CANNACEAE

Genus of about 50 species of rhizomatous herbaceous perennials, mainly from forest margins and moist, open areas in forest in Asia and tropical North and South America. Cannas are cultivated for their large, alternate, paddle-shaped leaves, 30–60cm (12–24in) long in most species and cultivars; they are pinnately veined and sheathed at the bases. The racemes or panicles of brightly coloured flowers are also attractive, each asymmetric flower having 3 petals joined into a tube at the bases, 3 sepals, and showy stamens. The flowers are usually produced in pairs from the axil of each bract. Hundreds of hybrids have resulted from complex crosses between various species; they



*Canna* 'Assaut'

are often grouped under the names *C. x generalis* and *C. x orchoides*. As the distinctions between these hybrid groups have been blurred by further interbreeding these names have not been used in the descriptions below.

In frost-prone areas, use cannas in summer bedding and lift for winter, or grow in containers on a patio or in a cool conservatory or greenhouse. In warmer areas, grow in a border.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in full light with shade from hot sun. During the growing season, water freely and apply a phosphate-rich liquid fertilizer monthly. Outdoors, grow in a sheltered site in fertile soil in full sun; water freely in dry spells. Dead-head to promote continued flowering. In frost-prone regions, plant in early summer; when autumn frost blackens the foliage, remove the stems and leaves and lift the rhizomes for winter storage; store in barely moist peat or leaf mould in frost-free conditions. In areas that are frost-free or almost so, leave *in situ* and protect with a deep dry mulch.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring or autumn. Chip seed or soak in warm water for 24 hours before sowing. Divide rhizomes into short sections, each with a prominent "eye", in early spring. Pot on and start into growth at 16°C (61°F); water sparingly at first.

• **PESTS AND DISEASES** Susceptible to red spider mites under glass. Slugs and caterpillars may be a problem outdoors.

*C. 'Assault'* see *C. 'Assault'*.

*C. 'Assault'* ■ syn. *C. 'Assault'*. Upright, rhizomatous perennial bearing purple-brown leaves, and racemes of gladiolus-like, orange-scarlet flowers, 7cm (3in) across, from midsummer to autumn. ↑ 1.8m (6ft), ↔ 50cm (20in). \*

*C. 'Black Knight'*. Erect, rhizomatous perennial producing bronze foliage. From midsummer to early autumn,



*Canna iridiflora*  
'Ehemannii'

bears large racemes of gladiolus-like, very dark red flowers, 7cm (3in) across, with wavy petals. ↑ 1.8m (6ft), ↔ 50cm (20in). \*

*C. edulis* see *C. indica*.

*C. 'Endeavour'* ■ Erect, rhizomatous perennial producing blue-green leaves. Racemes of iris-like, bright soft red flowers, 5cm (2in) across, are borne from midsummer to early autumn. ↑ 1.5–2.2m (5–7ft), ↔ 50cm (20in). \*

*C. 'Erebus'*. Erect, rhizomatous perennial with dark green leaves. From midsummer to early autumn, bears racemes of gladiolus-like, dark red flowers, 8cm (3in) across. ↑ 1.8m (6ft), ↔ 50cm (20in). \*

*C. glauca*. Slender, rhizomatous perennial with brittle rhizomes and narrowly ovate to elliptic, glaucous, blue-green leaves, 30–50cm (12–20in) long. Racemes of iris-like, pale lemon-yellow to dark yellow flowers, 7–9cm (3–3½in) across, are borne from midsummer to early autumn. ↑ 1.5–2.2m (5–7ft), ↔ 50cm (20in). West Indies to Bolivia and Argentina. \*

*C. indica*, syn. *C. edulis*. Rhizomatous perennial with ovate-lance-shaped to

oblong, dark green, often bronze-tinted leaves, to 50cm (20in) long. Racemes or panicles of iris-like, bright red or soft orange flowers, 5–7cm (2–3in) across, are borne from midsummer to mid-autumn. ↑ 1.5–2.2m (5–7ft), ↔ 50cm (20in). Tropical and subtropical South America. \* *'Purpurea'* produces dark purple leaves.

*C. iridiflora*. Upright, rhizomatous perennial with broadly elliptic, dark bluish green leaves, to 1m (3ft) long. Pendent panicles of trumpet-shaped, bright cerise-pink flowers, 11cm (4½in) across, open from midsummer to early autumn. ↑ 3m (10ft), ↔ 50cm (20in). Peru. \* *'Ehemannii'* ■ has dark blue-green leaves with red margins, and bears panicles of waxy, bright pinkish red flowers, to 15cm (6in) across; ↑ 2m (6ft), ↔ 60cm (24in).

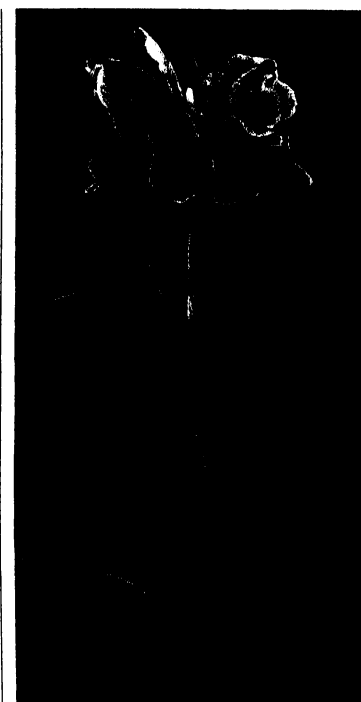
*C. 'King Humbert'*, syn. *C. 'Roi Humbert'*. Erect, rhizomatous perennial with vivid purple leaves, and racemes of orchid-like, bright red flowers, 7cm (3in) across, borne from midsummer to early autumn. ↑ 1.8m (6ft), ↔ 50cm (20in). \*

*C. 'King Midas'* ■ Erect, rhizomatous perennial with dark green leaves. Sturdy racemes of gladiolus-like, golden yellow, orange-marked flowers, 7cm (3in) across, are borne from midsummer to early autumn. ↑ 1.5m (5ft), ↔ 50cm (20in). \*

*C. 'Louis Cayeux'*. Very free-flowering, rhizomatous perennial producing bright green leaves. Racemes of orchid-like, soft salmon-pink flowers, 10cm (4in) across, are borne from midsummer to early autumn. ↑ 1.5m (5ft), ↔ 50cm (20in). \*

*C. 'Lucifer'*. Dwarf, very free-flowering, rhizomatous perennial with mid-green leaves. From midsummer to early autumn, bears profuse racemes of iris-like flowers, 5cm (2in) across; tepals are red with yellow margins. ↑ 60cm (24in), ↔ 50cm (20in). \*

*C. malawiensis 'Variegata'* see *C. 'Striata'*.



*Canna 'Rosemond Coles'*

*C. 'Pfitzer's Chinese Coral'*. Upright, rhizomatous perennial with grey-green leaves. Abundant racemes of gladiolus-like, coral-pink flowers, 7cm (3in) wide, open from midsummer to early autumn. ↑ 80cm (32in), ↔ 50cm (20in). \*

*C. 'Picasso'*. Compact, rhizomatous perennial bearing blue-green leaves and racemes of gladiolus-like, yellow, red-spotted flowers, 7cm (3in) across, from midsummer to early autumn. Leaves and flowers are bleached by bright sun, so best grown in partial shade. ↑ 1.2m (4ft), ↔ 50cm (20in). \*

*C. 'President'*. Erect, rhizomatous perennial with glossy, blue-green leaves and racemes of gladiolus-like, rich scarlet flowers, 7cm (3in) across, borne from midsummer to early autumn. ↑ 1.2m (4ft), ↔ 50cm (20in). \*

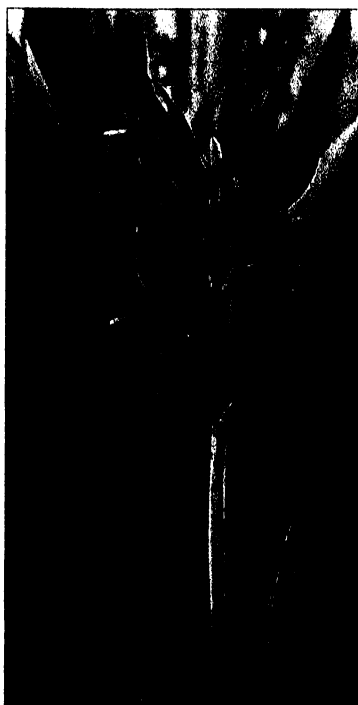
*C. 'Roi Humbert'* see *C. 'King Humbert'*.

*C. 'Rosemond Coles'* ■ Upright, rhizomatous perennial with large, mid-green leaves. From midsummer to early autumn, bears racemes of gladiolus-like red flowers, 7cm (3in) across, with yellow margins and yellow-spotted throats; the undersides of the petals are golden. ↑ 1.5m (5ft), ↔ 50cm (20in). \*

*C. 'Striata'*, syn. *C. malawiensis 'Variegata'*. Erect, rhizomatous perennial with dark red-purple stems and light green to yellow-green leaves, 25–50cm (10–20in) long, with bright yellow veins. Racemes of gladiolus-like orange flowers, 8cm (3in) across, are produced from midsummer to early autumn. ↑ 1.5m (5ft), ↔ 50cm (20in). \*

*C. 'Wyoming'*. Upright, rhizomatous perennial producing brown-purple leaves with darker purple veins. From midsummer to early autumn, bears racemes of gladiolus-like, frilled orange flowers, 10cm (4in) across, with apricot feathering and darker orange margins. ↑ 1.8m (6ft), ↔ 50cm (20in). \*

▷ **Canterbury bells** see *Campanula medium*, *C. medium*  
'Calycanthema'



*Canna 'Endeavour'*



*Canna 'King Midas'*

## CANTUA

## POLEMONIACEAE

Genus of 6 species of evergreen, small trees and shrubs of arching, sometimes scandent habit, usually found in mountainous areas of South America. The alternate leaves are simple, and the showy, tubular, 5-lobed flowers, borne in terminal corymbs, are red, purple, violet, or white. In frost-prone areas, grow cantuas in a cool greenhouse. In frost-free climates, they are suitable for growing against a wall or pillar, or in a shrub border.

• **HARDINESS** Half hardy to frost tender. *C. buxifolia* can withstand short periods of frost if grown in a warm, sheltered position.

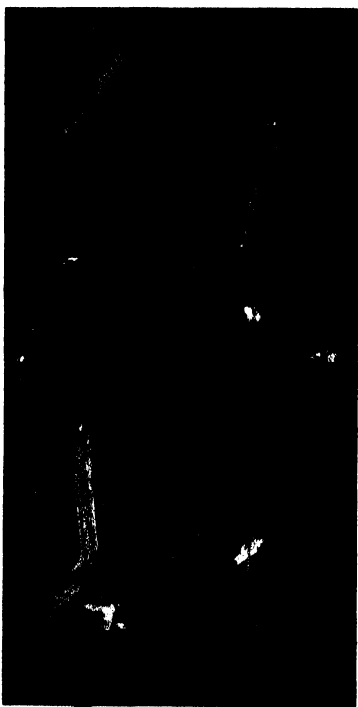
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Water freely during the growing season, applying a balanced liquid fertilizer monthly; water more sparingly in winter. Stand containers outdoors in summer. Top-dress or pot on in spring. The long, flexible stems require support. Outdoors, grow in fertile, moist but well-drained soil in a warm, sheltered site in full sun. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Red spider mites and whiteflies may be a problem, particularly under glass.

*C. buxifolia* ■ syn. *C. dependens* (Sacred flower of the Incas). Upright, often semi-scandent shrub with elliptic to lance-shaped, lobed, softly hairy, mid-green leaves, 2.5–5cm (1–2in) long. In spring, bears terminal corymbs of long-tubed, pendent flowers, 6–7cm (2½–3in) long, the tubes pink to purple, the petal lobes red. ‡ 2–5m (6–15ft), ↔ 1.5–2.5m (5–8ft). Peru, Bolivia, N. Chile. \*

*C. dependens* see *C. buxifolia*.



*Cantua buxifolia*

## CAPSICUM

## Chilli pepper, Pepper

## SOLANACEAE

Genus of up to 10 species of erect or spreading, many-branched annuals and perennials from wasteland and lowland forest margins in tropical North and South America. They have entire leaves, which are alternate or borne in groups of 2 or 3 at the nodes. Tubular or bell-shaped, yellow, white, green-white, or purple-tinged flowers are produced singly or in clusters of 2 or 3 from the leaf axils. Capsicums are mostly cultivated as crop plants for their shiny, chambered, many-seeded, variably shaped fruits, which are green at first, often ripening to yellow, orange, or red. The genus includes bell peppers (pimientos) as well as hot chilli peppers. In frost-prone areas, capsicums with brightly coloured fruit are also used ornamentally as houseplants, for window-boxes and patio containers, or for a warm greenhouse or conservatory.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer every 10 days until fruit begins to colour. Provide tall cultivars with support. In summer, maintain high humidity and temperatures of 21–25°C (70–77°F). Mist flowers daily with water to encourage fruiting. Outdoors, grow in fertile, well-drained soil enriched with garden compost or manure in full sun. Pinch out the growing tips of young plants to promote branching.

• **PROPAGATION** Sow seed at 21°C (70°F) in late winter.

• **PESTS AND DISEASES** Susceptible to viruses, fungal wilt, anthracnose, and powdery mildew. Red spider mites and aphids may be a problem under glass.

*C. annuum* var. *acuminatum* see *C. annuum*.

*C. annuum*, syn. *C. annuum* var. *acuminatum* (Chilli pepper, Paprika). Annual or short-lived perennial with alternate, lance-shaped to ovate, mid-green leaves, to 12cm (5in) long. Solitary, bell-shaped, white or yellow flowers, to 1.5cm (½in) across, are produced from the leaf axils in summer, or all year round, depending on the climate. The pendent, narrowly conical, twisted fruit, to 15cm (6in) long, are used fresh or dried. ‡ 1.5m (5ft), ↔ 50cm (20in). Tropical North and South America. ♠ (min. 4°C/39°F). Many cultivars are available. They are divided into 5 main groups, varying in shape, colour, and flavour. **Cerasiforme Group** (Cherry pepper) cultivars produce small, hot-flavoured, spherical fruit, 3–6cm (1¼–2½in) long, in shades of yellow, red, or purple. **Conioides Group** (Cone pepper) cultivars bear ornamental, hot-tasting, conical, erect fruit, to 5cm (2in) long, which are white or green at first, turning scarlet, crimson, or purple. **Fasciculatum Group** (Red cone pepper) cultivars bear hot-flavoured, clustered, upright, conical, bright red fruit, to 7cm (3in) long. **Grossum Group** (Bell pepper) cultivars include the salad peppers; they bear sweet, irregularly ovoid-bell-shaped

green fruit, 10–12cm (4–5in) long, which ripen to yellow, crimson, or deep purple. **Longum Group** (Cayenne pepper, Chilli pepper) cultivars bear very hot-tasting, pendent, tapered fruit, 15–30cm (6–12in) long, in shades from red to black-purple; some also produce attractively variegated leaves.

## CARAGANA

## LEGUMINOSAE/PAPILIONACEAE

Genus of about 80 species of deciduous, often spiny shrubs or small trees found on dry soils in exposed sites from E. Europe to China. They are cultivated for their attractive leaves, which are alternate, pinnate, and often clustered, and their solitary or clustered, pea-like flowers, which are usually yellow, but sometimes white or pink. Flowers are followed in autumn by slender brown pods, 2–6cm (¾–2½in) long. Grow in a dry shrub border or use as windbreaks.

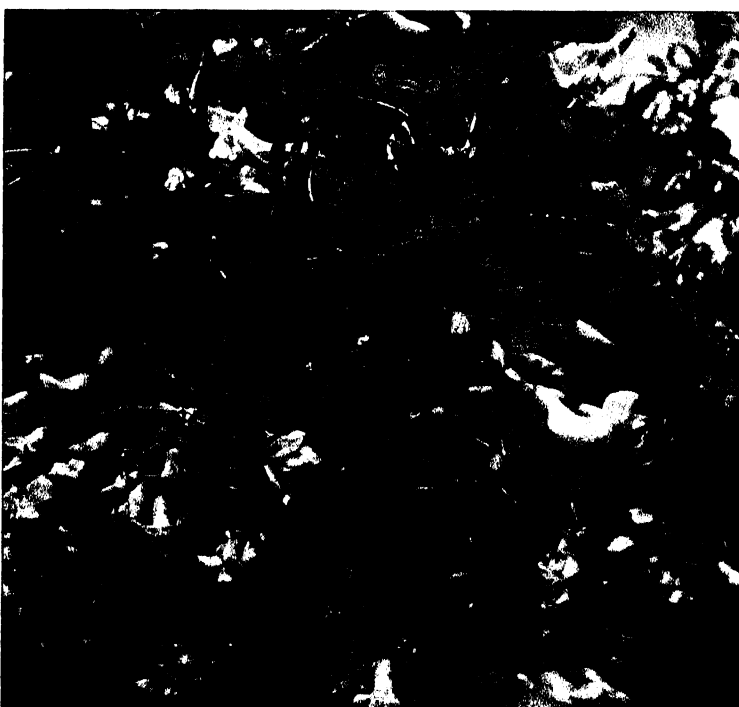
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun. Will thrive even in poor, dry soils in cold and exposed positions. Pruning group 1.

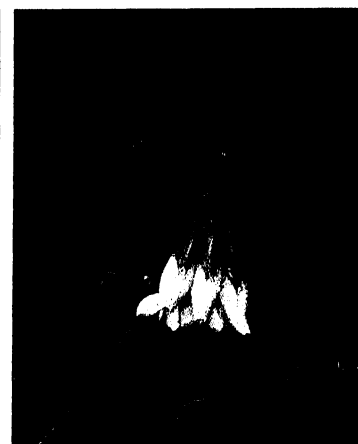
• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe; pre-soak spring-sown seed in warm water. Root greenwood cuttings in late spring. Graft in late winter; *C. arborescens* 'Pendula' is usually top-grafted.

• **PESTS AND DISEASES** Trouble free.

*C. arborescens* (Pea tree). Erect, thorny shrub with pinnate, light green leaves, to 8cm (3in) long, composed of up to 12 elliptic leaflets. Pale yellow flowers, to 2cm (¾in) long, are borne singly or in small clusters in late spring. ‡ 6m (20ft), ↔ 4m (12ft). Russia (Siberia), N. China. \*\*\*. 'Lorbergii' ♀ has elegant leaves, with 10–14 long, linear-lance-shaped leaflets, and small flowers, to 1cm (½in) long. 'Nana' ■ has a dwarf, congested habit and twisted shoots; ‡ 1.5m (5ft), ↔ 1m (3ft). 'Pendula' has stiff, pendent shoots; ‡ 1.5m (5ft), ↔ 1.2m (4ft).



*Caragana arborescens* 'Nana'



*Caragana brevispina*

*C. brevispina* ■ Spiny shrub with long, arching shoots, pink-tinged when young. Pinnate, softly hairy, mid-green leaves, to 10cm (4in) long, have up to 10 oblong to lance-shaped leaflets. In spring, produces clusters of 3 or 4 yellowish green flowers, to 2cm (¾in) long, becoming reddish yellow with age. ‡ 2–3m (6–10ft), ↔ 4m (12ft). N.W. Himalayas. \*\*\*

*C. frutex* (Russian pea shrub). Shrub with upright, slender shoots and pinnate, dark green leaves, to 2.5cm (1in) long, each comprising 2 pairs of stalkless, ovate leaflets. Bright yellow flowers, to 2.5cm (1in) long, are produced singly from the leaf axils in late spring and early summer. ‡ 3m (10ft), ↔ 2.5m (8ft). S. former USSR, C. Asia. \*\*\*

*C. pygmaea*. Low-growing, spiny shrub with arching or prostrate shoots and pinnate, mid-green leaves, 2–3cm (¾–1¼in) long, comprising 2 pairs of inversely lance-shaped leaflets. From late spring to summer, bears pendent yellow flowers, to 2.5cm (1in) long, singly along the shoots. ‡ 1m (3ft), ↔ 1.5m (5ft). Caucasus to E. Russia (Siberia) and China (Tibet). \*\*\*



**CARALLUMA** syn. FREREA

ASCLEPIADACEAE

Genus of 80–100 species of tufted or clump-forming, often stoloniferous, perennial succulents from dry areas of the Mediterranean, Africa, Socotra, the Arabian Peninsula, India, and Burma. They have succulent stems, producing leaves that are reduced to scales in most species. The open bell-shaped, 5-lobed, axillary or terminal flowers, solitary or in umbels, usually exude a pungent odour. The fruits are cylindrical, greyish green follicles containing tufted seeds. In frost-prone areas, grow in a warm greenhouse; in warm, dry climates, use outdoors in a semi-desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in bright filtered light in summer and full light in winter. When in growth, water moderately and apply a low-nitrogen fertilizer monthly; water very sparingly in winter to avoid desiccation. Outdoors, grow in sharply drained, humus-rich, sandy soil in partial shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in late spring or early summer. Take stem cuttings in spring, allow calluses to form, then root in partial shade.
- **PESTS AND DISEASES** Prone to scale insects, mealybugs, root mealybugs, and black rot.

*C. albocastanea* see *Orbeopsis albocastanea*.

*C. burchardii*. Cushion-forming, leafless succulent with 4-angled, grey-green to bluish green stems with deep marginal teeth. Terminal umbels of up to 6 olive-green or reddish brown flowers, each to 1.5cm (½in) across, with white-hairy corolla lobes, are borne in summer. Canary Islands, Morocco. ↑ to 20cm (8in), ↔ to 18cm (7in). ☼ (min. 10°C/50°F)

*C. dummeri* see *Pachycymbium dummeri*.

*C. europaea*, syn. *Stapelia europaea*. Variable, leafless succulent with 4-angled, blunt-margined, grey-green stems, often spotted pale red. In summer, bears terminal umbels of 10 or more greenish yellow or reddish brown flowers, to 1.5cm (½in) across, the pointed yellow corolla lobes with reddish brown tips and purple stripes.



*Caralluma joannis*

↑ 13cm (5in), ↔ to 20cm (8in). S. Italy, Spain, N. Africa. ☼ (min. 10°C/50°F)

*C. frerei*, syn. *Frerea indica*. Succulent with rounded, few-branched, prostrate or pendent, fleshy, pale green stems. The persistent, opposite, fleshy leaves, 2–3cm (¾–1¼in) long, are oblong or ovoid. In summer, bears solitary or paired, terminal, red-brown or maroon flowers, 2cm (¾in) across, with yellow- or white-marked lobes. ↑↔ to 12cm (5in). E. India. ☼ (min. 10°C/50°F)

*C. joannis* ■ Leafless succulent with erect or pendent, square to rounded, minutely toothed, purple-green stems. In summer, bears umbels of 2–10 flowers, each to 2.5cm (1in) across, with red-spotted, olive-yellow tubes and velvety purple lobes tipped with fine hairs. ↑ 10cm (4in) or more, ↔ 13cm (5in). Morocco. ☼ (min. 10°C/50°F)

*C. lutea* see *Orbeopsis lutea*.

*C. pillansii* see *Quaqua pillansii*.

▷ **Caraway** see *Carum*, *C. carvi*

**CARDAMINE** syn. DENTARIA  
Bittercress

BRASSICACEAE/CRUCIFERAE

Genus of about 150 species of annuals and perennials from cool, shady, damp habitats almost worldwide, but chiefly in the N. hemisphere. Some of the annuals are invasive garden weeds. The rootstock is fibrous or has scaly rhizomes. Cardamines have simple, pinnate or palmate leaves and unbranched stems bearing panicles or racemes (some short and congested) of 4-petalled, white, yellow, pink, lilac, or reddish violet flowers. Grow in a border, a rock garden, or in woodland.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist soil in full or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide in spring or after flowering. Root leaf-tip cuttings of *C. pratensis* and its cultivars in midsummer; they may also form bulbils or plantlets in the axils of the leaflets.
- **PESTS AND DISEASES** Flea beetles and aphids may damage the leaves.

*C. asarifolia*. Stoloniferous, clump-forming perennial producing prostrate, rooting stems and simple, kidney-shaped, mid-green leaves, 10–15cm (4–6in) long. Compact racemes of white flowers, each 7–10mm (¼–½in) across,



*Cardamine enneaphyllos*



*Cardamine pentaphyllos*

with violet anthers, are borne in late spring and early summer. ↑ 30–45cm (12–18in), ↔ to 60cm (24in). S. France, N. Italy. \*\*\*

*C. enneaphyllos* ■ syn. *Dentaria enneaphyllos*. Spreading, rhizomatous perennial producing whorls of 2- to 4-ternate or 3- to 5-palmate, toothed, mid-green leaves, 10–12cm (4–5in) long, composed of ovate to lance-shaped leaflets. In late spring, bears lax panicles of pendent, white or yellowish white flowers, 2cm (¾in) or more across. ↑ 20–40cm (8–16in), ↔ 45–60cm (18–24in). W. Carpathians and E. Alps to S. Italy, N.W. Balkans. \*\*\*

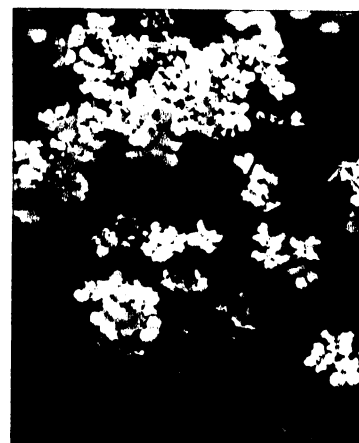
*C. latifolia* see *C. raphanifolia*.

*C. pentaphyllos* ■ syn. *Dentaria digitata*, *D. pentaphyllos*. Clump-forming, rhizomatous perennial with toothed, 5-palmate, mid-green leaves, 10–12cm (4–5in) long, composed of lance-shaped leaflets. Loose racemes of white, pale purple, or lilac flowers, to 2.5cm (1in) across, are borne in late spring and early summer. ↑ 30–50cm (12–20in), ↔ 30cm (12in). Pyrenees to S. Germany and N.W. Balkans. \*\*\*

*C. pratensis* (Cuckoo flower, Lady's smock). Variable perennial with short



*Cardamine pratensis* 'Flore Pleno'



*Cardamine trifolia*

rhizomes and rosettes of pinnate, grey-green to glossy, dark green leaves, to 15cm (6in) long, composed of 2–8 pairs of ovate to rounded or kidney-shaped leaflets, often producing plantlets. In late spring, bears panicles of purple, lilac, or white flowers, 1–3cm (½–1¼in) across. ↑ 30–45cm (12–18in), ↔ 30cm (12in). Europe, N. Asia, North America. \*\*\*. 'Edith' has pink buds, opening to double flowers that fade to white; ↑ 20cm (8in). 'Flore Pleno' ■ ♀ forms compact clumps and freely produces plantlets in the basal leaf clusters; it has double, lilac-pink flowers; ↑ 20cm (8in).

*C. raphanifolia*, syn. *C. latifolia*. Rhizomatous, spreading perennial with pinnate, dark green leaves, 10–15cm (4–6in) long, composed of 1–6 pairs of ovate to rounded, toothed leaflets. Panicles of lilac, reddish violet, or white flowers, 1–2cm (½–¾in) across, are borne in early summer. ↑ 45–80cm (18–32in), ↔ 60cm (24in). Mountains of S. Europe. \*\*\*

*C. trifolia* ■ (Trifoliate bittercress). Creeping perennial with short rhizomes and 3-palmate, dark green leaves, 2–3cm (¾–1¼in) long, with 3 rounded to diamond-shaped leaflets, red-tinted beneath. In late spring, produces short, congested racemes of open cup-shaped, yellow-anthered, white, occasionally pink flowers, 1–2cm (½–¾in) across. ↑ to 15cm (6in), ↔ to 30cm (12in). Mountainous, wooded areas in C. and S. Europe. \*\*\*

- ▷ **Cardamom** see *Elettaria cardamomum*
- ▷ **Cardinal climber** see *Ipomoea x multifida*
- ▷ **Cardinal flower** see *Lobelia cardinalis*, *Sinningia cardinalis*
- ▷ **Blue** see *Lobelia siphilitica*
- ▷ **Cardinal's guard** see *Pachystachys coccinea*

**CARDIOCRINUM**

Giant lily

LILIACEAE

Genus of 3 species of large, bulbous, monocarpic perennials found in scrub and forest in the Himalayas, Japan, and China. They are cultivated for their spectacular, lily-like, trumpet-shaped flowers, borne in summer, and their attractive, heart-shaped, veined leaves. The flowers are followed by large, decorative, upright, oblong-ovoid, pale brown seed capsules, 5–6cm (2–2½in) long. The bulbs take several years to

*Cardiocrinum giganteum*

reach maturity and die after flowering, leaving numerous offsets. Grow in woodland, or in a shaded, sheltered border.

• **HARDINESS** Fully to frost hardy; new growth that develops in early spring may need protection in frost-prone areas.

• **CULTIVATION** Plant bulbs just below the soil surface in autumn, in a cool, partially shaded, sheltered site in deep, fertile, humus-rich, moist but well-drained soil. Water freely in dry periods, but do not allow to become waterlogged; giant lilies are intolerant of hot or dry conditions. Apply a balanced liquid fertilizer 2 or 3 times when in growth, to encourage the development of offsets. Top-dress annually with leaf mould. Provide a deep winter mulch.

• **PROPAGATION** Sow seed in deep trays in a cool, shaded bulb frame as soon as ripe. Remove offsets after flowering. Offsets may take 4–5 years to flower; seed-raised plants take 7 years or more.

• **PESTS AND DISEASES** Prone to lily viruses and slug damage.

*C. cordatum*, syn. *Lilium cordatum*. Bulbous perennial with broad, heart-shaped, dark green leaves, to 30cm

*Cardiocrinum giganteum* var. *yunnanense*

(12in) long, stained maroon when young, borne on the lower part of the stems. In summer, stout, hollow stems bear congested, terminal racemes of 4–10, occasionally up to 20, trumpet-shaped, scented, creamy white flowers, to 15cm (6in) long, with purple marks on the lower tepals. † 1.2–2m (4–6ft), ↔ 30cm (12in). Japan, Russia (Sakhalin). \*\*\*

*C. giganteum* ♀ syn. *Lilium giganteum*. Bulbous perennial with basal rosettes of large, broadly ovate, glossy, dark green leaves, to 45cm (18in) long. Smaller leaves are produced on the tall, stout flower stems, which in summer bear racemes of up to 20 large, nodding, trumpet-shaped, strongly scented white flowers, 15–20cm (6–8in) long, with maroon stripes inside. † 1.5–4m (5–12ft), ↔ 45cm (18in). Himalayas, N.W. Burma, S.W. China. \*\*\*

var. *yunnanense* ♀ has bronze-purple stems, leaves, and young shoots; the flowers are often tinted green; W. and C. China.

## CARDIOSPERMUM

Heart seed

SAPINDACEAE

Genus of 14 species of evergreen, perennial, woody-stemmed tendril climbers from forest margins in tropical Africa, India, and North and South America. They are cultivated for their attractive, fern-like foliage and decorative, swollen seed pods. The alternate, 2-ternate leaves have deeply toothed or pinnatifid leaflets. Small flowers, with 4 unequal petals, are borne in stalked, axillary corymbs, each with a pair of opposite tendrils. In frost-prone areas, grow outdoors as half-hardy annuals, or in a temperate greenhouse. In warmer regions, train over a tall tree stump, archway, pergola, or arbour.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. In the growing season, water freely and apply a liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Provide support. In early spring, thin out congested growth of plants grown as perennials.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Aphids and whiteflies may be a problem under glass.

*C. balicacabum* (Balloon vine, Heart pea, Love-in-a-puff, Winter cherry). Slender, woody-based, evergreen tendril climber, normally grown as an annual or biennial. Leaves 15–20cm (6–8in) long are divided into 7–9 oblong-ovate, deeply toothed to pinnatifid, bright green leaflets. Tiny, greenish white flowers, 5mm (¼in) across, are borne from summer to autumn. They are followed by ovoid, membranous, 3-angled, balloon-like capsules, 2–3cm (¾–1¼in) long, which mature from light green to fawn. † 3–4m (10–12ft). Tropical Africa, India, North and South America. ☉ (min. 7–10°C/45–50°F)

▷ **Cardoon** see *Cynara cardunculus*

## CAREX

Sedge

CYPERACEAE

Vast genus of 1,500 or more species of deciduous and evergreen, rhizomatous or tufted perennials from temperate and arctic zones, as well as high altitudes in tropical regions. Most species occur in bog, moorland, or damp woodland, or by water. Sedges are mainly cultivated for their variegated or colourful foliage, although some species have attractive inflorescences. The generally grass-like leaves are usually linear, 3-ranked, and with leaf bases sheathing the triangular stems, which are solid and without nodes. Sedges are mainly monoecious, occasionally dioecious, and bear panicles of small, grass-like flowers in short spikes. There are sedges for nearly every site in the garden.

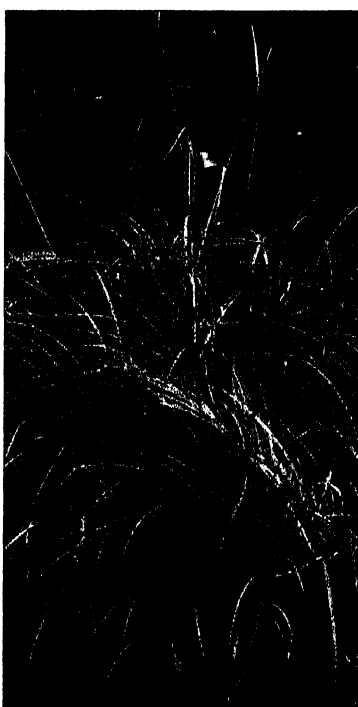
• **HARDINESS** Most sedges originating from New Zealand and tropical areas, as well as *C. conica*, *C. morrowii*, and their cultivars, and *C. 'Frosted Curls'*, are not reliably hardy where temperatures fall below -7°C (19°F) for long periods. All others described here are fully hardy.

• **CULTIVATION** Sedges have varying cultivation requirements. These are grouped as follows:

1. Most soils in sun or partial shade. Avoid extremes of wet or dry.
2. Fertile, moist but well-drained soil in sun or partial shade.
3. Fertile, moist or wet soil in sun or partial shade.
4. Moist but well-drained, alkaline soil in sun or partial shade.
5. Neutral to acid, lime-free soil in sun or partial shade.

In summer, cut out any dead leaves on evergreen species.

• **PROPAGATION** Sow seed of New Zealand species at 10–13°C (50–55°F) in early spring; expose those from Europe and North America to winter cold in a cold frame. Divide between mid-spring and early summer.

*Carex elata* 'Aurea'

• **PESTS AND DISEASES** Aphids sometimes infest the stem bases.

*C. berggrenii*. Miniature, evergreen perennial with short rhizomes, spreading slowly and forming loose tufts of short, blunt, blue-green, metallic-grey, or reddish brown leaves, to 5cm (2in) long. Small brown flower spikes, to 6mm (¼in) long, are borne on stems to 10cm (4in) long in midsummer. Cultivation group 2. † 10cm (4in), ↔ 15cm (6in). New Zealand. \*\*

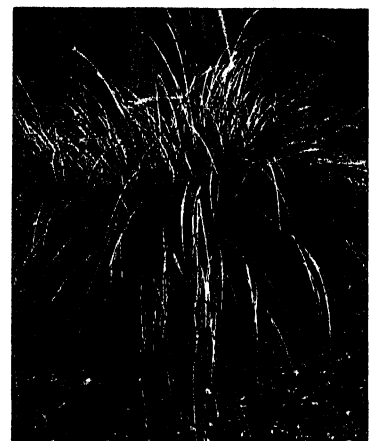
*C. buehneri* (Leatherleaf sedge). Densely tufted, evergreen perennial of symmetrical, arching habit, with short rhizomes and orange-brown leaves, to 45cm (18in) long, curled at the tips. In mid- and late summer, produces brown flower spikes, 0.5–3cm (¼–1¼in) long, on lax stems, to 50cm (20in) long. Cultivation group 1. † 50–75cm (20–30in), ↔ 90cm (36in). New Zealand. \*\*

*C. comans*. Densely tufted, evergreen perennial forming tussocks of hair-like, pale yellow-green, pale grey, or reddish brown leaves, 25cm (10in) or more long. Inconspicuous brown flower spikes, 0.5–2.5cm (¼–1in) long, are produced on stems to 25cm (10in) long in mid- and late summer. Variants with warm brown foliage are commonly available. Cultivation group 1. † 25–35cm (10–14in), ↔ 75cm (30in). New Zealand. \*\*\* (borderline)

*C. conica* 'Hime-kan-suge' see *C. conica* 'Snowline'.

*C. conica* 'Snowline', syn. *C. conica* 'Hime-kan-suge'. Small, tufted, evergreen perennial with dark green, white-margined leaves, to 15cm (6in) long, forming dense, low, arching tufts. Small, dark brown-purple flower spikes, 1–2.5cm (½–1in) long, are produced on stems to 15cm (6in) long, in early summer. Cultivation group 2. † 15cm (6in), ↔ 25cm (10in). \*\*

*C. elata* 'Aurea' ♀ syn. *C. stricta* 'Aurea' (Bowles' golden sedge). Deciduous perennial with short rhizomes, forming a dense clump of gently arching, rich yellow leaves, 40–60cm (16–24in) long, narrowly margined in green. In late spring and early summer, stems 50cm (20in) or more long bear brown male flower spikes, to 2.5cm (1in) long, above 2 or 3 stalkless green female spikes, 1.5–4cm (½–1½in) long. Cultivation group 3. † to 70cm (28in), ↔ 45cm (18in). \*\*\*

*Carex flagellifera*

*Carex grayi*

***C. firma* 'Variegata'**. Small, densely tufted, evergreen perennial with short rhizomes and short, stiff, pointed, shiny, blue-green leaves, to 10cm (4in) long, with bold, creamy yellow margins. In early summer, bears tiny, dark brown flower spikes, 5–10mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) long, on stems 7–10cm (3–4in) long. Cultivation group 4.  $\updownarrow$  10cm (4in). \*\*\*

***C. flagellifera***  $\square$  Densely tufted, evergreen perennial with short rhizomes. It is similar to *C. comans*, but taller and with broader green or reddish brown leaves, 40–70cm (16–28in) long. Stems bearing light brown flower spikes, 0.5–2.5cm ( $\frac{1}{4}$ –1in) long, elongate to over 1m (3ft) as the red-brown fruit mature. Variants in cultivation often have red-brown foliage. Cultivation group 1.  $\updownarrow$  1.1m (3½ft),  $\leftrightarrow$  90cm (36in). New Zealand. \*\*\* (borderline)

***C. 'Frosted Curls'***. Densely tufted, evergreen perennial with short rhizomes and arching, narrow, shiny, pale silvery green leaves, to 60cm (24in) long, curling at the tips. From early to late summer, bears small, inconspicuous, cylindrical green flower spikes, 5–10mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) long, on stems 45–60cm

*Carex pendula*

(18–24in) long. Cultivation group 1.  $\updownarrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). \*\*

***C. grayi***  $\square$  (Mace sedge). Deciduous, densely tufted perennial, with short rhizomes, forming strong, erect clumps of broad, rich green leaves, to 60cm (24in) long. Stems 60cm (24in) long bear mid-green flower spikes, 1.5–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, from early to late summer, followed by star-like, pale green seed heads; these resemble spiked clubs and are good for flower arranging. Cultivation group 3.  $\updownarrow$  to 75cm (30in),  $\leftrightarrow$  60cm (24in). North America. \*\*\*

***C. hachijoensis* 'Evergold'**  $\square$   $\nabla$  syn. *C. oshimensis* 'Evergold'. Tufted, evergreen perennial, with short rhizomes, forming a low mound of dark green leaves, to 25cm (10in) long, each with

*Carex hachijoensis* 'Evergold'*Carex siderosticha* 'Variegata'

a broad; creamy yellow central stripe. In mid- and late spring, bears brown flower spikes, 1–3cm ( $\frac{1}{2}$ – $\frac{1}{4}$ in) long, on stems to 15cm (6in) long. Often confused with *C. morrowii*. Cultivation group 2.  $\updownarrow$  30cm (12in),  $\leftrightarrow$  35cm (14in). \*\*\*

***C. morrowii* 'Fisher'**, syn. *C. morrowii* 'Fisher's Form'. Clump-forming, evergreen perennial with broad, stiff, shiny, conspicuously cream-striped and cream-margined, mid-green leaves, 40cm (16in) long. Panicles of green and brown flower spikes, 2–5cm ( $\frac{3}{4}$ –2in) long, are borne on stems 45cm (18in) long, in late spring. Cultivation group 2.  $\updownarrow$  45–50cm (18–20in),  $\leftrightarrow$  30cm (12in). \*\*

***C. morrowii* 'Fisher's Form'** see *C. morrowii* 'Fisher'.

***C. muskingumensis*** (Palm branch sedge). Loosely tufted, deciduous, gently spreading perennial with erect stems that bear horizontally held, bright green leaves, to 75cm (30in) long. In early and midsummer, produces golden brown flower spikes, 1.5–2.5cm ( $\frac{1}{2}$ –1in) long, on stems 60–75cm (24–30in) long. Cultivation group 3.  $\updownarrow$  75cm (28in),  $\leftrightarrow$  45cm (18in). North America. \*\*\*

***C. oshimensis* 'Evergold'** see *C. hachijoensis* 'Evergold'.

***C. pendula***  $\square$  (Drooping sedge, Pendulous sedge, Weeping sedge). Tufted, evergreen perennial forming dense clumps of relatively wide, keeled, shiny, mid-green leaves, to 90cm (36in) long, and blue-green beneath. In late spring and early summer, arching stems, to 1.4m (4½ft) long, bear cylindrical, catkin-like, dark brown flower spikes, to 15cm (6in) long; erect at first, they become pendent with age. Cultivation group 3.  $\updownarrow$  to 1.4m (4½ft),  $\leftrightarrow$  to 1.5m (5ft). Europe, N. Africa. \*\*\*

***C. petriei***. Densely tufted, evergreen perennial with short rhizomes and erect or arching, pale pinkish brown leaves, to 30cm (12in) long, with curled tips. In early and midsummer, bears stubby, red-brown flower spikes, 1–3cm ( $\frac{1}{2}$ – $\frac{1}{4}$ in) long, on stems to 25cm (10in) long. Cultivation group 1.  $\updownarrow$  25cm (10in),  $\leftrightarrow$  15cm (6in). New Zealand. \*\*

***C. pilulifera* 'Tinney's Princess'**. Deciduous perennial, similar to but more delicate than *C. hachijoensis* 'Evergold'. The leaves, to 10cm (4in) long, have broad, creamy yellow central stripes and narrow, dark green margins. In mid-spring, stems to 15cm (6in) long each bear a single, terminal, cylindrical brown male spike, 2–4cm ( $\frac{3}{4}$ –1½in)

long, and several red-brown female spikes, 2–4cm ( $\frac{3}{4}$ –1½in) long, clustered just below the male. Cultivation group 5.  $\updownarrow$  15cm (6in). \*\*\*

***C. saxatilis* 'Ski Run'** (Variegated russet sedge). Loosely tufted, deciduous, strongly rhizomatous perennial, slowly forming a low carpet of curved, glossy, mid-green leaves, to 10cm (4in) long, each with a central white stripe. In late spring, flowering stems, to 10cm (4in) long, each bear a single, terminal, dark brown male spike, 0.5–1.5cm ( $\frac{1}{4}$ –½in) long, above purple-brown female spikes, 0.5–2cm ( $\frac{1}{4}$ –¾in) long. Cultivation group 3.  $\updownarrow$  to 15cm (6in),  $\leftrightarrow$  30cm (12in) or more. \*\*\*

***C. siderosticha* 'Variegata'**  $\square$  Slowly spreading, deciduous, rhizomatous perennial, forming clumps of relatively broad, linear-lance-shaped, pale green leaves, to 25cm (10in) long, margined and narrowly striped white, and pink-flushed at the bases. Slender, pale brown flower spikes, 3–5mm ( $\frac{1}{8}$ –¼in) long, open on stems to 30cm (12in) long, in late spring. Cultivation group 3.  $\updownarrow$  30cm (12in),  $\leftrightarrow$  40cm (16in) or more. \*\*\*

***C. stricta* 'Aurea'** see *C. elata* 'Aurea'.

***C. testacea***. Densely tufted, evergreen perennial with arching leaves, to 60cm (24in) long, generally pale olive-green, but orange-brown on the surfaces that receive full light. Bears cylindrical, pale to dark brown flower spikes, to 2.5cm (1in) long, on stems 50–60cm (20–24in) long, in midsummer; stems later elongate in fruit to 1.5m (5ft). Cultivation group 1.  $\updownarrow$  to 1.5m (5ft),  $\leftrightarrow$  60cm (24in). New Zealand. \*\*

▷ **Caricature plant** see *Graptophyllum pictum*

## CARISSA

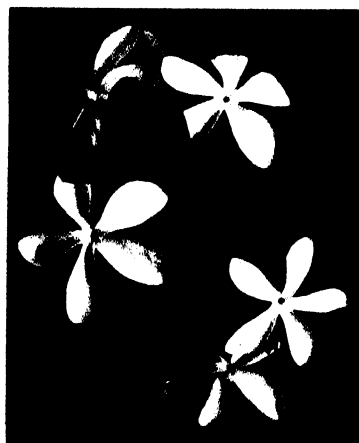
APOCYNACEAE

Genus of about 20 species of evergreen, often spiny shrubs and small trees from dry, open woodland in tropical and subtropical Africa and Asia. The leaves are opposite, entire, and leathery. The tubular flowers, with 5 spreading petal lobes, are borne singly or in terminal or axillary cymes, and are followed by red or black, fleshy fruits. Although the flesh of these is edible and used for jam-making, the seeds are poisonous. In frost-prone regions, grow in a cool greenhouse or conservatory. In frost-free areas, grow outdoors in a shrub border, or as hedging.

*Carissa macrocarpa*

- **HARDINESS** Mostly frost tender; *C. macrocarpa* and its cultivars may survive short spells around 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in moderately fertile, well-drained soil in full sun; partial shade is tolerated. Pruning group 8; plants under glass may need restrictive pruning. Trim hedges after flowering.
- **PROPAGATION** Sow seed at 15–18°C (59–64°F) as soon as ripe or in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*C. grandiflora* see *C. macrocarpa*.  
*C. macrocarpa* ■ syn. *C. grandiflora* (Natal plum). Many-branched, spiny shrub with ovate, rich green leaves, to 7cm (3in) long. Fragrant, waxy, white, jasmine-like flowers, 5cm (2in) wide, are borne in terminal or axillary cymes, to 10cm (4in) long, in late spring; they are followed by plum-like, ovoid-ellipsoid, red to purple-black fruit, 5cm (2in) long, ↓ 2–3m (6–10ft) or more, ↔ 3m (10ft) or more. South Africa (KwaZulu/Natal). ☼ (min. 5°C/41°F). Various cultivars have been selected, including 'Fancy', which is erect and very free-flowering, with glossy, dark green leaves and orange-red fruit, and 'Tuttlei' ■ which is dwarf, semi-prostrate, and dense, and useful as ground cover or for containers; ↓ 1m (3ft), ↔ to 2m (6ft).  
*C. spectabilis* see *Acokanthera oblongifolia*.

*Carissa macrocarpa* 'Tuttlei'

## CARLINA

*Carlina thistle*

ASTERACEAE/COMPOSITAE

Genus of about 28 species of annuals and perennials occurring in poor soils in Europe and Asia. The leaves form basal rosettes and are spiny and entire to pinnatisect. Large, solitary or cyme-like, occasionally stemless flowerheads are borne in summer; these have shiny, papery bracts and, in most species, are good for drying. The smaller species are suitable for a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor, well-drained soil in full sun; soil must not become waterlogged or the stems will rot. The compact, stemless habit of *C. acaulis* is lost in fertile soils.
- **PROPAGATION** Sow seed in autumn *in situ*, or in containers in a cold frame.
- **PESTS AND DISEASES** Trouble free.

*C. acaulis* (Stemless Carlina thistle). Clump-forming, short-lived perennial or monocarpic biennial with rosetted, pinnatifid to pinnatisect, elliptic-oblong, spiny-margined leaves, to 30cm (12in) long. Stemless flowerheads, to 10cm (4in) across, with silvery, off-white (sometimes pink-flushed) bracts surrounding a pale brown central disc, are borne in the centre of the rosettes in mid- and late summer. ↓ to 10cm (4in), ↔ to 25cm (10in). Alpine pastures of S. and E. Europe. \*\*\*

## CARLUDOVICA

CYCLANTHACEAE

Genus of 3 species of short-stemmed or stemless, palm-like perennials from woodland in tropical North and South America. The very long-stalked, rounded leaves are divided into several fan-like segments, each one deeply and narrowly lobed. Insignificant, fleshy, unisexual flowers are borne in cone-like spadices produced from the leaf axils in summer; they develop into showy red berries. In frost-prone climates, grow in a temperate or warm greenhouse, or plant outdoors in summer to lend a tropical effect to summer bedding. In tropical and subtropical regions, use in shady sites, especially beneath trees, where the handsome foliage may be displayed to best advantage. The large leaves are used to make panama hats.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in full light with shade from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained soil, ideally with some midday shade or in partial shade.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Divide in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. palmata* ■\* (Panama hat palm). Stemless, palm-like perennial with erect or suberect leaf-stalks, 1.5–3m (5–10ft) tall, and rounded leaf-blades, 40–80cm (16–32in) long. The leaf-blades have 3–5 segments, each with several rich green lobes, which are pendent at the

*Carludovica palmata*

tips. In summer, bears cylindrical to ellipsoid spadices enclosing yellowish to brownish green spadices that comprise groups of fleshy male flowers around individual female flowers. The spadices mature in autumn to about 15cm (6in) long, before they separate to disclose the bright red fruit. ↓ 2–3m (6–10ft), ↔ 1.5–3m (5–10ft). Central America to Bolivia. ☼ (min. 13–15°C/55–59°F)

## CARMICHAELIA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 40 species of deciduous shrubs, occasionally small trees, from New Zealand and Lord Howe Island. They are found in diverse habitats from coastal to mountain areas, including sand dunes, swamps, grassland, rocky places, woodland margins, streambanks, and lakesides. The seedlings have pinnate leaves, but mature plants are leafless or lose their leaves quickly. They are grown for their small, but usually profuse, often fragrant, pea-like flowers, borne in summer, sometimes singly, but mostly in dense, short racemes of 5–15, on cylindrical or flattened green shoots. They are attractive and unusual shrubs for a border or, in cooler areas, against a warm wall. Dwarf species, such as *C. enysii*, are suitable for a rock garden. In frost-prone areas, grow tender species in a cool greenhouse.

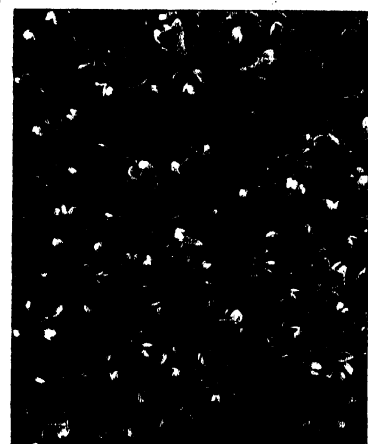
- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in humus-rich, well-drained but not too dry soil, in sun or partial shade; *C. glabrata* requires acid soil. Shelter from cold winds, either against a wall or among other shrubs. Pruning group 1.
- **PROPAGATION** Sow seed in a cold frame in autumn; or sow seed, scarified or pre-soaked in hot water, in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*C. enysii* ■ Dwarf, many-branched shrub, leafless when mature, with flattened, finely and longitudinally

grooved shoots, to 2mm (1/16in) wide, which form a compact mound. Fragrant purple flowers, to 5mm (1/4in) long, with dark purple veins, are borne singly or in 2- to 5-flowered racemes, to 6cm (2 1/2in) long, in midsummer. Often confused with the taller *C. orbiculata*, which grows to 10cm (4in) tall, and has wider stems. ↓ 5cm (2in), ↔ 5–30cm (2–12in). New Zealand (South Island). \*\*

*C. glabrata*. Bushy, spreading shrub, leafy only when young, with flattened, pendent shoots, to 4mm (1/8in) across. Small, fragrant, purple-and-white flowers, to 5mm (1/4in) long, are borne in dense racemes, to 25cm (10in) long, in summer. ↓ 2m (6ft), ↔ 2.5m (8ft). New Zealand (South Island). \*\*  
*C. odorata*. Graceful shrub, leafless or nearly so when mature, with slender, flattened, pendent shoots, to 3mm (1/8in) across. Fragrant, lilac-pink flowers, to 2cm (3/4in) long, are borne in dense, erect racemes, 3–5cm (1 1/4–2in) long, in summer. ↓ 3m (10ft). New Zealand (North Island). \*\*

*C. williamsii* ♀ Upright shrub or small tree, leafless or nearly so when mature, with broad, flattened shoots, to 1.5cm (1/2in) across. Relatively large, fragrant

*Carmichaelia enysii*

flowers, 2.5cm (1in) long, creamy yellow, flushed with green and purple, are borne in racemes, 3–5cm (1¼–2in) long, in early and mid-spring. ‡ 3m (10ft) occasionally more, ↔ 2.5m (8ft). New Zealand (North Island). \* \*

▷ **Carnation** see *Dianthus*  
**Wild** see *D. caryophyllus*

## CARNEGIEA

CACTACEAE

Genus of one species of slow-growing, giant, perennial cactus from desert areas in the USA and N.W. Mexico. It sometimes attains only 1m (3ft) in height after 30 years; branching and flowering may not occur until plants reach 3–4m (10–12ft) tall. The large, funnel- to bell-shaped flowers, borne in early summer, open only in the morning. They are followed in autumn by ovoid-oblong, scaly, often spiny fruit containing glossy black seeds. In frost-prone areas, grow in a warm greenhouse; in warm, dry climates, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 3 parts standard cactus compost and 1 part limestone chippings in full light, shaded from hot sun. When in growth, water freely and apply a low-nitrogen liquid fertilizer monthly; keep dry from mid-autumn to early spring. Outdoors, grow in sharply drained, humus-rich, gritty, slightly alkaline soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in early spring.
- **PESTS AND DISEASES** Trouble free.



*Carnegiea gigantea*

*C. gigantea* ■ (Saguaro cactus). Columnar, erect, slow-growing cactus with a tree-like trunk that eventually produces about 12 ascending branches with 12–24 (occasionally up to 30) ribs. The areoles bear grey or brown spines (12–16 radials and 3–6 centrals). In early summer, solitary, funnel- to bell-shaped, many-petalled white flowers, to 12cm (5in) long and across, are borne from felted, spineless areoles at the tips of the stems. ‡ to 16m (52ft), ↔ to 3m (10ft). USA (S. California, Arizona), N.W. Mexico. ☼ (min. 10°C/50°F)

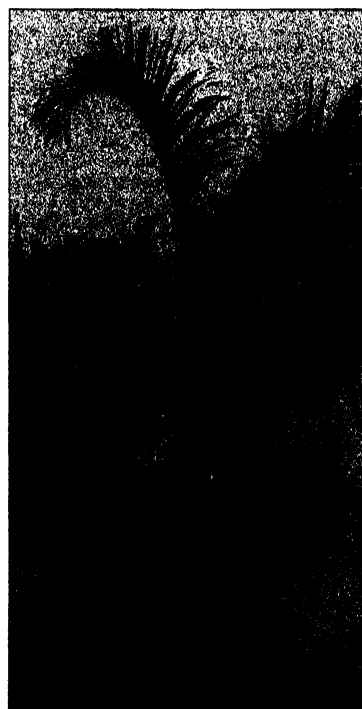
## CARPENTARIA

ARECACEAE/PALMAE

Genus of one species of single-stemmed palm from Queensland, Australia, found along riverbanks in rainforest. The prominent crownshaft bears dense, terminal clusters of pinnate leaves, and spreading or semi-pendent, many-branched panicles of 3-petalled flowers. In frost-prone areas, grow *C. acuminata* in a warm greenhouse, or use young specimens as houseplants. In frost-free climates, grow as a handsome specimen tree; it is frequently used as a street tree in N.E. Australia and Florida, USA.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow young plants in loam-based potting compost (J1 No.3) in bright filtered light with high humidity. Water freely in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun, but screen from hot sun when young.
- **PROPAGATION** Sow seed at 27°C (81°F) in spring.
- **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*C. acuminata* ■ ♀ syn. *Kentia acuminata*. Medium-sized palm with a slender, smooth trunk ringed by old leaf scars. Arching, pinnate, dark green



*Carpentaria acuminata*

leaves, 2–4m (6–12ft) long, comprise many narrow, linear, abrupt- or ragged-ended leaflets. From spring to summer, bears cup-shaped cream flowers in panicles to 1.5m (5ft) long, followed by crimson fruit in persistent yellow calyces. ‡ 10–15m (30–50ft), ↔ 3–7m (10–22ft). Australia (Queensland). ☼ (min. 13–15°C/55–59°F)

## CARPENTERIA

HYDRANGEACEAE/PHILADELPHACEAE

Genus of one species of evergreen shrub found in scrub on dry slopes and ridges, and in pine forest, in California, USA. It is valued mainly for its handsome leaves, which are opposite, leathery, and entire, and for its shallowly cup-shaped white flowers. *C. californica* is ideal for a shrub border, or for growing against a wall.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in well-drained, not too dry soil in full sun; shelter from cold, dry, and strong winds. Pruning group 8; remove the oldest flowered shoots occasionally from the base.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or spring. Root greenwood or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Fungal leaf spot may be a problem.

*C. californica* ■ ♀ Upright, open shrub with peeling, pale brown bark and lance-shaped to narrowly ovate-oblong, glossy, dark green leaves, 10–12cm (4–5in) long. Cup-shaped, fragrant white flowers, 4–8cm (1½–3in) across, with central bosses of yellow stamens, are produced singly or in short terminal cymes from the upper leaf axils in early and midsummer. ‡ 2m (6ft), or more if trained against a wall, ↔ 2m (6ft). USA (California). \* \*. 'Elizabeth' is compact, bearing flowers to 2.5cm (1in) across. 'Ladhams' Variety' produces large flowers, to 8cm (3in) across.

▷ **Carpet plant** see *Episcia*



*Carpenteria californica*

## CARPINUS

Hornbeam

BETULACEAE

Genus of 35–40 species of deciduous trees from woodland in Europe, Asia, and North America. They have alternate, prominently veined, entire or toothed leaves and, in spring, produce unisexual flowers in catkins; both male and female catkins are borne on the same plant. Hornbeams are cultivated for their elegant habit, ornamental foliage, autumn colour, and pendent, leafy-bracted racemes of fruit. They are attractive specimen trees for a park or woodland, and are excellent for hedging.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in sun or partial shade. Pruning group 1. Trim hedges of *C. betulus* in late summer. Hornbeams can withstand very hard pruning.
- **PROPAGATION** Sow seed in a seedbed in autumn. Root greenwood cuttings in early summer, or bud in late summer. Graft in winter; top-graft *C. betulus* 'Pendula' to display its weeping habit.
- **PESTS AND DISEASES** Prone to coral spot, caterpillars, and aphids.

*C. betulus* ♀ ♂ (Common hornbeam). Pyramidal, later irregularly rounded tree with smooth, fluted grey bark and ovate, unequally toothed, mid-green leaves, 7–12cm (3–5in) long, turning yellow to orange in autumn. In spring, bears yellow male catkins, to 3cm (1¼in) long, and greenish female catkins, to 12cm (5in) long. Female catkins are followed by racemes, 3–6cm (1¼–2½in) long, of green fruit with prominent, 3-lobed bracts, maturing to yellow-brown. ‡ 25m (80ft), ↔ 20m (70ft). Europe, Turkey, Ukraine. \* \* \*. 'Aspleniifolia' ♀ has toothed leaves with deeply cut lobes. 'Columnaris' ♂ is a slow-growing, densely branched, compact tree, spire-like when young; it becomes ovoid with age, but retains its

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*Carpinus betulus* 'Fastigiata'

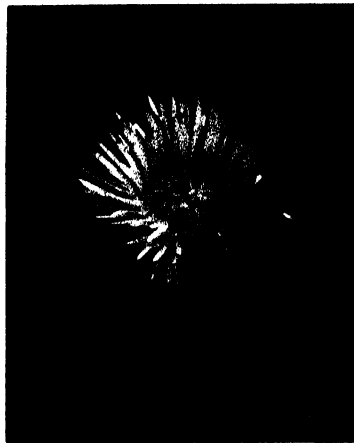
central leader; † 10m (30ft), ↔ 6m (20ft). 'Fastigiata' ♂ ♀ syn. 'Pyramidalis', is narrow and upright, becoming broadly conical and more open with age; † 15m (50ft), ↔ 12m (40ft). 'Frans Fontaine' ♂ is similar to 'Fastigiata', but narrower when mature; † 15m (50ft), ↔ 6m (20ft). 'Pendula' ♀ is mound-forming, with pendent branches, and is best grown as a top-grafted standard; † 2.5m (8ft), ↔ 4m (12ft). 'Pyramidalis' see 'Fastigiata'. *C. caroliniana* ♀ (American hornbeam). Spreading, occasionally shrubby tree with fluted, smooth grey bark. Ovate, sharply (sometimes doubly) toothed, slightly glaucous, blue-green leaves, 12cm (5in) long, are rounded or heart-shaped at the bases, turning yellow to orange-red in autumn. Male catkins are yellow and to 3.5cm (1½in) long. Mid-green female catkins, to 10cm (4in) long, are followed by racemes, 5–10cm (2–4in) long, of green fruit, maturing yellow-brown, with irregularly 3-lobed bracts; the central lobe is to 2.5cm (1in) wide. † 12m (40ft), ↔ 15m (50ft). E. North America, Mexico. \*\*\* *C. tschonoskii* ♀ Spreading tree with pendent branch-tips and ovate, sharp-

pointed, double-toothed, glossy leaves, to 7cm (3in) long, dark green above, mid-green beneath, and yellow in autumn. Male catkins are green and 1–2cm (½–¾in) long; female catkins are yellow-green, to 5cm (2in) long, and followed by pendent, green, later yellow-brown racemes of fruit, 5–7cm (2–3in) long, with ovate, toothed bracts. † 12m (40ft). China, Korea, Japan. \*\*\* *C. turczaninowii* ♂ Small, elegant tree, upright when young and later rounded, with slender shoots and ovate to broadly ovate, double-toothed, glossy, dark green leaves, to 5cm (2in) long, turning orange in autumn. Male catkins are green and 1–2.5cm (½–1in) long. Female catkins are yellow-green and to 5cm (2in) long; they are followed by racemes, 2.5–5cm (1–2in) long, of pendent, green, later yellow-brown fruit with ovate, unequal bracts, toothed on one side. † 6–12m (20–40ft), ↔ 10m (30ft). China, Korea, Japan. \*\*\*

## CARPOBROTUS

AIZOACEAE

Genus of 20–25 species of creeping, perennial succulents, mainly occurring in dry regions of South Africa, Australia (including Tasmania), Chile, and Mexico. They have prostrate, fleshy stems and pairs of finger-like, 3-angled, opposite, fleshy, smooth, sometimes spotted leaves, which are joined at the bases and usually keeled. Colourful, solitary, daisy-like, many-petalled, diurnal flowers are borne from late spring to early autumn and are followed by pear-shaped, fleshy fruits – those of *C. edulis* are used in preserves. In frost-prone areas, grow in a cool or temperate greenhouse, or treat as frost-tender annuals. In warmer areas, use as ground cover on a sandy, sunny bank or grow in a semi-desert garden. They are useful for binding and stabilizing sandy soils. • **HARDINESS** Half hardy to frost tender. • **CULTIVATION** Under glass, grow in a mix of 2 parts each loam and sharp sand



*Carpobrotus edulis*

and 1 part leaf mould in full light. In the growing season, water freely, and apply a balanced liquid fertilizer once annually, in early summer. Water very sparingly in winter. Outdoors, grow in poor, sharply drained, sandy, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 15°C (59°F) in early spring or root stem cuttings in spring or summer. • **PESTS AND DISEASES** Susceptible to mealybugs.

*C. acinaciformis*. Succulent producing trailing stems, to 1.5m (5ft) or more long, with short, lateral branches. Sickle-shaped, strongly keeled, greyish green leaves, 9cm (3½in) long, have "blisters" at the bases of the upper sides. Daisy-like, bright reddish purple flowers, 12cm (5in) across, open after midday and are borne freely from late spring to early autumn. † 15cm (6in), ↔ indefinite. South Africa (Eastern Cape, Western Cape, KwaZulu/Natal). \*

*C. edulis* ♂ (Hottentot fig, Kaffir fig). Widely spreading succulent with prostrate stems, 2m (6ft) or more long, rooting at intervals along their length, and sickle-shaped, slightly curved, dull, grey-green leaves, to 8cm (3in) long. Numerous, daisy-like yellow flowers, 8–12cm (3–5in) across, opening after noon and turning pinkish later in the day, are borne from late spring to early autumn. Produces edible, fig-like brown fruit. † 15cm (6in), ↔ indefinite. South Africa (Eastern Cape, Western Cape, KwaZulu/Natal). ♀ (min. 7°C/45°F)

▷ **Carion flower** see *Stapelia*

## CARTHAMUS

Safflower

ASTERACEAE/COMPOSITAE

Genus of 14 species of upright, hairy annuals and herbaceous perennials found in dry, open, sunny habitats in the Mediterranean and W. Asia. They have alternate, pinnatifid to pinnatisect, occasionally simple and shallowly lobed, spiny-margined leaves, and thistle-like, yellow, pink, purple, or violet flowerheads. *C. tinctorius* is the only widely cultivated species, and has been used for centuries as a source of red and yellow dye. It is a good "everlasting" flower for use in dried flower arrangements and is also excellent for growing in a border or herb garden.

• **HARDINESS** Fully hardy to half hardy.

- **CULTIVATION** Grow in any light, well-drained soil in full sun.
- **PROPAGATION** Sow seed at 10–15°C (50–59°F) from early to late spring.
- **PESTS AND DISEASES** Trouble free.

*C. tinctorius* (False saffron, Safflower). Erect annual producing simple, ovate to linear, wavy-margined or pinnatifid, often spiny-toothed, light greyish green basal leaves, 3–9cm (1¼–3½in) long; stem leaves are narrowly linear-lance-shaped and stem-clasping. In summer, bears loose corymbs of thistle-like flowerheads, to 4cm (1½in) across, with large basal "cups" of stiff green bracts, from which tasselled tufts of red, orange, or yellow ray-florets emerge. † 30–60cm (12–24in), ↔ 30cm (12in). Probably W. Asia. \*\*\*. 'Lasting White' has creamy white flowers. 'Orange Ball' produces orange flowers. 'Summer Sun' has yellow flowers.

▷ **Carthusian pink** see *Dianthus carthusianorum*

## CARUM

Caraway

APIACEAE/UMBELLIFERAE

Genus of about 30 species of tap-rooted, upright biennials and perennials with 2- to 4-pinnate leaves and compound umbels of small white flowers. *C. carvi*, the only species cultivated, occurs in meadows, grassland and wasteland from Europe and North Africa to Siberia, Russia. It is grown in herb gardens for its scented, fern-like foliage and liquorice-flavoured seeds.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in deep, fertile, well-drained soil in full sun; caraway will tolerate heavier soils. Seed is borne in the second summer; harvest before it begins to darken, to avoid self-seeding. *C. carvi* self-seeds very freely.

• **PROPAGATION** Sow seed in rows *in situ* in late spring or late summer. Seedlings may be transplanted, but will bolt unless moved when very small.

• **PESTS AND DISEASES** Trouble free.

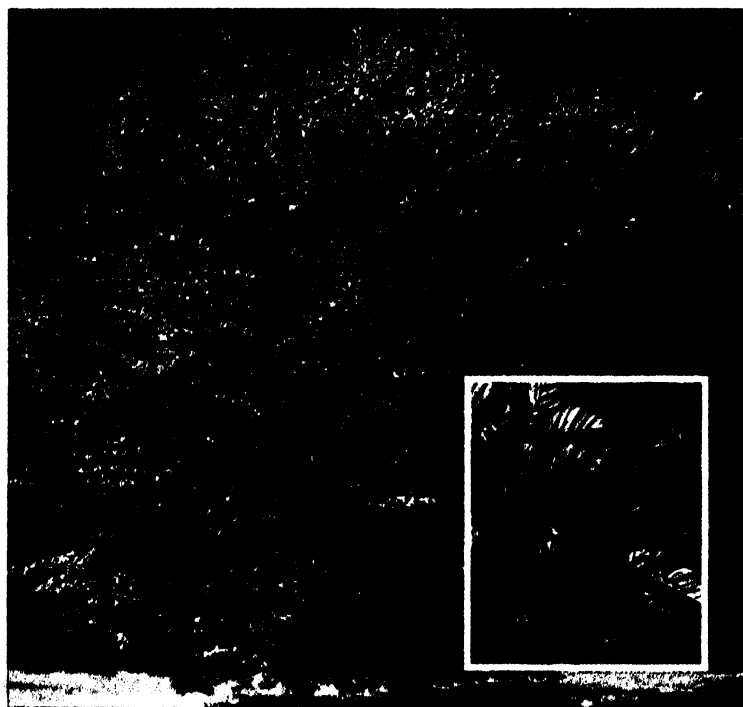
*C. carvi* (Caraway). Aromatic biennial with slender, ribbed stems and feathery, 2- or 3-pinnate, bright green leaves, 8–15cm (3–6in) long, comprising linear to linear-lance-shaped leaflets. Small white flowers are borne in compound umbels, to 4cm (1½in) across, in midsummer, followed by 5-ribbed fruit, 3–6mm (¼–¼in) long, containing the liquorice-flavoured seeds. † 60cm (24in), ↔ 30cm (12in). Europe to W. Asia. \*\*\*

## CARYA

Hickory

JUGLANDACEAE

Genus of about 25 species of deciduous trees, mostly found in woodland in E. Asia and North America. Hickories are valued for their foliage, which is pinnate and alternate, and often colours well in autumn, and for their sometimes ornamental bark. Flowers of both sexes are borne separately on the same plant in late spring and early summer: the males are produced in branched, pendent, yellow-green catkins, the females in small, terminal green spikes.



*Carpinus turczaninowii* (inset: leaf detail)



The autumn fruits are hard-shelled nuts, which in some species contain edible kernels, cultivated commercially as pecan nuts. Use hickories as specimen trees for a lawn or a woodland garden.

- **HARDINESS** Fully hardy except for *C. illinoensis*, which tolerates only short periods below -12°C (10°F).
- **CULTIVATION** Grow in deep, fertile, moist but well-drained, humus-rich soil in sun or partial shade. Seedlings quickly develop a deep tap root and resent transplanting. Pruning group 1.
- **PROPAGATION** Sow seed *in situ* as soon as ripe; if sowing in a seedbed transplant seedlings as soon as possible. Graft cultivars of *C. illinoensis* in winter.
- **PESTS AND DISEASES** Prone to crown gall, powdery mildew, and leaf spot.

*C. cordiformis* ■ ♀ □ (Bitternut, Bitternut hickory, Swamp hickory). Broadly columnar tree with ornamental, ridged grey bark. Pinnate, mid-green leaves, 15–25cm (6–10in) or more long, with 5–9 ovate-lance-shaped leaflets, turn yellow in autumn. Produces unpalatable, thick-shelled, spherical nuts, to 4cm (1½in) long. ‡ 25m (80ft), ↔ 15m (50ft). E. North America. \*\*\*  
*C. glabra* □ (Hognut, Pignut, Pignut hickory). Spreading tree with furrowed grey, ornamental bark. Pinnate, mid-green leaves, 20–30cm (8–12in) long, with usually 5–7 ovate-lance-shaped to obovate leaflets, turn yellow in autumn. Produces obovoid, bitter-tasting, thin-shelled nuts, to 5cm (2in) long. ‡ 25m (80ft), ↔ 20m (70ft). E. USA. \*\*\*  
*C. illinoensis* □ (Pecan). Rounded, tree with ornamental, furrowed grey



*Carya ovata*

bark. Pinnate, mid-green leaves, 30–50cm (12–20in) long, with usually 11–17 curved, oblong-lance-shaped leaflets, turn yellow in autumn. Oblong, thick-shelled nuts, to 6cm (2½in) long, are edible when ripe. In areas with warm summers, many cultivars are grown for their edible nuts. ‡ 30m (100ft), ↔ 20m (70ft). S. USA. \*\*\* (borderline)  
*C. ovata* ■ ♀ □ (Shagbark hickory). Broadly conical tree with ornamental, peeling, grey to brown bark. The pinnate, mid-green leaves, 20–35cm (8–14in) long, have usually 5 leaflets, the upper 3 obovate and the lower 2 ovate-lance-shaped to ovate; the leaves turn golden yellow in autumn. Thick-shelled nuts, to 6cm (2½in) long, are edible when ripe. ‡ 25m (80ft), ↔ 15m (50ft). E. North America. \*\*\*



*Carya cordiformis* (inset: leaf detail)

## CARYOPTERIS

VERBENACEAE

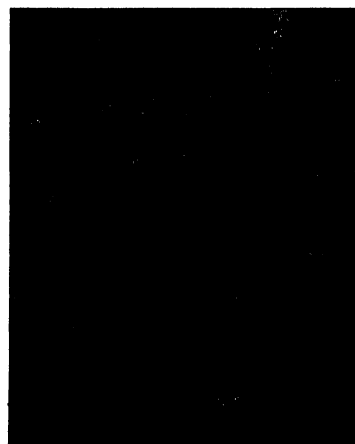
Genus of 6 species of aromatic, deciduous shrubs and perennials from a variety of habitats, including dry, hot slopes and woodland, in the Himalayas and mountains of E. Asia. They have opposite, simple, entire to toothed leaves and small, usually blue flowers borne in terminal or axillary panicles or cymes. Cultivated for their attractive, aromatic foliage and flowers, which are borne from late summer to autumn on the current year's shoots, they are ideal for a mixed or shrub border.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, light, well-drained soil in full sun. Where temperatures fall to -15°C (5°F), plant against a warm, sunny wall, particularly if summers are cool.
- **PROPAGATION** Sow seed in autumn in containers in a cold frame. Root soft-wood cuttings in late spring or green-wood cuttings in early summer.
- **PESTS AND DISEASES** Capsid bugs may cause leaf distortion.

*C. x clandonensis* cultivars. Selections derived from the dense, mound-forming shrub *C. x clandonensis* have ovate-lance-shaped, slightly toothed, grey-green leaves, to 5cm (2in) long, silver-hairy beneath. They bear axillary or terminal cymes of blue or purple-blue flowers, to 1cm (½in) across, in late summer and early autumn. ‡ 1m (3ft), ↔ 1.5m (5ft). \*\*\*. 'Arthur Simmonds' has dull,



*Caryopteris x clandonensis* 'Kew Blue'



*Caryopteris x clandonensis* 'Worcester Gold'

dark green leaves, silvery grey beneath, and bears bright purplish blue flowers. 'Dark Knight' has silvery grey leaves and very dark blue flowers. 'Heavenly Blue' ♀ is erect, with intensely dark blue flowers. 'Kew Blue' ■ has grey-green leaves, dull, dark green above, silvery grey beneath, and bears dark blue flowers. 'Worcester Gold' ■ has warm yellow foliage and lavender-blue flowers. *C. incana*, syn. *C. mastacanthus*. Dense, mound-forming shrub with aromatic, ovate, grey-green leaves, to 7cm (3in) long, sharply toothed at the margins. Bright violet-blue, occasionally white flowers, 7–8mm (¼–⅓in) across, are produced in rounded cymes from the upper leaf axils in autumn. ‡ 1.2m (4ft), ↔ 1.5m (5ft). China, Japan. \*\*\*  
*C. mastacanthus* see *C. incana*.

## CARYOTA

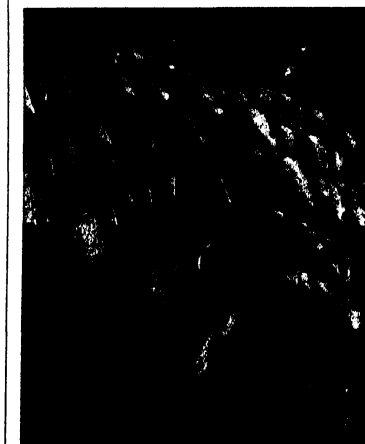
Fish-tail palm

ARECACEAE/PALMAE

Genus of 12 species of single- and cluster-stemmed, monoecious, sometimes monocarpic palms from India and Sri Lanka to S.E. Asia, N. Australia, and the Solomon Islands. They occur in forest from sea level to 2,000m (7,000ft) in humid or monsoon climates. Huge, 2-pinnate leaves, each with a prominent sheathing base, are arranged in spirals on the upper part of each stem. The 3-petalled, cup-shaped flowers are borne in large, pendent panicles just below the lowest leaf. In frost-prone areas, grow in a temperate or warm greenhouse, or use young specimens as houseplants. In tropical regions, fish-tail palms are used as ornamental specimen trees; where they occur naturally, they provide sago, palm wine, and building materials.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light and high humidity. Water freely when in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil with midday shade.
- **PROPAGATION** Sow seed at 27°C (81°F) in spring.
- **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*C. mitis* ■ \* (Burmese fish-tail palm, Clustered fish-tail palm). Small to medium-sized palm with clustered



*Caryota mitis*

stems, at first clothed with fibrous leaf bases, later bare. The broadly linear, 2-pinnate, rich green leaves are 2–4m (6–12ft) long, with 6–60, fish-tail-like, asymmetrically 3-angled leaflets.

Pendent panicles, 30cm (12in) or more long, of cream flowers, to 2cm (¾in) across, are borne in summer. †3–12m (10–40ft), ↔ 3–7m (10–22ft). Burma to Malaysian peninsula, Indonesia (Java), Philippines. ☉ (min. 15°C/59°F)

**C. urens** ♀ (Jaggery palm, Sago palm, Toddy palm, Wine palm). Medium-sized to large, fast-growing, monocarpic palm with a single, sturdy stem clothed with fibrous leaf bases. Arching, broadly linear, 2-pinnate, dark green leaves, to 6m (20ft) long, have 6–50 obliquely wedge-shaped leaflets, to 30cm (12in) long. Panicles, 2–4m (6–12ft) long, of cream flowers, 1–3cm (½–1¼in) across, are produced at the end of the tree's life, first at the top of the tree, then from each leaf axil downwards. The sugary sap is boiled down to make crude sugar (jaggery), or is distilled into toddy. †12–25m (40–80ft), ↔ to 10m (30ft). India, Sri Lanka, Malaysian peninsula. ☉ (min. 15°C/59°F)

▷ **Caspian locust** see *Gleditsia caspica*  
▷ **Cassandra** see *Chamaedaphne*

## CASSIA

CAESALPINIACEAE/LEGUMINOSAE

Genus of over 500 species of annuals and perennials, and deciduous, semi-evergreen, and evergreen shrubs and trees from moist woodland, riverbanks and scrub in tropical areas worldwide. They have pinnate leaves and 5-petalled, bowl-shaped flowers, borne in panicles or racemes, or occasionally singly. In frost-prone areas, grow in a temperate or warm greenhouse, or in a conservatory. In warmer climates, grow in a shrub border; use the trees as specimen plants.

• **HARDINESS** Fully hardy to frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly. Top-dress or pot on in early spring. Outdoors, grow in deep, well-drained, moderately fertile soil in full sun. Pruning group 1; plants under glass need restrictive pruning after flowering.

• **PROPAGATION** Sow pre-soaked seed at 18–21°C (64–70°F) in spring. Root semi-ripe cuttings in summer.  
• **PESTS AND DISEASES** Red spider mites and whiteflies may be troublesome under glass.

**C. alata** see *Senna alata*.  
**C. artemisioides** see *Senna artemisioides*.  
**C. corymbosa** see *Senna corymbosa*.  
**C. corymbosa** var. **plurijuga** see *Senna x floribunda*.  
**C. didymobotrya** see *Senna didymobotrya*.  
**C. fistula** ☉ (Golden shower tree, Indian laburnum, Pudding pipe-tree, Purging cassia). Spreading, semi-evergreen to deciduous tree producing bright green leaves, to 60cm (24in) long, each with 6–16 ovate leaflets; the older leaves are shed in winter or during periods of drought. Fragrant, bright yellow flowers, to 4cm (1½in) across, are borne freely in pendent racemes,



*Cassia fistula*

20–40cm (8–16in) long, from spring to summer. †8–12m (25–40ft), ↔ 3–5m (10–15ft). S.E. Asia, Pacific islands, Central and South America. ☉ (min. 15°C/59°F)

**C. x floribunda** see *Senna x floribunda*.

**C. javanica** ♀ (Pink shower). Many-branched, spreading, usually deciduous tree with densely downy young growth. The leaves, 40cm (16in) long, each have 16–34 elliptic to oblong-elliptic leaflets. Profuse pale pink, crimson, or buff-pink flowers, to 4cm (1½in) across, are borne in rigid racemes, 10cm (4in) or more long, from spring to summer. †to 25m (80ft) or more, ↔ 3–6m (10–20ft). S.E. Asia. ☉ (min. 16°C/ 61°F)

**C. siamea** see *Senna siamea*.

▷ **Cassia**,  
**Purging** see *Cassia fistula*  
**Silver** see *Senna artemisioides*

## CASSINIA

ASTERACEAE/COMPOSITAE

Genus of about 20 species of heather-like, evergreen shrubs, occasionally soft-stemmed, from Australia, New Zealand, and South Africa. In the wild, they are found from coastal areas to scrub and grassland in the mountains. Cassinias are cultivated for their neat leaves, which are alternate, narrow, and entire, and their small heads of often fragrant flowers, borne in terminal corymbs. They are suitable for a shrub border or heather garden.

• **HARDINESS** Fully hardy to frost hardy.  
• **CULTIVATION** Grow in moderately fertile, well-drained, humus-rich soil in



*Cassinia leptophylla* subsp. *vauvilliersii*

full sun. Pruning group 10, in spring.

• **PROPAGATION** Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**C. fulvida** see *C. leptophylla* subsp. *fulvida*.

**C. leptophylla**. Bushy, rounded, evergreen shrub with tiny, linear to spoon-shaped, dark green leaves, 2–10mm (¼–¾in) long, white- or yellowish white-hairy beneath, on sticky, white- or yellowish white-hairy shoots. In midsummer, bears small heads of tiny, funnel-shaped white flowers in terminal corymbs, to 8cm (3in) across. †2m (6ft), ↔ 2.5m (8ft). New Zealand. \*\*\*.

**subsp. fulvida**, syn. *C. fulvida* (Golden heather) has dark green leaves, yellow beneath, on sticky yellow shoots, giving the plant an overall golden appearance.

**subsp. vauvilliersii** ☐ syn. *C. vauvilliersii*, has narrowly spoon-shaped to oblong-ovate leaves, and pure white flowers, to 8cm (3in) across; †to 3m (10ft). **subsp. vauvilliersii** var. **albida** (Silver heather) has densely silver-white-hairy shoots and dark green leaves, densely silver-white-hairy beneath; white flowerheads are borne in dense corymbs, to 5cm (2in) across, in mid- and late summer; ↔ 1.5m (5ft); \*\*.

**C. vauvilliersii** see *C. leptophylla* subsp. *vauvilliersii*.

## CASSIOPE

ERICACEAE

Genus of 12 species of dwarf, evergreen shrubs from diverse habitats in arctic and alpine regions of N. Europe, N. Asia, and North America. They have 4 rows of tiny, overlapping, scale-like leaves, pressed flat to the whipcord-like stems, and bear solitary, axillary, bell- or urn-shaped flowers in late spring and early summer. Grow in a rock garden, on a peat bank, or in open areas in woodland.

• **HARDINESS** Fully hardy, although late frosts may destroy the flowers.

• **CULTIVATION** Grow in a sheltered site in moist, acid, humus-rich soil in partial shade or in an open, sunny site. *C. tetragona* tolerates some lime.

• **PROPAGATION** Sow seed in autumn in containers in an open frame. Root greenwood or semi-ripe cuttings in summer, preferably under mist.

Prostrate species may be layered in autumn or early spring.

• **PESTS AND DISEASES** Trouble free.



*Cassiope lycopodioides*

**C. 'Edinburgh'** ☐♀ Upright shrub with few-branched stems clothed in closely overlapping, lance-shaped, hairy-margined, dark green leaves, 2–4mm (¼–½in) long, and slightly furrowed beneath. Nodding, bell-shaped white flowers, to 8mm (⅜in) across, with reflexed lobes and greenish brown calyces, are produced at the stem tips in late spring. †to 25cm (10in). \*\*\*.

**C. fastigiata**. lax, erect shrub bearing furrowed, lance-shaped, dark green leaves, to 4mm (¼in) long, with fringed, silvery margins. In late spring, produces bell-shaped white flowers, 8mm (⅜in) across, with slightly reflexed lobes and green or red calyces. †to 25cm (10in), ↔ to 20cm (8in). Himalayas. \*\*\*.

**C. lycopodioides** ☐♀ Mat-forming shrub with slender, tangled stems and tiny, ovate, dark green leaves, to 2mm (⅛in) long. In late spring, bears axillary, short-stemmed, tubular-bell-shaped white flowers, 6mm (¼in) across, with red calyces and red leaf-stalks. †to 8cm (3in), ↔ to 25cm (10in). Japan to USA (Alaska). \*\*\*.

**C. mertensiana** ☐ Dense, upright shrub with ovate-lance-shaped, dark green leaves, to 5mm (¼in) long. The bell-shaped, creamy white flowers, 7–8mm (¼–⅜in) across, have red or green calyces, and are produced from the leaf axils in spring. †to 15cm (6in), ↔ to 25cm (10in). USA (California to Alaska). \*\*\*. var. **gracilis** is mound-forming, slender, and free-flowering. **C. selaginoides**. Many-branched shrub with stems densely clothed in minute, narrowly oblong, deeply furrowed, dark green leaves, to 2mm (⅛in) long. In late spring, pendent, bell-shaped white flowers, to 1cm (½in) across, with red calyces, are borne on long green flower-stalks, mainly at the stem tips. †to 15cm (6in). W. China. \*\*\*.

**C. tetragona**. Upright shrub with 4-angled shoots clothed in oblong-lance-shaped, scale-like, leathery, dark green leaves, 3–5mm (⅛–¼in) long. Bears pendent, bell-shaped white flowers, to



*Cassiope* 'Edinburgh'

*Cassiope mertensiana*

6mm (¼in) across, with red calyces, in late spring. ↑ to 25cm (10in), ↔ to 20cm (8in). Arctic, subarctic Europe and North America. \*\*\*

**C. wardii.** Lax, semi-upright shrub with 4-angled, few-branched stems and lance-shaped, hairy-margined, dark green leaves, to 5mm (¼in) long. Pendent, urn-shaped white flowers, 1cm (½in) across, flushed red inside at the bases, are borne close to the stem tips in late spring. Best grown in partial shade. ↑↔ to 15cm (6in). China (Tibet). \*\*\*

## CASTANEA

Chestnut, Sweet chestnut

FAGACEAE

Genus of about 12 species of deciduous trees and shrubs from woodland in S. Europe, Asia, North America, and N. Africa. They have alternate, oblong to oblong-elliptic or oval, veined, toothed leaves, and, in summer, bear small, heavily scented cream flowers in showy catkins from the leaf axils of young shoots. Chestnuts are valued for their bold foliage and spiny-husked, sometimes edible nuts, 2–6cm (¾–2½in) across. Grow as specimen trees or in woodland.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, well-drained, slightly acid, loam soil in sun or partial shade. Most species tolerate dry, sandy soils; with the exception of *C. sativa*, they grow best in climates with long, hot summers. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed as soon as ripe. Graft in late winter, or bud in summer.
- **PESTS AND DISEASES** Susceptible to honey fungus and *Phytophthora* root rot. *C. dentata* is prone to chestnut blight.

**C. dentata** ♀ (American chestnut). Vigorous, rounded tree with spirally furrowed bark when old, and tapering, oblong-lance-shaped, toothed, matt mid-green leaves, to 25cm (10in) long. Edible fruit ripen in autumn. ↑ 30m (100ft), ↔ 15m (50ft). E. USA. \*\*\*

**C. mollissima** ♀ (Chinese chestnut). Vigorous, spreading tree with spiral furrows in the bark when mature, and oblong to oval, toothed, glossy, mid-green leaves, to 20cm (8in) long, often softly downy beneath. Grown in North America for its edible fruit, borne in autumn. ↑↔ 20m (70ft). China. \*\*\*

**C. sativa** ♀♂ (Spanish chestnut, Sweet chestnut). Vigorous, broadly columnar

*Castanea sativa* 'Albomarginata'

tree with spirally furrowed bark when old, and oblong, toothed, glossy, dark green leaves, to 20cm (8in) long. Bears edible fruit in autumn. ↑ 30m (100ft), ↔ 15m (50ft). S. Europe, N. Africa, S.W. Asia. \*\*\*

**'Albomarginata'** □ syn. 'Argenteomarginata', has leaves margined creamy white. **'Aspleniifolia'** has leaves deeply cut into slender lobes. Some cultivars, such as **'Marron de Lyon'**, are grown for their fruit.

## CASTANOPSIS

FAGACEAE

Genus of about 110 species of evergreen trees and shrubs related to chestnuts (*Castanea*) and oaks (*Quercus*), from forest in warm regions of S.E. Asia. The leathery leaves are alternate and entire or toothed. The flowers are borne in erect, unisexual catkins, and are followed by nuts that develop inside prickly cases. They are useful specimen trees but may remain shrubby and achieve tree stature only in continental climates.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in fertile, moist but well-drained, slightly acid soil in sun; shelter from cold, dry winds. Partial shade in climates with long, hot summers is tolerated. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.
- **PESTS AND DISEASES** Trouble free.

**C. chrysophylla** see *Chrysopsis chrysophylla*.

**C. cuspidata** ♀ Spreading tree, often shrubby in cultivation, with attractive, pendent branches and ovate to oblong, tapered, usually entire leaves, to 10cm (4in) long, glossy, dark green above, bronze beneath. Small white flowers are borne in erect catkins, 5–7cm (2–3in) long, in summer. Acorn-like nuts enclosed in downy husks ripen in 2 years. ↑ 8m (25ft), ↔ 8m (25ft) or more. China, Japan. \*\*

## CASTANOSPERMUM

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of evergreen tree from rainforest in Australia. It produces alternate, oval to lance-shaped, pinnate leaves and bears short, dense racemes of pea-like flowers. In frost-prone regions, grow in a temperate greenhouse; in warmer areas, it is a majestic specimen or shade tree, especially beside a lake or other water feature.

• **HARDINESS** Frost tender, but tolerates short periods at temperatures around 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, shaded from hot sun. Maintain moderate humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in deep, fertile, moist but well-drained soil in sun or partial shade. Pruning group 1; plants under glass may need restrictive pruning.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe or in early spring.

• **PESTS AND DISEASES** Trouble free.

**C. australe** ♀ (Black bean tree, Moreton Bay chestnut). Open, spreading tree producing lustrous, dark green leaves, 30–45cm (12–18in) long, composed of 9–17 elliptic-oblong, slightly curved leaflets. Racemes of yellow, orange, or red flowers, 3–4cm (1¼–1½in) long, are borne from late spring to late summer. They are followed by thick pods, 10–25cm (4–10in) long, containing chestnut-like black seeds. ↑ 10–30m (30–100ft), ↔ 5–12m (15–40ft). N.E. Australia. ☼ (min. 7°C/45°F)

▷ **Cast-iron plant** see *Aspidistra elatior*

▷ **Castor oil plant** see *Ricinus communis*

## CASUARINA

Australian pine, She oak

CASUARINACEAE

Genus of 40–70 species of evergreen, conifer-like trees and shrubs from Australia and the Pacific islands, where they thrive in a range of habitats from semi-desert to swamp forest. They are cultivated for their foliage, which is modified into minute scales or teeth arranged in a collar-like ring at each node. The tiny, petalless flowers are

borne in single-sexed, cone-like spikes. Some species have nitrogen-fixing bacterial nodules on their roots. In frost-prone areas, grow young plants in a cool or temperate conservatory or greenhouse, or as houseplants. In frost-free climates, use Australian pines as specimen trees, windbreaks, or screens. They are tolerant of strong winds, coastal conditions, and wet or dry soils.

• **HARDINESS** Mostly frost tender, but *C. equisetifolia* and *C. torulosa* will tolerate short spells near to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1.

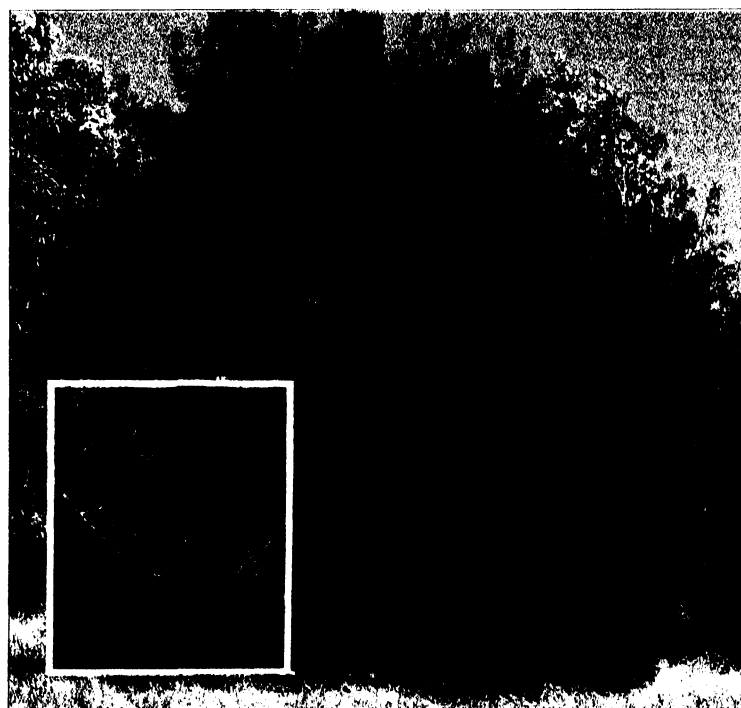
• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings in mid- or late summer.

• **PESTS AND DISEASES** Trouble free.

**C. equisetifolia** ♀ (Horsetail tree). Erect to spreading, open tree with pendent branch tips, grey-green shoots, and scale-like leaves, 1mm (¼in) long, arranged in whorls of 6–8. The cylindrical to ovoid flower cones are 5mm (¼in) long. ↑ 5–15m (15–50ft), sometimes to 25m (80ft), ↔ 3–8m (10–25ft). E. Australia, Pacific islands. ☼ (min. 3–5°C/37–41°F)

**C. torulosa** □♀♂ (Forest oak).

Slender, erect to spreading tree, sometimes with pendent shoots, and with corky bark. Scale-like leaves, 3–8mm (¼–¾in) long, arranged in whorls of 4, are pinkish when young, maturing to mid- or dark green. Some variants have light bronze to black-bronze foliage. Semi-spherical to cylindrical, bronze-green flower cones are 5–10mm (¼–½in) long. ↑ 8–25m (25–80ft), ↔ 5–10m (15–30ft). Australia (Queensland, New South Wales). ☼ (min. 3–5°C/37–41°F)

*Casuarina torulosa* (inset: leaf detail)

C

## CATALPA

## BIGNONIACEAE

Genus of 11 species of deciduous trees from E. Asia and North America, usually found on riverbanks and in woodland. Their large leaves are opposite or in whorls of 3. Catalpas are grown for their handsome foliage, for their large, bell-shaped, 2-lipped flowers, borne in upright, terminal panicles or racemes in mid- and late summer, and for their pendent, bean-like, narrowly cylindrical seed pods, which develop in autumn. Their wide-spreading habit and conspicuous flower panicles are seen to best advantage when they are grown as specimen trees. Those with coloured foliage are also effective in a shrub border; if pollarded or stooled annually, they produce large, ornamental leaves.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun, sheltered from strong winds. Protect young plants from frost during very cold weather. Unripened wood is prone to frost damage. Pruning group 1, or group 7 if grown as a pollard.



*Catalpa x erubescens* 'Purpurea'

• **PROPAGATION** Sow seed in a seedbed or in containers in an open frame in autumn. Root softwood cuttings in late spring or summer. Graft or insert root cuttings in winter. Bud in late summer.

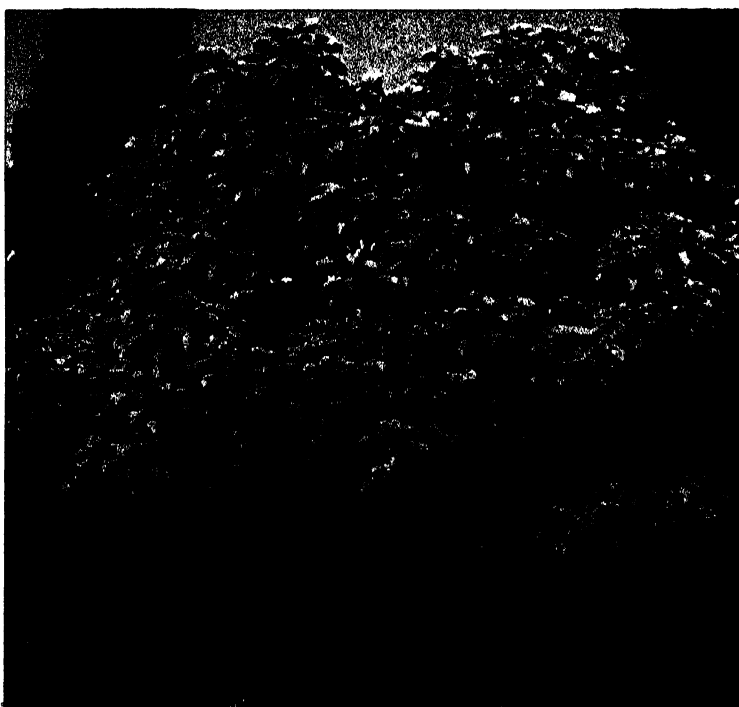
• **PESTS AND DISEASES** Trouble free.

*C. bignonioides* [☐] ♀ (Indian bean tree, Southern catalpa). Spreading tree with broadly ovate, entire, mid-green leaves, heart-shaped at the bases, and to 25cm (10in) long. White flowers, to 5cm (2in) across, marked with yellow and purple-brown, are borne in upright panicles, 20–30cm (8–12in) tall. They are followed by slender pods, to 40cm (16in) long. ♂↔ 15m (50ft). S.E. USA. \*\*\*. 'Aurea' [☐] ♀ has bright yellow foliage, bronze when young; ♂↔ 10m (30ft). 'Nana' is shrubby and rarely flowers; ♂ 1.8m (6ft), ↔ 1.5m (5ft). 'Purpurea' see *C. x erubescens* 'Purpurea'.

*C. x erubescens* 'Purpurea' [☐] ♀ syn. *C. bignonioides* 'Purpurea'. Spreading tree with broadly ovate leaves, 25–40cm (10–16in) long, with 3 shallow, tapered lobes, dark blackish purple when young, maturing to dark green. Bears white flowers, marked yellow and purple,



*Catalpa bignonioides*



*Catalpa bignonioides* 'Aurea'



*Catalpa speciosa*

to 5cm (2in) across, in large, upright panicles, to 30cm (12in) tall. They are followed by slender pods, to 40cm (16in) long. ♂↔ 15m (50ft). \*\*\*

*C. ovata* [☐] ♀ Spreading tree with broadly ovate, often 3-lobed, pale green leaves, to 25cm (10in) long. Upright panicles, to 25cm (10in) tall, of orange- and purple-marked, yellowish white flowers, to 3cm (1¼in) across, are followed by slender pods, to 30cm (12in) long. ♂↔ 10m (30ft). China. \*\*\*

*C. speciosa* [☐] ♀ (Northern catalpa, Western catalpa). Spreading tree with broadly ovate, glossy, dark green leaves, to 30cm (12in) long, usually with 3 finely tapered lobes, densely hairy beneath. Large white flowers, to 6cm (2½in) across, marked with yellow and purple, are sparsely borne in upright panicles, 15–20cm (6–8in) tall. They are followed by slender pods, to 50cm (20in) or more long. ♂↔ 15m (50ft). USA. \*\*\*

▷ **Catalpa.**

Northern see *Catalpa speciosa*

Southern see *Catalpa bignonioides*

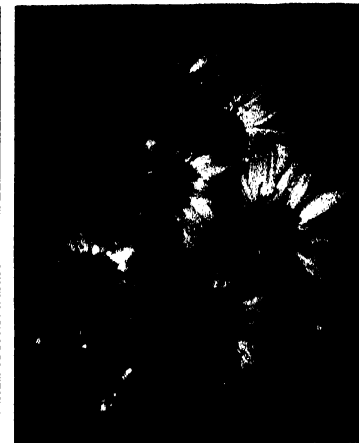
Western see *Catalpa speciosa*

## CATANANCHE

*Blue cupidone*, *Cupid's dart*

## ASTERACEAE/COMPOSITAE

Genus of 5 species of cornflower-like annuals and perennials occurring in dry meadows of the Mediterranean. They have linear to inversely lance-shaped, greyish green leaves, mainly in basal tufts, and are grown for their solitary flowerheads with strap-shaped, blue,



*Catananche caerulea* 'Major'

yellow, or white ray-florets and paper-like, silvery white bracts. Ideal for a sunny border; the flowers are also good for cutting and drying. *C. caespitosa* is best grown in an alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any well-drained soil in full sun; *C. caerulea* is often short-lived in heavy soil. In an alpine house, grow *C. caespitosa* in loam-based potting compost (J1 No.1), with additional grit, in full light.

• **PROPAGATION** Sow seed in containers in a cold frame in early spring or *in situ* in mid-spring. *C. caerulea* is best treated as an annual or a biennial; it usually flowers most freely in its second year. Divide in spring, or insert root cuttings in winter.

• **PESTS AND DISEASES** Powdery mildew may be a problem.

*C. caerulea*. Short-lived perennial with clumps of linear, grass-like, hairy leaves, to 30cm (12in) long. From midsummer to autumn, bears solitary, dark-centred, blue to lilac-blue flowerheads, 3–5cm (1¼–2in) across. ♂ 50–90cm (20–36in), ↔ 30cm (12in). S.W. Europe, Italy. \*\*\*. 'Bicolor' [☐] has white flowerheads with purple centres. 'Major' [☐] ♀ has dark-centred, lilac-blue flowerheads, 5cm (2in) across; ♂ 45–50cm (18–20in). 'Perry's White' has white flowerheads with cream centres.

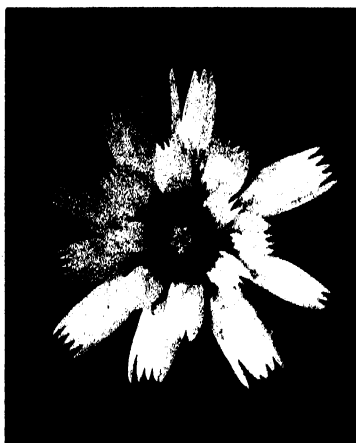
*C. caespitosa*. Dwarf, mound-forming perennial with rosettes of hairy, linear leaves, to 7cm (3in) long. Produces solitary flowerheads, to 3cm (1¼in) across, with many pale to deep yellow ray-florets, on short stems in spring. ♂ 5–10cm (2–4in), ↔ 15–20cm (6–8in). Atlas Mountains. \*\*\*

## CATASETUM

## ORCHIDACEAE

Genus of 50–70 species of deciduous, mainly epiphytic orchids from Central and South America, found from sea level to altitudes of 1,800m (6,000ft). They have stout, fleshy, ovoid to spindle-shaped pseudobulbs producing several alternately ranked, soft-textured, elliptic-lance-shaped to inversely lance-shaped leaves. Lateral, erect or pendent racemes of male and female flowers are borne on separate inflorescences from summer to autumn; occasionally flowers of both sexes are found on the same inflorescence.

• **HARDINESS** Frost tender.



*Catananche caerulea* 'Bicolor'

- **CULTIVATION** Intermediate-growing orchids. Grow in epiphytic orchid compost in containers or slatted baskets. During summer, provide bright filtered light and high humidity with good ventilation. Water freely and apply a balanced liquid fertilizer at every third watering. In winter, remove shading and keep dry. Do not spray foliage as this may cause spotting. See also p.46.
- **PROPAGATION** Divide when the plant overflows its container.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**C. pileatum.** Deciduous, epiphytic orchid with ovoid to spindle-shaped pseudobulbs and lance-shaped leaves, 30cm (12in) long. Fragrant, pale yellow or creamy white flowers, 10cm (4in) across, sometimes flecked purple or red, are produced in racemes, to 40cm (16in) long, in summer. ↓ 30cm (12in), ↔ 45cm (18in). Ecuador, Colombia, Venezuela, Trinidad, Brazil. ☼ (min. 18°C/64°F; max. 30°C/86°F)

▷ **Catchfly** see *Silene, Lychnis*  
**Alpine** see *Lychnis alpina*  
**German** see *Lychnis viscaria*  
**Nodding** see *Silene pendula*

## CATHARANTHUS

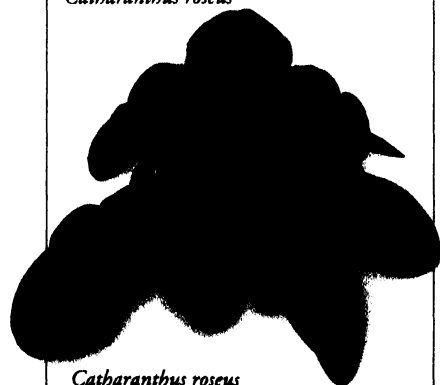
Madagascar periwinkle

APCYNACEAE

Genus of 8 species of annuals and perennials from Madagascar, occurring in open scrub and at forest margins. The opposite leaves are simple and entire, and the 5-petalled, periwinkle-like flowers are solitary or borne in terminal cymes. Only *C. roseus* is widely cultivated. In frost-prone areas, grow as annual bedding, in a cool greenhouse or



*Catharanthus roseus*



*Catharanthus roseus*  
 Pacifica Series 'Pacifica Punch'

conservatory, or as a houseplant. In frost-free regions, grow in a bed or border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light with good ventilation. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Plants under glass are best replaced every 2 years.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring. Root soft-wood cuttings in late spring or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Red spider mites and whiteflies may be a problem under glass.

**C. roseus** ☼ ♀ syn. *Vinca rosea* (Madagascar periwinkle, Old maid). Woody-based, fleshy, evergreen perennial, erect at first, then spreading. It has stiff but slightly untidy stems and opposite, oblong-ovate, glossy, mid- to dark green leaves, to 5cm (2in) long, with paler midribs. Salverform, pink, rose-pink, red, or white flowers, to 4cm (1½in) across, are produced singly from the upper leaf axils, mainly from spring to summer. All parts may cause severe discomfort if ingested. ↓↔ 30–60cm (12–24in). Madagascar. ☼ (min. 5–7°C/41–45°F). **Cooler Series** cultivars are compact and branching, producing pastel to deep rose-pink and white flowers with broad, overlapping petals. **var. ocellatus** produces flowers with bright red eyes. **Pacifica Series** cultivars branch from the base, and bear large, lilac, pale pink, or white flowers in spring; some have white flowers with red eyes; ↓ 30–35cm (12–14in); 'Pacifica Punch' ☼ produces red, white, or rose-red flowers with deeper red centres.

- ▷ *Cathcartia villosa* see *Meconopsis villosa*
- ▷ **Cathedral bell** see *Cobaea scandens*
- ▷ **Cathedral windows** see *Calathea makoyana*
- ▷ **Catherine's pincushion** see *Leucospermum catherinae*
- ▷ **Catmint** see *Nepeta*

## CATOPSIS

BROMELIACEAE

Genus, closely related to *Tillandsia*, of over 20 species of evergreen, epiphytic perennials (bromeliads) from lowland woodland, and rainforest. They occur up to altitudes of 2,000m (6,500ft) in S. North America, Central America, W., N., and E. South America, and the West Indies. The prominently sheathed leaves form funnel-shaped rosettes and are lance-shaped, smooth-margined, and often white-mealy. In summer, produces erect, arching, or pendent panicles of small, white or pale yellow flowers. Both male and female plants are needed to obtain fruit. In frost-prone areas, grow in a warm greenhouse or as houseplants. In warmer regions, grow in a moist, humid, outdoor site.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow epiphytically on bark or wood slabs, or



*Catopsis bahnii*

in epiphytic bromeliad compost in bright filtered light. In summer, water moderately, mist frequently, apply a quarter-strength foliar fertilizer monthly and provide high humidity. Water sparingly at other times. Outdoors, grow epiphytically in humid conditions in partial shade. See also p.47.

- **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Root offsets in late spring with bottom heat in partial shade.
- **PESTS AND DISEASES** Susceptible to mealybugs and scale insects.

**C. bahnii** ☼ Epiphytic bromeliad with dense rosettes of 12 or more white-mealy leaves, to 35cm (14in) long, tapering to fine tips. In summer, bears erect or arching panicles, 10–25cm (4–10in) long, with yellow bracts and white flowers, 7–9mm (¼–¾in) long. ↓ 50cm (20in) or more, ↔ 20cm (8in). Mexico, Guatemala, El Salvador, Honduras, Nicaragua. ☼ (min. 16°C/61°F)

- ▷ **Cat's claw vine** see *Macfadyena*
- Common** see *M. unguis-cati*
- ▷ **Cat's ears** see *Antennaria, Calochortus*
- ▷ **Cat's paw** see *Anigozanthos*
- Common** see *A. humilis*
- ▷ **Cat's tail** see *Typha, T. latifolia*
- Red-hot** see *Acalypha hispida*
- ▷ **Cat's whiskers** see *Tacca chantrierei*

## CATTLEYA

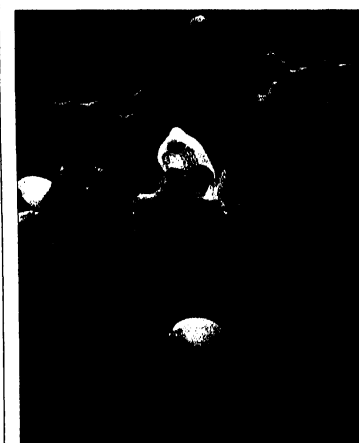
ORCHIDACEAE

Genus of about 40 species of evergreen, epiphytic orchids from dry coastal areas to altitudes of 2,000m (7,000ft), often found along mountain streams, in Central and South America. They produce erect, stout to slender pseudobulbs on short rhizomes and 1 or 2 semi-rigid, leathery, oblong to broadly obovate, occasionally glaucous, mid- to dark green leaves. Large, showy flowers, with 3-lobed or entire lips usually surrounded by thick, bract-like sheaths,

C



*Cattleya aurantiaca*



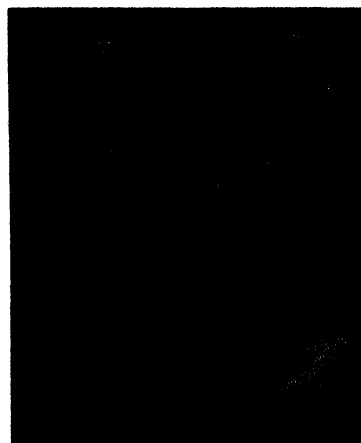
*Cattleya bicolor*

are borne in terminal racemes, or sometimes singly. Many hundreds of hybrids are available.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool to intermediate-growing orchids. Grow in epiphytic orchid compost in containers or orchid baskets. Provide high humidity, good ventilation, and bright filtered light or full light with shade from hot sun. In summer, water freely and apply a balanced liquid fertilizer at every third watering. In winter, remove shading and water more sparingly. See also p.46.
- **PROPAGATION** Divide when the plant overflows its container, or remove backbulbs and pot up separately.
- **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be a problem.

**C. aurantiaca** ☼ Variable, epiphytic orchid with slender, narrowly cylindrical or spindle-shaped pseudobulbs and 2 ovate to elliptic leaves, 10–20cm (4–8in) long. Numerous bright orange, sometimes red or pale gold flowers, 4cm (1½in) across, often with dark red spots or streaks on the lips, are produced in racemes in summer. ↓↔ 30cm (12in). Central America. ☼ (min. 5°C/41°F; max. 30°C/86°F)

**C. bicolor** ☼ Epiphytic orchid with cylindrical pseudobulbs producing 2 oblong leaves, 12–20cm (5–8in) long. Racemes of fragrant, yellow-green or brown flowers, 10cm (4in) across, with crimson lips, are borne from summer to autumn. ↓ 1.2m (4ft), ↔ 45cm (18in). Brazil. ☼ (min. 5°C/41°F; max. 30°C/86°F)

*Cattleya bowringiana*

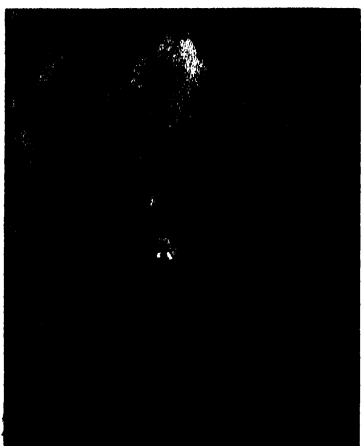
**C. bowringiana** ■ Epiphytic or terrestrial orchid producing cylindrical pseudobulbs and 2 narrowly oblong or elliptic-oblong, dark green leaves, 12–20cm (5–8in) long, glaucous at first. Long racemes of glossy, rose to magenta, white-throated flowers, 8cm (3in) across, with pale rose-purple and dark purple lips, open from autumn to winter. ‡ 1m (3ft), ↔ 45cm (18in). Guatemala, Belize. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. Chocolate Drop.** Epiphytic orchid with slender, oblong pseudobulbs and 2 oval leaves, 10–15cm (4–6in) long. In autumn, bears variable, chocolate-brown to reddish orange flowers, 5cm (2in) across, some with darker lips. ‡ 45cm (18in), ↔ 30cm (12in). ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. dowiana.** Epiphytic orchid with stout, oblong pseudobulbs producing one oblong leaf, to 30cm (12in) long. Racemes of fragrant yellow flowers, 12cm (5in) across, with crimson, gold-veined lips, are borne in autumn. ‡↔ 30cm (12in). Costa Rica, Colombia. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. forbesii.** Epiphytic orchid with slender, oblong to cylindrical pseudobulbs and 2 oblong or narrowly elliptic leaves, to 15cm (6in) long. From spring to summer, bears racemes of fragrant, tawny pink to light green flowers, 7cm (3in) across, with yellow throats and a yellow stripe on the lips. ‡↔ 30cm (12in). Brazil. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. guttata.** Epiphytic orchid producing cylindrical pseudobulbs and 2 lance-shaped or elliptic-oblong leaves, to 25cm (10in) long. In winter, produces

*Cattleya J.A. Carbone**Cattleya José Martí*

racemes of yellow- to lime-green flowers, to 7cm (3in) across, spotted red-brown, or banded purple; the 3-lobed lips are rose-purple to magenta. ‡ 1.2m (4ft), ↔ 60cm (24in). Brazil. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. J.A. Carbone** ■ Epiphytic orchid with club-shaped pseudobulbs and one oblong leaf, 15cm (6in) long. In early summer, bears fragrant mauve flowers, 12cm (5in) across, with darker mauve lips. ‡ 20cm (8in), ↔ 45cm (18in). ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. José Martí** ■ syn. *C. Mother's Favourite 'José Martí'*. Epiphytic orchid with club-shaped pseudobulbs and one oblong leaf, 15cm (6in) long. Fragrant white flowers, 12cm (5in) across, with yellow throats, are borne in spring. ‡ 20cm (8in), ↔ 45cm (18in). ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. labiata.** Epiphytic orchid with club-shaped pseudobulbs and one oblong leaf, to 30cm (12in) long. Racemes of ruffled, pale rose-pink to lilac-magenta flowers, 15cm (6in) across, with purple, yellow-veined lips, are produced in autumn. ‡↔ 30cm (12in). Brazil. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. mossiae.** Epiphytic orchid with club-shaped pseudobulbs and one oblong to ovate-oblong leaf, to 30cm (12in) long. In early summer, bears fragrant, light mauve, pink, or magenta flowers, 15cm (6in) across, with yellow-centred, white to lilac lips. ‡↔ 30cm (12in). Venezuela. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. Mother's Favourite 'José Martí'** see *C. José Martí*.

**C. Nigritian 'King of Kings'.** Epiphytic orchid producing club-shaped pseudobulbs and one oblong leaf, 15cm (6in) long. Bears rich mauve flowers, 12cm (5in) across, with darker mauve lips, in autumn or spring. ‡ 20cm (8in), ↔ 45cm (18in). ♀ (min. 5°C/40°F; max. 30°C/86°F)

**C. Portia 'Coerulea'.** Epiphytic orchid with club-shaped pseudobulbs and 1 or 2 oblong leaves, 15cm (6in) long. Bears blue-lilac flowers, 10cm (4in) across, in early summer. ‡↔ 30cm (12in). ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. skinneri.** Epiphytic orchid with cylindrical pseudobulbs and 2 oblong or elliptic-oblong leaves, to 30cm (12in) long. From winter to spring, bears many small, rose-purple to bright purple flowers, to 10cm (4in) across, the lips often white or cream. ‡↔ 30cm (12in). Mexico to Costa Rica, Guatemala. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. trianae.** Epiphytic orchid with club-shaped pseudobulbs and one oblong leaf, 30cm (12in) long. Racemes of pure white or rose-white flowers, 20cm (8in) across, often purple-suffused, with pink and magenta lips, are borne from winter to spring. ‡↔ 30cm (12in). Colombia. ♀ (min. 5°C/41°F; max. 30°C/86°F)

**C. walkeriana.** Epiphytic orchid with stout, spindle-shaped pseudobulbs and one oblong leaf, 5–10cm (2–4in) long. Solitary (occasionally 2 or 3), rich amethyst or white flowers, 10cm (4in) across, with rose-pink or light magenta lips, are produced in spring. ‡ 12cm (5in), ↔ 15cm (6in). Brazil. ♀ (min. 5°C/41°F; max. 30°C/86°F)

## CAULOPHYLLUM

### BERBERIDACEAE

Genus of 2 (possibly only one) species of rhizomatous perennials found in mountain woodland, one in E. North America, the other in Japan. They bear racemes or panicles of small flowers, with sepals much larger than the petals. The fruits split open early to reveal berry-like seeds that turn from green to blue. The leaves develop with the flowers or just after they open, and immediately below them. Each leaf has 3 leaflets, which are ovate to obovate, 3-lobed, and conspicuously veined; they are occasionally 2-ternate. Grow in a woodland garden for their berries.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, humus-rich, acid soil in partial or deep shade.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe; germination may be slow and erratic. Divide in spring, before growth begins, or after flowering. Very slow to increase.
- **PESTS AND DISEASES** Trouble free.

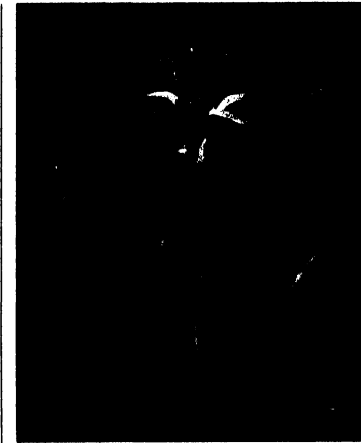
**C. thalictroides** (Blue cohosh). Rhizomatous perennial with 3-palmate, mid-green leaves, produced singly or in pairs. In mid- and late spring, bears green- or yellow-brown flowers, 1cm (½in) across, with 6 long sepals and 6 short petals, the latter reduced to nectaries. Spherical seeds, to 1cm (½in) across, are deep, bright blue, sometimes glaucous. ‡ to 75cm (30in), ↔ 18cm (7in). North America (New Brunswick to Tennessee, and S. Carolina). \*\*\*

## CAUTLEYA

### ZINGIBERACEAE

Genus of 5 or 6 species of rhizomatous perennials from shaded ravines among low, grassy vegetation and shrubs in the Himalayas. They have 2-ranked, lance-shaped to oblong leaves, and bear lax, terminal, spike-like racemes of complex, 2-lipped yellow flowers, with bold red bracts and sepals. Grow in a shaded mixed or herbaceous border, or in a woodland garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Plant rhizomes 15cm (6in) deep in spring. Grow in moist, humus-rich soil in partial shade. Water freely in dry periods, and apply a thick mulch in autumn.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring, or divide in late spring after growth has just begun.
- **PESTS AND DISEASES** Slugs may damage the leaves.

*Cautleya spicata*

**C. spicata** ■ Rhizomatous perennial with broadly lance-shaped, hairless, mid-green leaves, to 35cm (14in) long. In late summer, produces stiff spikes of 2-lipped yellow flowers, 2.5cm (1in) long, with reddish green to maroon bracts. ‡ 60–90cm (24–36in), ↔ 45cm (18in). Himalayas. \*\*\* (borderline)

## CAVENDISHIA

### ERICACEAE

Genus of about 100 species of evergreen, small trees or shrubs from cloud forest in tropical South America. The leathery leaves are alternate, simple, and entire. They are cultivated mainly for their bell-shaped or tubular flowers, borne in axillary or terminal, simple or branched racemes. In frost-prone areas, grow in a cool or temperate greenhouse. In frost-free regions, grow in a shrub border or at the base of a house wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Top-dress or pot on in early spring. Outdoors, grow in moist but well-drained, humus-rich, neutral to acid soil in partial shade, or screened from full sun. Pruning group 8 or 9, but regular pruning is not necessary.
- **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root semi-ripe cuttings in summer. Layer in spring or autumn.
- **PESTS AND DISEASES** Red spider mites and scale insects may be a problem under glass.

**C. acuminata.** Spreading shrub with arching to pendent branches, and ovate to oblong or lance-shaped leaves, 5–8cm (2–3in) long, pink when young but maturing to glossy, dark green. From autumn to early winter, produces clustered racemes, 3–6cm (1¼–2½in) long, of narrowly bell-shaped or tubular, crimson to scarlet flowers with green lobes, which are shielded in bud by large scarlet bracts. ‡ 1–2m (3–6ft), ↔ 1m (3ft). Colombia, Ecuador. ♀ (min. 5°C/41°F)

▷ **Cayenne pepper** see *Capsicum annuum* Longum Group

▷ *Cayratia thomsonii* see *Parthenocissus thomsonii*



## CEANOTHUS

*California lilac*

RHAMNACEAE

Genus of about 55 species of deciduous and evergreen shrubs, more rarely small trees, mostly from W. North America, in particular California, but also from E. USA and Mexico, occurring from the coast to the mountains, usually in scrub and woodland on dry slopes. They have opposite or alternate, usually toothed leaves, and are cultivated for their small but profuse, blue, white, or pink flowers, to 3mm (1/8in) across, borne in terminal, lateral, or axillary cymes, racemes, or panicles. They are suitable for growing in a shrub border or against a sunny wall. Low-growing or prostrate species and cultivars are excellent as ground cover or in a large rock garden.

• **HARDINESS** Fully hardy to frost hardy.

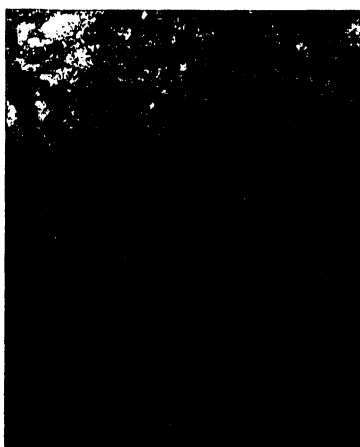
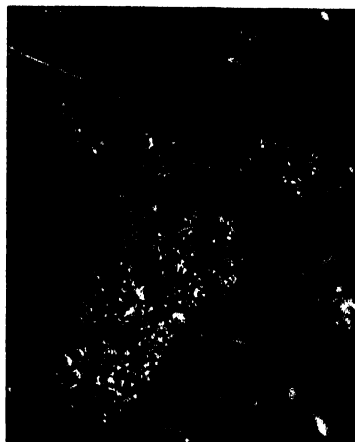
• **CULTIVATION** Grow in fertile, well-drained soil in full sun, sheltered from strong, cold winds. California lilacs are lime tolerant, but may become chlorotic on shallow chalk soils. Most may be trained against a wall, where they can reach twice the height they would in an open site. Pruning group 8 after flowering for evergreens; group 6 in early spring for deciduous plants; group 13 if wall-trained. Mulch and apply a balanced liquid fertilizer after pruning.

• **PROPAGATION** Sow seed in a seedbed, or in containers in an open frame, in autumn; most species hybridize readily. Root greenwood cuttings of deciduous plants, and semi-ripe cuttings of evergreens, in mid- to late summer.

• **PESTS AND DISEASES** Susceptible to honey fungus.

**C. arboreus 'Trewithen Blue'** ☐ ♀ Vigorous, wide-spreading, evergreen shrub with alternate, broadly oval to rounded, shallowly toothed, dark green leaves, to 10cm (4in) long. In spring and early summer, bears fragrant, mid-blue flowers in large, pyramidal, terminal and lateral panicles, to 12cm (5in) long. ‡ 6m (20ft), ↔ 8m (25ft). \*\*

**C. 'A.T. Johnson'**. Vigorous, bushy, spreading, evergreen shrub with alternate, ovate, shallowly toothed, light green leaves, to 3cm (1 1/4in) long. Rich blue flowers are produced in lateral and terminal panicles, 5–6cm (2–2 1/2in) long, over a long period in late spring and again from late summer to autumn. ‡ 2.5m (8ft). \*\*

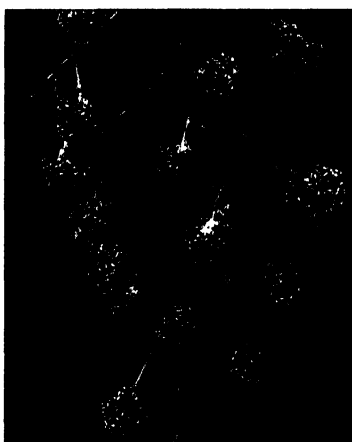
*Ceanothus arboreus* 'Trewithen Blue'*Ceanothus* 'Autumnal Blue'

**C. 'Autumnal Blue'** ☐ ♀ Upright, evergreen shrub with alternate, elliptic, finely toothed, glossy, bright green leaves, to 5cm (2in) long. Rich sky-blue flowers are borne in large, lateral panicles, 8cm (3in) long, from late summer to autumn. ‡ 3m (10ft). \*\*\*

**C. 'Blue Jeans'**. Spreading, evergreen shrub with opposite, oblong, toothed, leathery, dark green leaves, 2–4cm (3/4–1 1/2in) long. Mid-blue flowers are freely borne in lateral and terminal, rounded cymes, to 2cm (3/4in) across, in late spring. ‡ 2.5m (8ft). \*\*

**C. 'Blue Mound'** ☐ ♀ Mound-forming, evergreen shrub with alternate, oblong, very finely toothed, glossy, dark green leaves, to 3cm (1 1/4in) long. In late spring, produces dark blue flowers in large, lateral cymes, 6–8cm (2 1/2–3in) long. ‡ 1.5m (5ft), ↔ 2m (6ft). \*\*

**C. 'Burkwoodii'** ♀ Bushy, compact, evergreen shrub with opposite, oval, toothed, glossy, dark green leaves, to 3cm (1 1/4in) long, and greyish beneath. Bright blue flowers are produced in dense lateral and terminal panicles, to 6cm (2 1/2in) long, from late summer to autumn. ‡ 1.5m (5ft), ↔ 2m (6ft). \*\*

*Ceanothus* 'Blue Mound' (inset: flower detail)*Ceanothus* 'Cascade'

**C. 'Burtonensis'**. Spreading, evergreen shrub with alternate, rounded, crinkled, dark green leaves, to 2cm (3/4in) long. In late spring and early summer, bears dark blue flowers in dense, rounded, terminal and lateral cymes, to 3cm (1 1/4in) across. ‡ 2m (6ft), ↔ 4m (12ft). \*\*

**C. 'Cascade'** ☐ ♀ Vigorous, evergreen, open shrub with arching branches and alternate, oblong, finely toothed, glossy, dark green leaves, to 5cm (2in) long. Bears a mass of powder-blue flowers in large, terminal and lateral panicles, to 6cm (2 1/2in) long, from spring to early summer. ‡ 4m (12ft). \*\*

**C. 'Concha'** ☐ Dense, evergreen shrub with arching branches and alternate, oblong-elliptic, finely toothed, dark green leaves, to 5cm (2in) long. In late spring, reddish purple buds open to dark blue flowers in numerous rounded, terminal and lateral cymes, to 3cm (1 1/4in) across. ‡ 3m (10ft). \*\*

**C. 'Cynthia Postan'** ☐ syn. *C. x regius* 'Cynthia Postan'. Dense, rounded, evergreen shrub with alternate, oblong, finely toothed, glossy, dark green leaves, to 4cm (1 1/2in) long, grey-green beneath. Rich blue flowers are profusely borne in dense, lateral cymes, 4–5cm (1 1/2–2in)

*Ceanothus* 'Concha'

long, in late spring and early summer. ‡ 2.5m (8ft). \*\*

**C. 'Dark Star'**. Arching, evergreen shrub with alternate, ovate, toothed, dark green leaves, to 1cm (1/2in) long, with deeply impressed veins. Honey-scented, dark purplish blue flowers are borne in rounded, terminal and lateral cymes, to 3cm (1 1/4in) across, in late spring. ‡ 2m (6ft), ↔ 3m (10ft). \*\*

**C. 'Delight'** ♀ Vigorous, bushy, evergreen shrub with alternate, oblong, glossy, dark green leaves, to 2.5cm (1in) long. Dark blue flowers are produced in terminal and lateral panicles, to 6cm (2 1/2in) long, in mid- and late spring. ‡ 3m (10ft), ↔ 5m (15ft). \*\*

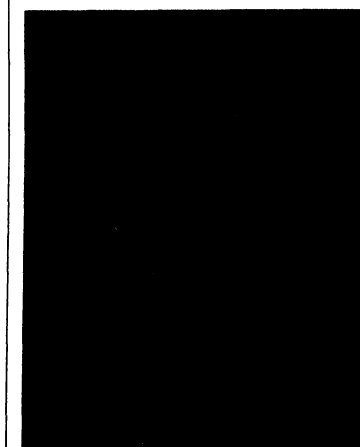
**C. x delileanus 'Gloire de Versailles'** see *C. 'Gloire de Versailles'*.

**C. dentatus**. Densely branched, spreading, evergreen shrub with rigid shoots and alternate, tightly clustered, small, oblong-elliptic, toothed, dark green leaves, to 1cm (1/2in) long. In late spring, bears dark blue flowers in small, rounded, terminal or lateral cymes, to 2cm (3/4in) across. ‡ 1.5m (5ft), ↔ 2m (6ft). USA (California). \*\*.

**var. floribundus** has broader leaves and more densely clustered flowers.

**C. divergens**. Spreading, evergreen shrub with rigid, slender shoots and opposite, flat, holly-like, dark green leaves, to 2.5cm (1in) long, with smooth margins. In spring, purple-blue flowers open from red-purple buds in dense, rounded, lateral, umbel-like cymes, to 2cm (3/4in) across. ‡ 1m (3ft), ↔ 1.5m (5ft). USA (California). \*\*

**C. 'Edinburgh'** ♀ Vigorous, dense, upright, evergreen shrub with alternate,

*Ceanothus* 'Cynthia Postan'

C

*Ceanothus* 'Gloire de Versailles'

oblong-ovate, toothed, olive-green leaves, to 7cm (3in) long. Produces rich blue flowers in lateral cymes, to 5cm (2in) long, from spring to early summer.  $\pm$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). \*\*

**C. 'Gentian Plume'**. Open, spreading, evergreen shrub with alternate, ovate-oblong, strongly veined, shallowly toothed, mid-green leaves, 8cm (3in) or more long. Deep sky-blue flowers are borne in large, open, terminal and axillary panicles, 12cm (5in) or more long, in late spring and often again in autumn.  $\pm$  4m (12ft). \*\*

**C. 'Gloire de Versailles'**  $\square$   $\nabla$  syn. *C. x delileanus* 'Gloire de Versailles'. Bushy, deciduous shrub with alternate, oval, finely toothed, dark green leaves, to 7cm (3in) long. From midsummer to autumn, bears pale blue flowers in large, terminal and axillary panicles, to 10cm (4in) or more long.  $\pm$  1.5m (5ft). \*\*\*

**C. gloriosus**. Prostrate or decumbent, evergreen shrub with opposite, oblong-elliptic, holly-like, leathery leaves, to 4cm (1½in) long, dark green and hairless above, grey-hairy beneath, with strongly toothed margins. In late spring and early summer, bears deep blue to purple flowers in rounded, terminal, umbel-like cymes, to 5cm (2in) across.  $\pm$  30cm (12in),  $\leftrightarrow$  3–4m (10–12ft). USA (California). \*\* **'Anchor Bay'** has dense growth and dark blue flowers;  $\pm$  50cm (20in),  $\leftrightarrow$  2m (6ft). **'Emily Brown'** has small, very strongly toothed leaves, to 2.5cm (1in) long, and dark indigo flowers;  $\pm$  1m (3ft),  $\leftrightarrow$  4m (12ft).

**C. griseus** (Carmel ceanothus). Vigorous, evergreen shrub producing alternate, ovate, glossy, dark green leaves, to 5cm (2in) long, grey-hairy beneath. Pale to dark blue flowers are borne in large, rounded, terminal and lateral panicles, to 7cm (3in) across, in late spring and early summer.  $\pm$  3m (10ft). USA (California). \*\* **var. horizontalis** **'Yankee Point'** bears profuse bright blue flowers;  $\pm$  60–90cm (24–36in),  $\leftrightarrow$  3m (10ft). **'Santa Ana'** is low-growing, with very dark blue flowers;  $\pm$  1.5m (5ft),  $\leftrightarrow$  5m (15ft).

**C. bearstiorum**. Prostrate, evergreen shrub with alternate, deeply veined, oblong, toothed, dark green leaves, to 3cm (1¼in) long, white-hairy beneath. Bears rich, dark blue flowers in rounded, terminal and lateral cymes, 2.5cm (1in) across, in late spring and early summer.  $\pm$  30cm (12in),  $\leftrightarrow$  2m (6ft). USA (California). \*\*

**C. 'Henri Désfosse'**. Bushy, deciduous shrub with alternate, oval, toothed, mid-green leaves, to 7cm (3in) long. From midsummer to autumn, bears dark blue flowers in large, terminal and lateral panicles, 8–12cm (3–5in) across.  $\pm$  1.5m (5ft). \*\*\*

**C. impressus** (Santa Barbara ceanothus). Spreading, evergreen shrub with small, alternate, rounded to elliptic, deeply veined, dark green leaves, to 1cm (½in) long. Dark blue flowers are produced in rounded, terminal cymes, to 2.5cm (1in) across, in mid- and late spring.  $\pm$  1.5m (5ft),  $\leftrightarrow$  2.5m (8ft). USA (California). \*\* **'Puget Blue'** is vigorous, with larger, elliptic-oblong leaves, to 2cm (¾in) long, and profuse dark blue flowers, borne in cymes to 3cm (1¼in) long;  $\pm$  3m (10ft).

**C. incanus**  $\square$  (Coast whitethorn). Spreading, stoutly branched, evergreen shrub with spiny, grey-glaucous shoots and alternate, ovate or broadly elliptic, entire or slightly toothed, grey-green leaves, to 6cm (2½in) long. In mid- and late spring, slightly fragrant, creamy white flowers are borne in lateral panicles, to 8cm (3in) long.  $\pm$  3m (10ft),  $\leftrightarrow$  4m (12ft). USA (California). \*\*

**C. 'Italian Skies'**  $\nabla$  Spreading, evergreen shrub with alternate, ovate, finely toothed, glossy, mid-green leaves, to 2cm (¾in) long. Bright blue flowers are borne in dense, conical, terminal and lateral cymes, to 7cm (3in) long, in late spring.  $\pm$  1.5m (5ft),  $\leftrightarrow$  3m (10ft). \*\*

**C. 'Julia Phelps'**. Rounded, evergreen shrub producing small, alternate, oblong-elliptic, finely toothed, dark green leaves, to 2.5cm (1in) long. Violet

flowers, opening from red-purple buds, are borne in dense, rounded, terminal and lateral cymes, to 3cm (1¼in) across, in late spring and early summer.  $\pm$  2m (6ft),  $\leftrightarrow$  2.5m (8ft). \*\*

**C. 'Marie Simon'**. Upright, bushy, deciduous shrub with alternate, oval, toothed leaves, to 5cm (2in) long, borne on red stems. Pale pink flowers open in terminal panicles, to 7cm (3in) or more long, from midsummer to autumn.  $\pm$  1.5m (5ft). \*\*\*

**C. papillosus var. roweanus**. Bushy, spreading, evergreen shrub with slender, alternate, oblong to linear, dark green leaves, to 5cm (2in) long, covered on the margins of the upper surfaces with sticky glands. Dark blue to purple-blue flowers are produced in terminal and axillary racemes, 3–4cm (1¼–1½in) long, in mid- and late spring.  $\pm$  1.5m (5ft),  $\leftrightarrow$  3m (10ft). USA (California). \*\*

**C. 'Perle Rose'**  $\square$  Bushy, deciduous shrub with alternate, oval, toothed, pale green leaves, to 5cm (2in) long. From midsummer to autumn, bears carmine-pink flowers in many terminal and lateral panicles, to 6cm (2½in) or more long.  $\pm$  1.5m (5ft). \*\*\*

**C. 'Pin Cushion'**  $\square$  Rounded, evergreen shrub with oblong-elliptic, dark green leaves, to 4cm (1½in) long. Mid-to light blue flowers are borne freely in terminal and axillary panicles, 5cm (2in) long, in late spring.  $\pm$  2m (6ft). \*\*

**C. purpureus** (Hollyleaf ceanothus). Spreading, evergreen shrub with rigid shoots and opposite, holly-like, broadly elliptic to rounded, wavy-margined, spine-toothed, glossy, dark green leaves, to 2cm (¾in) long. In spring, red-purple

*Ceanothus* 'Perle Rose'

buds open to purple-blue flowers in dense, lateral, umbel-like cymes, to 4cm (1½in) across.  $\pm$  1.2m (4ft),  $\leftrightarrow$  1.8m (6ft). USA (California). \*\*

**C. x regius** **'Cynthia Postan'** see *C. 'Cynthia Postan'*.

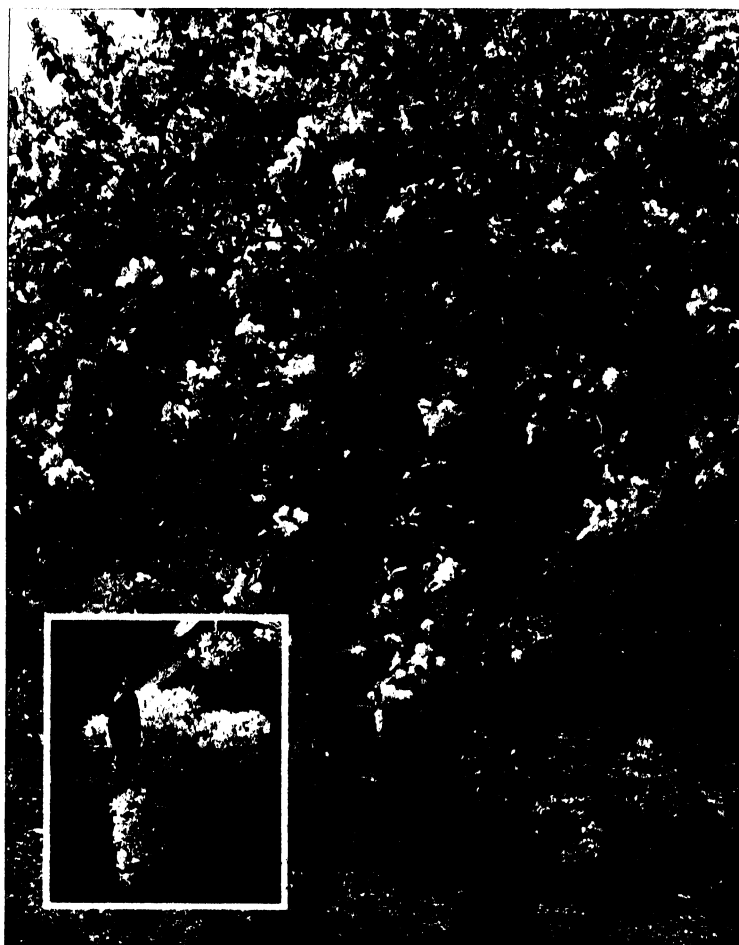
**C. repens** see *C. thyrsiflorus var. repens*.

**C. rigidus** (Monterey ceanothus). Intricately branched, evergreen shrub producing small, opposite, wedge-shaped to rounded, obovate, toothed leaves, to 1cm (½in) long, glossy, mid-green above and softly downy beneath, clustered on rigid shoots. Bright blue to purple-blue flowers are borne in dense, lateral, umbel-like cymes, to 2cm (¾in) across, during late spring and early summer.  $\pm$  1.2m (4ft),  $\leftrightarrow$  2m (6ft). USA (California). \*\* **'Snowball'** has white flowers.

**C. 'Skylark'**  $\square$  Bushy, evergreen shrub with alternate, oblong-elliptic, finely toothed, glossy, mid-green leaves, to 5cm (2in) long. Dark blue flowers are borne in profuse, open, terminal and lateral panicles, 6–8cm (2½–3in) long, in late spring and early summer.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*

**C. 'Snow Flurries'**. Vigorous, upright, evergreen shrub with opposite, obovate, toothed, dark green leaves, 0.6–1.5cm (¼–½in) long, paler green beneath. Fragrant white flowers are borne in axillary panicles, 5cm (2in) long, from mid-spring to early summer.  $\pm$  1.2m (4ft). \*\*

**C. 'Southmead'**  $\nabla$  Compact, bushy, evergreen shrub with alternate, oblong, finely toothed, dark green leaves, to 3cm (1¼in) long. In late spring and early summer, bears dark, rich blue flowers

*Ceanothus incanus* (inset: flower detail)*Ceanothus* 'Pin Cushion'

*Ceanothus* 'Skylark'

in oblong, lateral cymes, to 3cm (1¼in) long. ⚔→ 1.5m (5ft). \* \*

*C. thyrsiflorus* (Blueblossom).

Vigorous, upright, evergreen shrub with arching branches and alternate, ovate, toothed, glossy, mid-green leaves, to 4cm (1½in) long. In spring, bears pale to dark blue flowers in large, terminal and lateral panicles, 3–8cm (1¼–3in) long. ⚔→ 6m (20ft). USA (California, Oregon). \* \* \*. 'Millerton Point' has spreading branches and honey-scented, creamy white flowers in panicles to 9cm (3½in) long. *var. repens* ♀ syn. *C. repens* (Creeping blueblossom), is low and spreading; ⚔ 1m (3ft), ↔ 2.5m (8ft). USA (coastal N. California). *var. repens* 'Ken Taylor' is more prostrate; ⚔ to 30cm (12in).

*C. 'Topaze'*. Bushy, deciduous shrub producing alternate, oval, dark green leaves, to 7cm (3in) long. From mid-summer to autumn, bears dark indigo-blue flowers in large, terminal and axillary panicles, to 8cm (3in) long. ⚔→ 1.5m (5ft). \* \* \*

*C. x veitchianus* (*C. griseus* x *C. rigidus*). Spreading, rigidly branched, evergreen shrub with small, alternate or opposite, wedge-shaped, toothed leaves, to 2cm (¾in) long, glossy, dark green above and grey-green-hairy beneath. Bears dark blue flowers in dense, rounded, lateral cymes, to 3cm (1¼in) long, in mid- and late spring. ⚔→ 3m (10ft). USA (California). \* \* \* (borderline)

#### ▷ *Ceanothus*,

Carmel see *Ceanothus griseus*  
Hollyleaf see *Ceanothus purpureus*  
Monterey see *Ceanothus rigidus*  
Santa Barbara see *Ceanothus impressus*

#### ▷ Cedar see *Cedrus*

Atlas see *Cedrus atlantica*  
Blue Atlas see *Cedrus atlantica* f. *glauca*  
Chilean incense see *Austrocedrus chilensis*  
Cyprus see *Cedrus brevifolia*  
Deodar see *Cedrus deodara*  
Incense see *Calocedrus*, *C. decurrens*  
Japanese see *Cryptomeria*, *C. japonica*  
Pencil see *Juniperus virginiana*  
Tasmanian see *Athrotaxis*, *A. x laxifolia*  
Western red see *Thuja plicata*  
White see *Thuja occidentalis*  
▷ Cedar of Goa see *Cupressus lusitanica*  
▷ Cedar of Lebanon see *Cedrus libani*  
▷ *Cedrela sinensis* see *Toona sinensis*

*Cedronella canariensis*

## CEDRONELLA

LABIATAE/LAMIACEAE

Genus of one species of short-lived, woody-based perennial found on sunny, rocky slopes in the Canary Islands. It has alternate, 3-palmate leaves and 2-lipped flowers borne in long, terminal, whorled racemes. It is cultivated for its aromatic foliage, which is sometimes used in pot-pourri and herb teas. In frost-prone regions, *C. canariensis* is effective in a cool conservatory or greenhouse, or can be grown outdoors as an annual. In warmer areas, grow in a scented or herb garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. From spring to autumn, water moderately and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in well-drained, fertile soil in full sun.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in early spring. Root soft-wood cuttings in late spring.

• **PESTS AND DISEASES** Whiteflies may be a problem under glass.

*C. canariensis* ■ syn. *C. triphylla* (Balm of Gilead). Erect, woody-based, slender-stemmed perennial with aromatic, 3-palmate, mid-green leaves, 8–12cm (3–5in) long, emitting a cedar-like scent when touched. In midsummer, bears whorls of 2-lipped, white, pink, or lilac flowers, to 2cm (¾in) long. ⚔ to 1.2m (4ft), ↔ 60cm (24in). Canary Islands. ☞ (min. 5°C/41°F)

*C. mexicana* see *Agastache mexicana*.  
*C. triphylla* see *C. canariensis*.

## CEDRUS

Cedar

PINACEAE

Genus of 4 species of monoecious, evergreen, coniferous trees found in forest in the W. Himalayas and the Mediterranean. Some authorities give *C. atlantica* and *C. brevifolia* subspecific rank under *C. libani*, but they are maintained here as species. The needle-like foliage is arranged in clusters on short shoots, which develop new whorls each year. Cones are produced terminally on short shoots. The male cones, borne in autumn, are erect, cylindrical, light brown, and to 7cm (3in) long. The female cones are erect,

ovoid to oblong, cylindrical or barrel-shaped, green then brown, and to 12cm (5in) long; they ripen slowly over 2 years, then break up to release the seeds. With their large, spreading branches, cedars are majestic specimen trees, but need ample space if they are to achieve their full potential.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in a sunny, open site, in any well-drained soil, including chalk. If double leaders are produced, the weaker shoot should be cut out in autumn.

• **PROPAGATION** Sow seed in spring, after 21 days' moist pre-chill at 0–1°C (32–34°F). Graft selected cultivars in late summer or winter.

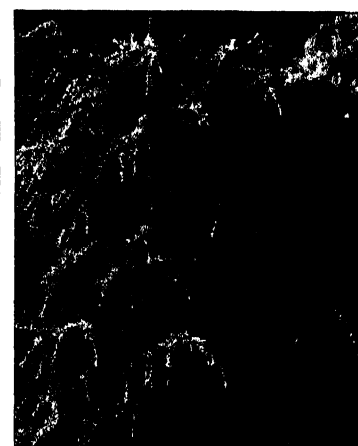
• **PESTS AND DISEASES** Very susceptible to honey fungus.

*C. atlantica* △ syn. *C. libani* subsp. *atlantica* (Atlas cedar). Conical, coniferous tree, later becoming more open, with fissured, silvery grey bark. Produces sharply pointed, roughly 4-sided, dark green to glaucous blue leaves, to 2.5cm (1in) long, in whorls of 30–45. Female cones, 6–10cm (2½–4in) long, are barrel-shaped and green, becoming pale brown. ⚔ to 40m (130ft), ↔ to 10m (30ft). Atlas Mountains. \* \* \*. 'Aurea' is a slow-growing, conical tree with golden yellow foliage when young, maturing green.

f. *fastigiata* △ is an upright, narrow-crowned tree with bluish green leaves.

f. *glauca* ■ △ △ (Blue Atlas cedar) has vivid, glaucous blue foliage, silvery white at first. 'Glaucous Pendula' △ has pendent, glaucous, blue-green foliage.

*C. brevifolia* ♀ △ syn. *C. libani* subsp. *brevifolia* (Cyprus cedar). Open-crowned, coniferous tree with a narrow habit when young, becoming broader with age, and with fissured, silvery grey bark. Sharply pointed leaves, to 1.5cm (½in) long, are grey-green to mid-green, sometimes bluish green, and borne in whorls of 20–30. Cylindrical, green then pale brown female cones are 7–10cm

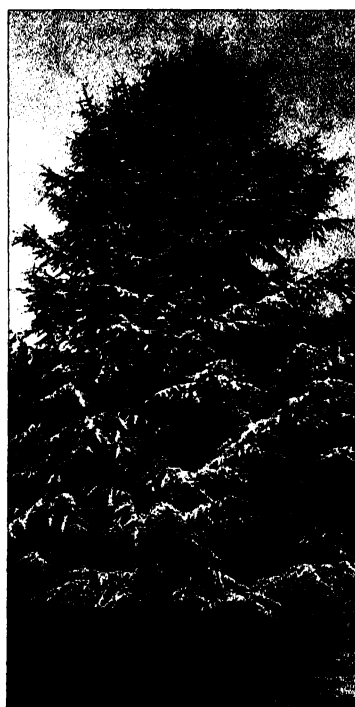
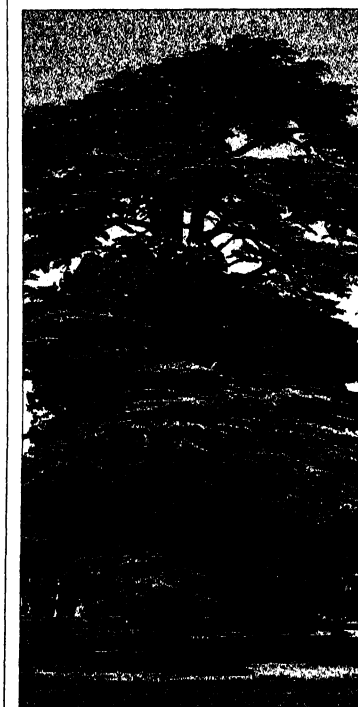
*Cedrus deodara* 'Aurea'

(3–4in) long. ⚔ 15–25m (50–80ft), ↔ to 12m (40ft). Cyprus. \* \* \*

*C. deodara* ♀ △ (Deodar cedar).

Conical, coniferous tree with spreading branches, pendent shoot tips, and dark brown or black bark. The needle-like leaves, 4–5cm (1½–2in) long, are bright to glaucous, mid-green, and produced in whorls of 20–30. Glaucous, barrel-shaped female cones, 8–12cm (3–5in) long, are green at first, ripening to brown. ⚔ to 40m (130ft), ↔ to 10m (30ft). W. Himalayas from W. Nepal to Afghanistan. \* \* \*. 'Aurea' ■ ♀ is slow-growing with golden yellow foliage, becoming greener as it matures; ⚔ 5m (15ft). 'Golden Horizon' is vigorous and flat-growing, with yellow or yellowish green foliage if grown in sun, but blue-green leaves in shade.

*C. libani* ■ □ (Cedar of Lebanon). Coniferous tree with wide-spreading branches, conical when young, flat-topped when old. The bark is black or brown with scaly fissures and ridges. Slightly flattened, 4-sided, sharply pointed, dark green to grey-green leaves, to 2.5cm (1in) long, are borne in whorls of 10–20. Barrel-shaped, dull green to brown female cones, broadest below the

*Cedrus atlantica* f. *glauca**Cedrus libani*

*Cedrus libani* 'Sargentii'

middle, are 8–12cm (3–5in) long. ♂→ to 30m (100ft). Lebanon to Turkey. \*\*\*. **subsp. atlantica** see *C. atlantica*. **subsp. brevifolia** see *C. brevifolia*. 'Sargentii' ♂♀ is slow-growing, with a pendent habit, and may be trained to make a rounded bush.

## CEIBA

Silk cotton tree

BOMBACACEAE

Genus of 4 species of large, spiny-trunked, deciduous trees from tropical North and South America, Africa, and Asia, favouring moist sites in forest and rainforest. The handsome leaves are alternate and palmate, with entire or finely toothed leaflets. Conspicuous, 5-petalled flowers are borne singly or in axillary clusters on bare stems, and are followed by large seed pods containing seeds padded with white floss (kapok). In cool climates, grow young specimens as foliage plants in a warm greenhouse. In tropical regions, silk cotton trees are splendid specimen and shade trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in large containers of loam-based potting

*Ceiba pentandra*

compost (J1 No.3) in full light shaded from hot sun. In the growing season, provide high humidity, water freely, and apply a balanced liquid fertilizer monthly; water sparingly when leafless. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun. Pruning group 1; plants under glass may need restrictive pruning.

- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring. Root semi-ripe cuttings in summer.

- **PESTS AND DISEASES** Red spider mites often infest plants under glass.

*C. pentandra* ♂♀ (Kapok, White silk cotton tree). Tall tree, erect at first, then spreading, with a spiny trunk that eventually forms buttresses. Palmate, mid-green leaves, 8–15cm (3–6in) long, are comprised of 5–8 oblong-lance-shaped, entire leaflets. Clusters of cup-shaped, yellow, white, or pink flowers, 6cm (2½in) across, are produced from late winter to early spring, before the leaves expand. ♂ 25–70m (80–230ft), ♀ 5–25m (15–80ft). W. Africa (possibly introduced from South America). ♂ (min. 16°C/61°F)

▷ **Celandine**,

**Greater** see *Chelidonium majus*

**Lesser** see *Ranunculus ficaria*

▷ **Celandine poppy** see *Stylphorum diphyllum*

## CELASTRUS

Bittersweet, Staff vine

CELASTRACEAE

Genus of about 30 species of deciduous, rarely evergreen shrubs and twining, woody climbers, with alternate, simple, usually toothed leaves. They are found worldwide but occur mainly in thickets and woodland in warm-temperate or subtropical regions. Their attraction as garden plants lies in their ornamental autumn fruits, which split when ripe to reveal coloured seeds. Male and female flowers, in terminal or axillary racemes, panicles, or cymes, are often borne on separate plants. Train against a wall, fence, or pergola, or through a tree.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in well-drained soil in full sun; will tolerate partial shade. Plant one male with at least one female to ensure fruit production. The vigorous species need strong support; if grown up trees, these should be at least 10m (30ft) tall. Pruning group 11, in winter or early spring.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe, or in spring. Insert root cuttings in winter, or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*C. articulatus* see *C. orbiculatus*.

*C. orbiculatus* ♂♀ syn. *C. articulatus* (Oriental bittersweet, Staff vine).

Vigorous, woody, deciduous climber with broadly elliptic to rounded, scalloped to toothed, mid-green leaves, to 10cm (4in) long, turning yellow in autumn. Axillary cymes of small green flowers open in summer, followed by clusters of bead-like yellow fruit that open to expose pink to red seeds. ♂ 14m (46ft). E. Asia. \*\*\*

*C. scandens* (American bittersweet, Climbing bittersweet, Staff tree, Staff

*Celastrus orbiculatus*

vine). Woody, deciduous climber bearing oval to ovate, toothed, mid-green leaves, 10cm (4in) long. In summer, produces small, yellow-green flowers in terminal panicles or racemes, followed by clusters of orange-yellow fruit with red seeds. ♂ 10m (30ft). E. North America. \*\*\*

▷ **Celery pine** see *Phyllocladus*

## CELMISIA

New Zealand daisy

ASTERACEAE/COMPOSITAE

Genus of about 60 species of evergreen, mat- or rosette-forming perennials and subshrubs, mostly from grassland, moors, or scree at high altitudes in New Zealand and S.E. Australia. They often have silky, silvery foliage, and bear daisy-like, solitary flowerheads, usually with white ray-florets (occasionally flushed lilac or pale yellow) and yellow disc-florets, in late spring and summer. They are excellent free-flowering foliage plants for a rock garden or for growing among small shrubs; grow smaller species as specimens in pans in an alpine house. Celmisias thrive in cool, moist climates.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, slightly acid, humus-rich soil in sun or partial shade. Some species, especially *C. argentea* and *C. sessiliflora*, need protection from winter wet. In dry areas, shade from hot sun, and spray regularly during dry periods. In an alpine house, grow in a mix of equal parts lime-free loam, leaf mould, and sharp sand. Move pan-grown plants to a cool outdoor site in summer.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Celmisias hybridize freely but often produce only a few viable seeds. Divide in spring, or root individual rosettes as cuttings in spring.
- **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

*C. argentea*. Cushion-forming perennial with densely packed, silver-woolly rosettes of linear leaves, to 1cm (½in) long. In late spring and early summer, bears almost stemless flowerheads, to 2.5cm (1in) across, with narrow, widely spaced white ray-florets, and yellow disc-florets. ♂ 2.5cm (1in), ♀ to 10cm (4in). New Zealand (South Island). \*\*\*

*Celmisia ramulosa*

*C. asteliifolia*. Clump-forming perennial with spreading to erect, linear silver leaves, to 8cm (3in) long. In spring, bears flowerheads to 2.5cm (1in) across, with white ray-florets and yellow disc-florets, on semi-erect, whitish green stems, to 20cm (8in) long. ♂ 15–20cm (6–8in), ♀ 30cm (12in). S.E. Australia, including Tasmania. \*\*\*

*C. bellidioides*. Mat-forming perennial with rooting stems and small rosettes of obovate-oblong or spoon-shaped, dark green, leathery leaves, to 1.5cm (½in) long. In early summer, bears white-rayed flowerheads, to 2.5cm (1in) wide, with yellow disc-florets, on green stems to 3.5cm (1½in) long. ♂ to 5cm (2in), ♀ to 30cm (12in). New Zealand (South Island). \*\*\*

*C. coriacea* of gardens see *C. semicordata*.

*C. gracilentia*. Tufted perennial with erect to semi-prostrate, very narrow, linear leaves, to 10cm (4in) long, with recurved margins; they are dark green, mottled brown above, and silky white beneath. Flowerheads, to 2cm (¾in) across, with white ray-florets and yellow disc-florets, are borne on densely grey-woolly stems, to 20cm (8in) tall, in early summer. ♂→ 20cm (8in). New Zealand. \*\*\*

*C. incana*. Clump-forming subshrub with rosettes of obovate-oblong, brilliant white, silky-hairy leaves, 3–5cm (1¼–2in) long. Flowerheads, to 3.5cm (1½in) across, with numerous white ray-florets and yellow disc-florets, are borne on white-woolly stems, to 10cm (4in) long, in early summer. ♂ to 15cm (6in), ♀ to 20cm (8in). New Zealand. \*\*\*

*Celmisia semicordata*



*Celmisia spectabilis*

**C. ramulosa** ■ Subshrub with branching stems and erect, overlapping, linear-oblong leaves, 8–10mm (3/8–1/2in) long, dark green above, densely white-woolly beneath. In late spring and early summer, bears flowerheads, 2.5cm (1in) across, with many white ray-florets and pale yellow disc-florets, on slender, sticky, whitish stems, 4–5cm (1 1/2–2in) high. ↑ to 25cm (10in). New Zealand (South Island). \*\*\*

**C. semicordata** ■ syn. *C. coriacea* of gardens. Clump-forming perennial with short rhizomes and erect, then recurved, sword- to lance-shaped, leathery, silky-hairy leaves, grey-green above, white beneath, to 30cm (12in) long. White-rayed flowerheads, to 8cm (3in) across, with yellow disc-florets, are borne on erect, whitish green stems, 30–40cm (12–16in) tall, in early and midsummer. ↑ to 50cm (20in), ↔ to 30cm (12in). New Zealand (South Island). \*\*\*

**C. sessiliflora**. Cushion-forming perennial with rosettes of densely silver-woolly, sometimes olive-green, stiff, linear leaves, to 1.5cm (1/2in) long. Flowerheads, to 3cm (1 1/4in) across, with white ray-florets and yellow disc-florets,

are produced on whitish green stems, 2.5–5cm (1–2in) long, in early summer. ↑ to 5cm (2in), ↔ to 20cm (8in). New Zealand (South Island). \*\*\*

**C. spectabilis** ■ Tufted, clump-forming perennial with short rhizomes and narrowly oblong-lance-shaped, wide-spreading, leathery leaves, to 25cm (10in) long, glossy, dark green to silvery green above, and densely white- to buff-woolly beneath. Flowerheads, to 5cm (2in) across, with long white ray-florets and yellow disc-florets, are borne on densely whitish-woolly stems, 10–25cm (4–10in) long, in early summer. ↑ to 30cm (12in). New Zealand. \*\*\*

**C. walkeri** ■ syn. *C. webbiana*. Subshrub with spreading, semi-decumbent, woody stems and terminal rosettes of linear-oblong, leathery, grey-green leaves, to 5cm (2in) long, densely white-woolly beneath. In early summer, white-rayed flowerheads, to 4cm (1 1/2in) wide, with yellowish white disc-florets, are borne on slender, sticky green stems, to 20cm (8in) tall. ↑ to 30cm (12in). New Zealand (South Island). \*\*\*

**C. webbiana** see *C. walkeri*.

## CELOSIA

Cockscomb

AMARANTHACEAE

Genus of 50–60 species of erect annuals, perennials, and shrubs from dry slopes, stony soils, and scrub in subtropical and tropical Asia, Africa, and North, Central and South America. Celosias have alternate, lobed or simple, oval to lance-shaped leaves and brightly coloured, terminal or axillary cymes of tiny flowers. The cultivars often have plume-like (Plumosa group) or crested (Cristata or Cockscomb group) inflorescences: the upright plumes of Plumosa group cultivars are frequently used for summer bedding schemes, while Cristata group cultivars, with their tightly clustered flowerheads, are used as summer-flowering container plants. Cristata



*Celmisia walkeri*



*Celosia argentea* Century Series 'Century Yellow'

group cultivars flower best in a warm greenhouse. Both groups are treated as annuals and discarded after flowering; they provide good cut flowers, either fresh or dried.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No. 1) in full light with good ventilation; when in bloom, admit only bright filtered light to prolong flowering. Once the roots fill the container, water moderately but regularly, mist lightly, and apply a balanced liquid fertilizer every 2 weeks. Outdoors, after any danger of frost has passed, plant in moist but well-drained, fertile soil in a sheltered position in full sun; water freely in dry weather.

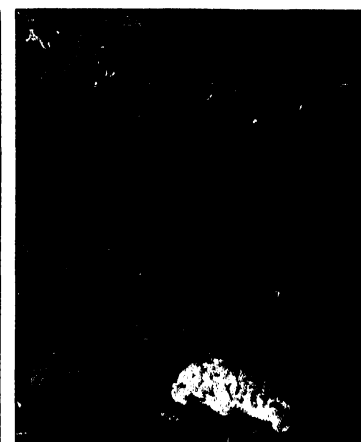
• **PROPAGATION** Sow seed at 18°C (64°F) from early to late spring.

• **PESTS AND DISEASES** Prone to foot and root rot, and fungal leaf spot diseases. Red spider mites, whiteflies, and aphids may be a problem under glass.

**C. argentea**. Upright, branching perennial, usually grown as an annual, with oval to lance-shaped, pale green leaves, to 15cm (6in) long. Flowers are



*Celosia argentea* 'Fairy Fountains'



*Celosia argentea* Olympia Series

silvery white, and produced in dense, terminal spikes, 5–10cm (2–4in) long, in summer. ↑ to 60cm (24in), ↔ to 45cm (18in). Equatorial tropics in Asia, Africa, and North, Central, and South America. \*. Cultivars also flower in summer and are available in red, orange, yellow, and cream. Plumosa group cultivars have open, feathery, pyramidal flowerheads, 10–25cm (4–10in) long; those in the Cristata or Cockscomb group are compact plants with crested, coral-like heads of tightly clustered flowers, 8–12cm (3–5in) across.

'**Apricot Brandy**' (Plumosa group) is a many-branched cultivar producing deep orange flowerheads; ↑ to 50cm (20in). Cultivars of **Century Series** (Plumosa group) are among the most vigorous and widely cultivated, bearing vivid red, rose-pink, or yellow flowerheads; '**Century Yellow**' ■ is a vigorous cultivar with golden yellow flowerheads suitable for drying; ↑ to 45cm (18in).

'**Fairy Fountains**' ■ (Plumosa group) has flowerheads in a range of pastel colours including pink, salmon-pink, and creamy yellow; ↑ to 40cm (16in).

**Kimono Series** (Plumosa group) cultivars are dwarf, producing large flowerheads in bright colours including salmon-pink, rose-red, yellow, or creamy white; ↑ to 20cm (8in). Cultivars of **Kurume Series** (Cristata group) are available in a wide colour range, including gold, yellow, rose-pink, orange, scarlet, orange-red, and red-and-gold bicolours; the flowerheads, good for cutting, are to 20cm (8in) across; ↑ 1.2m (4ft). '**New Look**' (Plumosa group) has dark purple-green foliage and bears deep red flowerheads; ↑ to 45cm (18in). **Olympia Series** ■ (Cristata group) cultivars are dwarf, and bear flowerheads in colours including golden yellow, scarlet, light red, deep cerise and purple; ↑ to 20cm (8in).

**C. spicata Flamingo Series**. Cultivars from this series (derived from *C. spicata*) are upright and branching, with lance-shaped, mid-green leaves, 6–12cm (2 1/2–5in) long. In summer, they bear compact, erect and cylindrical, barley-like spikes of flowers, 10–12cm (4–5in) long, pink towards the tips and silvery white at the bases. The flowers are excellent for both cutting and drying. ↑ to 18cm (7in), ↔ to 15cm (6in). \*

▷ *Celsia* see *Verbascum*

*C. acaulis* see *V. acaule*

*C. arcturus* see *V. arcturus*

# CELTIS

Hackberry, Nettle tree

ULMACEAE

Genus of about 70 species of deciduous and evergreen trees and shrubs from temperate and tropical regions in both hemispheres, usually found in woodland, on rocky slopes, or on riverbanks. Hackberries are grown for their form, habit, and foliage, which often colours well in autumn. They have alternate and usually toothed leaves. The small green, unisexual flowers are borne in spring; male flowers are produced in clusters at the base of twigs, while the females are produced singly or in twos or threes from the leaf axils, and are followed in autumn by spherical, fleshy berries. Use hackberries as lawn specimens or in a woodland garden. They grow best in continental climates with hot summers; in cool, maritime climates they often form small, multi-stemmed trees.

• **HARDINESS** Fully hardy.

• **CULTIVATION** In warm climates, grow in deep, fertile, well-drained soil in sun or partial shade. In cooler areas, hackberries thrive on dry soils and need a warm site in full sun. Pruning group 1.

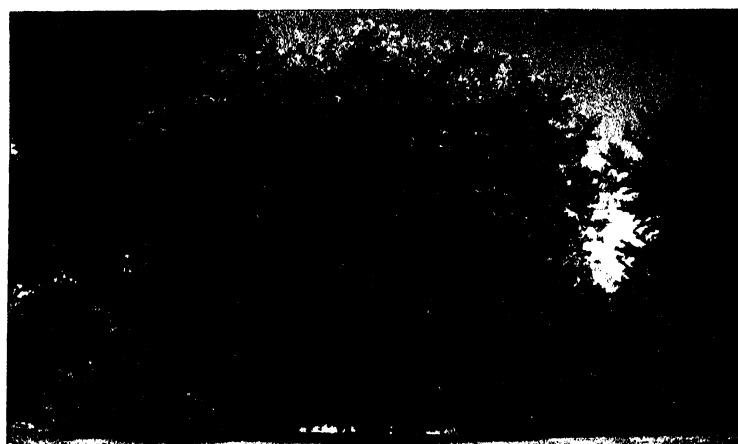
• **PROPAGATION** Sow seed in a seedbed or open frame in autumn.

• **PESTS AND DISEASES** Trouble free.

**C. australis** [ ] ♀ (Southern nettle tree). Spreading, deciduous tree producing ovate to lance-shaped, rough, coarsely



*Celtis australis* (inset: leaf detail)



*Celtis occidentalis*

toothed leaves, to 15cm (6in) long; they are dark green above, downy and light green beneath, turning yellow in autumn. Bears edible red fruit, to 1cm (½in) across, ripening blackish brown. ♂→ 20m (70ft). Mediterranean, S.W. Asia. \*\*\*

**C. laevigata** ♀ (Common hackberry, Mississippi hackberry, Sugar hackberry). Spreading, deciduous tree with ovate to lance-shaped, entire or sparsely toothed leaves, to 10cm (4in) long, dark green and hairless above, paler and softly hairy on the veins beneath. Sweet, edible, orange-red fruit, to 7mm (¼in) across, ripen to purple-black. ♂→ 12m (40ft). S. USA. \*\*\*

**C. occidentalis** [ ] ♀ (Hackberry, Sugarberry). Spreading, deciduous tree with broadly ovate to ovate-lance-shaped, sharply toothed leaves, to 12cm (5in) long, rounded to heart-shaped at the bases; they are glossy, mid-green above, paler green and sparsely softly hairy on the veins beneath. Sweet, edible fruit, to 1cm (½in) across, ripen from yellow or red to purple. ♂→ 20m (70ft). ♂→ 15m (50ft). E. North America. \*\*\*

**C. reticulata** ♀ (Western hackberry, Sugarberry). Spreading, deciduous tree

or shrub producing thick, oblong to ovate, usually entire but sometimes toothed, dark green leaves, to 10cm (4in) long, bright green above, darker with downy veins beneath. Sweet, edible, orange-red fruit, to 1cm (½in) across, ripen to deep purple. ♂→ 8m (25ft). S.W. USA. \*\*\*

**C. sinensis** ♀ Spreading, deciduous tree producing oblong to ovate leaves, to 8cm (3in) long, shallowly blunt-toothed except at the bases, glossy, dark green above, duller beneath, and hairless on both sides. Sweet, edible fruit, to 1cm (½in) across, are dark orange, ripening to red-brown. ♂→ 12m (40ft). E. China, Korea, Japan. \*\*\*

# CENTAUREA

Hardheads, Knapweed

ASTERACEAE/COMPOSITAE

Genus of about 450 species of annuals, biennials, perennials, and subshrubs found in dry sites, including woodland, rocky mountain slopes, subalpine meadows, and sand dunes. They occur mainly in Europe and the Mediterranean, with a few in Asia, Australia, and North America. The simple leaves are pinnatisect or pinnatifid, and sometimes silver-hairy. They bear spherical or hemispherical flowerheads with tubular, usually deeply lobed florets, the outer ones often longer and more spreading than the rest. Each flowerhead has a conspicuous involucre, the bracts overlapping, fringed, and often with toothed or spiny, silvery white or black tips. Grow in a border or rock garden; some are ideal for naturalizing in grass or in a wildflower garden. Some frost-hardy perennials are grown as summer bedding annuals. For winter flowering, grow *C. cyanus* in containers. All are attractive to bees and butterflies.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in well-drained soil in full sun. *C. macrocephala* and *C. montana* and its cultivars require moist but well-drained soil in sun or partial shade; other perennials will tolerate some drought.

• **PROPAGATION** Sow seed of annuals *in situ* in spring, or in biodegradable containers to avoid root disturbance; seed of *C. cyanus* may be sown in early autumn to flower early the next year. Sow seed of perennials in containers in a cold frame in spring, and divide in spring or autumn. Sow seed of *C.*



*Centaurea cyanus*

*montana* in late summer, or insert root cuttings in winter.

• **PESTS AND DISEASES** Powdery mildew may be a problem.

**C. bella**. Clump-forming perennial with densely white-woolly stems and obovate to fiddle-shaped, pinnatifid, feathery, light green leaves, to 12cm (5in) long, with elliptic to obovate lobes, the terminal lobes larger than the rest. Leaf undersides and flower stems are covered in fine white hairs. Pale pink to purple-pink flowerheads, to 4.5cm (1½in) across, are borne in midsummer. ♂→ 20–30cm (8–12in), ♂→ 45cm (18in). Caucasus. \*\*\*

**C. benoistii**. Clump-forming, woody-based perennial producing oblong-spoon-shaped, pinnatisect, mid-green leaves, to 6cm (2½in) long, with linear, sometimes toothed lobes. Pale pink or purple flowerheads, 3cm (1¼in) across, are borne in summer. ♂→ 50–100cm (20–39in), ♂→ 30–60cm (12–24in). Morocco. \*\*\*

**C. candidissima** of gardens see *C. cineraria*.

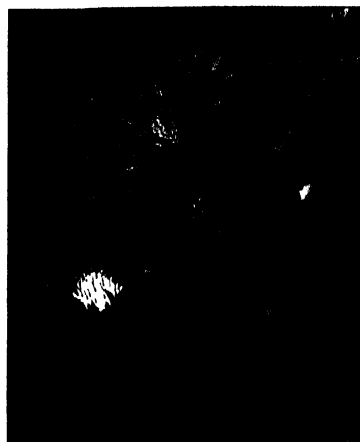
**C. cineraria** ♀ syn. *C. candidissima* of gardens. Very variable, erect, or sometimes prostrate, evergreen perennial with sparsely branched stems. Lance-shaped to ovate, pinnatifid to 2-pinnatisect, grey-white leaves, 8–15cm (3–6in) long, with elliptic to lance-shaped lobes, are woolly on both sides. In summer, bears purple flowerheads, 1–2.5cm (½–1in) across. ♂→ 80cm (32in), ♂→ 45cm (18in). W. and S. Italy, including Sicily. \*\*\*

**C. cyanus** [ ] (Blue-bottle, Cornflower). Erect annual with lance-shaped, entire



*Centaurea dealbata* 'Steenbergii'



*Centaurea hypoleuca* 'John Coutts'

leaves, 10–20cm (4–8in) long, the lower leaves with a few pinnatifid lobes, and woolly-hairy beneath. Dark blue flowerheads, 2.5–4cm (1–1½in) across, with violet-blue inner florets, are borne from late spring to midsummer. ↑ 20–80cm (8–32in), ↔ 15cm (6in). N. temperate regions. \*\*\*. **Baby Series** cultivars are excellent in containers, and usually available with blue, white, or pink flowerheads; ↑ to 30cm (12in), ↔ 20cm (8in). **Florence Series** cultivars are compact, uniform, and many-branched, with flowerheads in cherry-red, pink, or white; ↑ to 35cm (14in), ↔ to 25cm (10in). **Standard Tall Group** cultivars produce flowerheads in a range of colours, including blue, white, pink, and shades of mauve and maroon; they are good for cut flowers; ↑ 1–1.2m (3–4ft), ↔ 25cm (10in).

**C. dealbata.** Clump-forming perennial with obovate, pinnatisect leaves, to 20cm (8in) long, light green above and grey-green beneath. White-centred pink flowerheads, to 4cm (1½in) across, are produced in midsummer. Requires staking, but easy to grow. Flowerheads are good for cutting. ↑ 90cm (36in), ↔ 60cm (24in). Caucasus. \*\*\*.

*Centaurea macrocephala*

**'Steenbergii'** ■ has dark carmine-pink flowerheads with white-tinged disc-florets; ↑ 60cm (24in).

**C. hypoleuca.** Clump-forming perennial with gently spreading roots and elliptic-lance-shaped, pinnatifid, wavy-margined leaves, 15–20cm (6–8in) long, light green above and grey-white beneath. Bears long-lasting, fragrant, pale to deep pink flowerheads, 6cm (2½in) across, in summer. ↑ 60cm (24in), ↔ 45cm (18in). Caucasus, Turkey, Iran. \*\*\*. **'John Coutts'** ■ has deep rose-pink flowerheads.

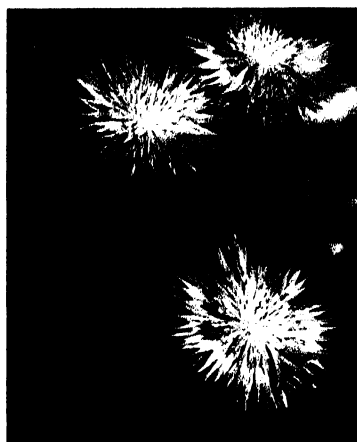
**C. macrocephala** ■ Clump-forming, robust perennial with broadly lance-shaped, pinnatifid, mid-green leaves, 15–20cm (6–8in) long, and stiff, leafy stems. In mid- and late summer, buds with fringed, glossy brown involucre bracts, open to deep, rich yellow flowerheads, 4.5–5cm (1¾–2in) across. ↑ to 1.5m (5ft), ↔ 60cm (24in). Caucasus, Turkey. \*\*\*.

**C. montana** ■ Rhizomatous, mat-forming perennial with ovate to broadly lance-shaped, entire to pinnatifid, sometimes slightly toothed, mid-green leaves, 6cm (2½in) long, woolly beneath, with densely woolly stems. Blue flowerheads, 5cm (2in) across, with reddish violet florets, open from late spring to midsummer. Needs staking. ↑ 45cm (18in), ↔ 60cm (24in). Europe to Poland and N.W. Balkans. \*\*\*. **f. alba** has white flowerheads. **'Carnea'**, syn. **'Rosea'**, produces pink flowerheads. **'Parham'** has large, dark lavender-blue flowerheads. **'Rosea'** see **'Carnea'**. **'Violetta'** bears dark violet flowerheads.

**C. moschata** see *Amberboa moschata*.

**C. pulcherrima** ■ Clump-forming perennial with lance-shaped to broadly lance-shaped, pinnatifid, silvery green leaves, to 25cm (10in) long. In midsummer, stiff, slender stems each bear a solitary flowerhead, to 5cm (2in) across, with silvery yellow involucre bracts and rose-pink or purple-pink florets. ↑ 30–40cm (12–16in), ↔ 60cm (24in). Caucasus, Turkey. \*\*\*.

**C. 'Pulchra Major'**, syn. *Leuzea centauroides*. Clump-forming perennial with numerous pinnatisect, narrowly ovate leaves, 15–45cm (6–18in) long, dark green above and grey-green beneath. In midsummer, tall stems bear striking buds, with bristly, glossy, silvery green bracts, which open to flowerheads, 8cm (3in) across, with bright purplish red florets. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*\* (borderline)

*Centaurea montana**Centaurea pulcherrima*

**C. simplicicaulis.** Rhizomatous perennial forming a dense mat of 2-pinnate, hairy, mid-green leaves, 5cm (2in) long, with 1–4 pairs of elliptic to rounded leaflets. In late spring and early summer, elongated buds, with white-tipped involucre bracts, open to silvery rose-pink flowerheads, 5cm (2in) across, on stiff, slender stems. ↑ to 25cm (10in), ↔ 60cm (24in). S. Caucasus, N. Turkey. \*\*\*.

**C. triumfettii subsp. stricta.** Perennial with short rhizomes and narrowly lance-shaped, entire or slightly toothed, densely grey-woolly leaves, 10cm (4in) long. Solitary, terminal flowerheads, to 2.5cm (1in) across, with clear blue outer florets and reddish violet central florets, and brown, white-tipped bracts, are borne on axillary branches in early summer. ↑ 30cm (12in), ↔ 60cm (24in). C. and E. Europe, N. Balkans. \*\*\*.

## CENTAURIUM

syn. ERYTHRAEA  
Centaury

GENTIANACEAE

Widely distributed genus of about 30 species of rosette-forming or tufted annuals, biennials, and perennials, from Europe, N. Africa, Australia, Chile, the USA, and W. Asia, often found in seaside habitats. Their leaves are mostly obovate to elliptic, grey-green to pale green, and 1–5cm (½–2in) long. Flat-topped cymes of upright, shallowly bell-shaped or salverform flowers are borne from early to late summer. Grow in a rock garden, trough, or alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained soil in full sun. Centauries are often short-lived, so propagate regularly.
- **PROPAGATION** Sow seed in containers in a cold frame, as soon as ripe or in autumn. Divide in spring.
- **PESTS AND DISEASES** Prone to red spider mites and aphids under glass. Susceptible to slugs and snails outdoors.

**C. erythraea** (Common centaury). Variable, rosetted biennial or short-lived perennial with solitary or branching stems, and mostly basal, obovate to elliptic, grey-green leaves, 1–5cm (½–2in) long, with 3–7 prominent, parallel veins. In summer, stems 3–8cm (1¼–3in) long bear branched, flat-topped cymes of pink or pink-purple, salverform flowers, each to 1.5cm (½in) across. Thrives in sun or partial shade.

↑ to 8cm (3in), ↔ 2.5cm (1in). Dry grassland in Europe and W. Asia. \*\*\*. **C. portense** see *C. scilloides*. **C. scilloides**, syn. *C. portense* (Perennial centaury). Evergreen, tufted perennial with short rhizomes and decumbent to upright stems bearing ovate-elliptic to oblong, glossy, pale green leaves, to 2cm (¾in) long. In early summer, produces cymes of open bell-shaped or salverform, bright pink flowers, 1–2cm (½–¾in) across, on stems 5–8cm (2–3in) long. Often self-seeds. ↑ to 8cm (3in), ↔ to 15cm (6in). W. Europe. \*\*\*.

▷ **Centaury** see *Centaureum*  
**Common** see *C. erythraea*  
**Perennial** see *C. scilloides*

## CENTRADENIA

MELASTOMATACEAE

Genus of 4 or 5 species of evergreen perennials and small shrubs found at forest margins and in moist scrub in Mexico and Central America. They are grown mainly for their small, 4-petalled pink flowers, borne abundantly in terminal or axillary racemes or panicles, and for their attractive foliage. The leaves are entire, often strongly 3-veined, and arranged in opposite pairs; one leaf of each pair is usually smaller than the other. In frost-prone climates, grow in a warm greenhouse. In warmer areas, use in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. In growth, water freely, apply a balanced liquid fertilizer monthly, and provide high humidity; water moderately in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in partial shade. Pruning group 9, after flowering.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root softwood cuttings in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**C. floribunda.** Small, softly hairy shrub of open habit with lance-shaped leaves, 2.5–5cm (1–2in) long, mid- to dark green above and glaucous beneath, with reddish green veins. From winter to spring, bears small, lilac-pink flowers, white within, and 8mm (⅓in) across, in terminal panicles, to 10cm (4in) across. ↑ 30–90cm (12–36in). Mexico to Guatemala. ☼ (min. 13°C/55°F)

## CENTRANTHUS

Valerian

VALERIANACEAE

Genus of 8–12 species of annuals and perennials, a few subshrubby, from dry, sunny slopes, often on chalky soils, in S. Europe, the Mediterranean, N.W. Africa, and S.W. Asia. They have erect, branched stems, simple or pinnate, opposite leaves, and funnel-shaped, red or white flowers, borne in terminal and axillary cymes. *C. ruber*, the only species in common cultivation, is valued for being free- and long-flowering. It is suitable for a border, but grows best on old walls and dry, stony banks. It is attractive to bees and other insects.

- **HARDINESS** Fully hardy to half hardy.

C

*Centranthus ruber*

- **CULTIVATION** Grow in well-drained, poor to moderately fertile, preferably chalk or lime soil in full sun. Dead-head regularly and replace every 3 or 4 years.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide perennials with care in early spring.
- **PESTS AND DISEASES** Trouble free.

**C. ruber** ■ (Red valerian). Clump-forming, woody-based, many-branched perennial producing simple, lance-shaped to ovate, slightly toothed or entire, fairly fleshy, glaucous, deep to mid-green leaves, to 8cm (3in) long. Dense cymes of small, funnel-shaped, fragrant, white, pale rose-pink, or dark crimson flowers, 1.5cm (½in) long, are borne from late spring to late summer. Self-seeds freely. ↑ to 1m (3ft). Mediterranean (S. Europe and N. Africa to Turkey). \*\*\*

## CEPHALANTHUS

### RUBIACEAE

Widely distributed genus of about 10 species of deciduous and evergreen trees and shrubs found mainly by rivers in temperate and tropical regions of Africa, Asia, and North and Central America. They are grown for their ball-like, terminal or axillary heads of small, fragrant flowers. The leaves are opposite or whorled. Suitable for a shrub border; grow frost-tender species in a temperate greenhouse. The foliage may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained, neutral to acid soil in full sun. Pruning group 6.
- **PROPAGATION** Sow seed of hardy species in containers in a cold frame in autumn. Take semi-ripe cuttings in summer, or hardwood cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

**C. occidentalis** ♀ (Buttonbush, Button-willow, Honey-balls). Open-branched, deciduous shrub or small tree with oval to elliptic-lance-shaped leaves, to 18cm (7in) long. The glossy, mid-green leaves, with red veins and red midribs beneath, are opposite or arranged in whorls of 3, and emerge in late spring. Dense, rounded heads, to 2.5cm (1in) across, of small, very fragrant, tubular-funnel-shaped, white or cream flowers, are produced in late summer and early autumn. ↑ 2m (6ft),

↔ 2.5m (8ft), occasionally to 5m (15ft). North America, Mexico, Cuba. \*\*\*. **var. pubescens** has oblong to ovate-lance-shaped leaves, and produces flowerheads to 5cm (2in) across. USA (Indiana to Texas).

## CEPHALARIA

### DIPSACACEAE

Genus of about 65 species of annuals and perennials, occurring in habitats ranging from meadows to mountain pastures, from Europe and Africa to C. Asia. They have opposite, pinnatifid or pinnatisect, toothed leaves and scabious-like, terminal flowerheads, usually pale yellow or white, with several rows of stiff involucre bracts. Grow at the back of a herbaceous border or in a wildflower garden.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in early spring. Divide in early or mid-spring.
- **PESTS AND DISEASES** Trouble free.

**C. alpina**, syn. *Scabiosa alpina*. Clump-forming perennial with elliptic, pinnate or pinnatisect, basal leaves, 15–40cm (6–16in) long, consisting of 3–8 pairs of oblong-lance-shaped, toothed leaflets or lobes. Bears long-stalked, pale yellow flowerheads, 3cm (1¼in) or more wide, the outer florets larger than the rest, in early and midsummer. ↑ to 2m (6ft), ↔ 60cm (24in). Jura mountains, S.W. and C. Alps, N. Apennines. \*\*\*

**C. gigantea** ■ syn. *C. tatarica*, *Scabiosa gigantea*, *S. tatarica*. (Giant scabious, Yellow scabious). Clump-forming perennial producing pinnatisect, basal leaves, to 40cm (16in) long, with oblong to broadly lance-shaped, coarsely toothed lobes. In summer, stout, few-branched stems bear primrose-yellow flowerheads, 4–6cm (1½–2½in) across, the outer florets larger than the rest. ↑ to 2.5m (8ft), ↔ 60cm (24in). Caucasus, N. Turkey. \*\*\*

**C. tatarica** see *C. gigantea*.

## CEPHALOCEREUS

### CACTACEAE

Genus of 3 species of columnar, erect, occasionally branching, hairy, perennial cacti from rocky areas of C. Mexico. They have ribbed stems with closely set areoles and numerous spines. Mature plants develop woody growths that bear funnel-shaped flowers in summer, followed by ovoid, dry, hairy red fruits. In frost-prone regions, grow in a warm greenhouse or conservatory, or use as houseplants. In warm, dry climates, grow outdoors in a desert garden. Many species once included in *Cephalocereus* have been transferred to *Pilosocereus* and other genera.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 3 parts standard cactus compost and 1 part limestone chippings in full light. During the growing season, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep plants completely dry in winter. Outdoors, grow in sharply drained, poor to

*Cephalocereus senilis*

moderately fertile, slightly alkaline soil in full sun. See also pp.48–49.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Susceptible to root mealybugs.

**C. euphorbioides** see *Neobuxbaumia euphorbioides*.

**C. senilis** ■ (Old man cactus).

Columnar cactus producing 20–30 ribs. The areoles bear long, twisting, bristly white hairs, that lengthen as the plant ages and almost cover the grey spines (3–5 centrals and 20–30 radials). Nocturnal pink flowers, 5cm (2in) long, are produced in summer. ↑ 12m (40ft), ↔ to 2m (6ft). C. Mexico. ☉ (min. 10°C/50°F)

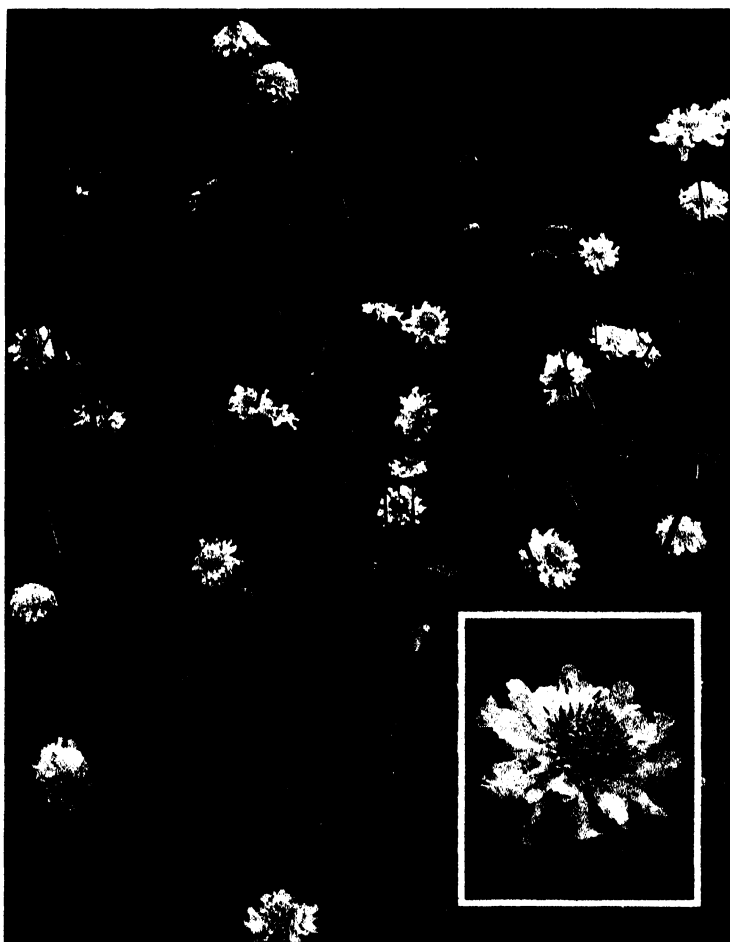
## CEPHALOPHYLLUM

### AIZOACEAE

Genus of about 60 species of creeping, clump-forming or spreading, perennial succulents from sandy coastal regions of S.W. Africa and South Africa. They have fleshy, cylindrical to 3-angled leaves. Branched cymes of up to 3 many-petalled, large, daisy-like flowers, with yellow, red, purple, or white petals, and often with colourful stamens, open at about midday in summer. In frost-prone areas, grow in a cool or temperate greenhouse. In warm, dry regions, use as ground cover.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 2 parts each loam and sharp sand and 1 part leaf mould in full light; provide shade from hot sun and good ventilation. When in growth, water moderately and apply a low-nitrogen liquid fertilizer monthly. Keep plants almost dry at other times. Outdoors, grow in poor to moderately fertile, sharply drained, humus-rich soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F), or root cuttings, both in late spring.
- **PESTS AND DISEASES** Susceptible to aphids while flowering.

**C. alstonii** ■ Prostrate succulent with grey-green branches, 50cm (20in) or more long, and cylindrical, recurved, semi-erect, spotted, greyish green leaves, to 7cm (3in) long, the upper surfaces flattened. In summer, produces long-stemmed, ruby-red flowers, to 8cm (3in) across, with violet stamens. ↑ 10cm

*Cephalaria gigantea* (inset: flowerhead detail)



*Cephalophyllum alstonii*

(4in), ↔ indefinite. South Africa (Western Cape). ☼ (min. 7°C/45°F) *C. pillansii*. Variable, prostrate, perennial succulent with greenish red, later grey branches, 30–40cm (12–16in) long, and cylindrical, recurved, spotted, dark green leaves, 2.5–20cm (1–8in) long. Short-stemmed, yellow, red-centred flowers, to 6cm (2½in) across, are borne in profusion in summer. † 8cm (3in) or more, ↔ 60cm (24in). Namibia, South Africa (Western Cape, Northern Cape). ☼ (min. 7°C/45°F)

## CEPHALOTAXUS

Plum yew

CEPHALOTAXACEAE

Genus of up to 9 species of evergreen, normally dioecious, occasionally monoecious, coniferous, small trees or shrubs from forest understorey in N.E. India, Burma, Vietnam, China, Korea, Japan, and Taiwan. The dark or mid-green foliage is yew-like, spreading, and 2-ranked on either side of the green shoots; the undersides of the leaves have glaucous or silver bands. Male flowers are produced in spherical clusters from the axils on the undersides

of the weaker shoots. Female plants produce fruits that consist of a single hard seed surrounded by a fleshy green covering. Plum yews grow well in shaded sites and are useful as hedges. They prefer cool, moist climates.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in partial shade, or in sun in cool, moist climates; will tolerate a range of soil types. Shelter from cold, dry winds. Trim hedges in early summer. Tolerant of hard clipping.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or in spring after stratification. Seed may take 2 years to germinate. Root greenwood or semi-ripe cuttings of terminal or epicormic shoots in summer or autumn; cuttings from sideshoots seldom develop satisfactorily.
- **PESTS AND DISEASES** Trouble free.

*C. fortunei* ♂ (Fortune plum yew). Shrub or narrow-crowned, small, coniferous tree with whorled branches and shredding or scaly, red-brown bark. Linear or slightly curved, mid-green leaves, 4–9cm (1½–3½in) long, with 2 white bands beneath, are borne in flat or slightly V-shaped sprays. Ovoid to elliptic, olive-green fruit, to 2.5cm (1in) long, ripening to purple-brown, are borne on short stalks on female plants. † to 10m (30ft), ↔ to 5m (15ft). C. and E. China. \*\*\*

*C. harringtoniana* (Cowtail pine, Plum yew). Coniferous shrub, occasionally a small tree, with sharp-pointed, slightly curved or linear, dark green leaves, 4–6cm (1½–2½in) long, rising either side of the shoots in a wide V-shape. Female plants produce ovoid to obovoid, olive-green fruit, 3cm (1¼in) long, in autumn. † 3–10m (10–30ft), ↔ 3–6m (10–20ft). Korea, Japan. \*\*\* *var. drupacea* ♂ is a small tree with a wide, rounded crown and narrowly furrowed, partially peeling, dark grey bark. The leaves, 2.5–3.5cm (1–1½in) long, are arranged on each

shoot in 2-ranks in a V-shape; ↔ 1–5m (3–15ft); Japan, C. and W. China. 'Fastigiata' is a shrub, with erect branches and radially arranged leaves, to 8cm (3in) long; † ↔ 5m (15ft).

## CERARIA

PORTULACACEAE

Genus of 5 or 6 species of succulent, sometimes deciduous shrubs from hilly areas of Namibia and South Africa, with short, swollen trunks and often with waxy bark. They are grown for their thick, fleshy leaves, which are usually opposite, occasionally alternate, and for their small, funnel-shaped, white or pink flowers, borne singly or in clusters of 2–6 in summer. Both male and female plants are needed to obtain fruit. In frost-prone areas, grow in a temperate conservatory or greenhouse, or as houseplants. In warm, dry areas, grow in a border or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 3 parts standard cactus compost and 1 part leaf mould in full light with shade from hot sun. When in growth, water moderately and apply a low-nitrogen fertilizer monthly. Keep almost dry at other times. Outdoors, grow in well-drained, poor to moderately fertile, humus-rich soil in a sheltered, sunny site. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe, or root stem cuttings in spring.
- **PESTS AND DISEASES** Susceptible to aphids early in the growing season.

*C. pygmaea*. Dwarf, succulent shrub with a short caudex bearing spreading, stiff, fleshy, often down-curving stems covered with thick, ovoid, fleshy, bluish green or yellow-green leaves, to 1.5cm (½in) long. Clusters of 2–5 pale pink flowers, 3–6mm (¼–¼in) across, are produced in summer. † 20cm (8in), ↔ 30cm (12in). Namibia, South Africa (Western Cape, Northern Cape). ☼ (min. 16°C/61°F)

## CERASTIUM

CARYOPHYLLACEAE

Genus of up to 100 annuals and mainly carpet-forming or tufted perennials from temperate and arctic zones of Europe and North America. They are generally hairy, with tiny, star-shaped white flowers with 5 petals, deeply indented or cleft in 2, borne singly or in cymes. The leaves are usually simple, opposite, and entire. *Cerastium* species include many weeds; the species in cultivation are mainly vigorous and mat- or carpet-forming. Grow at the front of a border, on a wall, or in a large rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun. *C. tomentosum* is useful for poor soil on dry, sunny banks.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Divide in spring; root stem tip cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

*C. tomentosum* ♂ (Snow-in-summer). Rampant, carpet- or mat-forming perennial producing linear or lance-shaped, white- or silver-woolly



*Cerastium tomentosum*

leaves, 1–3cm (½–1¼in) long. Profuse cymes of star-shaped white flowers, to 2.5cm (1in) across, are borne in late spring and summer. † 5–8cm (2–3in), ↔ indefinite. Italy, including Sicily, and widely naturalized elsewhere in Europe. \*\*\*

## CERATOPETALUM

CUNONIACEAE

Genus of 5 species of evergreen shrubs and trees from open woodland and rainforest in Australia and New Guinea. They are valued for their terminal and axillary panicles of 4- or 5-petalled flowers. After flowering, the calyces enlarge and become brightly coloured, producing a second, showier floral display. Leaves are simple or 3-palmate, and borne in opposite pairs. In frost-prone areas, grow in a cool greenhouse or conservatory. In frost-free climates, use as unusual specimen plants for a small garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with additional leaf mould and sharp sand, in full light, with shade from hot sun. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; reduce water in winter. Top-dress or pot on in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in sun or partial shade. Pruning group 1; plants under glass may need restrictive pruning, after flowering.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings in summer (rooting may be slow).
- **PESTS AND DISEASES** Trouble free.

*C. gummiferum* ♂ (New South Wales Christmas tree). Large shrub or small, bushy tree, erect at first then spreading, with 3-palmate leaves composed of narrowly oblong, shallowly toothed leaflets, to 7cm (3in) long, dark green above, paler beneath. Panicles, to 10cm (4in) or more long, of white flowers, 6mm (¼in) across, with enlarged, bright red calyces, to 1cm (½in) across, are produced in spring. † 3–10m (10–30ft), ↔ 2–6m (6–20ft). Australia (New South Wales). ☼ (min. 5°C/41°F). 'Christmas Snow' bears flowers with white calyces. 'White Christmas' is similar to 'Christmas Snow', but has white-variegated leaves.



*Cephalotaxus harringtoniana* var. *drupacea* (inset: fruit detail)

C

## CERATOPHYLLUM

Hornwort

## CERATOPHYLLACEAE

Genus of about 30 species of almost rootless, submerged aquatic perennials from Eurasia, N. and tropical Africa, and S. and E. USA, producing whorls of delicate, stalkless, linear, dark green leaves, 1–4cm (½–1½in) long, often crowded near the growing points. The minute, unisexual flowers are enclosed in axillary bracts, with both male and female flowers borne on the same plant. Hornworts are grown in cold-water aquaria for their delicate foliage, and are good oxygenators for a garden pool. They tolerate a wide range of water conditions.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in water 60–90cm (24–36in) deep in full sun; hornworts will, however, tolerate shade. Grow in a pool, tub, or cold-water aquarium in full light. The almost rootless stems spread freely; some shoots may root in mud at the bottom of the water. *C. demersum* overwinters by modified terminal buds (turions), which sink to the bottom until spring, when they develop into young plants. See also pp.52–53.
- **PROPAGATION** Detach small pieces of stem, or turions, and float in water.
- **PESTS AND DISEASES** Algae may swamp the fragile lower leaves.

*C. demersum* (Hornwort). Submerged aquatic perennial producing slender, often rootless stems, 30–60cm (12–24in) long, with whorls of forked, brittle, dark green leaves, often borne more densely near the growing points. Tiny, cup-shaped flowers, the males white and 3mm (¼in) across, the females green and 1mm (⅛in) across, are borne from the leaf axils in summer. ↔ indefinite. E. central Europe, Mediterranean, tropical Africa. \*\*\*

## CERATOSTIGMA

## PLUMBAGINACEAE

Genus of about 8 species of deciduous and evergreen subshrubs and herbaceous perennials found in dry, open situations in N.E. tropical Africa, the Himalayas, China, and S.E. Asia. They are grown for their 5-lobed, salverform blue flowers, borne in terminal and axillary, spike-like clusters from late summer to autumn, and for their simple, alternate leaves, which turn red or bronze in autumn. Grow in a sunny, sheltered, mixed or shrub border, or against a warm, sunny wall. *C. plumbaginoides* is also suitable for ground cover and for a rock garden. The frost-tender species are best grown in a cold or cool greenhouse in frost-prone areas.

- **HARDINESS** Fully hardy to frost tender. Shrubby species are slightly less hardy than herbaceous species, but will usually regrow from the bases, if top growth is damaged in winter.
- **CULTIVATION** Grow in moderately fertile, light, moist but well-drained soil in full sun. Pruning group 10, for shrubby species, in early to mid-spring.
- **PROPAGATION** Root softwood cuttings in spring or semi-ripe cuttings in summer. Remove suckers in autumn or

*Ceratostigma plumbaginoides*

spring. Layer in autumn. Overwinter young plants in frost-free conditions.

- **PESTS AND DISEASES** Powdery mildew may be a problem.

*C. griffithii*. Rounded, evergreen or semi-evergreen shrub with bristly red stems and obovate, densely bristly, purple-margined, mid-green leaves, to 3cm (1¼in) long, which turn red in autumn and winter. Bright blue flowers, to 3cm (1¼in) across, are borne in terminal, spike-like clusters from late summer to autumn. ↓ 1m (3ft), ↔ 1.5m (5ft). Himalayas. \*\*

*C. minus*. Open-branched, deciduous shrub with slender, bristly, mid-green stems. Obovate to spoon-shaped, mid-green leaves, to 5cm (2in) long, are rounded at the tips and almost hairless above, but have bristly margins; they turn red in autumn. From late summer to autumn, bears dense, terminal or axillary, spike-like clusters of bright blue or purple-blue flowers, to 2cm (¾in) across and red-purple at the bases. ↓ 1m (3ft), ↔ 1.5m (5ft). W. China. \*\*\*

*C. plumbaginoides* □ ♀ syn. *Plumbago larpentiae*. Rhizomatous, spreading, woody-based perennial with upright,

slender red stems and obovate, bright green leaves, to 9cm (3½in) long, with bristly, wavy margins, richly red-tinted in autumn. In late summer, bears terminal, spike-like clusters of brilliant blue flowers, to 2cm (¾in) across. ↓ to 45cm (18in), ↔ to 30cm (12in) or more. W. China. \*\*\*

*C. willmottianum* □ Open-branched, spreading, deciduous shrub with slender, bristly, mid-green stems. Lance-shaped to obovate, pointed, bristly, mid- to dark green, purple-margined leaves, to 5cm (2in) long, turn red in autumn. From late summer to autumn, bears pale to mid-blue flowers, 2.5cm (1in) across, with red-purple tubes, in terminal or axillary, spike-like clusters. ↓ 1m (3ft), ↔ 1.5m (5ft). W. China. \*\*\*

## CERATOZAMIA

## ZAMIACEAE

Genus of 9 species of dioecious, evergreen cycads found in cloud forest, on dry upland, and among dense, tangled brushwood, from Mexico to Belize.

They are palm-like in habit, with short, swollen trunks and rigid, pinnate, leathery leaves in lax, terminal rosettes or whorls. Cone-like male and female inflorescences ("cones") are borne on mature plants in summer: female cones are solitary, cylindrical, and dull green; male cones are slightly narrower and grey-green. In frost-prone areas, grow as houseplants or in a temperate or warm greenhouse. In warmer areas, use as specimen plants on a lawn or patio.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in deep containers in a mix of equal parts loam, coarse sand, garden compost, and granulated bark in bright filtered or indirect light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained, neutral to acid soil in partial or dappled shade.

*Ceratozamia mexicana*

- **PROPAGATION** Sow seed at 21–30°C (70–86°F) in spring. If offsets develop, detach and pot them up in spring.
- **PESTS AND DISEASES** Prone to scale insects and mealybugs under glass.

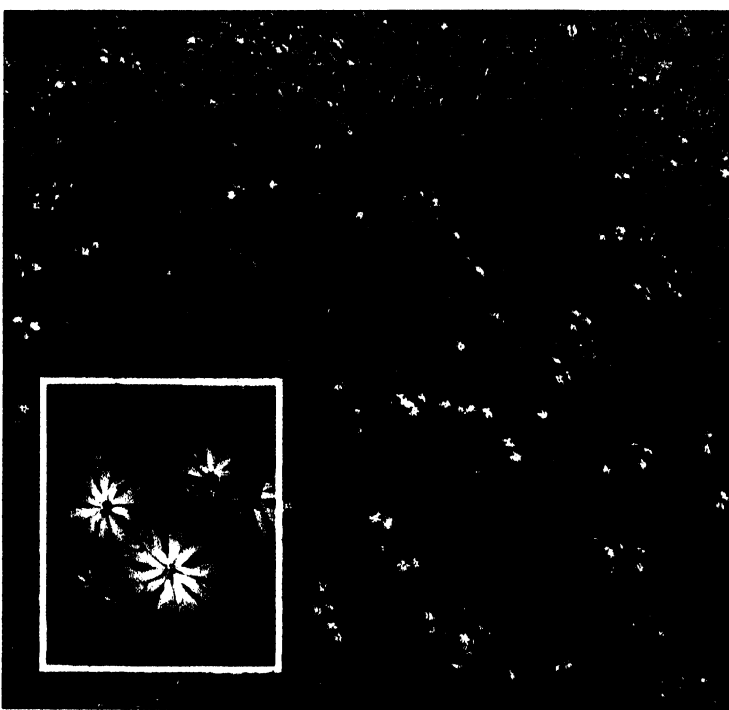
*C. mexicana* □ ★ (Mexican horncone). Large cycad with almost columnar, usually single caudices. The arching, pinnate leaves are erect to spreading, 1–3m (3–10ft) long, and have up to 150 narrowly to broadly lance-shaped, light green leaflets. Flowering cones are borne in summer: green female cones, to 30cm (12in) long, have prominently horned scales; grey-green male cones, to 50cm (20in) long, have only rudimentary horns. ↓ to 2m (6ft), ↔ to 4m (12ft). Mexico. ♀ (min. 16°C/61°F)

## CERCIDIPHYLLUM

## CERCIDIPHYLLACEAE

Genus of one species of deciduous tree from woodland in China and Japan. Tiny red flowers are borne in early spring, before the leaves; male and female flowers are produced on separate plants. *C. japonicum* is cultivated for its foliage, which provides particularly good autumn colour; it is best grown as a specimen tree in a woodland setting.

- **HARDINESS** Fully hardy. Young leaves may be damaged by late frost.
- **CULTIVATION** Grow in deep, fertile, humus-rich, moist but well-drained soil, preferably neutral to acid, in sun or dappled shade, sheltered from cold, dry winds. Plants often develop several main stems, but may be trained as central-leader standards. Pruning group 1.

*Cercidiphyllum japonicum**Ceratostigma willmottianum* (inset: flower detail)

- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Take basal cuttings in late spring and semi-ripe cuttings in midsummer.
- **PESTS AND DISEASES** Trouble free.

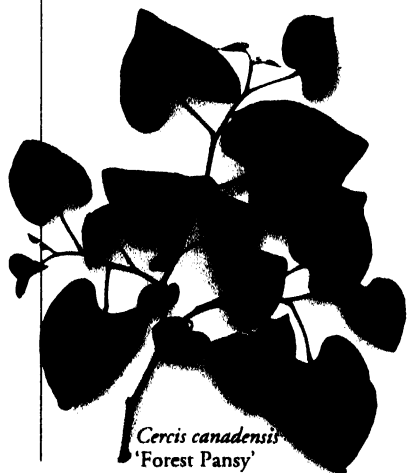
**C. japonicum** ☐ ♀ ♂ (Katsura tree). Pyramidal, later rounded, deciduous tree with vigorous shoots and opposite, sometimes alternate, ovate to rounded, mid-green leaves, to 10cm (4in) long. Bronze when young, the mid-green leaves turn yellow, orange, and red in autumn and colour best on acid soils. Fallen leaves smell of burnt sugar when crushed. ‡ 20m (70ft), ↔ 15m (50ft). China, Japan. \*\*\*. **var. magnificum** ♀ syn. *C. magnificum*, is smaller, but with larger leaves, to 12cm (5in) long; ‡ 10m (30ft), ↔ 8m (25ft). Japan. f. **pendulum** ♂ syn. 'Pendulum', has a weeping habit, with slender, pendent branches; ‡ 6m (20ft), ↔ 8m (25ft). *C. magnificum* see *C. japonicum* var. *magnificum*.

## CERCIS

LEGUMINOSAE/PAPILIONACEAE

Genus of about 6 species of deciduous trees and shrubs found in woodland, at woodland margins, and on rocky hillsides in the Mediterranean, C. and E. Asia, and North America. They have alternate, heart-shaped, entire leaves and bear brightly coloured, pea-like flowers in stalkless clusters or short racemes in spring, followed by flattened pods. The flowers are normally produced on the previous year's wood either before or as the leaves unfold, but they may also be borne on wood that is several years old. Larger species are excellent specimen plants; grow smaller ones in a shrub border, or train against a wall.

- **HARDINESS** Fully hardy, but may be tender when young. Unripened wood is liable to frost damage.
- **CULTIVATION** Grow in fertile, deep, moist but well-drained, preferably loam soil in full sun or dappled shade. Plant in the final location when young; older plants resent transplanting. Pruning group 1; also group 7 for *C. canadensis* 'Forest Pansy'. For large foliage, pollard well-established plants in early spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings, or bud selected clones, in summer.
- **PESTS AND DISEASES** Canker, coral spot, *Verticillium* wilt, leafhoppers, and scale insects may be a problem.



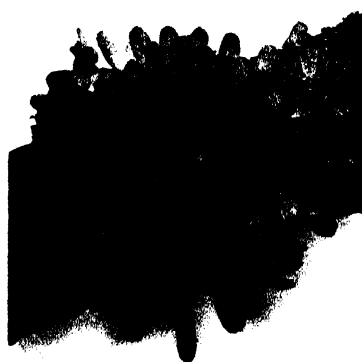
*Cercis canadensis*  
'Forest Pansy'



*Cercis siliquastrum*

**C. canadensis** ♂ (Eastern redbud). Spreading, often multi-stemmed tree with heart-shaped leaves, pointed at the tips, to 10cm (4in) long, bronze when young, turning yellow in autumn. Deep crimson, purple to pink, or occasionally white flowers, to 1cm (½in) long, are borne in clusters of 2-8 on bare stems, before the leaves. ‡ 10m (30ft). North America. \*\*\*. **'Forest Pansy'** ♀ has dark red-purple leaves. **'Royal White'** bears a profusion of pure white flowers. **var. texensis 'Oklahoma'** syn. *C. reniformis* 'Oklahoma', has waxy, glossy, rich green leaves with rounded tips, and dark wine-red flowers; ‡ 5m (15ft).

**C. chinensis** ♂ (Chinese redbud). Densely branched shrub or small tree with erect shoots and rounded, glossy, leathery, rich green leaves, to 12cm (5in) long, with pointed tips, turning yellow in autumn. Bears clusters of 3-8 deep to lavender-pink flowers, to 1.5cm (½in) across, before the leaves. ‡ 6m (20ft), ↔ 5m (15ft). C. China. \*\*\*. **'Avondale'** is compact with abundant dark purple-pink flowers; ‡ to 3m (10ft). **C. occidentalis** ♂ (California redbud, Western redbud). Spreading shrub or small tree, often multi-stemmed, with kidney-shaped, bluish green leaves, to 10cm (4in) long, that have rounded or notched tips, bronze at first, turning



*Cercis siliquastrum* 'Bodnant'

yellow in autumn. Dark purple-pink flowers, to 1.5cm (½in) across, are borne in clusters of 5 or 6, usually on year-old wood, before the leaves. ‡ 5m (15ft), ↔ 4m (12ft). S.W. USA. \*\*\*. **C. reniformis 'Oklahoma'** see *C. canadensis* var. *texensis* 'Oklahoma'. **C. siliquastrum** ☐ ♀ ♂ (Judas tree). Spreading, sometimes multi-stemmed tree with inversely heart-shaped to kidney-shaped, glaucous, blue-green leaves, to 10cm (4in) long, with notched tips, bronze when young, turning yellow in autumn. Bears clusters of 3-6 magenta to pink, occasionally white flowers, 1.5-2cm (½-¾in) long, before and with the leaves, often on the main branches. ‡ 10m (30ft). S.E. Europe, S.W. Asia. \*\*\*. f. **albida**, syn. 'Alba', has white flowers. **'Bodnant'** ☐ has dark purple-pink flowers.

## CEREUS

CACTACEAE

Genus of about 25 species of tree-like or columnar, perennial cacti, mainly from rocky terrain in South America and the West Indies. They usually have 3-14 thick ribs and often woolly areoles bearing stout spines. Nocturnal, widely cup- or funnel-shaped flowers are borne from summer to early autumn, and are followed by ovoid, fleshy, red or yellow fruits containing glossy black seeds. In frost-prone areas, grow in a temperate greenhouse or conservatory. In warm, dry climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. In the growing season, water freely and apply a low-nitrogen liquid fertilizer monthly; keep almost dry in winter. Outdoors, grow in sharply drained, poor to moderately fertile, humus-rich, slightly acid soil in full sun. See also pp.48-49.
- **PROPAGATION** Sow seed at 19-24°C (66-75°F) in early spring, or root cuttings of young branches in late spring or early summer.



*Cereus validus*

- **PESTS AND DISEASES** Susceptible to mealybugs and scale insects.

**C. chalybaeus**. Columnar cactus with 5- or 6-ribbed, few-branched, often purple-ringed, glaucous, dark green stems. Brown-woolly areoles bear red then black spines (7-9 radials and 3 or 4 longer, thicker centrals). In summer, bears funnel-shaped flowers, to 20cm (8in) long; the inner petals are white, the perianth tubes and backs of the outer petals are purple or red. ‡ 3m (10ft), ↔ 70cm (28in). N. Argentina, Uruguay. ☉ (min. 7-10°C/45-50°F). **C. emoryi** see *Bergerocactus emoryi*. **C. flagelliformis** see *Aporocactus flagelliformis*.

**C. forbesii** see *C. validus*.

**C. peruvianus of gardens** see *C. uruguayanus*.

**C. silvestrii** see *Echinopsis chamaecereus*.

**C. spachianus** see *Echinopsis spachiana*.

**C. uruguayanus**, syn. *C. peruvianus* of gardens. Tree-like, columnar cactus with 5- to 9-ribbed, few-branched, glaucous, dark green stems. Rounded, furrowed ribs bear brown areoles with reddish brown to black, occasionally yellowish spines (4-7 radials and 1 or 2 longer, thicker centrals). In summer, bears funnel-shaped flowers, 16cm (6in) long, with white inner petals and green-, brown-, or red-tipped white outer petals. ‡ to 5m (15ft), ↔ 70cm (28in). S.E. Brazil to N. Argentina. ☉ (min. 7-10°C/45-50°F).

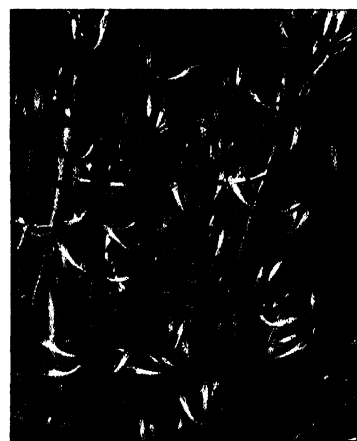
**C. validus** ☐ syn. *C. forbesii*. Tree-like, columnar cactus producing dull bluish green, then grey-green stems, with 4-7 often notched ribs. White-woolly areoles bear dark brown spines (5-7 radials and 1 or 2 longer, thicker centrals). Cup-shaped flowers, 25cm (10in) long, with white inner and red-pink outer petals, are borne in early autumn. ‡ 4m (12ft), ↔ 60cm (24in). Argentina. ☉ (min. 7-10°C/45-50°F).

▷ **Ceriman** see *Monstera deliciosa*

## CEROPEGIA

ASCLEPIADACEAE

Genus of up to 200 or more species of evergreen or semi-evergreen, erect, pendent, or climbing perennials from deserts to rainforests in tropical and subtropical areas of the Canary Islands, Africa, Madagascar, Asia, and Australia. Many are succulent, with fleshy, tuber-like caudices. The leaves are opposite

*Ceropegia dichotoma*

and in whorls of 3, varying from ovate-heart-shaped to lance-shaped or linear. The flowers are borne singly or in cymes in summer, and are often widely flared at the tips in the form of parachutes or lanterns. The fruits are cylindrical to lance-shaped, and the flat, silk-tufted seeds are contained in hairless follicles. In frost-prone areas, grow in a warm greenhouse or as houseplants, using pendent species in hanging baskets. In warm, dry climates, grow outdoors in a desert garden; train climbing species on trellis, a pergola, or other support.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts sharp sand and 1 part each loam, peat, and leaf mould in bright filtered light. When in growth, water moderately and apply a low-nitrogen liquid fertilizer 2 or 3 times. Keep plants dry at other times; over-watering and low temperatures will lead to basal rot of the caudices. Outdoors, grow in sharply drained, poor, humus-rich, loam soil, providing shelter from full sun. See also pp. 48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in early spring. Increase *C. linearis* subsp. *woodii* from stem bulbils. Take stem cuttings, 10–15cm (4–6in) long, in early summer; root in a sand and peat mix at 22–25°C (72–77°F), and keep moist.

• **PESTS AND DISEASES** Prone to aphids, scale insects, and sometimes mealybugs.

*C. devecchii* var. *adelaidae*. Succulent climber with fleshy, grey-green, red-mottled stems, 1.2m (4ft) long, and ovate to 3-angled, scale-like, black-green

*Ceropegia linearis* subsp. *woodii*

leaves, to 4mm (1/4in) long. Solitary, tubular, red-spotted cream flowers, 3cm (1 1/4in) long, with broadly triangular, minutely hairy, green or pale red lobes, are borne in summer. † 1.2m (4ft), ↔ 60cm (24in). Kenya, Tanzania. ♀ (min. 10°C/50°F)

*C. dichotoma* □ Erect, semi-evergreen succulent producing grey-green stems, 30–100cm (12–39in) long, with linear, slightly fleshy, grey-green leaves, 2.5–8cm (1–3in) long. Bright yellow flowers with slightly curved, paler yellow tubes, 3cm (1 1/4in) long, and fully united lobes, to 1.5cm (1/2in) long, are borne singly or in cymes in summer. † 1m (3ft), ↔ 60cm (24in). Canary Islands (Tenerife). ♀ (min. 10°C/50°F)

*C. distincta* subsp. *haygarthii* sec *C. haygarthii*.

*C. haygarthii*, syn. *C. distincta* subsp. *haygarthii*. Climbing, semi-evergreen succulent with twining, pencil-like, fleshy stems, 40–130cm (16–51in) long, and ovate to elliptic, fleshy, mid-green leaves, 1.5cm (1/2in) or more long, heart-shaped at the bases. In summer, bears solitary, funnel-shaped, red-spotted, pale pink flowers, 2cm (3/4in) or more long, slightly curved at the tubular bases, and with lobes that broaden upwards and unite to form stalks, surmounted by red, white-haired anthers. † 1.2m (4ft), ↔ 60cm (24in). South Africa (Northern Cape, Eastern Cape, Western Cape). ♀ (min. 10°C/50°F)

*C. linearis* subsp. *woodii* □ ♀ syn. *C. woodii* (Hearts on a string, Rosary vine, Sweetheart vine). Pendent, evergreen, tuberous-rooted succulent with slender twining stems, to 1m (3ft) long. The heart-shaped, fleshy, mid-green leaves, to 1.5cm (1/2in) long, are purple beneath, and often have grey-green or purple markings above. Frequently produces bulbils from the leaf axils. Lantern-like, purplish brown flowers, 1–2cm (1/2–3/4in) long, with pinkish green tubes margined with fine purple hairs, are borne singly in summer. † 10cm (4in), ↔ indefinite. Zimbabwe to South Africa (Eastern Cape). ♀ (min. 10°C/50°F)

*C. nilotica*. Twining, semi-evergreen succulent with rounded or 4-angled, fleshy, greyish green stems, 30–80cm (12–32in) long, and ovate, finely toothed, greyish green leaves, 2–4cm (1/2–1 1/2in) long. In summer, bears cymes of flowers, 3–4cm (1 1/4–1 1/2in) long, with yellowish white or pale green tubes, and triangular, purple-brown lobes, yellow-blotched at the bases. † 75cm (30in), ↔ 60cm (24in). Sudan, Ethiopia, Kenya. ♀ (min. 10°C/50°F)

*C. sandersoniae* sec *C. sandersonii*.

*C. sandersonii*, syn. *C. sandersoniae* (Fountain flower, Parachute plant). Twining, evergreen succulent with ovate-heart-shaped, fresh green leaves, 4–5cm (1 1/2–2in) long, on light green stems, 40–140cm (16–55in) long. In summer, bears solitary, parachute-like, short-stalked green flowers, with broadly funnel-shaped tubes, to 5cm (2in) long, mottled darker green; the narrow lobes widen to unite at their upturned, white-haired margins, forming canopies to 2.5cm (1in) across. † 1.2m (4ft), ↔ 60cm (24in). Mozambique, South Africa (KwaZulu/Natal). ♀ (min. 10°C/50°F)

*C. woodii* sec *C. linearis* subsp. *woodii*.

## CESTRUM

## SOLANACEAE

Genus of about 175 species of evergreen and deciduous shrubs with alternate, simple, usually unpleasantly scented leaves, from woodland in Mexico and Central and South America. They are grown for their tubular to funnel-shaped, often fragrant flowers, borne in terminal or axillary cymes, followed by purple-red or red berries. Grow in a sheltered border or against a sunny wall. In frost-prone areas, grow tender species in a temperate or warm greenhouse or conservatory; container-grown plants may be moved outdoors in summer.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun and good ventilation. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in sun or partial shade. Provide support for scrambling species. Pruning group 8 for early-flowering evergreens; group 9 for late-flowering evergreens; and group 6 for deciduous plants. Plants under glass may need restrictive pruning; prune *C. aurantiacum* and *C. parqui* close to their bases annually in early spring.

• **PROPAGATION** Sow seed of frost-hardy species in containers in a cold frame in autumn; sow seed of tender species at 13–18°C (55–64°F) in spring. Root softwood cuttings of frost-hardy species, and semi-ripe cuttings of tender species, in summer.

• **PESTS AND DISEASES** Trouble free.

*C. aurantiacum* □ Evergreen shrub, becoming scandent if not regularly pruned, with ovate to lance-shaped, smooth, light green leaves, to 11cm (4 1/2in) long. Axillary and terminal, panicle-like cymes, to 10cm (4in) across, of tubular, bright orange flowers, to 3cm (1 1/4in) long, are borne from spring to early summer; they are followed by spherical, fleshy white berries. † 2–3m (6–10ft), ↔ 1.5–2m (5–6ft). Venezuela to Guatemala. ♀ (min. 5°C/41°F)

*C. elegans* □ ♀ syn. *C. purpureum*. Vigorous, evergreen shrub with arching branches and ovate-oblong to lance-shaped, matt, mid-green leaves, to 10cm (4in) long. From summer to autumn, bears tubular, crimson to purple-red or

*Cestrum elegans*

pink flowers, to 2cm (3/4in) long, in pendent, terminal, compound, panicle-like cymes, 10cm (4in) across; they are followed by purple-red berries. † 3m (10ft). Mexico. ♀ (min. 5°C/41°F)

*C. fasciculatum*. Strong-growing, evergreen shrub with arching branches and ovate to lance-shaped, wavy-margined, dark green leaves, to 7cm (3in) long. Tubular, bright red flowers, to 2cm (3/4in) long, are borne in terminal, pendent cymes, to 8cm (3in) across, from spring to early summer; they are followed by purple-red berries. † 2m (6ft). Mexico. \* \*

*C. 'Newellii'* ♀ Vigorous, evergreen shrub with arching branches and narrowly ovate, dark green leaves, to 10cm (4in) long. From summer to autumn, bears tubular crimson flowers, to 2cm (3/4in) long, in dense, terminal, compound panicles, 8–12cm (3–5in) across, sometimes followed by purple-red berries. † 3m (10ft). \* \*

*C. parqui* □ ♀ (Willow-leaved jessamine). Upright, deciduous shrub, sometimes herbaceous in cold areas, with linear-lance-shaped to elliptic, mid-green leaves, to 12cm (5in) long. From summer to autumn, produces night-scented, tubular, bright yellow-green flowers, to 2.5cm (1in) long, with star-shaped mouths, in large, terminal and axillary cymes, to 13cm (5in) across; they are followed by violet-brown berries. † 2m (6ft). Chile. \* \*

*C. psittacinum*. Scandent, evergreen shrub with alternate, elliptic to oblong, softly hairy, mid-green leaves, 5–12cm (2–5in) long, heart-shaped or rounded at the bases. Bears axillary and terminal

*Cestrum aurantiacum*



*Cestrum parqui*

cymes of tubular to funnel-shaped, vivid orange flowers, 1.5cm (½in) long, in autumn, followed by ovoid black berries. ‡3m (10ft), ↔45cm (18in). Central America. ☼ (min. 10°C/50°F)

*C. purpureum* see *C. elegans*.

*C. roseum*. Erect, evergreen shrub with oblong to ovate, wavy-margined, softly hairy, mid-green leaves, to 10cm (4in) long. In summer, bears terminal cymes of tubular-funnel-shaped, rose-pink flowers, to 3cm (1¼in) long, with spreading lobes, followed by red berries. ‡↔2m (6ft). Mexico. \*\*\*

▷ *Ceterach* see *Asplenium*

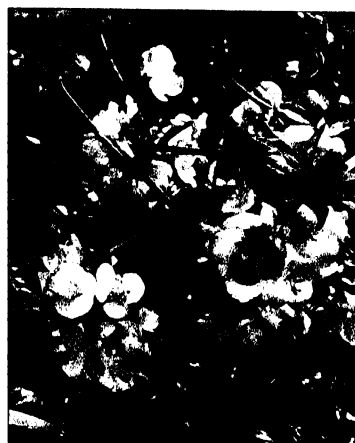
*C. officinarum* see *A. ceterach*

## CHAENOMELES

Flowering quince, Japanese quince, Japonica

ROSACEAE

Genus of 3 species of deciduous, often spiny shrubs, one sometimes a small tree, from mountain woodland in China and Japan. They are cultivated for their early flowers, which are 5-petalled, cup-shaped, single to double, borne singly or in dense clusters, and for their apple-

*Chaenomeles speciosa* 'Moerloosei'

like, edible, aromatic, yellow to green, or purplish green fruits, produced in autumn, and palatable when cooked. The flowers are borne both before and with the alternately arranged, simple, toothed leaves. Grow in a shrub border, or on a bank, or train against a wall. Some flowering quinces, such as *C. japonica*, are useful as ground cover or low hedging.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in sun or partial shade. Suitable for a shaded wall, but bloom and fruit best in sun. Tolerant of lime, but may become chlorotic on very alkaline soils. Pruning group 2, or 13 if wall-trained.

• **PROPAGATION** Sow seed in containers in an open frame, or in a seedbed, in autumn. Root semi-ripe cuttings in summer. Layer in autumn.

• **PESTS AND DISEASES** Prone to canker, scale insects, and aphids.

*C. x californica* 'Enchantress' ☐

Compact, spiny, upright shrub with lance-shaped, mid-green leaves, to 8cm (3in) long, light brown-woolly beneath when young. Dark rose-pink flowers,

*Chaenomeles x superba* 'Crimson and Gold'

5cm (2in) across, are produced in profuse clusters in spring, followed by large yellow fruit, to 6cm (2½in) long. ‡2.5m (8ft), ↔2m (6ft). \*\*\*

*C. cathayensis* ☐ Vigorous, upright shrub or small tree with spiny shoots and lance-shaped, pointed, mid-green leaves, to 12cm (5in) long, often red-downy beneath when young. White, pink-flushed flowers, to 4cm (1½in) across, are borne in clusters of 2 or 3 blooms in early and mid-spring; they are followed by very large, yellow-green fruit, to 15cm (6in) long. ‡↔3m (10ft). China. \*\*\*

*C. japonica*, syn. *C. maulei* (Japonica, Japanese quince, Maule's quince).

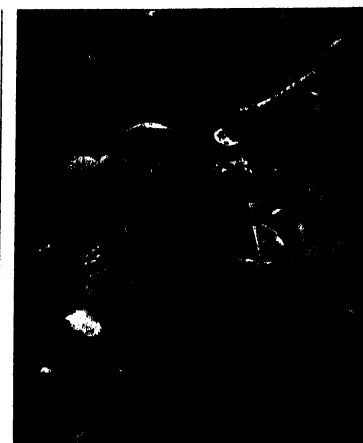
Spreading, thorny shrub with obovate to rounded, glossy, mid-green leaves, to 5cm (2in) long. Abundant clusters of orange to red flowers, 4cm (1½in) across, are borne in spring, followed by yellow or yellow-flushed red fruit, 2.5–4cm (1–1½in) long. ‡1m (3ft), ↔2m (6ft). Japan. \*\*\*

*C. lagenaria* see *C. speciosa*.

*C. maulei* see *C. japonica*.

*C. speciosa*, syn. *C. lagenaria*, *Cydonia speciosa*, *Pyrus japonica*. Vigorous, wide-spreading shrub with tangled, spiny branches and oval, glossy, dark green leaves, 4–9cm (1½–3½in) long. In spring, bears clusters of 2–4 scarlet to crimson flowers, 4.5cm (1¾in) across, followed by aromatic, green-yellow fruit, to 6cm (2½in) long. ‡2.5m (8ft), ↔5m (15ft). China. \*\*\*. 'Apple Blossom' see 'Moerloosei'. 'Falconnet Charlet' has double, salmon-pink flowers.

'Moerloosei' ☐ ♀ syn. 'Apple Blossom', bears large white flowers, flushed dark

*Chaenomeles x superba* 'Pink Lady'

pink. 'Nivalis' has pure white flowers.

'Phyllis Moore' has large clusters of semi-double, light pink flowers. 'Port Eliot' produces large red flowers.

'Simonii' has large, double, dark blood-red flowers; ‡1m (3ft), ↔2m (6ft).

'Snow' bears large white flowers.

'Umbilicata' bears dark pink flowers.

*C. x superba* (*C. japonica* x *C. speciosa*).

Rounded shrub with spiny, spreading branches and narrowly to broadly ovate or ovate-oblong, glossy, mid-green leaves, to 6cm (2½in) long. From spring to summer, bears clusters of cup-shaped, white, pink, orange-scarlet, or crimson to orange flowers, 3–4.5cm (1¼–1¾in) across; they are followed by green fruit, 5–7cm (2–3in) long, ripening to yellow. ‡1.5m (5ft), ↔2m (6ft). Garden origin. \*\*\*. 'Cameo' has double, peach-pink flowers. 'Crimson and Gold' ☐ ♀ is compact and spreading, and has dark red flowers with golden yellow anthers; ‡1m (3ft). 'Elly Mossel' has large scarlet flowers. 'Etna' is spreading, with dark scarlet flowers; ↔3m (10ft). 'Fire Dance' is spreading, with large, bright red flowers. 'Knap Hill Scarlet' ♀ has large, bright red flowers. 'Nicoline' ☐ ♀ bears abundant large, sometimes semi-double scarlet flowers. 'Pink Lady' ☐ ♀ has very early, dark pink flowers. 'Rowallane' ♀ is low and spreading, with scarlet flowers; ‡1m (3ft).

## CHAENORHINUM

Dwarf snapdragon

SCROPHULARIACEAE

Genus of about 20 species of annuals and perennials from dry, often stony soils in the Mediterranean region and in Turkey. They have branching, erect or spreading stems; 2-lipped, snapdragon-like flowers, produced either singly from the leaf axils or in terminal racemes; and opposite, simple, entire leaves. They are suitable for a rock garden, scree bed, or alpine house.

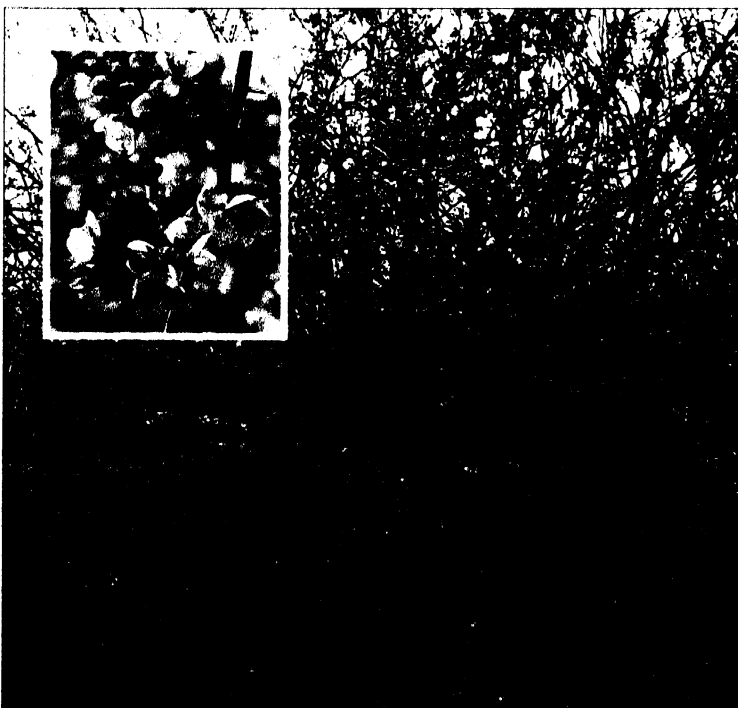
• **HARDINESS** Hardy to -10°C (14°F).

• **CULTIVATION** Grow in well-drained soil in full sun. Protect from winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Separate rooted runners in spring.

• **PESTS AND DISEASES** Young growth is prone to damage from slugs and snails.

*C. glareosum*, syn. *Linaria glareosum*. Prostrate to upright, mat-forming perennial, spreading by runners, with scale-like, ovate to rounded, hairy,

*Chaenomeles x californica* 'Enchantress' (inset: flower detail)*Chaenomeles x superba* 'Nicoline'

bluish green leaves, to 1.5cm (½in) long. Racemes of pale pinkish violet flowers, 1.5–2.5cm (½–1in) long, with yellow spurs and throats, are produced from early to late summer. † 5cm (2in) if prostrate, † 15–20cm (6–8in) when upright, ↔ to 20cm (8in). S. Spain. \* \*

## CHAEROPHYLLUM

APIACEAE/UMBELLIFERAE

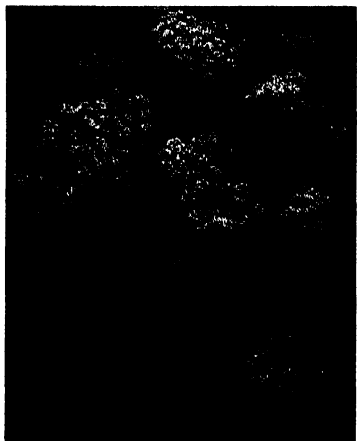
Genus of about 35 species of tap-rooted or tuberous annuals, biennials, and perennials from meadows, hedgerows, and open woodland in N. temperate regions. They have fern-like, pinnate to 3-pinnate leaves and compound umbels of small, white, pink, or yellow flowers. Use in a border or a woodland garden; the leaves or roots of some (chervil) have culinary uses.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, fertile soil in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in early spring.
- **PESTS AND DISEASES** Susceptible to damage from aphids, slugs, and snails. Powdery mildew may be a problem in dry spells.

**C. aureum** (Golden chervil). Clump-forming perennial with erect stems and mildly aniseed-flavoured, 3-pinnate, yellow-green leaves, 1–4cm (½–1½in) long, comprising lance-shaped, toothed or lobed leaflets. Umbels of white flowers, 5–10cm (2–4in) across, are borne in early summer. † to 1.2m (4ft), ↔ 45cm (18in). C. and S. Europe, S.W. Asia. \* \* \*

**C. hirsutum**. Upright, hairy perennial producing 2- or 3-pinnate, apple-scented, mid-green, sometimes purple-flushed leaves, 12–30cm (5–12in) long, with ovate to heart-shaped, toothed leaflets. Umbels of white flowers, 6cm (2½in) across, are borne from late spring to midsummer. † 60cm (24in), ↔ 30cm (12in). Spain and France to S.W. Russia. \* \* \*. **'Roseum'** □ syn. **'Rubrifolium'**, bears umbels of pink flowers.

- ▷ **Chain fern** see *Woodwardia*
- Asian** see *W. unigemmata*
- European** see *W. radicans*
- ▷ **Chain plant** see *Callisia fragrans*, *C. navicularis*
- ▷ **Chamaecereus silvestrii** see *Echinopsis chamaecereus*



*Chaerophyllum hirsutum* 'Roseum'

## CHAMAECYPARIS

Cypress

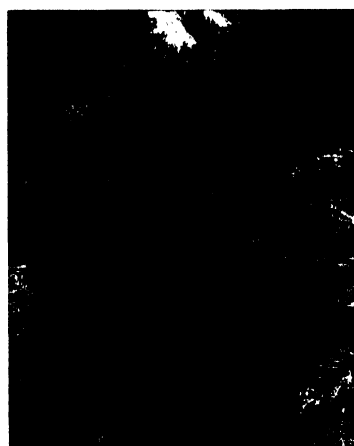
CUPRESSACEAE

Genus of 7 species of monoecious, evergreen, coniferous trees from forest in Taiwan, Japan, and North America. They have flattened sprays of scale-like, overlapping adult leaves, 1–5mm (¼–¼in) long, and larger, ovate to linear juvenile leaves, 2–8mm (¼–¾in) long. The spherical or angular female cones have 2, occasionally 3–5 seeds on each shield-like scale, and most ripen in the first autumn. The spherical or ovoid male cones, usually 1–5mm (¼–¼in) long, are borne in spring. Cypresses are used as specimen trees and for hedging; they have given rise to a vast number of cultivars, many dwarf or slow-growing and suitable for rock gardens or bonsai. Contact with the foliage may aggravate skin allergies.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Tolerant of chalky soils but best grown in moist but well-drained, preferably neutral to slightly acid soil in full sun. Trim hedging from late spring to early autumn, but do not cut into older wood.
- **PROPAGATION** Sow seed in a seedbed outdoors in spring, or root semi-ripe cuttings in late summer. Some dwarf cultivars, especially those of *C. obtusa*, should be grafted in late winter or spring.
- **PESTS AND DISEASES** Susceptible to *Phytophthora* root rot, honey fungus, and *Coryneum* canker. Aphids may also be a problem.



*Chamaecyparis lawsoniana* 'Columnaris'



*Chamaecyparis lawsoniana* 'Gnome'

**C. lawsoniana** ♀ syn. *Cupressus lawsoniana* (Lawson cypress). Narrowly columnar, coniferous tree with a dense crown, a pendent leading shoot, and reddish brown bark forming rounded, scaly plates. Bright green mature leaves are arranged in opposite pairs; they are sharply pointed, with incurved tips and translucent central glands. Oblong male cones, 6–8mm (¼–¾in) long, are bluish black in bud, opening brick-red. The wrinkled, reddish brown, sometimes glaucous female cones, to 1cm (½in) across, each have 8 scales. † 15–40m (50–130ft), ↔ 2–5m (6–15ft). W. North America. \* \* \*. **'Alumii'** ♂ has a narrow, conical habit, with erect sprays of blue-grey leaves, forming a billowing skirt of foliage at the base; † 6–15m (20–50ft). **'Chilworth Silver'** ♂ is



*Chamaecyparis lawsoniana* 'Intertexta'



*Chamaecyparis lawsoniana* 'Lane'

slow-growing and conical, with dense, blue-green juvenile foliage; † to 1.5m (5ft). **'Columnaris'** □ has a columnar crown of pale blue-grey leaves; † to 10m (30ft), ↔ 1m (3ft). **'Ellwoodii'** ♀ is a dense, conical shrub with erect branches and ovate, blue-grey young leaves; † 3m (10ft). **'Fletcheri'** ♀ is similar to 'Ellwoodii' but larger, with greyer foliage; † to 12m (40ft). **'Gnome'** □ is rounded and spreading, with bluish green foliage; † 1m (3ft). **'Green Pillar'**, syn. 'Green Spire', has an upright habit with bright green foliage, good for low-maintenance hedges. **'Intertexta'** □ ♀ has hard, grey-green foliage in lax, pendent sprays. It eventually forms a tall tree and develops a crown with erratic, spreading branches. **'Kilmacurragh'** ♀ is a narrow-crowned tree with bright



*Chamaecyparis lawsoniana* 'Minima'

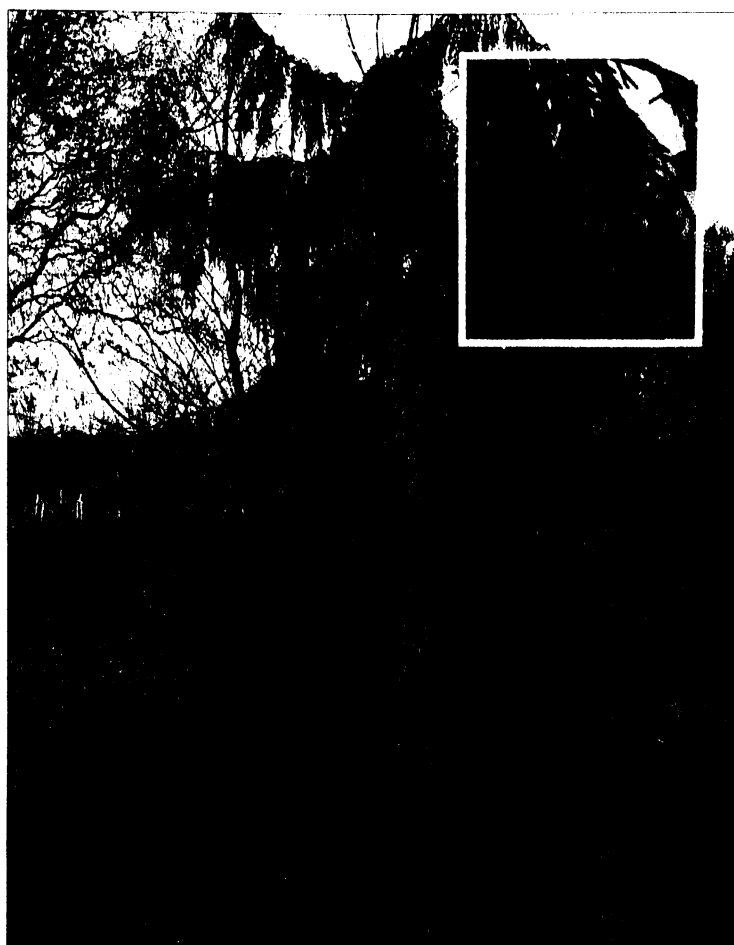


*Chamaecyparis lawsoniana* 'Pembury Blue'

*Chamaecyparis lawsoniana* 'Wisselii'

green foliage;  $\uparrow$  10–15m (30–50ft). 'Lane'  $\square$   $\varnothing$  syn. 'Lanei', is narrowly conical, with leaves golden yellow above and green-yellow beneath. 'Lutea'  $\varnothing$  is narrowly columnar or conical, slow-growing at first, with pendent sprays of golden yellow foliage;  $\uparrow$  15–20m (50–70ft). 'Minima'  $\square$   $\square$ – $\triangle$  has a very dwarf, rounded to conical habit, with upswept branches and rounded sprays of bluish green foliage;  $\uparrow$  to 1.5m (5ft). 'Nana'  $\triangle$  is similar to 'Minima' but forms a central trunk with yellow leaves;  $\uparrow$  to 2m (6ft). 'Pembury Blue'  $\square$   $\varnothing$  is a conical tree producing pendent sprays of bright blue-grey foliage;  $\uparrow$  to 15m (50ft). 'Pottenii'  $\triangle$  has a spindle-shaped crown with a conical tip, and feathery, yellow-to grey-green foliage. 'Stardust'  $\varnothing$ – $\triangle$  is a slow-growing, narrowly to broadly conical tree with fern-like yellow foliage. 'Winston Churchill'  $\triangle$  is a narrowly conical tree with golden foliage. 'Wisselii'  $\square$   $\varnothing$  is a narrowly conical tree with 3-dimensional sprays of blue-grey or blue-green foliage; it bears a mass of male cones in spring;  $\uparrow$  20–25m (70–80ft).

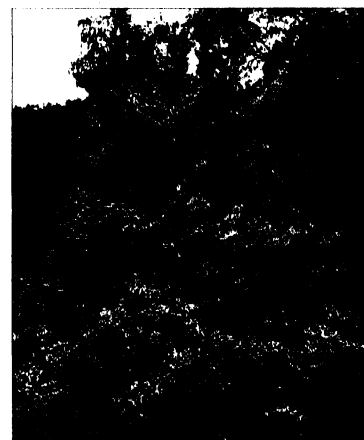
*C. nootkatensis*  $\triangle$  syn. *Cupressus nootkatensis* (Nootka cypress). Conical, occasionally columnar, coniferous tree with brown-grey bark, peeling in large plates, and sharply pointed, free-tipped, scale-like, dark green mature leaves arranged in long, pendent sprays. Green female cones, 1cm ( $\frac{1}{2}$ in) long, with a recurved central hook on each of the 4–6 scales, ripen in spring. Male cones are ovoid, brownish green, and 3mm ( $\frac{1}{8}$ in) long.  $\uparrow$  to 30m (100ft),  $\leftrightarrow$  to 8m (25ft). W. North America (Alaska to

*Chamaecyparis nootkatensis* 'Pendula' (inset: cone detail)

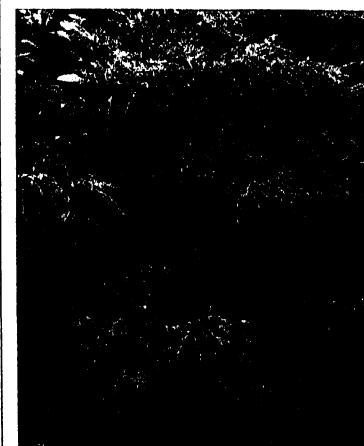
Oregon). \* \* \*. 'Aurea'  $\triangle$  has yellow foliage when young, maturing to yellow-green. 'Pendula'  $\square$   $\varnothing$  has a pendent habit, with vertical sprays of hanging foliage and a gaunt, open crown when mature.

*C. obtusa*  $\triangle$  syn. *Cupressus obtusa* (Hinoki cypress). Broad, conical, coniferous tree with soft, stringy bark. Glandless, blunt, dark green mature leaves, with bright white bands beneath, are borne in 2 unequal pairs. The green, then brown, female cones are 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) across, and have 8–12 scales. Male cones are spherical, orange-brown, and 8–10mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) across. A good specimen tree.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  to 6m (20ft). S. Japan. \* \* \*. 'Crippsii'  $\square$   $\varnothing$  syn. 'Crippsii Aurea', is slow-growing with rich golden foliage. A fine

specimen tree, best planted in full sun;  $\uparrow$  15m (50ft),  $\leftrightarrow$  8m (25ft). 'Fernspray Gold' is slow-growing, the branches clothed with short, rich golden yellow, fern-like leaves. 'Nana Aurea'  $\square$   $\varnothing$  is a flat-topped, dwarf shrub with golden yellow foliage, greener when grown in shade;  $\uparrow$  2m (6ft). 'Nana Gracilis'  $\varnothing$  has a dense, pyramidal habit with rich green foliage;  $\uparrow$  3m (10ft). 'Pygmaea'  $\square$  is a rounded, dwarf shrub with red-brown shoots and fan-shaped, bright green foliage, becoming brown over winter;  $\uparrow$  1.5m (5ft). 'Tempelhof' is an ovoid or conical, dwarf shrub with yellow-green foliage, turning bronze in winter;  $\uparrow$  2.5m (8ft). 'Tetragona Aurea'  $\square$   $\varnothing$  has 4-ranked, golden yellow to bronze-yellow leaves, which are greener when grown in shade;  $\uparrow$  to 10m (30ft).

*Chamaecyparis obtusa* 'Crippsii'*Chamaecyparis obtusa* 'Nana Aurea'*Chamaecyparis obtusa* 'Pygmaea'*Chamaecyparis obtusa* 'Tetragona Aurea'

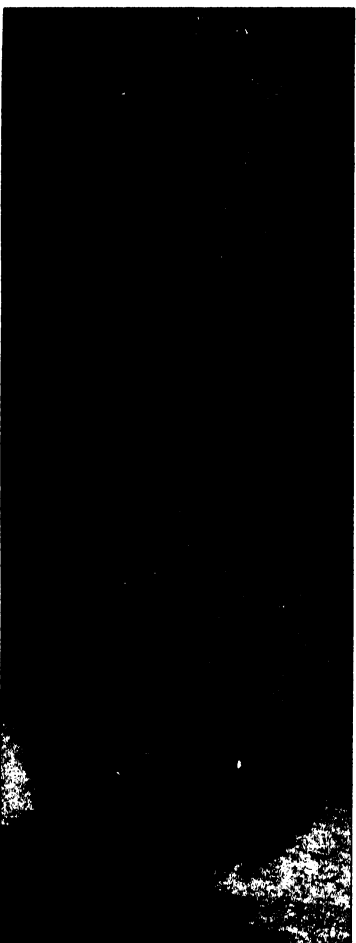
*C. pisifera*  $\triangle$  syn. *Cupressus pisifera* (Sawara cypress). Initially broad, conical, coniferous tree with an open crown and hard, fissured, finely peeling, red-brown bark. Pairs of sharp-pointed, bright green mature leaves, marked white beneath, with small glands and free-spreading tips, are produced in flattened sprays. Angular female cones, to 7mm ( $\frac{1}{4}$ in) long, are green, maturing to deep brown, with 6–8 scales. Black male cones are spherical, to 7mm ( $\frac{1}{4}$ in) across.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  to 5m (15ft). S. Japan. \* \* \*. 'Boulevard'  $\varnothing$  has soft, blue-green foliage. Needs a moist site;  $\uparrow$  10m (30ft). 'Filifera' has slender, whip-like shoots, which are mostly unbranched, and dark green leaves. 'Filifera Aurea'  $\square$   $\varnothing$  is similar to 'Filifera' but has golden yellow leaves

*Chamaecyparis pisifera* 'Filifera Aurea'

C

*Chamaecyparis pisifera* 'Squarrosa'

and is slower-growing; † 12m (40ft). 'Plumosa' is erect and broadly conical, with billowing foliage. The yellowish grey-green, semi-juvenile leaves, 2–4mm (1/16–1/8in) long, have free tips; ↔ 8m (25ft). 'Squarrosa' ■ syn. 'Squarrosa Veitchii', has soft young leaves, 5–8mm (1/4–3/8in) long, with free tips. It is similar in habit to 'Plumosa' but tends to open up, losing the inner foliage. *C. thyoides* ■ syn. *Cupressus thyoides* (White cypress). Narrowly conical, coniferous tree with dull red-brown or grey-brown bark. Sharply pointed, dark grey-green, sometimes glaucous mature leaves, with incurved tips and central glands, are produced on erratic sprays of fine shoots. The angular female cones, to 6mm (1/4in) across, are purple-black to red-brown, initially glaucous, and

*Chamaecyparis thyoides*

have 6–10 scales. Spherical male cones are brown, and to 7mm (1/4in) across. † to 15m (50ft), ↔ to 4m (12ft). E. USA. \*\*\*. 'Andelyensis' is a neat, conical shrub with linear, bluish green leaves; † to 3m (10ft).

## CHAMAECYTISUS

LEGUMINOSAE/PAPILIONACEAE

Genus of about 30 species of evergreen and deciduous, occasionally spiny, small trees, shrubs, and subshrubs found mainly on hillsides and in open woodland, from sea level to 2,000m (7,000ft), in Europe and the Canary Islands. Some species were previously included in the genus *Cytisus*. They have alternate, 3-palmate leaves, sometimes with softly hairy leaflets, and are grown for their pea-like, usually yellow, sometimes purple-pink or white flowers, borne on short, axillary shoots or in terminal racemes or clusters. Grow on a sunny bank or in a shrub border, rock garden, trough, or raised bed. *C. purpureus* is sometimes top-grafted on to *Laburnum* understock to produce a small standard tree. In frost-prone areas, grow half-hardy species in a cool greenhouse or conservatory.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Tolerant of a range of soil types, including poor, dry soils, but not shallow soils over chalk. Best in moderately fertile, well-drained soil in full sun. Root disturbance is resented, so plant out directly from containers into the final location as soon as possible. Pruning group 3 or 10, after flowering, or in spring for *C. supinus*. *C. demissus* needs little pruning. Do not cut back hard as plants seldom recover fully.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. demissus* ♀ syn. *C. hirsutus* var. *demissus*. Slow-growing, prostrate, hairy shrublet with deciduous, 3-palmate, mid-green leaves, 0.6–1.5cm (1/4–1/2in) long, silky-hairy beneath, composed of oblong-obovate to inversely lance-shaped leaflets. Axillary clusters of 2–4 yellow flowers, to 3cm (1 1/4in) across, with brown keels and an involucre of brown bracts, are borne in late spring and early summer. Suitable for a rock garden or trough. † 8cm (3in), ↔ 20cm (8in) or more. Greece. \*\*\*

*Chamaecytisus purpureus* f. *albus*

*C. hirsutus* var. *demissus* sec. *C. demissus*.

*C. purpureus*, syn. *Cytisus purpureus* (Purple broom). Deciduous, dense, semi-erect shrub with smooth, branching stems and 3-palmate, dark green leaves, to 2.5cm (1in) long, with obovate leaflets. In early summer, bears axillary clusters of 2 or 3 pale pink to deep lilac flowers, to 2.5cm (1in) across, with darker throats. † 45cm (18in), ↔ 60cm (24in). S.E. Europe. \*\*\*. f. *albus* ■ has white flowers.

*C. supinus*, syn. *Cytisus supinus*. Bushy, rounded, deciduous shrub producing shoots covered with long, spreading hairs, and 3-palmate, mid-green leaves, to 4cm (1 1/2in) long, with oblong-elliptic leaflets. Clusters of 2–8 bright yellow flowers, to 2.5cm (1in) across, are borne at the ends of the shoots from mid-summer to autumn. † 1m (3ft). C. and S. Europe. \*\*\*

## CHAMAEDAPHNE

syn. CASSANDRA  
ERICACEAE

Genus of one species of evergreen shrub found in moist, peaty soil, in bogs and at pond margins in N. temperate regions of Europe, Asia, and North America. It has alternate, glossy, dark green leaves and urn-shaped white flowers. Suitable for a peat or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, peaty, acid soil in sun or dappled shade. Pruning group 8.
- **PROPAGATION** Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*C. calyculata* (Leatherleaf). Evergreen shrub with slender, arching shoots and obovate to oblong, leathery, glossy, dark green leaves, to 5cm (2in) long, scaly beneath. In spring, bears small, urn-shaped white flowers in arching, one-sided, leafy racemes, 4–12cm (1 1/2–5in) long, at the ends of the shoots. † 75cm (30in), ↔ 90cm (36in). N. Europe, N. Asia, North America. \*\*\*. 'Nana' is compact and free-flowering; † 45cm (18in), ↔ 75cm (30in).

## CHAMAEDOREA

ARECACEAE/PALMAE

Genus of about 100 species of mainly small palms from rainforest in Mexico and Central and South America. They are valued for their leaves, which are pinnate or resemble a fish's tail, often arching, either tufted or alternate, and borne on erect and flexible, sometimes scandent stems. Insignificant, 3-petalled flowers are borne in spikes or panicles, followed by small fruits, 0.6–1.5cm (1/4–1/2in) across. In frost-prone areas, grow as houseplants, or in containers or borders in a warm conservatory or greenhouse. In warmer areas, grow in a shaded border or courtyard.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered or indirect light, shaded from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in humus-rich, moist

*Chamaedorea elegans*

but well-drained, neutral to acid soil, in full or partial shade.

- **PROPAGATION** Sow seed in spring at not less than 25°C (77°F).
- **PESTS AND DISEASES** Prone to red spider mites, scale insects, and thrips under glass.

*C. elegans* ■ ♀ \* syn. *Neanthe bella* (Parlour palm). Slender-stemmed palm with a terminal tuft of pinnate, rich green leaves, to 60cm (24in) long, comprising 21–40 linear to lance-shaped leaflets. Tiny yellow flowers are borne in erect, simple or branched panicles, 15–30cm (8–12in) long, from spring to autumn, followed by small, spherical black fruit. † 2–3m (6–10ft), ↔ 1–2m (3–6ft). Mexico, Guatemala. ☼ (min. 16°C/61°F). 'Bella' has a more compact tuft of leaves, and flowers freely. *C. metallica* ♀ \* (Miniature fish-tail palm). Very small palm with a single, cane-like stem and a terminal tuft of foliage. The semi-lustrous, deep bluish green leaves, 30–50cm (12–20in) long, are slightly puckered and shaped like a fish's tail. In summer, produces orange to red flowers in panicles 20–35cm (8–14in) long, just below the leaves.

*Chamaedorea microspadix*

*Chamaedorea seifrizii*

followed by small, ovoid black fruit. ↑ to 1m (3ft), ↔ to 50cm (20in). Mexico. ☼ (min. 16°C/61°F)

**C. microspadix** ☼✳ Small palm with groups of cane-like stems. Alternate, pinnate, blue-green leaves, 20–40cm (8–16in) long, have tubular, basal sheaths and 14–18 lance-shaped leaflets. In summer, cream to white flowers are borne in arching to pendent panicles, 15–23cm (6–9in) long, followed by small, spherical, orange-red fruit. ↑ to 3m (10ft), ↔ to 1.5m (5ft). E. Mexico. ☼ (min. 16°C/61°F)

**C. seifrizii** ☼✳ (Reed palm). Small, clump-forming palm with flexible, cane-like stems that may be semi-scandent in mature or large specimens. Alternate or loosely clustered, pinnate, rich green leaves, to 60cm (24in) long, have 24–28 narrowly lance-shaped leaflets. Yellow flowers are borne in erect panicles, 15–25cm (6–10in) long, either on stalks or just above the foliage. The small, spherical fruit are black. ↑ 1–2m (3–6ft), ↔ 1–1.5m (3–5ft). Mexico (Yucatan). ☼ (min. 16°C/61°F)

## CHAMAEMELUM

Chamomile

ASTERACEAE/COMPOSITAE

Genus of 4 species of aromatic annuals and perennials from grassy pastures and wasteland in Europe. The leaves are feathery, alternate, and pinnate then pinnatisect. The flowerheads are daisy-like, with yellow disc-florets and white ray-florets. *C. nobile* is grown for its medicinal flowers and for its foliage, which releases an apple-like fragrance

*Chamaemelum nobile* 'Flore Pleno'

when crushed. Close planting produces a dense sward, ideal for lawns and seats; the non-flowering cultivar *C. nobile* 'Treneague' is best for this purpose.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in an open site in well-drained, preferably light, sandy soil in full sun. To produce a lawn or seat, plant 12–15cm (5–6in) apart, and water freely until established. Cut the plants back regularly to encourage dense, compact growth; occasional rolling and treading of lawns will help to maintain an even surface.

• **PROPAGATION** Sow seed *in situ* or divide in spring. Increase *C. nobile* 'Treneague' by division.

• **PESTS AND DISEASES** Trouble free.

**C. nobile**, syn. *Anthemis nobilis* (Lawn chamomile, Roman chamomile). Mat-forming, hairy, aromatic perennial with stalkless, oblong, fresh green leaves, to 5cm (2in) long, divided into thread-like segments. In summer, bears daisy-like flowerheads, 0.7–1.5cm (¼–½in) across, singly on long stalks. May be invasive. Contact with foliage may aggravate skin allergies. ↑ 30cm (12in), ↔ 45cm (18in). W. Europe. ✳✳✳. 'Flore Pleno' ☼ has double, button-like flowerheads, and is ideal for edging a herb border; ↑ 15cm (6in), ↔ 45cm (18in). 'Treneague' is a low, tufted, non-flowering cultivar that roots where the decumbent stems touch the soil. It has strongly scented foliage, and is less vigorous than the species; ↑ 10cm (4in), ↔ 45cm (18in).

▷ *Chamaenerion* see *Epilobium*

*C. angustifolium* f. *album* see *E. angustifolium* f. *album*

▷ *Chamaepericlymenum* see *Cornus*

*C. canadense* see *C. canadensis*

## CHAMAEROPS

Dwarf fan palm

ARECACEAE/PALMAE

Genus of one species of shrubby palm from dry scrub and rocky or sandy slopes in the W. Mediterranean region. Its pinnate leaves are densely borne in tufts or rosettes, and the tiny, 3-petalled flowers are produced in panicles from the lower leaf axils. In frost-prone areas, *C. humilis* is best grown in a cool greenhouse or as a houseplant. In warmer areas, use as a specimen plant for a small garden.

• **HARDINESS** Half hardy; may survive short spells just below 0°C (32°F).

*Chamaerops humilis*

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full to bright indirect light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in well-drained, preferably moderately fertile soil in full sun; poor soil and partial shade is tolerated.

• **PROPAGATION** Sow seed at not less than 22°C (72°F) in spring, or separate suckers from established plants in late spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**C. humilis** ☼✳✳ Bushy palm, producing suckers when mature, with broad, pinnate, bluish or greyish green leaves, 60–100cm (24–39in) long, composed of 12–15 linear leaflets. Yellow flowers are borne in dense, almost hidden panicles, to 35cm (14in) long, from spring to summer. ↑ 2–3m (6–10ft), ↔ 1–2m (3–6ft). Mediterranean. ✳

▷ *Chamaespartium* see *Genista*

*C. sagittale* see *G. sagittalis*

*C. sagittale* subsp. *delphinense* see *G. delphinensis*

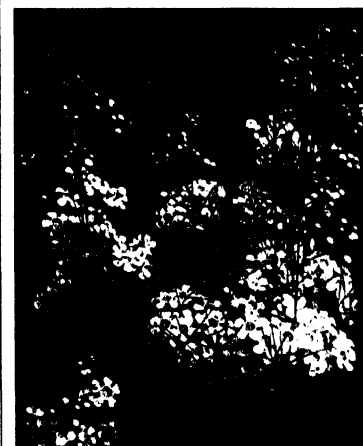
## CHAMELAUCIUM

MYRTACEAE

Genus of 21 species of evergreen shrubs from Western Australia, found on sandy heaths and in seasonally dry scrub. The narrow leaves are usually borne in opposite pairs, and the small, clustered flowers, for which these plants are valued, each have 5 rounded, spreading petals and a cup-shaped centre. In frost-prone areas, grow in a cool greenhouse or conservatory. In warmer climates, use to add colour and character to a shrub border or grow against a house wall; also useful for hedging.

• **HARDINESS** Most species are frost tender, but *C. uncinatum* will withstand short spells around 0°C (32°F).

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light with shade from hot sun. When in growth, water moderately, and apply a balanced liquid fertilizer monthly to well-established plants; water sparingly in winter. Pot on or top-dress in late winter. Outdoors, grow in sharply drained, neutral to acid, poor to moderately fertile, sandy soil in full sun.

*Chamelaucium uncinatum* 'Album'*Chamelaucium uncinatum* 'Bundara Excelsior'

Pruning group 8; plants under glass may need restrictive pruning.

• **PROPAGATION** Surface-sow seed at 13–18°C (55–64°F) in spring. Root greenwood cuttings in early summer or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Root-rotting fungi may be a problem outdoors.

**C. uncinatum** (Geraldton wax). Large, erect to spreading, open shrub producing linear, 3-angled, dark green leaves, 2–4cm (¾–1½in) long, with hooked tips. Purple, mauve, red, pink, or white flowers, to 2.5cm (1in) across, are borne in abundant clusters, 5–10cm (2–4in) across, from spring to summer. Excellent for cut flowers; drought tolerant. ↑ 2–5m (6–15ft), ↔ 2–4m (6–12ft). Australia (Western Australia). ✳ (borderline). 'Album' ☼ bears pure white flowers. 'Bundara Excelsior' ☼ bears large pink blooms. 'Purple Pride' has red-purple flowers.

▷ *Chamomile* see *Chamaemelum*

*Lawn* see *Chamaemelum nobile*

*Ox-eye* see *Anthemis tinctoria*

*Roman* see *Chamaemelum nobile*

## CHASMANTHE

IRIDACEAE

Genus of 3 species of cormous perennials, related to *Crocus*, from semi-shaded sites in South Africa. They are valued for their attractive, spike-like racemes of hooded, tubular, orange or red flowers, borne from spring to summer. Their narrow, linear, lance- or sword-shaped, mid-green leaves form a flat, basal fan. Excellent for a mixed or herbaceous border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade. Cut down in late winter, before new growth begins.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring, or divide in spring.

• **PESTS AND DISEASES** Trouble free.

**C. aethiopica**. Clump-forming, cormous perennial with lance-shaped or linear leaves, 40–60cm (16–24in) long. From spring to early summer, bears spike-like, one-sided racemes, 15–18cm (6–7in) long, of red or orange flowers, 8cm (3in) long, with maroon throats and yellow-striped tubes. ↑ to 70cm (28in), ↔ 5cm (2in). South Africa. ✳

**C. floribunda.** Clump-forming, cormous perennial producing lance-shaped leaves, 30–50cm (12–20in) long. Numerous bright orange or yellow flowers, to 8cm (3in) long, arranged in 2 ranks, are borne on branched spikes, 30cm (12in) long, in summer. †0.5–1.5m (20–60in), ↔ 15cm (6in). South Africa. \*

## CHASMANTHIUM

GRAMINEAE/POACEAE

Genus of about 6 species of perennial grasses, mostly from woodland in E. and C. USA, Mexico, and Central America. **C. latifolium**, the species most often cultivated, is bamboo-like with unusual flowerheads, which may be dried if cut before they are fully mature. Grow in a mixed or herbaceous border, or in a woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade. Cut down in late winter.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide between mid-spring and early summer.
- **PESTS AND DISEASES** Trouble free.

**C. latifolium**, syn. *Uniola latifolia* (Sea Oats, Spangle grass). Loosely tufted, spreading, perennial grass with broadly lance-shaped, arching, mid-green leaves, 10–25cm (4–10in) long, that turn yellow in winter. In late summer and early autumn, bears open panicles of flat, oblong-lance-shaped to broadly ovate green spikelets, 1cm (½in) long, ageing to brown, and breaking up at maturity. †1m (3ft), ↔ 60cm (24in). E. USA, N. Mexico. \*\*\*

▷ **Chaste tree** see *Vitex agnus-castus*

▷ **Checkerberry** see *Gaultheria procumbens*

▷ **Checkerbloom** see *Sidalcea malviflora*

▷ **Cheesewood** see *Pittosporum undulatum*

## CHEILANTHES

Lip fern

ADIANTACEAE

Genus of 150 or more species of mainly evergreen ferns, distributed worldwide. They are very drought-resistant, often growing between rocks, in near-deserts or deserts; the fronds shrivel in drought and recover after rain. They have erect or creeping rhizomes, producing dense clumps of small, pinnate to 3-pinnate, usually dull green fronds on shiny black stalks. The undersides of the leaf-blades may be white-mealy and covered with minute hairs or scales. Spores are formed at the margins of the frond segments, which curl under to protect them. In dry climates, grow in a scree bed, rock garden, or in a stone wall. Elsewhere, grow in containers in a cool or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender, but intolerant of excessive moisture.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.2), charcoal, and dolomitic limestone chippings, in full light. Provide low humidity and good ventilation. In the growing season, water sparingly (avoid wetting the foliage), and apply a half-strength, balanced



*Cheilanthes argentea*

liquid fertilizer monthly; keep almost dry in winter. Pot on every 2 or 3 years in spring. Outdoors, grow in sharply drained, gritty, humus-rich soil in full sun. Protect *C. fragrans* and *C. tomentosa* from winter rain.

- **PROPAGATION** Sow spores at 16°C (61°F) as soon as ripe. Divide in spring; this is less likely to be successful than sowing spores, because the rhizomes resent disturbance. See also p.51.
- **PESTS AND DISEASES** Fungal root rot may be a problem under glass.

**C. argentea** ■ Evergreen fern with erect or creeping rhizomes and long-stalked, 3-angled, 2- or 3-pinnate, dull green fronds, 15–25cm (6–10in) long, with linear segments; the undersides are white- or yellowish white-mealy. †20cm (8in), ↔ 30cm (12in). E. Asia. \*\*\*

**C. fragrans** ■ Evergreen fern with erect rhizomes producing tufts of lance-shaped, 3-pinnate, mid-green fronds, 6–12cm (2½–5in) long; the fronds have rounded segments, hairless beneath. †15cm (6in), ↔ 20cm (8in). S. Europe, Canary Islands, N. Africa, W. Asia (on acid rocks). \*\*\* (borderline)

**C. lanosa of gardens** see *C. tomentosa*.

**C. tomentosa**, syn. *C. lanosa* of gardens (Hairy lip fern). Evergreen fern with erect rhizomes. Lance-shaped, pinnatifid to 2-pinnate fronds, 15–30cm (6–12in) long, have rounded, dark grey-green segments, covered with silvery scales beneath. Stalks are purplish black with hair-like scales. †30cm (12in), ↔ 40cm (16in). USA (Pennsylvania to New Mexico, found on neutral or acid rocks). \*\*\* (borderline)



*Cheilanthes fragrans*

▷ **Cheiranthus** see *Erysimum*  
**C. x allionii** see *E. x allionii*  
**C. cheiri** see *E. cheiri*  
**C. cheiri 'Harpur Crewe'** see *E. x kewense* 'Harpur Crewe'

## CHEIRIDOPSIS

AIZOACEAE

Genus of about 100 species of dwarf, clump-forming, perennial succulents occurring in periodically semi-arid regions of Namibia and South Africa. Smooth, velvety, fleshy leaves are produced in pairs, either entirely free or partially joined along most of their length. The daisy-like, solitary, mainly stalked flowers, borne in summer, are followed by ovoid green fruits, which contain pale brown seeds. In frost-prone areas, grow in a temperate greenhouse. In warm, dry climates, use in a border or raised bed.

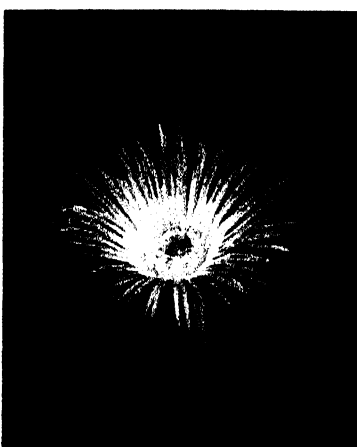
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 2 parts each loam and sharp sand and 1 part leaf mould, in full light. Provide low humidity. Water sparingly from summer to mid-autumn, applying a dilute, low-nitrogen liquid fertilizer at the beginning and end of this period; keep completely dry at other times. Outdoors, grow in gritty, humus-rich, sharply drained soil in full sun; protect from rain except when in full growth. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or root stem cuttings, in late spring or early summer.
- **PESTS AND DISEASES** Mealybugs may be a problem, particularly in dry weather.

**C. candidissima** see *C. denticulata*.

**C. denticulata** ■ syn. *C. candidissima*. Clump-forming succulent with paired, cylindrical, suberect, thick, greyish white leaves, to 10cm (4in) long, partially joined at the bases. Bears stalked yellow flowers, to 8cm (3in) across. †10cm (4in), ↔ indefinite. South Africa. ♀ (min. 7°C/45°F)

**C. purpurata** see *C. purpurea*.

**C. purpurea**, syn. *C. purpurata*. Clump-forming succulent with pairs of angular, bluish or pinkish green leaves, to 6cm (2½in) long, flat on the upper surfaces and rounded and keeled beneath. Bears short-stalked, purplish pink or yellow flowers, 3.5cm (1½in) across. †10cm (4in), ↔ indefinite. South Africa, possibly Namibia. ♀ (min. 7°C/45°F)



*Cheiridopsis denticulata*



*Chelidonium majus* 'Flore Pleno'

## CHELIDONIUM

PAPAVERACEAE

Genus of one species of variable biennial or short-lived perennial from woodland, scrub, wasteland, and rocky slopes in Europe and W. Asia. It has deeply pinnatifid or pinnatisect, hairless leaves, and bears umbels of poppy-like, bowl-shaped yellow flowers in summer. It is suitable for naturalizing in a wildflower garden or in light woodland. Contact with the orange-yellow sap may cause skin blisters.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Easy to grow in any soil and in almost any situation, but prefers woodland conditions.
- **PROPAGATION** Sow seed *in situ* in early spring.
- **PEST AND DISEASES** Trouble free.

**C. majus** (Greater celandine). Clump-forming perennial with lobed to deeply pinnatifid or pinnatisect, scalloped, pale or slightly bluish green leaves, 10–25cm (4–10in) long. Loose, terminal umbels of 4-petalled yellow flowers, 2–2.5cm (¾–1in) across, are produced on upright, brittle stems in summer. Self-seeds profusely. †to 60cm (24in), ↔ 20cm (8in). Europe, W. Asia. \*\*\*. 'Flore Pleno' ■ has double yellow flowers.

## CHELONE

Turtlehead

SCROPHULARIACEAE

Genus of about 6 species of perennials from moist woodland, prairies, and mountains of North America, valued for their strong growth and weather-resistant flowers. Turtleheads have a stiff, erect habit, and produce opposite pairs of simple, toothed, hairless leaves. The white, pink, or purple flowers, borne in short, dense, terminal racemes, from late summer to mid-autumn, are tubular and 2-lipped, with a beard on the inside of each lower lip. They are showy plants for a late summer border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, fertile, moist soil in an open site in partial shade or sun. Turtleheads will also grow in a bog garden, and tolerate heavy clay soil. Mulch in mid-spring with well-rotted manure or garden compost.
- **PROPAGATION** Sow seed in containers in a cold frame in early spring. Divide in



*Chelone obliqua*

spring. Root soft tip cuttings in late spring or early summer.

• **PESTS AND DISEASES** Susceptible to damage from slugs and snails.

*C. barbata* see *Penstemon barbatus*.

*C. glabra*, syn. *C. obliqua* var. *alba* (Turtlehead). Erect perennial with square stems and short-stalked, ovate to lance-shaped, mid-green leaves, 5–20cm (2–8in) long. Bears white or pink-tinged flowers, 2.5cm (1in) long, with white beards. †60–100cm (24–39in), ↔ 45cm (18in). E. and S. North America. \*\*\*

*C. lyonii*. Erect perennial with square stems and long-stalked, ovate to elliptic, toothed, mid-green leaves, 5–15cm (2–6in) long. Produces purple-pink flowers, 2.5cm (1in) long, with yellow beards. †to 1.2m (4ft), ↔ 60cm (24in). Mountains of S.E. USA. \*\*\*

*C. obliqua* ■ Erect perennial with more rounded stems than other species, and short-stalked, broadly lance-shaped to lance-shaped-elliptic, toothed or incised, boldly veined, dark green leaves, 5–20cm (2–8in) long. Bears dark pink or purple flowers, to 2cm (¾in) long, with sparse yellow beards. †40–60cm (16–24in), ↔ 30cm (12in). C. and S.E. USA. \*\*\*. var. *alba* see *C. glabra*.

#### ▷ Cherry,

**Barbados** see *Malpighia glabra*

**Bell-flowered** see *Prunus campanulata*

**Bird** see *Prunus padus*

**Black** see *Prunus serotina*

**Brush** see *Syzygium paniculatum*

**Choke** see *Prunus virginiana*

**Christmas** see *Solanum pseudocapsicum*

**Cornelian** see *Cornus mas*

**False Jerusalem** see *Solanum capsicastrum*

**Fuji** see *Prunus incisa*

**Great white** see *Prunus 'Taihaku'*

**Ground** see *Physalis*

**Higan** see *Prunus x subhirtella*

**Hill** see *Prunus jamasakura*

**Holly-leaved** see *Prunus ilicifolia*

**Jerusalem** see *Solanum pseudocapsicum*

**Manchurian** see *Prunus maackii*

**Ornamental** see *Prunus*

**Pin** see *Prunus pensylvanica*

**Rosebud** see *Prunus x subhirtella*

**Saint Lucie** see *Prunus mahaleb*

**Sargent** see *Prunus sargentii*

**Taiwan** see *Prunus campanulata*

**Virginian bird** see *Prunus virginiana*

#### ▷ Cherry cont.

**Wild** see *Prunus avium*

**Wild rum** see *Prunus serotina*

**Winter** see *Cardiospermum halicacabum*, *Solanum capsicastrum*, *S. pseudocapsicum*

**Yoshino** see *Prunus x yedoensis*

▷ **Cherry laurel** see *Prunus laurocerasus*

▷ **Cherry pie** see *Heliotropium arborescens*

#### ▷ Chervil,

**Common** see *Anthriscus cerefolium*

**Golden** see *Chaerophyllum aureum*

▷ **Chestnut** see *Castanea*

**American** see *Castanea dentata*

**Chinese** see *Castanea mollissima*

**Horse** see *Aesculus*, *A. hippocastanum*

**Moreton Bay** see *Castanospermum australe*

**Spanish** see *Castanea sativa*

**Sweet** see *Castanea*, *C. sativa*

**Water** see *Trapa*, *T. natans*

▷ **Chiapasia nelsonii** see *Disocactus nelsonii*

## CHIASTOPHYLLUM

CRASSULACEAE

Genus of one species of mat-forming, rhizomatous, succulent, evergreen perennial from shady, mountain habitats in the Caucasus. It is grown for its attractive, fleshy foliage and tiny yellow flowers in pendent racemes. Grow in a rock garden, border, or shaded rock and wall crevices.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, poor to moderately fertile soil in partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or root sideshoot cuttings in early summer.

• **PESTS AND DISEASES** Susceptible to damage by slugs and snails.

*C. oppositifolium* ■ ♀ syn. *C. simplicifolium*, *Cotyledon simplicifolia*. Spreading, rhizomatous, evergreen perennial forming dense mats of ovate to rounded, scalloped or wavy-

marginated, fleshy, pale green leaves, 4–12cm (1½–5in) long. In late spring and early summer, long stems bear bell-shaped, deep yellow flowers, to 5mm (¼in) long, in dense, arching, branched racemes. †15–20cm (6–8in), ↔ 15cm (6in). Caucasus. \*\*\*

*C. simplicifolium* see *C. oppositifolium*.

▷ **Chicory** see *Cichorium*, *C. intybus*

▷ **Chile nut** see *Gevuina avellana*

## CHILIOTRICHUM

ASTERACEAE/COMPOSITAE

Genus of 2 species of evergreen shrubs from temperate regions of South America, where they are found from sea level to the mountains. *C. diffusum* is grown for its rosemary-like leaves and daisy-like flowerheads, and is best suited to a sheltered, sunny shrub border. It thrives in coastal gardens.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun, with shelter from cold, dry winds. Pruning group 8.

• **PROPAGATION** Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*C. amelloides* see *C. diffusum*.

*C. diffusum*, syn. *C. amelloides*.

Evergreen shrub with erect shoots and usually linear, oblong-lance-shaped to elliptic, glossy, dark green leaves, to 4cm (1½in) long, densely and alternately arranged around the stems. White flowerheads, to 5cm (2in) across, with yellow centres, are borne on flower-stalks to 10cm (4in) long, in late spring and early summer. †1m (3ft), ↔ 1.5m (5ft). S. Chile, S.W. Argentina, Falkland Islands. \*\*

▷ **Chilli pepper** see *Capsicum*,

*C. annum*, *C. annum* Longum Group

## CHIMAPHILA

Prince's pine

PYROLACEAE

Genus of about 6 species of evergreen, creeping perennials, related to *Pyrola*, found in cool-temperate woodland in Europe, Asia, and North America. They have slender, upright stems, and produce whorls of leathery leaves and nodding, white to pink flowers in terminal corymbs or umbels. They grow best in cool climates, and are ideal for a woodland garden, for shaded areas in a rock garden, or for growing on a peat terrace or bank.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, humus-rich, acid soil, enriched with leaf mould, in a cool site in partial or dappled shade. Not easy to establish.

• **PROPAGATION** Sow seed as soon as ripe on to lime-free (ericaceous) seed compost topped with damp sphagnum moss; keep in a cool, shaded frame until germination.

• **PESTS AND DISEASES** Prone to damage by slugs and snails.

*C. maculata*. Evergreen perennial, with a creeping, woody rootstock producing ovate to lance-shaped, leathery, white-veined, dark green leaves, to 7cm (3in) long, usually arranged in whorls of 3.

Umbels of 3–5 open cup-shaped, white or pale pink flowers, to 1cm (½in) across, are borne on pendent flower-stalks in early summer. †to 25cm (10in), ↔ to 20cm (8in). E. North America. \*\*\*

## CHIMONANTHUS

Wintersweet

CALYCANTHACEAE

Genus of 6 species of deciduous and evergreen shrubs occurring in woodland in China. They are cultivated for their unusual, many-petalled, open bowl-shaped, waxy, and very fragrant flowers, which are borne in winter before the young leaves emerge. Grow wintersweets as specimen plants or in a shrub border. They may also be trained against a sunny wall.

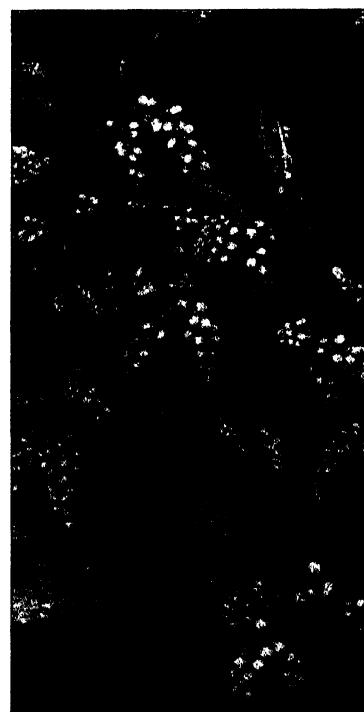
• **HARDINESS** Fully hardy, although unripened wood may be damaged by frost.

• **CULTIVATION** Grow in any fertile, well-drained soil in full sun. Pruning group 1, or group 13 if wall-trained; prune plants immediately after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*C. praecox* (Wintersweet). Vigorous, broadly upright, deciduous shrub with entire, lance-shaped, glossy, mid-green leaves, to 20cm (8in) long, rough above, smooth beneath, arranged in opposite pairs. Pendent, fragrant, sulphur-yellow flowers, 2.5cm (1in) across, stained brown or purple inside, are produced on the bare shoots in winter. †4m (12ft), ↔ 3m (10ft). China. \*\*\*. 'Concolor' see 'Luteus'. 'Grandiflorus' ■ ♀ has larger, deep yellow flowers, to 4.5cm (1½in) long, conspicuously striped maroon inside. 'Luteus' ♀ syn. 'Concolor', bears clear yellow flowers which open widely. 'Parviflorus' has pale yellow flowers to 1cm (½in) across.

*Chastophyllum oppositifolium**Chimonanthus praecox* 'Grandiflorus'

## CHIMONOBAMBUSA

GRAMINEAE/POACEAE

Genus of 6–20 species of small to medium-sized bamboos from deciduous woodland in S. and E. Asia, with running rhizomes, bright green leaves, and flowers borne in spike-like racemes. They are useful for planting as a screen or hedge, and grow well in a woodland garden. *C. quadrangularis* is cultivated for its unusual square canes, and elegant shape and foliage. Where temperatures fall below  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ), grow less hardy species in a cool or temperate greenhouse or conservatory.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in partial shade, with shelter from cold, dry winds.
- **PROPAGATION** Divide clumps, or take cuttings of sections of young rhizomes, in spring.
- **PESTS AND DISEASES** Emerging shoots are vulnerable to slug damage.

*C. quadrangularis*, syn. *Arundinaria quadrangularis* (Square-stemmed bamboo). Vigorous, spreading, rhizomatous bamboo, forming loose clumps of erect canes, often with sparse, small spines. Attractive, pendent, lance-shaped, dark green leaves, 20cm (8in) long, are produced from the prominent cane nodes. Older canes become square in cross-section, especially at the bases.  $\uparrow$  to 9m (28ft),  $\leftrightarrow$  1–2m (3–6ft). S.E. China, Taiwan. \* \*

- ▷ **China aster** see *Callistephus*
- ▷ **Chincherinchee** see *Ornithogalum thyrsoides*
- ▷ **Chinese-hat plant** see *Holmskioldia sanguinea*
- ▷ **Chinese houses** see *Collinsia bicolor*
- ▷ **Chinese lantern** see *Physalis alkekengi*
- ▷ **Chinkapin, Golden** see *Chrysopsis chrysophylla*
- ▷ **Chinquapin, Water** see *Nelumbo lutea*

## CHIONANTHUS

Fringe tree

OLEACEAE

Genus of 100 or more species of evergreen and deciduous trees and shrubs found in a variety of habitats, including woodland and scrub, and on stream-banks and rocky outcrops. They occur mainly in tropical regions, including E. Asia, Korea, Japan, and E. USA. Cultivated for their terminal panicles of flowers, which have 4 slender white petals, and for their blue-purple or blue-black fruits, *Chionanthus* species are attractive specimen plants. They are also suitable for a shrub border. Some plants have only male or only female flowers, and therefore may not produce fruit.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in any fertile, well-drained soil in full sun. Flowering and fruiting is best in areas with long, hot summers. Pruning group 1; remove the lower branches of *C. virginicus* to encourage a tree-like habit.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn; germination may take up to 18 months.
- **PESTS AND DISEASES** Trouble free.

*Chionanthus virginicus*

*C. retusus* ♀ (Chinese fringe tree). Spreading, deciduous shrub or small tree with peeling or deeply furrowed bark and opposite, usually elliptic, glossy leaves, 4–10cm (1½–4in) long, bright green above, softly white-hairy beneath. Fragrant white flowers are borne in erect panicles, 10–18cm (4–7in) long, in summer, followed by blue-black fruit, 1cm (½in) long. Lime-tolerant.  $\uparrow$  to 3m (10ft). China, Taiwan. \* \* \*

*C. virginicus* ♀ (Fringe tree). Spreading, deciduous shrub, or sometimes small tree, with opposite, usually elliptic, glossy, dark green leaves, to 20cm (8in) long. Fragrant white flowers are borne in pendent panicles, to 20cm (8in) long, in summer; they are followed by small, blue-black fruit, 1.5cm (½in) long. Needs acid soil.  $\uparrow$  3m (10ft),  $\leftrightarrow$  3m (10ft) or more. E. USA. \* \* \*

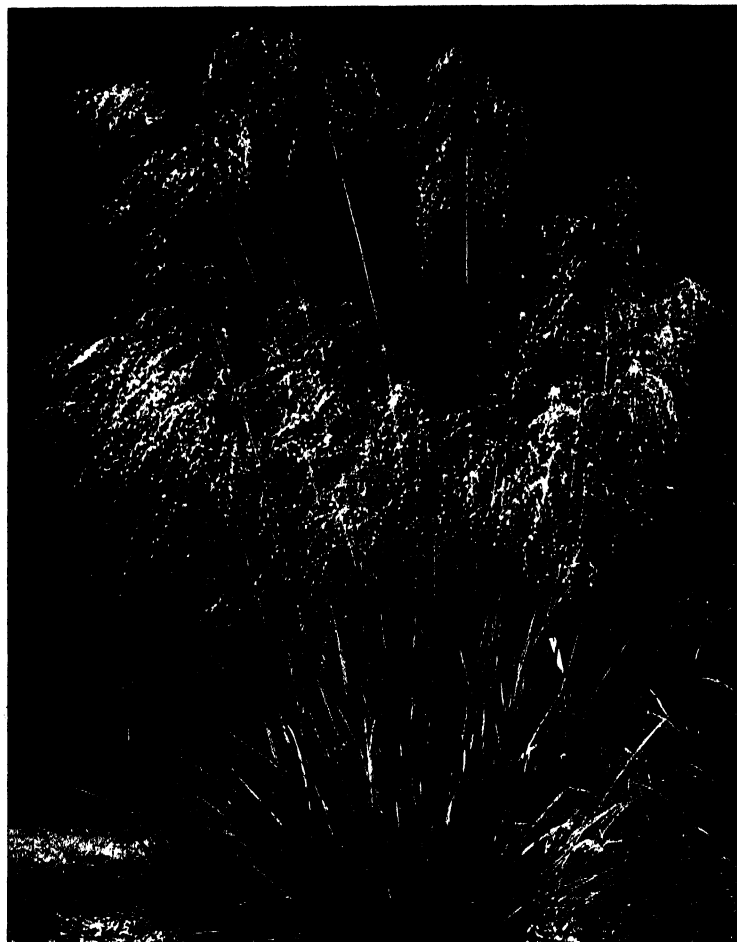
## CHIONOCHLOA

GRAMINEAE/POACEAE

Genus of about 20 species of evergreen, coarse, erect, tufted perennial grasses, mostly from New Zealand, found in alpine and subalpine grassland. The narrowly linear, deeply ridged leaves have persistent sheaths, similar to those of pampas grass (*Cortaderia*), to which this genus is related. The inflorescences bear several-flowered spikelets in loose, graceful panicles. *Chionochoa* species are cultivated for their strong, elegant shape, colourful foliage, and attractive flower-heads, which are excellent for dried flower arrangements if cut before fully mature. Grow as feature plants in a border or use as specimen plants.

- **HARDINESS** Most are frost hardy; *C. conspicua* will withstand falls in temperature to  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ).
- **CULTIVATION** Grow in a sheltered site in light, fertile, moist but well-drained soil. Protect crowns from excessive winter wet. Cut out old, flowered stems at the bases in early winter.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

*C. conspicua* ♀ syn. *Arundo conspicua*, *Cortaderia conspicua* (Plumed tussock grass). Robust, densely tufted, perennial grass, forming tussocks of stiff, arching, linear, red-brown-tinted, mid-green leaves, to 1.2m (4ft) long, often fringed with fine hairs at the bases. Strong, arching or erect stems bear large, open,

*Chionochoa conspicua*

pendent panicles, to 45cm (18in) long, of 3- to 7-flowered spikelets of creamy white flowers, each to 1.5cm (½in) long, in mid- and late summer.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  1m (3ft). New Zealand. \* \*

## CHIONODOXA

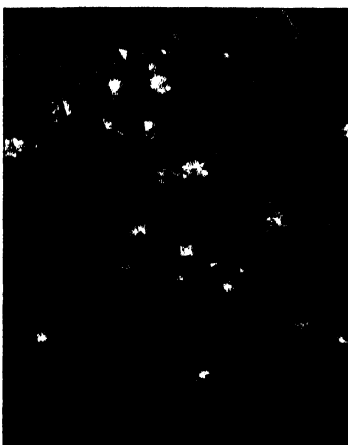
Glory of the snow

HYACINTHACEAE/LILIACEAE

Genus, related to *Scilla*, of 6 species of small, bulbous perennials from open mountainsides and forest in Crete, W. Turkey, and Cyprus. They bear racemes of star-shaped flowers in early spring, above linear, sometimes channelled, mid-green, basal leaves, to 28cm (11in) long. Grow in a rock garden, raised bed, or trough; most may also be grown under shrubs or trees, where they can

- spread. They self-seed freely. Their nomenclature is confused in commerce.
- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Plant bulbs 8cm (3in) deep in autumn, in any well-drained soil in full sun. *C. nana* dislikes winter wet and is best grown in an alpine house.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets in summer.
- **PESTS AND DISEASES** Trouble free.

*C. cretica* see *C. nana*.  
*C. forbesii* ♀ syn. *C. luciliae* of gardens, *C. siehei*, *C. molusi*. Bulbous perennial producing erect to spreading leaves, 7–28cm (3–11in) long. In early spring, bears racemes of 4–12 star-shaped blue flowers, 1–2cm (½–¾in) across, with white centres.  $\uparrow$  10–20cm (4–8in),

*Chionodoxa forbesii**Chionodoxa forbesii* 'Pink Giant'

*Chionodoxa luciliae*

→ 3cm (1¼in). W. Turkey. \*\*\*.  
 'Pink Giant' ■ has pink flowers, 1.5cm (½in) across, with white centres.

*C. gigantea* see *C. luciliae*.

*C. luciliae* ■ ♀ syn. *C. gigantea*. Bulbous perennial with often recurved leaves, 7–20cm (3–8in) long. In early spring, bears racemes of up to 3 star-shaped blue flowers, 1–2cm (½–¾in) across, with white centres. Similar to *C. forbesii* but has fewer flowers, with slightly wider tepals. ↓ 15cm (6in), ↔ 3cm (1¼in). W. Turkey. \*\*\*

*C. luciliae* of gardens see *C. forbesii*.  
*C. nana*, syn. *C. cretica*. Delicate, bulbous perennial with spreading leaves, 8–18cm (3–7in) long. In early spring, produces racemes of up to 3 star-shaped blue flowers, 6–10mm (¼–½in) across, with white centres. ↓ 15cm (6in), ↔ 3cm (1¼in). Greece (Crete). \*\*

*C. sardensis* ♀ Bulbous perennial with erect or spreading leaves, 7–20cm (3–8in) long. In early spring, bears racemes of up to 12 slightly pendent, star-shaped, deep clear blue flowers, 8–10mm (⅜–½in) across, with blue centres. ↓ 10–20cm (4–8in), ↔ 3cm (1¼in). W. Turkey. \*\*\*

*C. siehei* see *C. forbesii*.

*C. tmolusi* see *C. forbesii*.

## X CHIONOSCILLA

HYACINTHACEAE/LILIACEAE

Genus of one hybrid bulbous perennial, a cross between *Chionodoxa forbesii* and *Scilla bifolia*, with semi-erect, narrow, inversely lance-shaped, dark green, basal leaves. Grown for its short racemes of brilliant blue flowers in spring, it is

x *Chionoscilla allenii*

suitable for a rock garden, trough, or raised bed, and for planting beneath trees or shrubs.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Plant bulbs 7cm (3in) deep in autumn, in any well-drained soil in sun or partial shade.

• **PROPAGATION** Remove offsets in summer.

• **PESTS AND DISEASES** Trouble free.

x *C. allenii* ■ Bulbous perennial with basal leaves, 7–15cm (3–6in) long, and short racemes, 6–12cm (2½–5in) long, of variable, star-shaped, mid- to deep blue flowers, 1–1.5cm (½in) across, borne in spring. Natural hybrid. ↓ 10–20cm (4–8in), ↔ 3cm (1¼in). Turkey. \*\*\*. 'Fra Angelico' has deep bright blue flowers.

## CHIRITA

GESNERIACEAE

Genus of about 100 species of upright or mat-forming annuals and evergreen perennials from damp, semi-shaded sites in tropical Asia. They have fleshy stems and downy or bristly leaves in opposite pairs or whorls. The tubular or funnel-shaped flowers are either solitary or borne in many-flowered clusters from the leaf axils in summer and autumn. In frost-prone areas, grow in a warm greenhouse or conservatory; in tropical climates, grow in a damp, shady border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light, with high humidity and good air circulation. In the growing season, water moderately and apply a half-strength, balanced liquid fertilizer monthly. Water perennials more sparingly in winter. Outdoors, grow in well-drained, humus-rich, gritty soil in partial shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in early spring; seed of *C. lavandulacea* may be sown in succession from late winter. *C. sinensis* may be increased by leaf cuttings, inserted in moist, sandy compost in a propagating case.

• **PESTS AND DISEASES** Prone to stem rot in damp conditions; water on the leaves causes discoloration and fungal rot.

*C. lavandulacea* ■ Fast-growing, erect, usually unbranched annual with pairs of oblong-elliptic, softly hairy, light green leaves, 20cm (8in) long. In summer and

*Chirita lavandulacea*

autumn, bears a profusion of tubular, pale lavender-blue flowers, 2.5–4cm (1–1½in) across; each flower lasts only 2–3 days. At the coolest temperatures indicated, growth is more compact and the flowers last longer. ↓ 90cm (36in), ↔ 30cm (12in). Asia. ☼ (min. 13–21°C/55–70°F)

*C. sinensis* ♀ Evergreen perennial forming flat rosettes of thick, ovate-lance-shaped or elliptic, bristly-hairy, dark green leaves, sometimes heavily veined silver, 15–20cm (6–8in) long; they appear quilted, particularly at the margins. Occasionally produces tubular white flowers, 3cm (1¼in) long, marked yellow and suffused purple-pink. ↓ 5cm (2in), ↔ 35cm (14in). Himalayas, China, Hong Kong. ☼ (min. 13–21°C/55–70°F)

▷ **Chittamwood** see *Cotinus obovatus*

▷ **Chives** see *Allium schoenoprasum*

**Chinese** see *A. tuberosum*

## CHLIDANTHUS

AMARYLLIDACEAE

Genus of one species of bulbous perennial found in the Andes in Peru. It is grown for its strongly scented flowers, borne in summer. In frost-prone areas, it is best grown in a cool or temperate greenhouse or conservatory. In areas that are virtually frost free, grow in a sheltered site outdoors, such as at the base of a sunny wall.

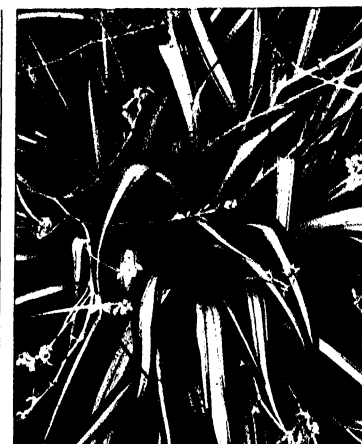
• **HARDINESS** Frost tender.

• **CULTIVATION** Plant with the nose of the bulb just above the soil surface in spring. Under glass, grow in loam-based potting compost (J1 No.2) in full light. Water freely when in growth, reducing water as leaves wither; keep cool and dry in winter. Container-grown plants may be plunged outdoors in summer. Outdoors, grow in humus-rich, sandy, well-drained soil in a sheltered position; apply a dry mulch in winter.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Remove offsets in spring.

• **PESTS AND DISEASES** Trouble free.

*C. fragrans* ■ Bulbous perennial with semi-erect, narrow, linear, grey-green, basal leaves, 15–40cm (6–16in) long. In summer, leafless stems bear umbels of 3–5 trumpet-shaped, strongly scented, golden yellow flowers, 5cm (2in) wide. ↓ 30cm (12in), ↔ 8cm (3in). Peru (Andes). ☼ (min. 5–10°C/41–50°F)

*Chlidanthus fragrans**Chlorophytum comosum* 'Vittatum'

## CHLOROPHYTUM

ANTHERICACEAE/LILIACEAE

Genus of about 250 species of evergreen, rhizomatous perennials with fibrous or fleshy roots. Those in cultivation are from a variety of habitats in South Africa and W. Africa, and are clump-forming, with linear, lance-shaped, ovate, or strap-shaped, basal leaves. In summer, they bear arching racemes or panicles of tiny, 6-petalled flowers, and sometimes produce plantlets. In frost-prone areas, grow in containers and hanging baskets in a cool or temperate conservatory, they are also popular foliage houseplants, tolerant of a wide range of conditions. In warmer areas, use in a border or as ground cover.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright indirect to full light, shaded from hot sun. Water freely in growth, moderately at other times. Outdoors, grow in any soil in sun or partial shade.

• **PROPAGATION** Sow seed at 18–20°C (64–68°F) in spring. Root plantlets, or divide, at any time except winter.

• **PESTS AND DISEASES** Trouble free.

*C. capense*. Clump-forming perennial with lance- or strap-shaped, bright green leaves, 25–60cm (10–24in) long. Bears tiny white flowers in racemes to 60cm (24in) long. Does not produce plantlets. ↓ 30cm (12in), ↔ 60cm (24in). South Africa. ☼ (min. 7°C/45°F)

*C. capense* of gardens see *C. comosum*.  
*C. comosum*, syn. *C. capense* of gardens (Ribbon plant, Spider plant). Clump-forming perennial with linear to linear-lance-shaped, fresh green leaves, 30cm (12in) long. Bears tiny white flowers in racemes, to 60cm (24in) long. Also produces plantlets. ↓ 15–20cm (6–8in), ↔ 15–30cm (6–12in). South Africa. ☼ (min. 7°C/45°F). 'Variegatum' ♀ produces leaves with white margins. 'Vittatum' ♀ has leaves with white or cream central stripes.

*C. orchidastrum*. Clump-forming perennial with oblong to inversely lance-shaped, often wavy-margined, glossy, mid-green leaves, 21–28cm (8–11in) long. Tiny, white, green-tinged flowers are borne in lax racemes, 25–40cm (10–16in) long. Does not produce plantlets. ↓ 15–20cm (6–8in), ↔ 15–30cm (6–12in). Sierra Leone. ☼ (min. 7°C/45°F)

## CHOISYA

Mexican orange blossom  
RUTACEAE

Genus of about 8 species of evergreen shrubs from canyons and rocky slopes in S.W. USA and Mexico. Choisyas are valued for their attractive, opposite, palmate, aromatic leaves, and for their fragrant, star-shaped white flowers, which are occasionally solitary, more often borne in terminal or axillary cymes or corymbs. They are best grown in a shrub border or against a wall.

• **HARDINESS** Fully hardy to frost hardy.  
• **CULTIVATION** Grow in fertile, well-drained soil, preferably in full sun; less hardy species, such as *C. arizonica*, benefit from the shelter of a wall. Pruning group 8.

• **PROPAGATION** Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Prone to snails.

*C. arizonica*. Erect shrub with slender branches, warty shoots, and mid- to dark green leaves comprising 5–10 linear, gland-margined leaflets, to 5cm (2in) long. In late spring, bears axillary corymbs of many pink-tinged white flowers, 2–3cm (¾–1¼in) across. ♂→ 1m (3ft). USA (S. Arizona). \* \* \*  
*C. 'Aztec Pearl'* □ ♀ Compact shrub with dark green leaves composed of 3–5 linear leaflets, to 8cm (3in) long. Pink-tinged white flowers, 2–3cm (¾–1¼in) across, are borne in axillary cymes of 3–6 blooms in late spring, and again in late summer and autumn. ♂→ 2.5m (8ft). \* \* \*



*Choisy 'Aztec Pearl'*



*Choisy ternata*



*Choisy ternata* 'Sundance'

*C. ternata* □ ♀ (Mexican orange blossom). Compact shrub with dark green leaves comprising 3 stalkless, obovate leaflets, 4–8cm (1½–3in) long. Axillary corymbs of 3–6 fragrant white flowers, 2.5–3cm (1–1¼in) across, are borne in late spring, and again in late summer and autumn. ♂→ 2.5m (8ft). Mexico. \* \* \*. 'Sundance' □ ♀ has bright yellow young foliage, yellow-green when grown in partial shade; it rarely flowers.

▷ **Chokeberry** see *Aronia*

**Black** see *A. melanocarpa*

**Purple** see *A. x prunifolia*

**Red** see *A. arbutifolia*

▷ *Chondrium gracile* see *Bouteloua gracilis*

## CHORISIA

BOMBACACEAE

Genus of 2 species of semi-evergreen or deciduous, succulent trees from low-lying areas in the Windward Islands, Brazil, and Argentina. They have spiny, extremely fleshy trunks, alternate, 5- to 7-palmate leaves, and open funnel-shaped flowers borne in autumn. In frost-prone areas, grow in a warm greenhouse; elsewhere, use as specimen trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light, shaded from hot sun, with good ventilation. Water moderately in growth, applying a balanced liquid fertilizer 2 or 3 times; keep dry at other times. Outdoors, grow in well-drained, neutral to acid, humus-rich soil in sun. Pruning group 1; plants under glass may need restrictive pruning in early spring.

• **PROPAGATION** Sow seed at 19–24°F (66–75°F) from spring to early summer.

• **PESTS AND DISEASES** Young plants are particularly vulnerable to scale insects.

*C. speciosa* △ (Floss silk tree). Broadly conical, slow-growing, semi-evergreen tree with long-stalked, pinnate leaves, to 12cm (5in) long, composed of 5–7 lance-shaped, often toothed leaflets. Open funnel-shaped, cream or white flowers, 10cm (4in) or more across, the upper parts of the petals reddish violet or yellowish white, are produced singly from the leaf axils in autumn. The pear-shaped, green then brown fruit contain seeds encased in silky floss. ♂ to 15m (50ft), ♀→ 1.5m (5ft). Brazil, Argentina. ♀ (min. 16°C/61°F)

## CHORIZEMA

LEGUMINOSAE/PAPILIONACEAE

Genus of 18 species of evergreen, small shrubs and twining and scandent climbers found in semi-arid scrub and open woodland in Australia. They are cultivated for their brightly coloured, small, pea-like flowers, borne mostly in terminal racemes. The leathery leaves are usually alternate, and may be entire or prickle-toothed. In frost-prone areas, grow in a cool conservatory or greenhouse. In warmer areas, grow in a shrub border or as ground cover. Train climbing species over arches, arbours, or larger shrubs.

• **HARDINESS** Most are frost tender; *C. cordatum* and *C. ilicifolium* may survive brief spells close to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (JI No.3), with additional sharp sand. Provide full light, with shade from hot sun, and good ventilation. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on in early spring. Outdoors, grow in humus-rich, neutral to slightly acid, moist but well-drained soil in full sun. Pruning group 8, or group 11 for climbing species; prune after flowering.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, after soaking in hot water. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. cordatum* ♀ (Heart-leaved flame pea). Dense, low shrub or semi-scandent climber with ovate, leathery, mid- to dark green leaves, 2–5cm (¾–2in) long, heart-shaped at the bases, and with spine-like teeth. From late winter to late summer, freely bears orange-red and yellow flowers, 1.5cm (½in) across, with purplish pink keels, in terminal racemes, 8–15cm (3–6in) long. ♂→ to 1.2m (4ft) or more. Australia (Western Australia). ♀ (min. 5–10°C/41–50°F)

*C. ilicifolium* □ (Holly flame pea). Spreading, open shrub with slender branches and narrowly to broadly ovate, dark green leaves, 5–8cm (2–3in) long, with wavy, prickle-toothed margins. Orange-red and yellow flowers, 1cm (½in) across, with purplish pink keels, are produced in terminal and axillary racemes, 8–15cm (3–6in) long, from



*Chorizema ilicifolium*

late winter to late summer. ♂→ 1–3m (3–10ft). Australia (Western Australia). ♀ (min. 5–10°C/41–50°F)

▷ **Chotito** see *Polyscias filicifolia*

▷ **Christmas bells** see *Blandfordia*  
**Tasmanian** see *B. punicea*

▷ **Christmas berry tree** see *Schinus terebinthifolius*

▷ **Christmas pride** see *Ruellia macrantha*

▷ **Christmas rose** see *Helleborus niger*

▷ **Christmas tree** see *Metrosideros excelsus*, *Picea abies*

**New South Wales** see

*Ceratopetalum gummiferum*

▷ **Christ's tears** see *Coix lacryma-jobi*

▷ **Christ's thorn** see *Euphorbia milii* var. *splendens*, *Paliurus spina-christi*

## CHRYSLIDOCARPUS

Yellow palm

ARECACEAE/PALMAE

Genus of about 20 species of single- and cluster-stemmed palms from forest in areas with high rainfall in Madagascar and adjacent islands. The pinnate, arching leaves are arranged in terminal clusters; panicles of small, 3-petalled flowers are borne among them. In frost-prone areas, grow in a temperate or warm greenhouse, or as houseplants. In tropical or subtropical regions, grow as elegant specimen trees.

• **HARDINESS** Frost tender.

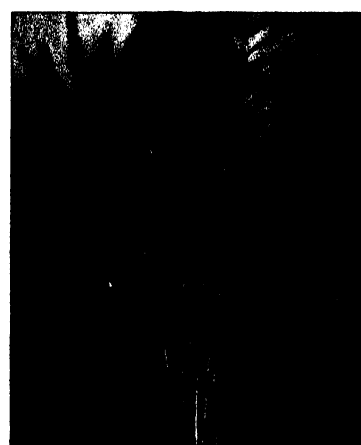
• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in bright filtered or full light with shade from hot sun. Water freely when in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade.

• **PROPAGATION** Sow seed at not less than 26°C (79°F) in spring.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*C. lutescens* □ ♀ \* syn. *Areca lutescens*, *Dypsis lutescens* (Areca palm, Butterfly palm, Golden feather palm). Small palm with clustered stems, at first covered with yellow leaf bases. The leaves, 1–2m (3–6ft) long, have numerous slender, lance-shaped, usually yellow-green leaflets. In summer, bears yellow flowers in panicles to 60cm (24in) long. ♂ to 9m (28ft), ♀→ to 6m (20ft). Madagascar. ♀ (min. 10–15°C/50–59°F)

▷ *Chrysanthemopsis* see *Rhodanthemum*



*Chrysalidocarpus lutescens*

## CHRYSANTHEMUM

ASTERACEAE/COMPOSITAE

Genus of about 20 species of upright, bushy annuals and herbaceous perennials (some with woody bases), now almost all attributed by botanists to the genus *Dendranthema*, but here maintained under *Chrysanthemum* for the benefit of gardeners. The annual species come from the Mediterranean region, where they grow in dry fields and wasteland; the herbaceous perennials are from the Arctic, parts of N. and C. Russia, China, and Japan. The aromatic, alternate, ovate to lance-shaped, dark green leaves, 5–17cm (2–7in) long, are shallowly to deeply lobed or pinnatisect, occasionally entire, and often feathery.

Chrysanthemums are grown primarily for their showy flowerheads, 2.5–30cm (1–12in) across, which consist of ray-florets in a variety of colours, including yellow, white, pink, purple, and red, with yellow disc-florets; they are cultivated in a multiplicity of forms.

For ease of reference, chrysanthemums have been divided into the following groups:

**Florists' chrysanthemums**

These perennial cultivars are available in a wide range of forms and colours, and are grown for exhibition, the garden, and cutting. They are often categorized according to their flowerhead form (see panel below right), their flowering season – early (late summer and early autumn), mid-season (mid-autumn), or late (mid-autumn to midwinter) – and whether they are disbudded or non-

disbudded (see below and panel below left). Disbudded chrysanthemums are classified by exhibitors into size groups. Non-disbudded chrysanthemums are categorized by both size and habit.

The early flowering spray chrysanthemums, reflexed cultivars, and pompon chrysanthemums are the best groups for outdoor use. Some mid-season reflexed cultivars are suitable for garden use, but most require protection from rain. Late-flowering cultivars are flowered in a temperate or warm greenhouse.

**Disbudded** – Disbudded chrysanthemums have all the flower buds on each shoot removed except for the terminal bud, in order to increase the size of the remaining bloom. For exhibition, those with incurved, intermediate, or reflexed flowers are restricted to 2 blooms per plant; in gardens, 4 or 5 blooms are allowed to develop. Single and anemone-centred flowers are reduced to 4–8 blooms for exhibition, and 10 or more for garden use and for cutting.

**Non-disbudded** – In non-disbudded chrysanthemums, the buds are usually allowed to develop freely. Non-disbudded chrysanthemums are grouped according to the following habits. **Spray chrysanthemums** produce several blooms per stem in a variety of flower forms: single, intermediate, reflexed, anemone-centred, pompon, spoon-shaped, or quill-shaped. They are grown mainly for garden decoration and for cutting. For exhibition, each plant is allowed to develop 4 or 5 stems, each bearing 5 or more flowerheads. Late-flowering sprays are restricted to 3 stems; for exhibition, each stem should bear 6 or 7 blooms or, if grown with controlled day length, 12 blooms per

stem; for exhibition, the central bud of the spray is usually removed to give a more rounded outline. **Charm chrysanthemums** have a dwarf, bushy, domed to almost spherical habit, and bear hundreds of single flowerheads, to 2.5cm (1in) across. They do not need stopping or training, and are grown for indoor decoration, for exhibition, and as bonsai plants. **Cascade chrysanthemums** have similar flowerheads to charms but are trained as fans, pillars, pyramids, or cascades. They are grown for indoor decoration, for exhibition, and as bonsai plants. **Pompon chrysanthemums** are dwarf and bushy, producing 50 or more dense, spherical, or occasionally hemispherical flowerheads per plant. They are suitable for a border outdoors.

**Rubellum Group chrysanthemums** These clump-forming, bushy perennials, with woody stem bases, are all named hybrids of *C. rubellum*, syn. *Dendranthema zawadskii*. They have pinnatisect leaves, often with a silvery cast, and bear single, semi-double, or double, yellow-centred flowerheads in a range of colours. Flowering in late summer and early autumn, they are excellent for a herbaceous border and for cutting.

**Annual chrysanthemums** These chrysanthemums have a bushy, branched habit and bear clusters of mainly single, yellow or white flowerheads, some with contrasting zones of orange or red. They flower over a long period during spring and summer, or from summer to early autumn, and are suitable for an annual border, or for infilling in a herbaceous border. *C. segetum* is also suitable for a wildflower garden.

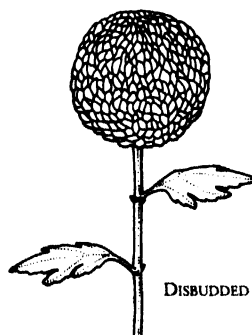
• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow early-flowering and mid-season florists' chrysanthemums outdoors in a sheltered site in full sun in fertile, moist but well-drained, neutral to slightly acid soil, enriched with well-rotted manure. Apply a top-dressing of balanced fertilizer before planting, and plant out when any danger of frost has passed. Provide support and tie stems in with soft twine as growth proceeds. Stop plants at 15–20cm (6–8in) tall, by pinching out the growing tips to encourage the early production of flowering laterals. A second stop will produce greater numbers of smaller blooms. For exhibition purposes, select the required number of strong laterals and remove the remainder. Disbud gradually, removing unwanted flower buds as laterals reach about 2cm (¾in) long. The timing of stopping and disbudding varies with climate and growing conditions; specialist catalogues and National Chrysanthemum Society publications provide approximate dates.

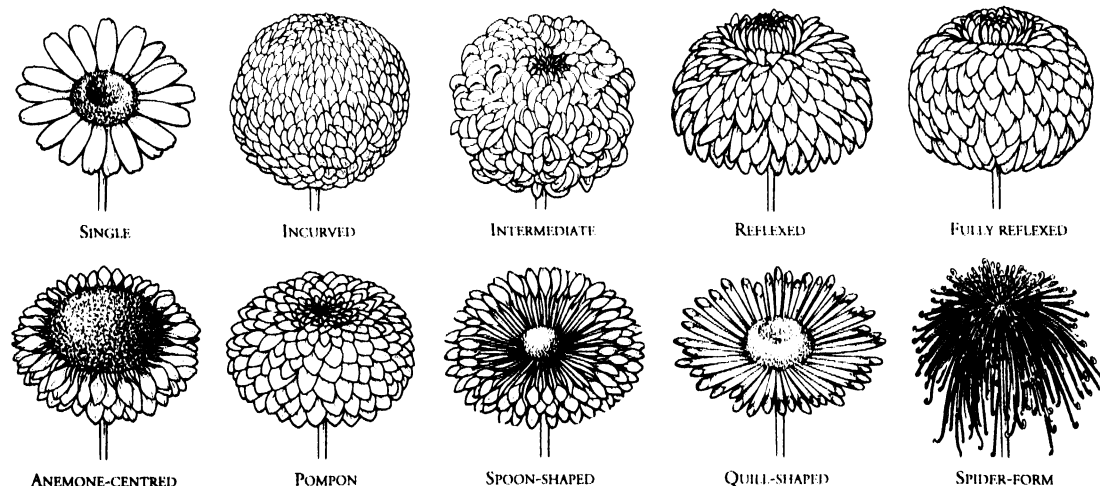
Water freely in dry weather, and apply a balanced liquid fertilizer every 7–10 days from midsummer until buds begin to show colour. In mid- to late autumn, cut back flowered stems to 15–23cm (6–9in). Lift crowns and store over winter in loamless potting compost in frost-free conditions. In areas experiencing only light frosts, leave *in situ*, apply a deep, dry winter mulch, and cut back in early spring. Protect early and mid-season exhibition cultivars from rain and frost. White- and yellow-flowered cultivars may be adequately protected by greaseproof paper bags, put in place as buds begin to show colour.

## DISBUDDED AND NON-DISBUDDED FORMS

Florists' chrysanthemums may be disbudded, leaving only one bud per stem. Non-disbudded plants produce flowerheads freely in sprays.



## CHRYSANTHEMUM FLOWERHEAD FORMS



**Single** – Single flowerheads, which have up to 5 rows of flat ray-florets surrounding the central yellow, often green-centred discs.

**Incurved** – Fully double, spherical flowerheads with ray-florets opening from the bases and curving upwards.

**Intermediate** – Fully double, loose, spherical flowerheads with ray-florets mainly incurving but some lower ones reflexing.

**Reflexed** – Fully double flowerheads, similar to fully reflexed, but less compact, forming umbrella shapes.

**Fully reflexed** – Fully double, spherical flowerheads with ray-florets opening from the crown of each flower and curving downwards and inwards to touch the stem.

**Anemone-centred** – Single flowerheads with enlarged disc-florets that form dome-shaped centres, up to half the width or more of the flowerheads.

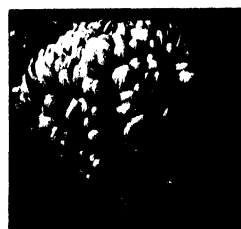
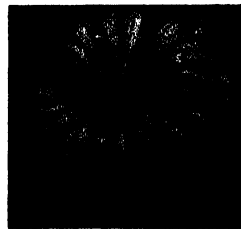
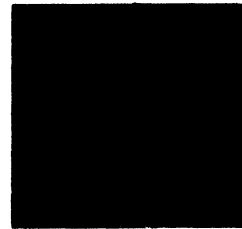
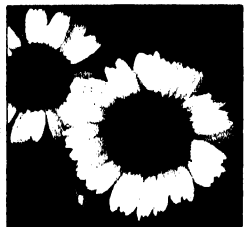
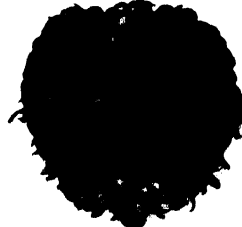
**Pompon** – Fully double, spherical flowerheads with tubular florets regularly and tightly packed, growing outwards from the crown.

**Spoon-shaped** – Double flowerheads with tubular ray-florets that open out at their tips to form spoon shapes.

**Quill-shaped** – Double flowerheads with tubular ray-florets that have a slanting opening at their tips, like that of a quill.

**Spider-form** – Double flowerheads with long, thin ray-florets; the outer ray-florets are more or less pendent, the inner ones curling upwards.

C

*Chrysanthemum* 'Alison Kirk'*Chrysanthemum* 'Autumn Days'*Chrysanthemum* 'Beacon'*Chrysanthemum* 'Brietner'*Chrysanthemum* 'Bronze Hedgerow'*Chrysanthemum* 'Bronze Yvonne Arnaud'*Chrysanthemum* 'Buff Margaret'*Chrysanthemum* 'Cappa'*Chrysanthemum carinatum* 'Court Jesters'*Chrysanthemum* 'Cherry Chintz'*Chrysanthemum* 'Clara Curtis'*Chrysanthemum* 'Cossack'

Cultivars of other colours, and all large-flowered cultivars of whatever colour, are best grown in an open-sided, polythene-covered lath house or in a cold greenhouse.

Grow late-flowering florists' chrysanthemums, including charms, cascades, and late-flowering sprays, in loam-based potting compost; use J1 No.2 in 7.5cm (3in) containers, and pot on successionally to flower in 23–30cm (9–12in) containers of J1 No.3, with the support of canes. Allow about 10 days between repotting and disbudding. Grow in a cold frame, bring into a warm greenhouse in early autumn, and provide bright filtered light with good ventilation and a winter minimum of 10°C (50°F). From midsummer onwards, water moderately and apply a balanced liquid fertilizer weekly.

Grow Rubellum Group and annual chrysanthemums in well-drained, moderately fertile soil in full sun.

• **PROPAGATION** Sow seed of charms and cascades at 13–16°C (55–61°F) in late winter or spring. Sow seed of Rubellum Group at 13–16°C (55–61°F) in spring, or divide in autumn or in early spring. Sow seed of annuals in containers in a cold frame in early spring, or *in situ* from spring to early summer; in frost-free areas, sow *in situ* in autumn for early flowering. Take basal cuttings of florists' chrysanthemums from overwintered stools: for late-flowering cultivars, take cuttings in early or mid-winter; for other groups take in early spring. Root cuttings in loamless potting compost with dry sand on the surface, at around 16°C (61°F). Place in a cold frame after first potting; protect from frost and ventilate as weather allows. Harden off in mid-spring.

• **PESTS AND DISEASES** Vulnerable to aphids, earwigs, caterpillars, capsid bugs, leaf miners, red spider mites, and white-flies. Prone to fungal rot, grey mould (*Botrytis*), powdery mildew, and white rust. Viruses may cause stunting, yellow markings, and puckering of leaves.

**C. 'Alexis'**. Intermediate florists' chrysanthemum with light pink flowerheads, 18–20cm (7–8in) across when disbudded, borne in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 45–60cm (18–24in). ☼ (min. 10°C/50°F)

**C. 'Alison Kirk'** ■ Incurved florists' chrysanthemum with white flowerheads, 14cm (5½in) across when disbudded, borne in early autumn. Good for exhibition. † 1.2m (4ft), ↔ 40cm (16in). \*

**C. *alpinum*** see *Leucanthemopsis alpina*.

**C. 'Amanda Whitmore'**. Anemone-centred florists' chrysanthemum bearing white flowerheads, to 15cm (6in) across when disbudded, in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 1m (3ft). ☼ (min. 10°C/50°F)

**C. 'Amber Gigantic'**. Tightly incurved or loosely reflexed florists' chrysanthemum, its form depending on the amount of warmth provided. Large amber flowerheads, 25–30cm (10–12in) across when disbudded, are borne in late autumn. † 1.3m (4½ft), ↔ 30cm (12in). ☼ (min. 10°C/50°F)

**C. 'Amethyst'**. Reflexed florists' chrysanthemum with purple blooms, 21cm (8in) across when disbudded, borne in late autumn. Good for exhibition. † 1.2m (4ft), ↔ 30cm (12in). ☼ (min. 10°C/50°F)

**C. *atlanticum*** see *Rhodanthemum atlanticum*.

**C. *atratum*** see *Leucanthemum atratum*.

**C. 'Autumn Days'** ■ Intermediate or loosely incurved florists' chrysanthemum with bronze flowerheads, 12cm (5in) across when disbudded, produced in early autumn. † 1–1.2m (3–4ft), ↔ to 75cm (30in). \*

**C. *balsamita*** see *Tanacetum balsamita*.

**C. 'Beacon'** ■ Intermediate florists' chrysanthemum bearing red, sometimes bronze flowerheads, to 18cm (7in) across when disbudded, in late autumn. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). ☼ (min. 10°C/50°F)

**C. 'Bert Gibson'**. Reflexed florists' chrysanthemum producing light pink flowerheads, 18cm (7in) across when disbudded, in late autumn. Good for exhibition. † 1.3m (4½ft), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**C. 'Bill Wade'**. Intermediate to loosely incurved florists' chrysanthemum with pure white flowerheads, 18–20cm (7–8in) across when disbudded, borne in early autumn. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**C. 'Brietner'** ■ Reflexed florists' chrysanthemum producing pink flowerheads, to 12cm (5in) across when

disbudded, in early autumn. Best used for garden decoration. † to 1.2m (4ft), ↔ 75cm (30in). \*

**C. 'Bronze Fairie'** ■ ♀ Pompon florists' chrysanthemum bearing many bronze flowerheads, 2.5cm (1in) across, in early autumn. † 30–60cm (12–24in), ↔ 60cm (24in). \*\*\*

**C. 'Bronze Hedgerow'** ■ Single florists' chrysanthemum with bronze flowerheads, 12cm (5in) across when disbudded, produced in late autumn. † 1.5m (5ft), ↔ 75–100cm (30–39in). ☼ (min. 10°C/50°F)

**C. 'Bronze Yvonne Arnaud'** ■ Reflexed florists' chrysanthemum with bronze flowerheads, to 12cm (5in) across when disbudded, borne in early autumn. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*

**C. 'Buff Margaret'** ■ Spray florists' chrysanthemum with reflexed, pale bronze flowerheads, 8–9cm (3–3½in) across, borne in early autumn. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. 'Cappa'** ■ Spray florists' chrysanthemum with anemone-centred yellow flowerheads, 5–8cm (2–3in) across, borne in late autumn. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. *carinatum***, syn. *C. tricolor* (Painted daisy). Erect, fast-growing, branched annual chrysanthemum with almost succulent, pinnatisect, bright green leaves, to 10cm (4in) long. Long, stiff stems bear solitary, daisy-like, single, purple-eyed flowerheads, to 10cm (4in) across, from summer to early autumn.

The flowerheads typically have yellow or white ray-florets, tinged red, with white zoning; a number of cultivars are available with flowerheads in shades of red, yellow, white, or purple, often with bold zoning on the ray-florets. † 60cm (24in), ↔ 30cm (12in). Morocco. \*

**'Court Jesters'** ■ ♀ bears flowerheads to 8cm (3in) across, in brilliant colours from white and yellow to orange, scarlet, and maroon, zoned in orange or red. **'Polar Star'** has pale yellow flowerheads, zoned in orange.

**C. *catananche*** see *Rhodanthemum catananche*.

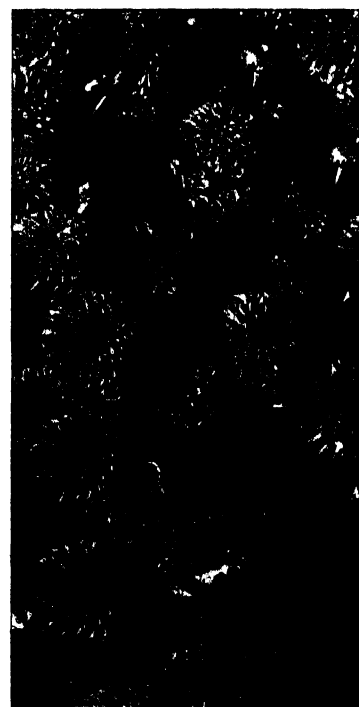
**C. 'Cherry Chintz'** ■ Fully reflexed florists' chrysanthemum with cherry-red flowerheads, to 13cm (5in) across when disbudded, produced in early autumn. † to 1.3m (4½ft), ↔ 75cm (30in). \*

**C. 'Cherry Venice'**. Fully reflexed florists' chrysanthemum with deep salmon-pink flowerheads, 15cm (6in) across when disbudded, borne in early autumn. Use for exhibition. † 1.2–1.3m (4–4½ft), ↔ 60–75cm (24–30in). \*

**C. 'Chessington'**. Intermediate to tightly incurved florists' chrysanthemum bearing white flowerheads, 18–20cm (7–8in) across when disbudded, in early autumn. Good for exhibition. † 2–2.2m (6–7ft), ↔ 75cm (30in). \*

**C. 'Christina'**. Intermediate to loosely incurved florists' chrysanthemum bearing white flowerheads, to 14cm (5½in) across when disbudded, in early autumn. Use for exhibition. † 1.3–1.5m (4½–5ft), ↔ 60–75cm (24–30in). \*

**C. 'Clara Curtis'** ■ Rubellum Group chrysanthemum freely bearing long-lasting, single, clear pink flowerheads, to 7cm (3in) across, from late summer to mid-autumn. The flowers are pleasantly scented, with centres that turn from green to yellow as the disc-florets open. † 75cm (30in), ↔ 60cm (24in). \*\*\*

*Chrysanthemum* 'Bronze Fairie'

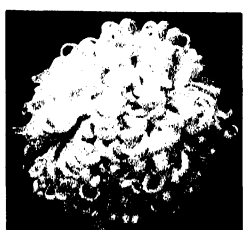




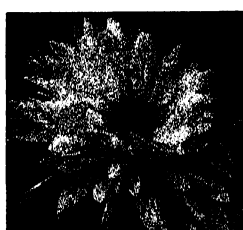
*Chrysanthemum* 'Dawn Mist'



*Chrysanthemum* 'Discovery'



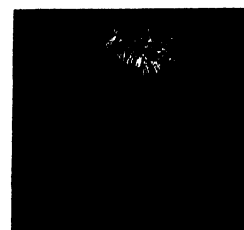
*Chrysanthemum* 'Duke of Kent'



*Chrysanthemum* 'Edwin Painter'



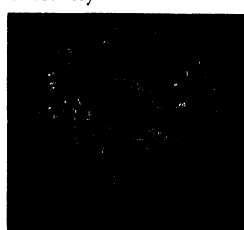
*Chrysanthemum* 'Fairweather'



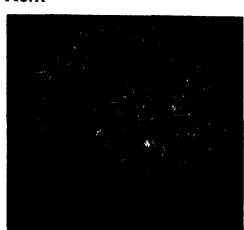
*Chrysanthemum* 'George Griffiths'



*Chrysanthemum* 'Golden Gigantic'



*Chrysanthemum* 'Golden Woolman's Glory'



*Chrysanthemum* 'Green Satin'



*Chrysanthemum* 'John Hughes'



*Chrysanthemum* 'John Wingfield'



*Chrysanthemum* 'Keith Luxford'

*C. coccineum* see *Tanacetum coccineum*.

*C. coronarium*. Erect, vigorous, many-branched annual chrysanthemum with pinnatisect, fern-like, light green leaves, 5–7cm (2–3in) long. From spring to summer, bears daisy-like, single yellow flowerheads, to 5cm (2in) across. ↑ to 80cm (32in), ↔ to 40cm (16in). Mediterranean. \*\*\*. **'Primrose Gem'** has primrose-yellow, golden-eyed flowerheads. ↑ to 30–45cm (12–18in). *C. 'Cossack'* ■ Fully reflexed florists' chrysanthemum producing deep red flowerheads, 20cm (8in) across when disbudded, in late autumn. ↑ 1.2–1.3m (4–4½ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F).

*C. 'Cream Duke'*. Fully reflexed florists' chrysanthemum, a sport of 'Duke of Kent', bearing creamy white flowerheads, 25cm (10in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F).

*C. 'Cream John Hughes'*. Perfectly incurved florists' chrysanthemum with creamy white flowerheads, 12–14cm (5–5½in) across when disbudded, produced in late autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 60–75cm (24–30in). ♀ (min. 10°C/50°F).

*C. 'Dawn Mist'* ■ Spray florists' chrysanthemum with single, pale pink flowerheads, to 8cm (3in) across, produced in early autumn. ↑ 1.2m (4ft), ↔ 75–100cm (30–39in). \*\*\*.

*C. densum* see *Tanacetum densum* subsp. *amani*.

*C. 'Discovery'* ■ Intermediate to loosely incurved florists' chrysanthemum with light yellow flowerheads, 10–12cm (4–5in) across when disbudded, borne in early autumn. ↑ 1.2m (4ft), ↔ 75cm (30in). \*

*C. 'Dorridge Sun'*. Incurved florists' chrysanthemum with light yellow flowerheads, to 15cm (6in) across when disbudded, in late autumn. ↑ 1.3m (4½ft), ↔ 60cm (24in). ♀ (min. 10°C/50°F).

*C. 'Duke of Kent'* ■ Fully reflexed florists' chrysanthemum with white flowerheads, 25cm (10in) across when disbudded, produced in late autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F).

*C. 'Edwin Painter'* ■ Single florists' chrysanthemum producing yellow

flowerheads, to 14cm (5½in) across when disbudded, in late autumn.

↑ 1.3–1.5m (4½–5ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F).

*C. 'Elsie Prosser'*. Fully reflexed florists' chrysanthemum with pink flowerheads, 25cm (10in) across when disbudded, produced in late autumn. Good for exhibition. ↑ 1.3–1.5cm (4½–5ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F).

*C. 'Emperor of China'*. Rubellum Group chrysanthemum bearing double, silvery pink flowerheads, 5cm (2in) across, with quilled petals. While flowering, in late summer and early autumn, the leaves become red tinged. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*\*.

*C. 'Enbee Wedding'* ♀ Spray florists' chrysanthemum with single, light pink flowerheads, to 8cm (3in) across, borne in early autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 75cm (30in). \*\*\*.

*C. 'Fairie'*. Pompon florists' chrysanthemum with pink flowerheads, 4cm (1½in) across, borne in early autumn. ↑ 30–60cm (12–24in), ↔ 60cm (24in). \*\*\*.

*C. 'Fairweather'* ■ Incurved florists' chrysanthemum with pale purplish pink flowerheads, 14cm (5½in) across when disbudded, produced in late autumn. Good for exhibition. ↑ 1.1m (3½ft), ↔ to 75cm (30in). ♀ (min. 10°C/50°F).

*C. gayanum* see *Rhodanthemum gayanum*.

*C. 'George Griffiths'* ■ Fully reflexed florists' chrysanthemum bearing deep red flowerheads, to 14cm (5½in) across when disbudded, in early autumn. Good for exhibition. ↑ 1.3–1.5m (4½–5ft), ↔ 75cm (30in). \*

*C. 'Gigantic'*. Tightly incurved or loosely reflexed florists' chrysanthemum, its form depending on the amount of warmth provided; bears salmon-pink flowerheads, 25–27cm (10–11in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.3m (4½ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F).

*C. 'Gillette'*. Incurved florists' chrysanthemum with cream flowerheads, 14cm (5½in) across when disbudded, borne in early autumn. ↑ 1.3m (4½ft), ↔ 45cm (18in). \*

*C. 'Ginger Nut'*. Intermediate florists' chrysanthemum producing light bronze flowerheads, to 14cm (5½in) across when disbudded, in early autumn; the

flowerheads may close over at the top to become incurved. Good for exhibition. ↑ 1.2m (4ft), ↔ 60cm (24in). \*

*C. 'Golden Chalice'* ■ Charm florists' chrysanthemum with single yellow flowerheads, 2.5cm (1in) across, borne in late autumn. Good for exhibition. ↑ 1m (3ft). ♀ (min. 10°C/50°F).

*C. 'Golden Gigantic'* ■ Tightly incurved or loosely reflexed florists' chrysanthemum, bearing large gold flowerheads, 25–27cm (10–11in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.3m (4½ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F).

*C. 'Golden Woolman's Glory'* ■ Single florists' chrysanthemum with gold flowerheads, 18cm (7in) across when disbudded, borne in late autumn. Good for exhibition. ↑ 1.3m (4½ft), ↔ 1m (3ft). ♀ (min. 10°C/50°F).

*C. 'Green Satin'* ■ Intermediate or loosely incurved florists' chrysanthemum with green flowerheads, 12cm (5in) across when disbudded, produced in late autumn. ↑ 1.2m (4ft), ↔ 60cm (24in). ♀ (min. 10°C/50°F).

*C. haradjanii* see *Tanacetum haradjanii*.

*C. 'Hedgerow'*. Single florists' chrysanthemum with pink flowerheads, 12cm (5in) across when disbudded, produced in late autumn. ↑ 1.5m (5ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F).

*Chrysanthemum* 'Golden Chalice'



*C. 'Hilfred'*. Charm florists' chrysanthemum with a profusion of single white flowerheads, 2.5cm (1in) across, borne in late autumn. Good for exhibition. ↑ 1m (3ft). ♀ (min. 10°C/50°F).

*C. hosmariense* see *Rhodanthemum hosmariense*.

*C. 'Idris'*. Incurved florists' chrysanthemum producing salmon-pink flowerheads, 21–25cm (8–10in) across when disbudded, in late autumn. ↑ 1.3m (4½ft), ↔ 45cm (18in). ♀ (min. 10°C/50°F).

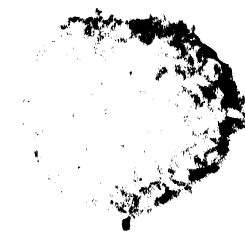
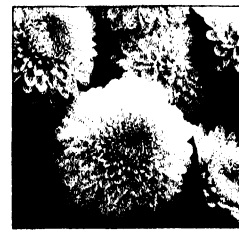
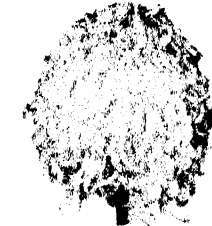
*C. 'Jessie Habgood'*. Reflexed florists' chrysanthemum producing large white flowerheads, 25cm (10in) or more across when disbudded, in late autumn. Good for exhibition. ↑ 2m (6ft), ↔ 45cm (18in). ♀ (min. 10°C/50°F).

*C. 'John Hughes'* ■ Incurved florists' chrysanthemum bearing white flowerheads, 12–14cm (5–5½in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 60–75cm (24–30in). ♀ (min. 10°C/50°F).

*C. 'John Wingfield'* ■ Reflexed florists' chrysanthemum producing white, often pink-flushed flowerheads, 12cm (5in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 45–60cm (18–24in). ♀ (min. 10°C/50°F).

*C. 'Keith Luxford'* ■ Incurved florists' chrysanthemum bearing pink flowerheads, 21–25cm (8–10in) across when

C

*Chrysanthemum* 'Lemon Rynoon'*Chrysanthemum* 'Lundy'*Chrysanthemum* 'Madeleine'*Chrysanthemum* 'Maria'*Chrysanthemum* 'Marion'*Chrysanthemum* 'Marlene Jones'*Chrysanthemum* 'Michael Fish'*Chrysanthemum* 'My Love'*Chrysanthemum* 'Nancy Furneaux'*Chrysanthemum* 'Oracle'*Chrysanthemum* 'Patricia Millar'*Chrysanthemum* 'Pavilion'

disbudded, in late autumn.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  45cm (18in).  $\odot$  (min. 10°C/50°F)

**C. 'Lemon Rynoon'**  $\square$  Spray florists' chrysanthemum with single, pale lemon-yellow flowerheads, 8cm (3in) across, becoming white with age, borne in late autumn.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75–100cm (30–39in).  $\odot$  (min. 10°C/50°F)

*C. leucanthemum* see *Leucanthemum vulgare*.

**C. 'Lilac Prince'**. Reflexed florists' chrysanthemum bearing large pink flowerheads, 25cm (10in) or more across when disbudded, in late autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  45cm (18in).  $\odot$  (min. 10°C/50°F)

**C. 'Lundy'**  $\square$  Fully reflexed florists' chrysanthemum with white flowerheads, 21–25cm (8–10in) across when disbudded, and often broader than they are deep, borne in late autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  45cm (18in).  $\odot$  (min. 10°C/50°F)

**C. 'Madeleine'**  $\square$  Spray florists' chrysanthemum producing reflexed pink flowerheads, to 8cm (3in) across, in early autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  75cm (30in). \*\*\*

**C. 'Majestic'**. Fully reflexed florists' chrysanthemum bearing light bronze flowerheads, 21–25cm (8–10in) across when disbudded, in late autumn. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  45cm (18in).  $\odot$  (min. 10°C/50°F)

**C. 'Malcolm Perkins'**. Intermediate florists' chrysanthemum with large yellow flowerheads, to 21cm (8in) across when disbudded, produced in early autumn. Good for exhibition.  $\uparrow$  1.6m (5½ft),  $\leftrightarrow$  75cm (30in). \*

*C. maresii* see *Rhodanthemum maresii*.

**C. 'Margaret'**  $\square$  Spray florists' chrysanthemum bearing reflexed pink flowerheads, 8–9cm (3–3½in) across, in early autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60–75cm (24–30in). \*\*\*

**C. 'Maria'**  $\square$  Pompon florists' chrysanthemum producing a profusion of pink flowerheads, to 4cm (1½in) across, in late summer and early autumn.  $\uparrow$  45cm (18in),  $\leftrightarrow$  30–60cm (12–24in). \*\*\*

**C. 'Marion'**  $\square$  Spray florists' chrysanthemum bearing reflexed, pale yellow flowerheads, 9cm (3½in) across, in late summer.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  75cm (30in). \*\*\*

**C. 'Marlene Jones'**  $\square$  Intermediate or loosely incurved florists' chrysanthemum with pale yellow flowerheads, to 15cm (6in) across when disbudded, borne in early autumn. Good for exhibition.  $\uparrow$  1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**C. 'Mary Stoker'**  $\square$  Rubellum Group chrysanthemum with single, rose-tinted, apricot-yellow flowerheads, 5cm (2in) across, produced in late summer and early autumn. The centres turn from green to yellow as the disc-florets open.  $\uparrow$  75cm (30in),  $\leftrightarrow$  60cm (24in). \*\*\*

**C. 'Mason's Bronze'**. Single florists' chrysanthemum producing bronze flowerheads, 12cm (5in) across when disbudded, in late autumn. Good for exhibition.  $\uparrow$  1.3–1.5m (4½–5ft),  $\leftrightarrow$  1m (3ft).  $\odot$  (min. 10°C/50°F)

*C. maximum* of gardens see *Leucanthemum x superbum*.

**C. 'Max Riley'**  $\square$  Fully incurved florists' chrysanthemum with yellow flowerheads, 12cm (5in) across when disbudded, produced in early autumn.

Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  75cm (30in). \*

**C. 'Michael Fish'**  $\square$  Intermediate or tightly incurved florists' chrysanthemum with white flowerheads, 15cm (6in) across when disbudded, borne in early autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60–75cm (24–30in). \*

**C. 'Milady'**. Spray florists' chrysanthemum with anemone-centred white flowerheads, 9cm (3½in) across, produced in late autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  75cm (30in).  $\odot$  (min. 10°C/50°F)

**C. 'Mrs. Jessie Cooper'**. Rubellum Group chrysanthemum with semi-double red flowerheads, 9–10cm (3½–4in) across, produced in late summer and early autumn.  $\uparrow$  75cm (30in),  $\leftrightarrow$  60cm (24in). \*\*\*

**C. 'My Love'**  $\square$  Single florists' chrysanthemum bearing salmon-pink flowerheads, 16cm (6in) across when disbudded, in late autumn.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75–100cm (30–39in).  $\odot$  (min. 10°C/50°F)

**C. 'Nancy Furneaux'**  $\square$  Reflexed florists' chrysanthemum with yellow flowerheads, 21–25cm (8–10in) across when disbudded, borne in late autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  45cm (18in).  $\odot$  (min. 10°C/50°F)

**C. 'Nancy Perry'**. Rubellum Group chrysanthemum with semi-double, dark pink flowerheads, to 7cm (3in) across, produced in late summer and early autumn.  $\uparrow$  75cm (30in),  $\leftrightarrow$  60cm (24in). \*\*\*

**C. 'Nancy Sherwood'**. Single florists' chrysanthemum with yellow flowerheads, 14cm (5½in) across when disbudded, produced in late autumn. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  1m (3ft).  $\odot$  (min. 10°C/50°F)

**C. 'Oracle'**  $\square$  Intermediate or loosely incurved florists' chrysanthemum producing pale bronze flowerheads, 12cm (5in) across when disbudded, in early autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60–75cm (24–30in). \*

*C. pacificum* see *Ajania pacifica*.

*C. paludosum* see *Leucanthemum paludosum*.

*C. parthenium* see *Tanacetum parthenium*.

**C. 'Patricia Millar'**  $\square$  Fully reflexed florists' chrysanthemum with light pink flowerheads, 13–14cm (5–5½in) across when disbudded, borne from early to late autumn. Use for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60–75cm (24–30in). \*

**C. 'Pavilion'**  $\square$  Intermediate or loosely incurved florists' chrysanthemum with white flowerheads, 18cm (7in) across when disbudded, borne in early autumn. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60–75cm (24–30in). \*

**C. 'Peach Brietner'**  $\square$  Reflexed florists' chrysanthemum bearing peach-pink flowerheads, to 12cm (5in) across when disbudded, in early autumn.  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  75cm (30in). \*

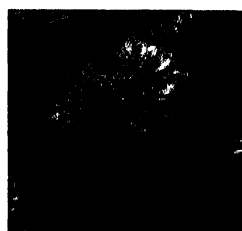
**C. 'Peach Margaret'**  $\square$   $\square$  syn. *C. 'Salmon Margaret'*. Spray florists' chrysanthemum bearing reflexed, light salmon flowerheads, 8–9cm (3–3½in) across, in early autumn.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60–75cm (24–30in). \*\*\*

**C. 'Pearl Celebration'**. Reflexed florists' chrysanthemum with large, light pink flowerheads, 18–21cm (7–8in) across when disbudded, borne in early autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  60–75cm (24–30in). \*

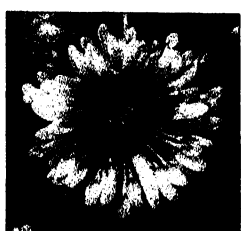
*Chrysanthemum* 'Mary Stoker'



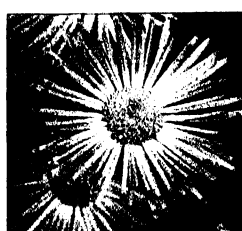
*Chrysanthemum* 'Peach Brietner'



*Chrysanthemum* 'Peach Margaret'



*Chrysanthemum* 'Pennine Alfie'



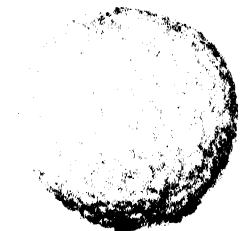
*Chrysanthemum* 'Pennine Flute'



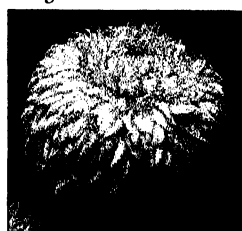
*Chrysanthemum* 'Pennine Jewel'



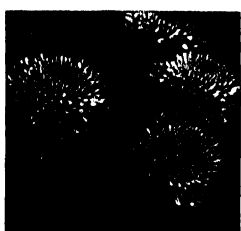
*Chrysanthemum* 'Pennine Oriel'



*Chrysanthemum* 'Primrose John Hughes'



*Chrysanthemum* 'Primrose West Bromwich'



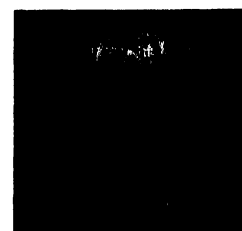
*Chrysanthemum* 'Purple Pennine Wine'



*Chrysanthemum* 'Raymond Mounsey'



*Chrysanthemum* 'Roblush'



*Chrysanthemum* 'Rose Yvonne Arnaud'

*C. pectinata* see *Leucanthemopsis pectinata*.

**C. 'Pennine Alfie'** ■ Spray florists' chrysanthemum with spoon-shaped, light bronze flowerheads, 8cm (3in) across, produced in early autumn. † 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**C. 'Pennine Flute'** ■ ♀ Spray florists' chrysanthemum with 4 or 5 stems of quill-shaped, purple-pink flowerheads, to 8cm (3in) across, produced in late summer and early autumn. † 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**C. 'Pennine Jade'** ♀ Spray florists' chrysanthemum bearing numerous single, light bronze flowerheads, 8cm (3in) across, in early autumn. † 1.2m (4ft), ↔ 1m (3ft). \*

**C. 'Pennine Jewel'** ■ Spray florists' chrysanthemum with spoon-shaped, light bronze flowerheads, 8cm (3in) across, produced in early autumn. Good for exhibition. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. 'Pennine Oriel'** ■ Spray florists' chrysanthemum bearing anemone-centred cream flowerheads, 9cm (3½in) across, with yellow centres in early autumn. Good for exhibition. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. 'Pennine Signal'** ♀ Spray florists' chrysanthemum producing single red flowerheads, 9cm (3½in) across, in early autumn. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. 'Peter Rowe'**. Incurved florists' chrysanthemum with yellow flowerheads, 12cm (5in) across when disbudded, produced in early autumn. Good for exhibition. † 1.3m (4½ft), ↔ 60–75cm (24–30in). \*

**C. 'Pink Gin'**. Spray florists' chrysanthemum producing reflexed, light purple flowerheads, 9cm (3½in) across, in late autumn. Good for exhibition. † 1.2m (4ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F)

**C. 'Poppet'** ♀ Pompon florists' chrysanthemum bearing a profusion of small yellow flowerheads, 4cm (1½in) across, in early autumn. † 60cm (24in), ↔ to 75cm (30in). \*\*\*

**C. 'Primrose Alison Kirk'**. Incurved florists' chrysanthemum with primrose-yellow flowerheads, 14cm (5½in) across when disbudded, borne in early autumn. Good for exhibition. † 1.2m (4ft), ↔ 40cm (16in). \*

**C. 'Primrose Chessington'**.

Intermediate to tightly incurved florists' chrysanthemum with primrose-yellow flowerheads, 18–20cm (7–8in) across when disbudded, produced in early autumn. Good for exhibition. † 2–2.2m (6–7ft), ↔ 75cm (30in). \*

**C. 'Primrose Jessie Habgood'**. Reflexed florists' chrysanthemum with primrose-yellow flowerheads, 25cm (10in) or more across when disbudded, borne in late autumn. † 2m (6ft), ↔ 45cm (18in). ♀ (min. 10°C/50°F)

**C. 'Primrose John Hughes'** ■ Perfectly incurved florists' chrysanthemum with primrose-yellow flowerheads, 12–14cm (5–5½in) across when disbudded, borne in late autumn. Good for exhibition. † 1.2m (4ft), ↔ 60–75cm (24–30in). ♀ (min. 10°C/50°F)

**C. 'Primrose Pennine Oriel'**. Spray florists' chrysanthemum with anemone-centred, primrose-yellow flowerheads, 9cm (3½in) across, borne in early autumn. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. 'Primrose West Bromwich'** ■ Fully reflexed florists' chrysanthemum bearing pale yellow flowerheads, 18cm (7in) across when disbudded, in mid-autumn. Good for exhibition. † 1.5m (5ft), ↔ 75cm (30in). \*

**C. 'Primrose World of Sport'**. Intermediate florists' chrysanthemum bearing primrose-yellow flowerheads, to 19cm (7in) across when disbudded, in early autumn. Good for exhibition. † 1.5m (5ft), † 75cm (30in). \*

**C. 'Purple Pennine Wine'** ■ ♀ Spray florists' chrysanthemum with reflexed purple flowerheads, 8cm (3in) across, borne in early and mid-autumn. Good for exhibition. † 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**C. 'Raymond Mounsey'** ■ Anemone-centred florists' chrysanthemum with red flowerheads, to 13cm (5in) across when disbudded, with domed, reddish bronze centres, produced in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 1m (3ft). ♀ (min. 10°C/50°F)

**C. 'Rebecca Walker'**. Intermediate florists' chrysanthemum producing large yellow flowerheads, 23cm (9in) across when disbudded, in early autumn. † 2m (6ft), ↔ 75cm (30in). \*

**C. 'Red Amethyst'**. Reflexed florists' chrysanthemum with vibrant, brilliant

red flowerheads, 21cm (8in) across when disbudded, produced in late autumn. Good for exhibition. † 1.2m (4ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F)

**C. 'Red Glory'** see *C. 'Red Woolman's Glory'*.

**C. 'Red Wendy'** ♀ Spray florists' chrysanthemum producing reflexed red flowerheads, 8cm (3in) across, in early autumn. Bears 5 or 6 blooms per stem in perfect umbrella-form when grown with 4 stems per plant. Good for exhibition. † 1.2m (4ft), ↔ 60–75cm (24–30in). \*\*\*

**C. 'Red Woolman's Glory'**, syn. *C. 'Red Glory'*. Single florists' chrysanthemum bearing red flowerheads, 21cm (8in) across when disbudded, in late autumn. † 1.3m (4½ft), ↔ 1m (3ft). ♀ (min. 10°C/50°F)

**C. 'Ringdove'** ■ Charm florists' chrysanthemum producing abundant single pink flowerheads, 2.5cm (1in) across, in late autumn. † 1m (3ft). ♀ (min. 10°C/50°F)

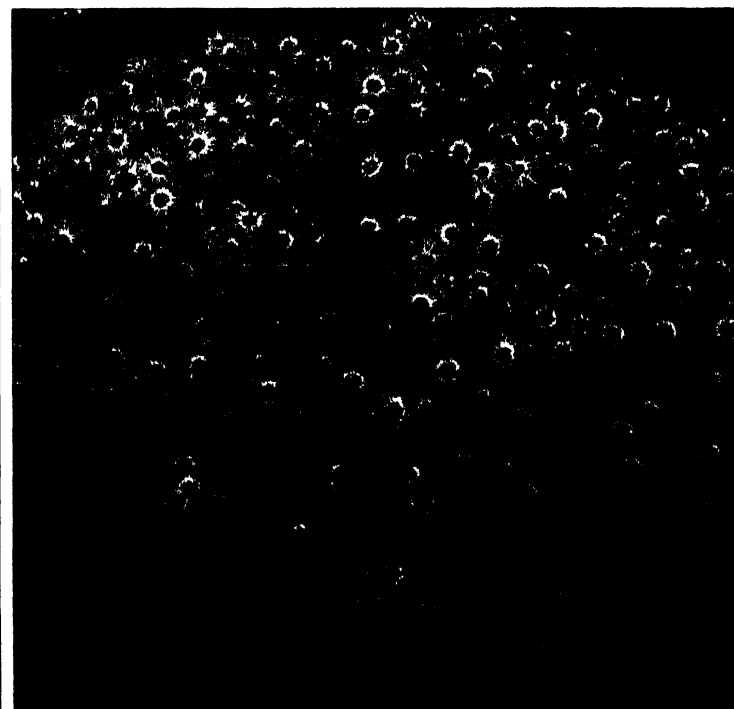
**C. 'Robeam'**. Spray florists' chrysanthemum with reflexed yellow flowerheads, to 8cm (3in) across, produced in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F)

**C. 'Roblush'** ■ Spray florists' chrysanthemum with reflexed, light pink flowerheads, to 8cm (3in) across, produced in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F)

**C. 'Romark'**. Spray florists' chrysanthemum producing reflexed white flowerheads, to 8cm (3in) across, in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F)

**C. 'Rose My Love'**. Single florists' chrysanthemum with deep salmon-pink flowerheads, 16cm (6in) across when disbudded, in late autumn. Good for exhibition. † 1.5m (5ft), ↔ 75–100cm (30–39in). ♀ (min. 10°C/50°F)

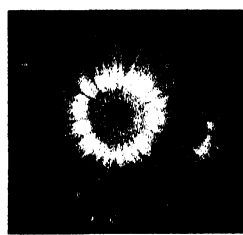
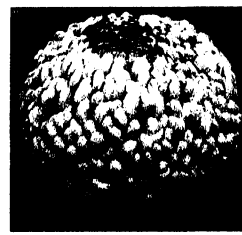
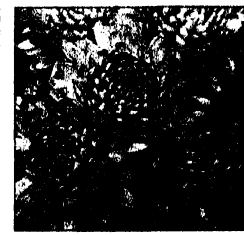
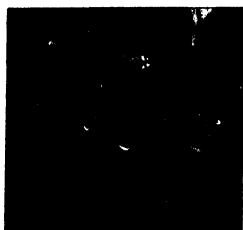
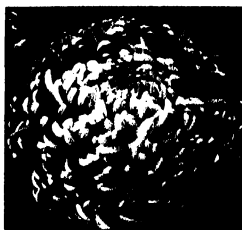
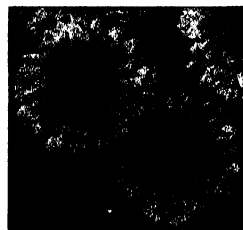
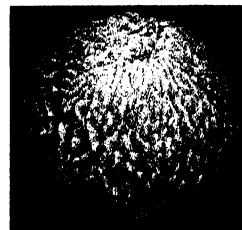
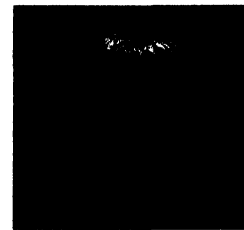
**C. 'Rose Yvonne Arnaud'** ■ Reflexed florists' chrysanthemum with deep rose-



*Chrysanthemum* 'Ringdove'

C

C

*Chrysanthemum* 'Roy Coopland'*Chrysanthemum* 'Rytorch'*Chrysanthemum* 'Sally Ball'*Chrysanthemum* 'Salmon Fairie'*Chrysanthemum* 'Salmon Fairweather'*Chrysanthemum* 'Satin Pink Gin'*Chrysanthemum* 'Senkyo Emiaki'*Chrysanthemum* 'Sentry'*Chrysanthemum* 'Skater's Waltz'*Chrysanthemum* 'Wendy'*Chrysanthemum* 'Yellow John Hughes'*Chrysanthemum* 'Yvonne Arnaud'

pink flowerheads, 12cm (5in) across when disbudded, produced in early autumn.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60–75cm (24–30in). \*

**C. 'Roy Coopland'**  $\blacksquare$  Intermediate to loosely incurved florists' chrysanthemum with bronze flowerheads, to 15cm (6in) across when disbudded, borne in late autumn. Good for exhibition.  $\uparrow$  1.4m (4½ft),  $\leftrightarrow$  60cm (24in).  $\odot$  (min. 10°C/50°F)

**C. 'Ryflash'**. Spray florists' chrysanthemum producing single, deep red flowerheads, to 8cm (3in) across, in late autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75–100cm (30–39in).  $\odot$  (min. 10°C/50°F)

**C. 'Rynoon'**. Spray florists' chrysanthemum bearing single, light pink flowerheads, to 8cm (3in) across, in late autumn.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75–100cm (30–39in).  $\odot$  (min. 10°C/50°F)

**C. 'Rytorch'**  $\blacksquare$  Spray florists' chrysanthemum with single, light bronze flowerheads, to 8cm (3in) across, with yellow centres, borne in late

autumn.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75–100cm (30–39in).  $\odot$  (min. 10°C/50°F)

**C. 'Sally Ball'**  $\blacksquare$  Spray florists' chrysanthemum bearing a profusion of anemone-centred bronze flowerheads, 12cm (5in) across, in early autumn.

$\uparrow$  1.2m (4ft),  $\leftrightarrow$  75cm (30in). \*\*\*

**C. 'Salmon Fairie'**  $\blacksquare$  Pompon florists' chrysanthemum bearing salmon-pink flowerheads, 4cm (1½in) across when disbudded, in late autumn. Good for exhibition.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  to 60cm (24in). \*\*\*

**C. 'Salmon Fairweather'**  $\blacksquare$  Incurved florists' chrysanthemum with salmon-pink flowerheads, 14cm (5½in) across when disbudded, borne in late autumn. Good for exhibition.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  to 75cm (30in).  $\odot$  (min. 10°C/50°F)

**C. 'Salmon Margaret'** see C. 'Peach Margaret'

**C. 'Salmon Seychelle'**. Reflexed florists' chrysanthemum with salmon-pink flowerheads, 21cm (8in) across when disbudded, produced in late autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  45cm (18in) with one flowerhead grown;  $\uparrow$  to 75cm (30in), with 2 flowerheads grown.  $\odot$  (min. 10°C/50°F)

**C. 'Salmon Venice'**. Reflexed florists' chrysanthemum with salmon-pink flowerheads, 15cm (6in) across when disbudded, borne in early autumn. Good for exhibition.  $\uparrow$  1.2–1.3m (4–4½ft),  $\leftrightarrow$  60–75cm (24–30in) when grown with 2 or more flowerheads;  $\uparrow$  to 1m (3ft) when grown with 3 or more flowerheads. \*

**C. 'Sam Oldham'**. Fully reflexed florists' chrysanthemum with large red flowerheads, to 18cm (7in) across when disbudded, produced in early autumn. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**C. 'Satin Pink Gin'**  $\blacksquare$  Spray florists' chrysanthemum with reflexed, light pink flowerheads, 8cm (3in) across, produced in late autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  75–100cm (30–39in).  $\odot$  (min. 10°C/50°F)

**C. *segetum***  $\blacksquare$  (Corn marigold). Fast-growing, erect, fleshy annual chrysanthemum with oblong to obovate, grey-green leaves, 3–5cm (1¼–2in) long, entire towards the stem tips, pinnatisect lower down the stems. Solitary, single, daisy-like yellow flowerheads, to 5cm (2in) across, are produced in summer.

Often included in wildflower seed mixtures.  $\uparrow$  to 80cm (32in),  $\leftrightarrow$  30cm (12in). Mediterranean. \*\*\* **'Eastern Star'** bears primrose-yellow flowerheads with brown central discs. **'Prado'** produces large, golden yellow flowerheads, to 8cm (3in) across, with dark brown central discs.

**C. 'Senkyo Emiaki'**  $\blacksquare$  Spider-form florists' chrysanthemum bearing light pink flowerheads, 15cm (6in) across when disbudded, in early autumn. Good for exhibition.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  to 60cm (24in).  $\odot$  (min. 10°C/50°F)

**C. 'Sentry'**  $\blacksquare$  Reflexed florists' chrysanthemum bearing deep red flowerheads, 12cm (5in) across when disbudded, in early autumn. Good for exhibition.  $\uparrow$  1.2–1.3m (4–4½ft),  $\leftrightarrow$  60–70cm (24–28in). \*

**C. *serotinum*** see *Leucanthemella serotina*.

**C. 'Seychelle'**. Reflexed florists' chrysanthemum with pink flowerheads, 21cm (8in) across when disbudded, borne in late autumn. Good for

exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  45–75cm (18–30in).  $\odot$  (min. 10°C/50°F)

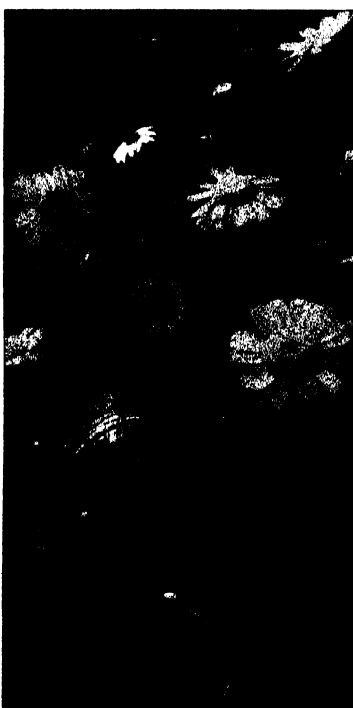
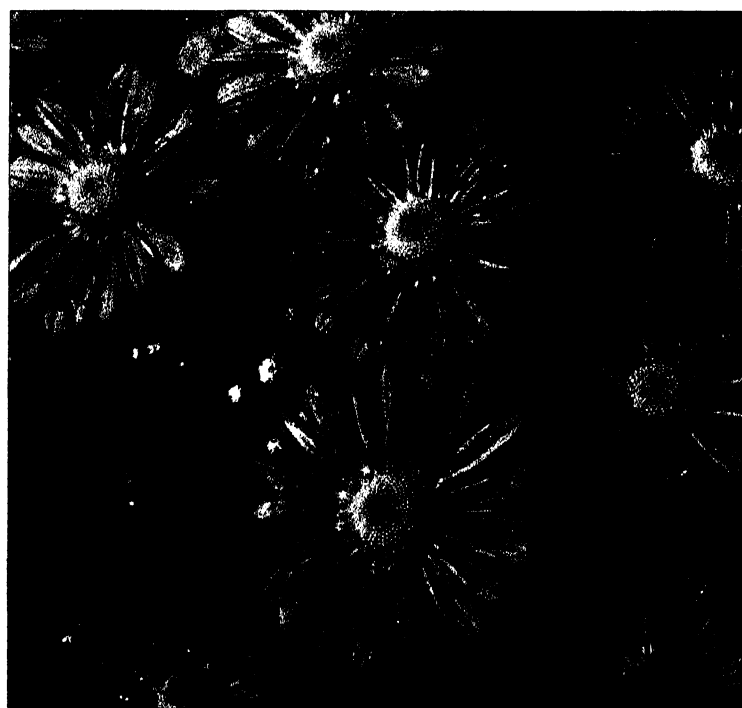
**C. 'Silver Gigantic'**. Tightly incurved or loosely reflexed florists' chrysanthemum, its form depending on the amount of warmth provided. Bears silver flowerheads, 25–27cm (10–11in) across when disbudded, in late autumn. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  30cm (12in).  $\odot$  (min. 10°C/50°F)

**C. 'Skater's Waltz'**  $\blacksquare$  Loosely incurved florists' chrysanthemum with pink flowerheads, 15cm (6in) across when disbudded, borne in late autumn. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  60–75cm (24–30in).  $\odot$  (min. 10°C/50°F)

**C. *x superbum*** see *Leucanthemum x superbum*.

**C. 'Susan Freestone'**. Fully reflexed florists' chrysanthemum producing yellow flowerheads, 15cm (6in) across when disbudded, in early autumn. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**C. 'Talbot Jo'**  $\blacksquare$  Spray florists' chrysanthemum bearing single pink

*Chrysanthemum segetum**Chrysanthemum* 'Talbot Jo'

flowerheads, 8cm (3in) across, in early autumn. Good for exhibition. ↑ 1.3m (4½ft), ↔ 75cm (30in). \* \* \*

**C. 'Tennis'**. Intermediate florists' chrysanthemum with white flowerheads, to 12cm (5in) across when disbudded, borne in early autumn. Good for exhibition. ↑ 1.3m (4½ft), ↔ 60cm (24in). \*

**C. tricolor** see *C. carinatum*.

**C. uliginosum** see *Leucanthemella serotina*.

**C. 'Venice'**. Reflexed florists' chrysanthemum bearing pink flowerheads, 15cm (6in) across when disbudded, in early autumn. Use for exhibition. ↑ 1.2–1.3m (4–4½ft), ↔ 60–100cm (24–39in). \*

**C. vulgare** see *Tanacetum vulgare*.

**C. 'Wendy'** ■ ♀ Spray florists' chrysanthemum bearing reflexed, light bronze flowerheads, 8cm (3in) across, in early autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 60–75cm (24–30in) when grown with 4 stems. \* \* \*

**C. 'West Bromwich'**. Reflexed florists' chrysanthemum with white flowerheads, 18cm (7in) across when disbudded, produced in mid-autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 75cm (30in) when disbudded. \*

**C. weyrichii** see *Dendranthema weyrichii*.

**C. 'White Fairweather'**. Incurved florists' chrysanthemum with white flowerheads, 14cm (5½in) across when disbudded, borne in late autumn. Good for exhibition. ↑ 1.1m (3½ft), ↔ 75cm (30in). \* (min. 10°C/50°F)

**C. 'Wisley Bronze'** ■ Cascade florists' chrysanthemum bearing single bronze flowerheads, 6cm (2½in) across, in late



*Chrysanthemum* 'Wisley Bronze'

autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 1m (3ft). \* (min. 10°C/50°F)

**C. 'Working Rose'**. Intermediate florists' chrysanthemum producing rose-pink flowerheads, to 21cm (8in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 45cm (18in). \* (min. 10°C/50°F)

**C. 'Woolman's Glory'**. Single florists' chrysanthemum with large bronze flowerheads, 21cm (8in) across when disbudded, borne in late autumn. Good for exhibition. ↑ 1.3m (4½ft), ↔ 1m (3ft) when disbudded to 4–6 flowerheads. \* (min. 10°C/50°F)

**C. 'Woolman's Prince'**. Incurved florists' chrysanthemum with large, light yellow flowerheads, to 15cm (6in) across when disbudded, borne in late autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 60cm (24in). \* (min. 10°C/50°F)

**C. 'World of Sport'**. Intermediate florists' chrysanthemum with large white flowerheads, 19cm (7in) across when disbudded, produced in early autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 75cm (30in). \*

**C. 'Yellow Ginger Nut'**. Intermediate florists' chrysanthemum bearing yellow flowerheads, to 14cm (5½in) across when disbudded, sometimes closing over the top to become fully incurved, in early autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 60cm (24in). \*

**C. 'Yellow John Hughes'** ■ Incurved florists' chrysanthemum bearing yellow flowerheads, 12–14cm (5–5½in) across when disbudded, in late autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 60–75cm (24–30in). \* (min. 10°C/50°F)

**C. 'Yellow John Wingfield'**. Reflexed florists' chrysanthemum with yellow flowerheads, 12cm (5in) across when disbudded, borne in late autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 45–60cm (18–24in). \* (min. 10°C/50°F)

**C. 'Yellow Pennine Oriel'**. Spray florists' chrysanthemum with anemone-centred yellow flowerheads, 9cm (3½in) across, borne in early autumn. Good for exhibition. ↑ 1.2m (4ft), ↔ 60–75cm (24–30in). \* \* \*

**C. 'Yellow West Bromwich'**. Fully reflexed florists' chrysanthemum with yellow flowerheads, 18cm (7in) across when disbudded, borne in mid-autumn. Good for exhibition. ↑ 1.5m (5ft), ↔ 75cm (30in). \*

**C. 'Yvonne Arnaud'** ■ Reflexed florists' chrysanthemum bearing reddish purple flowers, 14cm (5½in) across when disbudded, in early autumn. ↑ 1.2m (4ft), ↔ 60–75cm (24–30in). \*

## CHRYSOGONUM

ASTERACEAE/COMPOSITAE

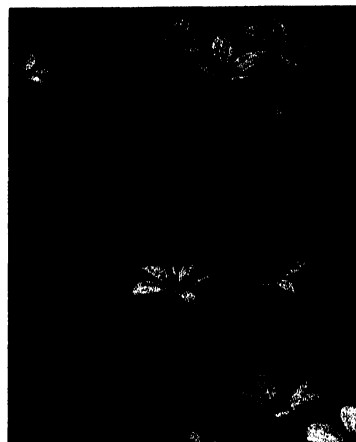
Genus of one species of rhizomatous perennial, with leafy runners, occurring in rich woodland soils in E. USA. The flowerheads resemble those of small, single zinnias, and are produced over a very long period from early spring to late summer. *C. virginianum* is cultivated as attractive ground cover.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, humus-rich soil in sun or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide or separate runners in spring or autumn.

• **PESTS AND DISEASES** Trouble free.



*Chrysogonum virginianum*

**C. virginianum** ■ Creeping perennial with long, reddish green stalks and opposite, heart-shaped to ovate-oblong, hairy, mid-green leaves, 2.5–10cm (1–4in) long, with scalloped to toothed margins. From early spring to late summer, branched stems bear solitary, star-shaped yellow flowerheads, 4cm (1½in) across, from the upper leaf axils; they each have 5 large, triangular ray-florets around the central disc-florets. Evergreen in mild winters. ↑ 25cm (10in), ↔ 60cm (24in). E. USA. \* \* \*

## CHRYSOLEPIS

EAGACEAE

Genus of 2 species of evergreen trees and shrubs from hill and mountain slopes from California to Washington State, USA. They are grown mainly for their handsome foliage and attractive catkins and fruits. They grow best in maritime climates, and are excellent specimen plants for a large lawn.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained, neutral or acid soil in sun or partial shade. Shelter from strong winds. Pruning group 8, or 1 for trees.

• **PROPAGATION** Sow seed as soon as ripe in a seedbed outdoors or in containers in an open frame.

• **PESTS AND DISEASES** Trouble free.

**C. chrysophylla** △ syn. *Castanopsis chrysophylla* (Golden chinkapin).

Conical tree producing narrowly oval, tapered, dark green leaves, to 15cm (6in) long, densely golden hairy beneath. Fragrant, creamy white catkins are borne in summer, and are followed by spiny, chestnut-like fruit produced in the following summer. ↑ 12m (40ft), ↔ 12–30m (40–100ft). W. USA (Oregon, California). \* \* \*

▷ **Chrysopsis** see *Heterotheca*

**C. mariana** see *H. mariana*

**C. villosa** see *H. villosa*

## CHRYSOSPLENIUM

Golden saxifrage

SAXIFRAGACEAE

Genus of about 55 species of creeping annuals and perennials from Europe, Asia, and North America, often found in moist woodland and close to streams. They have rounded or kidney-shaped, toothed, light to dark green leaves, and flat, terminal cymes of shallowly cup-

C



*Chrysosplenium davidianum*

shaped flowers above leafy bracts. They are useful as ground cover in a shady border, bog garden, or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, poor to moderately fertile, humus-rich soil in a shady site.

• **PROPAGATION** Divide, or take soft tip cuttings, in spring.

• **PESTS AND DISEASES** Susceptible to damage by slugs and snails.

**C. davidianum** ■ Rhizomatous, mat-forming perennial with erect, red-hairy stems. Broadly ovate-oblong leaves, 2–3cm (¾–1¼in) long, with scalloped margins, are mid- to dark green, densely white-hairy beneath, less so above. In late spring and early summer, bears greenish yellow flowers in cymes 3–5cm (1¼–2in) across, above pale green, leaf-like bracts. ↑ to 8cm (3in), ↔ 25cm (10in) or more. W. China. \* \* \*

▷ **Chulta** see *Dillenia indica*

## CHUSQUEA

GRAMINEAE/POACEAE

Genus of 90–100 species of evergreen, clump-forming bamboos occurring in upland woodland from Mexico to Chile. Chusqueas have cylindrical, smooth, glossy, pith-filled canes with 3 primary branches, borne alternately at the nodes, each branching densely and bearing linear to ovate or oval, pointed, mid- to dark green leaves. Use as specimen plants for a lawn or woodland garden.

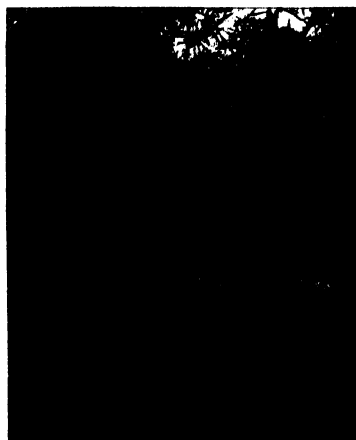
• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in humus-rich, leafy, moist but well-drained soil in sun or partial shade, sheltered from cold, dry winds.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide clumps, or remove sections of rhizome with a stem and root, in spring.

• **PESTS AND DISEASES** Emerging shoots are prone to slug damage.

C

*Chusquea culeou*

**C. culeou** [M] ♀ Graceful, erect bamboo, forming dense clumps of glossy, cylindrical, yellow-green to olive-green canes, to 3cm (1¼in) across, with long, tapered, papery white leaf sheaths; these are persistent for the first year, giving a striped appearance to the young canes. Clustered branches, 10–80cm (4–32in) long, arise alternately and almost encircle the white-waxy nodes; they bear numerous linear, tessellated, mid-green leaves, to 7cm (3in) long. As old leaves fall, branches and leaf-stalks persist, giving a whiskered look to the lower canes. † to 6m (20ft), ↔ 2.5m (8ft) or more. Chile. \*\*\*

## CIBOTIUM

DICKSONIACEAE

Genus of about 10 species of evergreen tree ferns from forest in tropical and subtropical to warm-temperate regions. They have very large, finely divided, ovate to triangular fronds, growing in tufts from an erect, trunk-like rhizome, covered with golden brown hairs. In frost-prone climates, grow in a large, temperate or warm greenhouse or conservatory. Elsewhere, grow outdoors as imposing specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered light and moderate humidity. In growth, water freely and apply a high-nitrogen liquid fertilizer monthly; in winter, water sparingly and admit maximum light. Top-dress or pot on in spring. If plants outgrow their site, they may be reduced in height by rooting the upper part of the stem in well-drained potting compost. Outdoors, grow in a humus-rich, moist but well-drained soil in partial shade.
- **PROPAGATION** Sow spores at 21°C (70°F) when ripe.
- **PESTS AND DISEASES** Trouble free.

**C. glaucum** [M] ♀ (Hawaiian tree fern). Tree fern with an erect stem bearing ovate, 2-pinnate, mid-green fronds, 2–3m (6–10ft) long, glaucous beneath, with lance-shaped segments. The stem tips and bases of the frond-stalks are covered with hairs. † 2–6m (6–20ft), ↔ 3–4m (10–12ft). USA (Hawaii). ☉ (min. 10°C/50°F)

**C. regale** ♀ Tree fern with an erect stem crowned with ovate, 2-pinnate,

*Cibotium glaucum*

mid-green fronds, 3–4m (10–12ft) long, and glaucous beneath, divided into lance-shaped segments. The stem tips and bases of the frond-stalks are hairy. † to 4m (12ft), ↔ 3–8m (10–25ft). Central America. ☉ (min. 10°C/50°F)

## CICERBITA

ASTERACEAE/COMPOSITAE

Genus of about 20 species of erect perennials found in N. temperate zones in wooded ravines and subalpine and moist, grassy meadows. They have pinnatifid to pinnatisect, mid-green leaves, each with a large, 3-angled terminal lobe, and smaller, sharply pointed lateral lobes. The basal leaves are stalked, the smaller stem leaves are stalkless and stem-clasping; their sap is milky. Cicerbitas are grown for their corymb-like panicles of numerous dandelion-like flowers; these have strap-shaped florets in blue, violet, lilac, or occasionally yellow, and are borne on branched stems from midsummer to early autumn. They are suitable for a large mixed or herbaceous border, or for naturalizing in a wild garden.

- **HARDINESS** Fully hardy.

*Cicerbita alpina*

- **CULTIVATION** Grow in moist, fertile, humus-rich, neutral to acid soil in sun or partial shade. Dead-head to prevent self-seeding.
- **PROPAGATION** Sow seed in containers in early spring, or divide in early spring.
- **PESTS AND DISEASES** Mildew may be a problem.

**C. alpina** [M] syn. *Lactuca alpina*, *Mulgedium alpinum* (Mountain sow thistle). Clump-forming perennial producing mid-green, basal leaves, 8–25cm (3–10in) long, blue-green beneath. Erect, branching, softly hairy, reddish green stems bear elongated panicles of violet-blue flowerheads, 2cm (¾in) across, from midsummer to early autumn. † to 2.5m (8ft), ↔ 60cm (24in). Norway, Scotland, Pyrenees, Alps, Apennines, mountains of Bulgaria, Carpathians. \*\*\*

**C. plumieri**, syn. *Lactuca plumieri*, *Mulgedium plumieri*. Clump-forming, hairless perennial with mid-green, basal leaves, 5–60cm (2–24in) long, blue-green beneath. Erect, branching stems bear panicles of blue flowerheads, 3cm (1¼in) across, from midsummer to early autumn. † to 1.3m (4½ft), ↔ 45cm (18in). Pyrenees, mountains of France, W. central Europe, S.W. Bulgaria. \*\*\*

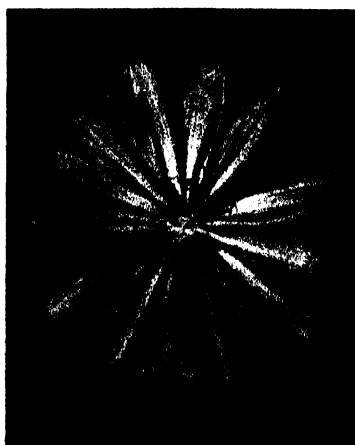
## CICHORIUM

Chicory, Endive

ASTERACEAE/COMPOSITAE

Genus of about 8 species of annuals and perennials from dry, sunny sites in Europe, the Mediterranean, temperate Asia, and Ethiopia. They have large, variably toothed or pinnatifid, mid-green leaves, milky sap, and stems that branch at flowering to bear numerous thistle- or dandelion-like, usually blue, occasionally pink or white flowerheads, which close by midday. Several species are grown as salad plants. Contact with all parts of the plants may irritate skin or aggravate skin allergies.

- **HARDINESS** Fully hardy to frost hardy; *C. spinosum* may survive temperatures down to -10°C (14°F).
- **CULTIVATION** Grow in fertile, well-drained soil in full sun. *C. spinosum* needs sharply drained soil and protection from excessive winter wet.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring.
- **PESTS AND DISEASES** Prone to mildew, lettuce ringspot, rust, and slugs.

*Cichorium intybus*

**C. intybus** [M] ♀ (Chicory). Clump-forming perennial with a large tap root and inversely lance-shaped, toothed, basal leaves, 7–30cm (3–12in) long. In summer, branched stems bear dandelion-like, terminal and axillary, clear blue, occasionally white or pink flowerheads, to 3.5cm (1½in) across. † 1.2m (4ft), ↔ 60cm (24in).

Mediterranean. \*\*\*

**C. spinosum**. Dwarf perennial with a woody rootstock. Branching stems terminating in long green spines bear inversely lance-shaped, pinnatifid, glossy leaves, to 5cm (2in) long. In summer, produces thistle-like blue flowerheads, to 2cm (¾in) across, singly from the leaf axils, or in few-flowered terminal clusters. Best in an alpine house. † ↔ to 20cm (8in). Mediterranean. \*\*

▷ **Cigar flower** see *Cuphea ignea*

## CIMICIFUGA

Bugbane, Cohosh

RANUNCULACEAE

Genus of 18 species of erect, clump-forming perennials from N. temperate regions, usually found in moist, shady grassland, woodland, or scrub. They have alternate, ternate to 3-ternate leaves. The numerous, white or cream flowers, occasionally pink-tinged, and usually 1–2cm (½–¾in) long, have 2–5 small petals and prominent tufts of stamens. They are crowded together in slender, bottlebrush-like racemes or panicles, which are followed by greenish white, then brown, star-shaped follicles. Some are unpleasantly scented. They are suitable for a moist border or woodland.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, fertile, preferably humus-rich soil in partial shade. Provide support.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, to germinate the following spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

*Cimicifuga simplex*



*C. acerina* see *C. japonica*.

*C. americana*. Clump-forming perennial producing 2- or 3-ternate, toothed, basal leaves, to 50cm (20in) long, with 3-lobed, ovate to oblong leaflets, dark green above, mid-green beneath. Red-tinted white flowers, 5-12mm (¼-½in) long, are borne in lax, branched racemes, to 50cm (20in) long, from late summer to mid-autumn. †0.6-2.5m (2-8ft), ↔ 50-100cm (20-39in). E. USA. \*\*\*

*C. foetida*. Clump-forming perennial with 2- or 3-ternate, toothed, mid-green, basal leaves, to 1m (3ft) long, usually with 3-lobed, oval or broadly ovate to elliptic leaflets. Pure white flowers, 5-12mm (¼-½in) long, are borne in branched racemes, to 60cm (24in) long, from late summer to mid-autumn. †0.6-2m (2-6ft), ↔ 50-80cm (20-32in). Russia (Siberia) to N. Mongolia. \*\*\*

*C. japonica*, syn. *C. acerina*. Clump-forming perennial producing long-stalked, ternate or 2-ternate, toothed, hairy, dark green, basal leaves, 30-75cm (12-30in) long, with 3- to 5-lobed, ovate to broadly ovate leaflets. Pure white flowers, 0.5-1cm (¼-½in) long, are borne in erect racemes, to 35cm (14in) long, from late summer to mid-autumn. †60-90cm (24-36in), ↔ 60cm (24in). Japan. \*\*\*

*C. racemosa* ♀ (Black snake root). Clump-forming perennial producing 2- or 3-ternate, occasionally ternate, dark green, basal leaves, to 40cm (16in) long, with oblong, often lobed or sharply toothed leaflets. In midsummer, slender, branched stems bear racemes, 60cm (24in) long, sometimes curved, of unpleasantly scented white flowers, 0.5-1.5cm (¼-½in) long. †1.2-2.2m (4-7ft), ↔ 60cm (24in). E. North America. \*\*\*. var. *cordifolia* see *C. rubifolia*.

*C. rubifolia*, syn. *C. racemosa* var. *cordifolia*. Clump-forming perennial with ternate or 2-ternate, dark green, basal leaves, to 60cm (24in) long,



*Cimicifuga simplex* 'Brunette'

composed of 3-17 broadly obovate leaflets, heart-shaped at the bases. In late summer, bears branched, sometimes curved racemes, to 60cm (24in) long, of creamy white flowers, to 1cm (½in) long. †30-140cm (12-55in), ↔ 60cm (24in). E. North America. \*\*\*

*C. simplex* □ Clump-forming perennial with 3-ternate, light green to purplish green, basal leaves, 30-75cm (12-30in) long, composed of 27-81 ovate to rounded, irregularly lobed leaflets. In early and mid-autumn, unbranched, or occasionally branched, often arching stems bear white flowers, 2cm (¾in) long, in racemes 6-30cm (2½-12in) long. †1-1.2m (3-4ft), ↔ 60cm (24in). Russia (Kamchatka, Sakhalin, Siberia), China (W. China, Manchuria), Mongolia, Korea, Japan. \*\*\*. 'Braunlaub' has very dark green leaves; †60-90cm (24-36in). 'Brunette' □ has very dark, brownish purple foliage, purple stems, and compact racemes, to 20cm (8in) long, of purple-tinged, off-white flowers. 'Elstead' ♀ has purple-tinged buds that open to white flowers later than in other cultivars; †60-90cm (24-36in). 'White Pearl' has arching stems bearing narrow racemes of green buds opening to white flowers over pale green leaves; †60-90cm (24-36in).

▷ *Cineraria cruentus* of gardens see *Pericallis x hybrida*

▷ *Cineraria, Florists'* see *Pericallis x hybrida*

▷ *Cineraria x hybrida* see *Pericallis x hybrida*

▷ *Cineraria maritima* see *Senecio cineraria*

▷ *Cinderella slippers* see *Sinningia regina*

## CINNAMOMUM

LAURACEAE

Genus of about 250 species of evergreen trees and shrubs found in forest in E. and S.E. Asia and Australia. The opposite or almost opposite leaves are simple, leathery, and aromatic; the small, insignificant, 6-lobed flowers are borne in axillary or terminal panicles. In frost-prone areas, grow for their foliage in a temperate greenhouse. In frost-free areas, grow outdoors as shade or specimen trees.

• **HARDINESS** Frost tender; *C. camphora* will withstand occasional falls in temperature to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. During the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on or top-dress in early spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade. Pruning group 1; plants under glass may need restrictive pruning after flowering or in spring.

• **PROPAGATION** Sow seed at 13-18°C (55-64°F) as soon as ripe, or in spring. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

*C. camphora* □ (Camphor tree). Erect to spreading tree with narrowly ovate, boldly veined, glossy leaves, to 10cm (4in) long, greenish red when young,

then rich green. Small, bowl-shaped, greenish yellow flowers are borne in clusters 5-7cm (2-3in) across, from spring to summer, followed by black berries, 6-10mm (¼-½in) across. †20m (70ft) or more, ↔ 5-10m (15-30ft). Tropical S.E. and E. Asia, including Japan and Malaysia. ♀ (min. 10°C/50°F)

▷ *Cinquefoil* see *Potentilla*

*Himalayan* see *P. atrosanguinea*

*Marsh* see *P. palustris*

## CIONURA syn. MARSDENIA

ASCLEPIADACEAE

Genus of one species of semi-climbing, deciduous shrub occurring in rocky areas, river-gravels, and maritime sands in the E. Mediterranean. It is grown for its fragrant flowers. In frost-prone climates, grow in a cool conservatory or greenhouse; elsewhere, use outdoors against a sunny wall. Contact with the latex exuded by cut leaves and stems may irritate skin, and may cause severe discomfort if ingested.

• **HARDINESS** Frost hardy only in dry, sunny sites.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Water freely in growth, applying a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moderately fertile, well-drained soil in a sunny, sheltered site. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed at 13-18°C (55-64°F) in spring. Root semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*C. erecta*, syn. *Marsdenia erecta*.

Twining shrub with opposite, ovate-heart-shaped, grey-green leaves, to 6cm (2½in) long. Produces cymes of bowl-shaped white flowers, 1cm (½in) across, from the leaf axils in summer, followed by pointed fruit that open to release silky seeds. Balkans, Crete, Turkey, S.W. Asia. †3m (10ft) or more. \*\*

▷ *Cirrhopetalum guttatum* see *Bulbophyllum guttatum*

▷ *Cirrhopetalum medusae* see *Bulbophyllum medusae*

## CIRSIIUM

ASTERACEAE/COMPOSITAE

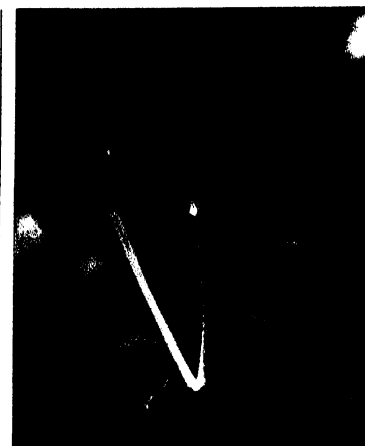
Genus of about 200 species of biennials and perennials from a variety of habitats in N. temperate regions, including grassy mountain slopes, streamsides or moorland meadows, and dry or moist alpine and subalpine meadows. They have spiny leaves and bear heads of tubular, purple, red, yellow, or sometimes white flowers. Many are invasive, spreading by means of rhizomes, or self-seeding. Those listed here are useful border plants, or suitable for damp meadows in a wild garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained soil in full sun. Dead-head to prevent self-seeding.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide perennials from autumn to spring.

• **PESTS AND DISEASES** Mildew may be a problem.



*Cirsium rivulare* 'Atropurpureum'

*C. japonicum*. Clump-forming biennial or perennial producing oblong-obovate, pointed, deeply lobed to pinnate, spiny, toothed, mid- to dark green leaves, to 30cm (12in) long. In late summer and early autumn, bears thistle-like, rose-pink to lilac flowerheads, 5cm (2in) across. †1-2m (3-6ft), ↔ 60cm (24in). Japan. \*\*\*. 'Rose Beauty' has deep carmine-red flowerheads.

*C. rivulare*. Clump-forming, spreading perennial with narrowly elliptic to oblong-lance-shaped, entire to pinnatifid, prickly, dark green leaves, to 45cm (18in) long, softly hairy beneath. Erect stems bear spherical, pincushion-like, deep crimson-purple to purple flowerheads, 3cm (1¼in) across, in early and midsummer. †1.2m (4ft), ↔ 60cm (24in). C. Europe into Russia, S.W. Europe. \*\*\*. 'Atropurpureum' □ has deep crimson flowerheads.

## CISSUS

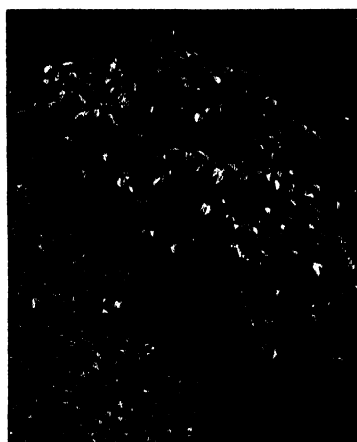
VITACEAE

Genus of about 350 species of evergreen perennials, shrubs, and climbers, some with succulent stems or roots, occurring in tropical and subtropical regions, at forest margins and in thickets. The leaves are alternate and may be simple, shallowly to deeply lobed, or 3- to 7-palmate. Insignificant, 4-petalled flowers are produced in compound, umbel-like cymes opposite the leaves or at the ends of the shoots. Dry, usually unpalatable berries, 0.3-3cm (¼-1¼in) across, ripen to shades of blue, red, purple, or black. In frost-prone regions, grow as foliage houseplants, or in a cool or warm conservatory; most are suitable for hanging baskets. In warmer climates, use climbing species to clothe pergolas, arbours, walls, or tall tree stumps.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow non-succulents in loam-based potting compost (J1 No.2) in bright filtered or indirect light. Water freely when in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Grow succulent species in J1 No.2 with added grit (up to one-third by volume), in full light. Water succulents moderately when in growth and keep them dry in winter. Outdoors, grow non-succulents in fertile, moist but well-drained soil in sun or partial shade; succulents need sharply drained soil and full sun. Pruning group 11, in spring;

C



*Cissus antarctica*

pinch out young plants to encourage a bushy habit. See also pp.48-49.

• **PROPAGATION** For climbers and shrubs, root hardwood or greenwood cuttings in summer. For succulents, sow seed at 21°C (70°F) in spring, or take stem cuttings in early summer.

• **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be a problem under glass.

**C. antarctica** [■] ♀ (Kangaroo vine). Climber with tendrils and broadly ovate, boldly toothed, leathery, glossy, rich green leaves, to 12cm (5in) long. Bears small green flowers in dense, axillary cymes, 3cm (1¼in) long, from spring to summer; they are followed by spherical black berries, 1cm (½in) across. ↑ 5-15m (15-50ft). N. Australia. ☉ (min. 5°C/41°F)

**C. bainesii** see *Cyphostemma bainesii*.

**C. capensis** see *Rhoicissus capensis*.

**C. discolor** [■] Slender climber with red stems and tendrils. Ovate to lance-shaped leaves, 8-25cm (3-10in) long, with heart-shaped bases, are deep green with silver, grey, or pink zones between the veins above, maroon beneath. In summer, produces red-tinted green



*Cissus quadrangularis*

flowers in small panicles, 5cm (2½in) long, followed by spherical, dark red fruit, 8mm (⅜in) across. ↑ 2-3m (6-10ft). S.E. Asia. ☉ (min. 5°C/41°F)

**C. hypoglauca** (Water vine). Vigorous, scandent climber with 5-palmate leaves, 5-8cm (2-3in) long, composed of ovate to lance-shaped leaflets, pale to deep green above, glaucous beneath. Small yellow flowers open in dense, axillary cymes, 4-6cm (1½-2½in) long, in summer, followed by blue-black berries, 1-2cm (½-¾in) across. ↑ 10-25m (30-80ft). Australia (New South Wales, Victoria). ☉ (min. 7°C/45°F)

**C. juttai** see *Cyphostemma juttai*.

**C. quadrangularis** [■] Few-leaved, succulent climber with tendrils, thick, 4-angled stems, and thinner, wavy-margined, horny branches constricted at the nodes. Entire to 3-lobed, ovate to triangular, coarsely toothed, fleshy, mid-green leaves, 20cm (8in) or more long, develop from the nodes and opposite the tendrils. Small, green or yellow flowers open in cymes, 5cm (2in) long, in summer, followed by ovoid, reddish black fruit, 4-6mm (¼-½in) across. ↑ 3m (10ft). Tropical Africa, Arabian peninsula, E. India. ☉ (min. 15°C/59°F)

**C. rhombifolia** [■] ♀ syn. *Rhoicissus rhombifolia* (Grape ivy). Vigorous climber producing forked tendrils and 3-palmate, dark green leaves, to 15cm (6in) long, with ovate to diamond-shaped leaflets, boldly veined and coarsely toothed, with rust-red hairs beneath. In summer, bears hairy green flowers in cymes 3-7cm (1¼-3in) long, opposite the leaves, followed by blue-black berries, 0.5-1.5cm (¼-½in)



*Cissus rhombifolia*

across. ↑ 3m (10ft) or more. Tropical America. ☉ (min. 5°C/41°F). **'Ellen Danica'** ♀ is compact and bushy but still vigorous, producing leaves with larger, deeply lobed leaflets; ↑ 1m (3ft).

**C. striata**, syn. *Ampelopsis sempervirens*, *Parthenocissus striata*, *Vitis striata* (Ivy of Uruguay). Slender, vigorous climber with tendrils and 3- to 5-palmate leaves, 4-7cm (1½-3in) long, composed of obovate, leathery, glossy, mid-green leaflets. In summer, bears green flowers in small cymes, 3cm (1¼in) long, opposite the leaves, followed by glossy black berries, 5-10mm (¼-½in) across. ↑ 10m (30ft). S. Brazil to Chile. \*

**C. voinieriana** see *Tetrastigma voinierianum*.

## CISTUS

Rock rose, Sun rose

CISTACEAE

Genus of about 20 species of evergreen shrubs occurring on dry, stony or rocky soils in the Canary Islands, N. Africa, Turkey, and S. Europe. They are grown for their showy, saucer-shaped, usually 5-petaled, white to dark pink flowers, borne singly or in terminal or axillary cymes from early to late summer; each bloom lasts only one day. They have opposite leaves. Rock roses are suitable for growing in a shrub border, on sunny banks, at the base of a wall, around paved areas, or in containers. They are often short-lived.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in a sheltered site in full sun, planting after any danger of hard frosts has passed. Rock roses are generally lime-tolerant, but may become chlorotic with age on very chalky soils. Pinch back young plants after flowering to encourage a bushy habit. Pruning group 8 or 9; they do not respond well to hard pruning, and old, leggy plants are best replaced.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in

spring. Root softwood or greenwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**C. x aguilarii** (*C. ladanifer* x *C. populifolius*). Rounded shrub with lance-shaped, 3-veined, wavy-margined, sticky, bright green leaves, to 10cm (4in) long. Solitary white flowers, to 8cm (3in) across, with golden yellow stamens, are borne in summer. ↑→ 1.2m (4ft). S.W. Europe, N. Africa. \*\*

**'Maculatus'** ♀ has sticky leaves, and flowers with a dark red mark at the base of each petal.

**C. albidus**. Dense, bushy shrub with ovate to oblong, 3-veined, grey-white leaves, to 5cm (2in) long. Terminal cymes of 3-8 dark lilac-pink flowers, 5cm (2in) across, with yellow centres, are produced in summer. ↑→ 1m (3ft). S.W. Europe, N. Africa. \*\*

**C. algarvensis** see *Halimium ocymoides*.

**C. 'Anne Palmer'**. Bushy shrub with erect, red-flushed shoots and lance-shaped, wavy-margined, deeply veined, dark green leaves, to 5cm (2in) long. Soft rose-pink flowers, to 7cm (3in) across, are borne singly or in small, terminal cymes of 2-4 blooms in summer. ↑→ 1m (3ft). \*\*

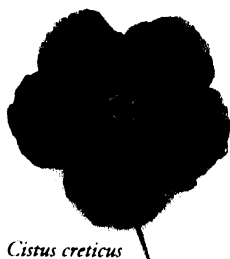
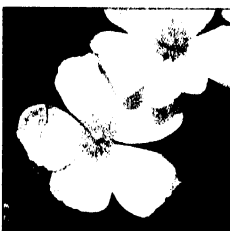
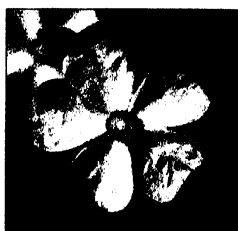
**C. 'Blanche'**. Bushy shrub with lance-shaped leaves, 4-8cm (1½-3in) long, dark green above and grey-green beneath. Pure white flowers, to 10cm (4in) across, are produced singly from the leaf axils or in terminal cymes in summer. ↑→ 1.5m (5ft). \*\*

**C. clusii**, syn. *C. rosmarinifolius*. Mound-forming shrub with linear leaves, to 2.5cm (1in) long, dark green above and white beneath. Small white flowers, 2.5cm (1in) across, with yellow stamens, open in few-flowered, terminal cymes in summer. ↑ 30cm (12in), ↔ 60cm (24in). W. Mediterranean. \*\*

**C. x corbariensis** [■] ♀ (*C. populifolius* x *C. salvifolius*) syn. *C. x hybridus*. Dense, bushy shrub with ovate, wavy-margined, dark green leaves, to 5cm (2in) long. From late spring to summer, red buds



*Cistus 'Peggy Sammons'*

*Cistus x corbariensis**Cistus creticus**Cistus x cyprius**Cistus x dansereau*  
'Decumbens'*Cistus monspeliensis**Cistus x skanbergii*

open to white flowers, 4cm (1½in) across, with yellow centres and stamens, borne singly or in terminal cymes of 2 or 3 blooms. ↓ 1m (3ft), ↔ 1.5m (5ft). S. Europe. \*\*

**C. creticus** ■ syn. *C. incanus* subsp. *creticus*. Compact shrub with ovate to obovate, wavy-margined, deeply veined, mid-green leaves, to 7cm (3in) long. In summer, bears terminal cymes of 3–5 purple-pink flowers, to 6cm (2½in) across, with yellow stamens. ↑↔ 1m (3ft). E. Mediterranean. \*\*

**C. crispus**. Rounded, bushy shrub with oblong to elliptic, grey-green leaves, to 4cm (1½in) long, deeply veined and wavy margined. In summer, produces terminal cymes of 2–5 purple-red flowers, to 6cm (2½in) across, with yellow stamens. ↓ 60cm (24in), ↔ 90cm (36in). W. Mediterranean. \*\*

'Sunset' see *C. x pulverulentus* 'Sunset'.

**C. x cyprius** ■♀ (*C. ladanifer* x *C. laurifolius*). Bushy shrub with narrowly lance-shaped to oblong-lance-shaped, slightly wavy-margined, sticky, dark green leaves, to 10cm (4in) long. In summer, bears terminal cymes of 3–6 white flowers, to 7cm (3in) across, with yellow and crimson marks at the bases of the petals and yellow stamens. ↑↔ 1.5m (5ft). S.W. Europe. \*\*

**C. x dansereaui** (*C. hirsutus* x *C. ladanifer*) syn. *C. x lusitanicus* of gardens. Upright shrub with sticky shoots and oblong-lance-shaped, dark green leaves, to 6cm (2½in) long. Terminal cymes of 3–6 white flowers, to 7cm (3in) across, with faint yellow and crimson marks at the base of each petal, are borne in summer. ↑↔ 1m (3ft). S.W. Europe. \*\*

**C. 'Elma'** ♀ Vigorous, bushy shrub with lance-shaped, glossy, deep green leaves, to 10cm (4in) long. In summer, bears terminal cymes of 3–6 white flowers, to 10cm (4in) across, with yellow stamens. ↑↔ 2m (6ft). \*\*

**C. x florentinus** (*C. monspeliensis* x *C. salviifolius*). Compact shrub with lance-shaped to elliptic-lance-shaped, wavy margined, grey-green leaves, to 4cm (1½in) long. White flowers, 4cm (1½in) across, with yellow centres, are produced in few-flowered, terminal cymes in summer. ↓ 1m (3ft), ↔ 1.5m (5ft). S. Europe, N. Africa. \*\*

**C. hirsutus**. Mound-forming shrub with dense branches. Shoots and ovate to elliptic, dark green leaves, to 6cm (2½in) long, are covered with long white hairs. In summer, bears terminal cymes of 3–8 white flowers, 4cm (1½in) across, with yellow centres. ↓ 1m (3ft), ↔ 1.5m (5ft). S.W. Europe. \*\*

**C. x hybridus** see *C. x corbariensis*.

**C. incanus** subsp. *creticus* see *C. creticus*.

**C. ingwerseniana** see *x Halimicistus 'Ingwersenii'*.

**C. ladanifer** ♀ syn. *C. ladaniferus* (Common gum cistus, Laudanum). Upright shrub with linear-lance-shaped, sticky, aromatic, dark green leaves, to 10cm (4in) long. White flowers, to 10cm (4in) across, with yellow centres, sometimes with crimson marks at the base of each petal, are borne singly at the ends of short sideshoots in summer. ↑ 2m (6ft), ↔ 1.5m (5ft). S.W. Europe to N. Africa. \*\*

**C. ladaniferus** see *C. ladanifer*.

**C. laurifolius** ♀ Upright shrub with ovate, sticky, aromatic, dark blue-green leaves, to 8cm (3in) long. In summer, bears erect, branched cymes of 3–8 white flowers, to 8cm (3in) across, with yellow centres. ↑↔ 2m (6ft). S.W. Europe. \*\*

**C. x lusitanicus** of gardens see *C. x dansereaui*.

**C. monspeliensis** ■ (Montpellier rock rose). Bushy shrub with linear to lance-shaped, deeply veined, dark green leaves,

*Cistus x purpureus*

to 5cm (2in) long. Crowded, terminal and axillary cymes of 3–6 saucer-shaped white flowers, to 2.5cm (1in) across, with yellow stamens, are borne in summer. ↓ 1m (3ft), ↔ 1.5m (5ft). S.W. Europe, N. Africa. \*\*

**C. 'Paladin'**. Bushy shrub with lance-shaped leaves, to 10cm (4in) long, mid-to dark green above, grey-green beneath. Solitary white flowers, to 10cm (4in) across, marked dark red at the base of each petal, are produced in summer. ↑↔ 1.5m (5ft). \*\*

**C. parviflorus**. Compact shrub with ovate, deeply veined, grey-green leaves, to 3cm (1¼in) long. Terminal and axillary cymes of 3–8 clear pink flowers, to 2.5cm (1in) across, are produced in summer. ↓ 1m (3ft), ↔ 1.5m (5ft). E. Mediterranean. \*\*

**C. 'Peggy Sammons'** ■♀ Bushy, upright shrub with oval, grey-green leaves, to 6cm (2½in) long. In summer, bears profuse, terminal cymes of 3–8 pale purplish pink flowers, 6cm (2½in) across. ↑↔ 1m (3ft). \*\*

**C. populifolius**. Rounded shrub with broadly ovate to heart-shaped, dark green leaves, to 9cm (3½in) long. In summer, produces cymes of 2–5 white flowers, to 5cm (2in) across, with yellow centres, from the upper leaf axils. ↑↔ 2m (6ft). S.W. Europe. \*\*

**C. x pulverulentus** 'Sunset', syn. *C. crispus* 'Sunset'. Compact, spreading shrub with oblong, wavy-margined, greyish green leaves, to 5cm (2in) long. Profuse terminal cymes of 3–6 rose-pink flowers, 5cm (2in) across, with yellow centres, are borne in summer. ↓ 60cm (24in), ↔ 90cm (36in). \*\*

**C. x purpureus** ■♀ (*C. creticus* x *C. ladanifer*). Rounded shrub with upright, sticky, red-flushed shoots and narrowly oblong-lance-shaped to obovate, slightly wavy-margined, dark green leaves, to 5cm (2in) long. In summer, produces terminal cymes of 3 crinkled, dark pink flowers, to 7cm (3in) across, with maroon marks at the bases of the petals. ↑↔ 1m (3ft). S. Europe. \*\*

**'Betty Taudevin'** has narrow, less wavy-margined leaves and brighter pink flowers, to 9cm (3½in) across.

**C. revollii** of gardens see *x Halimicistus sabucii*.

**C. rosmarinifolius** see *C. clusii*.

**C. salviifolius**. Bushy shrub with ovate, deeply veined, grey-green leaves, to 4cm (1½in) long. White flowers, to 5cm (2in) across, with yellow centres, are borne singly, or occasionally in few-flowered, axillary cymes, in summer. ↑ 75cm (30in), ↔ 90cm (36in). S. Europe. \*\*

**'Prostratus'** is low and spreading, with smaller leaves, 2cm (¾in) long; ↑ 15–25cm (6–10in), ↔ 60–90cm (24–36in).

**C. 'Silver Pink'**. Mound-forming shrub with lance-shaped, dark green leaves, to 7cm (3in) long, grey-green beneath. Silvery pink flowers, 8cm (3in) across, almost white in the centres, with prominent golden stamens, are borne in erect, terminal cymes of 3–5 blooms in summer. ↑ 75cm (30in), ↔ 90cm (36in). \*\*

**C. x skanbergii** ■♀ (*C. monspeliensis* x *C. parviflorus*). Compact shrub with narrowly oblong-lance-shaped, slightly wavy-margined, grey-green leaves, to 5cm (2in) long. In summer, profusely bears terminal cymes of 3–6 pale pink

flowers, 2.5cm (1in) across. ↑ 75cm (30in), ↔ 90cm (36in). Greece. \*\*

**C. wintonensis** see *x Halimicistus wintonensis*.

▷ **Cistus, Common gum** see *Cistus ladanifer*

## X CITROFORTUNELLA

RUTACEAE

Hybrid genus of evergreen shrubs and trees, crosses of *Citrus* and *Fortunella*. The alternate, simple, leathery leaves may have narrow wings on the stalks. Saucer-shaped or shallowly cup-shaped, 5-petalled, waxy flowers are borne singly or in twos or threes from the leaf axils, and are followed by small, orange-like fruits. In frost-prone areas, grow in a cool or temperate greenhouse, or as houseplants; elsewhere, grow outdoors as specimen plants.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun, and good ventilation. When in growth, mist daily, water freely, and apply a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Pot on or top-dress in winter. Outdoors, grow in neutral to acid, loamy, well-drained soil in full sun. Pruning group 1; plants under glass may need restrictive pruning in late winter or early spring.

• **PROPAGATION** Root semi-ripe cuttings in summer. Layer in early spring.

• **PESTS AND DISEASES** Red spider mites and scale insects may be a problem.

**x C. microcarpa** ■♀ (syn. *x C. mitis*, *Citrus mitis* (Calamondin, Panama orange). Large shrub or small, bushy tree, sometimes with a few short spines, and elliptic to broadly ovate, bright green leaves, 4–10cm (1½–4in) long. White flowers, 1.5cm (½in) across, are borne from spring to summer, followed by spherical, yellow then orange fruit, 2.5–4cm (1–1½in) across. ↑ 3–6m

*x Citrofortunella microcarpa*

## X CITROFORTUNELLA

(10–20ft), ↔ 2–3m (6–10ft). Garden origin. \* **'Tiger'** produces leaves margined and streaked with white. **'Variegata'** has white-mottled leaves and green-variegated fruit. x *C. mitis* see x *C. microcarpa*.

▷ **Citron** see *Citrus medica*.

## CITRUS

RUTACEAE

Genus of about 16 species of evergreen, often spiny trees and shrubs from open forest, thickets, and scrub in S.E. Asia and the larger islands in the E. Pacific. The leaves are alternate and simple, usually with winged stalks. Shallowly cup-shaped, 5-petalled, often scented white flowers, 2–5cm (1–2in) across, are borne in small, axillary racemes or corymbs. The familiar citrus fruits take about one year to mature. In frost-prone regions, grow in a cool or temperate greenhouse or conservatory. In warmer climates, grow as specimen plants, or in a fruit garden.

• **HARDINESS** Frost tender; but may survive short spells near to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, shaded from hot sun. In growth, water freely, mist daily, and apply a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Pot on or top-dress in late winter.

Outdoors, grow in moist but well-drained, neutral to slightly acid soil in full sun. Pruning group 1; plants under glass may need restrictive pruning in winter or early spring.

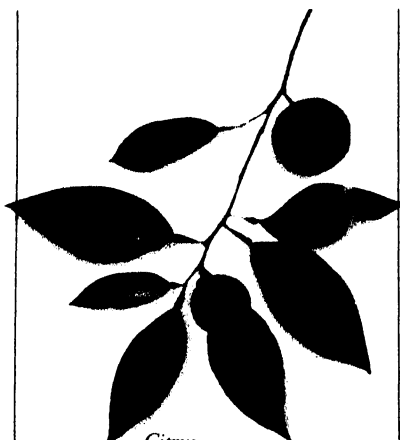
• **PROPAGATION** Sow seed at 16°C (61°F) in spring; seedlings do not come true to type. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Prone to red spider mites, whiteflies, scale insects, and mealybugs under glass. Outdoors, *Phytophthora* root rot may be a problem.

*C. aurantium* ☐ (Seville orange). Spiny tree, with a rounded crown and ovate to ovate-oblong, mid-green leaves, 7–10cm (3–4in) long. From late spring to summer, bears fragrant white flowers, 2cm (¾in) across, singly or in pairs or clusters from the leaf axils; they are followed by slightly flattened-spherical, red-tinted orange fruit, 5–7cm (2–3in) long. ‡ 10m (30ft), ↔ 6m (20ft). S.E. Asia. ☐ (min. 3–5°C/37–41°F).

*C. limon* ☐ (Lemon). Large shrub or small, freely branching, spiny tree with narrowly ovate, finely toothed, light green leaves, 5–10cm (2–4in) long. From spring to summer, fragrant white flowers, 4–5cm (1½–2in) across, borne singly or in small cymes, open from red- or purple-tinted buds; they are followed by broadly ovoid yellow fruit, 7–15cm (3–6in) long. ‡ 2–7m (6–22ft), ↔ 1.5–3m (5–10ft). Asia. ☐ (min. 3–5°C/37–41°F). **'Meyer'**, syn. *C. x meyeri* (Meyer's lemon), is a compact hybrid of *C. limon*, with fragrant flowers and small, spherical fruit.

*C. medica* ☐ (Citron). Large shrub or small, spiny tree with elliptic-ovate, toothed, rich green leaves, 10–18cm (4–7in) long. Short racemes of white, purple-tinted flowers, 4cm (1½in) wide, open from spring to autumn, followed by ovoid to oblong, lemon-yellow fruit, to 30cm (12in) long. ‡ 3–5m (10–15ft),



*Citrus aurantium*

↔ 2–3m (6–10ft). Probably S.W. Asia. ☐ (min. 3–5°C/37–41°F).

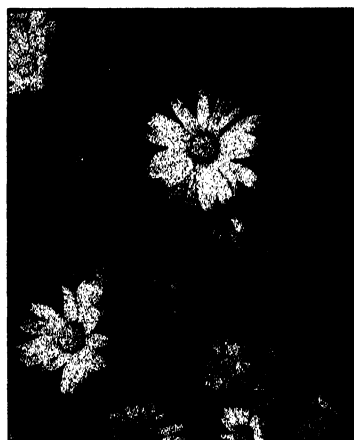
*C. x meyeri* see *C. limon* 'Meyer'.

*C. mitis* see x *Citrofortunella microcarpa*.

*C. reticulata* ☐ (Clementine, Mandarin, Tangerine). Rounded, sometimes spiny, large shrub or small tree with ovate to lance-shaped, deep green leaves, 3–4cm (1¼–1½in) long. In spring, bears very fragrant white flowers, 2.5–4cm (1–1½in) across, in short racemes. Spherical orange fruit, 4–8cm (1½–3in) long, are borne from autumn to spring. ‡ 2–8m (6–25ft), ↔ 1.5–3m (5–10ft). S.E. Asia. ☐ (min. 3–5°C/37–41°F). **Satsuma Group** cultivars are more cold-resistant than other variants, and have thin-peeled, sweet orange fruit, to 5cm (2in) long. *C. sinensis* 'Washington' ☐ (Sweet orange). Large, rounded, bushy shrub or small tree with oval to elliptic, dark green leaves, 5–15cm (2–6in) long. In spring, bears fragrant white flowers, 4cm (1½in) across, singly or in racemes. Sweet orange fruit, 6–10cm (2½–4in) long, each with a secondary, embryonic fruit embedded at the apex, are borne in winter. ‡ 6–12m (20–40ft), ↔ 3–5m (10–15ft). ☐ (min. 3–5°C/37–41°F).



*Citrus limon*



*Cladanthus arabicus*

## CLADANTHUS

Palm Springs daisy

ASTERACEAE/COMPOSITAE

Genus of 4 species of hummock-forming, branched annuals occurring in dry pastures in Spain and N.W. Africa. They have much-divided, pinnatisect to 2-pinnatisect, alternate, aromatic, light green leaves. Daisy-like flowerheads are produced throughout the summer, and are useful as cut flowers. They are suitable for a window-box or flower border. In frost-prone climates, grow in a cool greenhouse for late winter flowering.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. Provide good ventilation and a minimum temperature of 7–10°C (45–50°F). In growth, water moderately and apply a balanced liquid fertilizer every 2–3 weeks. Outdoors, grow in light, moderately fertile, well-drained soil in full sun. Dead-head for continuous flowering.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F), or *in situ*, in spring. For

winter flowering, sow seed at 13–16°C (55–61°F) in autumn.

• **PESTS AND DISEASES** Trouble free.

*C. arabicus* ☐ Moderately fast-growing annual producing ovate, pinnatisect or 2-pinnatisect, light green leaves, to 3cm (1¼in) long, with linear lobes. Continuously branching laterals bear single, deep yellow flowerheads, to 5cm (2in) across, in summer. May self-seed. ‡ 40–60cm (16–24in), ↔ to 40cm (16in). S. Spain, N.W. Africa. \*

## CLADRASTIS

LEGUMINOSAE/PAPILIONACEAE

Genus of 5 species of deciduous trees found in woodland and on limestone cliffs in China, Japan, and the USA. They are grown for their terminal, erect or pendent panicles of pea-like flowers and colourful autumn foliage. The light to mid-green leaves are alternate and pinnate. They are excellent specimen trees for an open, but not exposed position. Flowering is best when wood is well ripened by long hot summers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun; shelter from strong winds as the wood is very brittle. Pruning group 1, after flowering, or in late autumn or early winter.

• **PROPAGATION** Sow scarified seed outdoors in containers in an open frame, or in a seedbed, in autumn. Insert root cuttings in winter.

• **PESTS AND DISEASES** Trouble free.

*C. kentukea* see *C. lutea*.

*C. lutea* ☐ ♀ syn. *C. kentukea* (Yellow wood). Spreading tree with bright, light green leaves, to 30cm (12in) long, composed of 7–9 ovate or obovate leaflets, turning clear yellow in autumn. Pendent panicles of fragrant, white, yellow-marked flowers, to 3cm (1¼in) long, are produced in late spring and early summer. ‡ 12m (40ft), ↔ 10m (30ft). S.E. USA. \*\*\*



*Cladrastis lutea*

## CLARKIA

syn. EUCARIDIUM, GODETIA

ONAGRACEAE

Genus of about 36 species of vigorous, mostly slender-stemmed annuals found on dry, open slopes, from sea level to 2,400m (8,000ft), in W. North America and South America. They have oval or linear to elliptic, sometimes toothed leaves. Spreading, funnel-shaped, paper-thin, pastel-coloured flowers, with a satin-like texture, are borne in upright, leafy racemes in summer. Grow in an annual border. *Clarkia* species and cultivars are also good for cut flowers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained, slightly acid soil in sun or partial shade. Very fertile soil encourages growth of foliage at the expense of flowers. They dislike hot, humid conditions.

• **PROPAGATION** Sow seed *in situ* in autumn or early spring. Protect autumn-sown seedlings with cloches over winter, and avoid transplanting.

• **PESTS AND DISEASES** Susceptible to foot, root, and stem rot.

*C. amoena*, syn. *Godetia amoena*, *G. grandiflora* (Satin flower). Erect annual with lance-shaped, sometimes toothed leaves, to 6cm (2½in) long. Fluted, single or double, lilac to reddish pink flowers, 5cm (2in) across, are borne in raceme-like clusters at the tips of long, leafy shoots in summer. ↑ to 75cm (30in), ↔ 30cm (12in). USA (California). \*\*\*. Cultivars of **Grace Series** have single, lavender-pink, red, salmon-pink, or pink flowers with contrasting centres; ↑ to 50cm (20in). **Satin Series** cultivars are dwarf and bushy, with single flowers in various colours, many with white margins or contrasting centres; ↑ to 20cm (8in). **'Sybil Sherwood'** has single, salmon-pink flowers, fading to white at the margins; ↑ to 45cm (18in).



Clarkia amoena 'Sybil Sherwood'



Clarkia breweri 'Pink Ribbons'

*C. breweri* 'Pink Ribbons' [ ] syn. *Eucharidium breweri* 'Pink Ribbons'. Erect to spreading annual bearing lance-shaped to linear, sometimes toothed leaves, to 5cm (2in) long. Scented, purplish pink flowers, to 5cm (2in) across, with 3-lobed, ribbon-like petals, are borne in raceme-like clusters at the tips of leafy shoots in summer. ↑ to 30cm (12in), ↔ to 23cm (9in). USA (California). \*\*\*

*C. elegans* see *C. unguiculata*.

*C. unguiculata*, syn. *C. elegans*. Erect annual with lance-shaped, elliptic, or ovate leaves. In summer, bears solitary, lavender- to salmon-pink, purplish red, or dark red-purple, rarely white flowers, 1.5–4cm (½–1½in) across, from the upper leaf axils. ↑ 30–100cm (12–39in), ↔ 20cm (8in). USA (California).

\*\*\*. **Royal Bouquet Series** cultivars produce racemes, to 30cm (12in) long, resembling small hollyhocks, of evenly spaced, frilly, double, pink, red, or mauve flowers, to 5cm (2in) across, sometimes darker or paler at the bases; ↑ to 90cm (36in), ↔ to 30cm (12in).

▷ **Clary,**

**Annual** see *Salvia viridis*

**Biennial** see *Salvia sclarea*

**Meadow** see *Salvia pratensis*

## CLAYTONIA

Purslane, Spring beauty

PORTULACACEAE

Genus of about 15 species of deciduous and evergreen, succulent perennials and some annuals or short-lived perennials. They occur mainly in mountainous areas, often in scree, in Australasia and W. North America. They have rosettes of fleshy, stalked basal leaves, and opposite, stalkless, often stem-clasping upper leaves. Small, 5-petalled, cup- or bowl-shaped, pink or white flowers are borne in terminal racemes in summer. Grow in an alpine house or a scree bed.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in gritty, humus-rich, sharply drained soil in full sun. Protect from excessive winter wet.

• **PROPAGATION** Sow seed in containers in an open frame in autumn.

• **PESTS AND DISEASES** Aphids may be a problem under glass.

*C. megarhiza* var. *nivalis* [ ] syn.

*Calandrinia megarhiza* var. *nivalis*.

Short-lived, tap-rooted, evergreen perennial with spoon-shaped, fleshy,



Claytonia megarhiza var. nivalis

grey-green or deep green basal leaves, to 15cm (6in) long, and smaller, inversely lance-shaped to linear upper leaves. In early summer, shallowly cup-shaped, deep rose-pink flowers, 2–3cm (¾–1¼in) across, occasionally suffused yellow, are produced in dense racemes on short, branching stems. ↑ to 5cm (2in), ↔ to 15cm (6in). USA (Rocky Mountains). \*\*\*

## CLEISTOCACTUS

CACTACEAE

Genus of about 50 species of columnar, perennial cacti from mountainous areas, to 3,000m (10,000ft), in Peru, Bolivia, Paraguay, Argentina, and Uruguay, with cylindrical, fleshy stems bearing rounded ribs and dense spines. As they reach maturity (some in only 3–4 years), many species branch from the base and produce tubular, diurnal flowers. In frost-prone areas, grow in a warm greenhouse. In warmer climates, grow in a border with other cacti and succulents.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light and with low humidity. In the growing season, water freely and apply a half-strength balanced liquid fertilizer every 5–6 weeks. Keep completely dry from mid-autumn to spring. Outdoors, grow in sharply drained, low fertility, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring or summer. Root stem cuttings in early summer.

• **PESTS AND DISEASES** Mealybugs and root rot may be a problem.

*C. brookei*, syn. *C. wendlandiorum*.

Semi-erect or spreading cactus with 22- to 25-ribbed, mid-green stems, 4–6cm (1½–2½in) thick, densely covered with bristle-like, slightly yellowish or greyish white spines. Red or orange flowers, 5cm (2in) long, are borne in summer. ↑ 65cm (26in), ↔ indefinite. Bolivia. (min. 10°C/50°F)

*C. hyalacanthus* [ ] syn. *C. jujuensis*.

Erect cactus branching freely from the base. Greyish green stems, 4–6cm (1½–2½in) thick, have 17–25 ribs and are covered with bristle-like, hairy, brownish yellow or yellowish white spines. Bears pale red flowers, to 4cm (1½in) long, in summer. ↑ 1m (3ft) or more, ↔ 60cm (24in) or more. Bolivia, N.W. Argentina. (min. 10°C/50°F)

*C. jujuensis* see *C. hyalacanthus*.



Cleistocactus hyalacanthus

*C. smaragdiflorus*. Erect, then decumbent cactus with 12- to 16-ribbed, mid-green stems, 4–6cm (1½–2½in) thick. Closely set areoles bear long, bristly, pale to dark brown spines. Green-tipped red flowers, to 5cm (2in) long, are produced in summer. ↑ 2m (6ft), ↔ indefinite. Bolivia, Paraguay, Argentina, Uruguay. (min. 10°C/50°F)

*C. strausii* [ ] (Silver torch). Erect cactus branching freely from the base. Light green stems, 4–8cm (1½–3in) thick, have about 25 ribs with densely arranged, bristle-like, snow-white spines. Bears carmine-red flowers, 8–9cm (3–3½in) long, in summer. ↑ 1m (3ft) or more. Bolivia. (min. 10°C/50°F)

*C. wendlandiorum* see *C. brookei*.



Cleistocactus strausii

# CLEMATIS syn. ATRAGENE

Old man's beard, Traveller's joy,  
Virgin's bower

RANUNCULACEAE

Genus of more than 200 species of evergreen or deciduous, mainly semi-woody to woody, twining leaf-climbers and woody-based herbaceous perennials from the N. and S. hemispheres, including Europe, the Himalayas, China, Australasia, North America, and Central America. More than 400 mainly large-flowered cultivars are in cultivation. Due to the diversity of the species – which include short-growing herbaceous perennials, scandent or trailing shrubs, and climbers reaching 10–15m (30–50ft) in height – habit and leaf form vary greatly. The opposite, occasionally alternate, hairy to hairless leaves are simple, 3-palmate, or pinnate or 2-pinnate, with entire to irregularly cut margins. Climbing species attach to host plants or supporting structures by means of their leaf-stalks. More specific leaf information is given in the group descriptions below. The mostly bisexual, rarely unisexual flowers are borne singly or in cymes or panicles. They have 4–10 sepals (often referred to as petals) and vary greatly in shape and size (see panel below). Clematis are grown for their abundant flowers, often followed by decorative, filamentous, silvery grey seed heads. Some, such as *C. recta*, are scented. Use climbing species to clothe a wall, arbour, trellis, or pergola; they can also be grown over large shrubs or small trees. Grow herbaceous species in a mixed or herbaceous border.

For ease of reference, clematis may be divided into the following 3 groups, based on their cultivation requirements:

## Group 1

**Early-flowering species** – bear flowers on the previous year's shoots in winter and early spring. They prefer a sheltered, sunny site with well-drained soil. Mid-green leaves are evergreen and glossy, or deciduous, usually divided into 3 leaflets, and either lance-shaped, to 12cm (5in) long, or simple, oblong, and fern-like, 5cm (2in) long. Flowers are single and either bell-shaped or open bell-shaped, 2–5cm (¾–2in) long, or saucer-shaped, 4–5cm (1½–2in) across. Fully hardy to frost hardy.

*C. alpina*, *C. macropetala*, and their cultivars – bear flowers on the previous year's shoots in spring and occasionally on new growth in summer. *C. alpina* and its variants are ideal for very cold, exposed sites. They are deciduous, having pale to mid-green leaves, 3–5cm (1¼–2in) long, with 3–5 lance-shaped to broadly oblong, toothed leaflets. Single, semi-double, or double, bell-shaped to open bell-shaped flowers, 3–7cm (1¼–3in) across, are followed by attractive seed heads from summer to autumn. Fully hardy to frost hardy.

*C. montana* and its cultivars – bear flowers on the previous year's ripened shoots in late spring. They are very vigorous, deciduous climbers, useful for clothing a large tree or building. Mid-to purplish green leaves, 5–8cm (2–3in) long, have 3 lance-shaped leaflets with pointed tips. Flowers are almost flat to saucer-shaped, and usually single, 5–7cm (2–3in) across. Fully hardy.

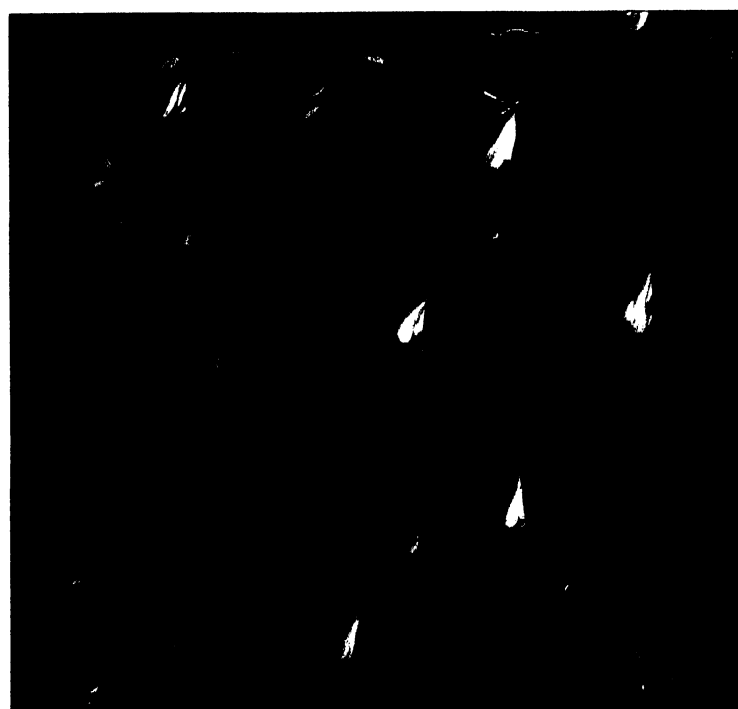
## Group 2

**Early- to mid-season, large-flowered cultivars** – bear flowers in late spring and early summer on sideshoots arising from the previous year's growth, and in mid- and late summer at the tips of the current year's shoots. They are deciduous with pale to mid-green leaves, usually 10–15cm (4–6in) long and divided into 3 ovate or lance-shaped leaflets, or simple and ovate, to 10cm (4in) long. Flowers are upright, single, semi-double, or fully double, and mostly saucer-shaped, 10–20cm (4–8in) across. Fully hardy to frost hardy; severe winters may damage early top growth.

## Group 3

**Late, large-flowered cultivars** – bear flowers on the current year's shoots in summer and early autumn. They are deciduous with pale to mid-green leaves, mostly 10–15cm (4–6in) long with 3 ovate or lance-shaped leaflets, or simple and ovate, to 10cm (4in) long. Flowers are single, outward-facing, and usually saucer-shaped, 7–15cm (3–6in) across. Fully hardy.

**Late-flowering species and small-flowered cultivars** – flower on the current year's shoots from summer to late autumn. They are generally deciduous with pale to dark green or grey-green leaves, 2–15cm (¾–6in) long, either pinnate or 2-pinnate, with lance-shaped leaflets, or simple and lance-shaped. Blooms are single or



*Clematis alpina*

double, and saucer-shaped, star-shaped, bell-shaped, open bell-shaped, tulip-shaped, or tubular, 1–10cm (½–4in) across. Fully hardy to half hardy.

**Herbaceous species and cultivars** – bear flowers on the current year's shoots from midsummer to late autumn. They are suitable for a mixed border with perennials. The leaves are mid- to dark green or greyish green, either simple and lance-shaped to ovate or heart-shaped, 2.5–15cm (1–6in) long, some with toothed margins, or 2.5–8cm (1–3in) long with 3–5 lance-shaped to ovate leaflets. Single flowers are either saucer-shaped, 1–2cm (½–¾in) across, or bell-shaped or tubular, 1–4cm (½–1½in) long. Fully hardy to frost hardy.

• **HARDINESS** Fully hardy to half hardy. See also group descriptions above.

• **CULTIVATION** Grow in fertile, humus-rich, well-drained soil in sun or partial shade, with the roots and base of the plant in shade. Herbaceous species prefer full sun. Mulch all clematis in late winter with garden compost or well-rotted manure, avoiding the immediate

crown. Plant climbing clematis with the top of the root ball about 8cm (3in) below the soil surface, to reduce risk of clematis wilt and encourage production of strong shoots from below soil level. After planting, cut back top growth of deciduous climbers to a strong pair of buds about 30cm (12in) above soil level. Provide strong support and tie in initially until plants begin to climb by themselves. Support herbaceous species and cultivars with twiggy brushwood.

Prune Group 1 clematis after flowering, removing dead or damaged stems and shortening others to their allotted space. This encourages production of new growth to flower in the following season. For Group 2 clematis, remove dead and damaged stems before growth begins in early spring, trimming all remaining stems back to where strong buds are visible. These buds provide a framework of second-year shoots which, in turn, produce sideshoots that flower in late spring and early summer. The flowers may then be removed. Young shoots bear more flowers later in the summer. For Group 3 clematis, cut back all the previous year's stems to a pair of strong buds, 15–20cm (6–8in) above soil level, before growth begins in early spring.

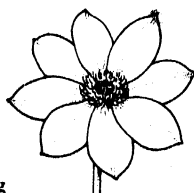
• **PROPAGATION** Sow seed of species as soon as ripe in containers in a cold frame. Divide or take basal cuttings of herbaceous species in spring. Root soft-wood cuttings in spring, or semi-ripe cuttings in early summer. Layer in late winter or early spring.

• **PESTS AND DISEASES** Clematis wilt may be a problem. Cutworms and voles may cut young stems. Aphids may attack young plants. Whiteflies may be a problem under glass.

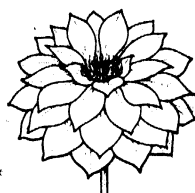
**C. 'Abundance'** ■ syn. *C. viticella* 'Abundance'. (Group 3) Late, small-flowered climber with light green leaves. From midsummer to late autumn, bears open bell-shaped, single, 4-sepalled, wine-red flowers, 6cm (2½in) across,

## CLEMATIS FLOWERS

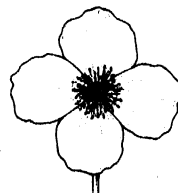
Clematis are valued for their long flowering period, and for the variety of shape and colour of their flowers. These also vary greatly in size, from 1–2cm (½–¾in) across in herbaceous and early-flowering species, to 20cm (8in) across in large-flowered cultivars.



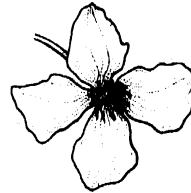
SINGLE, LARGE-FLOWERED



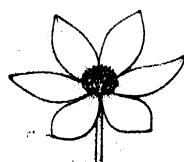
DOUBLE, LARGE-FLOWERED



*C. MONTANA*



*C. VITICELLA*



SAUCER-SHAPED



STAR-SHAPED



OPEN BELL-SHAPED



BELL-SHAPED



TULIP-SHAPED



TUBULAR





*Clematis* 'Ascotiensis'

with cream anthers. ‡3m (10ft), ↔1m (3ft). \*\*\*

**C. 'Alba Luxurians'** [♀] syn. *C. viticella* 'Alba Luxurians'. (Group 3) Late, small-flowered climber with slightly grey-green foliage. From mid-summer to late autumn, bears open bell-shaped, single flowers, 5–7cm (2–3in) across, with 4–6 green-tipped white sepals, sometimes faintly mauve-tinged when young, and small black anthers. ‡4m (12ft), ↔1.5m (5ft). \*\*\*

**C. alpina** [♀] (Alpine clematis). (Group 1) Early-flowering climber. Bears solitary, usually single, open bell-shaped blue flowers, 4–7cm (1½–3in) across, with white centres, from spring to early summer (occasionally also in mid- and late summer), followed by fluffy seed heads from late summer to autumn. ‡2–3m (6–10ft), ↔1.5m (5ft). Europe. \*\*\*

**'Constance'** has semi-double, deep purplish pink flowers. **'Frances Ravis'** ♀ has slightly twisted, mid-blue flowers. **'Frankie'** has light to mid-blue flowers with cream petaloid stamens tipped pale blue. **'Helsingborg'** bears flowers with pointed, deep blue-purple sepals and light brown-purple petaloid stamens. **'Pamela Jackman'** has deep blue flowers with blue and cream anthers. **'Pink Flamingo'** is free-flowering, and has semi-double, pale pink flowers with veins darkening towards the bases, and cream anthers. **'Willy'** has pale pink flowers, the sepals darkening towards the bases, deeper pink undersides, and cream anthers.

**C. armandii** [♀] (Group 1) Vigorous, evergreen, early-flowering climber bearing saucer-shaped, scented white flowers, 5cm (2in) across, with cream anthers, in axillary cymes in early spring. ‡3–5m (10–15ft), ↔2–3m (6–10ft). China. \*\*

**'Apple Blossom'** has pink-tinged white flowers, with deeper pink undersides, fading to pinkish white, 4–6cm (1½–2in) across.

**C. 'Asao'**. (Group 2) Compact, early, large-flowered climber producing single, creamy pink flowers, 10–13cm (4–5in) across, with deep pink sepal margins and yellow anthers, in late spring. Prefers partial shade. ‡2m (6ft), ↔1m (3ft). \*\*\*

**C. 'Ascotiensis'** [♀] (Group 3) Vigorous, late, small- to large-flowered climber. Bears single, bright violet-blue flowers, 9–12cm (3½–5in) across, with pointed sepals and brownish green anthers, in summer. ‡3–4m (10–12ft), ↔1m (3ft). \*\*\*

**C. 'Barbara Dibley'**. (Group 2) Early, large-flowered climber bearing single, petunia-red flowers, 13–18cm (5–7in) across, with a darker central bar, pointed sepals, and red anthers, from early to late summer. The spring flowers are larger and darker in colour. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Barbara Jackman'**. (Group 2) Early, large-flowered climber bearing single, mauve-blue flowers, 10cm (4in) across, with a magenta central band on each sepal and creamy yellow anthers, in summer. Fades in full sun. ‡2.5–3m (8–10ft), ↔1m (3ft). \*\*\*

**C. 'Beauty of Worcester'** [♀] (Group 2) Early, large-flowered climber producing deep blue flowers, 12–16cm (5–6in) across, with creamy white anthers. Double flowers are produced in late spring; summer flowers are smaller and single. ‡2.5m (8ft), ↔1m (3ft). \*\*

**C. 'Bees' Jubilee'** [♀] (Group 2) Compact, early, large-flowered climber flowering freely in late spring and early summer. Single flowers, 10–12cm (4–5in) across, are deep pink, fading with age, with a darker central band on each sepal and light brown anthers. Prefers partial shade. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Belle of Woking'**. (Group 2) Early, large-flowered climber producing double, bluish white flowers, 8–12cm (3–5in) across, with cream anthers and sometimes green outer sepals, from late spring to late summer. Prefers full sun. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Betty Corning'**, syn. *C. viticella* 'Betty Corning'. (Group 3) Late, small-flowered climber producing bell-shaped, slightly scented, single, pale lilac flowers, 5cm (2in) long, with recurved tips and cream anthers, from midsummer to late autumn. ‡2m (6ft), ↔1m (3ft). \*\*\*

**C. 'Bill MacKenzie'** [♀] syn. *C. orientalis* 'Bill MacKenzie'. (Group 3) Vigorous, late, small-flowered climber (thought to be a hybrid between *C. orientalis* and *C. tangutica*). From mid-summer to late autumn, bears abundant open bell-shaped, single yellow flowers, 8cm (3in) across, with red anthers, followed by large, fluffy seed heads. ‡7m (22ft), ↔2–3m (6–10ft). \*\*\*

**C. calycina** see *C. cirrhosa*. **C. 'Cardinal Wyszynski'** see *C. 'Kardynal Wyszynski'*.

**C. 'Carnaby'** [♀] (Group 2) Compact, early, large-flowered climber. Single, mid- to dark pink flowers, 8–10cm (3–4in) across, with a darker central band on each sepal and red anthers, are borne in summer. From late summer to autumn, flowers have lighter bases and darker central bands. Fades in full sun. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. x cartmanii 'Joe'** (*C. marmoraria* x *C. ternifolia*). (Group 1) Bushy, trailing or low-climbing, evergreen shrub with purple-tinted branches bearing finely dissected, 2-ternate, leathery, deep green leaves, to 6cm (2½in) long. Cyme-like panicles of shallowly cup-shaped, pure white, male flowers, 3–4cm (1¼–1½in) across, with white anthers, are borne in early spring. Grow in a cold greenhouse or sheltered garden. ‡ to 1.5m (5ft) or more, if climbing. ‡ to 20cm (8in), ↔ to 50cm (20in), if allowed to spread. \*\*

**C. cirrhosa** [♀] syn. *C. calycina*. (Group 1) Evergreen, early-flowering climber with leaves slightly bronze

beneath. Produces open cup-shaped cream flowers, to 6cm (2½in) long, sometimes red-flecked, either singly or in clusters, in late winter and early spring, followed by attractive seed heads. ‡2.5–3m (8–10ft), ↔1.5m (5ft). Europe. \*\*

**var. balearica** has fragrant, pale cream flowers, speckled reddish brown; Balearic Islands.

**'Freckles'** ♀ has creamy pink flowers, heavily speckled red inside.

**C. 'Comtesse de Bouchaud'** [♀] (Group 3) Strong-growing, late, large-flowered climber bearing single, bright mauve-pink flowers, 8–10cm (3–4in) across, with pale yellow anthers, in summer. ‡2–3m (6–10ft), ↔1m (3ft). \*\*\*

**C. 'Corona'**. (Group 2) Compact, early, large-flowered climber bearing single, light purplish pink flowers, 10–12cm (4–5in) across, with red anthers, in late spring and early summer. ‡2m (6ft), ↔1m (3ft). \*\*\*

**C. 'Countess of Lovelace'**. (Group 2) Early, large-flowered climber producing double, bluish lilac flowers, 10cm (4in) across, with cream anthers, in early summer. Single flowers, with pointed sepals, are borne on new shoots in late summer. ‡2m (6ft), ↔1m (3ft). \*\*\*

**C. crispa**. (Group 3) Deciduous, late-flowering climber. In summer, bears solitary, bell-shaped, single, lavender-blue flowers, 4–5cm (1½–2in) across,

with white margins and recurved tips to the sepals, and cream anthers. ‡2.5m (8ft), ↔1m (3ft). S.E. USA. \*\*\*

**C. dioscoreifolia** see *C. ternifolia*.

**C. 'Dr. Ruppel'** [♀] (Group 2) Early, large-flowered climber. Single flowers, 10–15cm (4–6in) across, with deep rose-pink sepals with darker central bands and light chocolate anthers, are freely produced throughout summer. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Duchess of Albany'** [♀] syn. *C. texensis* 'Duchess of Albany'. (Group 3) Deciduous, late, small-flowered climber. From midsummer to autumn, bears tulip-shaped, deep pink flowers, 5cm (2in) long, with slightly darker central bands inside. ‡2.5m (8ft), ↔1.5m (5ft). \*\*\*

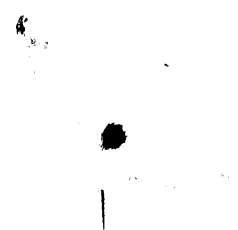
**C. x durandii** ♀ (Group 3) Non-clinging, late-flowering, semi-climbing perennial. Solitary, saucer-shaped, single, deep indigo-blue flowers, 6–8cm (2½–3in) across, with distinctive, golden yellow anthers, are produced in summer. Requires staking. ‡1–2m (3–6ft), ↔1m (3ft). \*\*

**C. 'Edomurasaki'**. (Group 2) Vigorous, mid-season, large-flowered climber. In summer, bears single, dark violet-blue flowers, 12–15cm (5–6in) across, with deep red anthers. ‡3m (10ft), ↔1m (3ft). \*\*

**C. 'Elsa Späth'** [♀] syn. *C. 'Xerxes'*. (Group 2) Early, large-flowered climber



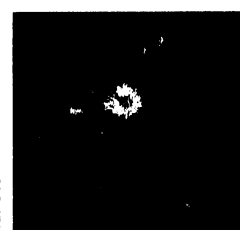
*Clematis* 'Abundance'



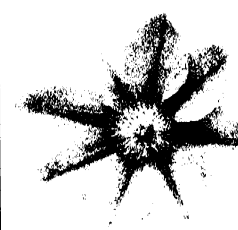
*Clematis* 'Alba Luxurians'



*Clematis armandii*



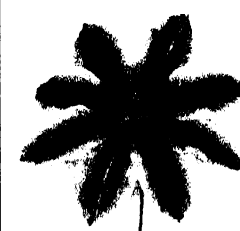
*Clematis* 'Beauty of Worcester'



*Clematis* 'Bees' Jubilee'



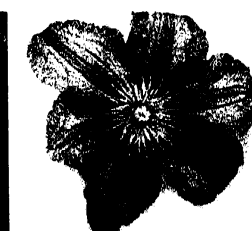
*Clematis* 'Bill MacKenzie'



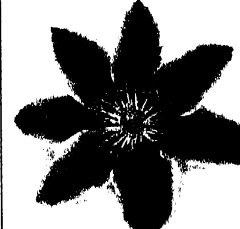
*Clematis* 'Carnaby'



*Clematis cirrhosa*



*Clematis* 'Comtesse de Bouchaud'



*Clematis* 'Dr. Ruppel'



*Clematis* 'Duchess of Albany'



*Clematis* 'Elsa Späth'

C

C



*Clematis* 'Etoile Rose'



*Clematis florida* 'Sieboldii'



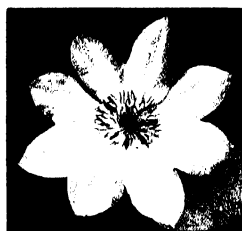
*Clematis* 'Gillian Blades'



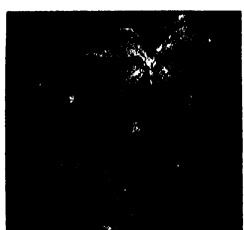
*Clematis* 'Gravetye Beauty'



*Clematis* 'Hagley Hybrid'



*Clematis* 'Henry'



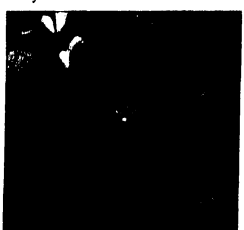
*Clematis heracleifolia* 'Wyevalle'



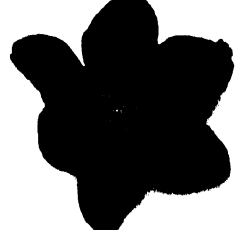
*Clematis* 'Huldine'



*Clematis integrifolia*



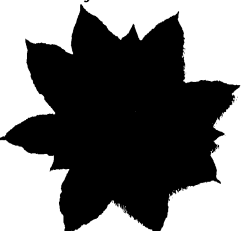
*Clematis* 'Jackmanii'



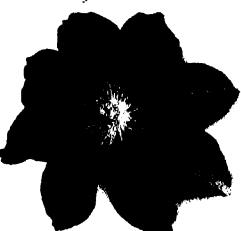
*Clematis* 'Jackmanii Rubra'



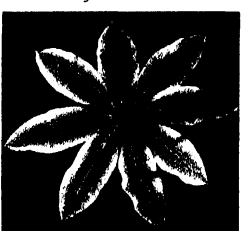
*Clematis* 'John Warren'



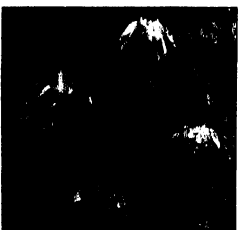
*Clematis* 'Kathleen Dunford'



*Clematis* 'Lasurtern'



*Clematis* 'Lincoln Star'



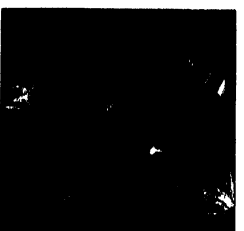
*Clematis macropetala*



*Clematis* 'Minuet'



*Clematis* 'Mme Edouard André'



*Clematis* 'Mme Julia Correvon'



*Clematis montana*



*Clematis montana* f. *grandiflora*

bearing single flowers, 12–16cm (5–6in) across, with overlapping, rich mauve-blue sepals and red anthers, from late spring to summer. ‡2–3m (6–10ft), ↔1m (3ft). \*\*\*

**C. x aristemon.** (Group 3) Late, small-flowered, woody-based, scandent climber. In summer and autumn, bears abundant solitary (sometimes 2 or 3), bell-shaped flowers, 8cm (3in) long, with very deep indigo-blue sepals, recurved at the tips, and creamy yellow anthers. ‡2.5m (9ft), ↔1m (3ft).

Garden origin. \*\*\* **'Hendersonii'** has violet-blue sepals; ‡2–5m (6–15ft).

**C. 'Ernest Markham'** ♀ (Group 3) Vigorous, late, small- to large-flowered climber. In summer, bears abundant, rich, vivid magenta flowers, 10cm (4in) across, with blunt-tipped sepals and light chocolate anthers. Prefers full sun. ‡3–4m (10–12ft), ↔1m (3ft). \*\*\*

**C. 'Etoile Rose'** ♂ syn. *C. texensis* 'Etoile Rose'. (Group 3) Late, small-flowered climber. From midsummer to autumn, bears numerous nodding, open bell-shaped, deep rose-pink flowers, 5cm (2in) across, with recurved tips, in clusters. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Etoile Violette'** ♂♀ syn. *C. viticella* 'Etoile Violette'. (Group 3) Late, small-flowered climber freely producing single, nodding, saucer-shaped, violet-purple flowers, 7cm (3in) across, with contrasting yellow anthers, from midsummer to late autumn. ‡3–5m (10–15ft), ↔1.5m (5ft). \*\*\*

**C. x fargesoides 'Paul Farges'** ♂ syn. *C. 'Summer Snow'*. (Group 3) Very vigorous, late, small-flowered climber. Star-shaped flowers, 4cm (1½in) across, with white sepals and anthers, are borne from midsummer to autumn. ‡7–9m (21–28ft), ↔3m (10ft). \*\*\*

**C. flammula.** (Group 3) Semi-evergreen or deciduous, late-flowering climber. Star-shaped, heavily scented white flowers, 3cm (1¼in) across, with cream anthers, are freely produced in panicle-like cymes from midsummer to autumn. Foliage is sometimes glaucous. Prefers a well-drained, sheltered, sunny site. ‡6m (20ft), ↔1m (3ft). S. Europe, N. Africa, W. Syria, Turkey. \*\*\*

**C. florida.** (Group 2) Deciduous or semi-evergreen, mid-season to late-flowering, large-flowered climber. Bears single, white or creamy white flowers, to 14cm (5½in) across, singly or in cymes in late spring or summer. ‡to 4m (12ft), ↔1m (3ft). E. China, Japan. \*\*\* **var. bicolor** see 'Sieboldii'. **'Flore Pleno'** has fully double, greenish white flowers, to 12cm (5in) across. **'Sieboldii'** ♂ syn. **var. bicolor**, has single flowers, 7–10cm (3–4in) across, with creamy white sepals and large, domed bosses of rich purple stamens. Weak-growing; ‡2–2.5m (6–8ft).

**C. 'General Sikorski'** ♀ (Group 2) Vigorous, mid-season, large-flowered climber. In early summer, bears single flowers, 10–15cm (4–6in) across, with overlapping blue sepals and creamy anthers. ‡3m (10ft), ↔1m (3ft). \*\*\*

**C. 'Gillian Blades'** ♂♀ (Group 2) Early, large-flowered climber. Single white flowers, 12–16cm (5–6in) across, with overlapping, wavy-margined sepals and cream anthers, appear in summer. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Gipsy Queen'** ♀ (Group 3) Vigorous, late, large-flowered climber.

Single flowers, 10–12cm (4–5in) across, with overlapping, velvety, violet-purple sepals and deep red anthers, are borne in summer. ‡3m (10ft), ↔1m (3ft).

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**C. 'Gravetye Beauty'** ♂ syn. *C. texensis* 'Gravetye Beauty'. (Group 3) Late, small-flowered climber bearing tulip-shaped, rich crimson-red flowers, 5cm (2in) long, with paler bands outside, from midsummer to autumn. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Guernsey Cream'**. (Group 2) Early, large-flowered climber bearing single flowers, 12cm (5in) across, with creamy yellow sepals and anthers, in early summer. Flowers are smaller and creamy white in late summer. Fades in full sun. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Hagley Hybrid'** ♂ (Group 3) Vigorous, compact, late, large-flowered climber. Single flowers, 8–10cm (3–4in) across, with boat-shaped, pinkish mauve sepals and red anthers, are produced in summer. Fades in full sun. ‡2m (6ft), ↔1m (3ft). \*\*\*

**C. 'Henry'** ♂♀ (Group 2) Vigorous, mid-season, large-flowered climber. Single flowers, 16–20cm (6–8in) across, with pointed, creamy white sepals and dark chocolate anthers, are produced in summer. ‡3m (10ft), ↔1m (3ft).

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**C. heracleifolia 'Wyevalle'** ♂ (Group 3) Woody-based perennial of open habit with toothed, deeply 3-lobed, light green leaves, 10–15cm (4–6in) long. Scented, tubular, light to mid-blue flowers, 4cm (1¼in) long, are produced in whorled racemes in summer. Needs support. ‡75cm (30in), ↔1m (3ft). \*\*\*

**C. 'H.F. Young'** ♂♀ (Group 2) Very free-flowering, compact, early, large-flowered climber. Bears single, warm blue flowers, 10cm (4in) across, with overlapping, violet-tinged sepals and cream anthers, in early summer. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Horn of Plenty'** ♀ (Group 2) Compact, early, large-flowered climber. Rounded, single flowers, 12cm (5in) across, with lilac-mauve sepals fading to mauve-blue, and dark red anthers, are borne in early summer. ‡2.5m (8ft), ↔1m (3ft). \*\*\*

**C. 'Huldine'** ♂ (Group 3) Very vigorous, late, small-flowered climber bearing cup-shaped white flowers, 6cm (2½in) across, mauve beneath, with short creamy anthers, in summer. ‡3–5m (10–15ft), ↔2m (6ft). \*\*\*



*Clematis* 'Etoile Violette'



*Clematis x fargesoides* 'Paul Farges' (inset: flower detail)

**C. integrifolia** (Group 3) Herbaceous perennial with usually simple, inversely lance-shaped to elliptic leaves. Solitary, bell-shaped, mid-blue flowers, 5cm (2in) long, with 4 slightly twisted sepals and cream anthers, are borne in summer, followed by silvery brown seed heads.  $\uparrow$  60cm (24in). C. Europe. \*\*\*

**C. 'Jackmanii'** (Group 3) Late, large-flowered climber. In mid- and late summer, bears abundant single, velvety, dark purple flowers, 8–10cm (3–4in) across, with light greenish brown anthers.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Jackmanii Alba'** (Group 2) Vigorous, early, large-flowered climber. In early summer, bears semi-double flowers, 15cm (6in) across, with blue-tinged, milk-white, pointed sepals (and occasionally bluish grey-green outer sepals), and light chocolate anthers. Late-summer flowers are single and off-white.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Jackmanii Rubra'** (Group 2) Early, large-flowered climber bearing semi-double flowers, 12cm (5in) across, with crimson-purple sepals and yellow anthers, in early summer, and single flowers in mid- and late summer.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Jan Pawel II'**, syn. *C. 'John Paul II'*. (Group 3) Late, large-flowered climber. In summer, bears single, pink-tinged, off-white flowers, 8–10cm (3–4in) across, with red anthers. In late summer, each sepal has a central pink band.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'John Paul II'** see *C. 'Jan Pawel II'*.

**C. 'John Warren'** (Group 2) Early, large-flowered climber. In early summer bears single flowers, 15–18cm (6–7in) across, with pointed, overlapping, pinkish grey sepals, with deep carmine-red veins and margins, and red anthers.  $\uparrow$  2.5–3m (8–10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Kakio'**, syn. *C. 'Pink Champagne'*. (Group 2) Compact, free-flowering, early, large-flowered climber. In early summer, bears rounded, single, purplish pink flowers, 10–15cm (4–6in) across,

paler near the sepal centres, with yellow anthers.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Kardynal Wyszynski'**, syn. *C. 'Cardinal Wyszynski'*. (Group 3) Free-flowering, late, large-flowered climber bearing single crimson flowers, 8–10cm (3–4in) across, with dark blackish red anthers, in summer.  $\uparrow$  2–3m (6–10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Kathleen Dunford'** (Group 2) Early, large-flowered climber bearing single or semi-double mauve flowers, 12cm (5in) across, with pointed sepals and red anthers, throughout summer.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Lady Betty Balfour'** (Group 3) Very vigorous, late, large-flowered climber producing single flowers, 12–15cm (5–6in) across, with rich purple sepals fading to purple-blue, and contrasting yellow anthers, in late summer and early autumn. Needs full sun.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Lasurtern'** (Group 2) Early, large-flowered climber bearing single blue flowers, 12–15cm (5–6in) across, with wavy-margined, overlapping sepals and cream anthers, in early summer.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Lincoln Star'** (Group 2) Early, large-flowered climber bearing single flowers, 10–12cm (4–5in) across, with raspberry-pink sepals and red anthers, in early summer. Later summer flowers are much paler, with central bands of pink and pale margins. Fades in full sun.  $\uparrow$  2–2.5m (6–8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Lord Nevill'** (Group 2) Early, large-flowered climber. In early summer, bears single flowers, 10–15cm (4–6in) across, with overlapping, deep blue sepals, minutely scalloped at the margins, and purple-red anthers.  $\uparrow$  2–3m (6–10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. macropetala** (Group 1) Early-flowering, deciduous climber bearing solitary, open bell-shaped, blue or violet-blue flowers, to 10cm (4in) across, from spring to early summer (occasionally from summer to early autumn), followed by silver seed heads.

Flowers appear semi-double, having 4 long sepals with shorter petaloid stamens within: the outer stamens are blue and the inner ones cream.  $\uparrow$  2–3m (6–10ft),  $\leftrightarrow$  1.5m (5ft). Russia (Siberia), Mongolia, China (Gansu). \*\*\*

**'Blue Bird'** has open, semi-nodding, mauve-blue flowers, to 12cm (5in) across. **'Jan Lindmark'** has mauve flowers.

**'Markham's Pink'** (Group 2) has sugar-pink flowers and pale to mid-green foliage. **'Rosy O'Grady'** has open, semi-nodding, pink-mauve flowers, 8cm (3in) across, with white petaloid stamens. **'White Swan'**, syn. *C. 'White Swan'*, is compact with white flowers, to 8cm (3in) across, with cream petaloid stamens;  $\leftrightarrow$  1m (3ft).

**C. 'Marie Boisselot'** (Group 2) Vigorous, mid-season, large-flowered climber. Single flowers, 15–18cm (6–7in) across, with overlapping white sepals and cream anthers, are produced from midsummer to late autumn.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. marmoraria**. (Group 1) Early-flowering, tufted, sometimes suckering, dwarf, spreading shrub with stiff, 3-palmate, glossy, somewhat fern-like, dark green leaves, 1–4cm (1/2–1 1/2in) long. In early and mid-spring, bears a profusion of long-stalked, erect, solitary or clustered, greenish white, unisexual, saucer-shaped flowers, 2.5cm (1in) across; the male flowers are larger and often whiter. Hybridizes freely with *C. x carmanii*. Grow in an alpine house or rock garden.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 25cm (10in). New Zealand (South Island). \*\*\*

**C. maximowicziana** see *C. terniflora*.

**C. 'Minuet'** (Group 3) Late, small-flowered climber bearing open bell-shaped, single white flowers, 5cm (2in) across, with pinkish purple veins and dark anthers, from midsummer to late autumn.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Miss Bateman'** (Group 2) Compact, free-flowering, early, large-flowered climber. Rounded, single white flowers, 8–10cm (3–4in) across, with red anthers, are borne in early summer.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

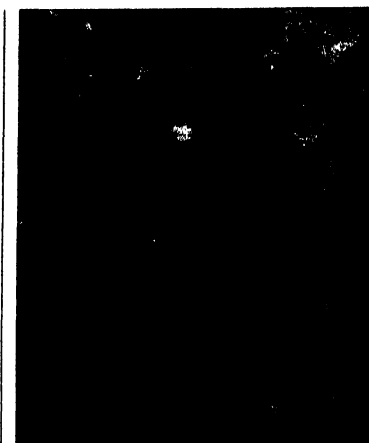
**C. 'Mme Baron Veillard'** (Group 3) Very vigorous, late, large-flowered climber. Single, satin-like, lilac- to rose-pink flowers, 10cm (4in) across, with greenish, light brown anthers, are borne in late summer and early autumn. Needs full sun.  $\uparrow$  3–4m (10–12ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Mme Edouard André'** (Group 3) Late, large-flowered climber freely producing single, deep red flowers, 8–10cm (3–4in) across, with silver undersides, pointed sepals, and yellow anthers, in midsummer.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Mme Grange'** (Group 3) Late, large-flowered climber. Single flowers, 10–13cm (4–5in) across, with boat-shaped, dusky purple sepals, with silver undersides and dark brown anthers, are produced in midsummer. Best against a light background.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**C. 'Mme Julia Correvon'** (Group 3) Late, large-flowered climber. From midsummer to late autumn, produces open bell-shaped, single,

C



*Clematis* 'H.F. Young'

bright wine-red flowers, 7cm (3in) across, with slightly twisted sepals and yellow anthers.  $\uparrow$  3m (10ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**C. 'Mme le Coultre'** see *C. 'Marie Boisselot'*.

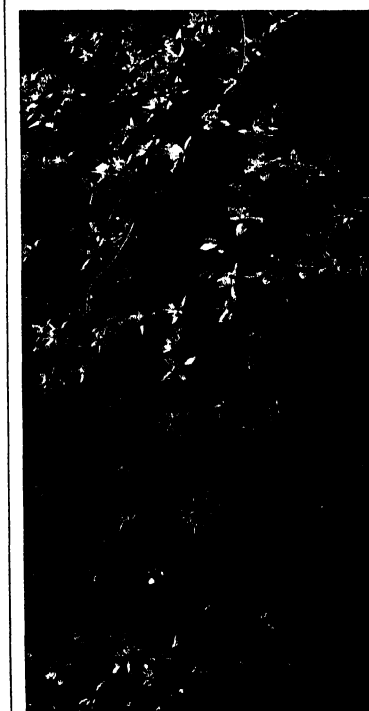
**C. montana** (Group 1) Early-flowering, very vigorous climber. Single white flowers, 5cm (2in) across, with creamy yellow anthers, either solitary or in short cymes, are produced very freely for about 4 weeks in late spring and early summer.  $\uparrow$  5–14m (15–46ft),  $\leftrightarrow$  2–3m (6–10ft). W. and C. China, Himalayas. \*\*\*

**'Alexander'** has large, light green leaves and white flowers, 8–10cm (3–4in) across. Prefers full sun;  $\uparrow$  7m (22ft),  $\leftrightarrow$  3m (10ft).

**'Elizabeth'** has large, purple-flushed, mid-green leaves and strongly scented, pale pink flowers, 7cm (3in) across, with yellow anthers;  $\uparrow$  7m (22ft),  $\leftrightarrow$  3m (10ft). f. **'grandiflora'** (Group 2) syn.

**'Grandiflora'**, is very vigorous, and has dark green leaves and white flowers, 8–10cm (3–4in) across, with cream anthers;  $\uparrow$  10m (30ft),  $\leftrightarrow$  4m (12ft).

**'Pink Perfection'** has purple-flushed, mid-green leaves and rounded, strongly scented pink flowers, 5–7cm (2–3in)



*Clematis macropetala* 'Markham's Pink'

C

across, with yellow anthers; 7m (22ft), 3m (10ft). **var. rubens** ♀ has purple-flushed, mid-green foliage and pink flowers, with cream anthers; 10m (30ft); China. **'Tetrarose'** ♀ has purplish green leaflets, with toothed margins, and produces satin-like pink flowers, 9cm (3½in) across, with large bosses of yellow anthers; 5m (15ft).

**C. 'Mrs. Cholmondeley'** ♀ (Group 2) Early, large-flowered climber bearing single, light lavender-blue flowers, 15–18cm (6–7in) across, with widely spaced sepals and light chocolate anthers, in early summer. 2–3m (6–10ft), 1m (3ft). \*\*\*

**C. 'Mrs. George Jackman'** ♀ (Group 2) Compact, early, large-flowered climber producing semi-double, creamy white flowers, 10cm (4in) across, with light brown anthers, in early summer. 2.5m (8ft), 1m (3ft). \*\*\*

**C. 'Mrs. N. Thompson'** (Group 2) Compact, early, large-flowered climber. Single, deep violet flowers, 10cm (4in) across, with vivid scarlet central bands and red anthers, are freely produced in early summer. 2.5m (8ft), 1m (3ft). \*\*\*

**C. 'Mrs. P.B. Truax'** (Group 2) Compact, early, large-flowered climber. Produces single, periwinkle-blue flowers, 10–12cm (4–5in) across, with

cream anthers, in early summer. 2.5m (8ft), 1m (3ft). \*\*\*

**C. 'Nelly Moser'** ♀ (Group 2) Compact, early, large-flowered climber. Single, pinkish mauve flowers, 12–16cm (5–6in) across, with darker central bands and red anthers, are borne in early summer. Flowers are paler in late summer. Fades in full sun. 2–3m (6–10ft), 1m (3ft). \*\*\*

**C. 'Niobe'** ♀ (Group 2) Compact, early, large-flowered climber. Single, rich deep red flowers, 10–15cm (4–6in) across, with pointed sepals and yellow anthers, are freely borne throughout summer. 2–3m (6–10ft), 1m (3ft). \*\*\*

**C. orientalis 'Bill MacKenzie'** see C. 'Bill MacKenzie'.

**C. orientalis 'Orange Peel'** see C. tibetana subsp. vernayi 'Orange Peel'.

**C. paniculata** see C. terniflora.

**C. 'Perle d'Azur'** ♀ (Group 3) Vigorous, very free-flowering, late, small-flowered climber. Open bell-shaped flowers, 8cm (3in) across, with azure-blue sepals, recurved at the tips, and creamy green anthers, are borne from midsummer to autumn. 3m (10ft), 1m (3ft). \*\*\*

**C. 'Perrin's Pride'** (Group 3) Late, large-flowered climber bearing rounded flowers, 8–10cm (3–4in) across, with rich mauve-purple sepals and greenish

brown anthers, in summer. 2–3m (6–10ft), 1m (3ft). \*\*\*

**C. 'Pink Champagne'** see C. 'Kakio'.

**C. 'Polish Spirit'** ♀ syn. C. viticella 'Polish Spirit'. (Group 3) Late, small-flowered climber with dark green leaves. Saucer-shaped, single, rich purple-blue flowers, 5–8cm (2–3in) across, with red anthers, are freely produced from midsummer to late autumn. 5m (15ft), 2m (6ft). \*\*\*

**C. potaninii var. fargesii** (Group 3) Late-flowering climber. Saucer-shaped white flowers, 5cm (2in) across, with creamy yellow anthers, either solitary or borne in short cymes, are freely produced from midsummer to early autumn. 5m (15ft), 1.4m (4½ft). S.W. China. \*\*\*

**C. 'Proteus'** ♀ (Group 2) Early, large-flowered climber. Double, mauve-pink flowers, 15cm (6in) across, paler towards the centres, with green outer sepals and cream anthers, are produced in early summer. From midsummer, flowers are single and pale mauve. 2.5–3m (8–10ft), 1m (3ft). \*\*\*

**C. 'Purpurea Plena Elegans'** see C. viticella 'Purpurea Plena Elegans'.

**C. 'Ramona'** (Group 2) Vigorous, early, large-flowered climber. Bears single, pale blue flowers, 10–15cm (4–6in) across, with dark red anthers, from midsummer to autumn. Prefers full sun. 3m (10ft), 1m (3ft). \*\*\*

**C. recta** ♀ (Group 3) Late-flowering, clump-forming, herbaceous perennial with grey-green foliage. Terminal panicles of small, star-shaped, heavily scented white flowers, 2cm (¾in) across, with cream anthers, are produced from midsummer to autumn, followed by attractive seed heads. Needs support. 1–2m (3–6ft), 75cm (30in). C. and S. Europe. \*\*\*

**C. rehderiana** ♀ (Group 3) Vigorous, late-flowering climber producing panicles of tubular, cowslip-scented, single yellow flowers, 2cm (¾in) long, with creamy yellow anthers, from midsummer to late autumn. 6–7m (20–22ft), 2–3m (6–10ft). W. China. \*\*\*

**C. 'Richard Pennell'** ♀ (Group 2) Early, large-flowered climber bearing single, rich purple-blue flowers, 10–13cm (4–5in) across, with golden yellow anthers, in early summer. 2–3m (6–10ft), 1m (3ft). \*\*\*

**C. 'Rouge Cardinal'** ♀ (Group 3) Late, large-flowered climber bearing single, glowing velvet-crimson flowers, 10cm (4in) across, with reddish brown anthers, in midsummer. Prefers full sun. 2–3m (6–10ft), 1m (3ft). \*\*\*

**C. 'Royalty'** ♀ (Group 2) Compact, early, large-flowered climber. Bears semi-double, purple-mauve flowers, 10cm (4in) across, with yellow anthers, in early summer, followed by smaller, single flowers from midsummer to autumn. 2m (6ft), 1m (3ft). \*\*\*

**C. 'Royal Velvet'** (Group 2) Compact, free-flowering, early, large-flowered climber. In early and midsummer, produces single flowers, 10–15cm (4–6in) across, with bluish, rich velvet-purple sepals, with darker central bands, and red anthers. 2–2.5m (6–8ft), 1m (3ft). \*\*\*

**C. 'Silver Moon'** ♀ (Group 2) Very compact, early, large-flowered climber.



*Clematis montana* var. *rubens*

In early summer, produces single flowers, 10–15cm (4–6in) across, with overlapping, silver-mauve sepals and cream anthers. 2m (6ft), 1m (3ft). \*\*\*

**C. 'Snow Queen'** (Group 2) Early, large-flowered climber. Single flowers, 15–18cm (6–7in) across, with pointed white sepals, tinged bluish pink, and red anthers, are borne in early summer. Late-summer flowers have hints of pink. 2.5m (8ft), 1m (3ft). \*\*\*

**C. stans** (Group 3) Late-flowering, woody-based climber or herbaceous perennial. From late summer to mid-autumn, produces clusters of tubular, pale blue flowers, 3cm (1¼in) long, with cream anthers. 70cm (28in). Japan. \*\*\*

**C. 'Star of India'** ♀ (Group 3) Vigorous, late, large-flowered climber. Deep purple-blue flowers, 8–10cm (3–4in) across, with deep carmine-red central bands and light brown anthers, are produced in midsummer. 3m (10ft), 1m (3ft). \*\*\*

**C. 'Summer Snow'** see C. x fargesiioides 'Paul Farges'.

**C. 'Sunset'** (Group 3) Late, large-flowered climber bearing single, bright



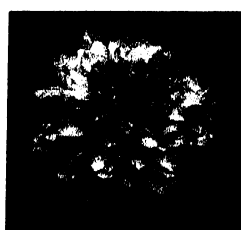
*Clematis* 'Perle d'Azur'



*Clematis montana* 'Tetrarose'



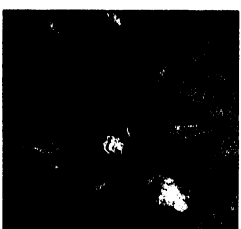
*Clematis* 'Nelly Moser'



*Clematis* 'Proteus'



*Clematis recta*



*Clematis* 'Richard Pennell'



*Clematis* 'Rouge Cardinal'



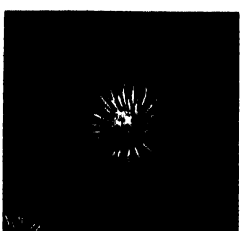
*Clematis* 'Silver Moon'



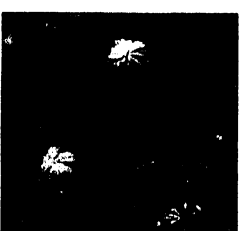
*Clematis* 'The President'



*Clematis* 'Venosa Violacea'



*Clematis* 'Ville de Lyon'



*Clematis viticella* 'Purpurea Plena Elegans'



*Clematis* 'Vyvyan Pennell'



*Clematis rehderiana*

red flowers, 10–12cm (4–5in) across, with yellow anthers, in midsummer. †2.5m (8ft), ↔ 1m (3ft). \*\*\*

**C. 'Sylvia Denny'**. (Group 2) Early, large-flowered climber. Bears semi-double white flowers, 10cm (4in) across, with white anthers, in early summer. In late summer, flowers are single and 8cm (3in) across. †2.5m (8ft), ↔ 1m (3ft). \*\*\*

**C. tangutica** (Group 3) Vigorous, late-flowering climber. Abundant, solitary, bell-shaped yellow flowers, 4cm (1½in) long, are produced from midsummer to late autumn, followed by fluffy seed heads. †5–6m (15–20ft), ↔ 2–3m (6–10ft). W. China. \*\*\*

**C. terniflora**, syn. *C. dioscoreifolia*, *C. maximowicziana*, *C. paniculata*. (Group 3) Deciduous or semi-evergreen, late-flowering climber with deep green leaves, sometimes with silver central bands. Numerous star-shaped white flowers, 2–3cm (¾–1¼in) across, are borne in panicles from late summer to autumn, followed by attractive seed heads. Prefers full sun. †5–6m (15–20ft), ↔ 2–3m (6–10ft). Japan. \*\*\*

**C. texensis**. (Group 3) Late-flowering climber. In summer, bears solitary, bell-shaped, reddish orange or scarlet flowers, 2–2.5cm (¾–1in) across, with thick sepals. †2m (6ft), ↔ 50cm (20in). USA. \*\*\*. Many of the cultivars ascribed to *C. texensis* are of hybrid origin, and are listed here under their cultivar names. **'Duchess of Albany'** see *C. 'Duchess of Albany'*. **'Etoile Rose'** see *C. 'Etoile Rose'*. **'Gravetye Beauty'** see *C. 'Gravetye Beauty'*.



*Clematis tangutica*

**C. 'The President'** (Group 2) Free-flowering, early, large-flowered climber bearing single, rich purple flowers, 10–15cm (4–6in) across, with silver undersides and red anthers, in early summer. †2–3m (6–10ft), ↔ 1m (3ft). \*\*\*

**C. tibetana subsp. vernayi 'Orange Peel'** syn. *C. orientalis 'Orange Peel'*. (Group 3) Vigorous, late, small-flowered climber. Bell-shaped, nodding flowers, 4cm (1½in) long, each with 4 thick yellow sepals and a dark centre, are produced from midsummer. Flowers are followed by attractive seed heads from late summer to winter. Often confused with other selections from the original collection in the wild. †6m (20ft), ↔ 2m (6ft). \*\*\*

**C. 'Venosa Violacea'** (Group 3) Late, small-flowered climber. Single, saucer-shaped, purple-veined white flowers, 8cm (3in) across, with boat-shaped sepals and bluish black anthers, are produced from midsummer to late autumn. †3m (10ft), ↔ 1m (3ft). \*\*\*

**C. 'Veronica's Choice'**. (Group 2) Early, large-flowered climber bearing semi-double, pale lavender-blue and mauve flowers, 10–15cm (4–6in) across, with cream anthers, in early summer. Later flowers are single. †2.5m (8ft), ↔ 1m (3ft). \*\*\*

**C. 'Victoria'**. (Group 3) Vigorous, late, large-flowered climber producing single, pinkish mauve flowers, 10cm (4in) across, with 4–6 sepals and light greenish brown anthers, in midsummer. †3m (10ft), ↔ 1m (3ft). \*\*\*

**C. 'Ville de Lyon'** (Group 3) Late, large-flowered climber. In midsummer, produces bright carmine-red flowers, 10–13cm (4–5in) across, with deeper-coloured sepal margins and yellow anthers. Best grown through an evergreen shrub, as lower foliage becomes scorched by late summer. †2–3m (6–10ft), ↔ 1m (3ft). \*\*\*

**C. 'Vino'**. (Group 2) Early, large-flowered climber. Single, purple-red flowers, 15cm (6in) across, with overlapping sepals and yellow anthers, are produced in early summer. †2–3m (6–10ft), ↔ 1m (3ft). \*\*\*

**C. viticella**. (Group 3) Late, small-flowered, semi-woody climber. Solitary, open bell-shaped, blue, purple, or rose-red flowers, 4cm (1½in) across, with pale yellow anthers, are produced from midsummer to early autumn. †2–4m (6–12ft), ↔ 1.5m (5ft). Central S. Europe. \*\*\*. Many of the cultivars ascribed to *C. viticella* are of hybrid origin, and are listed here under their cultivar names. **'Abundance'** see *C. 'Abundance'*. **'Alba Luxurians'** see *C. 'Alba Luxurians'*. **'Betty Corning'** see *C. 'Betty Corning'*. **'Etoile Violette'** see *C. 'Etoile Violette'*. **'Minuet'** see *C. 'Minuet'*. **'Mme Julia Correvon'** see *C. 'Mme Julia Correvon'*. **'Polish Spirit'** see *C. 'Polish Spirit'*. **'Purpurea Plena Elegans'** (Group 2) syn. *C. 'Purpurea Plena Elegans'*, bears abundant double flowers, 5–8cm (2–3in) across, with many purplish mauve sepals, occasionally green outer sepals, and no anthers, from midsummer to late autumn; †3m (10ft), ↔ 1m (3ft). **'Venosa Violacea'** see *C. 'Venosa Violacea'*.

**C. 'Vyvyan Pennell'** (Group 2) Early, large-flowered climber. In early

summer, bears double lilac flowers, 10–13cm (4–5in) across, with central, lavender-blue rosettes, golden yellow anthers, and occasionally green outer sepals. Midsummer flowers are blue-mauve. †2–3m (6–10ft), ↔ 1m (3ft). \*\*\*

**C. 'Wada's Primrose'**. (Group 2) Early, large-flowered climber bearing single, creamy white flowers, 10–13cm (4–5in) across, with yellow anthers, in early summer. Fades in full sun. †2–2.5m (6–8ft), ↔ 1m (3ft). \*\*\*

**C. 'Warsaw Nike'** see *C. 'Warsawska Nike'*.

**C. 'Warsawska Nike'**, syn. *C. 'Warsaw Nike'*. (Group 3) Late, large-flowered climber, freely producing rich velvet-purple flowers, 10cm (4in) across, with yellow anthers, in midsummer. †2–3m (6–10ft), ↔ 1m (3ft). \*\*\*

**C. 'W.E. Gladstone'**. (Group 2) Vigorous, early, large-flowered climber. Single, light blue flowers, 20cm (8in) across, with overlapping sepals and reddish brown anthers, are produced in mid- and late summer. †3m (10ft), ↔ 1m (3ft). \*\*\*

**C. 'White Swan'** see *C. macropetala 'White Swan'*.

**C. 'Will Goodwin'** (Group 2) Early, large-flowered climber with a long flowering period. Bears single, pale blue flowers, 15cm (6in) across, with yellow anthers, from early to late summer. †3m (10ft), ↔ 1m (3ft). \*\*\*

**C. 'William Kennett'**. (Group 2) Early, large-flowered climber. Bears single, pale lavender-blue flowers, 10–12cm (4–5in) across, with dark red anthers, in early summer. Each sepal has a darker central band that fades as the flower matures. †2–3m (6–10ft), ↔ 1m (3ft). \*\*\*

**C. 'Xerxes'** see *C. 'Elsa Späth'*.

▷ **Clematis, Alpine** see *Clematis alpina*

▷ **Clementine** see *Citrus reticulata*

## CLEOME

Spider flower

CAPPARIDACEAE

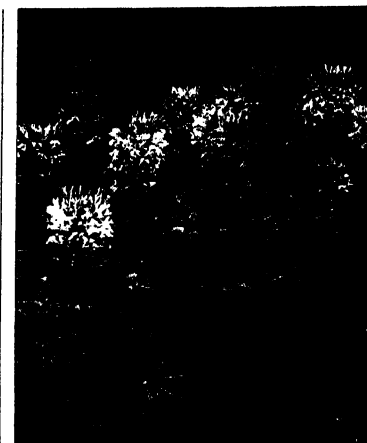
Genus of 150 species of bushy annuals and evergreen shrubs from sandy, free-draining soils on plains and in mountain valleys in tropical and subtropical zones worldwide. Only the annuals are commonly cultivated; they are valued for their terminal racemes of spider-like, 4-petalled flowers, with prominent stamens, which are borne above 3- to 7-palmate leaves. Grow in a summer flower border or as a seasonal filler for a mixed or herbaceous border. Flowers for cutting in summer may also be grown in a cool greenhouse.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer every 3–4 weeks. Outdoors, grow in light, fertile, preferably sandy, free-draining soil in full sun. Dead-head to prolong flowering and water freely in dry weather.

• **PROPAGATION** Sow seed at 18°C (64°F) in spring. Harden off before planting when danger of frost has passed.

• **PESTS AND DISEASES** Aphids may infest young plants. Susceptible to whiteflies under glass.



*Cleome hassleriana 'Colour Fountain'*

**C. hassleriana**, syn. *C. pungens* of gardens, *C. spinosa* of gardens (Spider plant). Erect annual with hairy stems and 5- to 7-palmate, minutely toothed, glandular-hairy leaves, to 12cm (5in) long, with ovate to lance-shaped leaflets and spines at the base of each leaf-stalk. Strongly scented, white to pink or purple flowers, to 3cm (1¼in) across, with oblong to rounded petals, are produced in dense, terminal racemes in summer. † to 1.5m (5ft), ↔ to 45cm (18in). S. Brazil, Paraguay, Argentina, Uruguay. ☼ (min. 4°C/39°F). **'Colour Fountain'** (Group 2) has delicate, narrow-petalled, scented, pink, violet-pink, rose-red, or white flowers, to 10cm (4in) across; † to 1.2m (4ft).

**C. pungens** of gardens see *C. hassleriana*.

**C. spinosa** of gardens see *C. hassleriana*.

## CLERODENDRUM

VERBENACEAE

Genus of about 400 species of deciduous and evergreen trees, shrubs, and climbers, mainly found in woodland in tropical and subtropical regions, particularly in Africa and Asia. They are cultivated for their terminal or axillary cymes, panicles, or corymbs of showy, usually salverform, often fragrant flowers with cylindrical tubes and protruding stamens. The leaves are arranged in whorls or opposite pairs. The shrubs are suitable for a warm border. Train the climbers over a trellis, pergola, or other support. In frost-prone areas, grow half-hardy and frost-tender species in a warm greenhouse or conservatory.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in a border or in large tubs of loam-based potting compost (J1 No.3) in full light, with shade from hot sun and good ventilation in summer. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun. Pruning group 11 for climbers (immediately after flowering); group 1 for deciduous shrubs or trees; group 9 for evergreen shrubs; group 6 for *C. bungei*. Shrubs under glass may need restrictive pruning.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Remove suckers from shrubs or trees in autumn or

*Clerodendrum bungei*

spring. Root semi-ripe cuttings with bottom heat in summer. Insert root cuttings in winter.

• **PESTS AND DISEASES** Mealybugs, red spider mites, and whiteflies may be troublesome under glass.

**C. bungei** [♀] (Glory flower). Deciduous, suckering shrub producing upright shoots and opposite, ovate, toothed, dark green leaves, to 20cm (8in) long, tinged with purple when young. Salverform, very fragrant, dark pink flowers, each with 5 spreading lobes, are borne in rounded, terminal panicles, 12–15cm (5–6in) across, from late summer to autumn. ↑→ 2m (6ft) or more. China. \* \*

**C. fallax** see *C. speciosissimum*.

**C. fragrans** 'Pleniflorum' see *C. philippinum*.

**C. myricoides** 'Ugandense' see *C. ugandense*.

**C. paniculatum** (Pagoda flower). Erect, open, evergreen shrub bearing opposite, ovate, 5-lobed, deep green leaves, 10–15cm (4–6in) long, with heart-shaped bases; the upper leaves are toothed or entire. Salverform, long-tubed scarlet flowers are produced in terminal panicles, to 30cm (12in) long, from summer to autumn. ↑ 1–1.3m (3–4½ft), ↔ 60–90cm (24–36in). S.E. Asia. ♀ (min. 10–13°C/50–55°F)

**C. philippinum**, syn. *C. fragrans* 'Pleniflorum' (Glory bower). Erect, evergreen shrub with angular, downy stems and opposite, broadly ovate, toothed, mid- to deep green leaves, to 25cm (10in) long. Terminal corymbs, 7–10cm (3–4in) across, of many

*Clerodendrum thomsoniae**Clerodendrum trichotomum*

fragrant, salverform, double, pink or white flowers, sometimes blue-tinted, are produced in summer. ↑ 2–3m (6–10ft), ↔ 1.5–2.5m (5–8ft). S. China. ♀ (min. 10–13°C/50–55°F)

**C. speciosissimum**, syn. *C. fallax* (Glory bower, Java glorybean). Erect, open, evergreen shrub with opposite, heart-shaped, corrugated, toothed, rich green leaves, to 30cm (12in) long. Bears tiered, terminal panicles, 20–30cm (8–12in) long, of salverform, bright scarlet flowers from summer to autumn. Bean-like fruit are dark blue. ↑ 1–4m (3–12ft), ↔ 1–2m (3–6ft). Indonesia (Java). ♀ (min. 10–13°C/50–55°F)

**C. splendens** ♀ Twining, evergreen climber with opposite, ovate to elliptic, entire, more or less glossy, rich green leaves, to 18cm (7in) long. Salverform, bright scarlet flowers are produced in dense, terminal panicles, 10–13cm (4–5in) long, mainly in summer. ↑ 3m (10ft) or more. Tropical W. Africa. ♀ (min. 10–13°C/50–55°F)

**C. thomsoniae** [♀] (Glory bower). Twining, evergreen climber with opposite, ovate, entire, rich green leaves, to 17cm (7in) long. Terminal and axillary panicles, 10cm (4in) across, of

*Clerodendrum ugandense*

flowers with bell-shaped, pure white calyces and rich crimson petals are produced freely in summer. ↑ to 4m (12ft). Tropical W. Africa. ♀ (min. 10–13°C/50–55°F)

**C. trichotomum** [♂] Upright, bushy, deciduous shrub or small tree with opposite, ovate, entire or sparsely toothed, dark green leaves, to 20cm (8in) long. From late summer to mid-autumn, bears salverform, fragrant white flowers with red sepals in erect, axillary cymes, to 20cm (8in) across; berries are bright blue. ↑→ 5–6m (15–20ft). China, Japan. \* \* \*. **var. fargesii** has bronze young leaves, and flowers with green sepals; China.

**C. ugandense** [♂] syn. *C. myricoides* 'Ugandense' (Blue glory bower).

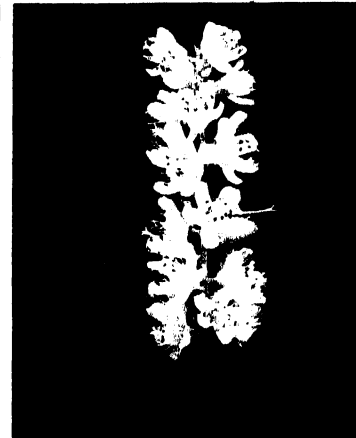
Scandent, evergreen climber with opposite, elliptic to narrowly obovate, boldly toothed, bright green leaves, 7–10cm (3–4in) long. Bears terminal panicles, 10–15cm (4–6in) long, of 5-petalled, blue to violet, sometimes blue and white flowers, each with long lower lips, from summer to autumn. ↑ 3–4m (10–12ft). Tropical Africa. ♀ (min. 10°C/50°F)

## CLETHRA

Summer-sweet, Sweet pepper bush, White alder

### CLETHRACEAE

Genus of more than 60 species of deciduous and evergreen trees and shrubs, occurring in woodland, swamps, and rocky places in E. Asia and North America, with one species (*C. arborea*) from Madeira. The leaves are alternate, simple, obovate to oblong, rarely lance-shaped, finely to coarsely toothed, and mid- to dark green. Clethras are grown for their fragrant, bell- to cup-shaped, white or yellowish white flowers, borne in racemes or panicles, and are suitable for a woodland garden. In frost-prone areas, grow *C. arborea* in a cool greenhouse or conservatory; it may be moved outdoors during summer.

*Clethra alnifolia*

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in acid, fertile, humus-rich, moist but well-drained soil in partial or dappled shade. Pruning group 1 for deciduous species. For *C. alnifolia* remove some of the old wood from the base in winter, leaving the strongest suckers as replacement growth. Pruning group 9 for *C. arborea*; needs restrictive pruning under glass.

• **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring or autumn, or sow seed of hardy species in containers outdoors in spring or autumn. Root greenwood cuttings of deciduous species in early summer and semi-ripe cuttings of evergreens in mid- or late summer.

• **PESTS AND DISEASES** Trouble free.

**C. alnifolia** [♂] (Sweet pepper bush). Upright, suckering, deciduous shrub with oval, mid-green leaves, to 10cm (4in) long. In late summer and early autumn, bears bell-shaped, fragrant white flowers, to 1cm (½in) across, in dense, upright, terminal racemes, to 15cm (6in) long. ↑→ 2.5m (8ft). E. USA. \* \* \*. 'Paniculata' ♀ syn. *C. paniculata*, bears abundant white flowers in broad panicles, to 10cm (4in) across.

**C. arborea** [♂] (Lily of the valley tree). Broadly conical, evergreen shrub or tree with red young shoots and oval, dark green leaves, to 15cm (6in) long. Cup-shaped, very fragrant white flowers, to 8mm (⅓in) across, are produced in lax,

*Clethra arborea*



*Clethra delavayi*

terminal racemes, to 15cm (6in) long, from late summer to mid-autumn. ↑8m (25ft), ↔6m (20ft). Madeira. \*

**C. barbinervis** ♀ Upright, deciduous shrub with peeling bark when mature, and obovate-elliptic, dark green leaves, to 12cm (5in) long, turning red and yellow in autumn. Bell-shaped white flowers, to 8mm (3/16in) across, are produced in arching, terminal racemes, to 15cm (6in) long, from late summer to autumn. ↑↔3m (10ft). E. China to Japan. \*\*\*

**C. delavayi** ♂♀ Upright, deciduous shrub with arching shoots and lance-shaped, rich blue-green leaves, to 15cm (6in) long. Nodding, cup-shaped white flowers, 1.5cm (1/2in) across, produced in dense, terminal racemes, to 25cm (10in) long, open from pink buds in midsummer. ↑↔4m (12ft). W. China. \*\*

**C. fargesii**. Upright, deciduous shrub with peeling bark on old stems, and slenderly tapered, ovate to lance-shaped, dark green leaves, to 12cm (5in) long, turning red and yellow in autumn. Produces cup-shaped white flowers, 6mm (1/4in) across, in arching, terminal racemes, to 25cm (10in) long, from late summer to autumn. ↑↔3m (10ft). W. China. \*\*\*

**C. paniculata** see *C. alnifolia* 'Paniculata'.

## CLEYERA

THEACEAE

Genus of about 17 species of evergreen and deciduous trees and shrubs found in woodland from the Himalayas to Japan, and from Mexico to Central America. They have alternate, leathery, usually linear to ovate-oblong, mid- to dark green leaves. *Cleyera* species and cultivars are grown for their attractive foliage and bowl-shaped, pale yellow to creamy white flowers, which may be borne singly or in clusters from the leaf axils of the previous year's wood. Suitable for a warm, sheltered shrub border or for growing against a wall. In frost-prone areas, grow *C. japonica* 'Tricolor' in a cool greenhouse.

• **HARDINESS** Frost hardy to half hardy.  
• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in acid, moderately fertile, humus-rich,

moist but well-drained soil in sun or partial shade, sheltered from cold, dry winds. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Susceptible to red spider mites and mealybugs under glass.

**C. fortunei** 'Variegata' see *C. japonica* 'Tricolor'.

**C. japonica**. Bushy, evergreen shrub with narrowly oblong to ovate-oblong, glossy, dark green leaves, to 10cm (4in) long. Bowl-shaped, fragrant, creamy white flowers, 1.5cm (1/2in) across, are produced singly or in threes from the leaf axils in summer, occasionally followed in autumn by small red fruit, 6–9mm (1/4–3/8in) across, ripening to black. ↑↔3m (10ft). Burma, China, Korea, Japan. \*\*\*. 'Tricolor', syn. *C. fortunei* 'Variegata', has young leaves tinged with pink, maturing to green with creamy white margins; ↑↔2m (6ft); \*

## CLIANTHUS

LEGUMINOSAE/PAPILIONACEAE

Genus of 2 species of evergreen, trailing or climbing shrubs or subshrubs found in semi-desert or warm-temperate scrub or woodland in Australia and New Zealand. They have alternate, pinnate, mid- to dark green leaves and showy flowers resembling lobsters' claws. In frost-prone climates, *C. formosus* is excellent for a hanging basket in a temperate greenhouse or conservatory; in warmer areas, grow in a raised bed or terrace planting. *C. puniceus* is suitable for training against a wall; in frost-prone areas, it needs the protection of a cool greenhouse or conservatory.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with additional grit, in full light. In the growing season, provide moderate humidity, water freely (avoiding the foliage), and apply a balanced liquid fertilizer monthly; water sparingly and maintain low humidity in winter.

Outdoors, grow in well-drained soil in full sun with shelter from cold, drying winds. If cut back by frost, *C. puniceus* often sprouts from the base in spring; provide a deep, dry winter mulch.

Generally best with little pruning. *C. formosus* requires no regular pruning (except trimming). Pruning group 11

*Clianthus formosus**Clianthus puniceus*

(or 13 if wall grown) for *C. puniceus* and cultivars, immediately after flowering; cut back flowered shoots by no more than one-third their length.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings of *C. puniceus* in summer. For hanging baskets, *C. formosus* is best grafted on to *Colutea arborescens* seedling rootstock in spring; on its own roots, it is very sensitive to overwatering.

• **PESTS AND DISEASES** Trouble free.

**C. dampieri** see *C. formosus*.

**C. formosus** ♂ syn. *C. dampieri* (Glory pea, Sturt's desert pea). Prostrate annual or short-lived perennial subshrub with densely silky-grey and downy leaves, 12–17cm (5–7in) long, with 9–21 oval leaflets. In summer, bears elongated, lobsterclaw-like, brilliant crimson and black flowers, 5–8cm (2–3in) long, in racemes 7–12cm (3–5in) long, ↑ to 20cm (8in), ↔1m (3ft) or more. N. Australia. ♂ (min. 7–10°C/45–50°F)

**C. puniceus** ♂♀ (Glory pea, Lobster claw, Parrot's bill). Evergreen shrub with climbing shoots and dark green leaves, to 15cm (6in) long, with 13–25 narrowly oblong leaflets. From spring to early summer, bears lobsterclaw-like, brilliant red flowers, to 7cm (3in) long, in pendent racemes, to 15cm (6in) long, ↑4m (12ft), ↔3m (10ft). New Zealand (North Island). \*\* **f. albus** ♂♀ has white flowers often flushed green. **f. albus** 'White Heron' bears abundant pure white flowers. 'Flamingo' see 'Roseus'. 'Red Cardinal' has brilliant scarlet flowers. 'Roseus', syn. 'Flamingo', has dark rose-pink flowers.

*Clianthus puniceus* f. *albus*

▷ **Cliffbush** see *Jamesia americana*

▷ **Climbers** see pp.36–37

▷ **Clinopodium acinos** see *Acinos arvensis*

▷ **Clinopodium grandiflorum** see *Calamintha grandiflora*

## CLINTONIA

CONVALLARIACEAE/LILIACEAE

Genus of 5 species of rhizomatous herbaceous perennials from woodland in the Himalayas, E. Asia, and North America. They have basal clumps of elliptic to broadly ovate, entire, glossy, pale to mid-green leaves. Bell- to star-shaped flowers are borne on upright stems in racemes or umbels, or occasionally singly; they are followed by spherical, fleshy berries. Grow in a woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in leafy, fertile, humus-rich, moist, neutral to acid soil in partial or full shade. Mulch with leaf mould or garden compost in spring.

• **PROPAGATION** Sow seed in containers of loamless seed compost in a cold frame in autumn. Divide in spring; plants may be slow to re-establish.

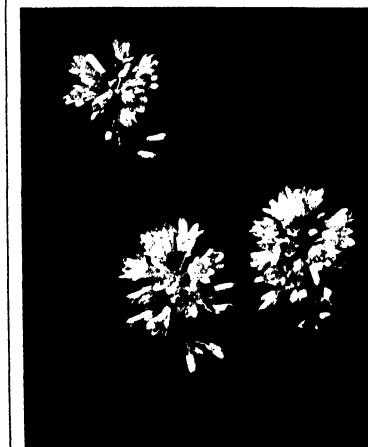
• **PESTS AND DISEASES** Slugs and snails may attack young growth.

**C. alpina** see *C. udensis*.

**C. andrewsiana** ♂ Clump-forming perennial with elliptic to broadly ovate, hairy-margined, glossy, rich green leaves, to 25cm (10in) long. In early summer, bears bell-shaped, pink-purple flowers, 2–2.5cm (3/4–1in) long, in terminal umbels, sometimes with secondary umbels beneath, followed by deep blue berries. ↑ to 60cm (24in), ↔ to 25cm (10in). USA (California). \*\*\*

**C. borealis** (Corn lily). Clump-forming perennial with inversely lance-shaped to obovate, glossy, pale green leaves, 10–30cm (4–12in) long, fringed with minute hairs. Bears loose, terminal umbels of nodding, bell-shaped, greenish yellow flowers, 1–2cm (1/2–3/4in) long, in late spring and early summer, followed by blue or white berries. ↑ to 30cm (12in), ↔ to 20cm (8in). E. North America. \*\*\*

**C. udensis**, syn. *C. alpina*. Clump-forming perennial with inversely lance-shaped to obovate or oblong, hairy-margined, glossy, mid-green leaves, 8–35cm (3–14in) long. In summer, bears bell-shaped, white, yellow-green,

*Clintonia andrewsiana*

or pale lilac flowers, to 1cm (½in) long, in lax, terminal, umbel-like racemes, followed by deep blue-purple berries. † to 30cm (12in), ↔ to 20cm (8in). Russia (Siberia), E. Himalayas, Japan. \*\*\*

**C. uniflora** (Bride's bonnet, Queencup). Spreading perennial with inversely lance-shaped to obovate, glossy, mid-green leaves, 7–15cm (3–6in) long, hairy beneath. Erect, star-shaped, pure white flowers, to 2.5cm (1in) across, are produced singly in the upper leaf axils in late spring, followed by blue-black berries. † 20cm (8in), ↔ 15cm (6in). W. North America. \*\*\*

## CLITORIA

LEGUMINOSAE/PAPILIONACEAE

Genus of 70 species of mainly evergreen perennials, shrubs, and climbers found in forest margins, thickets, and scrub in tropical regions. The leaves are alternate and pinnate or 3-palmate. Pea-like flowers, with incurved, keeled petals, are borne singly or in racemes from the leaf axils. Where temperatures fall below 16°C (61°F), grow in a warm greenhouse or conservatory; in warmer areas, grow on a trellis or through a vigorous tree or shrub.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained, loamy soil in full sun. Provide support for climbers. Pruning group 11, in spring.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

**C. ternatea** (Blue pea). Slender, trailing or scandent, evergreen climber, sometimes a short-lived perennial but often treated as an annual or biennial. Pinnate leaves, 6–12cm (2½–5in) long, each have 5–9 elliptic to ovate, rich green leaflets. Clear blue flowers, 3–5cm (1¼–2in) across, with yellow-tinted white centres, are produced singly or in pairs, from summer to autumn. † to 3m (10ft), ↔ 2m (6ft) as a trailer. Tropical Asia. ☉ (min. 16°C/61°F)

## CLIVIA

AMARYLLIDACEAE

Genus of 4 species of evergreen perennials from low-lying woodland, often by streams, in South Africa. They have swollen, bulb-like bases, and are grown for their erect, narrowly lance-shaped to strap-shaped, dark green, basal leaves and robust, tubular to trumpet-shaped, colourful flowers, borne in umbels on stout stems. In frost-prone areas, grow in a conservatory or warm greenhouse, or as houseplants. In hot climates, grow in a border or bed, or among shrubs. All parts of *C. miniata* may cause mild stomach upset if ingested, and the sap may irritate skin.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2),

with additional leaf mould and grit, in bright filtered or indirect light. In the growing season, water freely, applying a balanced liquid fertilizer weekly until the flower buds form; water very sparingly in winter. Outdoors, grow in fertile, humus-rich, well-drained soil in partial shade. Clivias resent root disturbance and need a restricted root run to encourage flowering.

- **PROPAGATION** Sow seed at 16–21°C (61–70°F) as soon as ripe. Divide in late winter or early spring.
- **PESTS AND DISEASES** Mealybugs may be troublesome.

**C. caulescens**. Evergreen perennial with strap-shaped leaves, to 1.8m (6ft) long. Umbels of 15–20 pendent, narrowly funnel-shaped, orange, red, or pinkish red flowers, 4–4.5cm (1½–1¾in) long, are produced from spring to summer. † 50cm (20in), ↔ 30cm (12in). South Africa. ☉ (min. 10°C/50°F)

**C. x cyrtanthiflora** (*C. miniata* x *C. nobilis*). Evergreen perennial with strap-shaped leaves, 30–60cm (12–24in) long. From summer to autumn, bears umbels of 40–60 semi-pendent, trumpet-shaped, rich salmon-pink to yellowish green flowers, 4–7cm (1½–3in) long. † 30–40cm (12–16in), ↔ 30cm (12in). South Africa. ☉ (min. 10°C/50°F)

**C. gardenii**. Evergreen perennial with narrowly lance-shaped leaves, 75cm (30in) long. Umbels of 10–20 pendent, narrowly funnel-shaped, often strongly curved, orange or red flowers, 4–6cm (1½–2½in) long, tipped with green, are produced from winter to spring. † 45–75cm (18–30in), ↔ 30cm (12in). South Africa. ☉ (min. 10°C/50°F)

**C. miniata** ☉ ♀ Evergreen perennial with strap-shaped leaves, to 60cm (24in) long. Bears large umbels of up to 20 semi-pendent, open tubular to funnel-shaped, yellow, red, or orange flowers, 5–7cm (2–3in) long, from spring to summer. † 45cm (18in), ↔ 30cm (12in). South Africa. ☉ (min. 10°C/50°F). 'Aurea' ♀ has yellow flowers.



*Clivia nobilis*

**C. nobilis** ☉ Evergreen perennial with strap-shaped leaves, 45cm (18in) long. Umbels of 40–60 semi-pendent, narrowly trumpet-shaped, red and yellow flowers, 2.5–4cm (1–1½in) long, tipped with green, are produced in spring and summer. † 40cm (16in), ↔ 30cm (12in). South Africa. ☉ (min. 10°C/50°F)

▷ **Clock vine**,

**Bengal** see *Thunbergia grandiflora*

**Bush** see *Thunbergia erecta*

▷ **Clove** see *Syzygium aromaticum*

▷ **Clover** see *Trifolium*

**Bush** see *Lepedeza*

**Crimson** see *Trifolium incarnatum*

**Dutch** see *Trifolium repens*

**Hairy canary** see *Lotus hirsutus*

**Italian** see *Trifolium incarnatum*

**Lucky** see *Oxalis tetraphylla*

**Water** see *Marsilea*, *M. quadrifolia*

**White** see *Trifolium repens*

▷ **Club, Golden** see *Orontium*

▷ **Club moss** see *Lycopodium*

▷ **Club-rush** see *Schoenoplectus lacustris*

subsp. *tabernaemontani* 'Zebrinus'

**Round-headed** see *Scirpoides*

*holoschoenus*



*Clivia miniata*

## CLUSIA

GUTTIFERAE/HYPERICACEAE

Genus of about 145 species of evergreen trees and shrubs, some of which are epiphytic, found in forest from Florida, USA, to Mexico, the West Indies, and tropical South America. They are grown for their simple, leathery leaves, borne in opposite pairs, and for their 4- to 9-petaled, magnolia-like flowers, borne singly or in terminal clusters. In frost-prone areas, grow as foliage houseplants, or in a warm or temperate greenhouse. In humid tropical climates, they are suitable for a coastal garden, a shrub border, or for specimen planting.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with additional sharp sand, in bright filtered light, with high humidity. From early summer to autumn, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in partial shade. Pruning group 1; tolerates restrictive pruning under glass.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root softwood cuttings with bottom heat in summer. Air layer in spring or summer.

- **PESTS AND DISEASES** Trouble free.

**C. major** ☐ syn. *C. rosea* (Autograph tree, Balsam apple). Open, semi-epiphytic shrub or small tree with short-stalked, obovate, glossy, deep green leaves, 8–18cm (3–7in) long. Produces funnel-shaped, pink or creamy white flowers, 5–8cm (2–3in) across, in clusters of 1–3 in summer. † 2–3m (6–10ft), ↔ 1–2m (3–6ft). Central to South America, W. Indies. ☉ (min. 16–18°C/61–64°F)

**C. rosea** see *C. major*.

## CLYTOSTOMA

BIGNONIACEAE

Genus of 9 species of evergreen, perennial climbers found in forest in tropical North and South America. The mid- to dark green leaves, borne in opposite pairs, are composed of 2 (in rare cases, 3) leaflets and a tendril. They are cultivated for their foxglove-shaped flowers, produced in pairs or clusters from the leaf axils. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer areas, grow as ground cover, or use to clothe a pergola, arbour, sunny wall, or tree.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a border or in large containers of loam-based potting compost (J1 No.3), with added leaf mould and sharp sand; provide full light, with shade from hot sun, and moderate humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Top-dress or pot on in late winter or spring. Outdoors, grow in fertile, moist but well-drained soil in partial shade or full sun with some midday shade. Provide support for the climbing stems. Pruning group 11 after flowering; group 12 under glass, in early spring or after flowering.

*Clytostoma callistegioides*

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root short-jointed, lateral shoots in summer.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be a problem under glass.

*C. callistegioides* [ ] syn. *Pandorea lindleyana*. Vigorous, open climber, with oblong-elliptic, lustrous, deep green leaves, 8–10cm (3–4in) long, composed of 2 opposite leaflets and a tendril for climbing. Two-lipped purple flowers, 7cm (3in) long, with lilac-veined, often pale yellow tubes, are borne in summer. ↑ to 10m (30ft). S. Brazil to Argentina. ☼ (min. 7–10°C/45–50°F)

## COBAEA

POLEMONIACEAE

Genus of about 20 species of woody, evergreen and herbaceous climbers found in forest and thickets from Mexico to tropical South America. They have alternate, pinnate leaves, each with a terminal, branched tendril. Large, 5-lobed, bell-shaped flowers are produced singly from the upper leaf axils. In frost-prone areas, grow in a cool greenhouse or conservatory, or outside as annuals. In warmer areas, use to clothe a pergola, arbour, sunny wall, or tree.

- **HARDINESS** Frost tender; *C. scandens* survives short periods near 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a low-nitrogen liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring.

Provide support. Outdoors, grow in moderately fertile, moist but well-drained soil in a sheltered site in full sun. Pruning group 11, after flowering or in late winter or early spring.

- **PROPAGATION** Sow seed at 18°C (64°F) in spring; plant out when danger of frost has passed. Root softwood cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Susceptible to red spider mites under glass.

*C. scandens* [ ] (Cathedral bell, Cup and saucer plant). Vigorous, erect, dense, semi-woody, evergreen, perennial climber, grown as an annual. Each leaf, to 11cm (4½in) long, has 4 oblong-elliptic, rich green leaflets, 2 basal stipules, and a large, branched tendril with many tiny hooks. From summer to

*Cobaea scandens*

autumn, bears fragrant flowers, 5cm (2in) long, opening creamy green and ageing to purple. ↑ 10–20m (30–70ft). Mexico. ☼ (min. 5°C/41°F). f. *alba* has white flowers, ageing to creamy white.

## COCCOTHRINAX

Thatch palm

ARECACEAE/PALMAE

Genus of 30–50 species of usually single-stemmed (rarely cluster-stemmed) palms occurring in dunes, scrub, and pine forest in Florida, USA, and the Caribbean. The 3-petalled flowers (with the petals and sepals fused into small, 6-pointed, star-like discs) are produced in panicles among terminal clusters of stalked, fan-shaped leaves, which have many slender, radiating lobes. In frost-prone climates, grow in a warm or temperate greenhouse, or as houseplants. Elsewhere, grow as specimen trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun. In the growing season, water freely, and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in neutral to alkaline, fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 24–27°C (75–81°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. argentata* ♀ (Florida silver palm). Single-stemmed palm with an erect grey trunk. Leaf-stalks, to 60cm (24in) long, bear lustrous, yellow-green leaf-blades, silvery white beneath, to 60cm (24in) across. Produces white flowers, 6–10mm (¼–½in) across, in panicles to 3m (10ft) long, in summer. ↑ to 8m (25ft). ↔ 2–3m (6–10ft). USA (Florida), Bahamas. ☼ (min. 13°C/55°F)

*C. fragrans* ♀ (Silver thatch). Single-stemmed palm with a slender trunk, at first bearing a fibrous webbing of old leaf bases, then smooth. The leaf-blades are light green above and silvery grey beneath, 40–60cm (16–24in) across, and borne on stalks of the same length. Produces fragrant yellow flowers, 6–8mm (¼–½in) across, in panicles to 2m (6ft) or more long, in summer. ↑ to 5m (15ft). ↔ 1.5–2.5m (5–8ft). Haiti, E. Cuba. ☼ (min. 13°C/55°F)

▷ *Cochlearia armoracia* see *Armoracia rusticana*

## COCHLIODA

ORCHIDACEAE

Genus of about 6 species of evergreen, epiphytic orchids found at high altitudes in the Andes of Ecuador and Peru. One or two linear, dark green leaves, to 20cm (8in) long, are borne at the tip of each ovoid to conical pseudobulb. From late spring to summer, attractive, usually large, scarlet or bright pink flowers are borne in tall or short, arching racemes arising from the base of the pseudobulb.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in pots or slatted baskets. In summer, provide humid conditions with bright filtered light and good ventilation.

Water freely, applying fertilizer at every third watering, and mist once or twice a day. In winter, admit full light and water sparingly. See also p.46.

- **PROPAGATION** Divide when the plant fills the container and “flows” over the sides.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*C. noezliana*. Epiphytic orchid with ovoid, compressed pseudobulbs. Racemes, 15–45cm (6–18in) long, of up to 12 rich scarlet flowers, 3.5cm (1½in) across, are produced in summer. ↑ 12cm (5in). ↔ 25cm (10in). Peru. ☼ (min. 10°C/50°F; max. 24°C/75°F)

*C. rosea*. Epiphytic orchid with ovoid, compressed pseudobulbs. Bears racemes, 13–40cm (5–16in) long, of up to 12 deep rose-pink flowers, 3.5cm (1½in) across, from spring to summer. ↑ 12cm (5in). ↔ 25cm (10in). Ecuador, Peru. ☼ (min. 10°C/50°F; max. 24°C/75°F)

## COCHLOSPERMUM

BIXACEAE

Genus of 12–15 species of deciduous trees and shrubs from dry or seasonally dry forests of tropical Central and South America. They have alternate, palmately lobed or pinnatifid, long-stalked, mid-to dark green leaves, and are grown for their bowl- or cup-shaped, 5-petalled flowers, borne in terminal panicles before the new leaves unfold. In frost-prone areas, grow as foliage plants in a warm greenhouse. In warmer climates, grow as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light and with low humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1, when leafless or immediately after flowering; needs restrictive pruning under glass.
- **PROPAGATION** Sow seed at 18–25°C (64–77°F) in spring. Root greenwood cuttings in early summer or semi-ripe cuttings in mid- to late summer, with bottom heat.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. vitifolium* ♀ (Wild cotton). Open, spreading tree with rounded, deeply 5-lobed, occasionally 3- to 7-lobed, rich green leaves, to 30cm (12in) across, with elliptic to narrowly obovate lobes. Cup-shaped, bright yellow flowers, 10–12cm (4–5in) across, with scarlet and orange stamens, are produced in panicles 15–30cm (6–12in) long, from winter to early summer. ↑ 12m (40ft). ↔ 10m (30ft). Mexico to Venezuela. ☼ (min. 15°C/59°F)

▷ *Cockies' tongues* see *Templetonia reusa*

▷ *Cockscomb* see *Celosia*

▷ *Cock's comb* see *Erythrina crista-galli*

▷ *Cockspur thorn* see *Crataegus crus-galli*

▷ *Coco-de-mer* see *Lodoicea*

▷ *Coconut* see *Cocos*

Double see *Lodoicea*

C

## COCOS

Cocunut

ARECACEAE/PALMAE

Genus of one species of single-stemmed palm from coastal tropical regions worldwide, possibly originating from the W. Pacific. Arching, pinnate leaves are borne in terminal heads. The 3-petalled flowers are produced in panicles from the leaf axils, followed by coconuts encased in thick, fibrous husks. In frost-prone areas, grow young specimens of *C. nucifera* as short-lived foliage plants in a warm greenhouse or conservatory, or as houseplants. In warmer areas, grow as a specimen or avenue tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) with additional sharp sand and fibrous organic matter, in full or bright filtered light with moderate humidity. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 27–30°C (81–86°F) in spring.

• **PESTS AND DISEASES** Susceptible to scale insects, mealybugs, and red spider mites under glass.

*C. capitata* see *Butia capitata*.

*C. nucifera* ♀ Large palm with a swollen, tapered base, an often-leaning grey trunk, and pinnate, bright green leaves, 4–6m (12–20ft) long, with many linear leaflets. Small, bowl-shaped, fragrant, cream to yellow flowers are borne at intervals throughout the year, followed by ovoid fruit, each with a green to ochre-yellow or orange-red exterior covering a fibrous brown husk. †20–30m (70–100ft), ↔ 12m (40ft). Coastal tropical regions. ☉ (min. 18°C/64°F). 'Nino' is dwarf and compact, with very narrow, lustrous leaflets; †to 3m (10ft), ↔ 1m (3ft).

▷ **Coco-yam** see *Colocasia esculenta*

## CODIAEUM

Croton

EUPHORBIACEAE

Genus of 6 species of evergreen shrubs, trees, and perennials from Malaysia and the larger islands in the E. Pacific, found in open forest, thickets, and scrub. They produce attractive, alternate, linear to broadly ovate, simple or shallowly to deeply lobed, leathery, often variegated leaves. Tiny, star-shaped yellow flowers are produced in axillary racemes intermittently throughout summer. In frost-prone areas, grow in a warm or temperate greenhouse, or as houseplants. In tropical or subtropical climates, grow in a shrub border, a courtyard garden, or as an informal hedge or screen. Contact with the foliage may aggravate skin allergies.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light, with shade from hot sun and high humidity. In growth, mist regularly, water freely, and apply a balanced liquid fertilizer every 2–3



*Codiaeum* 'Baronne de Rothschild'

weeks; water sparingly with tepid water in winter. Draughts and fluctuating temperatures cause leaf drop. Top-dress or pot on in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in sun or partial shade. Pruning group 9; under glass, cut back leggy plants to within 8–12cm (3–5in) of soil level, and dust wounds with powdered charcoal.

• **PROPAGATION** Root softwood cuttings with bottom heat in summer, dipping the bases in charcoal to stop "bleeding". Air layer in spring.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*C. 'Baronne de Rothschild'* ☐

Upright, woody-based perennial with ovate or lance-shaped leaves, 20cm (8in) long, green and yellow when young, maturing to rich red. Produces white flowers, 5mm (¼in) across, in summer. Rarely flowers in cultivation. †↔ to 1.5m (5ft). ☉ (min. 8°C/46°F)

*C. 'Flamingo'* ☐ Upright, evergreen shrub or woody-based perennial with ovate leaves, 15–25cm (6–10in) long. Young leaves are mid-green, with cream veins, turning yellow and maturing to red or purple. Produces yellow flowers, 5mm (¼in) across, in summer. Rarely flowers in cultivation. †1–2m (3–6ft), ↔ to 1m (3ft). ☉ (min. 8°C/46°F)

*C. variegatum* var. *pictum*. Upright, woody-based perennial with thick, ovate to linear, leathery leaves, to 30cm (12in) long, often deeply lobed, in various colours, usually green and yellow when young, maturing to shades of red. White flowers, 5mm (¼in) across, are borne in summer. †1–2m (3–6ft), ↔ 0.6–1.5m (2–5ft). ☉ (min. 10–13°C/50–55°F). 'Andreanum' is compact and bushy, with oval, pointed, copper-flushed leaves, 10–20cm (4–8in) long, with yellow veins and margins, maturing to reddish orange; †to 1m (3ft) or more, ↔ to 60cm (24in). 'Commotion' has oval, slightly lobed or fiddle-shaped, rich blue- and bright green leaves, 10–20cm (4–8in) long, variegated pink, yellow, and cream, and maturing to crimson; ↔ 60–120cm (24–48in). 'Evening Embers' is dense and strong-growing, with oval, shallowly lobed, bluish black leaves, 15–25cm (6–10in) long, suffused and dashed red and green, with dark red veins; †1.5–2m (5–6ft), ↔ 75–150cm (30–60in). 'Imperiale' is bushy, with elliptic leaves, 8–15cm (3–6in) long, which are almost entirely yellow at first,



*Codiaeum* 'Flamingo'

turning orange to red with green midribs; †to 1m (3ft), ↔ to 75cm (30in). 'Majesticum' has arching to pendent branches and linear, deep to olive-green leaves, to 25cm (10in) long, with yellow midribs, maturing to crimson; †↔ 1m (3ft) or more. 'Mrs. Iceton' has oval, blackish green leaves, 10–15cm (4–6in) long, with yellow markings between the veins, ageing to red and pink. 'Sunrise' is strong-growing, with narrowly lance-shaped, rich green leaves, 10–20cm (4–8in) long, boldly veined and margined yellow, maturing to orange-red; ↔ 1–1.5m (3–5ft). 'Tortile' has ribbon-like, spirally twisted, dark green leaves, 15–30cm (6–12in) long, which are variegated with orange-red; †↔ to 1m (3ft).

## CODONANTHE

GESNERIACEAE

Genus of 13 species of epiphytic, creeping, evergreen shrubs and perennials found on forested hillsides from Mexico to S. Brazil. They have mainly elliptic to ovate or narrowly ovate, usually entire, fleshy leaves borne in opposite, equal- or very unequal-sized

pairs. Flowers have curved corolla tubes, with wide yellow, sometimes red-speckled throats broadening to 5 petal lobes of white, pink, or pale or deep purple; they are solitary or borne in axillary cymes, and are followed by spherical, pink, red, or orange fruits. In frost-prone areas, grow in a warm greenhouse, or as houseplants in containers or hanging baskets. In tropical areas, grow epiphytically or beneath shrubs in a shady border.

• **HARDINESS** Frost tender.

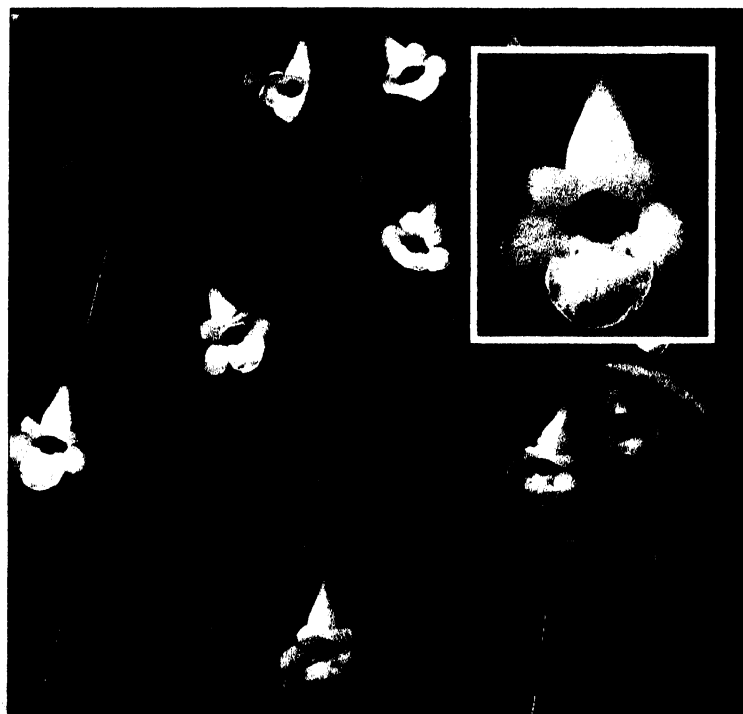
• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light, with moderate to high humidity. In growth, mist regularly, water freely with soft water, and apply a half-strength balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in moist, open, moderately fertile, humus-rich soil in partial shade. Pruning group 11, after flowering. Prune only to restrict size.

• **PROPAGATION** Divide or root stem-tip cuttings at any time of year.

• **PESTS AND DISEASES** Mealybugs may be a problem.

*C. crassifolia*. Epiphytic perennial with stems that are either prostrate and rooting at the nodes, or pendent. Elliptic to ovate, waxy, mid- to deep green leaves, 5cm (2in) or more long, have red glands beneath. Axillary cymes of 1–4 white flowers, 2–2.5cm (¾–1in) long, with yellow throats and sometimes pink-tinted petal lobes, are borne from spring to summer. †30cm (12in) or more, ↔ 60cm (24in) or more. Mexico to Brazil. ☉ (min. 15°C/59°F)

*C. gracilis* ☐ Epiphytic shrub with slender, prostrate or erect stems, bearing narrowly elliptic to ovate, stiffly and often sparsely hairy, mid- to deep green leaves, 2.5–4cm (1–1½in) long. In spring and summer, produces axillary cymes of 1 or 2 red- or maroon-spotted white flowers, 2cm (¾in) long, sometimes yellow at the bases. †↔ 30–90cm (12–36in). Brazil. ☉ (min. 15°C/59°F)



*Codonanthe gracilis* (inset: flower detail)

## CODONOPSIS

## CAMPANULACEAE

Genus of about 30 species of scandent or twining, mostly herbaceous perennials found on rocky mountain slopes or in alpine scrub from the Himalayas to Japan. Leaves are opposite or alternate, ovate or oblong to lance-shaped, and often malodorous when crushed. The flowers are usually solitary, terminal or axillary, nodding, and bell- or saucer-shaped, sometimes intricately marked inside. Grow smaller species in a rock garden, larger species in a herbaceous border or woodland garden, and scandent and twining species through small shrubs.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in light, fertile, humus-rich, moist but well-drained soil in sun or partial shade, with shelter from strong winds to protect the slender, brittle shoots. Those of *C. convolvulacea* are easily damaged; in very exposed areas grow in a cold greenhouse. Most species need light, twiggy support. In very cold areas, mulch in winter.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring.
- **PESTS AND DISEASES** Susceptible to attack by slugs and snails. Red spider mites may be a problem under glass.

*C. clematidea* ■ Twining, herbaceous perennial climber with branching stems and alternate, narrowly ovate, slender-pointed, grey-green leaves, to 2.5cm (1in) long. Produces solitary, terminal, nodding, bell-shaped, pale greenish blue flowers, 2.5cm (1in) long, with yellow, blue, and black markings inside, in late summer. ↑ to 1.5m (5ft). C. Asia. \*\*\*

*C. convolvulacea* ♀ Slender, twining, herbaceous perennial climber bearing opposite, ovate-lance-shaped to lance-shaped, mid-green leaves, 1-5cm (½-2in) long. Solitary, terminal, open bell- to saucer-shaped, violet-blue, occasionally white flowers, 3-5cm (1¼-2in) across, are produced in summer. ↑ to 2m (6ft). Himalayas, W. China. \*\*\*

*C. lanceolata* ■ syn. *C. ussuriensis*. Scandent herbaceous perennial with twining, purple-tinged stems and alternate, elliptic to oblong, mid-green leaves, to 5cm (2in) long. Solitary or paired, axillary, pendent, bell-shaped, mauve-flushed, greenish white flowers, spotted and striped violet inside, are



*Codonopsis lanceolata*

produced in autumn. ↑ 60-90cm (24-36in). China. \*\*\*

*C. meleagris*. Upright, scandent herbaceous perennial with ovate, wavy, finely hairy, deep green leaves, 2-8cm (¾-3in) long, usually forming a basal rosette. In summer, branching stems bear solitary, axillary or terminal, nodding, bell-shaped, greenish blue flowers, heavily chequered purple and brown inside, 2.5-4cm (1-1½in) long. ↑ to 30cm (12in). China. \*\*\*

*C. ovata*. Upright, non-twining herbaceous perennial with fleshy roots and mostly basal, opposite, ovate, very hairy, mid-green leaves, 1-3cm (½-1¼in) long. Solitary, terminal, tubular-bell-shaped, greenish blue flowers, 2.5-3cm (1-1¼in) long, chequered darker blue inside, are borne on slender stalks in mid- and late summer. Needs support. ↑ to 30cm (12in). W. Himalayas. \*\*\*

*C. tangshen*. Herbaceous perennial climber with twining stems and alternate, broadly lance-shaped, fleshy, toothed, mid-green leaves, 2.5-6cm (1-2½in) long. Solitary, axillary or terminal, bell-shaped, yellow to olive-green flowers, with purple veins and spots inside, are produced in summer. ↑ 2m (6ft). W. China. \*\*\*

*C. ussuriensis* see *C. lanceolata*.

*C. vinciflora*. Twining, herbaceous perennial climber with alternate or opposite, lance-shaped to ovate, thin-textured, mid-green leaves, 1.5-3.5cm (½-1½in) long, glaucous blue beneath. In early and midsummer, bears solitary, saucer-shaped, blue to bluish lilac flowers, 3-4.5cm (1¼-1¾in) across, terminally or on short lateral shoots. ↑ 1m (3ft). China. \*\*\*

## COELIA syn. BOTHRIOCHILUS

## ORCHIDACEAE

Genus of 5 species of evergreen, epiphytic, terrestrial, or lithophytic orchids from Mexico to Panama, where they occur at altitudes up to 1,500m (5,000ft). They have short rhizomes and clusters of ovoid or ellipsoid, olive-green pseudobulbs; each produces up to 5 narrowly to broadly lance-shaped, folded, pale to mid-green leaves at the tip. The inflorescence is a short, basal raceme bearing 6 or more tubular-bell-shaped, fleshy, fragrant, cream, ivory-white, or buff flowers, with pink or violet marks.

- **HARDINESS** Frost tender.

- **CULTIVATION** Intermediate-growing orchids. Pot tightly in containers of epiphytic orchid compost. In summer, provide high humidity and bright filtered light, with generous ventilation; water moderately, applying fertilizer at every third watering. In winter, admit full light, and water more sparingly. See also p.46.

- **PROPAGATION** Divide when the plant fills the containers and "flows" over the sides.

- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*C. bella*, syn. *Bothriochilus bellus*.

Epiphytic orchid with spherical to ovoid pseudobulbs, each producing 3 or 4 narrowly lance-shaped, pale green leaves, 45cm (18in) long. In early summer, up to 6 purple-tipped, ivory-white flowers, 2.5cm (1in) across, with lips marked golden orange, are borne in racemes 10-15cm (4-6in) long. ↑ to 45cm (18in). Mexico, Guatemala, Honduras. ♀ (min. 13°C/55°F; max. 30°C/86°F)

## COELOGYNE

## ORCHIDACEAE

Genus of more than 100 species of evergreen, epiphytic orchids occurring from lowland forest to high altitudes in mountainous regions from India and S.E. Asia to the Pacific islands. They vary greatly in size, producing pseudobulbs with 2 linear to elliptic, leathery, pleated leaves. Flowers are borne in racemes, mainly from the centre of new growth, usually from spring to summer. Many species are fragrant. *C. cristata* may be grown as a houseplant.

- **HARDINESS** Frost tender.

- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in a container or slatted basket. In summer, provide moderate to high humidity, good ventilation, and bright filtered light; water freely, apply fertilizer at every third watering, and mist once or twice daily. In winter, admit full light and keep completely dry. Tropical species, such as *C. dayana* and *C. speciosa*, should be kept moist at a minimum temperature of 15°C (59°F) throughout the year. See also p.46.

- **PROPAGATION** Divide when the plant fills the containers and "flows" over the sides, or remove backbulbs in mid-spring and pot them up separately.

- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*C. barbata*. Epiphytic orchid with conical pseudobulbs and oblong-lance-shaped, semi-rigid leaves, to 45cm (18in) long. In summer, produces a succession of pure white flowers, 5cm (2in) across, with brown and white, fringed lips, in upright racemes.

↑ to 45cm (18in). Bhutan, N.E. India. ♀ (min. 10°C/50°F; max. 30°C/86°F)

*C. Burfordiense* (*C. asperata* x *C. pandurata*). Epiphytic orchid with flattened, ribbed pseudobulbs and elliptic-lance-shaped, semi-rigid, folded leaves, 60cm (24in) long. Many apple-green flowers, 10cm (4in) across, with black lacing on the lips, are borne in arching racemes in summer. ↑ 75cm (30in), ↔ 90cm (36in). ♀ (min. 10°C/50°F; max. 30°C/86°F)

*C. cristata* ■ Epiphytic orchid with rounded pseudobulbs and lance-shaped leaves, to 30cm (12in) long. Pendent racemes of pure white, strongly fragrant flowers, 8cm (3in) across, with yellow-marked lips, are borne from winter to spring. ↑ 30cm (12in), ↔ 60cm (24in). E. Himalayas. ♀ (min. 10°C/50°F; max. 30°C/86°F)

*C. dayana*. Epiphytic orchid with conical pseudobulbs and lance-shaped, semi-rigid leaves, to 75cm (30in) long. From winter to spring, bears pendent racemes of many fragrant, pale yellow flowers, 5cm (2in) across, marked dark brown, with white-veined lips. ↑ to 60cm (24in). Malaysia, Sumatra, Java, Borneo. ♀ (min. 15°C/59°F; max. 30°C/86°F)

*C. flaccida* ■ Epiphytic orchid with conical pseudobulbs and lance-shaped, semi-rigid leaves, 20cm (8in) long. Bears racemes of strongly fragrant white flowers, 4cm (1½in) across, marked yellow on the central lobe of each lip and reddish brown on the lateral lobes, from winter to early summer. ↑ 25cm (10in), ↔ 30cm (12in). Himalayas. ♀ (min. 10°C/50°F; max. 30°C/86°F)

*C. massangeana*. Epiphytic orchid with conical pseudobulbs and elliptic-ovate, semi-rigid leaves, to 45cm (18in) long. From spring to early summer, fragrant,



*Codonopsis clematidea*



*Coelogyne cristata*



*Coelogyne flaccida*

C

*CoeLOGYNE nitida*

pale yellow flowers, 5cm (2in) across, with brown and yellow lips, are borne in pendent racemes.  $\pm$  60cm (24in). Malaysia, Sumatra, Java.  $\bullet$  (min. 15°C/59°F; max. 30°C/86°F)

**C. nitida**  $\square$   $\text{syn. } C. ochracea$ . Epiphytic orchid with oblong, shining pseudobulbs and elliptic-lance-shaped leaves, to 30cm (12in) long. From spring to early summer, bears racemes of strongly fragrant, pure white flowers, 2.5cm (1in) across, with orange and yellow lip markings.  $\pm$  25cm (10in).  $\leftrightarrow$  30cm (12in). W. Himalayas, China, Burma, Thailand, Laos.  $\bullet$  (min. 10°C/50°F; max. 30°C/86°F)

**C. ochracea**  $\text{see } C. nitida$ . **C. pandurata**. Epiphytic orchid with flattened, ribbed pseudobulbs and elliptic-lance-shaped, semi-rigid, folded leaves, to 60cm (24in) long. Bears pale green, fragrant flowers, 8cm (3in) or more across, with black lip markings, in long, arching racemes in summer.  $\pm$  75cm (30in).  $\leftrightarrow$  90cm (36in). Malaysia, Borneo, Sumatra.  $\bullet$  (min. 15°C/59°F; max. 30°C/86°F)

**C. speciosa**  $\square$  Epiphytic orchid with conical pseudobulbs and elliptic or lance-shaped leaves, to 35cm (14in) long. Bears green-yellow to pale salmon-pink flowers, 7cm (3in) across, with reddish brown lips, in pendent racemes at any time of year.  $\pm$  30cm (12in).  $\leftrightarrow$  60cm (24in). Sumatra, Java.  $\bullet$  (min. 15°C/59°F; max. 30°C/86°F)

$\triangleright$  **Coffeeberry**  $\text{see } Rhamnus californica$   
 $\triangleright$  **Coffee tree**  $\text{see } Polyscias guilfoylei$   
 $\triangleright$  **Kentucky**  $\text{see } Gymnocladus dioica$   
 $\triangleright$  **Cohosh**  $\text{see } Cimicifuga$

*CoeLOGYNE speciosa**Coix lacryma-jobi*

## COIX

GRAMINEAE/POACEAE

Genus of about 5 species of monoecious, annual or perennial, often rhizomatous grasses, originating in E. Asia but widely naturalized in tropical regions throughout the world. The leaves are flat and narrowly lance-shaped. *Coix* species produce compound inflorescences, borne in the upper leaf axils, which consist of many racemes of separate male and female spikelets. Female flowers of *C. lacryma-jobi*, the only species commonly cultivated, produce hard, bead-like seeds, which are frequently used in the manufacture of rosaries. The teardrop-like shape of the seeds gives rise to the common names, Christ's or Job's tears. *C. lacryma-jobi* may be grown outdoors in both warm- and cool-temperate climates. It is suitable for an annual border or for infilling in a herbaceous border.

**• HARDINESS** Half hardy.  
**• CULTIVATION** Grow in light to medium, fertile, moist but well-drained soil in a sheltered site in full sun. *C. lacryma-jobi* needs a long growing season to ripen fruit.  
**• PROPAGATION** Sow seed at 13–16°C (55–61°F) in late winter or early spring, and plant out when danger of frost has passed. In warm areas, sow seed *in situ* in spring.  
**• PESTS AND DISEASES** Trouble free.

**C. lacryma-jobi**  $\square$  (Christ's tears, Job's tears). Loosely tufted, annual grass with erect stems bearing bright green leaves, to 60cm (2ft) long. In early autumn, produces long-stalked, arching inflorescences with racemes of separate male and female spikelets, the latter giving rise to hard, shiny, ovoid-spherical seeds, to 1.5cm (½in) long, which are green at first, becoming pearly grey-purple when ripe.  $\pm$  45–90cm (18–36in).  $\leftrightarrow$  30cm (12in) or more. S.E. Asia.  $\star$

## COLCHICUM

Autumn crocus, Naked ladies

COLCHICACEAE/LILIACEAE

Genus of about 45 species of cormous perennials from alpine and subalpine meadows and stony hillsides in Europe, N. Africa, W. and C. Asia, N. India, and W. China. The basal, linear, strap-shaped, lance-shaped, or elliptic-ovate leaves, often ribbed or pleated, develop with or after the flowers. Conspicuous, usually goblet-shaped, sometimes fragrant flowers, with perianth tubes 1.5–7cm (½–3in) long, are borne in late summer, autumn, winter, or spring. Many large-flowered colchicums, with attractively tessellated flowers, bloom in autumn, mostly before the large leaves, which emerge from winter to early spring and persist until midsummer.

Grow large-leaved species among deciduous shrubs: *C. autumnale*, *C. speciosum*, and several other robust species may be naturalized in turf. The smaller species are suitable for a rock garden, scree bed, raised bed, or trough. Half-hardy species, and some of those with leaves present at flowering time, are best grown in a bulb frame or alpine house to protect them from excessive summer rainfall. All parts are highly toxic if ingested and, if in contact with skin, may cause irritation.

**• HARDINESS** Fully hardy to half hardy.

**• CULTIVATION** Plant 10cm (4in) deep in summer or early autumn. Colchicums have varying cultivation requirements, which, for ease of reference, may be grouped as follows:

1. Deep, fertile, well-drained soil that is not too dry, in an open site in full sun.  
 2. Gritty, sharply drained soil in a sunny raised bed or scree bed. In a bulb frame or alpine house, use a mix of equal parts loam, leaf mould, sharp sand, and grit in

full light. Apply a low-nitrogen liquid fertilizer at the beginning of the growing season. Water moderately when in growth, avoiding the foliage and flowers; keep completely dry when dormant.

**• PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Separate corms when dormant in summer.

**• PESTS AND DISEASES** Grey mould (*Botrytis*) and slugs may be a problem.

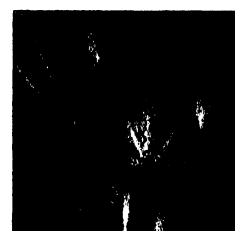
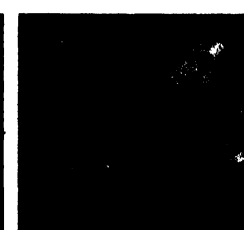
**C. agrippinum**  $\square$   $\text{syn. } C. autumnale$   $\text{and } C. variegatum$ . Cormous perennial, probably a hybrid between *C. autumnale* and *C. variegatum*, with semi-erect, linear-lance-shaped or strap-shaped, slightly wavy leaves, 9–15cm (3½–6in long). In early autumn, produces 1 or 2 narrowly funnel-shaped, heavily tessellated, deep purplish pink flowers with tepals 5cm (2in) long.

Cultivation group 1.  $\pm$  8–10cm (3–4in).  $\leftrightarrow$  8cm (3in). Unknown origin.  $\star \star \star$

**C. alpinum**. Cormous perennial with semi-erect, strap-shaped to linear-lance-shaped leaves, 8–15cm (3–6in) long. From late summer to autumn, produces 1 or 2 goblet-shaped, pale pink flowers with tepals 1.5–3cm (½–1¼in) long. Cultivation group 1 or 2.  $\pm$  6cm (2½in).  $\leftrightarrow$  8cm (3in). France (including Corsica), Switzerland, Italy (including Sardinia).  $\star \star \star$

**C. atropurpureum**. Cormous perennial with erect, strap-shaped to narrowly lance-shaped leaves, 9–19cm (3½–7in) long. In autumn, bears 1–3 cup-shaped flowers, opening white, then turning dark magenta-red, with tepals 3–5cm (1¼–2in) long. Cultivation group 1 or 2.  $\pm$  5cm (2in). Unknown origin, probably Balkans.  $\star \star \star$

**C. autumnale**  $\square$  (Meadow saffron). Vigorous, cormous perennial bearing erect, linear-lance-shaped to broadly lance-shaped leaves, 14–35cm (5½–14in) long. In autumn, produces

*Colchicum agrippinum**Colchicum autumnale**Colchicum bivonae**Colchicum byzantinum**Colchicum cilicicum**Colchicum kesselringii**Colchicum luteum**Colchicum* 'The Giant'*Colchicum* 'Waterlily'



1–6 goblet-shaped, lavender-pink flowers, with tepals 4–6cm (1½–2½in) long. Cultivation group 1. ↑ 10–15cm (4–6in), ↔ 8cm (3in). Europe. \*\*\*.

'**Alboplenum**' has double white flowers with numerous narrow tepals. f. *album* has white flowers. 'Major' see *C. byzantinum*. 'Pleniflorum', syn.

'Plenum', 'Roseum Plenum', has neat, rounded, double, pinkish lilac flowers, with tepals 5–7cm (2–3in) long.

'Plenum' see 'Pleniflorum'. 'Roseum Plenum' see 'Pleniflorum'.

*C. 'Autumn Queen'* ♀ Cormous perennial with semi-erect, broadly lance-shaped leaves, 18–25cm (7–10in) long. In early autumn, produces 1–4 goblet-shaped, fragrant flowers, with long perianth tubes, white throats, and rose-pink tepals, 4–8cm (1½–3in) long, strongly tessellated with deep purple. Cultivation group 1. ↑ 15cm (6in), ↔ 10cm (4in). \*\*\*

*C. baytopiorum*. Cormous perennial with a horizontal corm and semi-erect, narrowly lance-shaped leaves, to 8cm (3in) long at flowering, 20–30cm (8–12in) long when mature. In autumn, produces 1–5 goblet-shaped, pinkish purple flowers, with tepals 2–4.5cm (¾–1½in) long. Cultivation group 1 or 2; best in an alpine house. ↑ 8cm (3in). W. Turkey. \*\*\* (borderline)

*C. bivanonae* □ syn. *C. bowlesianum*, *C. sibthorpii*. Robust, cormous perennial with semi-erect, strap-shaped or linear-lance-shaped leaves, 12–30cm (5–12in) long. In autumn, produces 1–6 goblet-shaped, often fragrant, strongly tessellated, purplish pink flowers, with tepals 4–9cm (1½–3½in) long, often with white bases. Cultivation group 1. ↑ 15cm (6in), ↔ 10cm (4in). Italy to W. Turkey. \*\*\*

*C. boissieri*, syn. *C. procurrens*. Cormous perennial with a horizontal corm and erect, narrowly linear leaves, 11–22cm (4½–9in) long. In autumn, produces 1 or 2 slender, goblet-shaped, pinkish lilac flowers, with tepals 2.5–5cm (1–2in) long. Cultivation group 2; best in a bulb frame. ↑ 3cm (1¼in), ↔ 5cm (2in). S. Greece, W. Turkey. \*\*\*

*C. bornmuelleri*. Cormous perennial with semi-erect, narrowly elliptic leaves, 17–25cm (7–10in) long. In autumn, produces 1–6 funnel-shaped, pale to deep purplish pink flowers, with tepals 4.5–7cm (1¾–3in) long, and with purple-brown anthers. Often confused with *C. speciosum*, which has yellow anthers. Cultivation group 1. ↑ 15cm (6in), ↔ 10cm (4in). Turkey. \*\*\*

*C. bornmuelleri* of gardens see *C. speciosum*. *C. bowlesianum* see *C. bivanonae*. *C. byzantinum* □ ♀ syn. *C. autumnale* 'Major'. Vigorous, cormous perennial, probably a hybrid of *C. cilicicum*, with erect, strongly ribbed, elliptic or lance-shaped leaves, to 30cm (12in) long. In autumn, bears up to 20 open funnel-shaped, soft lilac flowers, with tepals 5cm (2in) long. Cultivation group 1. ↑ 12cm (5in), ↔ 10cm (4in). Origin unknown. \*\*\*

*C. cilicicum* □ Cormous perennial bearing semi-erect, narrowly elliptic to elliptic-lance-shaped leaves, 30–40cm (12–16in) long. In autumn, produces 3–25 widely funnel-shaped, purplish pink flowers with blunt tepals, 4–7.5cm



*Colchicum speciosum* 'Album'

(1½–3in) long, sometimes deeper in colour towards the tips. Cultivation group 1. ↑ 10cm (4in), ↔ 8cm (3in). Turkey, Syria, Lebanon. \*\*\*

*C. 'Conquest'* see *C. 'Glory of Heemstede'*.

*C. crociflorum* see *C. kesselringii*.

*C. cupanii*. Cormous perennial with semi-erect, linear to linear-lance-shaped, very glossy leaves, 10cm (4in) long at flowering, to 15cm (6in) long when mature. Produces 1–12 widely goblet-shaped, pale to deep purplish pink flowers, with tepals 2–2.5cm (¾–1in) long, in autumn. Cultivation group 2; best in a bulb frame. ↑ 4cm (1½in), ↔ 5cm (2in). S. France, Italy, Greece (including Crete), N. Africa. \*\*

*C. doerfleri* see *C. hungaricum*.

*C. 'Glory of Heemstede'*, syn. *C. 'Conquest'*. Robust, cormous perennial with semi-erect, narrowly ovate leaves, 18–25cm (7–10in) long. Produces 1–6 goblet-shaped, strongly tessellated, fragrant, bright reddish purple flowers, with tepals 3–6cm (1¼–2½in) long, in autumn. Cultivation group 1. ↑ 17cm (7in), ↔ 10cm (4in). \*\*\*

*C. hungaricum*, syn. *C. doerfleri*. Cormous perennial with erect, narrowly linear-lance-shaped, hairy leaves, 3–10cm (1¼–4in) long at flowering, to 30cm (12in) long when mature. In late winter and early spring, produces up to 8 goblet-shaped, white or pinkish lilac flowers, with tepals 2–3cm (¾–1¼in) long. Cultivation group 2; best in an alpine house. ↑ 8cm (3in), ↔ 5cm (2in). Hungary, Balkans. \*\*\*

*C. kesselringii* □ syn. *C. crociflorum*. Cormous perennial with semi-erect,

linear-lance-shaped leaves, 1–2cm (½–¾in) long at flowering, 7–10cm (3–4in) long when mature. Produces up to 4 funnel-shaped white flowers, with tepals 1.5–3cm (½–1¼in) long, striped or suffused purple outside, in late winter and early spring. Cultivation group 2; best in an alpine house. ↑ 2.5cm (1in). C. Asia. \*\*\*

*C. 'Lilac Wonder'*. Robust, free-flowering cormous perennial with semi-erect, narrowly ovate leaves, 18–25cm (7–10in) long. Produces 4–10 goblet-shaped, deep lilac-pink flowers, with narrow tepals, 4–6cm (1½–2½in) long, in autumn. Cultivation group 1. ↑ 15cm (6in), ↔ 10cm (4in). \*\*\*

*C. luteum* □ Cormous perennial with semi-erect, linear-lance-shaped leaves, 1–3cm (½–1¼in) long at flowering, 10–30cm (4–12in) long when mature. Produces up to 4 goblet-shaped golden flowers, with tepals 1.5–2.5cm (½–1in) long, in early spring. Cultivation group 2; best in a bulb frame. ↑ 8cm (3in). Afghanistan, N. India, Tibet. \*\*

*C. procurrens* see *C. boissieri*.

*C. 'Rosy Dawn'*. Robust, cormous perennial with semi-erect, ovate leaves, 18–25cm (7–10in) long. In autumn, produces 1–6 goblet-shaped then open trumpet-shaped, fragrant, pinkish violet flowers. Lightly tessellated tepals, 6–8cm (2½–3in) long, have prominent white centres. Cultivation group 1. ↑ 15cm (6in), ↔ 10cm (4in). \*\*\*

*C. sibthorpii* see *C. bivanonae*.

*C. speciosum* ♀ syn. *C. bornmuelleri* of gardens. Vigorous, cormous perennial producing semi-erect, narrowly elliptic to oblong-lance-shaped leaves, 18–25cm

(7–10in) long. In autumn, produces 1–3 goblet-shaped flowers, with yellow anthers, often white throats, and pale to deep pinkish purple tepals, 4.5–8cm (1¾–3in) long. Cultivation group 1. ↑ 18cm (7in), ↔ 10cm (4in). Caucasus, N.E. Turkey, Iran. \*\*\*. 'Album' □ ♀ has thick, weather-resistant, pure white flowers.

*C. 'The Giant'* □ Robust, cormous perennial with semi-erect, narrowly ovate leaves, 18–25cm (7–10in) long. In autumn, produces a succession of up to 5 somewhat goblet-shaped, purplish violet flowers, with lightly tessellated tepals, to 8cm (3in) long, and white bases. Cultivation group 1. ↑ 20cm (8in), ↔ 10cm (4in). \*\*\*

*C. variegatum*. Cormous perennial with horizontal, linear-lance-shaped or strap-shaped, wavy leaves, 9–15cm (3½–6in) long. In autumn, bears 1–3 widely funnel-shaped, short-tubed, strongly tessellated, violet-purple to pinkish purple flowers, with tepals 2–2.5cm (¾–1in) long. Cultivation group 2. ↑ 10cm (4in). Greece, S.W. Turkey. \*\*

*C. 'Violet Queen'*. Cormous perennial with semi-erect, broadly lance-shaped leaves, 18–25cm (7–10in) long. In early autumn, bears 1–5 funnel-shaped, strongly tessellated, fragrant, pinkish violet flowers with pointed tepals, 4–6cm (1½–2½in) long. Cultivation group 1. ↑ 15cm (6in), ↔ 10cm (4in). \*\*\*

*C. 'Waterlily'* □ Cormous perennial with semi-erect, narrowly ovate leaves, 18–25cm (7–10in) long. In autumn, produces up to 5 fully double, many-petalled, pinkish lilac flowers, with tepals 4–7cm (1½–3in) long. Grows best where its blooms are supported by neighbouring plants. Cultivation group 1. ↑ 12cm (5in), ↔ 10cm (4in). \*\*\*

## COLEONEMA

### RUTACEAE

Genus of 8 species of evergreen shrubs from open heathland and rocky slopes in South Africa. The alternate, usually short, linear to oblong or narrowly lance-shaped leaves are crowded on the stems, producing a feathery, heath-like effect. Small, star-shaped, 5-petalled flowers are produced singly, often profusely, at the ends of the shoots and from the leaf axils. In frost-prone areas, grow in a conservatory or cool greenhouse. In warmer climates, grow in a shrub border.

• **HARDINESS** Frost tender; *C. pulchrum* survives short periods near 0°C (32°F).

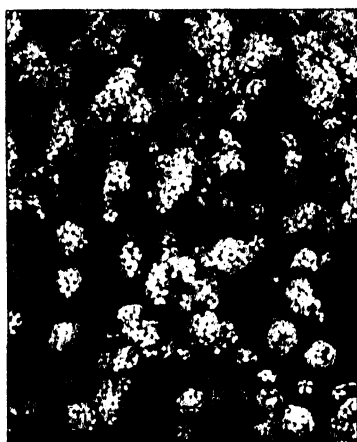
• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, with low humidity. Water moderately and apply a balanced liquid fertilizer monthly from spring to autumn; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in moderately fertile, moist but well-drained, neutral to acid soil in full sun. Pruning group 10, after flowering.

• **PROPAGATION** Surface-sow seed at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

*C. pulchrum*. Freely branching shrub, erect at first then spreading, with linear, bright green leaves, 2–4cm (¾–1½in)

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*Coleonema pulchrum* 'Golden Sunset'

long. Bears terminal and axillary, red or pink flowers, 9–13cm (3½–5in) across, with reflexed petals and darker eyes, from late spring to summer. ♀→ 1–1.2m (3–4ft). South Africa. ☼ (min. 3–5°C/37–41°F). 'Golden Sunset' ☐ syn. 'Sunset Gold', has glowing, yellow-green leaves and white flowers.

- ▷ *Coleus* see *Solenostemon*
- ▷ *Coleus blumei* var. *verschaffeltii* see *Solenostemon scutellarioides*
- ▷ *Coleus thyrsoides* see *Plectranthus thyrsoides*

## COLLETIA

RHAMNACEAE

Genus of 17 species of deciduous shrubs occurring in hillside scrub in temperate South America. The modified branches form succulent, cylindrical or flat, triangular, mid- to blue-green or grey-green spines, which point outwards from the shoots, with one terminal spine to each branch. The opposite leaves are sparse or wholly absent, particularly on mature plants; both the stems and leaves photosynthesize. Small, tubular or bell-shaped flowers, with tiny petals and conspicuous calyces, are produced singly or in many-flowered clusters, either on or below the spines. Grow in a sheltered shrub border or against a warm, sunny wall. In areas prone to severe frosts, grow in a cool greenhouse.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with good ventilation. In growth, water moderately and apply a



*Colletia paradoxa*

balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in an open site in full sun, sheltered from cold, dry winds. Pruning group 1; tip-prune young plants to encourage bushiness. Tolerates moderately hard pruning.

- **PROPAGATION** Root semi-ripe cuttings of short sideshoots in late summer.
- **PESTS AND DISEASES** Trouble free.

*C. armata* see *C. hystrix*.

*C. cruciata* see *C. paradoxa*.

*C. hystrix*, syn. *C. armata*. Stiffly branched, rounded, almost leafless shrub with cylindrical, sharp-pointed, grey-green spines, to 2.5cm (1in) long. Bears clusters of tubular, fragrant white flowers, 3mm (⅛in) long, on the spines, in late summer and early autumn.

♀→ 3m (10ft). Chile. \*\*\*. 'Rosea' has white flowers opening from pink buds.

*C. paradoxa* ☐ syn. *C. cruciata*.

Spreading shrub with flattened, blue-grey spines, to 4cm (1½in) across, and few or no leaves. In autumn, clusters of tubular, fragrant white flowers, to 4mm (⅛in) long, are borne below the spines. ♀ 3m (10ft), ↔ 5m (15ft). Brazil, Uruguay. \*\*

## COLLINSIA

SCROPHULARIACEAE

Genus of 25 species of erect to spreading, slender-stemmed annuals from open woodland, fields, and low valleys in North America and Mexico. They produce opposite, ovate, oblong, or lance-shaped, sometimes softly hairy



*Collinsia bicolor*



*Collinsia grandiflora*

leaves. Whorled, asymmetrically 2-lipped, pink, white, blue, or bicoloured flowers are borne in racemes from spring to summer. Grow in an annual or mixed border, or in a wild garden; they provide long-lasting cut flowers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in a sheltered, sunny to partially shaded site. Provide light twiggy support. Water in dry weather to prolong flowering.
- **PROPAGATION** Sow seed *in situ* in autumn or early spring, but delay thinning autumn sowings until the following spring.
- **PESTS AND DISEASES** Trouble free.

*C. bicolor* ☐ syn. *C. heterophylla*

(Chinese houses). Erect to spreading, weak-stemmed annual with ovate to lance-shaped, sometimes toothed, mid- to purplish green leaves, to 8cm (3in) long, heart-shaped at the bases. In summer, produces whorled racemes of flowers, to 3cm (1¼in) long, with upright, 2-lobed white upper lips, and lilac to pinkish purple lower lips, slanting outwards. ♀ to 60cm (24in), ↔ to 30cm (12in). USA (California). \*\*\*. 'Candidissima' has pure white flowers. 'Multicolor' has flowers marked white, lilac, and purplish pink.

*C. grandiflora* ☐ Erect, bushy, slender-stemmed annual with oval to lance-shaped or linear, toothed or entire, mid-green leaves, 4.5cm (1¾in) long. From spring to summer, bears whorled racemes of flowers, to 2.5cm (1in) long, with erect, 2-lobed, pale pinkish purple to pale purple upper lips, and deeper blue-purple, outward-slanting lower lips. ♀ 15–30cm (6–12in), ↔ 20–30cm (8–12in). W. North America (British Columbia to California). \*\*\*  
*C. heterophylla* see *C. bicolor*.

## COLLOMIA

POLEMONIACEAE

Genus of 15 species of erect to spreading annuals and perennials found in habitats ranging from woodland to mountain scree, in North and South America. They are cultivated for their ovate to lance-shaped, entire to lobed leaves, and their small, funnel- to trumpet-shaped or tubular, 5-lobed, red, purple, blue, or pinkish yellow flowers, borne singly or in terminal cymes in summer. Grow *C. biflora* in an annual or mixed border. The flowers are attractive to bees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun. During dry spells, water freely to prolong flowering.
- **PROPAGATION** Sow seed *in situ* in autumn or spring. Provide autumn-sown seedlings with cloche protection in frost-prone areas.
- **PESTS AND DISEASES** Trouble free.

*C. biflora*, syn. *C. cavanillesii*. Variable, softly hairy annual with lance-shaped leaves, to 6cm (2½in) long, toothed at the tips. Clusters of tubular scarlet flowers, to 1.5cm (½in) across, with 5 spreading lobes, are produced from the leaf axils at the stem tips in summer. ♀ to 60cm (24in), ↔ to 45cm (18in). Bolivia, Chile, Argentina. \*\*\*  
*C. cavanillesii* see *C. biflora*.

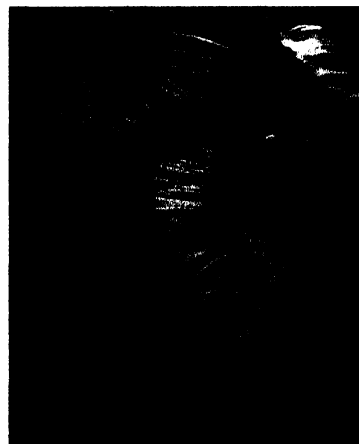
## COLOCASIA

Taro

ARACEAE

Genus of 6 species of tuberous, deciduous or more or less evergreen perennials occurring in swampy or moist areas in tropical Asia, and widely grown there as a staple food. The upright, tuberous rootstocks produce rounded to arrow-shaped, mostly dark green leaves, sometimes with prominent veins. The inflorescences, which are rarely borne on cultivated plants, consist of small white spathes with spadices that develop fleshy, single-seeded, glossy green berries. In frost-prone areas, grow in a warm greenhouse, either in containers or at the margins of an indoor pool. In warmer areas, grow in moist conditions as foliage plants. All parts may cause mild stomach upset if ingested without cooking, and contact with the sap may irritate the skin.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, pot up tubers in spring in loamless potting compost, and bring into growth at 18°C (64°F). Provide bright filtered light and high humidity. In the growing season, water freely, applying a balanced liquid fertilizer monthly. Outdoors, grow in fertile, humus-rich, moist or wet, slightly acid soil in partial shade. Keep tubers dry and frost-free when dormant. See also pp.52–53.
- **PROPAGATION** Divide in winter or early spring.
- **PESTS AND DISEASES** Red spider mites, aphids, and whiteflies may be troublesome under glass.



*Colocasia esculenta* 'Fontanesii'

*C. antiquorum* see *C. esculenta*.  
*C. esculenta* ♀ syn. *C. antiquorum*  
 (Coco-yam, Dasheen, Taro). Marginal aquatic perennial with ovate-heart-shaped to arrow-shaped, dark green leaf-blades, 60cm (24in) long, with leaf-stalks to 1m (3ft) long. † 1.5m (5ft), ↔ 60cm (24in). Tropical E. Asia. ☼ (min. 1°C/34°F, or 21°C/70°F to remain evergreen). 'Fontanesii' ■ has leaves with dark red to purple stalks, veins, and margins. 'Illustris' (Imperial taro) has violet leaf-stalks and light green leaf-blades, marked blackish purple between the veins.

## COLQUHOUNIA

LABIATAE/LAMIACEAE

Genus of 3 species of evergreen or semi-evergreen shrubs and subshrubs found in scrub and thickets in the Himalayas and China. The simple leaves, borne in opposite pairs, are finely toothed and light to dark green. Terminal spikes of showy, tubular, 2-lipped flowers are produced in axillary whorls. *C. coccinea* looks effective against a warm, sunny wall, or in a sheltered mixed border.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun, with shelter from cold, dry winds. May be cut back by hard frost, but will usually re-sprout from the base. Provide a deep, dry winter mulch. Pruning group 6.
- **PROPAGATION** Root softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*C. coccinea* ■♀ Upright, evergreen or semi-evergreen subshrub bearing ovate-lance-shaped, finely toothed, aromatic, sage-green leaves, to 20cm (8in) long, woolly beneath. Whorls of tubular, 2-lipped, bright orange to scarlet (occasionally yellow) flowers, to 2.5cm (1in) long, are produced in terminal spikes in late summer. †↔ 2.5m (8ft). Himalayas, W. China. \* \*



*Colquhounia coccinea*

▷ **Coltsfoot, Sweet** see *Petasites*  
 ▷ **Columbine** see *Aquilegia*  
**Alpine** see *A. alpina*  
**Rocky Mountain** see *A. saximontana*

## COLUMNNEA

GESNERIACEAE

Genus of over 150 species of evergreen shrubs or subshrubs, with trailing or pendent shoots, and occasionally scandent climbers, found in moist woodland, rainforest, or cloud forest in the West Indies, Mexico, Central America, and tropical South America. In the wild, they are frequently epiphytic, and often branch where the stems are rooted into the humus; in cultivation, the stems tend to remain unbranched. They have pairs of usually ovate to elliptic, often hairy, dark green leaves. From spring to autumn, tubular flowers are borne singly or in small clusters from the leaf axils. They are 5-lobed, with the upper 2 petals joined to form a hood, and the stamens and style projecting beyond the hood. In frost-prone climates, grow as houseplants or in a warm greenhouse. In warm, humid areas, grow epiphytically or in a shaded position among trees and shrubs.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a moss-lined hanging basket or half-pot in loamless potting compost in bright filtered or indirect light. Mist regularly with tepid, soft water to maintain high humidity. When in full growth, water freely but carefully with soft water, applying quarter-strength, high-potash fertilizer at each watering. Overwatering may encourage root and stem rot. In winter, provide full light, water moderately, and avoid wetting the foliage. For maximum production of flowers, water sparingly in the 6 weeks preceding the normal flowering period; resume normal watering as flower buds appear. Outdoors, grow in coarse, open, moderately fertile, humus-rich soil in partial shade. To maintain vigorous growth, propagate every 2 or 3 years.
- **PROPAGATION** Root tip cuttings with bottom heat in spring.
- **PESTS AND DISEASES** Susceptible to mealybugs, aphids, and cyclamen mites.

*C. x banksii* ■ (*C. schiedeana* x *C. oerstediana*). Trailing subshrub with ovate to oblong-ovate, smooth, shiny, dark green leaves, 4cm (1½in) long,



*Columnnea x banksii*



*Columnnea crassifolia*

sparsely hairy beneath. Throughout the year, produces solitary, hairy, scarlet flowers, 6cm (2½in) long, with faint yellow lines in the throats. † to 15cm (6in), ↔ trails to 1.2m (4ft). Garden origin. ☼ (min. 15°C/59°F)

*C. crassifolia* ■ Erect subshrub with narrowly elliptic, shiny leaves, dark green above, pale yellow-green and sparsely hairy beneath, to 10cm (4in) long. Bears solitary, hairy, bright scarlet flowers, to 10cm (4in) long, from spring to summer. †↔ 30cm (12in). Mexico, Guatemala. ☼ (min. 15°C/59°F)

*C. gloriosa*. Trailing subshrub with slender stems branching only at the base. Ovate or ovate-oblong, dark green leaves, 2.5cm (1in) long, are densely covered in fine purple hairs; the margins of the leaves are turned under, giving them a thickened appearance. From spring to summer, and intermittently throughout the rest of the year, bears solitary, hairy, fiery-red flowers, 8cm (3in) long, with yellow throats. † 15cm (6in), ↔ trails to 1m (3ft). Central America. ☼ (min. 15°C/59°F)

*C. microphylla*. Trailing subshrub with thin stems bearing close-set, ovate to rounded, dark green leaves, to 1cm



*Columnnea microphylla* 'Variegata'



*Columnnea* 'Robin'

(½in) long, covered in red-brown hairs. Bears solitary, hairy, scarlet flowers, 5–8cm (2–3in) long, with yellow throats, from spring to summer, and intermittently throughout the rest of the year. † 15cm (6in), ↔ trails to 2m (6ft). Costa Rica. ☼ (min. 15°C/59°F)

'Variegata' ■ has grey-green leaves with narrow cream margins.

*C. 'Robin'* ■ Vigorous, trailing subshrub with ovate, hairy, dark green leaves, 2–3cm (¾–1¼in) long. Numerous solitary, bright red flowers, 5–7cm (2–3in) long, are produced from early to late summer. † 35cm (14in), ↔ 60cm (24in). ☼ (min. 15°C/59°F)

*C. scandens*. Trailing subshrub with slender stems bearing oblong to narrowly oblong or ovate-elliptic, dark green leaves, 5cm (2in) long, with red hairs at the margins. Bears sparsely hairy, red or yellow flowers, 6cm (2½in) long, either singly or in pairs, from spring to summer. † to 15cm (6in), ↔ trails to 1m (3ft). Lesser Antilles. ☼ (min. 15°C/59°F). Several hybrids, including the following, have recently been named: 'Campus Sunset' is vigorous and bushy, with ovate leaves, olive-green above, red beneath; bears yellow flowers, with red-margined lobes, in autumn. 'Early Bird' is compact, with pointed leaves, 2.5cm (1in) long, and bears erect, yellow-throated orange flowers almost throughout the year; † to 10cm (4in), ↔ trails to 35cm (14ft).

'Yellow Dancer' is strong-growing, with yellow flowers.

*C. 'Stavanger'* ♀ (*C. microphylla* x *C. x vedrariensis*) (Norse fire plant). Very vigorous, freely branching, trailing subshrub bearing oval, lustrous, dark green leaves, 2cm (¾in) long. Solitary, hairy, bright scarlet flowers, 8–10cm (3–4in) long, are borne from spring to summer, and intermittently throughout the rest of the year. † to 15cm (6in), ↔ to 60cm (24in). ☼ (min. 15°C/59°F)

## COLUTEA

Bladder senna

LEGUMINOSAE/PAPILIONACEAE

Genus of about 25 species of deciduous shrubs, sometimes trees, found in dry soils in woodland and thickets, from S. Europe, E. Africa, Turkey, Iran, C. Asia, Afghanistan, Pakistan, and the Himalayas. They are grown for their pinnate leaves, with entire, usually elliptic to obovate leaflets, their pea-like, yellow to red-brown flowers, borne in

C

*Colutea arborescens*

few-flowered, axillary, long-stalked racemes, and their unusual, inflated, membranous, bladder-like fruits. Coluteas are suitable for a shrub border; those described are useful for an exposed site or dry, sunny bank. They tolerate poor, dry soils, coastal conditions, and urban pollution. Seeds may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Pruning group 1 or 6; *C. arborescens* may be trained as a branched-head standard.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root greenwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

*C. arborescens* ■ (Bladder senna). Vigorous, shrub (rarely tree-like) with pinnate, pale green leaves, to 15cm (6in) long, with 5–6 pairs of broadly elliptic to ovate leaflets. Produces 3–8 yellow flowers, to 2cm (¾in) long, in racemes to 12cm (5in) long, over a long period in summer, followed by green, then translucent seed pods, to 8cm (3in) long. ↗↔ 3m (10ft). S. Europe. \*\*\*

*C. x media* ■ (*C. arborescens* x *C. orientalis*). Vigorous, bushy shrub with pinnate, blue-green leaves, to 15cm (6in) long, with 3–6 pairs of elliptic leaflets. From early to late summer, bears orange-brown flowers, to 1.5cm (¾in) long, sometimes flushed yellow in the centres, in racemes to 10cm (4in) long. Seed pods, to 8cm (3in) long, are greenish brown at first, then translucent. ↗↔ 3m (10ft). Garden origin. \*\*\*

*C. orientalis*. Bushy, rounded shrub with pinnate, bluish green leaves, to 10cm (4in) long, with 3 or 4 pairs of obovate leaflets. In summer, produces 2–5 copper-red flowers, to 1.5cm (½in) long, with yellow markings, in racemes to 6cm (2½in) long, followed by pale brown then translucent seed pods, to 5cm (2in) long. ↗↔ 2m (6ft). Caucasus, N. Iran. \*\*\*

## COLUTEOCARPUS

BRASSICACEAE/CRUCIFERAE

Genus of one species of dwarf, tufted perennial, closely related to *Alyssum*, occurring in dry, rocky areas in the E. Mediterranean and Turkey. It has basal rosettes of oblong to lance-shaped leaves, terminal cymes of cross-shaped flowers,

and inflated seed pods. *C. vesicarius* is suitable for an alpine house or scree bed. In cool, damp areas, seed pods are more reliably produced in an alpine house.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Outdoors, grow in poor to moderately fertile, gritty, humus-rich, sharply drained soil in full sun. Protect from excessive wet. In an alpine house, grow in equal parts loam, leaf mould, and grit.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*C. reticulatus* see *C. vesicarius*.

*C. vesicarius*, syn. *Alyssum vesicaria*, *C. reticulatus*. Cushion-forming perennial with stiff, sharply toothed, glossy, mid-green leaves, to 8cm (3in) long. Loose, flat-topped, terminal cymes of golden yellow flowers, 1cm (½in) across, are produced on short stems in late spring, followed by papery, pale green seed pods, to 3cm (1¼in) long. ↗↔ 8cm (3in), ↔ 15cm (6in). E. Mediterranean. \*\*\* (borderline)

## COLVILLEA

CAESALPINIACEAE/LEGUMINOSAE

Genus of one species of evergreen tree from forest in Madagascar. It has large, alternate, 2-pinnate leaves and produces showy, pea-like flowers in conspicuous, pendent racemes. In frost-prone areas, grow *C. racemosa* in a temperate greenhouse. In warmer climates, grow as a specimen tree.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun and moderate humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; needs restrictive pruning under glass, immediately after flowering.
- **PROPAGATION** Sow seed at 18°C (64°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. racemosa* □ Erect tree, often with a long trunk and spreading branches. Fern-like, 2-pinnate leaves, to 90cm (36in) long, have many small, elliptic to oblong leaflets. From late autumn to winter, produces scarlet flowers, 4.5cm (1¾in) across, in racemes to 30cm (12in) long. ↗ 8–15m (25–50ft), ↔ 3–5m (10–15ft). Madagascar. \*

- ▷ *Comarostaphylis* see *Arctostaphylos*
- C. diversifolia* see *A. diversifolia*
- ▷ *Comarum* see *Potentilla*
- C. palustre* see *P. palustris*

## COMBRETUM

COMBRETACEAE

Genus of about 250 species of evergreen or semi-evergreen, sometimes briefly deciduous trees and shrubs, some more or less scandent, occurring in forest and thickets in tropical regions worldwide (except Australia). Leaves, borne in opposite pairs or in whorls, are mainly ovate, or oblong to elliptic and entire.

They are cultivated for their mostly small, tubular, 4- or 5-lobed flowers, borne in terminal and axillary racemes and panicles. In frost-prone areas, grow in a warm greenhouse or conservatory. In warmer climates, train on to a trellis or pergola.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a border or in large containers of loamless potting compost in bright filtered light, with full light in winter. Mist with tepid water as flower buds form. From spring to autumn, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil, in partial shade. Pruning group 11 or 12, immediately after flowering.
- **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. grandiflorum*. Evergreen, more or less scandent shrub or semi-climber with ovate-elliptic, slender-pointed, smooth or downy leaves, 10–15cm (4–6in) long. Produces many short, dense, one-sided racemes of bright red flowers, 2cm (¾in) long, from autumn to winter. ↗ 4–6m (12–20ft), ↔ 2–4m (6–12ft). Gambia to Ghana. ☼ (min. 16°C/61°F)

*C. paniculatum*. Vigorous, usually open, semi-evergreen or briefly deciduous, scandent shrub or climber. The stems bear short spines and broadly elliptic to oblong, papery leaves, to 18cm (7in) long. Panicles of red flowers, 4cm (1½in) long, are produced in autumn. ↗ 10m (30ft) or more, ↔ 3–5m (10–15ft). Tropical Africa. ☼ (min. 16°C/61°F)

▷ *Comfrey* see *Symphytum*

**Common** see *S. officinale*

**Tuberous** see *S. tuberosum*

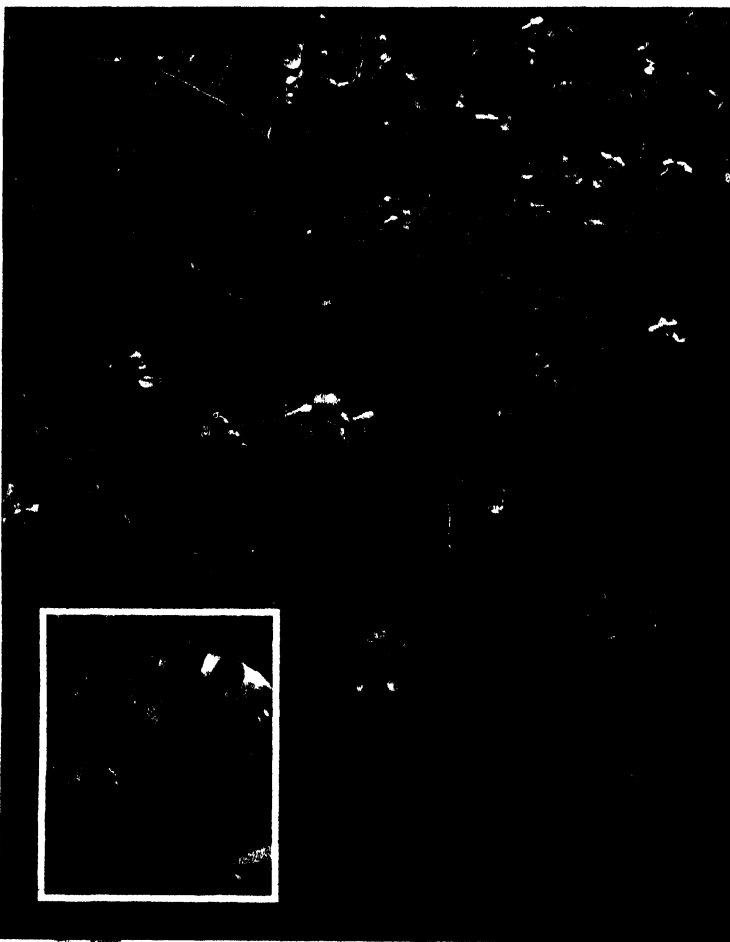
## COMMELINA

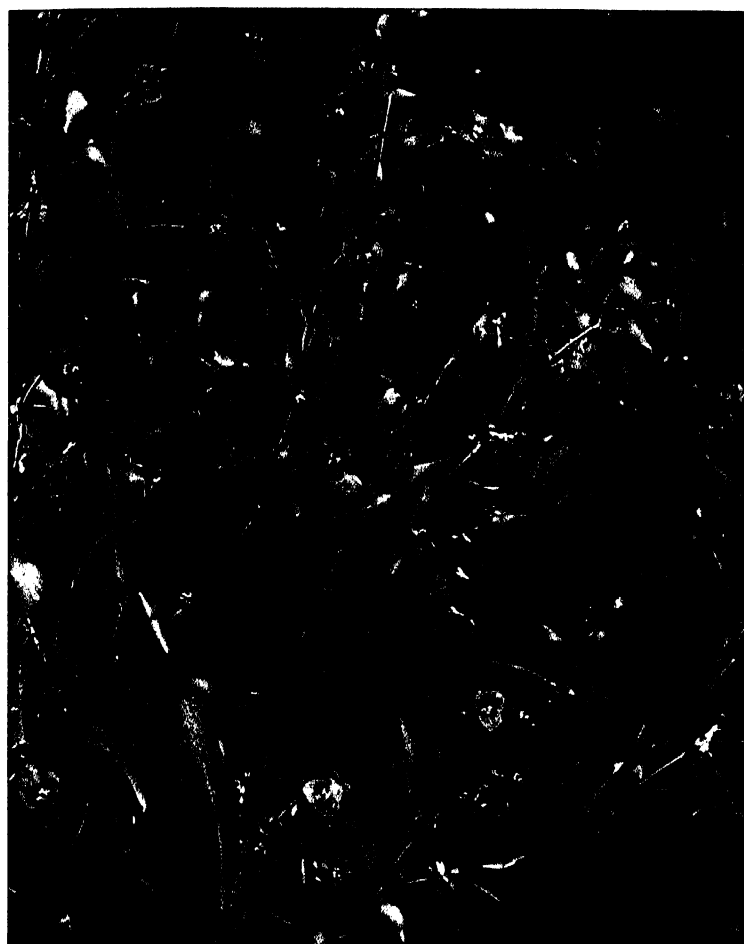
Day flower, Widow's tears

COMMELINACEAE

Genus of 100 species of mat-forming or clump-forming annuals and fibrous- or tuberous-rooted perennials from forest floors in tropical and subtropical regions of southern Africa, Asia, and North, Central, and South America. The leaves are alternate and ovate, lance-shaped, or linear. Most species root at the leaf nodes as they spread. One-sided cymes of small, saucer-shaped, 3-petalled flowers are enclosed in folded, terminal, spathe-like bracts; flowers emerge one at a time, each lasting less than a day. Use *Commelina* species as permanent ground cover. In frost-prone areas, grow tender species in a cool greenhouse or outdoors in an annual border; frost-hardy species are suitable for a herbaceous border.

- **HARDINESS** Frost hardy to frost tender; crowns of some tender species may tolerate -3°C (27°F), perhaps lower, in well-drained soil.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in a warm, sheltered site in sun or partial shade. Provide a deep, dry,

*Colutea x media* (inset: flower detail)



*Commelina coelestis*

winter mulch. In frost-prone climates, lift plants before the first frosts and overwinter in barely moist, frost-free conditions. Start into growth again in gentle heat in spring.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide in spring.

• **PESTS AND DISEASES** Slugs and vine weevils may be a problem.

***C. benghalensis***. Creeping, fibrous-rooted perennial bearing ovate-lance-shaped to ovate leaves, to 7cm (3in) long. Cymes of blue or violet flowers, 1.5cm (½in) across, are borne in the upper leaf axils in summer. † to 25cm (10in), ↔ indefinite. Tropical Asia, southern Africa. \* (borderline)

***C. coelestis*** ■ Vigorous, clump-forming, erect, tuberous perennial with hairy, fleshy stems bearing ovate-lance-shaped to oblong-lance-shaped, clasping leaves, 8–18cm (3–7in) long. From late summer to mid-autumn, freely produces cymes of vivid blue flowers, 2–3cm (¾–1¼in) across. Related to (and sometimes included in) *C. tuberosa*. † to 90cm (36in), ↔ 45cm (18in). Central and South America. \*\* **var. *alba*** bears white flowers.

***C. tuberosa***. Mat-forming, procumbent, tuberous perennial bearing narrowly lance-shaped leaves, to 9cm (3½in) long. Cymes of green flowers, 3cm (1¼in) across, streaked with dark blue-purple, are produced in summer. † to 20cm (8in), ↔ indefinite. Central and South America. \* (borderline)

▷ **Compass plant** see *Silphium laciniatum*

## CONANDRON

GESNERIACEAE

Genus of one species of rosette-forming, tuberous-rooted, evergreen perennial from Japan, found on wet, rocky cliffs in mountainous areas. Leaves are elliptic-ovate, coarsely toothed, wrinkled, and fleshy. Tubular flowers, with prominent stamens, are borne in nodding cymes on leafless stems in midsummer. In dry, cool-temperate climates, grow *C. ramondoides* in shaded, vertical crevices in a rock garden. In areas with cool, wet winters, grow in an alpine house.

• **HARDINESS** Frost hardy.

• **CULTIVATION** In an alpine house, grow in loam-based potting compost (JI No.2) with additional grit and leaf mould, in bright filtered light. In the growing season, water moderately with soft water, and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, gritty, humus-rich, moist but well-drained, acid soil in partial shade. Protect from excessive winter wet.

• **PROPAGATION** Surface-sow seed in containers in a cold frame in spring; water seedlings from below by plunging pots to their rims in soft water. Root leaf cuttings in early summer.

• **PESTS AND DISEASES** Red spider mites and aphids may be troublesome under glass.

***C. ramondoides***. Hummock-forming perennial with glossy, mid-green leaves, to 30cm (12in) long. In midsummer,

bears loose cymes of 10–40 tubular, deeply 5-lobed, white, lilac, or deep blue-purple flowers, to 1.5cm (½in) across, with orange centres, on stems to 20cm (8in) long. † to 25cm (10in), ↔ to 20cm (8in). Japan (Honshu). \*\*

▷ **Cone bush** see *Isopogon*

▷ **Coneflower** see *Echinacea*, *Rudbeckia*

**Drooping** see *Ratibida pinnata*

**Grey-head** see *Ratibida pinnata*

**Prairie** see *Ratibida*

**Rose** see *Isopogon dubius*

▷ **Cone pepper** see *Capsicum annuum*

Conioides Group

**Red** see *Capsicum annuum*

Fasciculatum Group

## CONGEA

VERBENACEAE

Genus of 7 species of evergreen, scandent shrubs and twining climbers found in forest and thickets in S.E. Asia. The leaves are opposite, entire, and ovate to elliptic or oblong. Congeas bear terminal panicles of tiny, tubular, 2-lipped flowers, borne in small clusters, ringed by several petal-like bracts. In frost-prone areas, grow in a warm greenhouse or conservatory. In warmer areas, grow on a trellis, pillar, or pergola.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light, with shade from hot sun, and with good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Top-dress or pot on in spring. Provide support for the climbing stems. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun. Pruning group 11, immediately after flowering.

• **PROPAGATION** Sow seed at 16–20°C (61–68°F) in spring. Root semi-ripe cuttings in summer with bottom heat. Layer in spring.

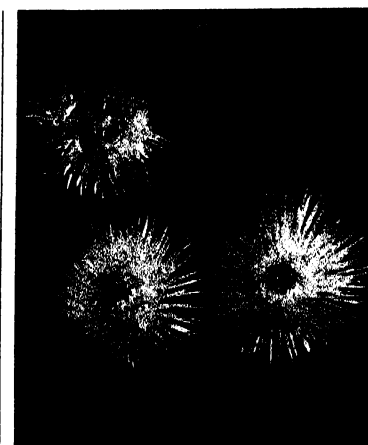
• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

***C. tomentosa*** (Shower orchid). Evergreen climber with downy, purple and green, scandent or climbing stems. Leaves are ovate to elliptic or oblong and lightly hairy, to 20cm (8in) long. From winter to spring, bears panicles of white flowers in dense clusters, 5cm (2in) across, within groups of ovate to elliptic-oblong, violet or white bracts, densely covered with white hairs. † 3–5m (10–15ft). Burma, Thailand. ♂ (min. 15°C/59°F)

## CONICOSIA

AIZOACEAE

Genus of 10 species of semi-evergreen, spreading, perennial (in rare cases, biennial) succulents from arid regions of South Africa's Northern Cape, Eastern Cape, and Western Cape. The long, narrow, 3-angled to semi-cylindrical, fleshy, tufted, often dark-spotted leaves dry up after flowering, but persist after the solitary, long-stalked, daisy-like yellow flowers have faded. Green berries contain spherical, slightly keeled, smooth seeds. In frost-prone areas, grow in a temperate greenhouse. In warm, dry climates, they are suitable for growing outdoors in a desert garden.



*Conicosia pugioniformis*

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts each loam and sharp sand and 1 part leaf mould, in full light and with low humidity. At the beginning of the growing season, apply a balanced liquid fertilizer. Water moderately from early summer to autumn, and keep completely dry at other times of year. Outdoors, grow in humus-rich, not too fertile, well-drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in mid-spring.

• **PESTS AND DISEASES** Aphids may prove troublesome.

***C. capensis***. Perennial succulent with stems to 15cm (6in) or more long. These are crowned by 3-angled, grooved, spotted, bluish green leaves, to 40cm (16in) long, which are shorter on the prostrate, floral branches. Bears pale yellow flowers, 7cm (3in) across, in summer. † 25cm (10in), ↔ 30cm (12in). South Africa (Northern Cape, Western Cape). ♂ (min. 7°C/45°F)

***C. pugioniformis*** ■ Perennial succulent with stems to 30cm (12in) long. These are crowned by 3-angled, greyish green leaves, to 20cm (8in) long, with grooved upper surfaces, reddish green at the bases. In late summer, bears glistening, bright yellow flowers, 7cm (3in) across. † 40cm (16in), ↔ 30cm (12in). South Africa (Northern Cape, Western Cape). ♂ (min. 7°C/45°F)

## CONIOGRAMME

ADIANTACEAE

Genus of 20 species of clump-forming, evergreen, semi-evergreen, or deciduous, terrestrial ferns from moist woodland in Asia. Creeping rhizomes produce pinnate to 3-pinnate, pale to dark green fronds with strap-shaped to ovate or oblong pinnae, pointed at the tips. Sporangia, not protected by indusia, are borne in rows on the undersides of the fronds. Suitable for growing in a shady border or woodland garden; in areas prone to hard frosts, grow half-hardy species in a cool greenhouse or conservatory.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered or indirect light and moderate humidity. In the growing season, water

C

freely, applying a half-strength balanced liquid fertilizer monthly; in winter, water moderately, keeping the foliage dry. Outdoors, grow in moist but well-drained, fertile, neutral to acid, leafy soil in partial shade. Provide shelter from strong winds.

• **PROPAGATION** Sow spores at 16°C (61°F) as soon as ripe. Divide rhizomes of well-established colonies in late spring. See also p.51.

• **PESTS AND DISEASES** Prone to slugs.

**C. japonica** (Bamboo fern). Deciduous, sometimes semi-evergreen fern with oblong to linear-lance-shaped fronds, 50–60cm (20–24in) long, which are pinnate at the tips and 2-pinnate at the bases. Narrowly ovate, pale green pinnae may have central yellow marks. ↑75cm (30in), ↔80cm (32in). E. Asia. \*\*\* (borderline)

## CONOPHYTUM

AIZOACEAE

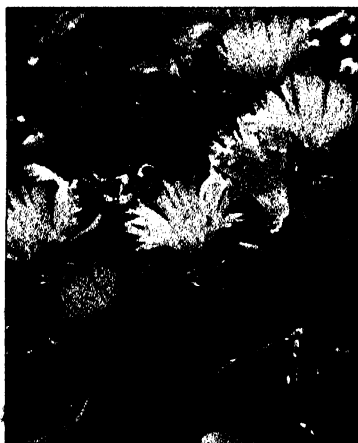
Genus of 290 species of dwarf, often slow-growing, clump-forming, perennial succulents, frequently with long roots, found in semi-desert areas with winter rainfall in Namibia and South Africa. Small, fleshy "bodies" comprise 2 united leaves with a central fissure, from which solitary, daisy-like flowers are produced, followed by small, ovoid, fleshy green fruits. After the flowers fade, the leaves gradually shrivel to papery sheaths; new leaves develop through the sheaths after the dormant period. In most climates they are grown in a warm greenhouse as they will not tolerate summer rainfall. In their native regions, grow in a raised bed or scree bed, or in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts loam to 1 part each sharp sand and leaf mould, in full light with low humidity. Water sparingly from late summer to early winter and again in spring; additional fertilizer is not needed. Keep completely dry from late spring to midsummer. Outdoors, grow in gritty, humus-rich, low-fertility soil in full sun. See also pp.48–49.

• **PROPAGATION** Surface-sow seed in late winter at 20–25°C (68–77°F) in moist, shady conditions; gradually increase light and reduce humidity after germination. Separate and root complete bodies in late summer.

• **PESTS AND DISEASES** Susceptible to aphids under glass.



*Conophytum bilobum*



*Conophytum notabile*

**C. bilobum** ■ Perennial succulent with flattened, heart-shaped, greyish green bodies, 2.5cm (1in) across, branching with age to form clusters. Bears yellow flowers, to 3cm (1½in) across, in late summer. ↑5cm (2in), ↔15cm (6in). South Africa (Northern Cape, Western Cape). ☼ (min. 10°C/50°F)

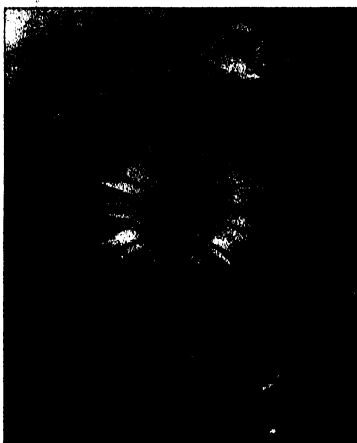
**C. longum** see *Ophthalmophyllum longum*.

**C. nanum**. Perennial succulent with fleshy, minutely papillose, bright green leaves forming spherical bodies, to 7mm (¼in) across. Red-tipped white flowers, 1cm (½in) across, are produced in late summer. ↑2cm (¾in), ↔8cm (3in). South Africa (Northern Cape). ☼ (min. 10°C/50°F)

**C. notabile** ■ Mat-forming, perennial succulent with generally ellipsoid, rounded, pale bluish green bodies, to 1cm (½in) across, each with a red dot on either side of the fissure. In late summer, bears brownish orange flowers, 2cm (¾in) across. ↑2.5cm (1in), ↔2cm (¾in). South Africa (Northern Cape, Western Cape). ☼ (min. 10°C/50°F)

**C. obcordellum**. Variable, mat-forming, perennial succulent with inversely conical, green-dotted, light green to grey bodies, to 2cm (¾in) across, with pinkish red sides. White flowers, to 1.5cm (½in) across, are produced in late summer. ↑to 1.5cm (½in), ↔to 7cm (3in). South Africa (Western Cape). ☼ (min. 10°C/50°F)

**C. pillansii** ■ Perennial succulent with 1–3 joined, depressed obovoid, pale yellowish green bodies, 2cm (¾in) or more across, the tops marked with translucent green dots, the sides slightly



*Conophytum pillansii*



*Conophytum truncatum*

reddened. In late summer, bears pinkish purple flowers, 2.5cm (1in) across, sometimes with white bases. ↑2cm (¾in), ↔to 7cm (3in). South Africa (Western Cape). ☼ (min. 10°C/50°F)

**C. subrisum**, syn. *C. villetii*. Clump-forming or solitary, perennial succulent with inversely conical, chalky white to bluish green bodies, 1.5–2.5cm (½–1in) across. Bright yellow flowers, with reddish tips, are borne from late summer to autumn. ↑2.5cm (1in), ↔to 10cm (4in). Namibia, South Africa. ☼ (min. 10°C/50°F)

**C. truncatum** ■ Variable, cushion-forming, perennial succulent with inversely conical, dark-spotted, greyish to bluish green bodies, 1.5cm (½in) across, with wide fissures. In autumn, bears yellowish or creamy white flowers, 1.5cm (½in) across. ↑1.5cm (½in), ↔to 15cm (6in). South Africa (Eastern Cape, Western Cape). ☼ (min. 10°C/50°F)

**C. velutinum**. Mat-forming, perennial succulent with ovate, velvety, olive-green bodies, 8mm (⅜in) across, with convex tops and slightly depressed fissures. The bodies often arise from small, basal branches that are covered by the remains of papery leaf sheaths. Bears bright pinkish purple flowers, to 2cm (¾in) across, in late summer. ↑1.5cm (½in), ↔7cm (3in). South Africa (Northern Cape). ☼ (min. 10°C/50°F)

**C. villetii** see *C. subrisum*.

▷ *Consolia falcata* see *Opuntia falcata*

## CONSOLIDA

Larkspur

RANUNCULACEAE

Genus of about 40 species of erect, slender-stemmed annuals, closely related to and sometimes included in the genus *Delphinium*. They occur in fallow fields and on stony slopes and steppes in S.E. Europe and from the W. Mediterranean region to C. Asia. The feathery, softly downy, mid- to dark green, usually rounded leaves are deeply pinnatisect, or palmate with numerous slender leaflets. Spurred, delphinium-like, pink, blue, or white flowers are produced in racemes or panicles in summer. The taller cultivars provide long-lasting cut flowers, which may also be dried. All are excellent for a cottage garden or annual border. Larkspur seeds are poisonous.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, fertile, well-drained soil in full sun. Water



*Consolida ajacis* Dwarf Rocket Series

freely in dry weather. Provide twiggy support for tall cultivars. Dead-head to prolong flowering.

• **PROPAGATION** Sow seed *in situ* from early spring to early summer, or in autumn with cloche protection in frost-prone areas.

• **PESTS AND DISEASES** Slugs, snails, powdery mildew, and crown rot may cause problems.

**C. ajacis**, syn. *C. ambigua*, *Delphinium consolida* (Larkspur). Sparsely to well-branched annual with finely dissected, almost fern-like, palmate leaves, to 10cm (4in) long, with oblong to linear leaflets. In summer, bears upright, simple or branching, open to densely packed spikes, to 60cm (24in) tall, of spurred, single or rosette-like, double flowers, to 4cm (1½in) across, in rich tones or pastel shades of pink, white, or violet-blue. ↑30–120cm (12–48in), ↔23–30cm (9–12in). Mediterranean. \*\*\*.

\*\*\*. **Dwarf Hyacinth Series** cultivars do not branch strongly at the bases, and bear double flowers in densely packed, blunt-tipped racemes. Grow in an exposed garden; ↑30–45cm (12–18in). **Dwarf Rocket Series** ■ cultivars are compact, with double, blue, purple, white, or pink flowers; ↑30–50cm (12–20in), ↔15–25cm (6–10in). **Giant Imperial Series** cultivars branch strongly from the bases, and produce racemes of double flowers on long, straight stems. Good for cut flowers; ↑60–100cm (24–36in), ↔35cm (14in). **C. ambigua** see *C. ajacis*.

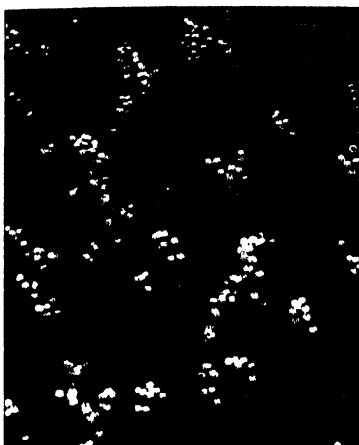
## CONVALLARIA

Lily-of-the-valley

CONVALLARIACEAE/LILIACEAE

Genus of 3 species, sometimes considered to be one variable species, of rhizomatous perennials found in light woodland, scrub, or alpine meadows in N. temperate regions. They have ovate-lance-shaped to elliptic, stalked, basal leaves. Pendent, bell-shaped, fragrant,





*Convallaria majalis*

mostly white flowers are produced in arching racemes. Grow in a wild or woodland garden, or use for ground cover in a damp, shady border. The seeds of *C. majalis* may cause mild stomach upset if ingested.

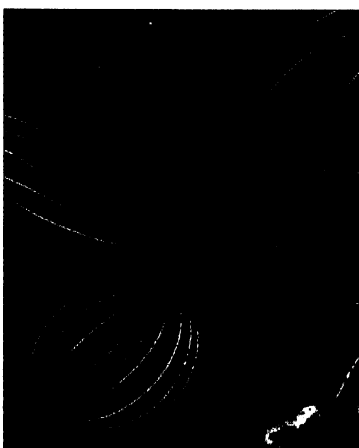
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in leafy, fertile, humus-rich, moist soil in full or partial shade. Top-dress with leaf mould in autumn. For a fragrant indoor display, lift and pot up rhizomes in autumn, and force gently or allow them to grow at their own pace. Replant outdoors after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, removing the flesh from the seeds before sowing. Separate rhizomes in autumn, keeping moist until established.

• **PESTS AND DISEASES** Susceptible to grey mould (*Botrytis*).

*C. majalis* ♀ Rhizomatous perennial producing tough, slender, creeping, branching rhizomes bearing pairs of ovate-lance-shaped to elliptic, stalked, hairless, basal leaves, 4–20cm (1½–8in) long. Arching racemes of pendent, spherical-bell-shaped, strongly scented, waxy white flowers, 0.5–1cm (¼–½in) across, are produced on leafless stems in late spring. ↑ 23cm (9in), ↔ 30cm (12in). N. temperate regions. \*\*\*  
'Albostriata' ♀ has leaves longitudinally striped creamy white. 'Flore Pleno' has double white flowers. 'Fortin's Giant' is vigorous, with wide leaves, and flowers 8–15mm (⅓–½in) across; ↑ 30cm (12in). 'Hardwick Hall' has broad leaves with very narrow, pale green



*Convallaria majalis* 'Albostriata'



*Convallaria majalis* var. *rosea*

margins, and flowers 9–10mm (⅓–½in) across; ↑ 25cm (10in). 'Prolificans' has panicle-like, branched inflorescences of sometimes slightly malformed flowers. var. *rosea* ♀ has pale mauish pink flowers; ↑ 20cm (8in).

## CONVOLVULUS

Bindweed

CONVOLVULACEAE

Genus of about 250 species of upright, climbing, or scrambling annuals and perennials, and evergreen shrubs or subshrubs, occurring in diverse habitats in subtropical and temperate areas. They have mostly entire leaves and produce solitary or clustered, funnel- or trumpet-shaped flowers. Grow in a rock garden, on a sunny bank, or in a mixed or herbaceous border. In frost-prone areas, grow half-hardy and frost-tender species in a temperate greenhouse. In areas with cold, wet winters, grow *C. cneorum* and *C. sabatius* in containers, and move them into a cold greenhouse in winter. Species with running rootstocks can prove invasive.

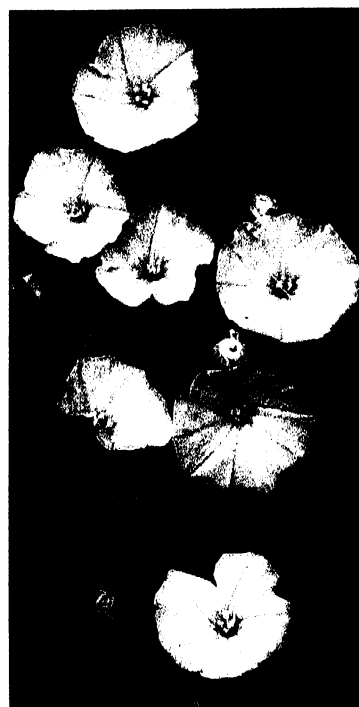
• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in poor to moderately fertile, gritty, well-drained soil in a sheltered site in full sun. Dead-head annuals to prolong flowering. Confine vigorous species by planting in a container plunged into the soil. In containers, use a loam-based potting compost (J1 No.1), and water freely when in growth; keep just moist during winter. Pruning group 8 for *C. cneorum*.

• **PROPAGATION** Sow seed of annuals *in situ* in mid-spring, or in autumn with



*Convolvulus boissieri*

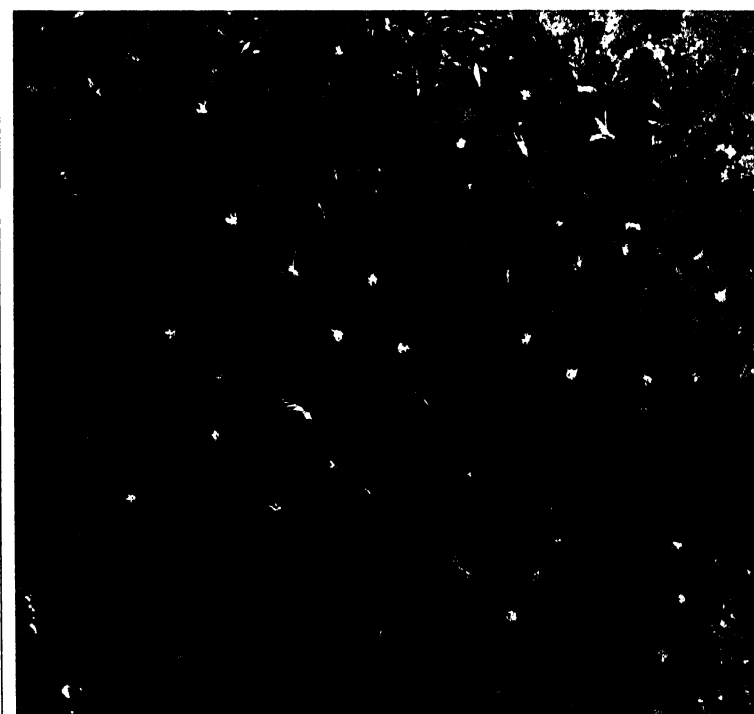


*Convolvulus cneorum*

cloche protection in frost-prone areas. For perennials, shrubs, and subshrubs, sow seed at 13–18°C (55–64°F) in spring; root softwood cuttings in late spring or greenwood cuttings in summer. Divide perennials in spring.

• **PESTS AND DISEASES** Susceptible to red spider mites and aphids under glass.

*C. althaeoides*. Vigorous, slender, climbing or trailing perennial with ovate to heart-shaped, shallowly to deeply lobed, hairy, silvery green leaves, to 3cm (1¼in) long. Axillary clusters of 1–3 widely funnel-shaped, clear pink flowers, to 4cm (1½in) across, are borne in mid- and late summer. Invasive, but suitable for a container. ↑ to 15cm (6in), ↔ indefinite. S. Europe. \*\*\*. **subsp.**



*Convolvulus sabatius*

*tenuissimus*, syn. *C. elegantissimus*, has more finely dissected leaves, with a covering of dense, soft, silvery hairs.

*C. boissieri* ♀ syn. *C. nitidus*. Creeping, mat- or cushion-forming perennial with clustered, ovate, silky-hairy, silvery grey leaves, to 3cm (1¼in) long. Bears short-stemmed, axillary clusters of 1–4 funnel-shaped white, sometimes pink-flushed flowers, to 2cm (¾in) across, with small yellow centres, in early summer. Does not always flower freely. ↑ to 8cm (3in), ↔ 40cm (16in) or more. Spain. \*\*\*

*C. cneorum* ♀ Compact, rounded, bushy shrub with inversely lance-shaped to linear, silky, silver-green leaves, 3–6cm (1¼–2½in) long. Funnel-shaped white flowers, to 4cm (1½in) across, with yellow centres, are borne from pink buds in axillary clusters from late spring to summer. ↑ 60cm (24in), ↔ 90cm (36in). C. and W. Mediterranean. \*\*\*  
*C. elegantissimus* see *C. althaeoides* subsp. *tenuissimus*.

*C. mauritanicus* see *C. sabatius*.

*C. minor* see *C. tricolor*.

*C. nitidus* see *C. boissieri*.

*C. purpureus* see *Ipomoea purpurea*.

*C. sabatius* ♀ syn. *C. mauritanicus*.

Trailing, slender-stemmed, woody-based perennial with oblong to broadly ovate, mid-green leaves, to 3cm (1¼in) long. Produces a profusion of shallowly funnel-shaped, pale to deep lavender-blue flowers, 1.5–2.5cm (½–1in) across, in clusters of 1–3 from the leaf axils, from summer to early autumn. ↑ 15cm (6in), ↔ to 50cm (20in). Spain, Italy, North Africa. \*\*

*C. tricolor*, syn. *C. minor*. Bushy, upright then spreading, red-stemmed annual or short-lived perennial with ovate to lance-shaped, dark green leaves, to 4cm (1½in) long. Solitary, open funnel-shaped, royal blue flowers, to 4cm (1½in) across, feathered white at the petal bases, with yellow eyes, are borne in long succession in summer; each bloom lasts only a day. ↑ 30–40cm (12–16in), ↔ 23–30cm (9–12in). Portugal to Greece, N. Africa. \*\*\*.

C

*Convolvulus tricolor* 'Royal Ensign'

'Royal Ensign' produces deep blue flowers, to 5cm (2in) across; grow in a hanging basket;  $\uparrow$  to 30cm (1ft).

▷ *Cooperia* see *Zephyranthes*

## COPERNICIA

Wax palm

ARECACEAE/PALMAE

Genus of about 24 species of slow-growing, single-stemmed palms from savannah and forest, often in dry areas prone to periodic flooding, in Cuba, Hispaniola, and South America. Leaves, borne in dense, terminal clusters, are pinnate with the 10–60 leaflets arranged so that the leaves appear to be palmately lobed. On fading, the leaves remain in place, hanging down and forming a thatch-like skirt. The bowl-shaped, 3-petalled flowers are borne in panicles between the leaves. In frost-prone areas, grow as houseplants or in a warm greenhouse or conservatory. In warmer areas, use as specimen trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun.

*Copernicia macroglossa*

In the growing season, water freely and applying a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade.

- **PROPAGATION** Sow seed at 23–27°C (73–81°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*C. macroglossa* [P] (Petticoat palm). Single-stemmed palm with a short, sturdy trunk covered in a skirt of dead leaves. Wedge-shaped leaflets, the outer ones with spiny margins, are stalkless or have very short stalks, and are usually deep green, to 1.4m (4½ft) long. Very small, greenish white flowers are borne in panicles that protrude beyond the leaf tips in summer.  $\uparrow$  5–7m (15–22ft),  $\leftrightarrow$  to 3m (10ft). Cuba.  $\ominus$  (min. 13°C/55°F)

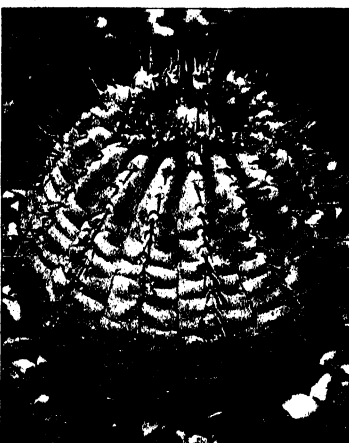
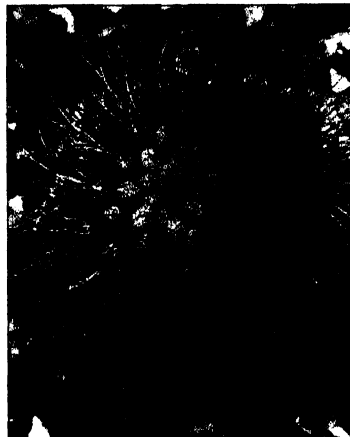
## COPIAPOA

CACTACEAE

Genus of 10–20 species of slow-growing, solitary or clustered, perennial cacti from coastal deserts of N. Chile. The stems have warty ribs and spiny areoles. Funnel-shaped, diurnal flowers, mostly in shades of yellow, are borne from the densely woolly crowns in summer, followed by spherical green fruits with glossy black seeds. In frost-prone areas, grow as houseplants or in a warm greenhouse. In warmer areas, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 3 parts standard cactus compost and 1 part perlite in bright filtered light. From spring to early autumn, water moderately, applying a balanced liquid fertilizer monthly. Keep dry at other times. Outdoors, grow in gritty, poor soil in full sun, with some midday shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in early spring. Remove offsets in summer.
- **PESTS AND DISEASES** Mealybugs may be a problem under glass.

*C. barquitenis* see *C. hypogaea*.  
*C. cinerea* [P] Simple or clump-forming cactus producing spherical then cylindrical, 14- to 30-ribbed, greyish white stems, to 20cm (8in) across. Dark brown areoles bear 1 or 2 black or grey spines. Bright yellow flowers, 3.5cm (1½in) long, are produced in summer.

*Copiapoa cinerea**Copiapoa krainziana*

$\uparrow$  to 70cm (3ft), rarely taller,  $\leftrightarrow$  to 40cm (16in). N. Chile.  $\ominus$  (min. 10°C/50°F).  
**var. gigantea**, syn. *C. haseltoniana*, bears completely grey stems with 20 or more very prominent ribs and dark brown spines;  $\leftrightarrow$  20cm (8in).

*C. haseltoniana* see *C. cinerea* var. *gigantea*.

*C. hypogaea*, syn. *C. barquitenis*. Simple or clump-forming cactus with flattened-spherical, dark brownish green stems, 6–7cm (2½–3in) across, with 12 or more ribs. White-woolly areoles bear a few white radial spines. Yellow flowers, 2cm (¾in) long, are borne in summer.  $\uparrow$  4–7cm (1½–3in),  $\leftrightarrow$  12cm (5in). N. Chile.  $\ominus$  (min. 10°C/50°F)

*C. krainziana* [P] Clump-forming cactus with spherical, 13- to 24-ribbed, greyish green stems, to 12cm (5in) across. Grey areoles bear grey spines (10–12 radials and 14–20 centrals). Golden yellow flowers, 3.5cm (1½in) long, are produced in summer.  $\uparrow$  10cm (4in) or more,  $\leftrightarrow$  to 1m (3ft). N. Chile.  $\ominus$  (min. 10°C/50°F)

▷ **Copper beech** see *Fagus sylvatica* f. *purpurea*

▷ **Copperleaf** see *Acalypha wilkesiana*

## COPROSMA

RUBIACEAE

Genus of about 90 species of evergreen shrubs and small trees found in forest, swamp, grassland, and rocky areas, from sea level to mountainous regions, from Indonesia to Australia, New Zealand, and the Pacific islands. The opposite leaves are simple, linear to rounded, often leathery, and light to dark green, purple, or brown. The inconspicuous, usually dioecious, tubular or narrowly funnel-shaped flowers are borne singly or in cymes or clusters. Coprosmas are valued for their handsome foliage, and, where plants of both sexes are grown together, for their mainly spherical, brightly coloured, succulent berries, 4–10mm (¼–½in) across, usually borne in autumn. Grow in a rock garden or shrub border. In frost-prone areas, grow half-hardy species and cultivars in a cool greenhouse or conservatory.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional grit in bright filtered light, with good ventilation. In growth, water freely and apply a balanced liquid fertilizer monthly; water moderately at

*Coprosma* 'Coppershine'

other times. Outdoors, grow in neutral to slightly acid, moderately fertile, moist but well-drained soil in sun or partial shade. Pruning group 8.

- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*C. acerosa* f. *brunnea* see *C. brunnea*.

*C. baueri* see *C. repens*.

*C. baueriana* see *C. repens*.

*C. 'Beatson's Gold'*. Compact, rounded, female shrub with spreading branches and ovate, bright green leaves, to 1.5cm (½in) long, splashed yellow in the centres. Bright red berries are borne in autumn.  $\uparrow$  1.5m (5ft). \*\*

*C. 'Blue Pearls'*. Mat-forming female shrub with rigid, spreading branches and inversely lance-shaped, dark green leaves, to 1cm (½in) long. Translucent blue berries are produced in summer.  $\uparrow$  45cm (18in),  $\leftrightarrow$  90cm (36in). \*\*

*C. 'Brunette'*. Bushy female shrub with ovate-oblong, glossy bronze leaves, 2.5cm (1in) long. Orange berries are borne in autumn.  $\uparrow$  1m (3ft). \*\*

*C. brunnea*, syn. *C. acerosa* f. *brunnea*. Mat-forming, dioecious shrub with spreading, tangled, wiry shoots and slender, linear, brownish green leaves, to 1.5cm (½in) long. Translucent blue berries are produced on female plants in autumn.  $\uparrow$  45cm (18in),  $\leftrightarrow$  2m (6ft). New Zealand. \*\*

*C. 'Chocolate Soldier'*. Erect, bushy, male shrub with oblong to oblong-ovate, very glossy, chocolate-brown to dark green leaves, 1–2cm (½–¾in) long.  $\uparrow$  1m (3ft),  $\leftrightarrow$  45cm (18in). \*

*Coprosma x kirkii* 'Variegata'

*Coprosma repens*

**C. 'Coppershine'** ■ Bushy male shrub with narrowly ovate-oblong, glossy, dark green to purple leaves, suffused copper, 2.5cm (1in) long,  $\pm$  1m (3ft). \*

**C. x kirkii** (*C. acerosa* x *C. repens*) Variants of this hybrid are of irregular, spreading habit. Arching branches bear linear-oblong, narrowly obovate, or lance-shaped, dark green leaves, to 4cm (1½in) long. In autumn, produces oblong-spherical, translucent or white berries, flushed or flecked red.  $\pm$  1.5m (5ft),  $\pm$  2m (6ft). New Zealand. \*

**'Variegata'** ■ is a spreading female shrub, with white-margined, grey-green leaves and white berries;  $\pm$  75cm (30in),  $\pm$  1.5m (5ft).

**C. 'Kiwi-gold'**, Prostrate male shrub with elliptic to oblong, glossy, mid-green leaves, 3cm (1¼in) long, boldly splashed yellow.  $\pm$  25cm (10in),  $\pm$  1m (3ft). \*\*

**C. repens** ■□ syn. *C. baueri*, *C. baueriana* (Looking glass plant). Large, dioecious shrub or small tree, sometimes prostrate, with broadly ovate-oblong, fleshy, glossy, deep green leaves, 2–8cm (¾–3in) long. Bears obovoid, orange-red berries, to 1cm (½in) long, from late summer to autumn.  $\pm$  0.6–8m (2–25ft),  $\pm$  1–3m (3–10ft). New Zealand. \*

**'Exotica'** is a female version of 'Picturata'. **'Marble Queen'** ■ is male, with leaves splashed creamy white. **'Picturata'** ■ is male, and has leaves with deep cream to yellow centres and orange berries.

**C. robusta**, Vigorous, usually dioecious, erect then spreading shrub with elliptic, semi-glossy, dark green leaves, 7–12cm (3–5in) long. Ovoid, deep orange to

*Coprosma repens* 'Marble Queen'*Coprosma repens* 'Picturata'

yellow berries are produced in autumn.  $\pm$  4–6m (12–20ft),  $\pm$  2–4m (6–12ft). New Zealand. \*. **'Variegata'** is male, with a central yellow blaze on each leaf. **'Williamsii Variegata'**, syn. **'Williamsii'**, is bisexual, with dark and light green marbled leaves, margined creamy yellow, and orange berries.

## COPTIS

Gold thread

RANUNCULACEAE

Genus of 10 species of low-growing, evergreen perennials from temperate, usually coniferous woodland and bogs in the N. hemisphere. They produce slender yellow rhizomes and basal, 3- to 5-palmate or finely palmately lobed leaves. Star-shaped flowers are borne on leafless stems above the foliage. Grow in a peat bed or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, slightly acid soil in a sheltered site in full or partial shade.

• **PROPAGATION** Sow seed in a cold frame as soon as ripe, or divide in spring.

• **PESTS AND DISEASES** Trouble free.

**C. quinquefolia**, Rhizomatous, spreading, delicate perennial with long-stalked, 5-palmate leaves, to 2.5cm (1in) long, with obovate or diamond-shaped leaflets. Solitary, upturned white flowers are borne on stems 8–12cm (3–5in) long, in spring.  $\pm$  to 12cm (5in),  $\pm$  to 20cm (8in). Japan, Taiwan. \*\*\*

▷ **Coral bean** see *Erythrina herbacea*

▷ **Coral bells** see *Heuchera sanguinea*

▷ **Coralberry** see *Symphoricarpos orbiculatus*

▷ **Coral bush** see *Templetonia retusa*

▷ **Coral drops** see *Besleria elegans*

▷ **Coral flower** see *Heuchera*

▷ **Coral gem** see *Lotus berthelottii*

▷ **Corallita** see *Antigonon*

White see *Porana paniculata*

▷ **Coral pea** see *Hardenbergia*, *Kennedia*

Black see *Kennedia nigricans*

Dusky see *Kennedia rubicunda*

Purple see *Hardenbergia violacea*

▷ **Coral plant** see *Berberidopsis corallina*, *Jatropha multifida*, *Russelia equisetiformis*

▷ **Coral tree** see *Erythrina*

Common see *E. crista-galli*

▷ **Coral vine** see *Antigonon*

Common see *Kennedia coccinea*

## CORDYLINE

Cabbage palm, Cabbage tree

AGAVACEAE

Genus of 15 species of evergreen shrubs or tree-like, woody-stemmed perennials, the larger ones resembling palms, found on open hillsides and in scrub and open forest in S.E. Asia and the Pacific, including Australasia. The tufted or rosetted, leathery leaves are simple, entire, and lance-shaped to linear.

Sweetly scented, shallowly cup-shaped, 6-tepal flowers, 6–10mm (¼–½in) across, are produced in sometimes large, conspicuous, terminal panicles, followed by spherical, white, red, blue, or purple berries, 3–8mm (¼–¾in) across. In frost-prone areas, grow as houseplants or in a cool, temperate, or warm greenhouse or conservatory. In warmer areas, grow as specimen plants, in a mixed or shrub border, or in a courtyard garden.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2), with full light for green-leaved species, bright filtered or indirect light for variants with coloured foliage.

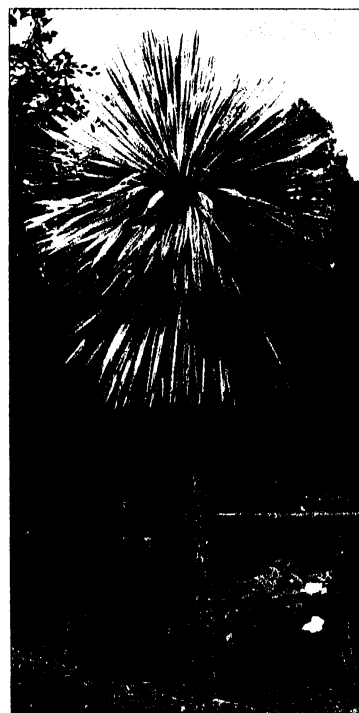
In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, well-drained soil in sun or partial shade.

• **PROPAGATION** Sow seed at 16°C

(61°F) in spring. Remove well-rooted suckers in spring.

• **PESTS AND DISEASES** Scale insects and red spider mites may prove troublesome under glass.

**C. australis** ♀♂ syn. *Dracaena australis* (New Zealand cabbage palm). Erect, palm-like tree, branching sparingly with age. Arching, lance-shaped to linear leaves, 30–90cm (12–36in) long, are light green to almost yellow-green. In summer, mature trees bear tiny, creamy white flowers in broad panicles, 1m (3ft) or more long, followed by white or blue-

*Cordyline australis* 'Albertii'

tinted berries.  $\pm$  3–10m (10–30ft) or more,  $\pm$  1–4m (3–12ft). New Zealand. \*. **'Albertii'** ■♀ has matt-green leaves with red midribs, cream stripes, and pink margins. **'Atropurpurea'** has leaves flushed purple at the bases and on the main veins beneath. **'Doucettii'** has leaves with creamy white stripes and pink-flushed margins. **'Purple Tower'** has broad leaves, heavily flushed plum-purple. **'Purpurea'** is similar to 'Purple Tower' but has slightly paler leaves.

**'Torbay Dazzler'** produces leaves with bold cream stripes and margins.

**'Variegata'** ■ has leaves longitudinally striped creamy white. **'Veitchii'** has leaves strongly flushed crimson at the bases and on the main veins beneath.

**C. banksii** ♀ Sparingly clump-forming or single-stemmed, erect shrub or, rarely, small tree with few branches and a crown of arching, strap-shaped, mid-to yellow-green leaves, 1m (3ft) or more long. White flowers are borne in broadly pyramidal panicles, 1–2m (3–6ft) long, in summer, followed by white or blue-tinted fruit.  $\pm$  3–4m (10–12ft),  $\pm$  2–3m (6–10ft). New Zealand. \*

**C. fruticosa**, syn. *C. terminalis* (Good luck tree, Ti tree). Erect, suckering, clump-forming shrub with generally unbranched stems and strap-shaped, deep green leaves, 30–60cm (12–24in) long. In summer, produces white to purple flowers in loose panicles, 30–50cm (12–20in) long, followed by bright red berries.  $\pm$  2–5m (6–15ft),  $\pm$  1–2.5m (3–8ft). Tropical S.E. Asia, E. Australia, larger Pacific islands.

• (min. 13°C/55°F). **'Amabilis'** has broad, glossy, bronze and red leaves, with flecks of white and pink when mature. **'Baby Ti'** has leaf margins suffused copper-red;  $\pm$  to 60cm (24in). **'Baptistii'** has broad, strongly recurved leaves streaked yellow and pink.

**'Firebrand'**, syn. 'Red Dracaena', has compact heads of foliage, flushed deep red-purple. **'Guilfoylei'** has strongly tapered, recurved leaves streaked red, pink, and white, with white bases.

*Cordyline australis* 'Variegata'

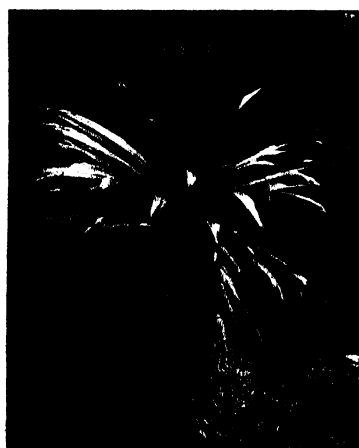
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*Cordyline fruticosa* 'Tricolor'

'**Hawaiian Bonsai**' is compact, with dark crimson leaves;  $\uparrow$  to 1m (3ft),  $\leftrightarrow$  to 60cm (24in). '**Margaret Storey**' is compact, with copper-flushed leaves splashed red and pink;  $\uparrow$  to 1m (3ft) or more. '**Mayi**' has red leaves when young, becoming deep green with red margins with age. '**Negri**' has deep copper-maroon foliage. '**Red Dracaena**' see 'Firebrand'. '**Tricolor**'  $\blacksquare$  has broad leaves boldly and very irregularly streaked and splashed in shades of red, pink, and cream.

*C. indivisa*  $\blacksquare$   $\uparrow$  syn. *Dracaena indivisa*. Thick-stemmed tree with a few branches at the top when mature. Each branch bears a tuft of narrowly lance-shaped, mid- to light green leaves, 1–2m (3–6ft) long, with red-veins above and suffused blue-white beneath. Cream flowers are borne in dense panicles, to 1.6m (5½ft) long, in summer, followed by bluish purple berries.  $\uparrow$  6–10m (20–30ft),  $\leftrightarrow$  2–4m (6–12ft). Mountain forests in New Zealand.  $\star$ . '**Purpurea**' has leaves suffused bronze-purple.

*C. stricta*. Erect, suckering shrub with low-arching, linear, toothed, deep green leaves, 20–60cm (8–24in) long. In summer, produces lilac to violet flowers, with reflexed petals, in loose, pyramidal panicles, to 60cm (24in) long, followed by purple or almost black berries.  $\uparrow$  2–3m (6–10ft),  $\leftrightarrow$  1–2m (3–6ft). Rainforest in Australia (Queensland to New South Wales).  $\odot$  (min. 13°C/55°F). '**Discolor**' has bronze-purple leaves. '**Grandis**' is generally larger and more robust;  $\uparrow$  to 3.5m (11ft). '**Rubra**' has foliage suffused copper-red. *C. terminalis* see *C. fruticosa*.

*Cordyline indivisa*

## COREOPSIS

Tickseed

ASTERACEAE/COMPOSITAE

Genus of 80–100 species of hairless or softly hairy annuals and perennials, some becoming woody at the bases. They occur on prairies and in woodland in North and Central America, and Mexico. Most have upright stems and produce opposite leaves, which may be either simple and entire, pinnate, or palmate (either palmately lobed or fully divided, 3-palmate). Daisy-like, bright yellow flowerheads are borne on long stalks; they are good for cut flowers, and are attractive to bees. Grow in a sunny annual or herbaceous border. Some cultivars, although perennial, are grown as annuals; most flower freely in their first year from seed.

• **HARDINESS** Fully hardy to frost tender.

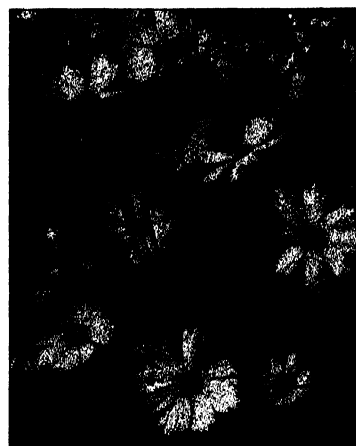
• **CULTIVATION** Outdoors, grow in fertile, well-drained soil in full sun or partial shade. Dead-head to prolong flowering. Support taller cultivars.

• **PROPAGATION** Sow seed of annuals *in situ*, in succession from early spring to early summer; sow perennials in a seedbed in mid-spring. Alternatively, sow seed at 13–16°C (55–61°F) in mid- or late winter; perennials will flower in the first year. Divide perennials in early spring. Root basal cuttings in spring.

• **PESTS AND DISEASES** Slugs and snails may prove troublesome.

*C. auriculata*. Rhizomatous perennial with erect, softly hairy stems bearing ovate to elliptic, entire or palmately lobed, mid-green leaves, to 12cm (5in) long. Solitary, bright yellow flowerheads, 5cm (2in) across, are borne from early to midsummer.  $\uparrow$  to 80cm (32in),  $\leftrightarrow$  60cm (24in). S.E. USA.  $\star\star\star$ . '**Cutting Gold**' see 'Schnittgold'. '**Schnittgold**'  $\blacksquare$  syn. 'Cutting Gold', has vivid gold flowerheads. '**Superba**' produces bright orange-yellow flowerheads, 6cm (2½in) across, with maroon basal marks, from early to late summer;  $\uparrow$  to 45cm (18in).

*C. californica*. Erect, branched, almost hairless annual with lance-shaped, entire to shallowly lobed, mostly basal, dark green leaves, to 15cm (6in) long. Produces solitary yellow flowerheads, to 3.5cm (1½in) across, in summer.  $\uparrow$  to 45cm (18in),  $\leftrightarrow$  23–30cm (9–12in). USA (California, S. Arizona), N.W. Mexico.  $\star\star\star$

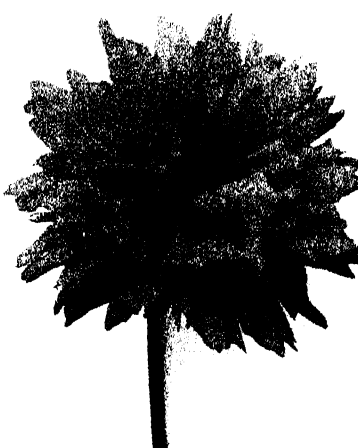
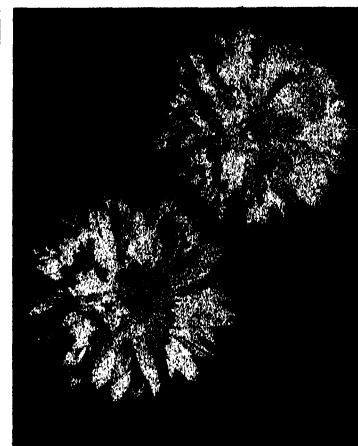
*Coreopsis auriculata* 'Schnittgold'*Coreopsis grandiflora* 'Badengold'

*C. grandiflora*. Clump-forming, almost hairless perennial, often grown as an annual, with simple, lance-shaped or palmately lobed lower leaves, to 10cm (4in) long. Flowering stems produce 3- to 5-pinnate leaves with linear leaflets. From late spring to late summer, produces solitary flowerheads, to 6cm (2½in) across, consisting of golden yellow ray-florets, with unevenly cut outer margins, and darker yellow disc-florets. Excellent for cutting. Dislikes excessive heat.  $\uparrow$  45–90cm (18–36in),  $\leftrightarrow$  45cm (18in). C. and S.E. USA.

$\star\star\star$ . '**Badengold**'  $\blacksquare$  produces deep yellow flowerheads with orange centres;  $\uparrow$  to 90cm (36in). '**Domino**' is a dwarf cultivar, producing yellow flowerheads;  $\uparrow$  40cm (16in). '**Early Sunrise**'  $\blacksquare$  is usually grown as an annual, and bears semi-double, deep yellow flowerheads, each flushed orange-yellow near the centre;  $\uparrow$  to 45cm (18in). '**Gold Star**', usually grown as an annual, bears golden yellow flowerheads and rolled or "quilled" petals;  $\uparrow$  to 30cm (12in).

'**Mayfield Giant**' has large, orange-yellow flowerheads, to 8cm (3in) across, and requires support;  $\uparrow$  to 90cm (36in). '**Sunburst**' has double, rich yellow flowerheads. '**Sunray**'  $\blacksquare$ , usually grown as an annual, has double, deep yellow flowerheads;  $\uparrow$  50–75cm (20–30in).

*C. lanceolata*  $\blacksquare$  Clump-forming, hairless perennial with usually entire, lance-shaped to inversely lance-shaped, mid-green leaves, to 15cm (6in) long. Flowering stems, with leaves only at the bases, produce solitary yellow flowerheads, 4–6cm (1½–2½in) across, from late spring to midsummer.  $\uparrow$  to 60cm

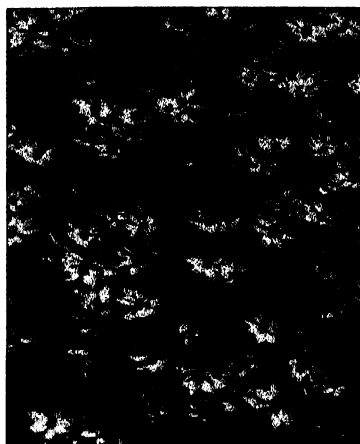
*Coreopsis grandiflora* 'Early Sunrise'*Coreopsis grandiflora* 'Sunray'

(24in),  $\leftrightarrow$  45cm (18in). C. and S. USA.  $\star\star\star$ . '**Baby Sun**' see 'Sonnenkind'. '**Goldfink**' is a dwarf cultivar, bearing golden yellow flowerheads;  $\uparrow$  to 25cm (10in). '**Sonnenkind**', syn. 'Baby Sun', produces golden yellow flowerheads;  $\uparrow$  40cm (16in). '**Sternaler**' produces yellow flowerheads with brown centres;  $\uparrow$  to 40cm (16in).

*C. tinctoria*, syn. *Calliopsis tinctoria*. Erect, hairless, stiff-stemmed annual bearing mostly basal, mid- to dark green leaves, to 10cm (4in) long. Leaves are lance-shaped and either entire or pinnate or 2-pinnate with linear leaflets. In summer, produces solitary, bright yellow flowerheads, to 5cm (2in) across, shading to brown-red at the bases, with dark red disc-florets. Dark red, purple, and brown variants also occur;  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  30–45cm (12–18in). North America.  $\star\star\star$ . '**Mahogany Midget**' is a dwarf cultivar, with yellow-centred, rich mahogany-scarlet flowerheads;  $\uparrow$  to 30cm (12in). '**Tiger Flower**' is a dwarf cultivar, producing flowerheads that vary from pure crimson to golden yellow, many of them speckled and striped with both colours;  $\uparrow$  to 23cm (9in),  $\leftrightarrow$  to 20cm (8in).

*C. verticillata*  $\blacksquare$  Bushy, rhizomatous, slowly spreading, hairless perennial with numerous branched stems. Leaves are 3-pinnate, to 6cm (2½in) long, with linear, mid-green leaflets. Bears yellow flowerheads, to 5cm (2in) across, in loose corymbs in early summer.  $\uparrow$  60–80cm (24–32in),  $\leftrightarrow$  45cm (18in). S.E. USA.  $\star\star\star$ . '**Golden Shower**' see 'Grandiflora'. '**Grandiflora**'  $\uparrow$  syn. 'Golden Shower', has dark yellow

*Coreopsis lanceolata*

*Coreopsis verticillata*

flowerheads. 'Moonbeam' has lemon-yellow flowerheads; † to 50cm (20in). 'Zagreb' has golden yellow flowerheads, and is drought-resistant; † 25–30cm (10–12in), ↔ to 30cm (12in).

▷ **Coriander** see *Coriandrum*

## CORIANDRUM

Coriander

APIACEAE/UMBELLIFERAE

Genus of 2 species of annuals, with hairless, strongly aromatic foliage, occurring in scrub, wasteland, fallow fields, or steppes in the E. Mediterranean region. The basal leaves are ovate and either pinnate to 3-pinnate, with toothed, linear or oblong leaflets, or pinnatisect; the upper leaves are pinnate to 3-pinnate with linear leaflets. Terminal, compound umbels of small, cup-shaped, white or purple-flushed sterile flowers, surrounded by larger fertile flowers, are followed by spherical, ribbed fruits. Grow in a herb garden for the leaves and seeds, which are used in cooking.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, fertile, well-drained soil, in full sun for seed production or in partial shade for best leaf growth. Pick leaves throughout the growing season. Harvest seed when the fruits begin to change colour and become pleasantly aromatic.

• **PROPAGATION** Sow seed *in situ* in spring. May self-seed.

• **PESTS AND DISEASES** Susceptible to fungal wilt.

*C. sativum*. Aromatic annual with long-stalked, glossy, bright green leaves, 1cm (½in) long. From midsummer to autumn, 5-petalled, white or pale purple flowers are produced in umbels to 1.5cm (½in) across, followed by pale golden brown fruit. † 50cm (20in), ↔ 20cm (8in). E. Mediterranean. \*\*\*

## CORIARIA

CORIARIACEAE

Genus of about 8 species of small trees or shrubs, usually deciduous, and rhizomatous, herbaceous or subshrubby perennials, which occur in warm-temperate climates in grassland, scrub, and woodland, often in mountainous regions. They are cultivated for their attractive habit, foliage, and fruits. Arching shoots bear opposite, simple, entire leaves. Small, insignificant green

*Coriaria terminalis* var. *xanthocarpa*

flowers are produced in terminal or axillary racemes in spring, and followed by ornamental, fleshy, black, purplish black, red, or yellow fruits. In some species, male and female flowers are borne on different plants. *Coriaria* species are suitable for a shrub border or rock garden. In frost-prone climates, grow half-hardy and frost-tender species in a cool greenhouse. The leaves and fruits of some species may cause severe stomach upset if ingested; in other species, the fruits are edible, although the seeds are thought to be poisonous.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow in deep, moderately fertile, well-drained soil in a sheltered site in full sun. Provide a dry winter mulch in frost-prone areas. Pruning group 1 or 2.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Sow seed of tender species at 13–16°C (55–61°F) in spring. Divide rhizomatous species in spring. Root greenwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*C. terminalis*. Deciduous, rhizomatous subshrub with arching shoots bearing broadly lance-shaped, mid-green leaves, to 8cm (3in) long, turning red in autumn. Small green flowers are borne in terminal racemes, to 15cm (6in) long, in late spring, followed in late summer by spherical, fleshy, dark blackish red fruit, to 1cm (½in) across. † 1m (3ft), ↔ 2m (6ft). W. China, Himalayas. \*\*. var. *xanthocarpa* ■ has translucent yellow fruit.

▷ **Corkscrew flower** see *Vigna caracalla*

▷ **Cork tree, Amur** see *Phellodendron amurense*

▷ **Corn cockle** see *Agrostemma*

▷ **Cornel** see *Cornus*

▷ **Bentham's** see *C. capitata*

▷ **Dwarf** see *C. canadensis*

▷ **Cornflower** see *Centaurea cyanus*

▷ **Cornish heath** see *Erica vagans*

▷ **Corn poppy** see *Papaver rhoeas*

## CORNUS

syn. CHAMAEPERICLYMENUM, DENDROBENTHAMIA, THELYCRANIA  
*Cornel*, *Dogwood*

CORNACEAE

Genus of about 45 species of mainly deciduous shrubs and small trees, and a few woody-based perennials, from grassland, thickets, woodland, rocky slopes, and swamps, mostly in N. temperate areas. The usually opposite, sometimes alternate leaves are lance-shaped-ovate to broadly ovate, and mid- to dark green. Small, star-shaped flowers are borne in terminal cymes, with or without bracts, in dense umbels with yellowish bracts that fall as the flowers open, or in dense clusters with conspicuous white or pink bracts. Those borne in cymes or umbels are followed by loose clusters of berries; those borne in clusters are followed by tight terminal clusters of berries or have the clusters united into compound, fleshy, strawberry-like fruits.

Dogwoods are grown for their showy bracts, elegant habit, fruits, and colourful autumn leaves; some are effective specimen trees or shrubs, especially in a woodland garden. Those with colourful winter shoots, grown as pollards, are useful for many situations, from a shrub border to a waterside garden. Use *C. canadensis* in woodland or for ground cover in a shrub border. The fruits of some species may cause mild stomach upset if ingested; contact with the leaf hairs may irritate skin.

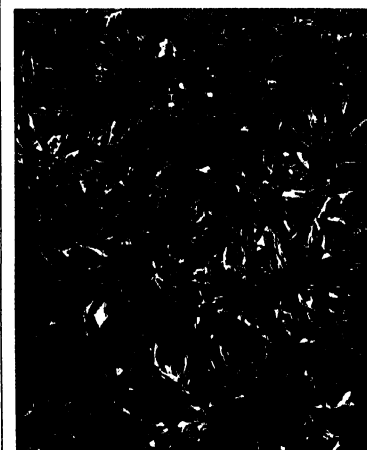
• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow "flowering dogwoods" (having large bracts), such as *C. capitata*, *C. florida*, *C. nuttallii*, and their hybrids, in fertile, humus-rich, well-drained, neutral to acid soil in sun or partial shade. *C. canadensis* prefers moist, acid soil. Others tolerate a range of soils and locations. Those grown for winter stems colour best in full sun. Pruning group 1; best with minimal pruning. Pruning group 7 for *C. alba*, *C. sanguinea*, and *C. stolonifera*.

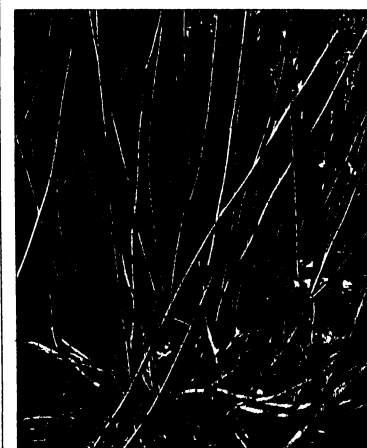
• **PROPAGATION** Sow seed in a seedbed in autumn, or stratify and sow in spring. Divide *C. canadensis* in spring or autumn. Graft variegated cultivars of *C. alternifolia* and *C. controversa* in winter. Root greenwood cuttings in summer.

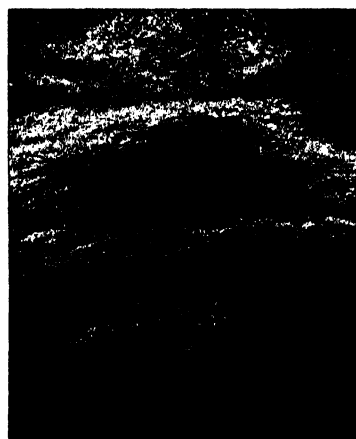
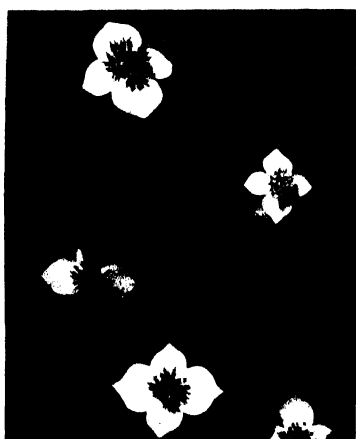
Take hardwood cuttings of those grown for winter stems in autumn.

• **PESTS AND DISEASES** May be affected by anthracnose.

*Cornus alba* 'Elegantissima'*Cornus alba* 'Kesselringii'

*C. alba*, syn. *Swida alba*, *Thelycrania alba* (Red-barked dogwood). Vigorous, upright, deciduous shrub with red winter shoots and ovate-elliptic, dark green leaves, to 10cm (4in) long, which turn red or orange in autumn. Bears white flowers in flat cymes, to 5cm (2in) across, in late spring and early summer. Ellipsoid fruit are white, often ringed blue. †↔ 3m (10ft). Siberia, N. China to Korea. \*\*\*. 'Aurea' has yellow leaves. 'Elegantissima' ■ ♀ has grey-green leaves, irregularly margined white. 'Gouchaultii' has pink-flushed, yellow-margined leaves. 'Kesselringii' ■ has blackish purple winter shoots and red and purple autumn leaves. 'Sibirica' ■ ♀ has bright red winter shoots and red autumn leaves. 'Spaethii' ■ ♀ has broadly yellow-margined leaves.

*Cornus alba* 'Sibirica'*Cornus alba* 'Spaethii'

*Cornus alternifolia* 'Argentea'*Cornus canadensis*

*C. alternifolia* ♀ syn. *Swida alternifolia* (Green osier, Pagoda dogwood). Deciduous tree or multi-stemmed shrub with spreading, tiered branches. Alternate, ovate-elliptic, mid-green leaves, to 12cm (5in) long, turn red and purple in autumn. Small white flowers are borne in flat cymes, to 5cm (2in) across, in early summer, followed by spherical blue-black fruit. ♂→ 6m (20ft). E. North America. \*\*\*.

'**Argentea**' ♂♀ syn. 'Variegata', is a tiered shrub or small tree with white-margined leaves, to 8cm (3in) long; ♂ 3m (10ft), ↔ 2.5m (8ft).

*C. amomum*, syn. *Swida amomum*. Vigorous, spreading, deciduous shrub with dull red-purple winter shoots and ovate-elliptic, dark green leaves, to 12cm (5in) long, turning orange, red, or

*Cornus controversa* 'Variegata' (inset: leaf detail)

purple in autumn. White flowers are produced in arching cymes, to 6cm (2½in) across, in late spring and early summer, followed by spherical, metallic grey-blue fruit. ♂ 3m (10ft), ↔ 4m (12ft). E. North America. \*\*\*.

*C. 'Ascona'*, syn. *C. nuttallii* 'Ascona'. Spreading, deciduous shrub producing purple winter shoots and ovate, mid-green leaves, to 12cm (5in) long, which turn orange, red, or purple in autumn. In late spring, green flowers are produced in flowerheads, 2cm (¾in) across, surrounded by 4 ovate, pointed white bracts, to 8cm (3in) long. ♂ 5m (15ft), ↔ 6m (20ft). \*\*\*.

*C. canadensis* ♂♀ syn. *Chamaepericlymenum canadense* (Creeping dogwood, Dwarf cornel). Creeping, rhizomatous perennial with

terminal whorls of oval or obovate to lance-shaped, mid-green leaves, 2–4cm (¾–1½in) long. In late spring and early summer, green flowers are borne in cymes, 1.5cm (½in) across, surrounded by 4–6 white, sometimes pink-flushed bracts, 1–2cm (½–¾in) long; flowers are followed by spherical, fleshy, bright red fruit. ♂ to 15cm (6in), ↔ indefinite. N. Asia, USA to Greenland. \*\*\*.

*C. capitata* ♂♀ syn. *Dendrobenthamia capitata* (Bentham's cornel). Spreading, bushy, evergreen tree or shrub with ovate to lance-shaped, grey-green leaves, to 12cm (5in) long. In summer, green flowers are produced in small, hemispherical heads, 1.5cm (½in) across, surrounded by 4–6 obovate, creamy white or yellowish white bracts, 4–5cm (1½–2in) long; flowers are followed by

*Cornus florida* 'Spring Song'

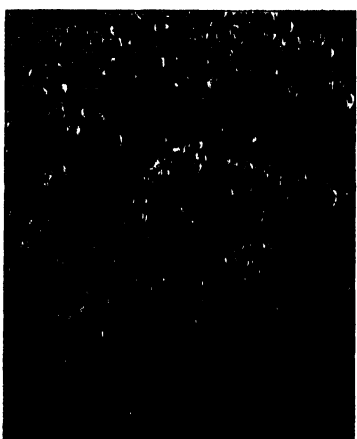
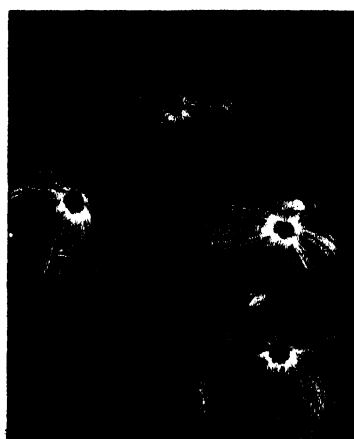
pendent, strawberry-like fruit. ♂→ 12m (40ft). China, Himalayas. \*\*\*.

*C. controversa* ♀ syn. *Swida controversa*. Rounded, deciduous tree bearing spreading, tiered branches. Alternate, elliptic leaves, to 15cm (6in) long, glossy, dark green above and glaucous beneath, turn rich red and purple in autumn. White flowers are borne in large, flattish cymes, to 18cm (7in) across, in early summer, followed by spherical, blue-black fruit. ♂→ 15m (50ft). China, Himalayas, Japan. \*\*\*.

'**Variegata**' ♂♀ has leaves with hold, creamy white margins; ♂→ 8m (25ft). *C. 'Eddie's White Wonder'* ♂♀ △ Broadly conical, deciduous tree or multi-stemmed shrub with ovate, mid-green leaves, to 12cm (5in) long, turning orange, red, and purple in autumn. In late spring, purplish green flowers are produced in flowerheads, to 1cm (½in) across, surrounded by 4–6 ovate white bracts, to 8cm (3in) long. ♂ 6m (20ft), ↔ 5m (15ft). \*\*\*.

*C. florida* △ (Flowering dogwood). Conical, deciduous tree or shrub with broadly oval to ovate, often slightly twisted or curled, mid-green leaves, to 15cm (6in) long, which turn red and purple in autumn. In late spring, green flowers, tipped with yellow, are borne in flowerheads, to 1.5cm (½in) across, surrounded by 4 obovate, white to pink bracts, 4–5cm (1½–2in) long, joined at the tips as they open. ♂ 6m (20ft), ↔ 8m (25ft). E. North America. \*\*\*.

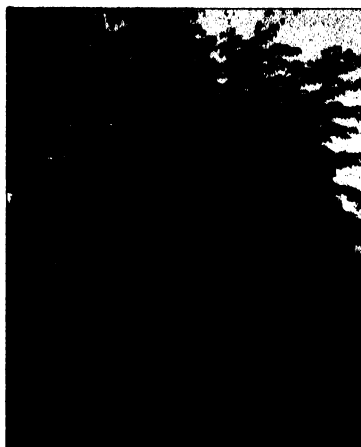
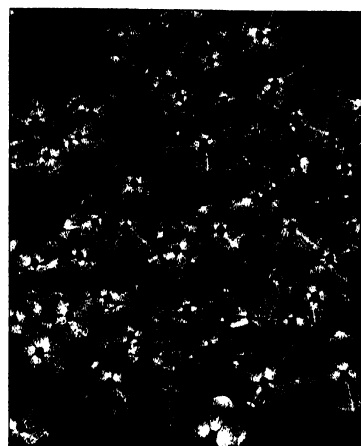
'**Cherokee Chief**' ♂♀ has very dark ruby-pink bracts. '**Cherokee Princess**' produces abundant flowerheads with large white bracts, 6cm (2½in) long.

*Cornus capitata**Cornus* 'Eddie's White Wonder'*Cornus florida* 'Cherokee Chief'*Cornus florida* 'Welchii'

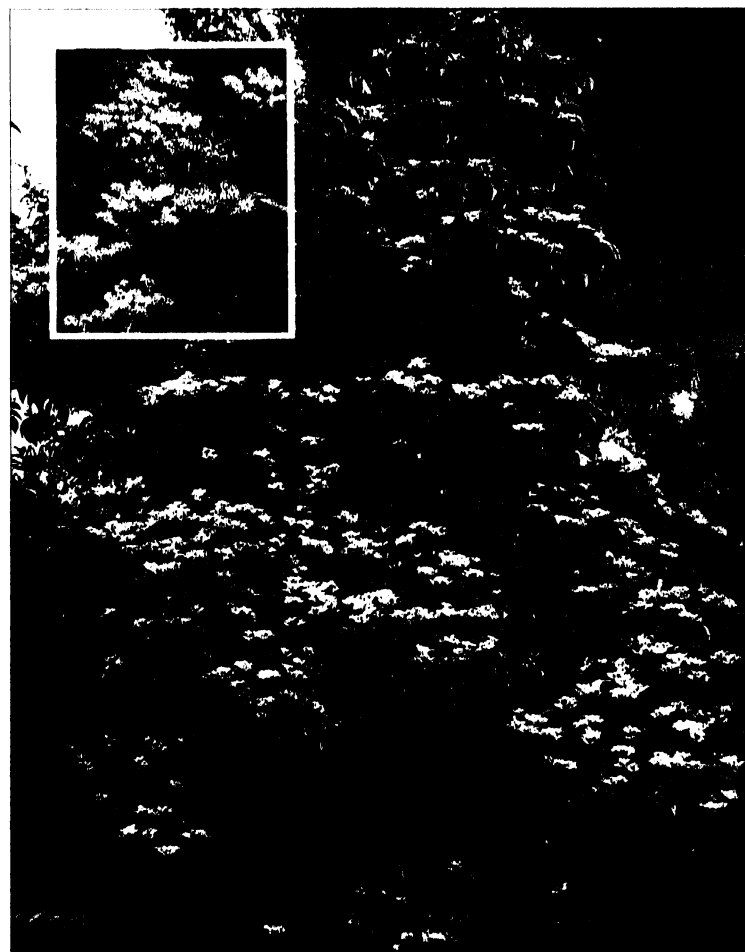
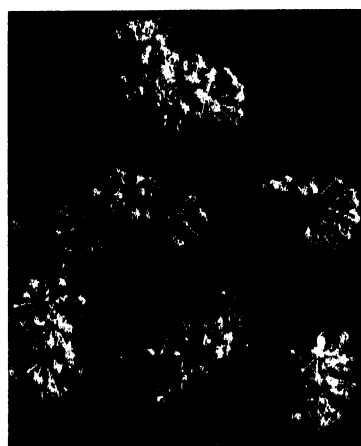


*Cornus kousa* 'China Girl'

'Cloud Nine' has large, overlapping white bracts, 6cm (2½in) long; it flowers freely, even when young. 'Hohman's Gold' has leaves margined golden yellow, turning red-purple with scarlet margins in autumn, and produces white bracts; † 3m (10ft), ↔ 4m (12ft). 'Rainbow' is similar to 'Hohman's Gold', but compact and upright; † 3m (10ft), ↔ 2.5m (8ft). *f. rubra* has pink bracts. 'Spring Song' has deep rose-pink bracts. 'Tricolor' see 'Welchii'. 'Welchii' syn. 'Tricolor', is slow-growing, with white- and pink-margined, grey-green leaves, turning bronze-purple with rose-red margins in autumn, and white bracts. 'White Cloud' is very free-flowering, and bears creamy white bracts. *C. kousa* △ Broadly conical, deciduous tree with flaking bark and ovate, wavy-margined, dark green leaves, to 8cm (3in) long, turning deep crimson-purple in autumn. In early summer, green flowers are produced in flowerheads, to 1cm (½in) across, surrounded by 4 ovate-lance-shaped to ovate white bracts, 2.5–5cm (1–2in) long; flowers are followed by strawberry-like, fleshy red fruit. † 7m (22ft), ↔ 5m (15ft). Korea, Japan. \*\*\*. 'China Girl' △ is very free-flowering, even when young. *var. chinensis* △ has smooth-margined leaves and large, tapered bracts, to 5cm (2in) long, which open creamy white and then turn white and eventually red-pink. 'Gold Star' is shrubby, with leaves marked dark yellow in the centres, turning red with purple margins in autumn; bracts are white on opening, later becoming pink; † 2.5m

*Cornus kousa* var. *chinensis**Cornus kousa* 'Satomi'

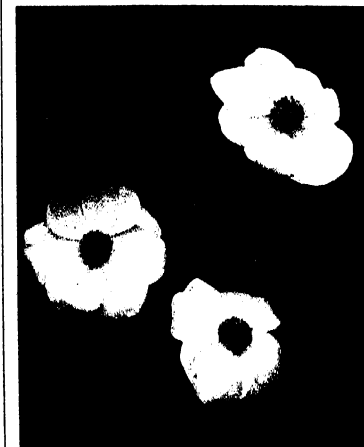
(8ft), ↔ 2m (6ft). 'Milky Way' flowers and fruits profusely. 'Satomi' △ has dark red-purple autumn foliage and dark pink bracts. 'Snowboy' has grey-green leaves with broad white margins, the leaves turning pink and red in autumn; † 2.5m (8ft), ↔ 2m (6ft). *C. macrophylla* △ Broadly conical, deciduous tree with ovate, glossy, mid-green leaves, to 18cm (7in) long. Creamy white flowers are produced in broad, flattened heads, to 18cm (7in) across, in late summer; flowers are followed by spherical, blue-black fruit. † 12m (40ft), ↔ 8m (25ft). China, Himalayas, Japan. \*\*\*. *C. mas* △ (Cornelian cherry). Vigorous, spreading, deciduous shrub or small tree with ovate, dark green leaves, to 10cm (4in) long, turning red-purple

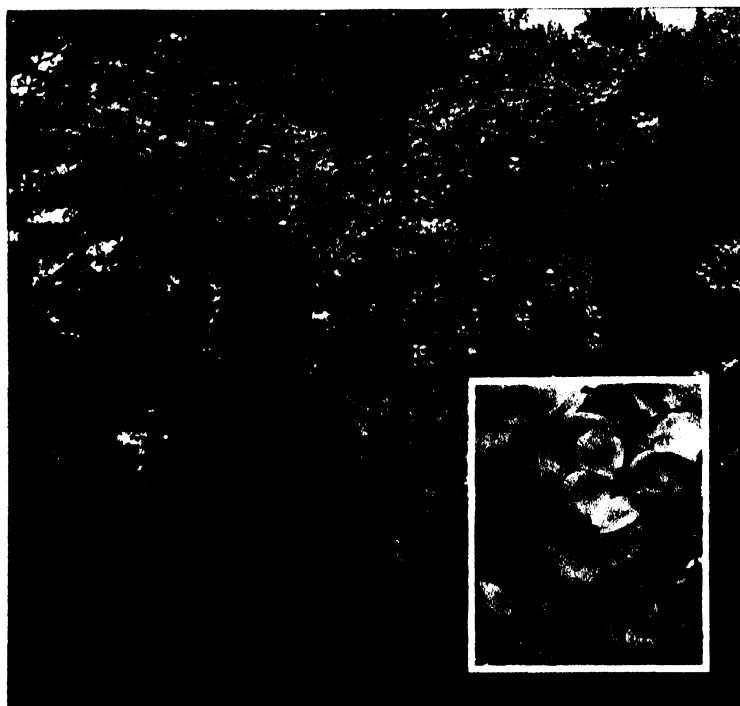
*Cornus macrophylla* (inset: flower detail)*Cornus mas*

in autumn. Yellow flowers are produced in small umbels, to 2cm (¾in) across, in late winter, before the leaves. Oblong-ellipsoid, fleshy, bright red fruit are produced in late summer, and are edible when ripe. † 5m (15ft). Europe, W. Asia. \*\*\*. 'Aurea' has yellow juvenile leaves, maturing to mid-green. 'Aureoelegantissima', syn. 'Elegantissima', has leaves broadly margined yellow and pink; † 2m (6ft), ↔ 3m (10ft). 'Elegantissima' see 'Aureoelegantissima'. 'Variegata' △ is compact, with white leaf margins and abundant fruit; † 2.5m (8ft), ↔ 2m (6ft). *C. 'Norman Hadden'* △ Spreading, semi-evergreen tree with arching branches and elliptic-ovate, mid-green leaves, to 8cm (3in) long, some turning yellow or pink in autumn.

*Cornus* 'Norman Hadden'

In early summer, green flowers are produced in abundant flowerheads, 1cm (½in) across, surrounded by broadly elliptic cream bracts, 4cm (1½in) long, turning dark pink; they are followed by large, pendent, strawberry-like red fruit. † 8m (25ft). \*\*\*. *C. nuttallii* △ (Pacific dogwood). Conical, deciduous tree with oval to obovate, mid-green leaves, to 12cm (5in) long, sometimes turning red in autumn. In late spring, purple and green flowers are produced in flowerheads, to 1.5cm (½in) across, surrounded by 4–6, occasionally up to 8, broadly ovate to obovate, white or pink-tinged bracts, 4–8cm (1½–3in) long; flowers are followed by spherical, orange-red fruit. † 12m (40ft), ↔ 8m (25ft). W. North America. \*\*\*. 'Ascona' see *C. 'Ascona'*. 'Colrigo Giant' △ is very vigorous, with stout shoots, leaves to 15cm (6in) long, and spherical flowerheads with 6–8 bracts. 'Gold Spot' has yellow-marked leaves. *C. officinalis*. Vigorous, spreading, deciduous shrub with rough, flaking brown bark and ovate to elliptic, dark green leaves, to 10cm (4in) long, turning red-purple in autumn. Yellow flowers are produced in loose umbels, 2cm (¾in) or more across, in late winter, before the leaves open; they are followed by oblong-ellipsoid, edible, bright red fruit. † 5m (15ft). China, Korea, Japan. \*\*\*. *C. 'Ormonde'* △ Spreading, deciduous shrub or tree with oval, mid-green leaves, to 12cm (5in) long, turning orange, red, or purple in autumn. In late spring, purple and green flowers are

*Cornus nuttallii* 'Colrigo Giant'

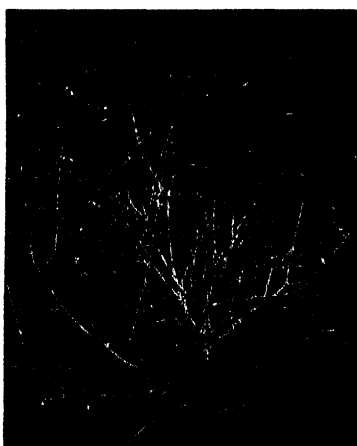


*Cornus* 'Porlock' (inset: flower detail)

produced in flowerheads, 1.5cm (½in) across, surrounded by usually 4, broadly elliptic, pink-tipped white bracts, 6cm (2½in) long. †4m (12ft), ↔ 6m (20ft). \*\*\*

**C. 'Porlock'** ☐☐ Spreading, semi-evergreen tree with elliptic to obovate, mid-green leaves, 5–7cm (2–3in) long. In late spring, purple and green flowers are produced in flowerheads, 1.5cm (½in) across, surrounded by ovate, white, then pink-red bracts, 7cm (3in) long. Very similar to *C.* 'Norman Hadden', but with narrower bracts, more tapered at their bases. †10m (30ft), ↔ 5m (15ft). \*\*\*

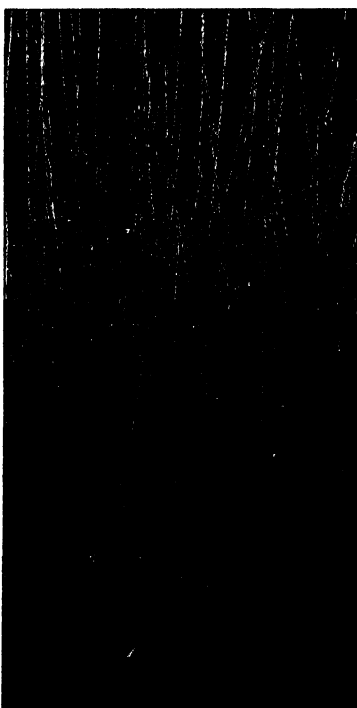
**C. sanguinea** (Common dogwood). Upright, deciduous shrub with reddish green, sometimes entirely green, winter shoots and ovate, mid-green leaves, to 10cm (4in) long, turning red in autumn. White flowers are borne in dense, flat cymes, to 5cm (2in) across, in summer, followed by spherical, dull blue-black fruit. †3m (10ft), ↔ 2.5m (8ft). Europe. \*\*\*. **'Viridissima'** has green winter shoots. **'Winter Beauty'** ☐ syn. **'Winter Flame'**, has bright orange-yellow and red winter shoots. **'Winter Flame'** see **'Winter Beauty'**.



*Cornus sanguinea* 'Winter Beauty'

**C. sericea** see *C. stolonifera*.

**C. stolonifera**, syn. *C. sericea* (Red osier dogwood). Vigorous, suckering, deciduous shrub with dark red winter shoots. Ovate to lance-shaped, dark green leaves, to 12cm (5in) long, turn red or orange in autumn. In late spring and early summer, white flowers are borne in flat cymes, to 5cm (2in) across, followed by white fruit, often tinged blue. Tolerates wet soils. †2m (6ft), ↔ 4m (12ft). E. North America. \*\*\*. **'Flaviramea'** ☐☐ has bright yellow-green winter shoots. **'Kelsey'**, syn. **'Kelsey's Dwarf'**, **'Nana'**, is compact, with red-tipped, yellow-green winter shoots; †75cm (30in), ↔ 1.5m (5ft). **'Kelsey's Dwarf'** see **'Kelsey'**. **'Nana'** see **'Kelsey'**.



*Cornus stolonifera* 'Flaviramea'

## COROKIA

CORNACEAE

Genus of 3 species of evergreen shrubs occurring in forests and rocky areas in New Zealand. They have alternate, linear to obovate leaves. Star-shaped, 5-petalled yellow flowers, 0.9–1.5cm (¾–½in) across, are produced singly from the leaf axils or in short, terminal racemes, panicles, or clusters, followed by colourful autumn fruits. In frost-prone areas, grow *Corokia* species and cultivars as specimen plants in a sheltered shrub border or against a wall. In warmer coastal regions, they will tolerate an open site or partial shade, and may be used for hedging.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil, preferably in full sun, sheltered from cold, dry winds. Pruning group 8; will tolerate hard pruning to restrict growth, if required.
- **PROPAGATION** Root greenwood cuttings in early summer, or semi-ripe cuttings in mid- or late summer.
- **PESTS AND DISEASES** Trouble free.

**C. buddlejoides** (Korokio). Upright shrub with elliptic to linear-lance-shaped, glossy, dark green leaves, to 15cm (6in) long. Bears small, fragrant yellow flowers in terminal panicles, 2–5cm (¾–2in) long, in spring, followed by spherical, bright red-black fruit. †3m (10ft), ↔ 2m (6ft). New Zealand (North Island). \*\*

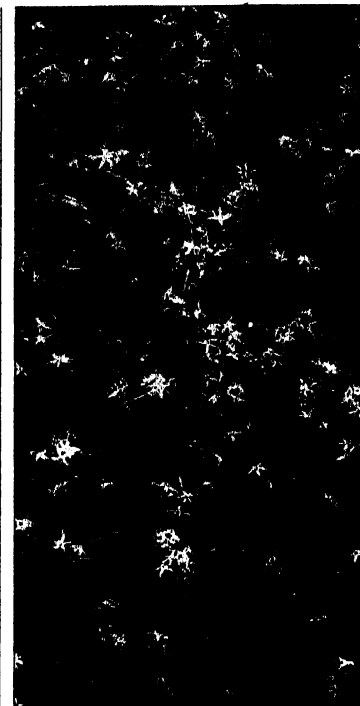
**C. cotoneaster** ☐ (Wire-netting bush). Rounded, intricately branched shrub bearing interlacing shoots and broadly ovate to obovate, dark green leaves, to 1.5cm (½in) long. In late spring, small, fragrant yellow flowers are produced singly or in clusters of up to 4, from the leaf axils, followed by oblong-ellipsoid, red or yellow fruit. †↔ 2.5m (8ft). New Zealand. \*\*

**C. macrocarpa**. Upright shrub with lance-shaped, leathery leaves, grey-green above and silvery beneath, to 8cm (3in) long. In early summer, small yellow flowers are borne in short racemes, to 4cm (1½in) long, from the leaf axils, followed by oblong-ellipsoid red fruit. †↔ 2m (6ft) or more. New Zealand (Chatham Island). \*\*

**C. x virgata** ☐ (*C. cotoneaster* x *C. buddlejoides*). Upright shrub with spoon-shaped to inversely lance-shaped leaves, glossy, dark green above and



*Corokia cotoneaster*



*Corokia x virgata*

white beneath, to 5cm (2in) long. In late spring, small, fragrant yellow flowers are produced in clusters of 3 from the leaf axils, followed by ovoid, yellow or orange fruit. †↔ 3m (10ft). New Zealand (North Island). \*\* **'Bronze King'** has bronze-tinged foliage.

**'Bronze Lady'** has dark bronze leaves, to 4cm (1½in) long, and bright red fruit. **'Yellow Wonder'** is vigorous and bears golden yellow fruit.

## CORONILLA

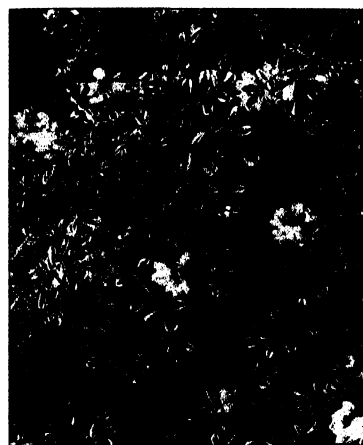
LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of annuals, herbaceous perennials, and evergreen and deciduous shrubs from Europe and N. Africa, where they occur in habitats ranging from meadows to scrub, woodland and woodland margins, and cliffs. They are cultivated for their alternate, usually pinnate leaves and their often fragrant, pea-like flowers, borne in axillary umbels. Grow in a shrub border or at the base of a warm, sunny wall.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in light, moderately fertile, well-drained soil in full sun, sheltered from cold, dry winds.



*Coronilla valentina* subsp. *glauca*



*Coronilla valentina* subsp. *glauca*  
'Variegata'

Pruning group 1; cut back leggy plants almost to the bases to rejuvenate them in spring.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or stratify and sow at 10–13°C (50–55°F) in spring. Root greenwood cuttings in early summer or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*C. emerus*, syn. *Hippocrepis emerus* (Scorpion senna). Bushy, rounded, deciduous shrub with mid-green shoots and pinnate leaves, to 6cm (2½in) long, with up to 9 obovate leaflets. Slender-stalked, axillary umbels of 2 or 3 pale yellow flowers, 2cm (¾in) long, are produced from late spring to autumn, followed by slender, segmented pods, to 10cm (4in) long. ↑↔ 2m (6ft). C. and S. Europe. \* \* \*

*C. glauca* see *C. valentina* subsp. *glauca*. *C. valentina*. Dense, rounded, bushy, evergreen shrub with pinnate, bright green leaves, to 5cm (2in) long, with up to 13 obovate leaflets. Axillary umbels of 4–14 fragrant, bright yellow flowers, 1cm (½in) long, are produced in late winter and early spring, and again in late summer, followed by slender pods, to 5cm (2in) long. ↑↔ 1.5m (5ft). S. Portugal, Spain to Croatia (Dalmatia). \* \* \*

subsp. *glauca* ♀ syn. *C. glauca*, is often more compact, and bears blue-green leaves with 5–7 leaflets; ↑↔ 80cm (32in); \* \* \* (borderline). subsp. *glauca* 'Citrina' ♀ has pale yellow flowers. subsp. *glauca* 'Variegata' ♀ has leaves margined creamy white; \* \*

## CORREA

Australian fuchsia  
RUTACEAE

Genus of about 20 species of evergreen shrubs and small trees found in scrub and open woodland in Australia. The opposite, simple leaves have star-shaped hairs and are aromatic when bruised. The mainly pendent, tubular to bell-shaped flowers, with 4 spreading or reflexed lobes, are produced singly or in few-flowered clusters. In frost-prone climates, grow in a cool greenhouse or conservatory. In warmer areas, grow in a shrub border or courtyard garden, or at the base of a house wall.

• **HARDINESS** Half hardy to frost tender. • **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost



*Correa backhouseana*

in full light, with shade from hot sun, and with good ventilation. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained, neutral to acid soil in full sun. *C. pulchella* and *C. reflexa* tolerate mildly alkaline soil. Pruning group 8.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

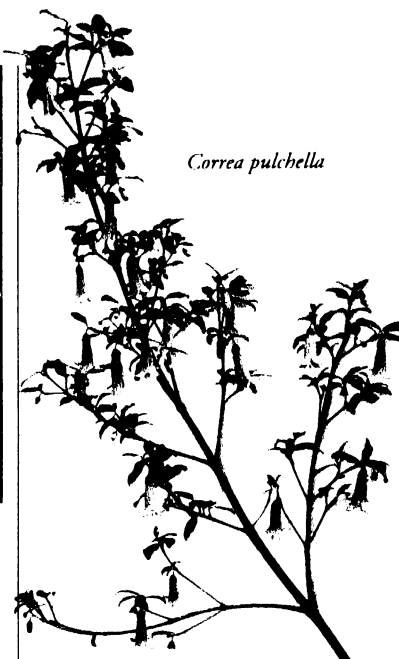
• **PESTS AND DISEASES** Scale insects may be a problem under glass.

*C. alba*. Freely branching shrub with ovate, rich green leaves, 2–4cm (¾–1½in) long, smooth above, finely hairy beneath. From early summer to late autumn, bears short, bell-shaped, sometimes pink-tinted, waxy white flowers, to 1.5cm (½in) long, in few-flowered clusters. ↑ 2m (6ft), ↔ 1–2m (3–6ft). Australia (South Australia, New South Wales, Victoria, Tasmania). \* *'Pinkie'* is bushy and spreading, with hairy, rust-red stems and glossy, deep green leaves, grey-hairy beneath. From autumn to spring, produces clusters of dusky pink flowers, shortly tubular at first, then splitting into 4 reflexed petals. ↑ 1m (3ft), ↔ 1–1.5m (3–5ft).

*C. backhouseana* ♀ Dense, spreading shrub with hairy, rust-red twigs and oval, dark green leaves, 2–3cm (¾–1¼in) long, smooth above and hairy beneath. Produces small clusters of tubular, pale or reddish green or cream flowers, to 2.5cm (1in) long, from late



*Correa* 'Dusky Bells'



*Correa pulchella*

autumn to late spring. ↑ 1–2m (3–6ft), ↔ 1.5–2.5m (5–8ft). Australia (Victoria, Tasmania). \*

*C. 'Carmine Bells'* see *C. 'Dusky Bells'*.

*C. 'Dusky Bells'* ♀ syn. *C. 'Carmine Bells'*, *C. 'Pink Bells'*, *C. 'Rubra'*. Wide-spreading shrub with reddish brown stems and oval, mid- to deep green leaves, to 3.5cm (1½in) long. Tubular, dusky carmine-red flowers, to 2.5cm (1in) long, are borne in small clusters from autumn to spring. ↑ 30–90cm (12–36in), ↔ 1.5–3m (5–10ft). \* *C. 'Harrisii'* see *C. 'Mannii'*.

*C. 'Ivory Bells'*. Bushy, vigorous shrub with spreading, densely hairy stems and elliptic to ovate, matt, deep green leaves, 2–3cm (¾–1¼in) long. Clusters of tubular, ivory-white flowers, to 2cm (¾in) long, with recurved lobes, ageing to tan, are mainly produced from winter to summer. ↑ 1–2m (3–6ft), ↔ 2–3m (6–10ft). \*

*C. 'Mannii'* ♀ syn. *C. 'Harrisii'*.

Spreading shrub with broadly ovate leaves, 2–3cm (¾–1¼in) long, heart-shaped at the bases and dark green above, paler beneath. Tubular red flowers, to 2.5cm (1in) long, with reflexed petal tips, are borne in small clusters from autumn to spring. ↑ 1–2.5m (3–8ft), ↔ 2–3m (6–10ft). \*

*C. 'Pink Bells'* see *C. 'Dusky Bells'*.

*C. pulchella* ♀ Freely branching, prostrate to almost erect shrub with oval to elliptic, smooth, bright green leaves, 1–2cm (½–¾in) long. Bears tubular, vermilion, orange, or pink to white flowers, to 2.5cm (1in) long, in small clusters from autumn to spring. ↑ 30–150cm (1–5ft), ↔ 0.9–2.5m (3–8ft). Australia (South Australia). \*

*C. reflexa* ♀ syn. *C. speciosa*. Erect to prostrate, loosely to compactly branched shrub bearing obovate-oblong to lance-shaped, rich green leaves, to 5cm (2in) long, white-felted beneath. Tubular to narrowly bell-shaped flowers are green, white, pink, or red, 2–2.5cm (¾–1in) long, sometimes with green or cream reflexed petal tips; they are produced in small clusters, mainly from autumn to spring. ↑ 0.3–3m (1–10ft), ↔ 1–3m (3–10ft). Australia (except Northern Territory). \*

*C. 'Rubra'* see *C. 'Dusky Bells'*.

*C. speciosa* see *C. reflexa*.

## CORYOACTUS

syn. ERDISIA

CACTACEAE

Genus of about 20 species of trailing or erect, shrub-like, perennial cacti from semi-arid areas of S. and C. Peru, Bolivia, and N. Chile. Many branch from the bases to form large clumps, with cylindrical, ribbed stems bearing evenly spaced, spiny areoles. Solitary, funnel-shaped, diurnal, orange, red, or vivid yellow flowers are produced in summer, followed by spherical, spiny green fruits with small black or brown seeds. In frost-prone areas, grow in a temperate greenhouse, with a minimum temperature of 10°C (50°F). In warmer areas, grow in a desert garden.

• **HARDINESS** Frost tender.

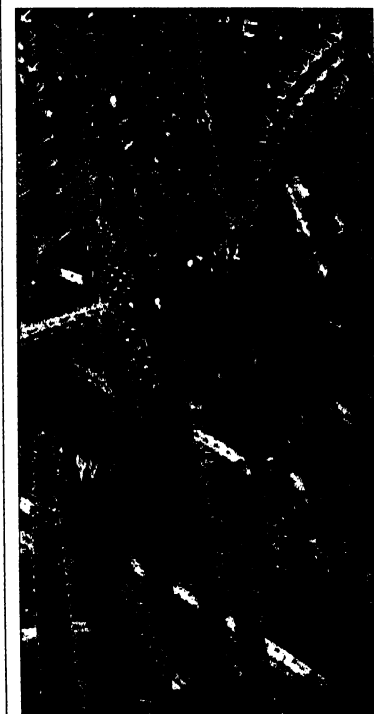
• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with shade from hot sun. From spring to summer, water moderately and apply a dilute, low-nitrogen liquid fertilizer monthly; keep completely dry at other times. Outdoors, grow in low-fertility, sharply drained, gritty, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring. Root stem cuttings in late spring or early summer.

• **PESTS AND DISEASES** Mealybugs, and occasionally aphids, may be a problem.

*C. brachypetalus*. Erect, clump-forming cactus with 7- or 8-ribbed, dull green stems branching from the base. White areoles bear 15–20 brownish black spines. Deep orange flowers, 4–6cm (1½–2½in) across, are produced in summer. ↑ 2–4m (6–12ft), ↔ 1m (3ft). S. Peru. ☼ (min. 10°C/50°F)

*C. erectus* ♀ syn. *Erdisia erecta*. Usually erect, clump-forming cactus with 5- or 6-ribbed, mid-green stems branching from the base, and pale brown or white areoles bearing yellowish white spines (10 or more radials and 1 or 2 centrals). Produces carmine-red or scarlet flowers,



*Coryoactus erectus*

4–5cm (1½–2in) across, in summer. ↑ 1m (3ft) or more, ↔ 60cm (24in). S. Peru. ★ (min. 10°C/50°F)  
**C. squarrosus**, syn. *Erdisia squarrosa*. Erect, clump-forming cactus with 5- to 8-ribbed, deep green stems and brown areoles, each with about 11 yellow spines (1 central and 10 radials). Bright red, sometimes yellowish red flowers, 4cm (1½in) across, are produced in summer. ↑ 50cm (20in), ↔ 1m (3ft) or more. C. Peru. ★ (min. 10°C/50°F)

† **Corsican heath** see *Erica terminalis*

## CORTADERIA

Pampas grass, Tussock grass

GRAMINEAE/POACEAE

Genus of about 23 species of evergreen or semi-evergreen, perennial grasses from grassland, often near water, in New Zealand, New Guinea, and South America. They form dense tussocks of stiff, flat, narrowly linear, often glaucous leaves with rough or sharp margins, and bear stout-stemmed, plume-like, silver, gold, or pale rose-pink flower panicles (usually with male and female spikelets on separate plants, but occasionally hermaphroditic). Female spikelets have long, silky hairs at the bases. The plumes may be used in fresh or dried flower arrangements. Grow at the back of a border or as free-standing specimens.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun, with ample space to develop. Protect crowns of young plants in their first winter. Cut and comb out the previous year's stems

and dead foliage annually, in late winter or early spring, taking care to avoid the sharp leaf margins.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**C. argentea** see *C. selloana*.

**C. conspicua** see *Chionochloa conspicua*.

**C. richardii** (Toe toe). Densely tufted, clump-forming, evergreen, perennial grass with recurved, leathery, pale olive-green leaves, to 1.2m (4ft) long. In early and midsummer, arching stems, to 2.5m (9ft) tall, bear shaggy, pyramidal, creamy white or silvery white panicles, 60cm (24in) long, which persist into winter. ↑ to 2.5m (9ft), ↔ 1.8m (6ft). New Zealand. ★★

**C. selloana**, syn. *C. argentea* (Pampas grass). Densely tufted, clump-forming, evergreen, perennial grass with arching, glaucous, mid-green leaves, to 2.5m (8ft) or more long. In late summer, silky, silver, often pink- or purple-flushed spikelets are borne in pyramidal to oblong panicles, 45–90cm (18–36in) long, on erect stems. ↑ 2.5–3m (8–10ft), ↔ 1.5m (5ft) or more. Temperate South America. ★★. **'Albolineata'**, syn. **'Silver Stripe'**, is slow-growing and compact, with white-margined leaves and silvery white plumes; ↑ to 2m (6ft). **'Aureolineata'** □ ♀ syn. **'Gold Band'**, has rich yellow-margined leaves, ageing to dark golden yellow; ↑ to 2.2m (7ft).

**'Gold Band'** see **'Aureolineata'**.

**'Pumila'** ♀ bears mid-green leaves and masses of erect, silvery yellow plumes; ↑ to 1.5m (5ft), ↔ 1.2m (4ft).

**'Rendatleri'** has purplish pink panicles;



*Cortaderia selloana* 'Sunningdale Silver'

↑ to 2.5m (8ft). **'Silver Stripe'** see **'Albolineata'**. **'Sunningdale Silver'** □ ♀ has strong, erect stems and dense, weather-resistant, silvery white plumes; ↑ 3m (10ft) or more, ↔ to 2.5m (8ft).

## CORTUSA

PRIMULACEAE

Genus of 8 species of herbaceous perennials occurring in mountain woodland from W. and C. Europe to N. Asia. They produce long-stalked, rounded to heart-shaped, basal leaves. One-sided umbels of funnel- to bell-shaped flowers are produced on slender stems above the foliage. *Cortusa* species are suitable for a woodland or rock garden; they will not thrive in hot, dry climates.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, reliably moist but well-drained, slightly acid or alkaline soil in a cool position in partial shade.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Slugs and snails may be a problem.

**C. matthioli** □ Clump-forming perennial with kidney-shaped to rounded, crinkled, rusty-hairy, deep green leaves, 12cm (5in) or more across, with coarsely toothed lobes. Pendent, broadly bell-shaped, magenta or purple-violet, occasionally white flowers, 1cm (½in) long, are borne in one-sided umbels on hairy stems, in late spring and early summer. ↑ 20–30cm (8–12in), ↔ to 15cm (6in). W. Europe. ★★★



*Cortusa matthioli*

## CORYDALIS

syn. *PSEUDOCUMARIA*

PAPAVERACEAE

Genus of about 300 species of fibrous- or fleshy-rooted annuals and biennials, and tuberous or rhizomatous perennials. Most are herbaceous; a few are evergreen. They occur in a range of habitats, with many from woodland or rocky, mountain sites, mostly in N. temperate regions. They have opposite or alternate stem leaves, which are compound, usually ternate to 3-ternate, sometimes pinnate to 3-pinnate, and sometimes triangular in outline. The leaflets are often finely divided, producing a fern-like appearance. Tubular flowers, borne in mostly terminal, sometimes axillary racemes, usually above the foliage, each have 4 petals: the outer pair with a spur and reflexed tips, the inner pair incurved to cover the stamens and style.

The sun-loving species are suitable for a rock garden or alpine house; grow shade-loving species in a peat bank, in a rock or woodland garden, or as under-planting in a shrub border. Some species need a period of dry dormancy in summer and protection from excessive winter wet; these are best grown in a bulb frame or alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** *Corydalis* species have varying cultivation requirements, which, for ease of reference, are grouped as follows:

1. Full sun or partial shade and fertile, well-drained soil. Often self-seed freely.
2. Full sun and sharply drained, moderately fertile soil in a rock garden. May tolerate partial shade.
3. Partial shade and moderately fertile humus-rich, moist but well-drained soil.
4. Grow in a bulb frame or alpine house, in equal parts loam, leaf mould, and grit. Resent excessive wet.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe; germination may be erratic. Divide spring-flowering species in autumn, and summer-flowering species in spring.

• **PESTS AND DISEASES** Slugs and snails may be a problem. Aphids and red spider mites may prove troublesome under glass.

**C. aitchisonii**. Prostrate, tuberous perennial with clusters of ternate, blue-grey leaves, to 10cm (4in) long, with ovate leaflets. In spring, bears loose,



*Corydalis cheilanthifolia*



*Cortaderia selloana* 'Aureolineata'

*Corydalis diphylla*

spike-like racemes of slender-tubed, golden yellow flowers, to 4cm (1½in) long, with curved spurs, on short stems. Cultivation group 4. ↑ 10cm (4in), ↔ 15cm (6in). Uzbekistan, Afghanistan. \*\*\*

*C. ambigua* of gardens see *C. fumariifolia*.

*C. bracteata*. Tuberous perennial with ternate, pale green leaves, to 10cm (4in) long, with broadly obovate leaflets deeply divided into linear lobes. In spring, produces racemes of pale yellow flowers, to 2.5cm (1in) long, with broad lower lips, usually with paler spurs to 1.5cm (½in) long, and with large, dissected bracts. Cultivation group 3. ↑ to 25cm (10in), ↔ 10cm (4in).

*C. Asia, Russia (Siberia). \*\*\**

*C. bulbosa* of gardens see *C. cava*.

*C. cashmeriana*. Tufted perennial with clusters of ovoid tubers. Bears ternate, bright green leaves, to 8cm (3in) long, with ovate leaflets finely divided into oblong or elliptic lobes. Dense racemes of 3–8 brilliant blue flowers, 1cm (½in) long, with curved spurs, are produced in summer. Prefers cool, moist climates. Cultivation group 3. ↑ 10–25cm (4–10in), ↔ 8–15cm (3–6in). Himalayas. \*\*\*

*C. caucasica* var. *alba* of gardens see *C. malkensis*.

*C. cava* ♀ syn. *C. bulbosa* of gardens. Hollow-tubed perennial with 2-ternate, pale green leaves, to 10cm (4in) long, with wedge-shaped, lobed leaflets. In early spring, bears dense racemes of purple or white flowers, to 2.5cm (1in) long, with downward-curving spurs, to 1cm (½in) long, and entire, scale-like

bracts. Cultivation group 3. ↑ 10–20cm (4–8in), ↔ 10cm (4in). Europe. \*\*\*  
*C. cheilanthifolia* ☐ Evergreen, fibrous-rooted, rosette-forming perennial with fern-like, 2- or 3-pinnate, bronze-tinted, light to mid-green leaves, 15–45cm (6–18in) long, with linear or linear-lance-shaped leaflets. Dense, spike-like racemes of straight-spurred, deep yellow flowers, to 1.5cm (½in) long, are borne from spring to summer. Self-seeds freely. Cultivation group 1. ↑ to 30cm (12in), ↔ to 25cm (10in). W. and C. China. \*\*\*

*C. diphylla* ☐ Tuberous perennial with semi-erect, long-stalked, 2- or 3-ternate, glaucous, mid-green leaves, to 8cm (3in) long, with linear-lance-shaped leaflets. In spring, bears loose, terminal racemes of 6–10 pale violet flowers, 2–3cm (¾–1¼in) long, with deeper violet or red-violet lips and upward-pointing white spurs, to 1cm (½in) long. Cultivation group 2. ↑ to 15cm (6in), ↔ to 10cm (4in). W. Himalayas. \*\*\*

*C. flexuosa* ☐ Erect, summer-dormant perennial with slender, fibrous root-stocks with small bulbils, and 2-ternate leaves, to 15cm (6in) long, with ovate, glaucous, light green leaflets, sometimes flushed purple. From late spring to summer, produces dense, terminal and axillary racemes of slender-tubed, brilliant blue flowers, to 2.5cm (1in) long, with white throats. Cultivation group 3. ↑ to 30cm (12in), ↔ 20cm (8in) or more. China (W. Sichuan). \*\*\*

*C. fumariifolia*, syn. *C. ambigua* of gardens. Tuberous perennial with 2-ternate, slightly glaucous, mid-green leaves, to 7cm (3in) long, with entire, oval to obovate leaflets. From spring to early summer, bears loose, spike-like racemes of azure-blue, occasionally purple flowers, 2–3cm (¾–1¼in) long, with flattened, triangular spurs. Cultivation group 3. ↑ to 15cm (6in), ↔ to 10cm (4in). Russia (Kamchatka), China, Japan. \*\*\*

*C. halleri* see *C. solida*.  
*C. ledebouriana*. Tuberous perennial with ternate to 3-ternate, blue-green leaves, to 8cm (3in) long, with entire, elliptic to rounded leaflets. In spring, bears loose racemes of very pale purple flowers, to 7cm (3in) long, with dark purple lips and long, upward-curving spurs. Cultivation group 4. ↑ 10–15cm (4–6in), ↔ to 20cm (8in). Mainly Uzbekistan, also E. Afghanistan, N. Pakistan. \*\*\*

*C. malkensis*, syn. *C. caucasica* var. *alba* of gardens. Tuberous perennial producing ternate, pale green leaves, to 8cm (3in) long, with linear leaflets. Creamy white, occasionally blue flowers, to 2.5cm (1in) long, with broad lower lips and entire bracts, are produced in loose racemes in spring. Cultivation group 2 or 3. ↑ 8–15cm (3–6in), ↔ to 10cm (4in). Caucasus, Russia, N.E. Iran. \*\*\*

*C. nobilis*. Rhizomatous, robust, deep-rooted perennial with much-divided, more or less stalkless, bluish green leaves, to 30cm (12in) long; the leaves are 2-pinnate at the bases, with wedge-shaped leaflets. In late spring, the upright stems bear dense, terminal racemes of up to 30 light yellow flowers, 2–2.5cm (¾–1in) long, each with a brown spot and a short, downward-pointing spur, and deeper yellow at the tips. Cultivation group 1. ↑ 60cm (24in), ↔ 45cm (18in). Russia (Siberia), E. Kazakhstan, N.W. China, Mongolia. \*\*\*

*C. ochotensis*. Mound-forming, tap-rooted biennial bearing few long-stalked, 2- or 3-pinnate, light green leaves, 15cm (6in) long, with obovate to wedge-shaped, usually 2- or 3-lobed leaflets. Simple or branched racemes of up to 10 yellow flowers, 1.5–2cm (½–¾in) long, maroon at the tips, with tapering, downward-curving spurs, are produced from midsummer to late autumn. Cultivation group 1 or 3.

*C. lutea* ☐ syn. *Pseudofumaria lutea*. Rhizomatous, mound-forming, evergreen perennial with fern-like, 2-ternate or 2- or 3-pinnate, arching leaves, 10–15cm (4–6in) long, with obovate, 3-lobed leaflets, pale green above, glaucous beneath. Bluntly spurred, golden yellow flowers, 1–2cm (½–¾in) long, are borne in terminal and axillary racemes of 6–16 flowers, in a long succession from late spring to early autumn. Self-seeds freely. Cultivation group 1, 2, or 3. ↑ 40cm (16in), ↔ 30cm (12in). Widespread in Europe. \*\*\*

*C. malkensis*, syn. *C. caucasica* var. *alba* of gardens. Tuberous perennial producing ternate, pale green leaves, to 8cm (3in) long, with linear leaflets. Creamy white, occasionally blue flowers, to 2.5cm (1in) long, with broad lower lips and entire bracts, are produced in loose racemes in spring. Cultivation group 2 or 3. ↑ 8–15cm (3–6in), ↔ to 10cm (4in). Caucasus, Russia, N.E. Iran. \*\*\*

*C. nobilis*. Rhizomatous, robust, deep-rooted perennial with much-divided, more or less stalkless, bluish green leaves, to 30cm (12in) long; the leaves are 2-pinnate at the bases, with wedge-shaped leaflets. In late spring, the upright stems bear dense, terminal racemes of up to 30 light yellow flowers, 2–2.5cm (¾–1in) long, each with a brown spot and a short, downward-pointing spur, and deeper yellow at the tips. Cultivation group 1. ↑ 60cm (24in), ↔ 45cm (18in). Russia (Siberia), E. Kazakhstan, N.W. China, Mongolia. \*\*\*

*C. ochotensis*. Mound-forming, tap-rooted biennial bearing few long-stalked, 2- or 3-pinnate, light green leaves, 15cm (6in) long, with obovate to wedge-shaped, usually 2- or 3-lobed leaflets. Simple or branched racemes of up to 10 yellow flowers, 1.5–2cm (½–¾in) long, maroon at the tips, with tapering, downward-curving spurs, are produced from midsummer to late autumn. Cultivation group 1 or 3.

*Corydalis ochroleuca*

*C. lutea* ☐ syn. *Pseudofumaria lutea*. Rhizomatous, mound-forming, evergreen perennial with fern-like, 2-ternate or 2- or 3-pinnate, arching leaves, 10–15cm (4–6in) long, with obovate, 3-lobed leaflets, pale green above, glaucous beneath. Bluntly spurred, golden yellow flowers, 1–2cm (½–¾in) long, are borne in terminal and axillary racemes of 6–16 flowers, in a long succession from late spring to early autumn. Self-seeds freely. Cultivation group 1, 2, or 3. ↑ 40cm (16in), ↔ 30cm (12in). Widespread in Europe. \*\*\*

*C. malkensis*, syn. *C. caucasica* var. *alba* of gardens. Tuberous perennial producing ternate, pale green leaves, to 8cm (3in) long, with linear leaflets. Creamy white, occasionally blue flowers, to 2.5cm (1in) long, with broad lower lips and entire bracts, are produced in loose racemes in spring. Cultivation group 2 or 3. ↑ 8–15cm (3–6in), ↔ to 10cm (4in). Caucasus, Russia, N.E. Iran. \*\*\*

*C. nobilis*. Rhizomatous, robust, deep-rooted perennial with much-divided, more or less stalkless, bluish green leaves, to 30cm (12in) long; the leaves are 2-pinnate at the bases, with wedge-shaped leaflets. In late spring, the upright stems bear dense, terminal racemes of up to 30 light yellow flowers, 2–2.5cm (¾–1in) long, each with a brown spot and a short, downward-pointing spur, and deeper yellow at the tips. Cultivation group 1. ↑ 60cm (24in), ↔ 45cm (18in). Russia (Siberia), E. Kazakhstan, N.W. China, Mongolia. \*\*\*

*C. ochotensis*. Mound-forming, tap-rooted biennial bearing few long-stalked, 2- or 3-pinnate, light green leaves, 15cm (6in) long, with obovate to wedge-shaped, usually 2- or 3-lobed leaflets. Simple or branched racemes of up to 10 yellow flowers, 1.5–2cm (½–¾in) long, maroon at the tips, with tapering, downward-curving spurs, are produced from midsummer to late autumn. Cultivation group 1 or 3.

*C. lutea* ☐ syn. *Pseudofumaria lutea*. Rhizomatous, mound-forming, evergreen perennial with fern-like, 2-ternate or 2- or 3-pinnate, arching leaves, 10–15cm (4–6in) long, with obovate, 3-lobed leaflets, pale green above, glaucous beneath. Bluntly spurred, golden yellow flowers, 1–2cm (½–¾in) long, are borne in terminal and axillary racemes of 6–16 flowers, in a long succession from late spring to early autumn. Self-seeds freely. Cultivation group 1, 2, or 3. ↑ 40cm (16in), ↔ 30cm (12in). Widespread in Europe. \*\*\*

*C. malkensis*, syn. *C. caucasica* var. *alba* of gardens. Tuberous perennial producing ternate, pale green leaves, to 8cm (3in) long, with linear leaflets. Creamy white, occasionally blue flowers, to 2.5cm (1in) long, with broad lower lips and entire bracts, are produced in loose racemes in spring. Cultivation group 2 or 3. ↑ 8–15cm (3–6in), ↔ to 10cm (4in). Caucasus, Russia, N.E. Iran. \*\*\*

*C. nobilis*. Rhizomatous, robust, deep-rooted perennial with much-divided, more or less stalkless, bluish green leaves, to 30cm (12in) long; the leaves are 2-pinnate at the bases, with wedge-shaped leaflets. In late spring, the upright stems bear dense, terminal racemes of up to 30 light yellow flowers, 2–2.5cm (¾–1in) long, each with a brown spot and a short, downward-pointing spur, and deeper yellow at the tips. Cultivation group 1. ↑ 60cm (24in), ↔ 45cm (18in). Russia (Siberia), E. Kazakhstan, N.W. China, Mongolia. \*\*\*

*C. ochotensis*. Mound-forming, tap-rooted biennial bearing few long-stalked, 2- or 3-pinnate, light green leaves, 15cm (6in) long, with obovate to wedge-shaped, usually 2- or 3-lobed leaflets. Simple or branched racemes of up to 10 yellow flowers, 1.5–2cm (½–¾in) long, maroon at the tips, with tapering, downward-curving spurs, are produced from midsummer to late autumn. Cultivation group 1 or 3.

↑ 60cm (24in), ↔ 30cm (12in). N. China, Korea, Japan. \*\*\*

*C. ochroleuca* ☐ Evergreen, fibrous-rooted, clump-forming perennial with 2- or 3-pinnate, light green leaves, to 12cm (5in) long, with obovate leaflets. Compact, axillary racemes of creamy white flowers, to 1.5cm (½in) long, with yellow throats and downward-curving spurs, are produced from late spring to summer. Self-seeds freely. Cultivation group 1. ↑ to 30cm (12in). S.E. Europe. \*\*\*

*C. popovii* ☐ Tuberous perennial with 2- or 3-ternate, blue-green leaves, to 15cm (6in) long, with 3–9 ovate leaflets. In late spring, produces loose, upright racemes of outward-facing, pale violet to white flowers, to 4.5cm (1¾in) long, with deep red-purple lips and downward-curving spurs, to 2.5cm (1in) long. Cultivation group 4. ↑ to 15cm (6in), ↔ to 12cm (5in). C. Asia. \*\*\*

*C. rutifolia*. Variable, tuberous perennial with tufted, 2-ternate, grey-green leaves, to 10cm (4in) long, with entire or finely cleft leaflets. In spring, bears violet flowers, to 2.5cm (1in) long, with dark purple lips and ascending, inflated spurs, in loose racemes just

*Corydalis popovii**Corydalis flexuosa**Corydalis lutea*

C

*Corydalis solida* 'George Baker'

above or among the leaves. Cultivation group 4. ‡ 8cm (3in), ↔ to 12cm (5in). Greece (Crete), Cyprus, E. Turkey, Lebanon, Iraq. \*\*\*

*C. saxicola*, syn. *C. thalictrifolia*. Rhizomatous perennial with 2- or 3-pinnate, shiny, mid-green leaves, 35cm (14in) long, with obovate or ovate leaflets. Spreading racemes of short-spurred yellow flowers, to 2.5cm (1in) long, are produced from late spring to summer. Cultivation group 2 or 4. ‡ to 30cm (12in), ↔ to 20cm (8in). C. China. \*\*

*C. scouleri*. Rhizomatous, spreading, deep-rooting perennial with upright stems bearing pinnatisect or 2- or 3-pinnate, greyish green leaves, to 35cm (14in) long, with ovate, entire or deeply cut lobes or leaflets. In late spring and early summer, produces racemes of 15–35 purplish pink or white flowers, 2.5cm (1in) long, with slender spurs. Cultivation group 3. ‡ to 90cm (36in), ↔ 45cm (18in). N.W. North America. \*\*\*

*C. solida* ♀ syn. *C. halleri*, *C. transylvanica* of gardens (Fumewort). Variable, tuberous perennial with 2- or 3-ternate, grey-green leaves, to 8cm

(3in) long, with deeply and unevenly dissected, narrowly to broadly ovate leaflets. In spring, produces dense, upright, spike-like racemes of numerous pale mauve-pink to red-purple or white flowers, to 2cm (¾in) long, with tapered, downward-curving spurs and lobed bracts. Cultivation group 2 (tolerates partial shade). ‡ to 25cm (10in), ↔ to 20cm (8in). N. Europe, Asia. \*\*\*. 'George Baker' ♀ syn. 'G.P. Baker', produces deep reddish salmon-pink flowers. Many similar seedlings from pink- or red-flowered variants of *C. solida* have recently been raised and named.

*C. thalictrifolia* see *C. saxicola*.

*C. transylvanica* of gardens see *C. solida*.

*C. wilsonii* ♀ Evergreen perennial with a fleshy, tap-rooted rootstock and rosettes of pinnate, smooth, blue-green leaves, to 8cm (3in) long, with broadly oblong-elliptic leaflets. Loose racemes of short-spurred, green-tipped, canary-yellow flowers, to 2cm (¾in) long, are produced in spring. Suitable for an alpine house or shady wall. Cultivation group 4. ‡ 10–20cm (4–8in). C. China. \*\*\*

## CORYLOPSIS

HAMAMELIDACEAE

Genus of 7–10 species of deciduous shrubs and small trees found in woodland and scrub in the E. Himalayas, China, Taiwan, and Japan. They have alternate, simple, ovate to broadly ovate, toothed, pale to dark green leaves. Pendent racemes of 6–20 bell-shaped, fragrant yellow flowers are produced in spring, before the young leaves emerge. Grow in a woodland garden or shrub border.

• **HARDINESS** Fully hardy, although late frosts may damage the flowers.

• **CULTIVATION** Grow in fertile, moist but well-drained, acid soil in partial shade. Pruning group 1; prune immediately after flowering if required.

*Corylopsis glabrescens**Corylopsis sinensis*

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Insert greenwood cuttings in summer. Layer in autumn.

• **PESTS AND DISEASES** Trouble free.

*C. glabrescens* ♀ Open, spreading shrub with broadly ovate leaves, dark green above and blue-green beneath, to 10cm (4in) long. Pale yellow flowers are borne in pendent racemes, to 2.5cm (1in) long, in mid-spring. ‡ 5m (15ft). Korea, Japan. \*\*\*

*C. pauciflora* ♀ Bushy, spreading shrub with ovate, bright green leaves, to 7cm (3in) long, bronze when young. Bears abundant pale yellow flowers in pendent racemes, to 3cm (1¼in) long, in early and mid-spring. ‡ 1.5m (5ft), ↔ 2.5m (8ft). Japan, Taiwan. \*\*\*

*C. sinensis* ♀ syn. *C. willmottiae*. Vigorous, open, upright to spreading shrub with obovate to oblong leaves, to 10cm (4in) long, dark green above and blue-green beneath. Lemon-yellow flowers are produced in pendent racemes, to 8cm (3in) long, in mid-spring. ‡ 4m (12ft). China. \*\*\*

*var. calvescens f. veitchiana* ♀ syn. *C. veitchiana*, is upright, and produces pendent racemes, 9cm (3½in) long, of mid-yellow flowers with brick-red anthers; ↔ 2.5m (8ft). 'Spring Purple' has dark plum-purple young foliage.

*C. spicata*. Open, spreading shrub with ovate to obovate leaves, dark green above and glaucous beneath, to 10cm (4in) long. Bears bright yellow flowers, with red to purple anthers, in slender, pendent racemes, to 15cm (6in) long, in spring. ‡ 2m (6ft), ↔ 3m (10ft). Japan. \*\*\*

*C. veitchiana* see *C. sinensis* var. *calvescens f. veitchiana*.

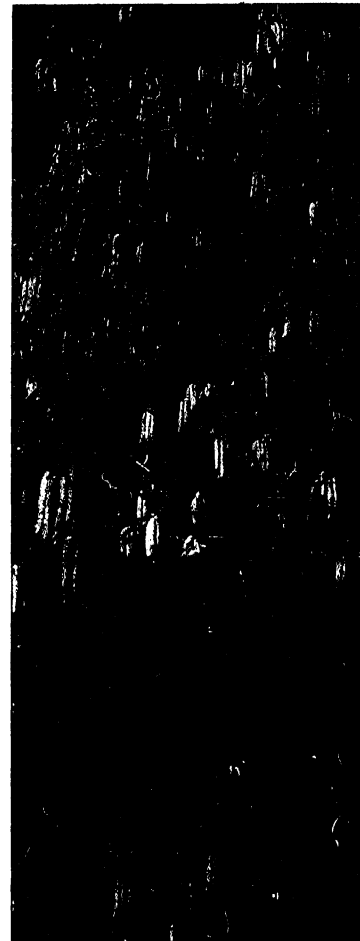
*C. willmottiae* see *C. sinensis*.

## CORYLUS

Hazel

BETULACEAE

Genus of 10–15 species of deciduous trees and shrubs from N. temperate regions, usually found in woodland. They have alternate, rounded or oval to ovate leaves, sometimes with heart-shaped bases. Hazels are grown for their foliage and yellow male catkins. Cultivars of *C. avellana* and *C. maxima* also produce edible nuts. Smaller hazels are best grown in a shrub border; the larger species and cultivars are excellent specimen trees.

*Corylus avellana* 'Contorta'

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade; they are ideal for chalky soils. Grow variants with coloured leaves in full sun. Remove suckers, which are produced particularly on grafted plants. Pruning group 1; also group 7 for *C. avellana* and *C. maxima*.

• **PROPAGATION** Sow seed in a seedbed as soon as ripe. Layer cultivars in autumn; graft in winter.

• **PESTS AND DISEASES** Caterpillars, mites, sawflies, and aphids may be troublesome. Honey fungus, silver leaf, and powdery mildew may be a problem.

*C. avellana* cultivars. Upright or tree-like shrubs with broadly heart-shaped, round-tipped, toothed, mid-green leaves, to 10cm (4in) long. Pendent

*Corylus colurna*



*Corylus maxima* 'Purpurea'

yellow catkins, 4–6cm (1½–2½in) long, are borne in late winter and early spring. ↗↖ 5m (15ft). Europe, Turkey. \*\*\*. 'Aurea' has bright yellow young foliage, becoming yellow-green when mature. 'Contorta' ♂♀ (Corkscrew hazel, Harry Lauder's walking stick) has strongly twisted shoots, which are particularly effective in winter, and is useful for flower arrangements. *C. colurna* ♂♀ (Turkish hazel). Conical tree with broadly oval, shallowly lobed, dark green leaves, to 12cm (5in) long, turning yellow in autumn. Pendent yellow catkins, 5–8cm (2–3in) long, are borne in late winter. Produces edible nuts, enclosed in deeply fringed husks, in autumn. ↑ 20m (70ft), ↔ 7m (22ft). S.E. Europe, W. Asia. \*\*\*. *C. maxima* ♀ (Filbert). Upright shrub or tree with heart-shaped, mid-green leaves, to 14cm (5½in) long. Pendent yellow catkins, 5–8cm (2–3in) long, are borne in late winter. Produces edible nuts, enclosed in tubular husks, which ripen in autumn. ↑ 6m (20ft), ↔ 5m (15ft). S.E. Europe to Caucasus. \*\*\*. 'Purpurea' ♂♀ has dark purple foliage, and purple-tinged catkins and fruit husks; grow in full sun.

## CORYNOCARPUS

### CORYNOCARPACEAE

Genus of 48 species of evergreen trees from Australasia, New Guinea, Vanuatu, and New Caledonia, occurring in open woodland and thickets. Simple, entire, leathery leaves are arranged alternately or in spirals along the stems. Small, tubular, 5-petalled flowers are

*Corynocarpus laevigatus*

borne in terminal panicles or racemes, followed by plum-like fruits. In frost-prone areas, grow *Corynocarpus* species and cultivars in a temperate or warm greenhouse; in warmer climates, use as specimen trees, screens, or windbreaks, especially in a coastal garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full or bright filtered light, with good ventilation. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade. Pruning group 1; plants under glass may need restrictive pruning.

• **PROPAGATION** Sow seed at not less than 15°C (59°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*C. laevigatus* ♂ (Karaka). Erect and bushy, then spreading tree with obovate to elliptic-oblong, lustrous, deep green leaves, 10–20cm (4–8in) long. When mature, produces tiny, greenish yellow flowers in stiff panicles, 10–20cm (4–8in) long, from spring to summer. Narrowly ovoid orange fruit, 4cm (1½in) long, ripen in autumn. ↑ 10–15m (30–50ft), ↔ 2–5m (6–15ft). Vanuatu, New Zealand. ☼ (min. 10°C/50°F). 'Albovariegatus' has leaves with white margins. 'Variegatus' has yellow-margined leaves.

## CORYPHA

### ARECACEAE/PALMAE

Genus of 8 species of monocarpic, single-stemmed palms from tropical Asia to N. Australia and the Malaysian islands. Pinnate leaves, which appear to be palmate, are borne in dense clusters. Bowl-shaped, 3-petalled flowers are produced in spectacular, terminal

*Corypha umbraculifera*

panicles. In frost-prone areas, grow as foliage houseplants or in a warm greenhouse; in warmer areas, grow as free-standing specimens on a lawn.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light with moderate humidity. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 24–29°C (75–84°F) in spring.

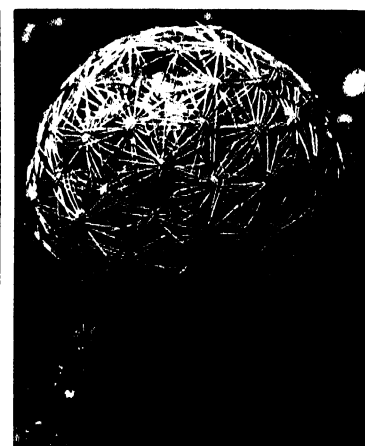
• **PESTS AND DISEASES** Red spider mites and scale insects may be a problem under glass.

*C. umbraculifera* ♂♀ (Talipot palm). Medium-sized to large palm with a sturdy trunk clad in old leaf bases. Leaf-stalks are 2–3m (6–10ft) long, with short, spiny teeth; the lustrous, rich green blades, 2.5–5m (8–15ft) across, have 70–120 segments. Creamy white flowers are borne in panicles, 6–8m (20–25ft) tall – the largest of all palm inflorescences; they first appear in spring at the end of the tree's life (usually between 20 and 30 years old). ↑ 15–25m (50–80ft), ↔ 7–14m (22–46ft). S. India, Sri Lanka. ☼ (min. 15°C/59°F)

## CORYPHANTHA

### CACTACEAE

Genus of 45 species of mostly spherical, occasionally cylindrical, warty, spiny, perennial cacti, occurring in semi-arid areas of S.W. USA and Mexico. In summer, solitary, funnel-shaped, diurnal flowers are produced from the bases of the furrows in the tubercle axils; these are followed by cylindrical green seed pods, which contain ovoid to kidney-shaped brown seeds. In frost-prone areas, grow as houseplants or in a warm greenhouse; in warmer climates, grow in a desert garden.

*Coryphantha cornifera*

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to early autumn, water freely and apply a low-nitrogen liquid fertilizer monthly; keep completely dry at other times. Outdoors, grow in low-fertility, humus-rich, gritty, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or early summer.

• **PESTS AND DISEASES** Mealybugs may be a problem under glass.

*C. calochlora* see *C. nickelsiae*.

*C. conoidea* see *Neolloydia conoidea*.

*C. cornifera* ♂ Perennial cactus with spherical then columnar, dark to grey-green stems, covered with angular tubercles, each with an areole bearing curved, yellowish brown spines (7–12 radials and 1 central). Yellow flowers, 6cm (2½in) across, are produced in summer. ↑ to 12cm (5in), ↔ 8cm (3in). C. Mexico. ☼ (min. 10°C/50°F)

*C. elephantidens* ♂ Perennial cactus with flattened-spherical, glossy, mid-green stems, covered with long, very thick, furrowed and felted tubercles, and with white wool in the tubercle axils and at the crown. Each areole produces 6–8 curved, yellowish brown radial spines (no centrals). Deep pink flowers, 8–10cm (3–4in) across, with redder bases and mid-stripes, are produced in summer. ↑ 15cm (6in), ↔ to 20cm (8in). S.W. Mexico. ☼ (min. 10°C/50°F)

*C. macromeris*. Variable, clump-forming cactus with spherical, greyish green stems with cylindrical tubercles.

*Coryphantha elephantidens*

The areoles have straight or curved spines (15 red radials and 1–4 dark brown centrals). Deep pink to purple-red flowers, 8cm (3in) across, are produced in summer.  $\pm$  15cm (6in),  $\leftrightarrow$  30cm (12in). S.W. USA, Mexico.  $\bullet$  (min. 10°C/50°F)

**C. nichelsiae**, syn. *C. calochlora*. Clump-forming cactus producing ovoid, glaucous, pale green, later dark green stems with rounded tubercles. The areoles bear numerous straight or curved, yellowish white spines (12–15 radials and 3–5 centrals). Bears yellow flowers, 3–7cm (1¼–3in) across, with brownish purple outer segments, in summer.  $\pm$  8cm (3in). USA (Texas), Mexico.  $\bullet$  (min. 10°C/50°F)

**C. vivipara** see *Escobaria vivipara*.

## COSMOS

ASTERACEAE/COMPOSITAE

Genus of about 25 species of erect to spreading, freely branched annuals and perennials, found in scrub and meadows in S. USA and Central America. The leaves, borne in opposite pairs, may be simple, lobed, or pinnatisect to 3-pinnatisect or pinnate. *Cosmos* species and cultivars are grown for their large, showy, crimson-red, pink, or white flowerheads, which may be saucer-, bowl-, or open cup-shaped, and are borne on long stems, mainly in summer. Grow annual species and cultivars in an annual border or as fillers in a herbaceous border. Perennial species are excellent container or border plants.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Dead-head to prolong flowering, leaving a few flowerheads on annual species, which often self-seed. Mulch *C. atrosanguineus* in autumn; in very cold areas, lift tubers before first frosts and keep frost-free during winter, packed in barely moist peat.

• **PROPAGATION** Sow seed at 16°C (61°F) in mid-spring, or *in situ* in late spring. Root basal cuttings of *C. atrosanguineus* with bottom heat in early spring.

• **PESTS AND DISEASES** Aphids, slugs, and grey mould (*Botrytis*) may prove troublesome.

**C. atrosanguineus**  $\square$  syn. *Bidens atrosanguinea*. Erect then spreading, tuberous perennial with reddish brown stems and spoon-shaped, pinnate to 2-



*Cosmos atrosanguineus*



*Cosmos bipinnatus* 'Sea Shells'

pinnate, dark green leaves, 7–15cm (3–6in) long, with ovate-diamond-shaped, entire or toothed leaflets. Solitary, shallowly cup-shaped, chocolate-scented, velvet-textured, chocolate-maroon flowerheads, 4.5cm (1¾in) across, with slightly darker brown disc-florets, are produced from midsummer to autumn.  $\pm$  75cm (30in),  $\leftrightarrow$  45cm (18in). Mexico. \* \*

**C. bipinnatus**. Erect, freely branching annual with pinnatisect, mid-green leaves, to 30cm (12in) long, with linear segments. Produces solitary, bowl- or saucer-shaped, white, pink, or crimson flowerheads, 8cm (3in) across, with yellow centres, throughout summer.  $\pm$  to 1.5m (5ft),  $\leftrightarrow$  45cm (18in). Mexico. \* \*. 'Candy Stripe' has white flowerheads with a variable, dark crimson picotee margin to each floret, some flecked also in crimson, and with the occasional pure crimson bloom;  $\pm$  to 90cm (36in). 'Sea Shells'  $\square$  has carmine-red, pink, or white flowerheads, with florets curiously "quilled" or rolled into tubes;  $\pm$  to 90cm (36in). **Sensation Series** cultivars bear pink or white flowerheads, sometimes more than 9cm (3½in) across, in late spring;  $\pm$  to 90cm (36in). Cultivars of **Sonata Series**  $\nabla$  are dwarf, with flowerheads in carmine-red, pink, or



*Cosmos bipinnatus* 'Sonata White'

white, and are especially suitable for an exposed garden;  $\pm$  30cm (12in). The series includes 'Sonata White'  $\square$ , which has pure white flowers;  $\pm$  to 45cm (18in),  $\leftrightarrow$  30cm (12in).

**C. sulphureus**. Erect, bushy, hairy-stemmed annual with 2- or 3-pinnatisect, mid-green leaves, to 18cm (7in) long, with linear lobes. Open bowl-shaped, orange or yellowish red flowerheads, with black centres, are borne in clusters, 3.5–6cm (1½–2½in) across, throughout summer.  $\pm$  1.4m (4½ft),  $\leftrightarrow$  45cm (18in). Mexico.  $\bullet$  (min. 5°C/41°F). 'Butterkist', syn. 'Lemon Cream', 'Lemon Peel', 'Yellow Garden', bears semi-double yellow flowerheads, to 6cm (2½in) across, in late summer or early autumn;  $\pm$  to 75cm (30in). **Ladybird Series** cultivars have less feathery foliage and semi-double flowerheads, 4–8cm (1½–3in) across, in yellow, orange, or scarlet;  $\pm$  30–40cm (12–16in),  $\leftrightarrow$  20cm (8in). 'Lemon Cream' see 'Butterkist'. 'Lemon Peel' see 'Butterkist'. 'Yellow Garden' see 'Butterkist'.

▷ **Costmary** see *Tanacetum balsamita*

## COSTUS

ZINGIBERACEAE

Genus of over 90 species of mostly clump-forming, rhizomatous perennials with an open, lax habit found on forest floors in tropical Africa, Asia, Australia, and North, Central, and South America. The spirally arranged, somewhat fleshy leaves are inversely lance-shaped, lance-shaped, or elliptic. *Costus* species are cultivated for their showy, solitary or paired, white, yellow, orange, pink, or red flowers with basal bracts, usually produced in dense, terminal heads on leafy shoots or sometimes on leafless shoots. The flowers are tubular, each with 3 petals, usually of equal size. Where temperatures fall below 18°C (64°F), grow in a warm greenhouse. In humid tropical climates, grow in a shady border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost, ideally planted directly into a border, in bright indirect light with high humidity. From spring to summer, water freely and apply a balanced liquid fertilizer monthly; reduce water in autumn, and water sparingly in winter. Pot on or replant in spring. Outdoors, grow in moist but well-drained, fertile, acid soil in full or partial shade.

• **PROPAGATION** Sow seed at 20°C (68°F) as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

**C. cuspidatus** see *C. igneus*.

**C. igneus**, syn. *C. cuspidatus* (Fiery costus). Erect then spreading perennial producing elliptic, long-pointed leaves, 10–20cm (4–8in) long, dark green above and reddish green beneath. Bears terminal, deep yellow or orange flowers, 5cm (2in) across, at any time of year.  $\pm$  40cm (16in),  $\leftrightarrow$  45cm (18in). Brazil.  $\bullet$  (min. 18°C/64°F)

**C. malortieanus**  $\square$  (Spiral ginger). Erect perennial with broadly elliptic or obovate, mid-green leaves, to 20cm (8in) long, with darker bands or stripes



*Costus malortieanus*

above and shiny pale green beneath. Deep yellow flowers, 5cm (2in) across, with brown- or red-banded lips, are produced in dense, terminal heads at any time of year.  $\pm$  1m (3ft). Central America.  $\bullet$  (min. 18°C/64°F)

**C. speciosus** (Crepe ginger). Erect perennial with narrowly elliptic, mid-green leaves, 12–25cm (5–10in) long. Orange- or yellow-centred, white or pink flowers, 5cm (2in) across, are produced in terminal heads, 12cm (5in) long, with red bracts, at any time of year.  $\pm$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). S.E. Asia to New Guinea.  $\bullet$  (min. 18°C/64°F)

**C. spicatus**. Erect perennial with canelike stems and narrowly elliptic, mid-green leaves, 30cm (12in) long. Yellow and pink flowers, 5cm (2in) across, with red to yellow lips, are produced in terminal heads at any time of year.  $\pm$  2.5m (8ft),  $\leftrightarrow$  1m (3ft). West Indies (Hispaniola).  $\bullet$  (min. 18°C/64°F)

▷ **Costus, Fiery** see *Costus igneus*

## COTINUS

Smoke bush

ANACARDIACEAE

Genus of 2 species of deciduous trees and shrubs occurring in rocky habitats from the Mediterranean region to China and in S. USA. They are cultivated for their alternate, broadly elliptic to rounded, green or purple leaves, which colour well in autumn, and for their plume-like panicles of small, ovoid fruits, which appear in late summer.

Inconspicuous flowers are borne in filamentous panicles in summer, producing a smoke-like appearance. Grow in a shrub border or as specimen plants, or plant in groups, which look particularly effective in autumn.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or partial shade. Purple-leaved forms colour best in full sun. Pruning group 1; or group 7 to produce large foliage.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Layer in spring. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Susceptible to *Verticillium* wilt. Powdery mildew may affect purple-leaved forms.

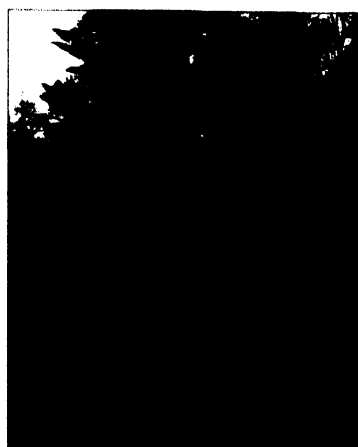
**C. americanus** see *C. obovatus*.

**C. coggygia**  $\nabla$  syn. *Rhus cotinus* (Smoke bush, Venetian sumach). Bushy

*Cotinus coggygria* f. *purpureus*

tree or shrub with oval, mid-green leaves, to 7cm (3in) long, turning yellow to orange and red in autumn. Fruiting panicles, to 15cm (6in) long, are green at first, becoming fawn then grey as they mature.  $\pm$  5m (15ft). S. Europe to C. China. \*\*\*. 'Flame' see *C. 'Flame'*. 'Notcutt's Variety' has wine-red foliage and purple-pink fruiting panicles. *f. purpureus* produces light to mid-green leaves, turning orange to red in autumn, and purplish pink inflorescences. 'Royal Purple' bears dark red-purple foliage, turning scarlet in autumn.

*C. 'Flame'*  $\square$   $\varnothing$   $\varnothing$  syn. *C. coggygria* 'Flame'. Vigorous, bushy, small tree or shrub producing oval, light green leaves, to 10cm (4in) long, which turn brilliant orange-red in autumn. Fruiting panicles

*Cotinus* 'Grace'

are purple-pink.  $\pm$  6m (20ft),  $\leftrightarrow$  5m (15ft). \*\*\*

*C. 'Grace'*  $\square$   $\varnothing$   $\varnothing$  Bushy, vigorous shrub or small tree with oval purple leaves, to 10cm (4in) long, turning brilliant, translucent red in late autumn. Fruiting panicles are purple-pink.  $\pm$  6m (20ft),  $\leftrightarrow$  5m (15ft). \*\*\*

*C. obovatus*  $\varnothing$   $\triangle$  syn. *C. americanus*, *Rhus cotinoides* (American smoke tree, Chittamwood). Broadly conical shrub or small tree with obovate to oval leaves, to 12cm (5in) or more long, pinkish bronze when young, turning brilliant orange, red, and purple in autumn.

Large, plume-like, pinkish grey fruiting panicles, to 30cm (12in) long, are borne in summer and persist into autumn.  $\pm$  10m (30ft),  $\leftrightarrow$  8m (25ft). S.E. USA. \*\*\*

*Cotinus* 'Flame'

## COTONEASTER

### ROSACEAE

Genus of more than 200 species of deciduous, semi-evergreen, or evergreen shrubs and trees from woodland and rocky areas in N. temperate regions of Europe, Asia, and N. Africa. They have alternate, lance-shaped to narrowly elliptic, broadly ovate, or rounded leaves. Saucer- to shallowly cup-shaped, white to deep pink flowers, borne singly or in cymes from spring to summer, are followed in autumn by ornamental, spherical to ovoid or obovoid fruits.

Grow in a shrub border or as a hedge or screen; some are ideal for wall training. Dwarf species are suitable for a rock garden. Many prostrate species provide good ground cover; some may be trained as weeping standards. Seeds may cause mild stomach upset if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil; most will tolerate dry positions. Deciduous species prefer full sun. Large and medium-sized evergreens thrive in sun or partial shade, but need protection from cold, dry winds in areas with prolonged periods below  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ). Dwarf evergreens fruit more prolifically in full sun. Most need little regular pruning but will tolerate hard renovation pruning. Pruning group 1 for deciduous species; group 8 for evergreens; group 13 for wall-trained shrubs. Prune formal hedges and wall-trained plants back to the fading flowers or nearest berry cluster in mid- or late summer. Trim again lightly in early autumn if fresh growth obscures fruit display.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, in autumn; some species are apomictic and come true from seed. Root semi-ripe cuttings of evergreen and semi-evergreen species in late summer; root greenwood cuttings of deciduous species in early summer.

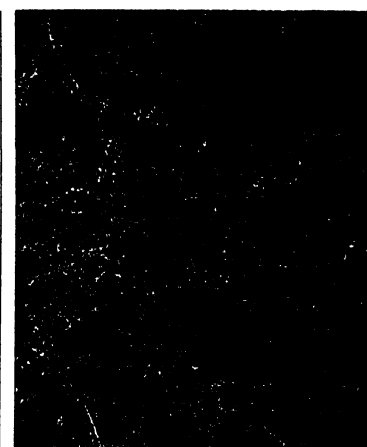
• **PESTS AND DISEASES** Susceptible to fireblight and honey fungus. May be infested by aphids, woolly aphids, scale insects, and webber moth caterpillars.

*C. acutifolius*. Upright, deciduous shrub with arching shoots and ovate, dark green leaves, to 5cm (2in) long. Short cymes of pink-tinged white flowers are borne in summer, followed by obovoid red fruit, 8–10mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) long.  $\pm$  3m (10ft). China. \*\*\*

*C. adpressus*  $\varnothing$  Prostrate, deciduous shrub with broadly ovate to obovate, wavy-margined, dull green leaves, 1cm ( $\frac{1}{2}$ in) long, turning red in autumn. In summer, bears red-tinged white flowers singly or in pairs, followed by spherical, bright red fruit, to 7mm ( $\frac{1}{4}$ in) long.  $\pm$  30cm (12in),  $\leftrightarrow$  2m (6ft). W. China. \*\*\*. *var. praecox* see *C. nanshan*.

*C. affinis*  $\square$  Vigorous, rounded to broadly columnar, deciduous shrub or small tree with peeling bark and elliptic, dark green leaves, 4–10cm ( $1\frac{1}{2}$ –4in) long. White flowers, borne in large cymes in early summer, are followed by cylindrical, dark purple-black fruit, 0.9–1.5cm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) long.  $\pm$  5m (15ft),  $\leftrightarrow$  4m (12ft). Himalayas. \*\*\*

*C. apiculatus*. Vigorous, more or less prostrate, deciduous shrub bearing

*Cotoneaster atropurpureus* 'Variegatus'

rounded, wavy-margined, glossy, mid-green leaves, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, turning red to purple-red in autumn. Solitary, red-tinged white flowers are borne in summer, followed by spherical red fruit, 1cm ( $\frac{1}{2}$ in) long.  $\pm$  1m (3ft),  $\leftrightarrow$  2.5m (8ft). China (Sichuan). \*\*\*

*C. atropurpureus*. Compact, prostrate or ascending, deciduous shrub with arching branches, and broadly ovate, slightly wavy-margined, glossy, mid-green leaves, to 1cm ( $\frac{1}{2}$ in) long, turning dark red-purple in autumn. Solitary, black-based red flowers are borne in summer, followed by almost spherical, bright orange-red fruit, 4–5mm ( $\frac{1}{8}$ – $\frac{1}{4}$ in) long.  $\pm$  50–100cm (20–39in),  $\leftrightarrow$  2.5m (8ft). China (Hubei). \*\*\*

'Variegatus'  $\square$   $\varnothing$   $\varnothing$  syn. *C. horizontalis* 'Variegatus', is less vigorous, with white-margined leaves, turning pink and red in autumn;  $\pm$  45cm (18in),  $\leftrightarrow$  90cm (36in).

*C. 'Autumn Fire'* see *C. 'Herbstfeuer'*.

*C. bullatus* *var. macrophyllus* see *C. rehderi*.

*C. cashmiriensis*  $\square$   $\varnothing$   $\varnothing$  syn. *C. cochleatus* of gardens, *C. melanotrichus*, *C. microphyllus* *var. cochleatus* of gardens. Compact, prostrate, evergreen shrub with elliptic, glossy, dark green leaves, to 1cm ( $\frac{1}{2}$ in) long. Bears usually solitary white flowers, pink in bud, in summer, followed by almost spherical, dark red fruit, 6–8mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) long. Ideal as ground cover.  $\pm$  30cm (12in),  $\leftrightarrow$  2m (6ft). Himalayas (Kashmir). \*\*\*

*C. cochleatus* of gardens see *C. cashmiriensis*.

*C. congestus*, syn. *C. pyrenaicus*. Dense, mound-forming or prostrate, evergreen shrub with obovate, dull pale green

*Cotoneaster cashmiriensis*

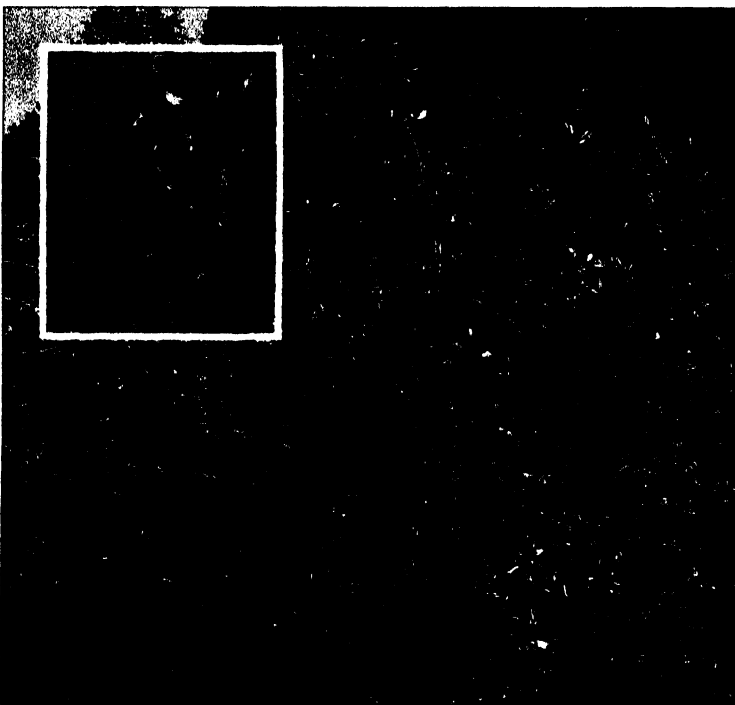
*Cotoneaster conspicuus*

leaves, 5–15mm (¼–½in) long. Solitary white flowers are borne in summer, followed by spherical, bright red fruit, 6–10mm (¼–½in) long. Excellent in a rock garden. ‡70cm (28in), ↔90cm (36in). Himalayas. \*\*\*

**C. conspicuus** [V] syn. *C. conspicuus* var. *decorus*. Dense, mound-forming, evergreen shrub with narrowly elliptic, slightly shiny, dark green leaves, 0.5–2cm (¼–½in) long. White flowers are produced singly or occasionally in cymes of up to 5 in summer; they are followed by spherical, shiny red fruit, 7–9mm (¼–½in) long, which often last well into winter. ‡1.5m (5ft), ↔2–2.5m (6–8ft). S.E. Tibet. \*\*\*. ‘**Red Glory**’ is erect and vigorous, producing dark red fruit; ‡2m (6ft).

**C. conspicuus** var. *decorus* see *C. conspicuus*.

**C. ‘Coral Beauty’**. Dense, mound-forming, evergreen shrub with arching branches and obovate to oblong, glossy, dark green leaves, to 1cm (½in) long. Cymes of white flowers are borne in summer, followed by profuse, spherical, bright orange fruit, to 9mm (⅜in) long. Ideal as ground cover. ‡1m (3ft), ↔2m (6ft). \*\*\*

*Cotoneaster ‘Cornubia’* (inset: fruit detail)*Cotoneaster divaricatus*

**C. ‘Cornubia’** [V] [Q] Vigorous, arching, semi-evergreen shrub or tree bearing narrowly elliptic, dark green leaves, to 12cm (5in) long, some of which turn bronze in winter. Cymes of white flowers are produced in summer, followed by abundant, almost spherical, bright red fruit, to 7mm (¼in) long. ‡↔6m (20ft). \*\*\*

**C. dammeri** [V] Vigorous, prostrate, evergreen shrub with long, spreading shoots and broadly obovate to elliptic, mid- to dark green leaves, 1.5–3cm (½–1¼in) long. White flowers are solitary or borne in 2- to 4-flowered cymes in early summer, followed in autumn by almost spherical red fruit, to 7mm (¼in) long. ‡20cm (8in), ↔2m (6ft). China (Hubei). \*\*\*. ‘**Major**’ has rounded, dark green leaves, to 3.5cm (1½in) long. ‘**Streibs Findling**’ see *C. procumbens*.

**C. dielsianus**. Erect, deciduous, occasionally semi-evergreen shrub with slender, arching shoots bearing ovate to obovate leaves, to 4cm (1½in) long, dark green above and yellowish grey-hairy beneath, turning red in autumn. In summer, bears cymes of 3–7 pink-tinged white flowers, followed by almost

spherical, glossy red fruit, 6mm (¼in) long. ‡↔2.5m (8ft). China. \*\*\*

**C. distichus** see *C. nitidus*.

**C. divaricatus** [V] Densely branched, erect, rounded, deciduous shrub with ovate to elliptic, glossy, dark green leaves, 0.8–2.5cm (⅜–1in) long, turning red in autumn. Pink-tinged white flowers are solitary or produced in 2- to 4-flowered cymes in summer, followed by ellipsoid to cylindrical, dark red fruit, 7–9mm (¼–½in) long. ‡2.5m (8ft), ↔3m (10ft). China (Hubei). \*\*\*

**C. ‘Exburiensis’**. Vigorous, arching, evergreen shrub with narrowly pointed, elliptic-lance-shaped, deeply veined, mid-green leaves, to 12cm (5in) long. Large cymes of white flowers, borne in early summer, are followed by almost spherical, pale yellow fruit, 5mm (¼in) long, becoming pink-tinged in winter. ‡↔5m (15ft). \*\*\*

**C. floccosus** of gardens see *C. salicifolius*.

**C. franchetii**. Spreading to erect, evergreen or semi-evergreen shrub with arching branches, and elliptic to ovate leaves, to 3.5cm (1½in) long, grey-green above and white beneath. White flowers, suffused red, with erect petals, are produced in 5- to 15-flowered cymes in summer, followed by obovoid, bright orange-red fruit, 6–9mm (¼–½in) long. ‡↔3m (10ft). China (Yunnan). \*\*\*

var. *sternianus* see *C. sternianus*.

**C. frigidus** [V] [Q]–[Q] Deciduous tree or large shrub, upright when young, later spreading, with peeling bark and narrowly elliptic to obovate, wavy-margined, dull green leaves, to 15cm (6in) long. Large cymes of 20–60 white flowers are borne in summer, followed by almost spherical, bright red fruit, 6mm (¼in) long. ‡↔10m (30ft). Himalayas. \*\*\*. ‘**Fructu Luteo**’ [V] has creamy yellow fruit.

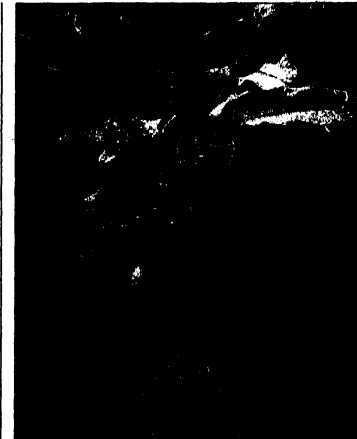
**C. glaucophyllus**. Spreading, evergreen or semi-evergreen shrub with ovate or elliptic, mid-green leaves, 3–8cm (1¼–3in) long, glaucous beneath. Cymes of 15–40 white flowers are produced in midsummer, followed in late autumn by obovoid, orange-red fruit, to 7mm (¼in) long. ‡↔3m (10ft). China (Yunnan). \*\*\*

**C. ‘Gnom’** [V] syn. *C. ‘Gnome’*, *C. salicifolius* ‘Gnom’. Prostrate, dense, evergreen shrub bearing narrowly lance-shaped, dark green leaves, to 3cm (1¼in) long. Cymes of white flowers are produced in early summer, followed by spherical red fruit, to 5mm (¼in) long. Excellent as ground cover. ‡30cm (12in), ↔2m (6ft). \*\*\*

**C. ‘Gnome’** see *C. ‘Gnom’*.

**C. ‘Herbstfeuer’**, syn. *C. ‘Autumn Fire’*. Evergreen shrub, prostrate at first, later mound-forming, with lance-shaped, dark green leaves, to 6cm (2½in) long, some turning bright red in autumn. Cymes of 5–12 white flowers are borne in early summer, followed by spherical, bright red fruit, to 5mm (¼in) long. ‡1m (3ft), ↔3m (10ft). \*\*\*

**C. horizontalis** [V] [Q] Spreading, deciduous shrub with branches forming a herringbone pattern. Rounded to broadly elliptic, glossy, dark green leaves, to 1cm (½in) long, turn red in autumn. In late spring, bears pink-tinged white flowers singly or in pairs. Spherical fruit, to 6mm (¼in) long, are bright red. ‡1m (3ft), ↔1.5m (5ft).

*Cotoneaster frigidus*

W. China. \*\*\*. var. *perpusillus* see *C. perpusillus*. ‘**Variegatus**’ see *C. atropurpureus* ‘**Variegatus**’.

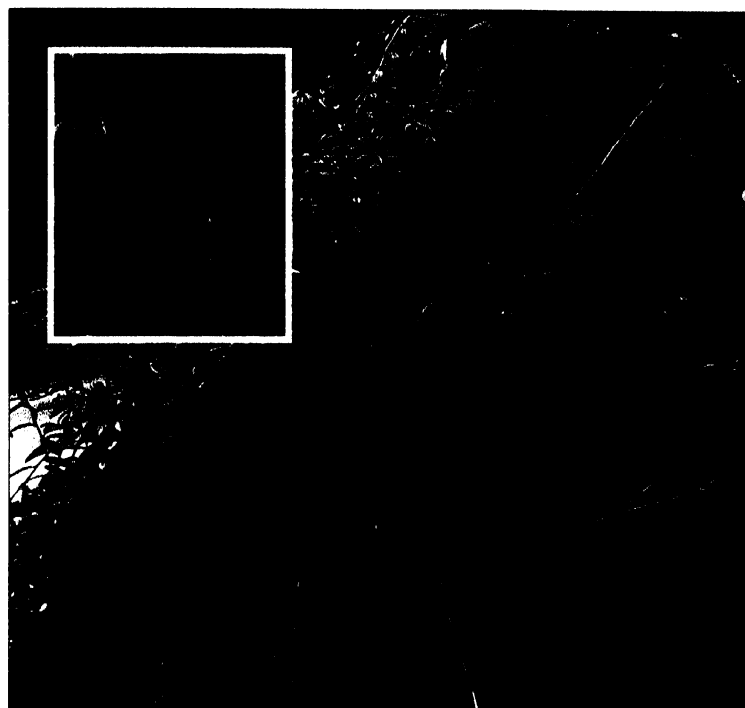
**C. hupehensis**. Deciduous shrub with slender, arching branches and elliptic to ovate, dark green leaves, to 3.5cm (1½in) long. Cymes of 5–10 white flowers are borne from late spring to summer, followed by spherical, bright red fruit, to 1cm (½in) or more long. ‡2.5m (8ft), ↔4m (12ft). W. China (Hubei). \*\*\*

**C. ‘Hybridus Pendulus’**. Prostrate, evergreen or semi-evergreen shrub with elliptic-lance-shaped, dark green leaves, to 8cm (3in) long. Small cymes of white flowers are borne in early summer, followed by almost spherical, bright red fruit, 5mm (¼in) long. Forms a small tree with weeping branches when grown as a standard. ‡↔2m (6ft). \*\*\*

**C. hylmoei**, syn. *C. salicifolius* var. *rugosus* of gardens. Rounded, evergreen shrub with arching shoots and elliptic-lance-shaped, deeply veined, tapered, dark green leaves, to 7cm (3in) long. Cymes of small white flowers, opening from pink buds, are borne in summer, followed by long-lasting, spherical, bright red fruit, 6–8mm (¼–½in) long. ‡2.5m (8ft), ↔4m (12ft). W. China. \*\*\*

**C. integrifolius**, syn. *C. microphyllus* of gardens, *C. thymifolius*. Stiffly branched, compact, evergreen shrub with obovate to oblong, glossy, dark green leaves, to 1cm (½in) long. Solitary white flowers are borne in early summer, followed by spherical, dark reddish pink fruit, 8–10mm (⅜–½in) long. ‡1m (3ft), ↔1.5m (5ft). Himalayas. \*\*\*

*Cotoneaster frigidus* ‘**Fructu Luteo**’



*Cotoneaster* 'Gnom' (inset: fruit detail)

***C. lacteus*** [♀] Dense, evergreen shrub with arching branches bearing obovate or broadly elliptic, deeply veined leaves, 3.5–9cm (1½–3½in) long, dark green above and yellow-white felted beneath. Bears cymes of up to 100 milky white flowers in summer, followed by obovoid red fruit, 6mm (¼in) long, which persist over winter. May be grown as a hedge. ⚔→ 4m (12ft). China (Yunnan). \*\*\*  
***C. linearifolius***, syn. *C. microphyllus* var. *thymifolius* of gardens. Compact, rounded, evergreen shrub with rigid branches. Oblong to inversely lance-shaped, glossy, dark green leaves, 4–7mm (⅛–¼in) long, are glaucous beneath and notched at the tips. Solitary white flowers, pink in bud, are borne in early summer, followed by spherical, dark red fruit, 4–5mm (⅛–¼in) long. ⚔→ 60–90cm (24–36in). Nepal. \*\*\*  
***C. melanotrichus*** see *C. cashmiriensis*.  
***C. microphyllus* var. *cochleatus* of gardens** see *C. cashmiriensis*.  
***C. microphyllus* of gardens** see *C. integrifolius*.  
***C. microphyllus* var. *thymifolius* of gardens** see *C. linearifolius*.  
***C. multiflorus***. Vigorous, deciduous shrub with long, arching branches and

ovate to rounded leaves, to 5cm (2in) long, dull yellowish green above and sparsely hairy, mid-green beneath. Cymes of 10–20 white flowers are borne in late spring, followed by abundant spherical red fruit, to 1cm (½in) long, from late summer to autumn. ⚔→ 5m (15ft). Kazakhstan. \*\*\*  
***C. multiflorus* of gardens** see *C. purpurascens*.  
***C. nanshan***, syn. *C. adpressus* var. *praecox*. Prostrate, spreading, deciduous shrub with rounded, very wavy-margined, mid-green leaves, 1–2.5cm (½–1in) long, turning red in autumn. Paired or single, pinkish white or red-flushed white flowers are produced in late spring, followed by large, almost spherical, bright red fruit, to 1cm (½in) long. ⚔ 1m (3ft), ⚔→ 2m (6ft). W. China (Sichuan, Yunnan). \*\*\*  
***C. nitidus***, syn. *C. distichus*. Wide-spreading or erect, deciduous or semi-evergreen shrub with stiff branches bearing rounded, glossy, dark green leaves, to 1cm (½in) long. Solitary, pink-tinged white flowers are produced in summer; flowers are followed by long-lasting, obovoid to almost spherical, bright red fruit, to 6mm (¼in)



*Cotoneaster horizontalis*

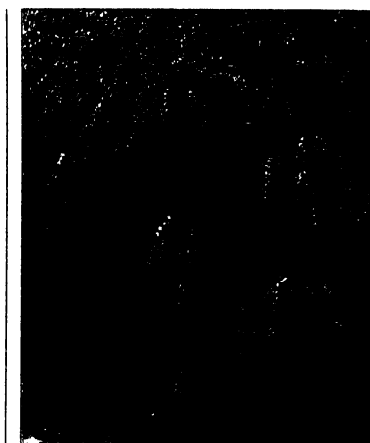


*Cotoneaster lacteus*



*Cotoneaster procumbens*

long. ⚔ 2.5m (8ft), ⚔→ 4m (12ft). China (Yunnan), Himalayas. \*\*\*  
***C. perpusillus***, syn. *C. horizontalis* var. *perpusillus*. Prostrate, deciduous shrub with branches forming a herringbone pattern. Rounded, glossy, dark green leaves, to 8mm (⅜in) long, turn red in autumn, but remain longer than those of *C. horizontalis*. In summer, bears solitary, pink-tinged white flowers. Almost spherical fruit, 4–5mm (⅛–¼in) long, are bright red. ⚔ 30cm (12in), ⚔→ 2m (6ft). China (Hubei). \*\*\*  
***C. 'Pink Champagne'***. Vigorous, arching, evergreen shrub with narrowly elliptic-lance-shaped, pointed, deeply veined, mid-green leaves, to 12cm (5in) long. Large cymes of white flowers are borne in early summer, followed by spherical, pale yellow fruit, 5mm (¼in) long, which turn pink in late autumn. ⚔→ 5m (15ft). \*\*\*  
***C. procumbens*** [♂] syn. *C. dammeri* 'Streibs Findling'. Prostrate, evergreen shrub, occasionally forming a low mound. Broadly obovate, dull dark green leaves, to 1cm (½in) long, are purplish when young. Solitary white flowers are borne in summer, followed by almost spherical red fruit, to 6mm (¼in) long. ⚔ 10cm (4in), ⚔→ 2m (6ft). China. \*\*\*  
***C. prostratus* of gardens** see *C. rotundifolius*.  
***C. purpurascens*** [♂] [♀] syn. *C. multiflorus* of gardens. Erect shrub or small tree with arching branches and ovate to rounded, mid-green leaves, 2–6cm (¾–2½in) long, paler beneath, and hairy when young. In mid- and late spring, bears cymes of white flowers, followed by long-lasting, pear-shaped or spherical red fruit, 6mm (¼in) long. ⚔→ 3–4m (10–12ft). Russia (Siberia), China. \*\*\*  
***C. pyrenaicus*** see *C. congestus*.  
***C. rehderi***, syn. *C. bullatus* var. *macrophyllus*. Vigorous, deciduous shrub with long, arching shoots and ovate to oblong-elliptic, pointed, deeply veined, dark green leaves, to 15cm (6in) long, turning red in autumn. Cymes of up to 30 pink-tinged white flowers are borne in early summer, followed by obovoid to almost spherical, bright red fruit, 8–10mm (⅜–½in) long. ⚔ 5m (15ft), ⚔→ 3m (10ft). China (Sichuan). \*\*\*  
***C. 'Rothschildianus'*** [♂] [♀] Vigorous, arching, evergreen shrub with narrowly elliptic-lance-shaped, tapered, deeply veined, pale green leaves, to 10cm (4in) long. Bears large cymes of white flowers



*Cotoneaster purpurascens*

in early summer, followed by spherical, golden yellow fruit, 5mm (¼in) long, produced over a long period in autumn. ⚔→ 5m (15ft). \*\*\*  
***C. rotundifolius***, syn. *C. prostratus* of gardens. Spreading, evergreen shrub with arching branches and broadly elliptic to obovate-elliptic, glossy, dark green leaves, to 2cm (¾in) long. Solitary flowers are borne in late spring, followed by spherical, dark pinkish red fruit, 7–10mm (¼–½in) long. ⚔ 1.5m (5ft), ⚔→ 3m (10ft). Himalayas. \*\*\*  
***C. 'Sabrina'*** see *C. splendens*.  
***C. salicifolius***, syn. *C. floccosus* of gardens. Vigorous, evergreen shrub with arching branches and elliptic-lance-shaped, dark green leaves, to 10cm (4in) long. Bears cymes of 30–100 white flowers in summer, followed by almost spherical, shiny, bright red fruit, 5mm (¼in) long. ⚔→ 5m (15ft). China. \*\*\*  
**'Gnom'** see *C. 'Gnom'*. **var. *rugosus* of gardens** see *C. hylmoei*.  
***C. serotinus*** [♂] Arching, open, evergreen shrub or small tree with elliptic or obovate-elliptic leaves, 2.5–7cm (1–3in) long, dark green above and pale green (softly downy at first) beneath. Cymes of up to 40 white flowers are borne in mid- and late summer, followed in autumn by obovoid to almost spherical, bright red fruit, 6mm (¼in) long. ⚔ 10m (30ft), ⚔→ 3–4m (10–12ft). W. China (Yunnan). \*\*\*



*Cotoneaster* 'Rothschildianus'

*Cotoneaster simonsii*

**C. simonsii** [V] Upright, deciduous or semi-evergreen shrub. Broadly ovate, glossy, dark green leaves, to 3cm (1¼in) long, turn red in autumn. Bears pink-tinged white flowers singly or in few-flowered cymes in summer. Obovoid fruit, 8–10mm (⅜–½in) long, are bright orange-red. ↑ 2.5m (8ft), ↔ 2m (6ft). India (Sikkim), Bhutan. \*\*\*

**C. 'Skogholm'**, syn. *C. 'Skogsholmen'*. More or less prostrate, evergreen shrub with ovate to oblong, glossy, dark green leaves, to 2cm (¾in) long. White flowers are borne singly or in few-flowered cymes in late spring, followed by sparse, spherical, bright red fruit, 6–8mm (¼–⅓in) long. Good as ground cover. ↑ 60cm (24in), ↔ 3m (10ft). \*\*\*

**C. 'Skogsholmen'** see *C. 'Skogholm'*.

**C. splendens** V syn. *C. 'Sabrina'*.

**C. splendens** V syn. *C. 'Sabrina'*. Rounded, deciduous shrub with arching branches bearing broadly elliptic to rounded, glossy, mid-green leaves, to 2cm (¾in) long, turning red in autumn. Bears cymes of 3 (occasionally up to 7) pink-suffused white flowers, margined rose-pink, in early summer, followed by almost spherical, bright orange fruit, 9–10mm (⅜–½in) long. ↑ 2m (6ft), ↔ 2.5m (8ft). China (Sichuan). \*\*\*

**C. sternianus** [V] syn. *C. franchetii* var. *sternianus*. Vigorous, upright, evergreen or semi-evergreen shrub with arching branches and elliptic, glossy, dark green leaves, 2.5–6cm (1–2½in) long, white-woolly beneath. Erect cymes of up to 15 pink-tinged white flowers are produced in summer, followed by spherical, bright, deep orange-red fruit, 8–10mm (⅜–½in) long. Grow as a hedge. ↑ 3m (10ft). China (Yunnan). \*\*\*

*Cotoneaster sternianus**Cotoneaster x watereri* 'John Waterer'

**C. thymifolius** see *C. integrifolius*.

**C. 'Valkenburg'**. Dense, spreading, semi-evergreen shrub with ovate, glossy, mid-green leaves, to 2cm (¾in) long, turning orange, red, and yellow in autumn. In late spring, pink-suffused white flowers are produced singly or in few-flowered cymes, followed by ellipsoid to cylindrical red fruit, 7–9mm (¼–⅓in) long. ↑ 2m (6ft), ↔ 4m (12ft). \*\*\*

**C. x watereri 'John Waterer'** [V] V Vigorous, evergreen or semi-evergreen shrub or small tree with arching branches and lance-shaped, dark green leaves, to 10cm (4in) long. Large cymes of 30–50 white flowers are borne in summer, followed by almost spherical red fruit, 9mm (⅜in) long. ↑ 5m (15ft). \*\*\*

▷ **Cotton, Wild** see *Cochlospermum vitifolium*

▷ **Cotton grass** see *Eriophorum*  
**Broad-leaved** see *E. latifolium*  
**Common** see *E. angustifolium*

▷ **Cotton lavender** see *Santolina chamaecyparissus*

▷ **Cottonwood** see *Populus*  
**Black** *P. trichocarpa*  
**Eastern** see *P. deltoides*

## COTULA

ASTERACEAE/COMPOSITAE

Genus of about 55 species of prostrate, tufted, or creeping, rhizomatous annuals and perennials, mostly found in moist areas in N. and E. Africa, South Africa, Australia, Mexico, and South America. They are grown mainly for their aster-like flowerheads. In some species, the male and female florets are borne in separate heads. *Cotula* species are also grown for their mainly alternate, sometimes opposite or rosette-forming leaves, which are usually pinnate or lobed, occasionally entire, and mostly silver or fresh green. *C. coronopifolia* is suitable for a pond margin, a bog garden, or a damp border; in areas prone to hard frosts, grow as an annual. Alpine species are suitable for a rock garden.

• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Grow in moist, humus-rich, moderately fertile soil in full sun. Dead-head to prolong flowering.

• **PROPAGATION** Surface-sow seed at 13–18°C (55–64°F) in spring. Lift and divide plants in autumn; in frost-prone areas, overwinter in a cold frame.

• **PESTS AND DISEASES** Trouble free.

**C. atrata** see *Leptinella atrata*.

**C. coronopifolia** (Brass buttons).

Annual or short-lived perennial with many creeping, semi-prostrate, hairless, succulent stems and linear, lobed or coarsely toothed, strongly scented, fresh green leaves, 5–12cm (2–5in) long. Button-like, bright yellow flowerheads, 1cm (½in) across, are borne on slender stalks in summer. May be grown in water to 15cm (6in) deep. ↑ 15cm (6in), ↔ 30cm (12in). South Africa. \*\*\*

## COTYLEDON

CRASSULACEAE

Genus of 9 species of compact, often clump-forming, perennial succulents and evergreen subshrubs from desert or shaded areas in E. Africa, the Arabian Peninsula, and southern Africa. They are grown for their foliage and flowers. The stalked, fleshy leaves are borne in opposite pairs. Tubular to bell-shaped, generally pendent, red, yellow, or orange flowers are borne in crowded, terminal panicles, mostly in late summer and autumn. In frost-prone areas, grow in a temperate greenhouse or as houseplants. In warmer climates, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with shade from hot sun. In the growing season, water moderately, avoiding the foliage, and apply a dilute, low-nitrogen liquid fertilizer monthly; keep completely dry in winter. Outdoors, grow in gritty, low-fertility, humus-rich, sharply drained soil in full sun with some midday shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or root stem cuttings, in spring or summer.

• **PESTS AND DISEASES** Susceptible to aphids.

**C. cooperi** see *Adromischus cooperi*.

**C. ladismithensis** [V] syn. *C. tomentosa* var. *ladismithensis*. Bushy, often semi-prostrate succulent with many branches, fleshy and hairy above, woody beneath. Thick, oblong, round-tipped, softly hairy, mid-green leaves, 5cm (2in) long, have 2–4 soft teeth. In autumn, bears tubular, brownish red flowers, to 1.5cm (½in) long, in a fleshy inflorescence, 9cm (3½in) long. Often considered a variety of *C. tomentosa*. ↑ 30cm (12in), ↔ 20cm (8in). South Africa (Western Cape). ☼ (min. 7°C/45°F)

*Cotyledon ladismithensis**Cotyledon orbiculata*

**C. oblonga** see *C. orbiculata* var. *oblonga*.

**C. orbiculata** [V] Shrubby, erect, freely branching succulent with thick, fleshy stems and ovoid, white-frosted-waxy, white or grey leaves, to 14cm (5½in) long. Tubular, red or yellowish red flowers, 1.5–2cm (½–¾in) long, are produced in fleshy inflorescences, to 70cm (28in) long, from late summer to autumn. ↑ to 1m (3ft), ↔ 50cm (20in). Angola, Namibia, South Africa (Northern Cape, Western Cape). ☼ (min. 7°C/45°F). var. **oblonga** [V] syn. *C. oblonga*, *C. undulata*, is decumbent to suberect, with densely packed, obovate to inversely lance-shaped, thick, fleshy, wavy-margined, white-frosted leaves and yellowish red or orange flowers.

**C. paniculata** see *Tylecodon paniculatus*.

**C. reticulata** see *Tylecodon reticulatus*.

**C. simplicifolia** see *Chiasmophyllum oppositifolium*.

**C. tomentosa**. Compact, woody-based, perennial succulent with slender, loose stems and thick, obovoid, grey-green leaves, to 5cm (2in) long, covered with a dense felt of dark hairs at the tips. From late summer to autumn, bears pendent, tubular red flowers, to 1.5cm (½in) long, with long, recurved lobes, in panicles to 20cm (8in) long. ↑ to 30cm (12in), ↔ 12cm (5in). South Africa (Western Cape). ☼ (min. 7°C/45°F).

var. **ladismithensis** see *C. ladismithensis*.

**C. undulata** see *C. orbiculata* var. *oblonga*.

**C. wallichii** see *Tylecodon papillaris*

subsp. *wallichii*.

**C. zeyheri** see *Adromischus cristatus* var. *zeyheri*.

*Cotyledon orbiculata* var. *oblonga*



- ▷ **Couch**,  
**Hairy** see *Elymus hispidus*  
**Onion** see *Arrhenatherum elatius*  
 subsp. *bulbosum* 'Variegatum'  
 ▷ **Cowberry** see *Vaccinium vitis-idaea*  
 ▷ **Cow itch tree** see *Lagunaria patersonii*  
 ▷ **Cow parsley** see *Anthriscus sylvestris*  
 ▷ **Cowslip** see *Primula veris*  
**American** see *Dodecatheon*  
**Blue** see *Pulmonaria angustifolia*  
**Cape** see *Lachenalia*  
**Giant** see *Primula florindae*  
**Himalayan** see *Primula sikkimensis*  
**Jerusalem** see *Pulmonaria officinalis*  
**Virginia** see *Mertensia*  
*pulmonarioides*  
 ▷ **Crab apple** see *Malus*  
**Common** see *M. sylvestris*  
**Japanese** see *M. floribunda*  
**Manchurian** see *M. baccata* var.  
*mandschurica*  
**Siberian** see *M. baccata*  
**Wild** see *M. sylvestris*  
**Wild sweet** see *M. coronaria*

## CRAMBE

BRASSICACEAE/CRUCIFERAE

Genus of about 20 species of imposing, often woody-based annuals and perennials from rocky mountain slopes and coastal sand dunes, and in open grassland, in Europe, Turkey, C. Asia, and tropical Africa. They have large, simple to pinnatisect basal leaves and erect, often thick stems, which are usually leafless or bear smaller leaves. Numerous tiny, scented, cross-shaped, white or pale yellow flowers are borne in large racemes or panicles. *Crambe* species are cultivated for their handsome foliage and elegant inflorescences, which are attractive to bees. They are suitable for a herbaceous border or a wild or woodland garden, and thrive in coastal sites. The leafy stems of *C. maritima* are often eaten as a vegetable; developing stems may be blanched from late winter to spring.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, fertile, well-drained soil in full sun, although they will tolerate poor soils and partial shade. Provide shelter from strong winds.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide in early spring, or insert root cuttings in winter.
- **PESTS AND DISEASES** Susceptible to clubroot and soil-borne black rot (especially *C. maritima*).

***C. cordifolia*** [L] ♀ Clump-forming perennial forming a mound of long-stalked, kidney-shaped to ovate, puckered, toothed, bristly, dark green leaves, to 35cm (14in) or more across, which die down in mid- or late summer. Strong stems bear white flowers in many-branched panicles, to 1.5m (5ft) across, in late spring and midsummer. † to 2.5m (8ft), ↔ 1.5m (5ft). Caucasus. \*\*\*

***C. maritima*** (Sea kale). Spreading, mound-forming perennial with ovate, irregularly pinnatifid, twisted, glaucous, blue-green leaves, to 30cm (12in) long. Thick stems bear white flowers in dense racemes, to 60cm (24in) across, in early summer. † 75cm (30in), ↔ 60cm (24in). Coastal areas of N. and W. Europe, Black Sea. \*\*\*

*Crambe cordifolia*

- ▷ **Cranberry** see *Vaccinium*,  
*V. macrocarpon*  
 ▷ **Crane flower** see *Strelitzia reginae*  
 ▷ **Cranesbill** see *Geranium*  
**Armenian** see *G. psilostemon*  
**Bloody** see *G. sanguineum*  
**Dusky** see *G. phaeum*  
**Meadow** see *G. pratense*  
**Wood** see *G. sylvaticum*

## CRASPIDIA

Bachelor's buttons, Billy buttons

ASTERACEAE/COMPOSITAE

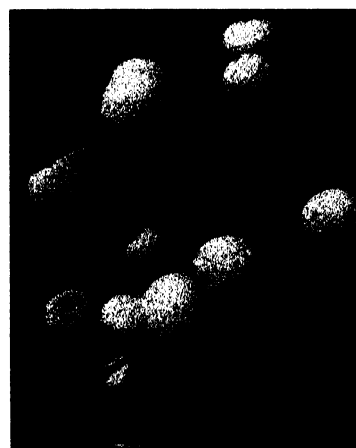
Genus of 8 species of annuals and perennials from mountainous regions of Australia, Tasmania, and New Zealand. They are grown mainly for their dense, hemispherical flowerheads of tiny, cup-shaped flowers, surrounded by leafy bracts and borne on stiff, unbranched stems. They are also cultivated for their basal rosettes of elliptic, obovate, spoon-shaped, or linear, hairy, mid-green to silvery white leaves. Grow perennial species in a rock garden or scree bed. In damp, frost-prone areas, most are best in an alpine house; grow *C. globosa* in an annual border. The flowerheads are useful for dried flower arrangements.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow annuals in any well-drained soil in full sun. Grow perennials in sharply drained, low-fertility, humus-rich, gritty soil in full sun; protect from excessive winter wet. Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand, with a top-dressing of grit. Water freely when in growth (avoiding the foliage) and keep just moist in winter.
- **PROPAGATION** Sow seed of annuals and perennials at 13–18°C (55–64°F) in spring. Divide perennials in spring.
- **PESTS AND DISEASES** Slugs and snails may attack young growth. Red spider mites may be troublesome under glass.

***C. glauca***, syn. *C. richia*. Tufted, rosette-forming perennial with inversely lance-shaped to linear, usually white-

hairy, grey-green leaves, to 15cm (6in) long. Solitary flowerheads, to 3cm (1¼in) across, of yellow or cream florets, are borne on stiff stems in summer. † 40cm (16in) or more, ↔ 20cm (8in). S. Australia. \*\*\* (borderline)  
***C. globosa*** (Bachelor's buttons, Drumsticks). Rosette-forming, white-woolly perennial, usually grown as an annual, with narrowly strap-shaped, light green leaves, to 30cm (12in) long, covered in white hairs. Mustard-yellow flowerheads, to 3cm (1¼in) across, are produced in summer at the tips of long, rigid, hairy stems. † 60–90cm (24–36in), ↔ to 12cm (5in). Australia (W. Victoria, New South Wales). \*\*\*  
***C. incana***. Densely white-woolly perennial bearing basal rosettes of obovate to spoon-shaped, mid-green leaves, to 10cm (4in) long. Dense, bright yellow flowerheads, to 3cm (1¼in) across, are produced in summer. † 20–30cm (8–12in), ↔ 15cm (6in). New Zealand. \*\*\*

***C. richia*** see *C. glauca*.  
***C. uniflora*** [L] (Bachelor's buttons). Rosette-forming annual or perennial with long-stalked, woolly, obovate or lance-shaped, mid-green basal leaves, to

*Craspedia uniflora*

12cm (5in) long, and white-woolly, lance-shaped, clasping stem leaves, 6cm (2½in) long. Clear yellow flowerheads, to 4cm (1½in) across, are produced in summer. † to 45cm (18in), ↔ 35cm (14in). S. Australia, Tasmania, New Zealand. \*

## CRASSULA

CRASSULACEAE

Genus of about 150 species of annual and perennial succulents and evergreen, succulent shrubs and subshrubs, ranging from dwarf to tall, tree-like plants, and found in dry to moist, high to low areas in Africa, Madagascar, and Asia, but mostly in South Africa. They are grown mainly for their fleshy, usually opposite leaves, which vary greatly in shape, size, and texture, and are also cultivated for their tubular or star- or funnel-shaped flowers, borne in dense, terminal, cyme-like inflorescences. In frost-prone areas, grow as houseplants, or in a cool or temperate greenhouse. In warm, dry climates, grow in a border with other succulents or in a desert garden.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light; a few need bright filtered or indirect light. From spring to autumn, apply balanced liquid fertilizer monthly and water moderately; water sparingly in winter. Outdoors, grow in moderately fertile to poor, humus-rich, sharply drained soil in full sun; *C. capitella* subsp. *thyrsiflora*, *C. hemisphaerica*, and *C. schmidtii* prefer partial shade. See also pp. 48–49.
- **PROPAGATION** Sow seed at 15–18°C (59–64°F) in early spring. Root stem or leaf cuttings in spring or summer.
- **PESTS AND DISEASES** Mealybugs, vine weevils, and aphids may be a problem.

***C. arborescens*** [L] (Silver jade plant). Shrub-like succulent with a stout, branched stem and broadly elliptic to obovate, greyish green leaves, 3.5–7cm (1½–3in) long, often with red margins, or red-spotted above. From autumn to winter, bears star-shaped pink flowers, to 1cm (½in) across. † 4m (12ft), ↔ to 2m (6ft). South Africa (Western Cape, Eastern Cape, KwaZulu/Natal). ☼ (min. 5–7°C/41–45°F)

***C. arborescens* of gardens** see *C. ovata*.  
***C. argentea* of gardens** see *C. ovata*.  
***C. capitella* subsp. *thyrsiflora***, syn. *C. corymbosula*, *C. thyrsiflora*. Variable, erect, sparingly branched, perennial

*Crassula arborescens*

C

*Crassula deceptor*

succulent. Ovate to linear-lance-shaped, hairy-margined, grey-green leaves, 3–7cm (1¼–3in) long, are spotted dark green or red. Star-shaped white flowers, 6–8mm (¼–½in) across, are produced in autumn. † to 30cm (12in), ↔ 15cm (6in). Namibia, South Africa (Eastern Transvaal, Orange Free State, KwaZulu/Natal, Northern Cape, Eastern Cape). ☼ (min. 5–7°C/41–45°F)

***C. coccinea***, syn. *Rochea coccinea*. Erect, succulent subshrub with elliptic to ovate, pointed, dull green, often red-tinged leaves, to 2.5cm (1in) long, densely arranged in 4 rows on red stems. Tubular, bright red, occasionally white flowers, to 4.5cm (1½in) long, are borne from summer to autumn. † 60cm (24in), ↔ to 40cm (16in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 5–7°C/41–45°F)

***C. corymbosula*** see *C. capitella* subsp. *thyrsiflora*.

***C. deceptor*** ☼ syn. *C. deceptor*. Perennial succulent, sometimes branching from the base, with 4-ranked, thick, ovate, greenish grey leaves, 1.5cm (½in) long, with minute, raised dots and lines. Bears funnel-shaped, cream to pale yellow or pink flowers, to 5mm (¼in) across, in spring. † to 10cm (4in). South Africa (Northern Cape, Western Cape). ☼ (min. 5–7°C/41–45°F)

***C. deceptor*** see *C. deceptor*.

***C. falcata*** see *C. perfoliata* var. *minor*.

***C. hemisphaerica***. Tufted, perennial succulent with a short stem, crowned by a dense, hemispherical rosette of 4-ranked, obovate, recurved, grey-green leaves, 1–5cm (½–2in) long, with fine white hairs. Bears tubular white flowers,

*Crassula ovata*

3mm (¼in across), in spring. † 5–15cm (2–6in), ↔ to 18cm (7in). South Africa (Northern Cape, Western Cape). ☼ (min. 5–7°C/41–45°F)

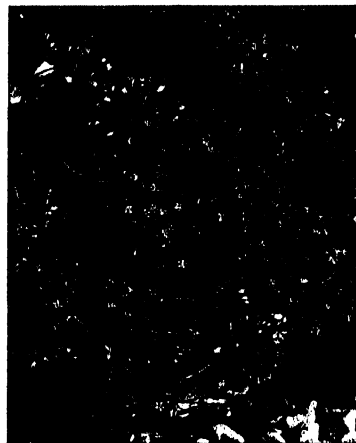
***C. lactea***. Semi-erect or prostrate, succulent subshrub. Short branches bear inversely lance-shaped, pointed, glossy, dark green leaves, 3–7cm (1¼–3in) long, margined with white dots. Small, star-shaped, scented, yellow-white, pink-flushed flowers, to 5mm (¼in) across, are produced in winter. † 20–30cm (8–12in), ↔ 1m (3ft) or more. South Africa (Eastern Cape, KwaZulu/Natal). ☼ (min. 5–7°C/41–45°F)

***C. lycopodioides*** see *C. muscosa*.

***C. multicava*** ☼ Freely branching, bushy or prostrate, perennial succulent with oblong-ovate to elliptic, minutely spotted and pitted, grey-green or glossy, mid-green leaves, 2–7cm (¾–3in) long. Star-shaped, pinkish white flowers, to 6mm (¼in) or more across, open in spring. † 30–40cm (12–16in), ↔ to 1m (3ft). South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal). ☼ (min. 5–7°C/41–45°F)

***C. muscosa***, syn. *C. lycopodioides* (Lizard tail). Spreading, perennial succulent, forming a dense bush, with triangular to ovate, scale-like, densely 4-ranked, mid-green leaves, tinged yellow, grey, or brown, 2–8mm (¼–½in) long. Bears minute, tubular, greenish yellow flowers, to 3mm (¼in) across, singly or in few-flowered, axillary clusters, in spring. † 10–30cm (4–12in), ↔ 20cm (8in). South Africa (Northern Cape, Western Cape). ☼ (min. 5–7°C/41–45°F)

***C. orbicularis***, syn. *C. rosularis*. Tufted, perennial succulent with flat rosettes of

*Crassula sarcocaulis*

elliptic to inversely lance-shaped, hairy-margined, glossy, mid-green leaves, 1.5–5cm (½–2in) long. Star-shaped white flowers, 4–8mm (¼–½in) across, are produced from summer to autumn. † 15–25cm (6–10in), ↔ to 30cm (12in). South Africa (KwaZulu/Natal). ☼ (min. 5–7°C/41–45°F)

***C. ovata*** ☼ syn. *C. arborescens* of gardens, *C. argentea* of gardens.

***C. portulacea*** (Jade plant, Jade tree). Erect, many-branched, succulent shrub with a thick, fleshy stem and elliptic, glossy, mid-green leaves, sometimes red-margined, 2–4cm (¾–1½in) long.

Star-shaped, white to pale pink flowers, to 8mm (¼in) across, are produced in autumn. † 2m (6ft) or more, ↔ 1m (3ft) or more. South Africa (Northern Cape, Western Cape, Eastern Cape, KwaZulu/Natal, Northern Transvaal, Eastern Transvaal). ☼ (min. 5–7°C/41–45°F)

***C. perfoliata* var. *falcata*** see *C. perfoliata* var. *minor*.

***C. perfoliata* var. *minor*** ☼ syn.

*C. falcata*, *C. perfoliata* var. *falcata*, *Rochea falcata* (Propeller plant). Erect, perennial succulent with fleshy stems and thick, triangular-lance-shaped, curving grey leaves, 10cm (4in) long. Star-shaped, scented, scarlet, pink, or white flowers, to 1cm (½in) across, are borne in late summer. † 1m (3ft), ↔ 75cm (30in). South Africa (Eastern Cape). ☼ (min. 5–7°C/41–45°F)

***C. portulacea*** see *C. ovata*.

***C. pyramidalis*** ☼ Semi-erect, perennial succulent with stems forming leafy columns and 4 neat ranks of ovate, flat, mid-green leaves, 4–12cm (1½–5in)

long. In autumn, each stem is crowned by creamy white flowers, to 1cm (½in) across. † 3–8cm (1¼–3in) or more, ↔ 10cm (4in). South Africa (Northern Cape). ☼ (min. 5–7°C/41–45°F)

***C. rosularis*** see *C. orbicularis*.

***C. rupestris*** ☼ Erect, spreading, or semi-prostrate, perennial succulent with thick, ovate-lance-shaped, brownish red leaves, 3–15mm (¼–½in) long, often with red margins. Star-shaped, white or pink flowers, to 6mm (¼in) across, are produced in axillary cymes in summer. † 50cm (20in), ↔ 40cm (16in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 5–7°C/41–45°F)

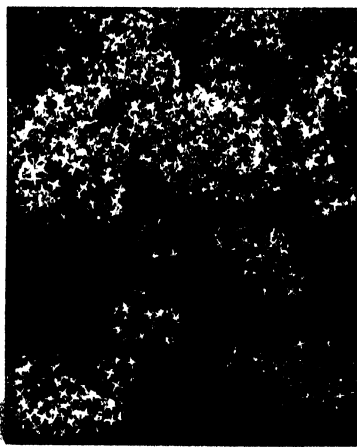
***C. sarcocaulis*** ☼ syn. *Sedum sarcocaulis*.

Bushy, perennial succulent with fleshy stems and branches, bearing elliptic-lance-shaped, sharply tapering, red-tinged, mid-green leaves, 1–3cm (½–1¼in) long. Produces star-shaped, malodorous, white or pink flowers, to 4–5mm (¼–½in) across, in summer. † 30cm (12in) or more, ↔ 30cm (12in). South Africa (Eastern Cape, KwaZulu/Natal), Lesotho. \* \*

***C. schmidtii*** ☼ Mat-forming, perennial succulent with erect, hairy, green or red stems bearing loose rosettes of narrowly lance-shaped, flat, pitted and spotted, dark green leaves, 3–4cm (1¼–1½in) long, margined with white hairs. Star-shaped, bright purplish pink flowers, to 4mm (¼in) across, are produced in winter. † 10cm (4in), ↔ 30cm (12in). South Africa (Western Cape, Eastern Cape, KwaZulu/Natal). ☼ (min. 5–7°C/41–45°F)

***C. socialis*** ☼ Tufted, perennial succulent bearing short, dense rosettes of 4-ranked, obovate to ovate, hornymargined, light green leaves, 6mm (¼in) long, with rounded undersides. Bears star-shaped white flowers, to 6mm (¼in) across, in spring. † 6cm (2½in), ↔ indefinite. South Africa (Eastern Cape). ☼ (min. 5–7°C/41–45°F)

***C. thyrsiflora*** see *C. capitella* subsp. *thyrsiflora*.

*Crassula socialis**Crassula multicava**Crassula perfoliata* var. *minor**Crassula schmidtii*

## CRATAEGUS

Hawthorn

ROSACEAE

Genus of 200 or more species of usually spiny, deciduous, sometimes semi-evergreen trees and shrubs occurring in woodland and scrub in N. temperate regions. The leaves are alternate, simple or lobed, mostly ovate or obovate, and mid- to dark green; some species produce good autumn colour. The white to deep pink flowers are usually shallowly cup-shaped and mostly borne in flat or rounded corymbs at the ends of short, leafy shoots, although, rarely, they may be solitary. Fruits, produced in autumn, consist of fleshy exteriors with bony nutlets; they are mostly red but may also be black, yellow, or bluish green. Hawthorns are valued for their long season of interest and their extreme hardiness. They are particularly useful specimen trees for a town, coastal, or exposed garden. *C. laevigata* and *C. monogyna* are also used for hedging. The seeds may cause mild stomach upset if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any (except waterlogged) soil in full sun or partial shade. Pruning group 1. Trim hedges after flowering or in autumn.

• **PROPAGATION** Remove seed from flesh as soon as ripe and sow in a seedbed or in containers in an open frame. Stratify and sow seed in a seedbed in spring (germination may take 18 months). Bud cultivars in midsummer, or graft in winter.

• **PESTS AND DISEASES** Caterpillars, aphids, gall midges, fireblight, honey fungus, rust, and powdery mildew may be troublesome.

*C. cordata* see *C. phaenopyrum*.

*C. crus-galli* ♀ (Cockspur thorn). Spreading, deciduous tree with curved thorns, 3–8cm (1¼–3in) long. Obovate, leathery, glossy, dark green leaves, to 10cm (4in) long, turn bright crimson in autumn. Bears many-flowered corymbs of white flowers, to 1.5cm (½in) across, with pink anthers, in early summer, followed by long-lasting, spherical, dark red fruit, to 1cm (½in) across. ‡8m (25ft), ↔ 10m (30ft). E. USA. \*\*\*

*C. elluangeriana* ♀ Spreading, spiny, deciduous tree with ovate, sharply toothed and lobed, mid-green leaves, to 8cm (3in) long, turning orange and red

in autumn. Corymbs of 9–10 white flowers, to 2cm (¾in) across, with red anthers, are produced in late spring, followed by oblong-ellipsoid, glossy crimson fruit, to 1.5cm (½in) long. ‡→ 6m (20ft). E. USA. \*\*\*

*C. flava* ♀ (Yellow haw). Spreading, spiny, deciduous shrub or small tree with ovate to obovate, often 3-lobed, dark green leaves, to 5cm (2in) long. Corymbs of 3–7 white flowers, 1cm (½in) across, are borne in late spring and early summer, followed by spherical or pear-shaped, yellow-green fruit, to 1cm (½in) across. ‡6m (20ft), ↔ 8m (25ft). E. USA. \*\*\*

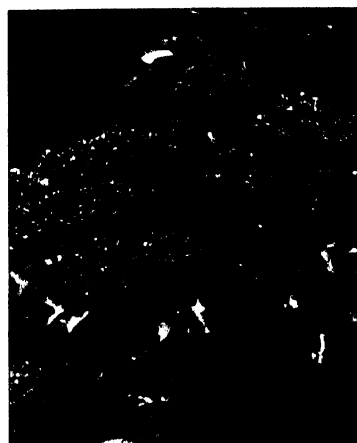
*C. laciniata* ♂♀ syn. *C. orientalis*. Compact, spreading, sparsely thorny, deciduous tree with triangular to diamond-shaped, 5- to 9-lobed, dark green leaves, to 5cm (2in) long. In late spring and early summer, bears corymbs of up to 12 white flowers, to 1.5cm (½in) across, with red anthers, followed by spherical, downy, orange-red to red fruit, to 1.5cm (½in) across. ‡→ 6m (20ft). S.E. Europe, W. Asia. \*\*\*

*C. laevigata* ♀ syn. *C. oxyacantha* of gardens (May, Midland hawthorn). Rounded, thorny, deciduous tree with ovate, shallowly 3- to 5-lobed, glossy, mid-green leaves, to 5cm (2in) long. Corymbs of up to 10 white to pink flowers, 1cm (½in) across, are produced in late spring, followed by spherical to ovoid red fruit, 0.6–1.5cm (¼–½in) long. ‡→ to 8m (25ft). Europe to India, N. Africa. \*\*\*. '*Coccinea Plena*' see '*Paul's Scarlet*'. '*Crimson Cloud*' has large, bright red flowers, 2cm (¾in) across, with white centres. '*Paul's Scarlet*' ♂♀ syn. '*Coccinea Plena*', bears profuse, double, dark pink flowers. '*Plena*' has double white flowers, ageing to pink. '*Rosea Flore Pleno*' ♀ bears double pink flowers.

*C. x lavalleyi 'Carrierei'* ♀♀ Strong-growing, spreading, thorny, semi-evergreen tree with obovate, toothed, glossy, dark green leaves, to 10cm (4in) long, turning red in late autumn and winter. In early and midsummer, bears erect, many-flowered corymbs of white flowers, to 2cm (¾in) across. Long-lasting, ellipsoid or spherical, orange-red fruit, 2cm (¾in) long, ripen in late autumn. ‡7m (22ft), ↔ 10m (30ft). \*\*\*

*C. macrosperma* var. *acutiloba* ♂♀ Spreading, thorny, deciduous tree with ovate to elliptic, sharply toothed, dark green leaves, to 8cm (3in) long, with 5 broadly triangular, toothed lobes. Corymbs of 5–12 white flowers, to 1.5cm (½in) across, with red anthers, are produced in late spring; they are followed by obovoid, bright red fruit, 1.5cm (½in) long. ‡6m (20ft), ↔ 8m (25ft). E. North America. \*\*\*

*C. monogyna* ♀ (Common hawthorn, May, Quick, Quickthorn). Rounded, deciduous tree with numerous thorns and broadly ovate to diamond-shaped, deeply 3- to 7-lobed, glossy leaves, to 5cm (2in) long, dark green above and paler beneath. Flat corymbs of 6–12 fragrant white flowers, to 1.5cm (½in) across, with pink anthers, are borne in late spring, followed by spherical, ovoid, or ellipsoid, glossy, dark red fruit, 6mm (¼in) long. Suitable as a hedge. ‡10m (30ft), ↔ 8m (25ft). Europe. \*\*\*. '*Biflora*' (Glastonbury thorn) produces



*Crataegus laevigata* 'Paul's Scarlet'

both foliage and flowers in mild winter weather, as well as in spring. '*Stricta*' ♀ is narrow and columnar, with erect branches; ↔ 4m (12ft).

*C. x mordenensis cultivars* ♀ Compact, rounded, thornless, deciduous trees with obovate, deeply 2- to 4-lobed, mid-green leaves, to 7cm (3in) long. In late spring, bear many-flowered corymbs of white or pink flowers, 1.5cm (½in) across, in late spring. Spherical, red-pink fruit, to 1cm (½in) long, are rarely produced. ‡→ 6m (20ft). \*\*\*.

'*Snowbird*' has fragrant, double white flowers. '*Toba*' has pink-tinged white flowers, ageing to pink.

*C. orientalis* see *C. laciniata*.

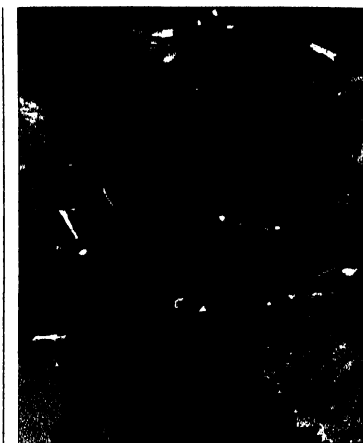
*C. oxyacantha* of gardens see *C. laevigata*.

*C. pedicellata* ♂♀ Spreading, thorny, deciduous tree. Broadly ovate, dark green leaves, to 10cm (4in) long, with 4–5 pairs of shallow, sharply toothed lobes, turn orange and red in autumn. Loose, many-flowered corymbs of white flowers, to 2cm (¾in) across, with red anthers, are produced in late spring, followed by pear-shaped, bright red fruit, 2cm (¾in) long. ‡→ 6m (20ft). E. North America. \*\*\*

*C. persimilis* 'Prunifolia' ♀♀ syn. *C. x prunifolia*. Rounded, deciduous tree producing stout thorns and obovate, glossy, deep green leaves, to 8cm (3in) long, which turn orange and red in autumn. In early summer, produces dense, rounded, many-flowered corymbs of white flowers, to 2cm (¾in) across, with pink anthers, followed by spherical, bright red fruit, 1.5cm (½in) long. ‡8m (25ft), ↔ 10m (30ft). \*\*\*



*Crataegus macrosperma* var. *acutiloba*



*Crataegus pedicellata*

*C. phaenopyrum* ♀ syn. *C. cordata* (Washington thorn). Rounded, slender, thorny, deciduous tree. The maple-like, deeply 3-lobed leaves, to 7cm (3in) long, are triangular with heart-shaped bases, and glossy, mid-green, turning orange to red in autumn. In early and midsummer, bears many-flowered corymbs of white flowers, 1cm (½in) across, with pink anthers, followed by long-lasting, spherical, glossy, bright red fruit, 6mm (¼in) long. ‡→ 10m (30ft). S.E. USA. \*\*\*

*C. x prunifolia* see *C. persimilis* 'Prunifolia'.

*C. punctata* 'Ohio Pioneer' ♀ Spreading, almost thornless, deciduous tree with obovate, dark green leaves, to 10cm (4in) long. Many-flowered corymbs of white flowers, 2cm (¾in) across, with pink anthers, are borne in spring, followed by slightly pear-shaped to spherical, dark red fruit, 2–2.5cm (¾–1in) long. ‡8m (25ft), ↔ 10m (30ft). \*\*\*

*C. tanacetifolia* ♀ (Tansy-leaved thorn). Rounded to broadly upright, usually thornless, deciduous tree with stout shoots and obovate to diamond-shaped, grey-green leaves, to 2.5cm (1in) long, with 5–7 narrowly oblong, finely divided lobes. Rounded corymbs of 6–8 fragrant white flowers, to 2.5cm (1in) across, with red anthers, are borne in midsummer, followed by spherical, aromatic, orange-yellow fruit, 2–2.5cm (¾–1in) across. ‡10m (30ft), ↔ 8m (25ft). W. Asia. \*\*\*

*C. viridis* 'Winter King' ♀ Round-headed, deciduous tree with a few slender thorns, to 4cm (1½in) long. The ovate or oblong, toothed or shallowly lobed, glossy, mid-green leaves, to 6cm (2½in) long, turn red in autumn. In late spring, bears many-flowered corymbs of white flowers, to 2cm (¾in) across, with pale yellow anthers, followed by spherical red fruit, 6–9mm (¼–¾in) long, which last through winter. ‡12m (40ft), ↔ 6m (20ft). \*\*\*

▷ *Crawfordia speciosa* see *Gentiana speciosa*

▷ *Creamcups* see *Platystemon*, *P. californicus*

▷ *Creeping buttons* see *Peperomia rotundifolia*

▷ *Creeping Charlie* see *Pilea nummulariifolia*

▷ *Creeping devil* see *Stenocereus eruca*

▷ *Creeping Jenny*, *Golden* see *Lysimachia nummularia* 'Aurea'



*Crataegus laciniata*

C

## CREMANTHODIUM

ASTERACEAE/COMPOSITAE

Genus of about 50 species of perennials, mostly found in cool, moist conditions, in scrub and on open slopes at high altitudes in India, Tibet, and China. They have often kidney-shaped, usually rosetted basal leaves and upright stems with bract-like leaves. They are grown for their usually pendent, daisy-like flowerheads, borne singly or in simple, few-flowered racemes or corymbs. Grow in woodland, a rock garden, or an alpine house. They grow best in cool climates with snow cover in winter.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in partial shade. In areas without snow cover, protect with a deep, winter mulch. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe.
- **PESTS AND DISEASES** Slugs and snails may damage outdoor plants. Prone to aphids and red spider mites under glass.

**C. reniforme**, syn. *Senecio reniformis*. Rosette-forming perennial with kidney-shaped, toothed, glossy, mid-green leaves, 15–20cm (6–8in) long. In summer, solitary, pendent, cone-shaped flowerheads, to 7cm (3in) across, with narrow, tapering, pale yellow ray-florets and brown disc-florets, are produced on stout stems, to 20cm (8in) long. † 20cm (8in), ↔ 15cm (6in). India (Sikkim) to Bhutan and Nepal. \*\*\*

- ▷ **Crepe flower** see *Lagerstroemia indica*
- ▷ **Crepe myrtle** see *Lagerstroemia indica*
- Giant sec *L. speciosa*
- Queen's see *L. speciosa*

## CREPIS

Hawk's beard

ASTERACEAE/COMPOSITAE

Genus of about 200 species of annuals and perennials found in dry grassland, on stony slopes, and among mountain scree and rocks throughout the N. hemisphere. Although some species are persistent weeds, others are cultivated for their dandelion-like flowerheads, borne singly or in simple or compound, many-flowered racemes, corymbs, or panicles. They have one or several,

314 *Crepis aurea*

mainly branched stems, and usually produce flattened, basal rosettes of entire to pinnatifid leaves. Those species grown as ornamental plants are suitable for a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun.
- **PROPAGATION** Sow seed in an open frame as soon as ripe. Insert root cuttings from lateral roots (not tap roots) in winter. Most species self-seed freely.
- **PESTS AND DISEASES** Trouble free.

**C. aurea** ■ Rosette-forming, tap-rooted perennial with obovate to inversely lance-shaped, toothed or cleft, light green leaves, to 10cm (4in) long. Usually solitary, golden orange flowerheads, 3cm (1¼in) across, are borne on stems clothed in black and white hairs, from summer to autumn. † 10–30cm (4–12in), ↔ 30cm (12in). Alps, mountainous areas of Italy, S. and W. Balkans. \*\*\*

**C. incana** ♀ (Pink dandelion). Rosette-forming perennial with inversely lance-shaped, pinnatisect, usually densely grey-hairy leaves, 3–13cm (1¼–5in) long. In late summer, bears bright, clear pink to magenta-pink flowerheads, 3cm (1¼in) across, in many-flowered corymbs. Needs full sun. †↔ 30cm (12in). S. and S.E. Greece. \*\*\*

**C. rubra**. Rosette-forming annual or short-lived perennial with mostly basal, inversely lance-shaped, toothed, slightly puckered and hairy, pale green leaves, to 15cm (6in) long. Pinkish red flowerheads, to 2.5cm (1in) across, are borne singly or in pairs on stiff, slightly arching stems from spring to summer. † 30–40cm (12–16in), ↔ 15cm (6in). Balkans, S. Italy, Greece (Crete). \*\*\*

**var. alba** has white flowers.

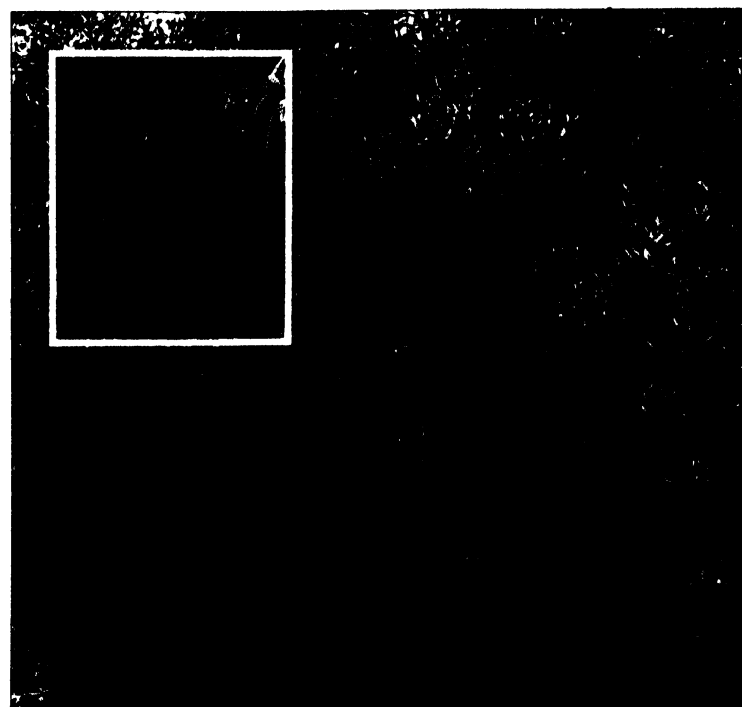
- ▷ **Cress**, Indian see *Tropaeolum majus*
- Rock see *Arabis*
- Stone see *Aethionema*
- ▷ **Crinitaria** see *Aster*

## CRINODENDRON

ELAEOCARPACEAE

Genus of 2 species of evergreen shrubs and trees from forests in Chile. They are cultivated for their foliage and flowers. The alternate, dark green leaves are narrowly elliptic to narrowly oblong or ovate. Pendent, bell-, lantern-, or urn-shaped, red or white flowers are borne singly or in pairs. Grow in a sheltered woodland garden or against a sheltered wall; they will tolerate an exposed site in mild areas. They may also be grown in a cool greenhouse or conservatory, where they will flower earlier.

- **HARDINESS** Hardy to -7°C (19°F).
- **CULTIVATION** Grow in fertile, moist but well-drained, humus-rich, acid soil in partial shade, or in full sun with the roots kept cool and shaded. *C. patagua* tolerates drier conditions and prefers full sun. Shelter from cold, drying winds. Restrict pruning to removal of dead wood in late spring. Pruning group 9 for *C. patagua*; group 8 for *C. hookerianum*.
- **PROPAGATION** Root greenwood cuttings in early summer, or semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*Crinodendron hookerianum* (inset: flower detail)

**C. hookerianum** ■ ♀ □ syn.

*Tricuspidaria lanceolata* (Lantern tree). Stiffly branched shrub, rarely a small tree, with upright shoots bearing narrowly elliptic to narrowly oblong, pointed, toothed, dark green leaves, to 10cm (4in) long. Lantern- or urn-shaped, fleshy-petalled, scarlet to deep carmine-pink flowers, 2–2.5cm (¾–1in) long, are produced from late spring to late summer. The young growth and flower buds may be damaged by hard frosts. † 6m (20ft), ↔ 5m (15ft). Chile. \*\*

**C. patagua** □–□ Vigorous, upright shrub, rarely a small tree, bearing ovate, glossy, dark green leaves, to 7cm (3in) long. Bell-shaped, scented flowers, 2.5cm (1in) long, with fringed white petals, are produced in late summer. † 8m (25ft), ↔ 5m (15ft). Chile. \*\*

- ▷ **Crinodonna** see *Amarcrinum*
- x C. corsii** see *A. memoria-corsii*

## CRINUM

AMARYLLIDACEAE

Genus of approximately 130 species of deciduous or evergreen, bulbous perennials found at streamsides and lake margins throughout tropical regions and South Africa. They are grown for their umbels of large, showy, funnel-shaped, long-tubed, often scented flowers, borne on leafless stems from spring to autumn. Leaves are basal, usually long, strap-shaped, and light to mid-green. Grow in a warm, sheltered border. In frost-prone areas, grow tender species in a temperate or warm greenhouse. All parts may cause severe discomfort if ingested; contact with the sap may irritate skin.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Plant in spring, with the neck of the bulb just above soil level. Under glass, grow in loam-based potting compost (J1 No.2) with additional sharp sand and well-rotted manure, in full or bright filtered light. Water freely when in growth; keep moist after flowering.

Pot on only when absolutely necessary, in early spring. Outdoors, grow in deep, fertile, humus-rich, moist but well-drained soil in full sun.

- **PROPAGATION** Sow seed at 21°C (70°F) as soon as ripe. Remove offsets in spring.
- **PESTS AND DISEASES** Trouble free.

**C. americanum** (Florida swamp lily). Deciduous, clump-forming perennial, spreading by stolons, with curved, sparingly toothed, mid-green leaves, to 75cm (30in) long. Umbels of up to 6 white flowers, 10–13cm (4–5in) long, with purple or brown backs, are borne from spring to autumn. † 50cm (20in), ↔ 15cm (6in). S. USA. ♀ (min. 10°C/50°F). 'Miss Elsie' has leaves to 1.2m (4ft) long; flowers, with brown-flushed backs, are borne from spring to summer.

**C. asiaticum** ■ (Poison bulb). Deciduous, clump-forming perennial with semi-erect, mid-green leaves, to 1.2m (4ft) long, grouped at the top of a false stem. Bears umbels of 20 or more narrow-tepalled, fragrant white flowers, 10cm (4in) long, from spring to summer. † 60cm (24in), ↔ 15cm (6in). Tropical S.E. Asia. ♀ (min. 10°C/50°F)

*Crinum asiaticum*

*Crinum x powellii* 'Album'

**C. bulbispermum**, syn. *C. longifolium*. Deciduous perennial bearing curved, light to mid-green leaves, 60–90cm (24–36in) long. In summer, produces umbels of 6–12 fragrant, white or pink flowers, 7–15cm (3–6in) long, flared at the tips, with a dark red central stripe on each tepal. Easily grown in a sheltered border. ↑ 60cm (24in), ↔ 15cm (6in). South Africa. \*\*

**C. longifolium** see *C. bulbispermum*. **C. macowanii** (Pyjama lily). Deciduous perennial with curved, mid-green leaves, 90cm (36in) long, with wavy margins. In autumn, bears umbels of 10–15 fragrant, white or pink flowers, to 10cm (4in) long, flared at the tips, with a dark red central stripe on each tepal. ↑ 60cm (24in), ↔ 15cm (6in). C. and E. Africa, South Africa. \*

**C. moorei**. Deciduous perennial bearing light to mid-green leaves, 90cm (36in) long, grouped at the top of a long, false stem. Umbels of 6–12 fragrant flowers, 8cm (3in) long, either white or in shades of pink, are produced in autumn. ↑ 90cm (36in), ↔ 30cm (12in). South Africa. \*

**C. x powellii** ♀ (*C. bulbispermum* × *C. moorei*). Deciduous perennial with a long bulb neck bearing arching, light to mid-green leaves, to 1.5m (5ft) long. Umbels of up to 10 widely flared, fragrant, pale to mid-pink flowers, to 10cm (4in) long, are produced from late summer to autumn. ↑ 1.5m (5ft), ↔ 30cm (12in). Garden origin. \*\*\* (borderline). 'Album' ■ has pure white flowers.

## CROCOSMIA

syn. ANTHOLYZA, CURTONUS

Montbretia

IRIDACEAE

Genus of 7 species of clump-forming, cormous perennials from grassland in South Africa. Erect, linear-lance-shaped leaves are mostly ribbed or sometimes pleated, mainly mid-green, sometimes pale green or brownish green, usually 60–100cm (24–36in) long. They are grown for their funnel-shaped, brightly coloured flowers, borne from mid- to late summer in often branched spikes on wiry stems. Grow at the edge of a shrub border or in clumps in a herbaceous border. The flowers are excellent for cutting.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Plant 8–10cm (3–4in) deep in spring, in moderately fertile,

humus-rich, moist but well-drained soil in sun or partial shade. In frost-prone areas, plant near a wall; mulch in the first winter and in periods of prolonged frost. Lift and divide congested clumps in spring to maintain vigour.

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring, just before growth starts.

- **PESTS AND DISEASES** Red spider mites may be troublesome.

**C. aurea**. Cormous perennial with pale green leaves, 50–70cm (20–28in) long. Erect or occasionally branched spikes of pale to dark orange flowers, 5cm (2in) long, arranged in 2 rows, are produced in early summer. ↑ 80–90cm (32–36in), ↔ 8cm (3in). South Africa. \*\*

**C. 'Bressingham Blaze'**. Cormous perennial with large clumps of pleated, mid-green leaves. In late summer, bears brilliant orange-red flowers, 5–6cm (2–2½in) long, with yellow throats, in spikes 60–80cm (24–32in) long. ↑ 75–90cm (30–36in), ↔ 8cm (3in). \*\*

**C. 'Citronella' of gardens** see *C. 'Golden Fleece'*.

**C. x crocosmiiflora** (*C. aurea* × *C. pottsi*) (Montbretia). Robust, sometimes invasive, variable cormous perennial with pale green leaves, 60–80cm (24–32in) long. Thin, slightly arching, sometimes branched spikes of orange or yellow flowers, 3–5cm (1¼–2in) long, are produced in summer. ↑ 60cm (24in), ↔ 8cm (3in). South Africa. \*\*\*

**C. 'Emberglow'**. Cormous perennial with mid-green leaves. Dark red flowers, 5–8cm (2–3in) long, arranged in 2 rows in arching, freely branching spikes, are produced in summer. ↑ 60–75cm (24–30in), ↔ 8cm (3in). \*\*

**C. 'Emily McKenzie'**, syn. *C. 'Lady McKenzie'*. Cormous perennial with mid-green leaves. In late summer, bears branched spikes of usually downward-facing, broad-petalled, bright orange flowers, 4–5cm (1½–2in) long, with mahogany throat markings. ↑ 60cm (24in), ↔ 8cm (3in). \*\*

**C. 'Firebird'**. Robust, cormous perennial with mid-green leaves. In summer, bears upward-facing, bright orange-red flowers, 5–8cm (2–3in) long, in spreading, mostly unbranched spikes. ↑ 80cm (32in), ↔ 8cm (3in). \*\*

**C. 'Fire King' of gardens** see *C. 'Jackanapes'*.

**C. 'George Davison' of gardens** see *C. 'Golden Fleece'*.

*Crocosmia* 'Golden Fleece'*Crocosmia* 'Jackanapes'

**C. 'Golden Fleece'** ■ syn. *C. 'Citronella' of gardens*, *C. 'George Davison' of gardens*. Cormous perennial with mid-green leaves. In late summer, bears slightly arching, freely branched spikes of lemon-yellow flowers, to 5cm (2in) long. ↑ 60–75cm (24–30in), ↔ 8cm (3in). \*\*

**C. 'Jackanapes'** ■ syn. *C. 'Fire King' of gardens*. Cormous perennial with mid-green leaves. Arching, many-branched stems of bicoloured, orange-red and yellow flowers, 2–3cm (¾–1¼in) long, are produced in late summer. ↑ 40–60cm (16–24in), ↔ 8cm (3in). \*\*

**C. 'Lady Hamilton'**. Cormous perennial with mid-green leaves. In late summer, golden yellow flowers, 3–4cm (1¼–1½in) long, with apricot-yellow

*Crocosmia masoniorum*

centres, are produced in erect, branched spikes. ↑ 60–75cm (24–30in), ↔ 8cm (3in). \*\*

**C. 'Lady McKenzie'** see *C. 'Emily McKenzie'*.

**C. 'Lucifer'** ■ ♀ Robust, cormous perennial bearing pleated, mid-green leaves. Upward-facing, bright tomato-red flowers, to 5cm (2in) long, are produced in bold, slightly arching, sparsely branched spikes in midsummer. ↑ 1–1.2m (3–4ft), ↔ 8cm (3in). \*\*

**C. masoniorum** ■ ♀ Robust, cormous perennial bearing pleated, mid-green leaves, 60–100cm (24–39in) long. In midsummer, bears upward-facing, orange-red flowers, 5cm (2in) long, in arching, usually unbranched spikes. ↑ 1.2m (4ft), ↔ 8cm (3in). South Africa. \*\*\* (borderline)

*Crocosmia* 'Lucifer'

C

*Crocosmia* 'Solfatare'

**C. paniculata**, syn. *Antholyza paniculata*, *Curtonus paniculatus*. Cormous perennial producing strongly plicated, olive green leaves, to 1m (3ft) long. In late summer, downward-curved orange flowers, to 6cm (2½in) long, are borne alternately on branched, zigzagged stems. † 1.5m (5ft), ↔ 10cm (4in). South Africa. \*\*

**C. rosea** sec *Tritonia disticha*.

**C. 'Solfatare'** [M] ♀ syn. *C. 'Solfaterre'*. Cormous perennial with bronze leaves. Apricot-yellow flowers, 3cm (1¼in) long, are borne on arching, branched stems in midsummer. † 60–70cm (24–28in), ↔ 8cm (3in). \*\*

**C. 'Solfaterre'** see *C. 'Solfatare'*.

**C. 'Spitfire'**. Cormous perennial with mid-green leaves. Upward-facing, bright orange-red flowers, 3.5cm (1½in) long, are borne on arching, branched stems in late summer. † 70–90cm (28–36in), ↔ 8cm (3in). \*\*

**C. 'Star of the East'** [M] Cormous perennial with mid-green leaves. From late summer to early autumn, produces horizontal-facing, clear orange flowers, 3.5cm (1½in) long, each with a paler orange centre, on branched stems. † 70cm (28in), ↔ 8cm (3in). \*\*

*Crocosmia* 'Star of the East'

## CROCUS

## IRIDACEAE

Genus of about 80 species of dwarf, cormous perennials found in a wide range of habitats, including woodland, scrub, and meadows, from coastal to subalpine areas in C. and S. Europe, N. Africa, the Middle East, C. Asia, and W. China. The small, mainly goblet-shaped flowers (4 or more per corm) open in autumn or early spring to reveal inner tepals in often contrasting colours. The 6 tepals forming the bowl of the flower are usually each 2–5cm (¾–2in) long, while the perianth tube may be up to 15cm (6in) long. The styles are either 3-branched (with expanded or frilled ends), 6-branched, or multi-branched (with more than 6 branches). Semi-erect, linear to linear-lance-shaped leaves, mostly mid-green with pale silvery green central stripes, usually appear at the same time as or soon after the flowers and elongate markedly as the flowers fade. In some autumn-flowering species, flowers appear before the leaves.

Chrysanthus Hybrids are selections of *C. biflorus* or *C. chrysanthus*, or hybrids between these two species. They have grey- to mid-green leaves, to 15cm (6in) long, borne with or after the flowers. Up to 4 flowers, each 5–10cm (2–4in) long, are produced in spring.

Grow crocuses in drifts at the front of a mixed or herbaceous border, or in a rock garden, raised bed, or trough; the most vigorous are useful for naturalizing in short turf. Some need a dry summer dormancy, and these are best grown in a bulb frame or alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Plant crocuses 8–10cm (3–4in) deep: spring-flowering ones in autumn, and autumn-flowering ones in late summer. Crocuses have varying cultivation requirements, which, for ease of reference, are grouped as follows:

1. Full sun and gritty, poor to moderately fertile, well-drained soil.
2. Full light in a bulb frame or alpine house, in a mix of equal parts loam, leaf mould, and grit or sharp sand. In the growing season, water freely and apply a low-nitrogen fertilizer monthly; keep completely dry in summer dormancy.
3. Sun or partial shade and moderately fertile, humus-rich, moderately moist but well-drained soil.

• **PROPAGATION** Collect seed as soon as ripe, just before the seed capsule splits, and sow immediately in containers in a cold frame. Leave seedlings in containers for 2 years before planting out. Many crocuses self-seed freely. Remove cormlets during dormancy.

• **PESTS AND DISEASES** Mice, voles, and squirrels may feed on the corms. Birds sometimes pick off flowers. Corms in storage are prone to rots and moulds.

**C. 'Advance'**. Early spring-flowering Chrysanthus Hybrid producing several pale yellow flowers, suffused violet-bronze outside and golden yellow inside. Cultivation group 1. † 7cm (3in), ↔ 5cm (2in). \*\*\*

**C. aeriis** of gardens see *C. biflorus* subsp. *pulchricolor*.

**C. ancyrensis** [M] Late winter- and early spring-flowering crocus, producing 5 or more, rounded, bright yellow or orange

*Crocus* 'Gipsy Girl'

flowers, 1.5–3cm (½–1¼in) long, which have long perianth tubes. Cultivation group 1. † 5cm (2in). C. and N. Turkey, W. China (Tien Shan). \*\*\*

**C. angustifolius** ♀ syn. *C. susianus* (Cloth of gold crocus). Spring-flowering crocus producing grey-green leaves and 1 or 2 narrow, orange-yellow flowers, 1.5–3.5cm (½–1½in) long. Outer tepals are suffused or almost wholly marked deep bronze, and recurve strongly when flowers are fully open. Cultivation group 1 or 2. † 5cm (2in). S. Ukraine (including Crimea), Armenia. \*\*\*

**C. asturicus** see *C. serotinus* subsp. *salzmännii*.

**C. aureus** see *C. flavus*.

**C. banaticus** [M] ♀ syn. *C. iridiflorus*.

Early autumn-flowering crocus with very distinctive, solitary flowers. Large, lilac to purple outer tepals, to 5cm (2in) long, open wide; smaller inner tepals, to 3cm (1¼in) long, remain erect and are usually paler. The style is divided into a mass of lilac or white branches. Dark green leaves, without central stripes, are borne after the flowers. Slow to increase, and best propagated by seed.

Cultivation group 3. † 10cm (4in), ↔ 5cm (2in). N.E. former Yugoslavia, Romania, S.W. Ukraine. \*\*\*

**C. baytopiorum**. Spring-flowering crocus with 1 or 2 rounded, clear blue-turquoise flowers, 2–3cm (¾–1¼in) long. Cultivation group 2. † 5cm (2in), ↔ 2.5cm (1in). S.W. Turkey. \*\*\*

**C. biflorus** [M] Very variable, early spring-flowering crocus producing 1–4 yellow-throated flowers, to 3cm (1¼in) long, in shades of lilac-blue or white, the outer tepals sometimes striped purple or brownish purple. Cultivation group 1. † 6cm (2½in), ↔ 5cm (2in). Italy, S. former Yugoslavia, Greece, Bulgaria, Turkey, Iran, S. Ukraine (Crimea), Armenia, Caucasus. \*\*\*

**C. alexandri** has white flowers, the outer tepals heavily marked deep purple; S.W. Bulgaria, former Yugoslavia. subsp. *pulchricolor*, syn. *C. aeriis* of gardens, has rich blue-purple flowers, stained

dark violet near the bases, with deep yellow throats; N.W. Turkey. subsp. *weldenii* 'Fairy' has white flowers, the outer tepals dusted violet.

**C. 'Blue Bird'**. Spring-flowering Chrysanthus Hybrid with pale blue flowers, heavily marked violet outside, with golden yellow throats. Cultivation group 1. † 7cm (3in), ↔ 5cm (2in). \*\*\*

**C. 'Blue Pearl'** ♀ Spring-flowering Chrysanthus Hybrid producing yellow-throated white flowers with soft lilac-blue outer tepals. Cultivation group 1. † 7cm (3in), ↔ 5cm (2in). \*\*

**C. boryi** ♀ Autumn-flowering crocus producing up to 4 well-rounded, creamy white flowers, to 5cm (2in) long, sometimes veined or flushed mauve outside, with the leaves. Cultivation group 2. † 8cm (3in), ↔ 5cm (2in). Greece (including Crete). \*\*

**C. cancellatus**. Very variable, autumn-flowering crocus with 1–3 slender, pale blue flowers, to 6cm (2½in) long, striped violet outside. Grey-green leaves are usually absent but may just be visible at flowering. Cultivation group 2. This description applies to subsp. *cancellatus*, the most commonly cultivated variant, found in S. Turkey, Lebanon, and S. Israel; other subspecies occur in Greece, S. former Yugoslavia, Lebanon, Jordan, Iraq, and Iran. † 5cm (2in). \*\*\*

**C. cartwrightianus** [M] ♀ Autumn- and early winter-flowering crocus with 1–5 open goblet-shaped, fragrant, pale to deep lilac or white flowers, 1.5–3cm (½–1¼in) long, veined dark purple. Leaves appear with or shortly after the flowers. Cultivation group 2, but may be grown outside in a sunny, very well-drained situation. † 5cm (2in). Greece (including Crete). \*\*\*

**C. chrysanthus** ♀ Late winter- and early spring-flowering crocus with dull green leaves and up to 4 rounded, scented flowers, 1.5–4cm (½–1½in) long, which vary from cream to deep golden yellow, often suffused or veined



bronze-maroon outside. Cultivation group 1.  $\uparrow$  5cm (2in),  $\leftrightarrow$  4cm (1½in). Former Yugoslavia, Greece, Albania, Macedonia, Bulgaria, W., C., and S. Turkey. \*\*\*

*C. clusii* see *C. serotinus* subsp. *clusii*.

*C. corsicus*  $\square$   $\varnothing$  Spring-flowering crocus with 1 or 2 slender, scented flowers, 2–3.5cm (¾–1½in) long, bright lilac inside and paler lilac, striped violet or purple outside, with bright orange styles. Leaves are deep green. Cultivation group 1 or 2.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  4cm (1½in). France (Corsica). \*\*\*

*C. 'Cream Beauty'*  $\varnothing$  Compact, spring-flowering Chrysanthus Hybrid producing rich cream flowers with pale greenish brown bases and deep golden yellow throats. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. cvijicii*  $\square$  Spring-flowering crocus producing solitary flowers, 2–4cm (¾–1½in) long, usually golden yellow but sometimes white or cream. Leaves are only just visible at flowering. Cultivation group 2.  $\uparrow$  10cm (4in),  $\leftrightarrow$  4cm (1½in). S. former Yugoslavia, N. Greece, E. Albania. \*\*\*

*C. dalmaticus*  $\square$  Late winter- and early spring-flowering crocus with solitary, rounded, pale lilac flowers, 1.5–3.5cm (½–1½in) long. Outer tepals have a silver or biscuit-brown overlay, lightly veined with purple. Cultivation group 1.  $\uparrow$  8cm (3in),  $\leftrightarrow$  4cm (1½in). Former Yugoslavia, N. Albania. \*\*\*

*C. 'Dutch Yellow'*  $\varnothing$  syn. *C. 'Golden Yellow'*, *C. x luteus* 'Dutch Yellow'. Vigorous, spring-flowering crocus with 2–5 orange-yellow flowers, 3–5cm (1¼–2in) long. Suitable for naturalizing in grass. Cultivation group 1.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. 'E.A. Bowles'*  $\square$   $\varnothing$  Spring-flowering Chrysanthus Hybrid with compact, rich lemon-yellow flowers, the outer tepals with bronze-green bases and purple

feathering. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. 'Elegance'*. Tall, spring-flowering Chrysanthus Hybrid with large, bright golden yellow flowers with large brown marks outside. Cultivation group 1.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. etruscus* 'Zwanenburg'  $\square$  Late winter- and spring-flowering crocus with 1 or 2 lilac-blue flowers, 3–4cm (1¼–1½in) long, the outsides washed silver or biscuit-brown with faint purple veining. Cultivation group 1.  $\uparrow$  8cm (3in),  $\leftrightarrow$  4cm (1½in). \*\*\*

*C. 'Eyecatcher'*. Spring-flowering Chrysanthus Hybrid with grey-white flowers, heavily marked deep purple outside. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. flavus*, syn. *C. aureus*. Spring-flowering crocus producing 1–4 scented, orange-yellow flowers, 2–3.5cm (¾–1½in) long. Cultivation group 1.  $\uparrow$  8cm (3in),  $\leftrightarrow$  5cm (2in). S. former Yugoslavia, C. and N. Greece, N.W. and W. Turkey, Romania. \*\*\*

*C. gargaricus*. Spring-flowering crocus with tiny corms, 5mm (¼in) across, and solitary, slender, bright orange-yellow flowers, 1.5–4.5cm (½–1½in) long. Non-stoloniferous and may be difficult to grow. Cultivation group 3.  $\uparrow$  4cm (1½in),  $\leftrightarrow$  2.5cm (1in). N.W. Turkey. \*\*\*

subsp. *herbertii*  $\square$  increases by stolons and may form large clumps. Easier to grow; cultivation group 2 or 3. *C. 'Gipsy Girl'*  $\square$  Spring-flowering Chrysanthus Hybrid producing large yellow flowers with purple stripes and feathering outside. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. 'Golden Yellow'* see *C. 'Dutch Yellow'*.

*C. goulimyi*  $\square$   $\varnothing$  Autumn-flowering crocus producing 1–3 rounded, scented, lilac flowers, 1.5–4cm (½–1½in) long, with long, slender perianth tubes. Leaves

are borne with the flowers. Cultivation group 1 or 2.  $\uparrow$  10cm (4in),  $\leftrightarrow$  5cm (2in). S. Greece. \*\*\*

*C. hadriaticus*  $\varnothing$  syn. *C. hadriaticus* var. *chrysobelonius*. Autumn-flowering crocus producing 1–3 white flowers, 2–4.5cm (¾–1½in) long, with the leaves. Flowers have conspicuous yellow throats and may be lightly feathered with lilac at the bases; the style is divided into 3 bright red branches. Cultivation group 1 or 2.  $\uparrow$  8cm (3in),  $\leftrightarrow$  4cm (1½in). Greece. \*\*\*

*C. hadriaticus* var. *chrysobelonius* see *C. hadriaticus*.

*C. imperati* 'De Jager'  $\square$  Late winter- and early spring-flowering crocus with 1 or 2 flowers, 3–4.5cm (1¼–1½in) long, with long perianth tubes. Flowers are rich violet-purple inside and biscuit-brown outside, with pronounced violet stripes. Leaves are shiny and dark green. Cultivation group 1.  $\uparrow$  10cm (4in),  $\leftrightarrow$  4cm (1½in). \*\*\*

*C. iridiflorus* see *C. banaticus*.

*C. korolkowii* (Celandine crocus). Late winter- and early spring-flowering crocus with 3–5 slender, scented, shiny, golden yellow flowers, 2–3.5cm (¾–1½in) long. Cultivation group 2, although may be grown outside. Needs a dry summer dormancy.  $\uparrow$  10cm (4in),  $\leftrightarrow$  5cm (2in). Uzbekistan, Tajikistan, N. and E. Afghanistan, N. Pakistan. \*\*\*

*C. kotschyianus*  $\square$   $\varnothing$  syn. *C. zonatus*. Vigorous, autumn-flowering crocus with large, irregular, flattened corms. Solitary, long-tubed, pale lilac flowers, 3–4.5cm (1¼–1½in) long, are borne before the leaves. Each short-stemmed flower has a ring of yellow dots around the throat and creamy white stamens. Cultivation group 1 or 2. Needs a dry summer dormancy.  $\uparrow$  6–8cm (2½–3in),  $\leftrightarrow$  5cm (2in). Turkey, N.W. Syria, Lebanon. \*\*\*

var. *leucopharynx* has flowers with white throats.

*C. 'Ladykiller'*  $\square$   $\varnothing$  Spring-flowering Chrysanthus Hybrid producing white flowers heavily marked deep purple outside. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. laevigatus*  $\varnothing$  Late autumn- and early winter-flowering crocus with 1–3 often fragrant, white to lilac flowers, 1.5–3cm (½–1¼in) long, sometimes yellow or biscuit-coloured outside, often heavily feathered with deep violet-purple. Deep green leaves are borne with the flowers. Suitable for naturalizing in grass.

Cultivation group 1 or 2.  $\uparrow$  4–8cm (1½–3in),  $\leftrightarrow$  4cm (1½in). Greece (including Crete). \*\*\*

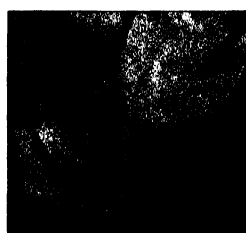
*C. longiflorus*  $\square$   $\varnothing$  Autumn-flowering crocus with 1 or 2 pale to deep lilac, strongly fragrant flowers, 2–4.5cm (¾–1½in) long, often lightly feathered outside, with bright orange-red styles. Leaves, with white central stripes, appear with the flowers. Cultivation group 2.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  3cm (1¼in). S.W. Italy (including Sicily), Malta. \*\*\*

*C. x luteus* 'Dutch Yellow' see *C. 'Dutch Yellow'*.

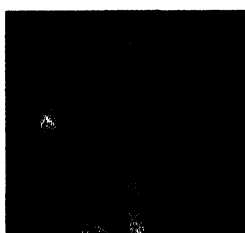
*C. malyi*  $\square$   $\varnothing$  Spring-flowering crocus with slightly grey-green leaves and 1 or 2 white flowers with long perianth tubes, pointed tepals, 2–4cm (¾–1½in) long, sometimes faintly suffused purple at the bases, and yellow throats. Cultivation group 2.  $\uparrow$  8cm (3in),  $\leftrightarrow$  4cm (1½in). W. former Yugoslavia. \*\*\*

*C. medius*  $\square$   $\varnothing$  Late autumn-flowering crocus producing solitary, vivid purple, or sometimes paler flowers, 2.5–5cm (1–2in) long, with long perianth tubes and bright orange-red styles; flowers appear just before the leaves. Cultivation group 1.  $\uparrow$  8cm (3in),  $\leftrightarrow$  2.5cm (1in). S.E. France, N.W. Italy. \*\*\*

*C. minimus*  $\square$  Late spring-flowering crocus with 1 or 2 mid- to deep lilac-purple flowers, 2–3cm (¾–1¼in) long, with long perianth tubes. Outer tepals



*Crocus ancyrensis*



*Crocus banaticus*



*Crocus biflorus*



*Crocus cartwrightianus*



*Crocus corsicus*



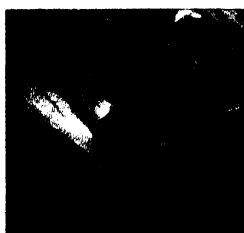
*Crocus cvijicii*



*Crocus dalmaticus*



*Crocus* 'E.A. Bowles'



*Crocus etruscus*  
'Zwanenburg'



*Crocus gargaricus* subsp.  
*herbertii*



*Crocus goulimyi*



*Crocus imperati* 'De Jager'



*Crocus kotschyianus*



*Crocus* 'Ladykiller'



*Crocus longiflorus*



*Crocus malyi*



*Crocus medius*



*Crocus minimus*

C

*Crocus sieberi* 'Hubert Edelsten'

are veined, stained, or feathered with dark violet, often on a buff or yellow base. Cultivation group 1.  $\uparrow$  8cm (3in),  $\leftrightarrow$  2.5cm (1in). France (S. Corsica), Italy (Sardinia). \*\*\*

*C. niveus*. Autumn-flowering crocus producing 1 or 2 flowers when the leaves are just present. The flowers, 3–6cm (1¼–2½in) long, vary from white to lilac with yellow throats and long, white, yellow, or purple-brown perianth tubes. The orange styles are much-divided and very conspicuous. Cultivation group 2, but may be grown outside. Needs a dry summer dormancy.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  4cm (1½in). S. Greece. \*\*\*

*C. nudiflorus*. Autumn-flowering crocus producing solitary, long-tubed, rich purple flowers, 3–6cm (1¼–2½in) long, before the leaves. Spreads by stolons and is suitable for naturalizing in grass. Cultivation group 3.  $\uparrow$  15–26cm (6–10in),  $\leftrightarrow$  5cm (2in). S.W. France, N. and E. Spain. \*\*\*

*C. ochroleucus*  $\square$  ♀ Late autumn-flowering crocus producing 1–3 creamy white flowers, 2–3.5cm (¾–1½in) long, with conspicuous yellow throats and long perianth tubes. Leaves appear with, or shortly after the flowers. Increases freely by offsets and is suitable for naturalizing in grass. Cultivation group 1 or 2.  $\uparrow$  5cm (2in),  $\leftrightarrow$  2.5cm (1in). S.W. Syria, Lebanon, N. Israel. \*\*\*

*C. oivieri*. Spring-flowering crocus with spreading leaves, producing 1–4 long-tubed, pale lemon-yellow to deep orange flowers, 1.5–3.5cm (½–1½in) long, with undivided styles. Cultivation group 1.  $\uparrow$  5cm (2in),  $\leftrightarrow$  4cm (1½in). S.E. Romania, S. Albania, Macedonia, S. Bulgaria, Greece, Turkey (except E. Turkey). \*\*\*. **subsp. balansae** has much-divided styles, and outer tepals striped or heavily suffused bronze; Greece (Samos, Chios), W. Turkey.

*C. oreoreticus*. Autumn-flowering crocus producing 1–5 rich lilac flowers, 1.5–3cm (½–1¼in) long, each with dark purple veins and a silvery wash on the outside. Leaves are only just present at flowering. Increases easily from seed. Cultivation group 2.  $\uparrow$  5cm (2in). Greece (Crete). \*\*\*

*C. 'Princess Beatrix'* see *C. 'Prinses Beatrix'*.

*C. 'Prinses Beatrix'*, syn. *C. 'Prinses Beatrix'*. Spring-flowering Chrysanthus Hybrid producing compact, clear blue flowers with yellow bases. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. pulchellus*  $\square$  ♀ Autumn- to early winter-flowering crocus producing 1, occasionally 2, long-tubed, goblet-shaped flowers, 3–6cm (1¼–2½in) long, before the leaves. Flowers are pale lilac-blue, lightly veined violet, with deep yellow throats and white anthers. Very similar to *C. speciosus*, with which

*Crocus tommasinianus* f. *albus*

it hybridizes. Suitable for naturalizing in grass. Cultivation group 1.  $\uparrow$  10–12cm (4–5in),  $\leftrightarrow$  4cm (1½in). S. former Yugoslavia, N. Greece, S. Bulgaria, Turkey. \*\*\*. **'Zephyr'** see *C. 'Zephyr'*.

*C. reticulatus*. Late winter- and early spring-flowering crocus producing 1 or 2 cup-shaped, fragrant, white or lilac flowers, 1.5–3.5cm (½–1½in) long, with light yellow throats inside. Outer tepals have 3–5 longitudinal, deep violet bands. Grey-green leaves have white central stripes. Cultivation group 2.  $\uparrow$  to 10cm (4in),  $\leftrightarrow$  8cm (3in). N.E. Italy to S. Turkey and N. Caucasus. \*\*\*

*C. salzmannii* see *C. serotinus* subsp. *salzmannii*.

*C. sativus*, syn. *C. sativus* var. *cashmirianus* (Saffron crocus). Autumn-flowering crocus producing 1–5 widely open, rich lilac flowers, to 5cm (2in) long, with dark purple veins. Dull green leaves are borne with or shortly after the flowers. Saffron is obtained from the long, conspicuous, 3-branched, deep red style. Sterile, increasing only by division. Cultivation group 1 or 2.  $\uparrow$  5cm (2in). Origin uncertain; it is probably an ancient selection of *C. cartwrightianus*. \*\*\*. **var. cashmirianus** see *C. sativus*.

*C. serotinus*. Autumn-flowering crocus with solitary, pale to deep lilac flowers, 2.5–4cm (1–1½in) long, sometimes veined darker lilac, with long perianth tubes and white or very pale yellow throats. Dark green leaves are sometimes present at flowering. Cultivation group 2.  $\uparrow$  5–8cm (2–3in),  $\leftrightarrow$  4cm (1½in). S. Portugal. \*\*\*. **subsp. clusii** ♀ syn. *C. clusii*, produces leaves as the flowers fade; cultivation group 1, with added humus;  $\uparrow$  5–8cm (2–3in),  $\leftrightarrow$  4cm (1½in); Portugal, N.W. and S.W. Spain. **subsp. salzmannii**, syn. *C. asturicus*, *C. salzmannii*, flowers earlier, producing larger, pale lilac flowers when leaves are only just present; N., C., and S. Spain, Gibraltar, N. Africa.

*C. sieberi* ♀ Vigorous, late winter- and early spring-flowering crocus with 1–3 scented, rich pinkish lilac-blue, yellow-throated flowers, 2–3cm (¾–1¼in) long. Cultivation group 1.  $\uparrow$  5–8cm (2–3in),  $\leftrightarrow$  2.5cm (1in). Greece. \*\*\*. **'Albus'** see 'Bowles' White'. **'Bowles' White'**  $\square$  ♀ syn. 'Albus', produces white flowers, 3–4.5cm (1¼–1¾in) long, with deep golden yellow throats, in early spring. **'Firefly'** has abundant, lilac flowers. **'Hubert Edelsten'**  $\square$  ♀ has pale lilac flowers, 3–4.5cm (1¼–1¾in)

long, with rich purple outer tepals, each with a bold white line. **subsp. sieberi** produces white flowers, marked purple outside, from spring to early summer; cultivation group 2;  $\uparrow$  4cm (1½in); Greece (Crete). **subsp. sublimis** f. **tricolor**  $\square$  ♀ has narrow flowers, each with 3 distinct bands of lilac, white, and golden yellow. **'Violet Queen'** has deep violet flowers with pointed tips.

*C. 'Skyline'*. Spring-flowering Chrysanthus Hybrid producing clear blue flowers, lightly veined darker blue outside. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. 'Snow Bunting'*  $\square$  ♀ Spring-flowering Chrysanthus Hybrid with white flowers, lightly feathered grey-blue outside. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. speciosus* ♀ Autumn-flowering crocus producing solitary flowers before the leaves. Long-tubed flowers, 3–6cm (1¼–2½in) long, in shades of violet-blue with deeper blue veins, have much-divided, bright orange styles. Increases rapidly by seed and offsets; suitable for naturalizing in grass. Cultivation group 1.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  5cm (2in). N. and C. Turkey, N. Iran, S. Ukraine (Crimea), Caucasus, C. Asia. \*\*\*. **f. albus** ♀ syn. 'Albus', has pure white flowers. **'Conqueror'** has deep blue flowers, 4–7cm (1½–3in) long. **'Oxonian'**  $\square$  has violet-mauve flowers with dark violet bases and tubes.

*C. 'Spring Pearl'*. Spring-flowering Chrysanthus Hybrid with bronze-yellow flowers, feathered purple-brown outside. Cultivation group 1.  $\uparrow$  7cm (3in),  $\leftrightarrow$  5cm (2in). \*\*\*

*C. rusianus* see *C. angustifolius*.

*C. tommasinianus* ♀ Late winter- to spring-flowering crocus producing 1 or 2 slender flowers, 2–4.5cm (¾–1¾in) long, with long white perianth tubes. Flowers vary from pale silvery lilac to shades of reddish purple; outer tepals are often overlaid silver. Increases freely by seed and offsets; suitable for naturalizing in grass. Cultivation group 1.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  2.5cm (1in). S. Hungary, S. former Yugoslavia, N.W. Bulgaria. \*\*\*. **f. albus**  $\square$  has white flowers. **'Barr's Purple'** has purple flowers, silvery outside. **'Ruby Giant'**  $\square$  is clump-forming, with sterile, rich reddish purple flowers. **'Whitewell Purple'** increases rapidly and has reddish purple flowers, silver mauve inside.

*C. tournefortii* ♀ Late autumn- to winter-flowering crocus. Solitary, long-

*Crocus ochroleucus**Crocus pulchellus**Crocus sieberi* 'Bowles' White'*Crocus sieberi* subsp. *sublimis* f. *tricolor**Crocus* 'Snow Bunting'*Crocus speciosus* 'Oxonian'*Crocus tommasinianus* 'Ruby Giant'*Crocus vernus* subsp. *albiflorus**Crocus vernus* 'Purpureus Grandiflorus'



*Crocus vernus* 'Pickwick'

tubed, widely open, pale lilac flowers, 1.5–3.5cm (½–1½in) long, have much-divided orange styles and white anthers. Flowers, borne with the leaves, remain open at night. Cultivation group 1 or 2. †5–8cm (2–3in), ↔ 4cm (1½in).

S. Greece (including Crete, Cyclades). \*\*\*

**C. vernus** (Dutch crocus). Spring- to early summer-flowering crocus producing solitary flowers, 3–6cm (1¼–2½in) long, in white or shades of lilac or purple. Suitable for naturalizing in grass. Cultivation group 1.

†10–12cm (4–5in), ↔ 5cm (2in). W. Russia, Poland, Czech Republic, Slovakia, Austria, former Yugoslavia, Hungary, Romania, Italy. \*\*\*. **subsp.**

**albiflorus** □ has pointed, white or occasionally purple flowers, and is more difficult to cultivate; France, Spain (Pyrenees), Switzerland, Italy (including Sicily), Germany, Austria, Czech Republic, Slovakia, former Yugoslavia, Albania. 'Flower Record' has pale violet flowers. 'Haarlem Gem' has lilac flowers, silvery grey outside. 'Jeanne d'Arc', syn. 'Joan of Arc', has white flowers with deep purple bases and faint purple feathering. 'Joan of Arc' see 'Jeanne d'Arc'. 'Pickwick' □ has white flowers, striped pale and dark lilac, with dark purple bases. 'Purpureus Grandiflorus' □ has abundant violet flowers with purple bases. 'Queen of the Blues' has lilac-blue flowers.

'Remembrance' has shiny violet flowers. 'Vanguard' produces pale lilac flowers, grey outside, in late winter.

**C. 'Zephyr'** ♀ syn. *C. pulchellus* 'Zephyr'. Autumn-flowering crocus producing solitary, long-tubed, pale lilac flowers, 2–4cm (¾–1½in) long, before the leaves. Cultivation group 1. †10–12cm (4–5in), ↔ 5cm (2in). \*\*\*

**C. zonatus** see *C. kotschyanus*.

**C. 'Zwanenburg Bronze'** ♀ Spring-flowering Chrysanthus Hybrid producing yellow flowers, almost completely suffused dark reddish brown outside. Cultivation group 1. †7cm (3in), ↔ 5cm (2in). \*\*\*

#### ▷ **Crocus,**

**Autumn** see *Colchicum*

**Celandine** see *Crocus korolkowii*

**Chilean blue** see *Tecophilaea cyanocrocus*

**Cloth of gold** see *Crocus angustifolius*

**Dutch** see *Crocus vernus*

**Saffron** see *Crocus sativus*

## CROSSANDRA

### ACANTHACEAE

Genus of about 50 species of evergreen shrubs and subshrubs from forest margins of the Arabian Peninsula, tropical Africa, Madagascar, India, and Sri Lanka. They have whorls of hairless or softly hairy, usually entire, obovate, ovate, elliptic, or lance-shaped leaves. Salverform flowers, each with a long corolla tube and 5 usually orange or red lobes, are borne in terminal or axillary, 4-sided spikes with prominent bracts. In frost-prone areas, grow in a temperate or warm greenhouse; a few may be used as houseplants. In tropical areas, grow in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light from autumn to spring, and in bright filtered light in summer. Provide moderate to high humidity. In growth, water freely with soft water and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pinch out growing points when young to encourage bushy growth. Outdoors, grow in fertile, humus-rich, well-drained soil in full sun. Pruning group 8; plants under glass need restrictive pruning in late winter.

• **PROPAGATION** Sow seed at 16°C (61°F) in early spring. Root semi-ripe cuttings with bottom heat in early spring.

• **PESTS AND DISEASES** Trouble free.

**C. infundibuliformis** □ syn. *C. undulifolia* (Firecracker flower). Erect subshrub with slender stems and ovate to lance-shaped, wavy-margined, glossy, mid-green leaves, 5–12cm (2–5in) long. Fan-shaped, orange-yellow to salmon-pink flowers, to 3cm (1¼in) across, are borne in usually axillary, cone-shaped spikes, 10cm (4in) long, with downy bracts, at any time of year. †1m (3ft), ↔ 60cm (24in). S. India, Sri Lanka. ☼ (min. 15°C/59°F). 'Mona Walhead' is much more compact, with lustrous green leaves and deep salmon-pink flowers; †50cm (20in), ↔ 30cm (12in).

**C. nilotica** □ Erect subshrub with elliptic, softly hairy, mid-green leaves, the few basal leaves 6cm (2½in) long, and the stem leaves 10cm (4in) long. Fan-shaped, vivid red to orange flowers, 2.5cm (1in) across, are produced in dense, axillary or terminal spikes, to 7cm



*Crossandra infundibuliformis*



*Crossandra nilotica*

(3in) long, with hairy bracts, at any time of year. †30–60cm (12–24in), ↔ to 35cm (14in). Tropical Africa. ☼ (min. 15°C/59°F)

**C. pungens**. Dense subshrub with oblong, white-veined, dull green leaves, 5–14cm (2–5½in) long. Produces fan-shaped orange flowers, to 4cm (1½in) across, in congested, axillary or terminal spikes, 10cm (4in) long, with bristly, sometimes spiny bracts, at any time of year. †60cm (24in), ↔ 50cm (20in). Tropical Africa. ☼ (min. 15°C/59°F)

**C. undulifolia** see *C. infundibuliformis*.

▷ **Cross-leaved heath** see *Erica tetralix*

## CROTALARIA

### Rattlebox

### LEGUMINOSAE/PAPILIONACEAE

Genus of about 600 species of annuals, perennials, and evergreen shrubs from scrub, grassland, and open forest in tropical and subtropical zones worldwide, particularly in E. and S. tropical Africa. The alternate leaves are simple or 3- to 7-palmate. Pea-like flowers are borne in terminal or axillary racemes, followed by inflated seed pods. In frost-prone areas, grow the perennials and shrubs in a temperate greenhouse. In warm, dry climates, grow against a warm, sunny wall or in a border.

Annuals are easy to cultivate in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, and with good ventilation. In the growing season, water freely, and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 8; plants under glass need restrictive pruning after flowering.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites and whiteflies may prove troublesome under glass.

**C. agatiflora** □ (Canary bird bush). Erect to spreading shrub with 3-palmate leaves, 5–8cm (2–3in) long, with ovate to elliptic-lance-shaped, mid- to deep green leaflets. Yellow- to olive-green flowers, 3.5–5cm (1½–2in) long, are borne in terminal racemes, 25–40cm (10–16in) long, mainly in summer,



*Crotalaria agatiflora*

followed by large, rattle-like seed pods. †2–3m (6–10ft), ↔ 1–2m (3–6ft). Uganda to Zimbabwe, highlands of Kenya. ☼ (min. 7–10°C/ 45–50°F)

▷ **Croton** see *Codiaeum*

## CROWEA

### RUTACEAE

Genus of 3 species of evergreen shrubs and woody-based perennials found in scrub and open woodland in Australia. The alternate, linear to elliptic leaves are simple and glandular. The usually solitary, sometimes paired, axillary or terminal, star-shaped flowers have 5 wide, spreading petals. In frost-prone areas, grow in a cool greenhouse or conservatory; in warmer climates, use in a shrub border or courtyard garden.

• **HARDINESS** Frost tender; *C. exalata* survives short periods near 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, and with good ventilation. In growth, water moderately, applying a balanced liquid fertilizer monthly from spring to autumn; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun, with some midday shade, or in partial shade. Pruning group 10, after flowering.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in early spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

C

*Crowea exalata*

**C. exalata** ■ Open-branched shrub producing linear to narrowly obovate, mid-green leaves, 2–5cm (¾–2in) long, which smell of aniseed when bruised. Abundant pink or, rarely, white flowers, 2cm (¾in) across, are produced singly from the leaf axils, from late spring to autumn. ‡ 30–90cm (12–36in), ↔ 0.5–1.5m (20–60in). Australia (New South Wales, Victoria). ♀ (min. 5°C/41°F)

**C. saligna** Open-branched shrub with slender stems bearing narrowly elliptic, deep green leaves, 4–8cm (1½–3in) long, with recurved margins. From summer to late autumn, produces solitary, waxy pink flowers, 3.5cm (1½in) across, from the leaf axils. ‡ 1–1.5m (3–5ft). Australia (New South Wales). ♀ (min. 5°C/41°F)

▷ **Crowfoot** see *Ranunculus*

**Water** see *R. aquatilis*

▷ **Crown imperial** see *Fritillaria imperialis*

▷ **Crown of thorns** see *Euphorbia milii*

▷ **Crucianella** see *Phuopsis*

**C. stylosa** see *P. stylosa*

▷ **Cruel plant** see *Araujia sericifera*

▷ **Cryptanthopsis navioides** see *Orthophytum navioides*

## CRYPTANTHUS

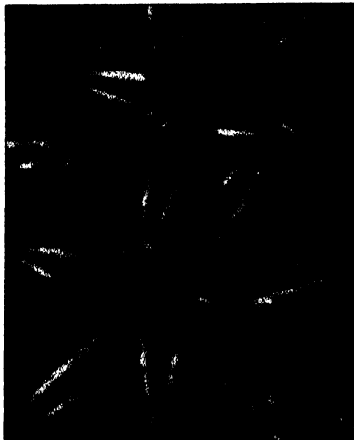
Earth star, Starfish plant

BROMELIACEAE

Genus of about 20 species of mostly stemless, evergreen, mainly dwarf, terrestrial perennials (bromeliads) found in soil or on rocks in dry, forest regions, at altitudes up to 1,600m (5,000ft), in E. Brazil. The strap- to spoon-shaped, wavy-margined, sometimes attractively zoned leaves are borne in flat, star-like rosettes. In some species, offsets form in the leaf axils; others produce them from stolons. In summer, inconspicuous, star-shaped, often scented, white or greenish white, occasionally pale yellow flowers are produced in sunken, corymb-like inflorescences at the centre of each rosette. Where temperatures fall below 15–20°C (59–68°F), grow in a warm greenhouse, as houseplants, or in a bottle garden; in humid, tropical areas, grow in a bed or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost, in full or bright filtered light with moderate to high humidity. In the growing season, water moderately but carefully, mist

*Cryptanthus bivittatus*

regularly with tepid soft water, and apply a dilute fertilizer monthly; reduce water slightly in winter. Outdoors, grow in moist but well-drained, moderately fertile, acid soil, enriched with fibrous organic matter, in partial or dappled shade. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Remove offsets in early summer.

• **PESTS AND DISEASES** Susceptible to root rot.

**C. acaulis** (Green earth star). Stemless or short-stemmed, clump-forming bromeliad with rosettes of 10–15 narrowly lance-shaped, wavy-margined, minutely toothed leaves, 13cm (5in) long; leaves are mid-green and scaly above, densely white-scaly beneath. Corymbs of 5 or 6 or more, scented white flowers, 4cm (1½in) long, are produced in summer. ‡ to 10cm (4in), ↔ indefinite. E. Brazil. ♀ (min. 20°C/68°F). ‘**Ruber**’, syn. var. *ruber*, has leaves tinged brownish red.

**C. beuckeri**. Stemless or very short-stemmed, clump-forming bromeliad with loose, often irregular rosettes of 10–20 broadly lance-shaped to narrowly ovate, tapering, wavy-margined, toothed, pink-flushed, dull green leaves, to 15cm (6in) long, white mottled above and grey scaly beneath. Corymbs of 3–6 white or greenish white flowers, 3cm (1¼in) long, are produced in summer. ‡ to 15cm (6in). E. Brazil. ♀ (min. 20°C/68°F)

**C. bivittatus** ■ Stemless bromeliad with low, spreading rosettes of about 20 strap-shaped, wavy-margined, toothed,

*Cryptanthus bromelioides* ‘Tricolor’*Cryptanthus* ‘Pink Starlight’

dark green leaves, to 18cm (7in) long, striped white or pink. Few-flowered corymbs of white flowers, 2.5cm (1in) long, are produced in summer. ‡ to 10cm (4in), ↔ to 25cm (10in). E. Brazil. ♀ (min. 20°C/68°F)

**C. bromelioides** (Rainbow star). Short-stemmed, stoloniferous bromeliad with rosettes of 10–20 strap-shaped, minutely toothed, stiff, olive-green to bronze leaves, to 35cm (14in) long, often wavy-margined, and stems to 60cm (24in) long. Dense corymbs of white flowers, 4cm (1½in) long, are produced in summer. ‡ 30–40cm (12–16in), ↔ indefinite. E. Brazil. ♀ (min. 20°C/68°F). ‘**Tricolor**’ ■ syn. var. *tricolor*, has olive-green leaves with white and red longitudinal stripes.

**C. fosterianus** ■ Stemless or short-stemmed bromeliad with almost flat, widely spreading rosettes of up to 12 strap-shaped, long-pointed, wavy-margined, toothed, brownish green or reddish brown leaves, to 30cm (12in) long, cross-banded purplish brown or greyish brown above and grey scaly beneath. In summer, white flowers, 1cm (½in) long, are produced in corymbs, each consisting of a 3- or 4-flowered outer cluster and a 2-flowered inner cluster. ‡ to 12cm (5in), ↔ to 60cm (24in). E. Brazil. ♀ (min. 20°C/68°F)

**C. ‘Pink Starlight’** ■ Stemless, spreading bromeliad with rosettes of about 15 strap-shaped, wavy-margined leaves, to 8cm (3in) long, striped olive-green and white, and strongly suffused deep pink. In summer, inconspicuous, slightly scented white flowers, 3cm (1¼in) long, are borne in few-flowered

*Cryptanthus zonatus* ‘Zebrinus’

corymbs. ‡ 20cm (8in), ↔ 35cm (14in) or more. ♀ (min. 20°C/68°F)

**C. zonatus** ■ (Zebra plant). Stemless bromeliad with rosettes of 8–15 strap-shaped, mid-green leaves, to 20cm (8in) long, with grey-brown cross-banding above and densely white-scaly beneath. White flowers, 3cm (1¼in) long, are produced in few-flowered corymbs in summer. ‡ to 12cm (5in), ↔ to 40cm (16in). E. Brazil. ♀ (min. 20°C/68°F). ‘**Zebrinus**’ ■ has dark grey-green leaves with pronounced white cross-banding.

## X CRYPTBERGIA

BROMELIACEAE

Hybrid genus, between *Cryptanthus* and *Billbergia*, of rosette-forming, evergreen, terrestrial perennials (bromeliads). The narrowly triangular, arching, olive-green to bronze outer leaves (shading to wine-red in the centre in some variants) are much longer than the inner ones, which tend to form a cup. In summer, cryptbergias usually bear small corymbs of tubular white flowers, with spreading lobes, from the centres of the rosettes. Most offset freely. In frost-prone areas, grow in a warm greenhouse or as foliage houseplants; in warmer climates, grow in a bed or at the front of a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in bright filtered light, with moderate humidity. In the growing season, water freely, applying a dilute fertilizer monthly; water sparingly at other times. Outdoors, grow in moist but well-drained, moderately fertile, acid soil, enriched with fibrous organic matter, in partial shade. See also p.47.

• **PROPAGATION** Remove offsets in spring.

• **PESTS AND DISEASES** Whiteflies and scale insects may prove troublesome under glass.

× **C. ‘Rubra’** ■ Clump-forming bromeliad producing basal rosettes of dark green leaves, to 50cm (20in) long, turning copper-red in the lower halves, and with minutely scaly undersurfaces. In full light, the foliage intensifies to bronze-red. Small clusters of short-lived white flowers, to 1cm (½in) across, are occasionally produced in summer. ‡ to 30cm (12in). ♀ (min. 13°C/55°F)

▷ *Cryptocereus anthonyanus* see *Selenicereus anthonyanus*

x *Cryptbergia* ‘Rubra’

## CRYPTOCORYNE

Water trumpet

ARACEAE

Genus of 50 species of slow-growing, rhizomatous, evergreen, marginal aquatic perennials from tropical S. and S.E. Asia. They are grown for their stiff, broadly ovate to lance-shaped, leathery leaves, which are mostly submerged. Minute, orange, red, or purple to almost black flowers are produced in a tubular spathe that projects above the surface of the water in mature plants. The flowers contain olfactory glands that give off a dung-like scent; this attracts insects, which crawl down the inside of the spathe, where they become trapped and pollinate the female flowers. In frost-prone areas, grow in a tropical aquarium or in the margins of an indoor pool in a warm greenhouse. In warmer areas, grow in the margins of an outdoor pool.

• **HARDINESS** Frost tender.

• **CULTIVATION** In an indoor pool, grow in aquatic planting baskets of inert medium, in full light, in water 15–30cm (6–12in) deep, and feed with sachets of proprietary aquatic plant fertilizer. In an outdoor pool, grow in baskets of humus-rich, sandy soil, or plant directly into the mud at the pond margin, in full sun or partial shade. In an aquarium, grow in containers of sharp sand and leave undisturbed. Provide full light until established; thereafter, they will tolerate bright filtered light. Maintain the water temperature at 20–30°C (68–86°F). See also pp.52–53.

• **PROPAGATION** Remove offsets in spring, or divide rhizomes in spring or early summer, and plant 1–2cm (½–¾in) deep.

• **PESTS AND DISEASES** Slight changes in external conditions, such as light and temperature, or in water chemistry, may cause the leaves to become soft and translucent.

*C. beckettii*. Submerged aquatic perennial with narrowly ovate to ovate, olive-green to dark brown leaves, 15cm (6in) long, with violet leaf-stalks. The twisted flower spathes, to 12cm (5in) tall, dull yellow on the outside and purplish brown inside, with blackish purple collars, are produced intermittently, only when growth is above the water surface, but most often in winter. ± 15cm (6in). S. and S.E. Asia. ☀ (min. 15°C/59°F)

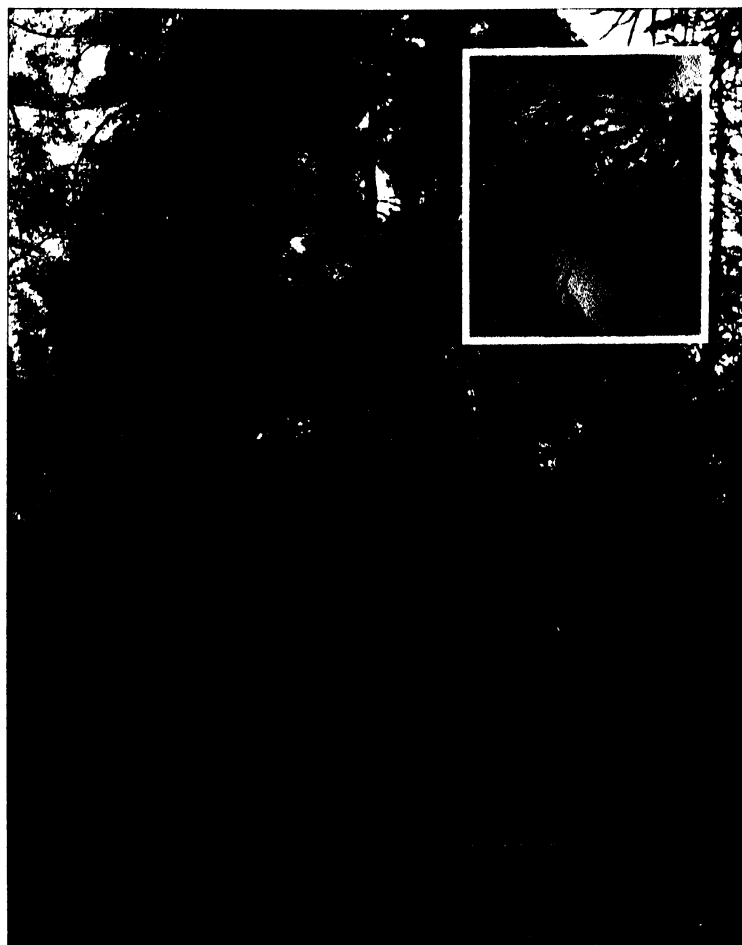
*C. spiralis*. Submerged aquatic perennial, variable in habit, with linear-lance-shaped, dark green leaves, 10–15cm (4–6in) long. The purple spathes, to 24cm (10in) tall, are twisted at first, later becoming straight, and are produced intermittently throughout the year. ± 25cm (10in), ↔ 15cm (6in). India. ☀ (min. 15°C/59°F)

## CRYPTOMERIA

Japanese cedar

TAXODIACEAE

Genus of 1 (possibly 2) species of evergreen, monoecious, coniferous tree from forests of China and Japan. It is cultivated for its conical or columnar habit, its thick, fibrous, red-brown bark, and its narrowly wedge-shaped, light to dark green leaves, which point forwards



*Cryptomeria japonica* (inset: fruit detail)

in 5-ranked spirals around the shoots. Solitary, spherical female cones, 1–3cm (½–1¼in) long, have shield-like scales, each with a central point and triangular teeth. The ovoid male cones, 1cm (½in) long, are clustered at the shoot tips. Grow both species and cultivars as specimen trees; the dwarf cultivars are effective accent plants for a conifer collection, with heaths or heathers. *Cryptomeria* is one of the few conifer genera that will coppice successfully.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Tolerates most well-drained soils, including chalky ones, although it grows best in deep, fertile, moist but well-drained, humus-rich soil in a sheltered site in full sun or partial shade. Needs no formal pruning. To coppice or restore untidy specimens,

cut back to within 60–90cm (24–36in) of ground level in spring.

• **PROPAGATION** Sow seed in containers in a cold frame or in a seedbed in spring. Root ripewood cuttings in late summer or early autumn.

• **PESTS AND DISEASES** Trouble free.

*C. fortunei* see *C. japonica* var. *sinensis*.

*C. japonica* ☀ ♀ ♂ (Japanese cedar).

Conical or columnar, coniferous tree with mid-to-deep green leaves, 0.5–1.5cm (¼–½in) long, and brown female cones, each scale with 3–5 seeds. ± to 25m (80ft), ↔ to 6m (20ft). Japan. \*\*\*. 'Bandai-sugi' ♀ is a rounded, irregular shrub, with dense foliage that turns bronze in winter; ± 2m (6ft).

'Cristata' ☀ syn. 'Sekka-sugi', is narrow and conical, with several shoots fused



*Cryptomeria japonica* 'Cristata'



*Cryptomeria japonica* 'Elegans Compacta'



*Cryptomeria japonica* 'Spiralis'

and flattened into "cockcombs"; ± 8m (25ft), ↔ 5m (15ft). 'Elegans' ♀ has soft, bluish green juvenile foliage, to 2.5cm (1in) long, turning red-brown in winter; leaves are well spaced on the shoots but dense in overall effect; ± 6–10m (20–30ft). 'Elegans

'Compacta' ☀ ♀ is a conical shrub with soft, glossy, dark green juvenile leaves, turning bronze in winter; ± 2–4m (6–12ft). 'Pyramidata' ♂ is narrowly columnar; ± to 4m (12ft), ↔ 40cm (16in). 'Sekkan-sugi' is moderately slow-growing with creamy yellow leaves, turning almost white in winter. 'Sekka-sugi' see 'Cristata' var. *sinensis*, syn.

*C. fortunei*, is conical, becoming rounded when mature, with an open crown and billowing branches (more pendent than those of *C. japonica*), and yellow-green leaves; female cones have only 2 seeds per fertile scale; S. China. 'Spiralis' ☀ syn. 'Yore-sugi', is a dense shrub or small tree, producing spirally curved and twisted, inward-pointing leaves; ± to 6m (20ft). 'Yore-sugi' see 'Spiralis'.

▷ *Cryptostemma calendulaceum* see *Arctotheca calendula*

## CTENANTHE

MARANTACEAE

Genus of about 15 species of rosette-forming, evergreen, rhizomatous perennials from damp forest floors and thickets in Costa Rica and Brazil. They are grown for their ovate to obovate, lance-shaped, or inversely lance-shaped, yellowish to dark green leaves, marked dark or light green, silver, or yellow. The basal leaves have longer stalks than the stem leaves. Irregularly shaped, tubular, white or yellow flowers are borne in short, terminal racemes or spikes. In frost-prone areas, grow in a warm greenhouse or as houseplants. In tropical and subtropical areas, they are suitable for growing in a shaded bed or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered or bright indirect light, with high humidity. Maintain constant temperatures and draught-free conditions. In growth, mist with soft water, water freely, and apply a balanced liquid fertilizer every 3 or 4 weeks. Water moderately in winter. Report annually in late spring or early

C

*Ctenanthe burle-marxii*

summer. Outdoors, grow in moist, fertile, humus-rich soil in partial shade.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe or in spring. Divide in spring.
- **PESTS AND DISEASES** Mealybugs may be a problem under glass.

*C. burle-marxii* ■ Evergreen perennial with softly hairy, purple-tinged green stems. Ovate to obovate-oblong, hairless leaves, pale green above and deep purple beneath, have sickle-shaped, dark green markings, prominent main veins, and leaf bases of unequal size. The stem leaves, 14cm (5½in) long, are much larger than the basal leaves. White flowers are borne in inconspicuous spikes intermittently throughout the year. † to 60cm (24in), ↔ 35cm (14in). Brazil. ♀ (min. 13°C/55°F)

*C. compressa*. Evergreen perennial with wiry stems and slender-pointed, linear-oblong to oblong-ovate, waxy leaves, 35cm (14in) long, mid-green above and greyish green beneath. Spikes of yellowish green flowers are produced irregularly throughout the year. † 60cm (24in), ↔ 35cm (14in). S.E. Brazil. ♀ (min. 13°C/55°F)

*C. lubbersiana* ♀ Evergreen perennial with widely branched stems and linear to linear-oblong leaves, 30cm (12in) long, deep green with irregular yellow streaks above, pale green beneath. Spikes of white flowers are borne intermittently throughout the year. † 2m (6ft), ↔ 1m (3ft). Brazil. ♀ (min. 13°C/55°F)

*C. oppenheimiana*, syn. *Calathea oppenheimiana*. Vigorous, bushy, evergreen perennial with lance-shaped,

*Ctenanthe oppenheimiana* 'Tricolor'

leathery leaves, 40cm (16in) long, dark green with V-shaped silver patterns above and wine-red beneath. Spikes of white flowers appear irregularly throughout the year. † 1m (3ft), ↔ 60cm (24in). E. Brazil. ♀ (min. 13°C/55°F)

'Tricolor' ■ ♀ (Never-never plant) has foliage with irregular, creamy white and pale and dark green markings.

*C. setosa*. Vigorous, evergreen perennial with inversely lance-shaped, mid-green leaves, 12–18cm (5–7in) long, with the tips bent over, sometimes margined or sparsely striped white. Inconspicuous, pale yellow flowers are borne in spikes at any time of year. † 1.5m (5ft), ↔ 1m (3ft). S.E. Brazil. ♀ (min. 13°C/55°F)

▷ **Cuckoo flower** see *Cardamine pratensis*

▷ **Cucumber,**

**Serpent** see *Trichosanthes*

*cucumerina* var. *anguina*

**Squirting** see *Ecballium*

▷ **Cucumber tree** see *Magnolia acuminata*

▷ **Cudrania** see *Maclura*

*C. tricuspidata* see *M. tricuspidata*

▷ **Culver's root** see *Veronicastrum virginicum*

▷ **Cumin** see *Cuminum*, *C. cyminum*

## CUMINUM

Cumin

APIACEAE/UMBELLIFERAE

Genus of 2 species of slender annuals found in open maquis and garigue, and on cultivated ground, from the eastern Mediterranean to C. Asia. The 2-ternate leaves consist of thread-like segments. Compound umbels, with few rays bearing small, irregularly shaped, white to pale pink flowers, are followed by oblong-ovoid, ridged, finely hairy fruits. *C. cyminum* is grown for its aromatic fruit, which are used in cooking. Grow in a herb or vegetable garden.

• **HARDINESS** Half hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun. Need 3–4 warm months in summer for good seed production; harvest seed in late summer.

• **PROPAGATION** In frost-free areas, sow seed *in situ* in early spring. In cool-temperate areas, sow seed at 13–18°C (55–64°F) in late winter or early spring, and plant out in late spring.

• **PESTS AND DISEASES** Trouble free.

*C. cyminum* (Cumin). Slender, spreading annual with ovate, 2-ternate, blue-green leaves, to 10cm (4in) long, with narrowly linear segments. In mid-summer, produces white to pale pink flowers in umbels to 2.5cm (1in) across, followed by ovoid-oblong, ribbed, grey-green fruit, 5mm (¼in) long, containing pale brown seeds. †↔ 30cm (12in). E. Mediterranean. \*

## CUNNINGHAMIA

China fir

TAXODIACEAE

Genus of 2 or 3 species of evergreen, monoecious, coniferous trees from forests of China and Taiwan. They have thick, fibrous, red-brown bark and stiff, sharply pointed, narrowly lance-shaped, mid- to dark green leaves, densely arranged in 2 ranks in the same plane. Solitary female cones are brown and

spherical to ovoid-conical; spherical, yellow-brown male cones are borne in clusters. They are closely related to the redwoods (*Sequoia*), although the foliage is similar to that of the monkey puzzle tree (*Araucaria araucana*). Grow as a specimen tree.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any moist but well-drained soil, including deep soils over chalk, in full sun or dappled shade. Shelter from cool, drying winds. Best in a moist climate, otherwise old foliage may turn brown and persist. Tolerates coppicing. Young plants may be slow to form a leader; if so, grow as a multi-stemmed specimen, or cut back in spring and train in the strongest resulting shoot as the new leader.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root ripe-wood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*C. lanceolata* ■ 0–0 syn. *C. lanceolata* var. *sinensis* (China fir). Narrowly to broadly upright or conical, coniferous tree, developing a rounded, domed top. Lance-shaped, glossy, bright green

leaves, to 7cm (3in) long, each with a raised midrib and 2 white bands beneath, are decurrent on the green shoots. Ovoid-conical, green-brown female cones are 3–4cm (1¼–1½in) long, † to 20m (70ft) or more, ↔ to 6m (20ft). China. \*\*\*. var. *sinensis* see *C. lanceolata*.

## CUNONIA

CUNONIACEAE

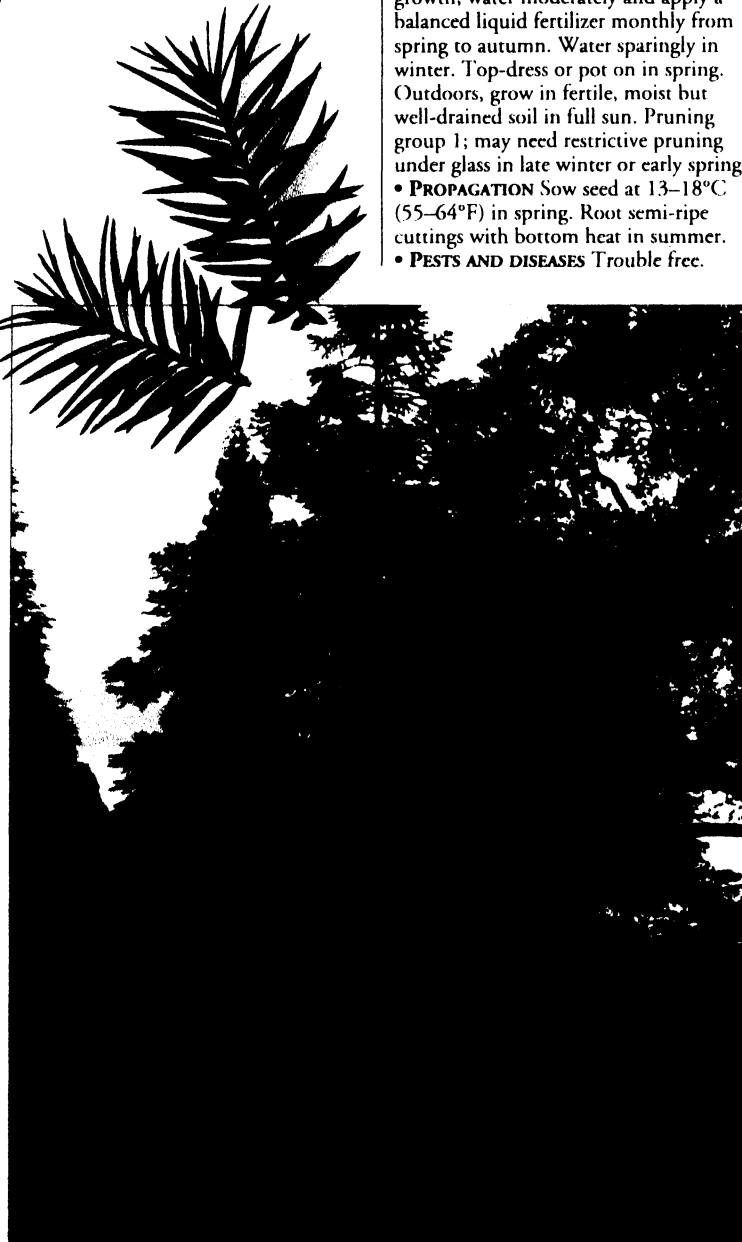
Genus of 15 species of evergreen trees occurring in damp sites in South Africa and New Caledonia. The pinnate or 3-palmate, thick, leathery, mid- to dark green leaves are borne in opposite pairs. Star-shaped, 5-petalled flowers are produced in dense, axillary racemes. In frost-prone climates, grow *C. capensis* as a foliage plant in a temperate greenhouse or conservatory; in warmer areas, it is an effective specimen or shade tree.

• **HARDINESS** Half hardy to frost tender; *C. capensis* may survive short periods near 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. In growth, water moderately and apply a balanced liquid fertilizer monthly from spring to autumn. Water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass in late winter or early spring.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

*Cunninghamia lanceolata* (inset: leaf detail)



*Cunonia capensis*

**C. capensis** ☐♂ (African red alder). Freely branched tree with pinnate, rich green leaves, 20–40cm (8–16in) long, with 5–9 lance-shaped to oblong, toothed leaflets, to 10cm (4in) long. Bears fragrant, cream to white flowers in opposite, paired racemes, to 15cm (6in) long, in late summer. ↑ 10–18m (30–60ft), ↔ 3–6m (10–20ft). South Africa. ☼ (min. 7°C/45°F)

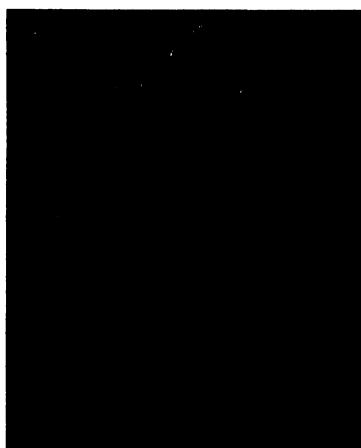
- ▷ **Cup and saucer** see *Campanula medium* 'Calycanthema'
- ▷ **Cup and saucer plant** see *Cobaea scandens*
- ▷ **Cup flower** see *Nierembergia*

## CUPHEA

LYTHRACEAE

Genus of more than 250 species of annuals, short-lived, sometimes subshrubby, evergreen perennials, and evergreen shrubs, from woodland clearings and pasture in S.E. USA, Mexico, and subtropical and tropical Central and South America. Many species have sticky, glandular hairs. Mainly opposite, ovate to lance-shaped, entire or slightly toothed leaves are mid- to dark green. Irregularly shaped, tubular flowers are borne singly or in often leafy racemes or panicles. In frost-prone areas, grow as houseplants or in a temperate greenhouse or conservatory, or use as annuals and grow in a summer bedding or annual border. In warmer climates, grow in a shrub border or bed.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2)

*Cuphea cyanea**Cuphea hyssopifolia*

in full light with shade from hot sun and in moderate humidity. In the growing season, water freely and apply a balanced liquid fertilizer every 3 or 4 weeks; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun or partial shade. Pruning group 10, in spring.

- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in early spring, or *in situ* in late spring. Divide, or root softwood cuttings of perennials with bottom heat, in late spring.
- **PESTS AND DISEASES** Susceptible to aphids and whiteflies.

**C. cyanea** ☐ Freely branching, soft-stemmed shrub or subshrub with sticky, glandular-hairy shoots and long-stalked, ovate, mid- to deep green leaves, 5–8cm (2–3in) long. From late spring to autumn, produces terminal racemes of green-tipped, orange-red flowers, 2–3cm (¾–1¼in) long, each with 2 small, deep violet-blue petals. ↑ to 1m (3ft) or more. Mexico. ☼ (min. 7°C/45°F)

**C. hyssopifolia** ☐♀ (False heather). Bushy, rounded shrub with slender, downy stems and densely borne, narrowly lance-shaped, dark green leaves, 0.6–2.5cm (¼–1in) long. Produces short racemes of 1–3 light pink-purple, pink, or white flowers, to 1cm (½in) long, with 6 spreading petals, from the upper leaf axils, mainly from summer to autumn. ↑ 30–60cm (12–24in), ↔ 20–80cm (8–32in). Mexico, Guatemala. ☼ (min. 7°C/45°F)

**C. ignea** ☐♀ syn. *C. platycentra* (Cigar flower). Spreading, freely branching, soft-stemmed shrub or subshrub, often grown as an annual, with lance-shaped to narrowly oblong, glossy, bright green leaves, 3–8cm (1¼–3in) long. From late spring to autumn, slender, deep red flowers, 2–3cm (¾–1¼in) long, each with a dark red band, a white rim, and 2 tiny black-purple petals, are borne singly from the upper leaf axils. ↑ 30–75cm (12–30in), ↔ 30–90cm (12–36in). Mexico to Jamaica. ☼ (min. 7°C/45°F). 'Variegata' has mid-green leaves flecked cream and lime-green.

**C. lanceolata**. Bushy, purple-stemmed subshrub with glandular-hairy, sticky stems and foliage. Lance-shaped to oval, pointed leaves are mid-green and white-hairy, to 8cm (3in) long. Solitary, 6-petalled, deep violet flowers, to 4cm (1½in) long, constricted at the necks, then flaring into unequally sized upper and lower lips, are borne from the upper

*Cuphea ignea*

leaf axils from summer to autumn. ↑ to 65cm (26in), ↔ to 45cm (18in) (in containers). C. Mexico. \*

**C. llavea** var. **miniata**. Bushy subshrub with bristly stems and ovate to lance-shaped, mid-green leaves, to 8cm (3in) long. In early summer, bears terminal racemes of 2-petalled, vermilion flowers, 3.5cm (1½in) long, flared at the mouths and with greenish purple calyces. ↑ 45cm (18in), ↔ 15cm (6in). Mexico. \*

**C. llavea** var. **miniata** of gardens see *C. x purpurea*.

**C. llavea** of gardens see *C. x purpurea*.

**C. miniata** of gardens see *C. x purpurea*.

**C. platycentra** see *C. ignea*.

**C. x purpurea** (*C. llavea* x *C. procumbens*), syn. *C. llavea* var. **miniata** of gardens, *C. llavea* of gardens, *C. miniata* of gardens. Bushy subshrub, often grown as an annual, with sticky, glandular-hairy stems and foliage. Red stems bear ovate to lance-shaped, pointed, dark green leaves, to 8cm (3in) long. From spring to autumn, produces terminal racemes of 2-petalled, pink to red flowers, to 3cm (1¼in) long, which flare at the mouths. ↑ 30–60cm (12–24in), ↔ 23–45cm (9–18in). Garden origin. \*. 'Avalon' has purple flowers. 'Firefly' has cherry-red flowers.

- ▷ **Cupidone, Blue** see *Catananche*
- ▷ **Cupid's bower** see *Achimenes*
- ▷ **Cupid's dart** see *Catananche*
- ▷ **Cup of gold** see *Solandra maxima*
- ▷ **Cup plant** see *Silphium perfoliatum*

## X CUPRESSOCYPARIS

CUPRESSACEAE

Hybrid genus, between *Chamaecyparis* and *Cupressus*, of fast-growing, columnar, evergreen, coniferous trees. They produce flattened sprays of scale-like, dark green leaves, to 3mm (⅛in) long. Female cones are spherical; male cones are ovoid, yellow, and 2–3mm (⅛–⅜in) long. Grow as specimen trees or use for hedging. Contact with the foliage may aggravate skin allergies.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any deep, well-drained soil in full sun or partial shade. Needs no formal pruning. Trim hedging 2 or 3 times in the growing season (without cutting back into the old wood), with the last cut in late summer or early autumn.
- **PROPAGATION** Root semi-ripe cuttings in late summer.

x *Cupressocyparis leylandii* 'Castlewella'x *Cupressocyparis leylandii* 'Haggerston Grey'

- **PESTS AND DISEASES** May be affected by honey fungus. *Coryneum* canker may cause the death of twigs and ultimately entire trees. Aphids may cause dieback.

x **C. leylandii** ♂ syn. *Cupressus leylandii* (Leyland cypress). Tapering, coniferous tree with smooth bark, becoming stringy with age, and flat sprays of pointed, dark green, grey-tinged leaves. Dark brown female cones, 1.5–2cm (½–¾in) across, each have 8 scales. ↑ to 35m (120ft), ↔ to 5m (15ft). Garden origin. \*\*\*. 'Castlewella' ☐ syn. 'Galway Gold', produces plume-like sprays of yellow foliage; ↑ 25m (80ft). 'Haggerston Grey' ☐♀ is the most popular cultivar, and has

x *Cupressocyparis leylandii* 'Harlequin'

grey-green foliage. 'Harlequin'  $\square$  syn. 'Variegata', a sport of 'Haggerston Grey', has patches of ivory-white foliage. 'Leighton Green' is narrow, with fresh green foliage. 'Naylor's Blue' has blue-grey foliage, which is especially attractive after rain. 'Robinson's Gold'  $\nabla$  has bronze-yellow foliage in spring, maturing to golden yellow and lime-green. 'Variegata' see 'Harlequin'.  
x *C. notabilis*  $\nabla$   $\square$  Narrowly conical, coniferous tree with upswept branches, red-brown bark, and acute, blue-grey leaves, borne in sparse sprays. Purple female cones, 1.5cm ( $\frac{1}{2}$ in) across, each have 4–8 scales.  $\uparrow$  to 15m (50ft),  $\leftrightarrow$  to 6m (20ft). Garden origin. \*\*\*

## CUPRESSUS

Cypress

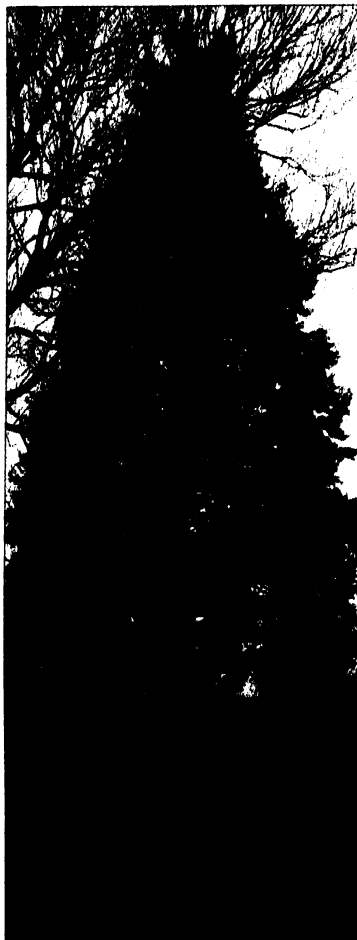
CUPRESSACEAE

Genus of about 24 species of evergreen, monoecious, coniferous trees from the N. hemisphere, found in dry, open hillside forest. The paired, overlapping, forward-pointing, scale-like leaves vary from rounded to pointed at the tips. The mature bark often breaks off into curling or rounded scales. Small, spherical to ovoid female cones, to 4cm ( $\frac{1}{2}$ in) long, ripen in the second year but usually persist on the tree, and have 5–20 seeds per scale. Ovoid green male cones, 2–3mm ( $\frac{1}{16}$ – $\frac{1}{8}$ in) long, are borne at the shoot tips. Cupresses tolerate dry conditions and are excellent specimen trees. *C. macrocarpa* may be used as a hedge or screen. In frost-prone areas, grow *C. torulosa* 'Cashmeriana' in a cool greenhouse or conservatory.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light, with good ventilation. Outdoors, grow in any well-drained soil (including alkaline and acid soils) in full sun. Shelter from cold, drying winds. Trim hedges in late spring, without cutting back into the old wood.
- **PROPAGATION** Sow seed in a seedbed, or in containers in a cold frame, in spring. Root semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** May be affected by honey fungus. *Coryneum* canker may cause the death of twigs and ultimately entire trees. Aphids may cause dieback.

*C. abramsiana*  $\emptyset$  Vigorous, conical, coniferous tree with deeply furrowed, dark grey bark and sparse sprays of

*Cupressus arizonica* var. *glabra*

pointed, bright green, glandless leaves, 2mm ( $\frac{1}{16}$ in) long. Spherical, shiny brown to grey-buff female cones, to 3.5cm ( $\frac{1}{2}$ in) across, each have 6 scales.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  to 6m (20ft). USA (California). \*\*\*

*C. arizonica* var. *glabra*  $\square$   $\emptyset$  syn. *C. glabra* (Smooth cypress). Conical, coniferous tree with smooth, reddish purple bark. Pointed, glaucous, blue-grey leaves, 2mm ( $\frac{1}{16}$ in) long, are arranged in dense sprays. Dorsal resin glands form white flecks on the foliage. Spherical, prickly brown female cones, 2.5cm (1in) across, each have 6 or 8 scales.  $\uparrow$  10–15m (30–50ft),  $\leftrightarrow$  4–5m (12–15ft). S.W. USA. \*\*\*

*C. bakeri*  $\emptyset$  (Baker cypress). Conical, coniferous tree with reddish grey or grey bark, splitting into thin scales. Pointed, aromatic, grey-green leaves, 2mm ( $\frac{1}{16}$ in) long, with prominent, dorsal resin glands, are borne in sparse sprays. Spherical, greyish brown female cones, 1.5cm ( $\frac{1}{2}$ in) across, each have 6–8 scales and prominent curved prickles.  $\uparrow$  to 15m (50ft),  $\leftrightarrow$  to 5m (15ft). USA (Oregon, N. California). \*\*\*

*C. cashmeriana* see *C. torulosa* 'Cashmeriana'.

*C. glabra* see *C. arizonica* var. *glabra*.

*C. goveniana* var. *pygmaea*  $\emptyset$ – $\emptyset$  Shrubby, narrowly conical to columnar, coniferous tree with exfoliating, rough, grey or brown bark. Pointed, dark green, glandless leaves, 2mm ( $\frac{1}{16}$ in) long, which are lemon-scented when crushed, are borne in plume-like sprays. Spherical, prickly brown female cones, less than 2cm ( $\frac{3}{4}$ in) across, usually have 6 scales each.  $\uparrow$  to 10m (30ft),  $\leftrightarrow$  to 4m

(12ft). USA (Mendocino County, California). \*\*\*

*C. guadalupensis*  $\emptyset$ – $\emptyset$  (Guadalupe cypress). Narrowly conical then ovoid, coniferous tree with red-brown bark that cracks into small flakes. Slender, blunt or pointed, blue-green leaves, 3mm ( $\frac{1}{8}$ in) long, borne in slender sprays, have resin glands that are fragrant when crushed. Spherical brown female cones, 3–4cm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) across, each have 8–10 scales and a prominent dorsal prickle.  $\uparrow$  to 15m (50ft),  $\leftrightarrow$  to 3–4m (10–12ft). USA (S. California). \*\*.

'Glauc' has glaucous, grey-green leaves.

*C. lawsoniana* see *Chamaecyparis lawsoniana*.

*C. leylandii* see x *Cupressocyparis leylandii*.

*C. lindleyi* see *C. lusitanica*.

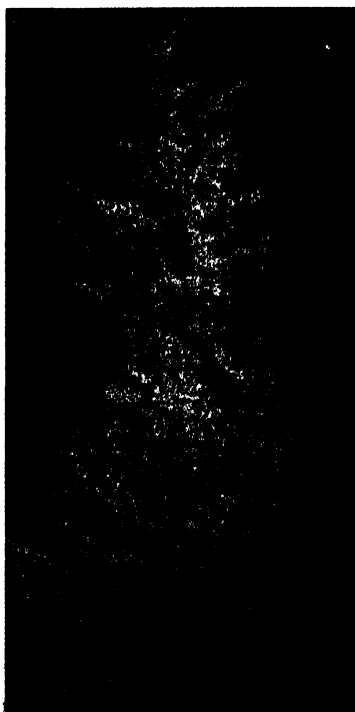
*C. lusitanica*  $\emptyset$ – $\emptyset$  syn. *C. lindleyi* (Cedar of Goa, Mexican cypress). Conical to columnar, coniferous tree with brown bark, shallowly fissured into fibrous spirals. Bears scarcely scented, glandless, grey-green or blue-green leaves, 2–3mm ( $\frac{1}{16}$ – $\frac{1}{8}$ in) long, with free, pointed tips, in spreading sprays. Spherical, glaucous blue then shiny brown female cones, 1.5cm ( $\frac{1}{2}$ in) across, each have 6–8 scales and conical prickles.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  to 6m (20ft). Mexico to Guatemala. \*\*\*.

'Glauc Pendula' has pendent sprays of bright blue-green foliage.

*C. macrocarpa*  $\emptyset$ – $\emptyset$  (Monterey cypress).

Coniferous tree, narrowly conical to columnar and spiky-topped when young, becoming very wide-spreading with age, with shallowly ridged bark. Pointed, dark to bright green, glandless, lemon-scented leaves, 2mm ( $\frac{1}{16}$ in) long, are borne in erect or spreading, plume-like sprays. Spherical brown female cones, 2.5–3cm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) across, each have 8–10 scales that lack a prominent prickle.  $\uparrow$  to 30m (100ft),  $\leftrightarrow$  4–12m (12–40ft). USA (Monterey County, California). \*\*\*.

'Goldcrest'  $\square$   $\nabla$   $\emptyset$ – $\emptyset$  is narrowly conical, with dense, rich golden yellow foliage;  $\uparrow$  to 5m (16ft),  $\leftrightarrow$  2.5m (8ft).

*Cupressus macrocarpa* 'Goldcrest'*Cupressus torulosa* 'Cashmeriana'

*C. nootkatensis* see *Chamaecyparis nootkatensis*.

*C. obtusa* see *Chamaecyparis obtusa*.

*C. pisifera* see *Chamaecyparis pisifera*.

*C. sempervirens*  $\emptyset$ – $\emptyset$  (Italian cypress, Mediterranean cypress). Narrowly conical or columnar to broadly spreading, coniferous tree. Horizontal branches bear dense sprays of grey-green or dark green, glandless leaves, to 1mm ( $\frac{1}{16}$ in) long, usually with rounded, abruptly pointed tips (but with free, pointed tips on strong shoots). Spherical to ovoid, prickly brown female cones, 2.5–3.5cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, each have 8–14 scales.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  1–6m (3–20ft). E. Mediterranean to Iran. \*\*\*.

'Stricta'  $\nabla$   $\emptyset$  is narrowly upright, sometimes forming a very narrow, almost pencil-like tree, with fused and flattened branches;  $\leftrightarrow$  to 3m (10ft).

'Swane's Gold'  $\nabla$   $\emptyset$  is narrowly upright,

with pale yellow or greenish yellow leaves;  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  1m (3ft).

*C. thyoides* see *Chamaecyparis thyoides*.

*C. torulosa* 'Cashmeriana'  $\square$   $\nabla$   $\emptyset$ – $\emptyset$  syn. *C. cashmeriana* (Kashmir cypress). Coniferous tree, conical when young, becoming broad and columnar when mature, with fibrous, red-brown bark. Bright, glaucous blue, glandless leaves, 2–3mm ( $\frac{1}{16}$ – $\frac{1}{8}$ in) long, with free, pointed tips, to 2mm ( $\frac{1}{16}$ in) long, are borne in long, flat, pendent sprays. Spherical, prickly, green-brown female cones, 1.5cm ( $\frac{1}{2}$ in) across, each have 8–10 scales.  $\uparrow$  to 30m (100ft),  $\leftrightarrow$  to 10m (30ft). Probably Himalayas. \*

## CURCUMA

ZINGIBERACEAE

Genus of 40 species of reed-like, rhizomatous perennials, which often have fleshy roots and thick, aromatic rhizomes. They are found in seasonally drought-prone areas of tropical Asia and Australia. The leaves are narrowly ovate to oblong. Cone-like, terminal inflorescences are formed from often colourful bracts. Very small, 3-petalled,

*Curcuma roscoeana*

tubular flowers are often obscured by the bracts. Where temperatures fall below 18°C (64°F), grow in a warm greenhouse; in tropical areas, use as ground cover. The rhizomes of some species are used as spices and in cooking.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in bright filtered light, with moderate humidity. In growth, water freely and apply a balanced liquid fertilizer monthly. In winter dormancy, keep almost dry at 12°C (54°F). Pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in partial shade.
- **PROPAGATION** Sow seed at 20°C (68°F) as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

*C. petiolata* (Queen lily). Upright perennial with a brown or brownish yellow rhizome, pale yellow inside, and up to 6 oblong leaves, 25cm (10in) long, with leaf-stalks of almost equal length. Yellow and white flowers, 1cm (½in) long, are borne at any time of year in terminal spikes, 15cm (6in) long, with deep violet upper bracts and green, occasionally violet lower bracts. † 60cm (24in), ↔ 45cm (18in). Malaysia. ☉ (min. 18°C/64°F)

*C. roscoeana* ■ Erect perennial with a brown rhizome, white inside, and ovate, shiny, mid-green leaves, 15–30cm (6–12in) long, with deep green veins. In summer, bears bright yellow flowers, 1cm (½in) long, with orange bracts, in terminal spikes, 20cm (8in) long. † to 90cm (36in), ↔ 45cm (18in). Malaysia. ☉ (min. 18°C/64°F)

- ▷ **Current**, *Buffalo* see *Ribes odoratum*
- Flowering** see *Ribes*, *R. sanguineum*
- Fuchsia-flowered** see *Ribes speciosum*
- Indian** see *Symphoricarpos orbiculatus*
- ▷ **Curry plant** see *Helichrysum italicum* subsp. *serotinum*
- ▷ **Curtonus** see *Crocosmia*
- C. paniculatus* see *C. paniculata*
- ▷ **Cushion bush** see *Leucophya*

## CYANANTHUS

### CAMPANULACEAE

Genus of about 25 species of tufted, perennials occurring in cool, moist, mountainous areas in the Himalayas and W. China. They have prostrate stems radiating from a cluster of stout, almost woody roots, and alternate, linear to broadly rounded leaves, which are toothed, lobed, or entire, and often hairy. Terminal, usually solitary, broadly funnel-shaped, blue, violet, or yellow, occasionally white flowers each have 5 spreading lobes and short tubes. Grow in a rock garden, scree bed, peat bed, or trough, or in an alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, humus-rich, moist but well-drained, preferably neutral to slightly acid soil in partial shade. In an alpine house, grow in loam-based potting compost (JI No.1) with added grit and leaf mould; keep plants cool and shaded in summer.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe or in early spring. Root softwood cuttings in late spring or early summer.
- **PESTS AND DISEASES** Susceptible to red spider mites and aphids under glass.

*C. integer* of gardens see *C. microphyllus*.

*C. lobatus* ■ ♀ Spreading perennial with obovate, deeply lobed, fleshy, dull green leaves, 1cm (½in) long, with wedge-shaped bases. In late summer, produces solitary, bright blue-purple flowers, 2–4cm (¾–1½in) across, with spreading lobes and dark brown, shaggy-hairy calyces. † 5cm (2in), ↔ 30cm (12in). Himalayas to China (Yunnan). \*\*\*

*C. microphyllus* ♀ syn. *C. integer* of gardens. Mat-forming perennial with slender red stems, clothed in ovate to oblong-elliptic, dark green leaves,

*Cyananthus lobatus*

2–8mm (¼–⅓in) long, with the margins rolled under. In late summer, bears solitary, violet-blue flowers, 2.5cm (1in) across, with tufts of white hair at the throats. † to 2.5cm (1in), ↔ to 25cm (10in). Nepal to S.W. Tibet. \*\*\*

## CYANOTIS

### COMMELINACEAE

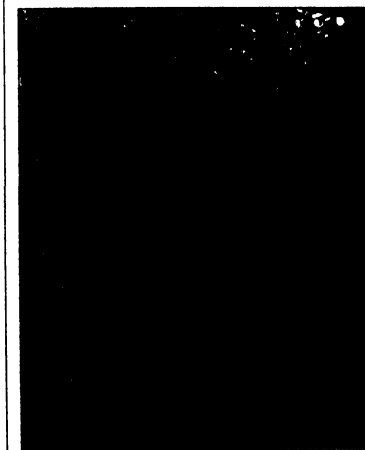
Genus of about 30 species of low-growing, evergreen perennials, related to *Tradescantia*, but more succulent and with greater tolerance of dry conditions. They occur in upland forest and rocky areas in Africa and Asia. The trailing stems, to 30cm (12in) long, are almost hidden by hairy, densely 2-ranked, lance-shaped to broadly ovate or oblong leaves. One-sided cymes of short-lived, shallowly cup-shaped, 3-petalled, purple, violet, or blue flowers are borne in summer. In frost-prone areas, grow in a temperate greenhouse or conservatory, in hanging baskets, or as houseplants. In warmer climates, grow in a herbaceous bed or border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light, with shade from hot sun, and with low humidity. Water moderately at all times. During active growth, apply a balanced liquid fertilizer monthly; excessive feeding causes soft, untypical growth. Outdoors, grow in sharply drained, moderately fertile soil in full sun, with some midday shade.
- **PROPAGATION** Root stem-tip cuttings with bottom heat in spring.
- **PESTS AND DISEASES** Trouble free.

*C. kewensis* ♀ (Teddy bear plant).

Spreading perennial with lance-shaped, fleshy leaves, to 5cm (2in) long, dark green above and red beneath, densely covered with short, felted, ginger-brown hairs. Cymes of up to 8 pink-purple flowers, 8mm (⅓in) across, are borne in summer. † 12cm (5in), ↔ 30cm (12in). S. India. ☉ (min. 10°C/50°F)

*C. somaliensis* ■ ♀ (Pussy cars). Spreading perennial with oblong-linear, pointed, arching, leathery, deep olive-green leaves, 4cm (1½in) long, slightly purple-flushed and with whisker-like white hairs. Bears cymes of mauve-blue flowers, 5mm (¼in) across, with prominent golden stamens, in summer; these are only occasionally produced in cultivation. † 15cm (6in), ↔ 40cm (16in). Somalia. ☉ (min. 10°C/50°F)

*Cyanotis somaliensis*

## CYATHEA syn. ALSOPHILA

Tree fern

### CYATHEACEAE

Genus of 600 or more species of evergreen tree ferns, mainly from forested mountain ranges in tropical and subtropical regions of the S. hemisphere. Cyatheas may reach over 20m (70ft) tall, some relatively quickly. They have a pole-like, fibrous trunk, consisting of an erect rhizome clad in roots, topped by large, pinnate, 2-pinnate, or pinnatifid fronds, which develop in flushes; the crowns of uncurling fronds are densely covered by white, brown, or black scales. The stems bear characteristic scars of old fronds. Grow as specimen plants in a shady site. In frost-prone areas, grow in a cool, temperate, or warm greenhouse.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in large containers in a mix of 1 part each of loam, sharp sand, and charcoal, and 3 parts coarse leaf mould or peat. Provide bright filtered light and moderate to high humidity. In growth, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in dappled or partial shade, or full sun in moist soil. Outdoors and under glass, damp down trunk and leaves regularly on hot days.
- **PROPAGATION** Sow spores at 15–18°C (59–64°F) as soon as ripe.
- **PESTS AND DISEASES** *Rhizoctonia* on young plants may be a problem.

*C. australis* ♀ syn. *Alsophila australis*. Tree fern producing a stem covered with frond scars and, towards the base, dense wiry roots. Ovate, 2-pinnate, dark green fronds, to 4m (12ft) long, have lance-shaped or linear segments and shiny brown scales. † 1–3m (3–10ft), ↔ 3–5m (10–15ft). E. Australia. \*

*C. australis* of gardens see *C. cooperi*. *C. cooperi* ■ ♀ syn. *Alsophila australis* of gardens, *C. australis* of gardens. Fast-

*Cyathea cooperi*

*Cyathea dealbata*

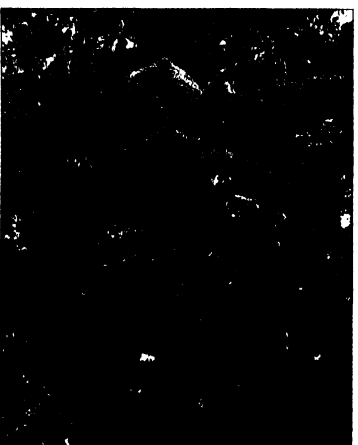
growing tree fern with a slender stem. Narrowly ovate, 2-pinnate, mid-green fronds, to 4m (12ft) long, have lance-shaped or linear segments. Scales on the frond stalks are white. ‡ 2–5m (6–15ft), ↔ 3–4m (10–12ft). Australia. ☼ (min. 10°C/50°F)

**C. dealbata** ☼ Tree fern with an attractive glaucous bloom, both on the frond bases covering the stem and on the undersides of the fronds. Narrowly ovate, 2-pinnate, mid- to deep green fronds, to 3m (10ft) long, have oblong-lance-shaped segments. Scales are shining, dark brown. ‡ to 10m (30ft), ↔ 1–3m (3–10ft). New Zealand. \*

**C. howeana** ♀ Tree fern with a slender trunk and narrowly ovate, 2-pinnate, scaly-hairy, light green fronds, to 3m (10ft) long, with deeply toothed or pinnatifid segments. ‡ to 2m (6ft), ↔ 3–4m (10–12ft). Australia (Lord Howe Island). ☼ (min. 10°C/50°F)

**C. medullaris** ☼ (Black tree fern, Sago fern). Wide-spreading tree fern with a black stem and a rosette of 2- or 3-pinnate fronds, 3–6m (10–20ft) long, deep green above and paler beneath, with narrowly oblong, finely tapering segments. Black stalks are scaly-hairy. ‡ 10–15m (30–50ft), ↔ 3–6m (10–20ft). Australia (Victoria to Tasmania), New Zealand. \*

**C. smithii** ♀ Upright tree fern with a stout, tapering stem and a rosette of oblong-lance-shaped, 2- or 3-pinnate fronds, 1–2m (3–6ft) long, with yellow-green stalks and toothed, narrowly oblong segments, bright mid-green above and pale green beneath. ‡ to 8m (25ft), ↔ 4m (12ft). New Zealand. \*

*Cyathea medullaris*

## CYATHODES

### EPACRIDACEAE

Genus of about 175 species of heath-like evergreen shrubs and small trees found in alpine and subalpine regions of Australia, Tasmania, and New Zealand, and in various habitats in Malaysia, New Guinea, and Polynesia. They have usually small, overlapping, linear, linear-oblong to lance-shaped, elliptic, or inversely lance-shaped leaves, the new growth often flushed pink or bronze. Small, tubular, unisexual or bisexual flowers are either solitary or borne in terminal racemes; they are followed by fleshy, colourful fruits, 8–10mm (3/8–1/2in) across, although fruiting is not always reliable in cultivation. Some species, including *C. colensoi*, are suitable for a rock garden, a peat terrace, or a shrub border. In frost-prone areas, grow half-hardy or frost-tender species in a cool or temperate greenhouse.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow in moist but well-drained, fertile, humus-rich, acid soil in partial shade, although they will tolerate full sun in cooler climates, where soil remains reliably moist in the growing season. Provide shelter from cold, drying winds. Pruning group 8.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn; germination may take up to 3 years. Root greenwood cuttings in early summer, or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

**C. colensoi**, syn. *Leucopogon colensoi*, *Stryphelia colensoi*. Prostrate or decumbent shrub with stiff, upright shoots clothed in narrowly oblong, smooth, grey-green leaves, to 9mm (3/8in) long, fringed with fine hairs. White flowers, 6mm (1/4in) long, are borne in erect racemes at the tips of young growth in spring, occasionally followed by spherical, white to deep crimson fruit, 4–5mm (1/8–1/4in) across. ‡ 30cm (12in). New Zealand. \*

**C. fraseri** see *Leucopogon fraseri*.

## CYBISTAX

### BIGNONIACEAE

Genus of 3 species of deciduous or semi-evergreen trees and shrubs occurring in forest from Mexico to Paraguay. The palmate leaves, with 5–7 short-stalked leaflets, are borne in opposite pairs. Funnel-shaped, 5-lobed flowers are borne in showy, terminal panicles. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer climates, grow as specimen or shade trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, plant directly into a greenhouse border in loam-based potting compost (J1. No.3) in full light, and with moderate to high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; plants under glass need restrictive pruning, when leafless or immediately after flowering.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root semi-ripe

cuttings with bottom heat in summer. Air layer in early spring.

• **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

**C. donnell-smithii** ♀ syn. *Tabebuia donnell-smithii* (Primavera). Spreading to round-headed, deciduous tree, with 5- to 7-palmate, mid- to light green leaves, to 35cm (14in) long. Lax panicles, 15–30cm (6–12in) long, of foxglove-like yellow flowers, 3–4cm (1 1/4–1 1/2in) long, are borne on the bare branches in spring. ‡ 18–25m (60–80ft), ↔ 5–10m (15–30ft). Mexico, Guatemala. ☼ (min. 10–15°C/50–59°F)

▷ **Cycad**,

**Ferocious blue** see *Encephalartos horridus*

**Lebombo** see *Encephalartos lebomboensis*

**Modjadji** see *Encephalartos transvenosus*

**Natal** see *Encephalartos natalensis*

**Prickly** see *Encephalartos altensteinii*

**Suurberg** see *Encephalartos longifolius*

▷ **Cycads** see p.50

## CYCAS

Fern palm, Sago palm

### CYCADACEAE

Genus of about 15 species of cycads found mainly on dry, stony slopes and in semi-desert and dry, open woodland (and, rarely, at rainforest margins) from Madagascar to S. and S.E. Asia, Australia, and the Pacific islands. They have whorls of pinnate, stiff, leathery leaves, with linear-lance-shaped to sickle-shaped leaflets. Dioecious inflorescences arise from the centres of the leaf rosettes. The large male inflorescences are cone-like, up to 80cm (32in) tall, and usually covered in woolly hairs; the female inflorescences consist of loosely arranged, modified leaves, to 30cm (12in) long, bearing ovules on the margins. *Cycas* species are generally cultivated for their palm-like appearance. In frost-prone climates, grow in a temperate or warm greenhouse, or as foliage houseplants. In warmer climates, they make excellent specimen plants.

• **HARDINESS** Frost tender; *C. revoluta* will survive short periods near to 0°C (32°F) if given some protection.

• **CULTIVATION** Under glass, grow in a mix of equal parts loam, garden compost, and coarse bark with additional grit and charcoal, and a slow-release fertilizer. Provide full light, with shade from hot sun, and moderate humidity. In the growing season, water moderately; reduce humidity and water in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 15–29°C (59–84°F) in spring. Remove and pot up suckers in spring.

• **PESTS AND DISEASES** Susceptible to red spider mites, mealybugs, and scale insects under glass. *Cycas* species may be damaged by chemical pesticides; use soft soap or biological controls.

**C. circinalis** ☼ (False sago, Fern palm, Sago palm). Erect cycad with a robust stem, thickened towards the base

*Cycas circinalis*

and bearing pale bands of old leaf scars. Leaves are pinnate, 1.5–3m (5–10ft) long, with up to 100 narrowly lance-shaped, glossy, rich green leaflets. Cone-like inflorescences are brown; the males to 45cm (18in) long, females to 30cm (12in) long. Female inflorescences produce ovoid red fruit, to 6cm (2 1/2in) long. ‡ to 6m (20ft), ↔ 3–6m (10–20ft). S.E. India. ☼ (min. 13°C/55°F)

**C. media** ♀ (Zamia palm). Erect cycad with a robust stem, rarely branched, bearing rings of pale leaf scars.

Spreading leaves, ascending at first, are pinnate, to 1.5m (5ft) long, consisting of linear, bright green leaflets. Cone-like inflorescences are brown; the males to 50cm (20in) long, the females to 40cm (16in) long. Female inflorescences produce broadly ellipsoid, orange-red fruit, 2–4cm (3/4–1 1/2in) long. ‡ to 5m (15ft), ↔ 3m (10ft). Australia (Queensland). ☼ (min. 13°C/55°F)

**C. revoluta** ☼ (Japanese sago palm). Robust-stemmed cycad, erect at first but gradually reclining with age, and suckering and branching when mature. Arching leaves, 0.75–1.5m (30–60in) long, are pinnate, with up to 125 sickle-shaped, glossy, dark green leaflets. Ovoid, woolly, golden brown inflorescences are produced on mature plants but seldom on those grown in containers. The male inflorescences, to 40cm (16in) long, are pineapple-scented; females, 20cm (8in) long, produce ovoid yellow fruit, 3–4cm (1 1/4–1 1/2in) long. ‡ 1–2m (3–6ft) or more, ↔ 1–2m (3–6ft) or more. Japan (including Ryukyu Islands). ☼ (min. 7–10°C/45–50°F)

*Cycas revoluta*

## CYCLAMEN

Sowbread

PRIMULACEAE

Genus of about 19 species of tuberous perennials found in habitats ranging from alpine woodland and damp woods to dry sands and maquis, from the Mediterranean east to Iran and south to Somalia. Leaves are rounded to heart-shaped, sometimes toothed or lobed, often with silver zones or light and dark patterns above, and purplish red below. Leaves of autumn-flowering species last through winter to spring. The nodding, sometimes fragrant flowers, 1–3cm (½–1¼in) long, each have 5 reflexed, twisted petals, varying from white to pink and carmine-red, often with darker "mouths" (perianth tube rims). Flowers may be borne at almost any time of year, depending on the species. In most species, the flower-stalk coils on to the soil surface after flowering to release the ripe seeds. *C. persicum* has been selected extensively to produce a wide colour and size range, the flowers often much larger than those of the wild species.

Grow fully hardy species and cultivars in a rock garden, border, or raised bed. Frost-hardy to frost-tender cyclamens (with the exception of *C. parviflorum*), need a warm, dry summer dormancy; outside Mediterranean climates, they are best grown in a cool greenhouse, alpine house, or bulb frame. Cultivars of *C. persicum* are excellent in a conservatory or as houseplants. All parts may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** For ease of reference, cultivation requirements may be divided into 3 groups, as follows:

1. Plant 3–5cm (1¼–2in) deep. Grow in moderately fertile, humus-rich, well-drained soil in partial shade, under trees or shrubs, to avoid excessive summer moisture. Mulch annually with leaf mould as leaves wither; in areas with prolonged frost, provide a deep, loose mulch. Do not allow *C. parviflorum* and *C. purpurascens* to dry out.

2. Plant 2–2.5cm (¾–1in) deep, or with the tops of the tubers just at the soil surface. Grow in a mix of equal parts loam, leaf mould, peat, and sharp sand in an alpine house or bulb frame; grow half-hardy species in a cool greenhouse, in bright filtered light with moderate humidity. In growth, water moderately. Reduce water and humidity as leaves

fade; keep completely dry in dormancy. Apply a low-nitrogen liquid fertilizer every 6–8 weeks when in full leaf.

3. (*C. persicum* and its cultivars). Plant with the tops of the tubers just above the soil surface. Grow in loam-based potting compost (J1 No.2) in bright filtered light (full light in winter), with moderate humidity and an even winter temperature of 13–16°C (55–61°F). Avoid draughts and hot, dry air. When in full leaf, water moderately (avoiding the crown), and apply a low-nitrogen liquid fertilizer every 2 weeks. Reduce water as leaves wither after flowering; keep dry when dormant (about 2–3 months). Resume watering and feeding as new growth appears. When tubers fill the pot, repot when dormant.

• **PROPAGATION** Sow seed as soon as ripe, in darkness, at 6–12°C (43–54°F). Sow seed of *C. persicum* at 12–15°C (54–59°F); sow seed of open-pollinated cultivars in late summer to flower in about 14 months; sow seed of other cultivars from late winter to mid-spring to flower in autumn of the same year. Before sowing, soak all seed in water for at least 10 hours and rinse thoroughly.

• **PESTS AND DISEASES** Mice or squirrels may be a problem. Prone to red spider mites, vine weevil, cyclamen mite, and grey mould (*Botrytis*) under glass.

*C. abchasicum* see *C. coum* subsp. *caucasicum*.

*C. africanum* ■ Tuberous perennial with heart-shaped, bright green leaves, to 10cm (4in) long, with paler green markings. Produces flowers, 2–3.5cm (¾–1½in) long, in shades of pink with deep maroon mouths, just before the leaves in autumn. Cultivation group 2; cool greenhouse. †12–15cm (5–6in), ↔23cm (9in). Algeria. \*

*C. alpinum* see *C. trochopteranthum*.

*C. balearicum*. Tuberous perennial with scallop-margined, heart-shaped, mid-green or grey-green leaves, heavily silvered above, maroon beneath, to 9cm (3½in) long, usually smaller. Delicate, strongly fragrant, white or pale pink flowers, to 1.5cm (½in) long, with fine pink veins, are borne with the leaves in spring. Cultivation group 2. †5cm (2in), ↔5–8cm (2–3in). Balearic Islands. \*\*

*C. caucasicum* see *C. coum* subsp. *caucasicum*.

*C. cilicium* ■♀ Tuberous perennial with rounded or heart-shaped, strongly patterned, mid-green leaves, 1.5–5cm (½–2in) long, often purplish beneath.



*Cyclamen coum* f. *albissimum*

Slender, white or pink flowers, 1–2cm (½–¾in) long, stained dark carmine-red at the mouths, are borne with the leaves in autumn. Cultivation group 1 or 2. †5cm (2in), ↔8cm (3in). S. Turkey. \*\*

f. *album* has white flowers. *C. coum* ♀ Tuberous perennial with rounded leaves, 2.5–6cm (1–2½in) long, either shiny, unmarked, and deep green, or deep green with silver patterns. Compact flowers, 0.8–1.5cm (¼–½in) long, varying from white to shades of pink and carmine-red, with dark carmine-red stains above white-rimmed mouths, are produced with the leaves in winter or early spring. Cultivation group 1. †5–8cm (2–3in), ↔10cm (4in). Bulgaria, Caucasus, Turkey, Lebanon. \*\*\*

f. *albissimum* ■ syn. 'Album', bears white flowers with dark carmine-red marks at the mouths. subsp. *caucasicum*, syn. *C. abchasicum*, *C. caucasicum*, has pinkish lilac flowers, to 1.5cm (½in) long, and heart-shaped, silver-marked leaves, with scalloped margins. **Pewter Group** ■♀ is a variable, vigorous selection, with leaves almost entirely silvered above.

*C. creticum*. Tuberous perennial with heart-shaped, greyish green leaves, to



*Cyclamen hederifolium*

4cm (1½in) long, with silver markings. Slender, fragrant, white or very pale pink flowers, 1.5–2.5cm (½–1in) long, are borne with the leaves in spring. Cultivation group 2. †5–8cm (2–3in), ↔8–10cm (3–4in). Greece (Crete). \*\*

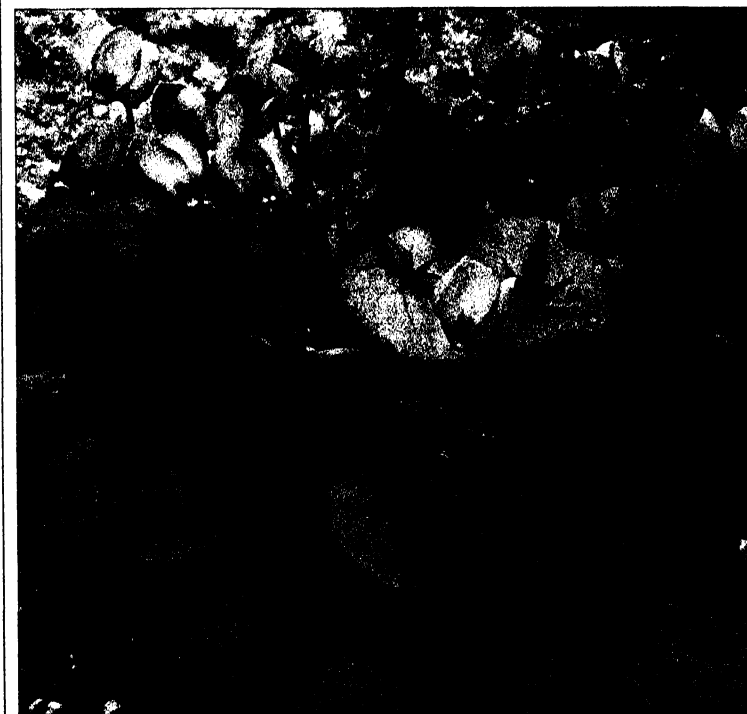
*C. cyprium*. Tuberous perennial with heart-shaped, toothed leaves, to 5cm (2in) or more long, patterned light grey-green. Bears very fragrant white flowers, to 2.5cm (1in) long, marked carmine-red at the mouths, with the leaves in autumn. Cultivation group 2. †5–8cm (2–3in), ↔15cm (6in). Cyprus. \*\*

*C. europaeum* see *C. purpurascens*.

*C. fatrense* see *C. purpurascens*.

*C. graecum*. Tuberous perennial with long, fleshy roots and heart-shaped, deep green leaves, 5–14cm (2–5½in) long, marked silver and light green. Pink to carmine-red flowers, 1.5–2.5cm (½–1in) long, with darker markings at the mouths, are borne just before the leaves in autumn. Cultivation group 2; best in a large container. †8–10cm (3–4in), ↔15cm (6in). Greece, Aegean Islands, Turkey, Cyprus. \*\*\*

f. *album* has pure white flowers. *C. hederifolium* ■♀ syn. *C. neapolitanum*. Tuberous perennial with



*Cyclamen coum* Pewter Group



*Cyclamen africanum*



*Cyclamen cilicium*

C

C

*Cyclamen libanoticum*

large, flattened tubers and clumps of very variable, triangular to heart-shaped, pointed, patterned, mid- to dark green leaves, 5–15cm (2–6in) long, often purplish green beneath. Sometimes scented flowers, to 2.5cm (1in) long, in shades of pink, with deep maroon marks at the apexes of the mouths, are produced in mid- and late autumn before the leaves. Self-seeds freely. Cultivation group 1. ‡ 10–13cm (4–5in), ↔ 15cm (6in). Mediterranean (Italy to Turkey). \*\*\*. f. *albiflorum* has pure white flowers without basal marks.

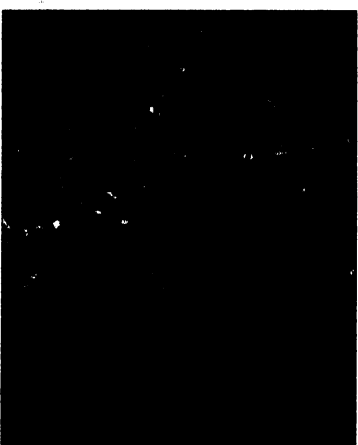
**C. libanoticum** ■♀ Tuberous perennial bearing rounded-heart-shaped, shallowly lobed, dull green leaves, 8cm (3in) long, patterned with lighter green,

*Cyclamen mirabile**Cyclamen persicum**Cyclamen persicum* Sierra Series 'Sierra White'

in winter. Pale to mid-pink flowers, to 3cm (1¼in) long, white at the bases, with bold carmine-red marks at the mouths, are produced with the leaves from winter to early spring. Cultivation group 2; cool greenhouse. ‡ 10cm (4in), ↔ 15cm (6in). Lebanon. \*

**C. mirabile** ■♀ Tuberous perennial with heart-shaped leaves, to 3.5cm (1½in) long, with scalloped margins, mid-green above and purplish red beneath; they often have pink marks on the upper surfaces when they first expand. Slender, pale pink flowers, to 2cm (¾in) long, with fringed petals and maroon marks at the mouths, are produced with the leaves in autumn. Cultivation group 2. ‡ 8cm (3in), ↔ 8–10cm (3–4in). S.W. Turkey. \*\* **C. neapolitanum** see *C. hederifolium*. **C. parviflorum**. Tuberous perennial with rounded, dull, deep green leaves, to 3.5cm (1½in) long, often smaller. Pink flowers, to 1cm (½in) long, stained dark pink at the mouths, are borne with the leaves in early spring. Cultivation group 1 or 2. ‡ 2.5–4cm (1–1½in), ↔ 5–8cm (2–3in). N.E. Turkey. \*\*

**C. persicum** ■ Tuberous perennial with heart-shaped leaves, 2.5–14cm (1–5½in) long, deep green, often silver-marbled above and pale or purplish green beneath. Sweet-scented, pink, red, or white flowers, 1–2cm (½–¾in) or more long, are produced on tall, slender stems, with the leaves, from early winter to early spring. Cultivation group 2 if grown outdoors; cultivation group 3 under glass and for all cultivars. ‡ to 20cm (8in), ↔ 15cm (6in). S.E.

*Cyclamen pseudibericum**Cyclamen repandum* subsp. *peloponnesiacum*

Mediterranean, N. Africa. ♀ (min 10°C/50°F). **Halios Series** cultivars have blunt-toothed, dark green leaves, 10–14cm (4–5½in) across, with silver marbling. A succession of flowers, 5–7cm (2–3in) long, in white, pink, scarlet, lilac, or purple, is borne from late summer to autumn; ‡ 30cm (12in), ↔ 18cm (7in). **Mirabelle Series** cultivars have small flowers, to 4cm (1½in) across, in deep or light salmon-pink, lilac, purple, scarlet, or white; ‡ 15cm (6in). **Miracle Series** cultivars have pink, salmon-pink, scarlet, or white flowers, 5–8cm (2–3in) long; ‡ to 15cm (6in). **'Scentsation'** is open-pollinated and produces strongly scented flowers, 5–8cm (2–3in) long, in pink, carmine-red, or crimson; ‡ 15cm (6in), ↔ 23cm (9in). **Sierra Series** cultivars have marbled foliage and flower in late winter, bearing flowers 5–8cm (2–3in) long in colours including white, pink, salmon-pink, scarlet, lilac, or purple; ‡ 23cm (9in), ↔ 20cm (8in); the series includes **'Sierra White'** ■ with clear white flowers. **'Victoria'** is open-pollinated, and has ruffled white flowers, 5–8cm (2–3in) long, with bright cherry-red margins and mouths; ‡ to 30cm (12in).

**C. pseudibericum** ■♀ Tuberous perennial with heart-shaped, silvery, dark green leaves, to 7cm (3in) long, lightly to conspicuously marked with silvery grey or grey-green. Fragrant, bright magenta flowers, to 2.5cm (1in) long, with darker, white-rimmed mouths, are borne with the leaves from winter to spring. Cultivation group 2. ‡ 10–15cm (4–6in), ↔ 8–10cm (3–4in). Turkey. \*\*

**C. purpurascens** ♀ syn. *C. europaeum*, *C. fatrense*. Evergreen, sometimes deciduous, tuberous perennial with rounded to heart-shaped, shiny, dark green leaves, to 8cm (3in) long, sometimes faintly mottled silvery green above, and purplish red below. Broad-mouthed, very strongly scented, rich to pale carmine-red flowers, to 2cm (¾in) long, are produced with the leaves in mid- and late summer. Prefers alkaline conditions. Cultivation group 1 or 2. ‡ 10cm (4in), ↔ 8–10cm (3–4in). C. and E. Europe. \*\*\*

**C. repandum**. Tuberous perennial bearing heart-shaped to triangular leaves, to 13cm (5in) long, dark green with grey-green patterning or speckles. Slender, fragrant, rich carmine-red

flowers, to 2cm (¾in) long, are borne with the leaves in mid- and late spring. Cultivation group 1 or 2. ‡ 10–15cm (4–6in), ↔ 10–13cm (4–5in). S. France (including Corsica), Italy, former Yugoslavia, Greece. \*\*\* (borderline). **subsp. peloponnesiacum** ■♀ has scallop-margined leaves with heavy silver speckling and paler pink flowers with darker pink zones around the mouths. **C. robilifianum**. Tuberous perennial with heart-shaped, strongly scalloped, shiny, bright green leaves, to 11cm (4½in) long, patterned silvery green. Often scented pink flowers, to 2.5cm (1in) long, with deep maroon mouths and projecting anthers, are produced with the leaves in autumn. Cultivation group 2; cool greenhouse. ‡ 10–13cm (4–5in), ↔ 15cm (6in). Libya. \* **C. trochopteranthum**, syn. *C. alpinum*. Tuberous perennial with rounded to heart-shaped, dark green, silver-marked leaves, 2.5–5cm (1–2in) long. Fragrant, white, pink, or carmine-red flowers, to 1.5cm (½in) long, with propeller-like, twisted petals, are produced with the leaves in late winter and early spring. Cultivation group 2. ‡ 5–8cm (2–3in), ↔ 8–10cm (3–4in). S.W. Turkey. \*\*

▷ *Cyclobothra lutea* see *Calochortus barbatus*

## CYNCHES

Swan orchid

ORCHIDACEAE

Genus of about 12 species of deciduous, epiphytic orchids from Central and South America, occurring at altitudes to 1,000m (3,250ft). They have elongated, spindle-shaped to cylindrical, fleshy pseudobulbs, and produce soft, folded, strap-shaped to ovate leaves in summer. Swan-like flowers, which may be male or female, are borne in arching or pendent racemes from nodes on the upper portion of the pseudobulbs, in early summer. The sex of the flowers is determined by the light level: in poor light, inflorescences of male flowers are usually produced. Female inflorescences develop in brighter conditions.

• **HARDINESS** Frost tender.

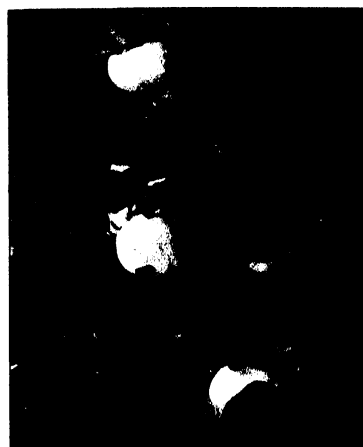
• **CULTIVATION** Warm-growing orchids. Grow in epiphytic orchid compost in deep containers or baskets. In summer, provide bright filtered light and moderate humidity; water moderately, applying fertilizer at every third watering, and keep foliage dry. Provide full light in winter; keep completely dry when dormant. See also p.46.

• **PROPAGATION** Divide pseudobulbs when growth recommences in spring.

• **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be troublesome under glass.

**C. egertonianum**. Epiphytic orchid with cylindrical to spindle-shaped pseudobulbs and strap-shaped leaves, 7–21cm (3–8in) long. From summer to autumn, bears racemes of brown- or purple-spotted, green or greenish brown, sometimes yellow or white, rarely pink female flowers, 5cm (2in) across. Dark purple male flowers are smaller. ‡ 40cm (16in), ↔ 45cm (18in). Belize, Costa Rica, Guatemala, Nicaragua. ♀ (min. 18–20°C/64–68°F; max. 30°C/86°F)



*Cydonia oblonga* 'Vranja'

## CYDONIA

Quince

ROSACEAE

Genus of one species of deciduous tree or shrub occurring at woodland margins and on rocky slopes in S.W. Asia. The elliptic to ovate leaves are arranged alternately. Attractive, shallowly bowl-shaped flowers are followed by pear-like, ornamental fruit, which are edible when cooked. *C. oblonga* should not be confused with the flowering quinces (*Chaenomeles*). In regions with cold summers or winter temperatures that fall below -15°C (5°F), fan train *C. oblonga* against a wall. In warmer climates, it is excellent as a free-standing specimen; it fruits best in areas with long, hot summers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. Pruning group 1; group 13 in winter, if fan-trained. In the first 3 or 4 winters, establish a framework of fruiting spurs; thereafter, prune only to remove badly placed shoots or to relieve overcrowding.
- **PROPAGATION** Sow seed of the species in a seedbed in autumn. Insert green-wood cuttings in early summer, or semi-ripe cuttings in mid- or late summer. May also be propagated from hardwood cuttings in autumn or early winter. Bud cultivars in summer, or bottom graft on to seedling quince stocks in late winter.
- **PESTS AND DISEASES** Susceptible to quince leaf blight, brown rot, fireblight, and mildew.

*C. oblonga* ♀ (Common quince). Rounded tree or shrub with crowded branches bearing broadly ovate, dark green leaves, grey-downy beneath, to 10cm (4in) long. Solitary, pale pink to white flowers, 5cm (2in) across, are produced from the leaf axils in late spring. Aromatic, edible, light golden yellow fruit, 8cm (3in) long, which ripen in autumn, are used for flavouring and in preserves. 1-5m (15ft). S.W. Asia. \*\*\*. 'Lusitanica', syn. 'Portugal', is vigorous, producing dark yellow fruit, 10cm (4in) long, covered in grey down. 'Maliformis' produces almost spherical fruit. 'Portugal' see 'Lusitanica'. 'Vranja' ♀ has very fragrant, pale green fruit, which ripen to golden yellow.

*C. sinensis* see *Pseudocydonia sinensis*.  
*C. speciosa* see *Chaenomeles speciosa*.

## CYMBIDIUM

ORCHIDACEAE

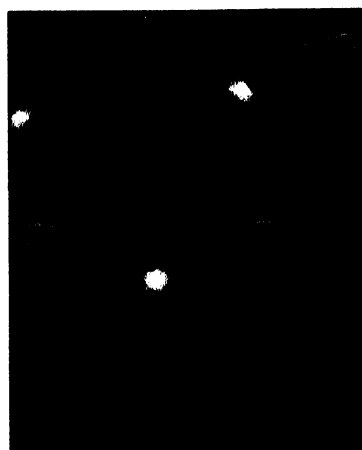
Genus of about 50 species of evergreen, epiphytic, lithophytic, or terrestrial orchids from temperate and tropical areas in India, China, Japan, S.E. Asia, and Australia. They have spherical to ovoid pseudobulbs and 8-10 long, narrowly oval to linear leaves. Flowers are borne in long or short racemes from the bases, mainly in spring. Hundreds of winter- or spring-flowering hybrids have been produced. Grow as houseplants or in a cool or temperate greenhouse; in Mediterranean climates, they may also be grown in a lath house. Contact with the foliage may aggravate skin allergies.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Cool-growing orchids. Pot firmly into epiphytic or terrestrial orchid compost with added charcoal and bone meal. In summer, provide bright filtered light and good ventilation. Water moderately, applying fertilizer at every third watering, and mist once or twice a day. In winter, place in full light and water sparingly. See also p.46.
- **PROPAGATION** Divide in early and mid-spring when pot-bound, or remove backbulbs and pot up after flowering.
- **PESTS AND DISEASES** Red spider mites, aphids, whiteflies, and mealybugs may prove troublesome.

*C. aloifolium*, syn. *C. pendulum*. Epiphytic orchid with small, ovoid pseudobulbs and fleshy, semi-rigid, linear leaves, 30-60cm (12-24in) long. Bears numerous, pale yellow to cream flowers, 4.5cm (1 3/4in) across, with dark red stripes on the tepals and lips, in pendent racemes from late winter to spring. 1-30cm (12in), 1-45cm (18in). E. Himalayas to S. China and Malaysia. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. bicolor*. Epiphytic orchid with small, ovoid pseudobulbs and fleshy, semi-rigid, linear leaves, 30cm (12in) long. Numerous creamy white flowers, 4.5cm (1 3/4in) across, with purple-spotted lips, are produced in pendent racemes in autumn. 1-30cm (12in), 1-45cm (18in). E. Himalayas to S. China and Indonesia. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. Christmas Angel 'Cooksbridge Sunburst'* (C. Angelica x C. Lucy Moore). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Bright yellow flowers, 10cm (4in) across, with spotted lips, are borne

*Cymbidium devonianum**Cymbidium elegans*

in pendent racemes in winter. 1-75cm (30in), 1-90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

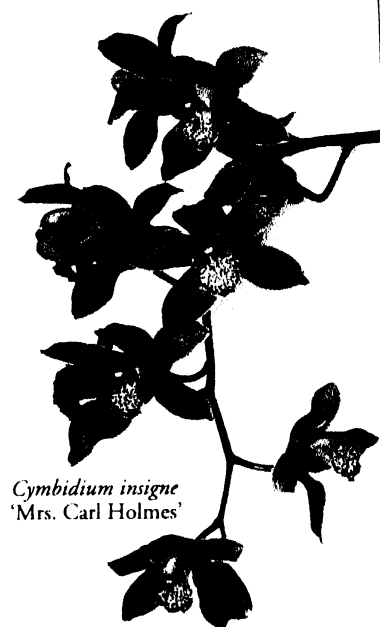
*C. devonianum* ♀ Epiphytic orchid with small, ovoid pseudobulbs and oval leaves, 30-60cm (12-24in) long. From spring to summer, bears olive-brown to yellow-green flowers, 4cm (1 1/2in) across, with dull purple lips, in pendent racemes. 1-30cm (12in). N.E. India, N. Thailand. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. eburneum*. Epiphytic orchid with very small pseudobulbs and linear leaves, 40-60cm (16-24in) long. In winter, bears upright racemes of white flowers, 8cm (3in) across, with yellow-stained lips. 1-50cm (20in), 1-60cm (24in). Himalayas, N. Burma, S.W. China. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. elegans* ♀ syn. *Cyperorchis elegans*. Epiphytic orchid with slender, ovoid pseudobulbs and narrowly oval leaves, 50cm (20in) long. Cream-yellow flowers, 5cm (2in) long, are produced in dense, pendent racemes from autumn to winter. 1-50cm (20in), 1-60cm (24in). Himalayas, S.W. China. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. ensifolium*. Lithophytic or terrestrial orchid with ovoid pseudobulbs and linear leaves, 30cm (12in) long. In summer, produces upright racemes of greenish yellow flowers, 2.5cm (1in) across, with white lips irregularly spotted red-brown. 1-30cm (12in). India, China, Japan, S.E. Asia. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. grandiflorum* see *C. hookerianum*.  
*C. hookerianum* ♀ syn. *C. grandiflorum*. Epiphytic or lithophytic

*Cymbidium hookerianum**Cymbidium insigne*  
'Mrs. Carl Holmes'

orchid with ovoid pseudobulbs and linear leaves, 60cm (24in) long. In early winter, bears fragrant, deep apple-green flowers, 9-13cm (3 1/2-5in) across, with purple- or yellow-spotted white lips, in arching racemes. 1-60cm (24in), 1-90cm (36in). Himalayas, S.W. China. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*C. insigne*. Lithophytic or terrestrial orchid with ovoid pseudobulbs and linear leaves, 50-100cm (20-39in) long. Bears upright racemes of white or white-flushed pink flowers, 8cm (3in) across, with white-flushed, pink-spotted lips, in spring. 1-90cm (36in), 1-60cm (24in). Vietnam, N. Thailand, S. China. ♀ (min. 10°C/50°F; max. 24°C/75°F)

'Mrs. Carl Holmes' ♀ has rose-pink flowers with red-spotted white lips.

*C. Kings Loch* (C. King Arthur x C. Loch Lomond). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Numerous green flowers, 8cm (3in) across, are borne in upright racemes in winter. 1-60cm (24in), 1-90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

'Miniature Yellow' ♀ has yellow flowers marked dark red on the lips.

*Cymbidium*  
King's Loch  
'Miniature  
Yellow'

C



*Cymbidium*  
Lisa Rose

**C. Lisa Rose** ■ (C. Keera x C. Sylvania). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Up to 12 rose-pink flowers, 10cm (4in) across, with yellowish white and deep red lips, are borne in upright racemes in winter. †60cm (24in), ↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. lowianum**. Epiphytic orchid with ovoid pseudobulbs and linear leaves, 60–75cm (24–30in) long. Greenish yellow flowers, 9–12cm (3½–5in) across, with red-banded lips, are borne in arching racemes in spring. †↔90cm (36in). Burma, Thailand, S.W. China. ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. New Dimension** (C. Mavourneen x C. Sussex Moor). Terrestrial orchid with ovoid pseudobulbs and narrowly oval leaves, 75cm (30in) long. Pale green flowers, 10cm (4in) across, are produced in upright racemes in winter. †60cm (24in), ↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**'Standard White'** ■ has white flowers with pink-flushed petals, and yellow and white lips with red markings.

**C. pendulum** see *C. aloifolium*.

**C. Pontac 'Mont Millais'** ■ (C. Hamsey x C. Memoria Doctor Borg).



*Cymbidium*  
New Dimension  
'Standard White'



*Cymbidium* Pontac 'Mont Millais'

Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Bears dark red flowers, 10cm (4in) across, with red-banded white lips, in long, upright racemes in winter.

†↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Portelet Bay** ■ (C. Caithness x C. Snowsprite). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. White flowers, 8cm (3in) across, with white-based, deep red lips, are borne in upright racemes in winter. †60cm (24in), ↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Rosehill** (C. Hamsey x C. Vieux Rose). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Deep pink flowers, 10cm (4in) across, are borne in upright racemes in winter. †60cm (24in), ↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. St. Helier 'Trinity'** (C. Mavourneen x C. New Dimension). Terrestrial orchid with ovoid pseudobulbs and narrowly oval leaves, 75cm (30in) long. Yellow-green flowers, 10cm (4in) across, with clear white lips, are produced in upright racemes from winter to spring. †↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Showgirl** ■♀ (C. Alexanderi x C. Sweetheart). Terrestrial orchid with spherical pseudobulbs and linear leaves, to 45cm (18in) long. Pink-flushed white flowers, 6cm (2½in) across, with red flecks and stripes on the lips, are borne in upright racemes from winter to spring. †↔45cm (18in). ♀ (min. 10°C/50°F; max. 24°C/75°F)



*Cymbidium* Portelet Bay



*Cymbidium* Showgirl

**C. Strathbraan** ■ (C. New Dimension x C. Putana). Terrestrial orchid with spherical pseudobulbs and linear leaves, to 45cm (18in) long. Very pale pink to rose-pink flowers, 6cm (2½in) across, with red flecks and margins on the lips, are borne in upright racemes in winter. †↔45cm (18in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Strathdon 'Cooksbridge Noel'** ■♀ (C. Kurun x C. Nip). Terrestrial orchid with spherical pseudobulbs and linear leaves, to 45cm (18in) long. Dusky red-pink flowers, 6cm (2½in) across, with yellow lips marked deep red and pale pink, are borne in upright racemes in winter. †↔45cm (18in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Strathkanaid** (C. Hamsey x C. Nip). Terrestrial orchid with rounded pseudobulbs and linear leaves, to 45cm (18in) long. Upright racemes of dark pinkish red flowers, 6cm (2½in) across, are produced in winter. †↔45cm (18in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Thurso** ■ (C. Miretta x C. York Meredith). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Bears upright racemes of mid-green flowers, 10cm (4in) across, with red stripes and flecks on the lips, in winter. †60cm (24in), ↔90cm (36in). ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. Tiger Tail** (C. Alexanderi x C. tigrinum). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 30cm (12in) long. Brown-shaded, lemon-yellow flowers, 6cm (2½in) across, are borne in upright racemes in early winter. †↔30cm (12in). ♀ (min. 10°C/50°F; max. 24°C/75°F)



*Cymbidium* Strathbraan



*Cymbidium* Strathdon 'Cooksbridge Noel'



*Cymbidium*  
Thurso

**C. tigrinum**. Lithophytic orchid with almost spherical pseudobulbs and narrowly oval leaves, 23cm (9in) long. Olive-green to yellow flowers, to 5cm (2in) across, with purple lines, spots, and margins on the lips, are produced in upright racemes in autumn. †25cm (10in), ↔15cm (6in). Burma, N.E. India. ♀ (min. 10°C/50°F; max. 24°C/75°F)

**C. tracyanum** ■ Epiphytic orchid with ovoid pseudobulbs and linear leaves, 60–75cm (24–30in) long. Strongly fragrant, yellow-green flowers, 9cm (3½in) across, boldly striped brown, with cream or yellow lips flecked purple-brown, are borne in arching racemes in



*Cymbidium tracyanum*

## CYMBIDIUM

autumn.  $\pm$  90cm (36in). N. Burma, N. Thailand, China (S. Yunnan).  $\bullet$  (min. 10°C/50°F; max. 24°C/75°F)  
**C. Vieux Rose 'Del Park'** (C. Babylon  $\times$  C. Rio Rita). Terrestrial orchid with ovoid pseudobulbs and linear leaves, 75cm (30in) long. Light pink flowers, 10cm (4in) across, with heavily red-spotted lips, are borne in upright racemes in spring.  $\pm$  90cm (36in).  $\bullet$  (min. 10°C/50°F; max. 24°C/75°F)

## CYMBOPOGON

GRAMINEAE/POACEAE

Genus of about 56 species of sturdy, aromatic, tufted, evergreen, perennial grasses, occurring in warm-temperate, subtropical, and tropical Africa and Asia, often in savannah grassland. They are grown for their linear to lance-shaped, mid- to bluish green leaves, and their loose or compact, many-branched flowering panicles, borne at the ends of the branches. The panicles consist of spikelets borne in short, paired, spike-like racemes, which are enclosed in spathe-like bracts. In frost-prone areas, grow in a conservatory or warm greenhouse and move outdoors in summer; in warmer climates, use in a mixed or grass border. *Cymbopogon* species contain essential oils that have medicinal, culinary, and cosmetic uses.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light, with moderate humidity. In the growing season, water freely; water sparingly in winter. Repot in early spring. Outdoors, grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring. Divide in late spring.
- **PESTS AND DISEASES** Trouble free.

**C. citratus** (Lemon grass). Densely tufted, clump-forming, perennial grass with hollow, cane-like stems and erect to arching, linear, rough-margined, strongly lemon-scented, pale blue-green leaves, to 90cm (36in) long. In late summer and early autumn, bears loose, branching flowering panicles, to 5cm (2in) long. Does not flower freely under glass.  $\pm$  1.5m (5ft),  $\pm$  90cm (36in). S. India, Sri Lanka.  $\bullet$  (min. 10°C/50°F)

## CYNARA

ASTERACEAE/COMPOSITAE

Genus of about 10 species of clump-forming, thistle-like perennials found on well-drained, sunny slopes and grassland in the Mediterranean region, N.W. Africa, and the Canary Islands. Many are imposing plants, with pinnatifid or 2-pinnatifid, silvery or greyish green leaves and tall, spherical flowerheads, borne singly or in corymbs. *Cynara* species are statuesque plants, suitable for a herbaceous border. The flowerhead bracts, leaf-stalks, and midribs of some species are edible. The thistle-like flowerheads are also useful for dried flower arrangements, and attract bees.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun, sheltered from strong winds. For best foliage effects, remove the flowering stems as they emerge in summer. Where temperatures



*Cynara cardunculus*

fall below -15°C (5°F), protect the rootstock with a dry winter mulch.

- **PROPAGATION** Sow seed in containers in a cold frame, or divide in spring. Insert root cuttings in winter.
- **PESTS AND DISEASES** Susceptible to grey mould (*Botrytis*), slugs, and aphids.

**C. cardunculus**  $\square$   $\varnothing$  (Cardoon). Clump-forming perennial with pinnatifid or 2-pinnatifid, usually spiny, silvery grey leaves, to 50cm (20in) long, with ovate to linear-lance-shaped segments and deep basal lobes. From early summer to early autumn, purple flowerheads, 4–8cm (1½–3in) across, are produced on grey-woolly stems. Blanched leaf-stalks and midribs are edible.  $\pm$  1.5m (5ft),  $\pm$  1.2m (4ft). S.W. Mediterranean, Morocco.  $\bullet$   $\bullet$   $\bullet$

**C. scolymus** (Globe artichoke). Clump-forming perennial with deeply lobed or pinnatifid, grey-green leaves, to 80cm (32in) long, with pointed segments, grey-hairy above, densely white-woolly beneath. In early autumn, bears purple flowerheads, 8–15cm (3–6in) across, with large involucre bracts. The flowerheads (in bud) are eaten as a vegetable. Probably a variant of *C. cardunculus* but horticulturally distinct.  $\pm$  to 2m (6ft),  $\pm$  1.2m (4ft). Origin unknown.  $\bullet$   $\bullet$   $\bullet$

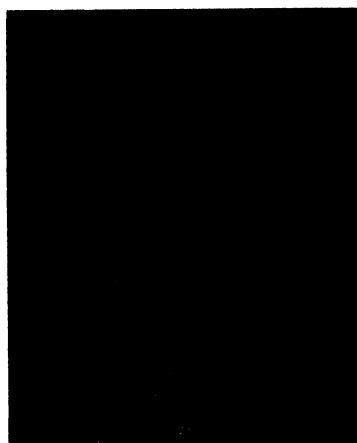
## CYNOGLOSSUM

Hound's tongue

BORAGINACEAE

Genus of about 55 species of annuals, biennials, and short-lived perennials from grassy places and rocky slopes in temperate regions and tropical uplands. They have alternate, narrowly lance-shaped to oblong or ovate, rough leaves, often clasping the stems, the lower ones stalked. They are cultivated for their usually blue, sometimes purple, rose-pink, or white flowers, similar to forget-me-nots (*Myosotis*), each with a short, tubular corolla and 5 widely spreading lobes, produced in one-sided, terminal cymes over a long period from spring to autumn. Grow in a mixed, herbaceous, or annual border.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in sun or partial shade. Plants become coarse and leafy and may not flower well in soil that is too fertile; they do not thrive in heavy clay soils.
- **PROPAGATION** Sow seed of perennials in containers in a cold frame in autumn



*Cynoglossum amabile* 'Firmament'

or spring. Sow seed of annuals and biennials *in situ* in mid-spring. Divide perennials in spring.

- **PESTS AND DISEASES** Prone to mildew.

**C. amabile**  $\varnothing$  (Chinese forget-me-not). Slow-growing, upright, bushy annual or biennial with obovate to lance-shaped, hairy, grey-green leaves, to 20cm (8in) long. Terminal cymes of pendent, sky-blue, sometimes white or pale pink flowers, 5–10mm (¼–½in) across, are produced in late summer.  $\pm$  45–60cm (18–24in),  $\pm$  to 30cm (12in). E. Asia.  $\bullet$   $\bullet$   $\bullet$

**'Firmament'**  $\square$  is compact, with deep blue flowers and grey-hairy leaves;  $\pm$  to 40cm (16in).

**C. longiflorum** see *Lindlofia longiflora*.  
**C. nervosum**  $\square$  (Hound's tongue). Clump-forming, erect, bushy perennial with bristly stems and narrowly oblong-lance-shaped, softly hairy or bristly, bright green leaves: the basal leaves to 4cm (1½in) long, the lower stem leaves to 12cm (5in). Many-flowered cymes of azure-blue flowers, 1cm (½in) across, are produced from mid-spring to mid-summer.  $\pm$  to 60cm (24in). W. Pakistan, N.W. India (including Kashmir).  $\bullet$   $\bullet$   $\bullet$

**C. officinale** (Hound's tongue). Softly hairy biennial that in its first year forms a basal rosette of elliptic-oblong, grey-green leaves, 12cm (5in) long. In the second summer, ascending, leafy stems bear loose cymes of dull dark purple flowers, 6mm (¼in) across.  $\pm$  50–70cm (20–28in),  $\pm$  30–50cm (12–20in). Europe, W. Asia.  $\bullet$   $\bullet$   $\bullet$

**C. wallichii**. Upright, bushy, densely white-hairy annual or biennial with obovate to lance-shaped, prominently



*Cynoglossum nervosum*

## CYPELLA

veined, mid-green leaves, to 18cm (7in) long. Dense, terminal cymes of pendent, pale to dark blue flowers, to 4mm (¼in) across, are produced from spring to summer.  $\pm$  60–90cm (24–36in),  $\pm$  to 45cm (18in). C. and S. Asia.  $\bullet$   $\bullet$

**C. zeylanicum**. Upright, bushy annual or biennial with elliptic to oblong, densely brown- or yellow-hairy, mid-green leaves, to 20cm (8in) long. Bears terminal cymes of pendent, blue to white flowers, to 5mm (¼in) across, in summer.  $\pm$  to 85cm (34in),  $\pm$  to 45cm (18in). Afghanistan to Sri Lanka and Japan.  $\bullet$

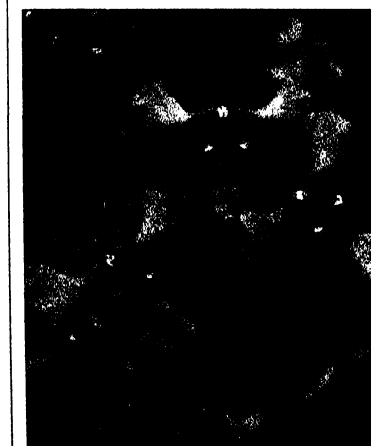
## CYPELLA

IRIDACEAE

Genus of 15 species of bulbous perennials occurring in grassland and woodland, often near streams, in Central and South America. They are cultivated for their curious, iris-like flowers, each with 3 spreading outer tepals and 3 much smaller, incurved inner ones, borne singly or in terminal corymbs. Individual flowers are short-lived but are produced in succession over long periods in winter or summer. Leaves are linear-lance-shaped and pleated. In frost-prone areas, grow in a cool greenhouse or conservatory; in warmer climates, grow at the base of a warm wall or in a rock garden.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Plant 8cm (3in) deep. Under glass, grow in 2 parts loam-based potting compost (JI No.2) to 1 part grit, in bright filtered light with good ventilation. In the growing season, water freely and apply a low-nitrogen liquid fertilizer monthly until flowers begin to form; keep dry and frost-free when dormant. Outdoors, grow in humus-rich, sandy soil, in a warm, sunny site. Either plant in autumn and protect with a mulch in winter, or plant in spring. Alternatively, in cold areas, lift bulbs after flowering and store in a frost-free place over winter.
- **PROPAGATION** Sow seed as soon as ripe at 7–13°C (45–55°F). Remove offsets when dormant, in late winter or spring if outdoors, or in summer or autumn, just before growth begins, if under glass.
- **PESTS AND DISEASES** Trouble free.

**C. herbortii**  $\square$  Bulbous perennial with linear-lance-shaped, pleated leaves, 15–30cm (6–12in) long, borne on the lower part of the stem. A succession of



*Cypella herbortii*

flowers, 4–6cm (1½–2½in) across, with broad, mustard-yellow outer tepals and purple-spotted or lined inner ones, is produced in summer. †30–50cm (12–20in), ↔ 5cm (2in). Argentina, Uruguay. \*

▷ *Cyperorchis elegans* see *Cymbidium elegans*

## CYPERUS

### CYPERACEAE

Genus of about 500–600 species of sedge- or grass-like annuals and evergreen, rhizomatous perennials, found almost exclusively in wet habitats throughout tropical and subtropical areas, with a small number in cool-temperate regions. They are grown for their foliage and unusual inflorescences. The cylindrical, 3-angled, or winged, often leafy stems, bear grass-like, linear leaves. Terminal, usually linear spikelets of hermaphroditic flowers have leaf-like bracts beneath, which in most species give the inflorescence a typically umbrella-like form. Grow at the margins of a pool or in a bog garden. In frost-prone areas, grow tender species as houseplants, in a temperate greenhouse or conservatory, or as marginal plants in an indoor pool.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No. 2 or 3) in bright filtered light. Stand containers in shallow trays of water to ensure ample moisture and high humidity at all times. In summer, apply a balanced liquid fertilizer monthly. To



*Cyperus eragrostis*

grow as a marginal in an indoor pool, grow in a watertight tub or bowl of loamy soil, top-dressed with a 2.5cm (1in) layer of gravel. Set at the pond edge with the gravel surface about 2.5–5cm (1–2in) below water level.

Outdoors, *C. eragrostis* thrives in most soils, not necessarily damp ones, in sun or partial shade. It will usually self-seed, even if the parent plant is killed in extreme cold. Grow *C. longus* as a marginal plant, in water 15–30cm (6–12in) deep, or in moist soil in a sunny or partially shaded border. Cut back dead material in late autumn. In subtropical and tropical areas, grow all species outdoors as for *C. longus*.

• **PROPAGATION** Sow seed in permanently moist seed compost in spring; hardy species in containers in a cold frame, tender species at 18–21°C (64–70°F). Divide both tender and hardy species in spring. Plantlets will develop on the leafy inflorescences of some tender species if they are placed upside down in water.

• **PESTS AND DISEASES** Trouble free.

*C. albostratus*, syn. *C. diffusus* of gardens. *C. elegans* of gardens. Densely tufted perennial with slender, woody rhizomes and firm, thin, winged stems. Mid-green leaves, to 60cm (24in) long, have pale, prominent veins. From mid-summer to early autumn, bears pale greenish yellow to pale brown spikelets in loose, compound umbels, 5–20cm (2–8in) across, above 6–9 leafy bracts, 0.8–1.5cm (¾–½in) long. †60cm (24in), ↔ 30cm (1ft). Southern Africa. ♀ (min. 10°C/50°F). 'Variegatus' has stems, leaves, and bracts conspicuously variegated with white stripes of varying widths; †60–90cm (24–36in).

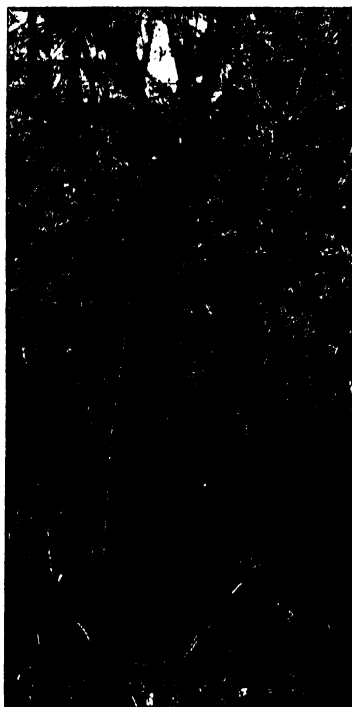
*C. alternifolius* (Umbrella plant). Densely tufted perennial with woody rhizomes and no basal leaves. Numerous winged, dark green stems each bear a terminal whorl of 11–25 deep green, arching, leaf-like bracts, 10–15cm (4–6in) long. From summer to autumn, the stems are topped by small spikelets of pale yellow-brown flowers in compound umbels, to 12cm (5in) across. †45–90cm (18–36in), ↔ 40cm (16in). Madagascar. ♀ (min. 5°C/41°F). *C. alternifolius* of gardens see *C. involucratus*.

*C. diffusus* of gardens see *C. albostratus*.

*C. elegans* of gardens see *C. albostratus*.



*Cyperus involucratus*



*Cyperus papyrus*

*C. eragrostis* ♀ syn. *C. vegetus* (American galingale). Loosely tufted, shortly rhizomatous perennial with stout, winged stems bearing net-veined, rough-margined, bright green leaves, to 90cm (36in) long, which are V-shaped in section. From midsummer to early autumn, produces spherical clusters of pale green spikelets in spreading, compound umbels, 2.5cm (1in) across, above 5–8 linear bracts, 8–10cm (3–4in) long. Good for drying. †60–90cm (24–36in), ↔ 45cm (18in). W. USA, warm-temperate South America. \*\*

*C. flabelliformis* see *C. involucratus*.

*C. involucratus* ♀ syn. *C. alternifolius* of gardens, *C. flabelliformis* (Umbrella grass). Clump-forming, tufted perennial with 12–28 leafy bracts in an umbrella-spoke arrangement, on 3-angled stems. Short, basal leaves are reduced to sheaths, 5cm (2in) long. In summer, produces 14–32 rays bearing tiny clusters of yellow flowers, which turn brown after producing pollen. †60–75cm (24–30in). Widely cultivated and naturalized throughout Africa. ♀ (min. 5–10°C/41–50°F).

*C. longus* (Galingale). Loosely tufted perennial with long, knotted rhizomes and stiff, erect, 3-angled stems. Each stem produces 2 or 3 arching, rough-margined, glossy, bright green leaves, 0.6–1.5m (2–5ft) long, grooved above, paler and sharply keeled beneath. In late summer and early autumn, bears red-brown spikelets in loose umbels, to 7cm (3in) across, above 2–6 leaf-like bracts that are often longer than the inflorescence. †0.6–1.5m (2–5ft), ↔ 1m (3ft) or more. Europe, N. Africa, S.W. and C. Asia. \*\*\*

*C. papyrus* ♀ (Egyptian paper rush, Papyrus). Clump-forming perennial with tall, 3-angled, pithy, leafless stems. Globe-like compound umbels of 100–200 thread-like rays, 12–30cm (5–12in) long, each ending in a tiny brown flower, become pendent with age. Ancient Egyptians flattened and

dried the stems to make a form of paper. Needs high humidity. †2m (6ft), ↔ 0.6–1.2m (2–4ft). Egypt to tropical Africa. ♀ (min. 5–10°C/41–50°F). *C. vegetus* see *C. eragrostis*.

## CYPHOMANDRA

### Tree tomato

#### SOLANACEAE

Genus of about 30 species of perennials and evergreen shrubs, trees, and climbers from the margins of dry forests in tropical America. Leaves are simple, occasionally 3-lobed, or compound, and arranged alternately. Star-, bowl-, or saucer-shaped flowers, each with 5 petal lobes, may be produced singly or in racemes or panicles from the upper leaf axils. Tomato-like, spherical to oblong-ellipsoid fruits, produced from summer to winter, are palatable only when fully ripe. In frost-prone climates, grow in a cool or temperate greenhouse; in warmer areas, use in a shrub border, courtyard garden, or fruit garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No. 3) in full or bright filtered light, with moderate humidity. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade. Pruning group 8; tip-prune when young. Plants under glass need restrictive pruning in late winter.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root greenwood cuttings with bottom heat in early summer.

• **PESTS AND DISEASES** Susceptible to whiteflies and red spider mites under glass.

*C. betacea* ♀ syn. *C. crassicaulis*. Sparingly, robustly branched, small tree or large shrub with ovate to heart-shaped, softly downy, almost fleshy, mid- to deep green leaves, to 30cm (12in) long. From spring to summer, star- or bowl-shaped, white to pale buff-pink flowers, 2.5cm (1in) across, are produced in axillary racemes, 10–15cm (4–6in) long, followed by ellipsoid, brick- or orange-red, edible fruit, 5–6cm (2–2½in) long. †2–3m (6–10ft), ↔ 1–2m (3–6ft). Peru. ♀ (min. 5–7°C/41–45°F).

*C. crassicaulis* see *C. betacea*.



*Cyphomandra betacea*

## CYPHOSTEMMA

## VITACEAE

Genus of about 150 species of prostrate or climbing, often deciduous, perennial succulents from semi-desert areas of Africa and Madagascar. They sometimes have trunk-like caudices, often with peeling "bark", and produce fleshy branches, with the leaves clustered at their tips. The leaves may be pinnate or 3- to 7-palmate, occasionally simple. In some species, resin exudes from the leaf undersides. Corymbs of pendent, cup-shaped to cylindrical flowers are borne in summer, followed by ovoid fruits, which usually contain only one seed each. In frost-prone areas, grow in a warm greenhouse; in warmer climates, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. In growth, water sparingly, and apply a low-nitrogen fertilizer 2 or 3 times; keep completely dry once the leaves have fallen. Outdoors, grow in poor to moderately fertile, humus-rich, sharply drained soil, in full sun. See also pp.48-49.

• **PROPAGATION** Sow seed at 18-21°C (64-70°F) in spring. Root basal cuttings in spring.

• **PESTS AND DISEASES** Mealybugs may be a problem under glass.

*C. bainesii*, syn. *Cissus bainesii*. Deciduous, perennial succulent with a spherical or bottle-shaped caudex, which is often divided into 2 thick branches with peeling, pale yellow or green bark. Resinous, usually 3-pinnate leaves, to 12cm (5in) long, with lance-shaped, toothed, fleshy, silvery green leaflets, are silver-hairy when young. Flat-topped cymes of cup-shaped, yellowish green flowers, 1cm (½in) across, are produced in summer, followed by red fruit. ½-60cm (24in). S.W. Africa. ☉ (min. 10°C/50°F)

*C. justae* ■ syn. *Cissus justae*. Deciduous, perennial succulent with very swollen stems and branches, which have peeling, yellowish green bark. Oval, 3-palmate, coarsely toothed, resinous, glossy, mid-green leaves, to 15cm (6in) long, are often red-tinted. Cymes of cylindrical, yellowish green flowers, 1cm (½in) across, are produced in summer, followed by red fruit. ½-2m (6ft). S. Namibia. ☉ (min. 10°C/50°F)



*Cyphostemma justae*

▷ **Cypress** see *Chamaecyparis*, *Cupressus*  
**Baker** see *Cupressus bakeri*  
**Guadalupe** see *Cupressus guadalupensis*

**Hinoki** see *Chamaecyparis obtusa*

**Italian** see *Cupressus sempervirens*

**Kashmir** see *Cupressus torulosa*  
'Cashmeriana'

**Lawson** see *Chamaecyparis lawsoniana*

**Leyland** see x *Cupressocyparis leylandii*

**Mediterranean** see *Cupressus sempervirens*

**Mexican** see *Cupressus lusitanica*

**Monterey** see *Cupressus macrocarpa*

**Nootka** see *Chamaecyparis nootkatensis*

**Pond** see *Taxodium distichum* var. *imbricarium*

**Sawara** see *Chamaecyparis pisifera*

**Smooth** see *Cupressus arizonica* var. *glabra*

**Summer** see *Bassia scoparia* f. *trichophylla*

**Swamp** see *Taxodium*, *T. distichum*

**White** see *Chamaecyparis thyoides*

▷ **Cypress pine** see *Callitris*

**Oyster Bay** see *C. rhomboidea*

**Tasmanian** see *C. oblonga*

▷ **Cypress spurge** see *Euphorbia cyparissias*

## CYPRIPEDIUM

Lady's slipper orchid

## ORCHIDACEAE

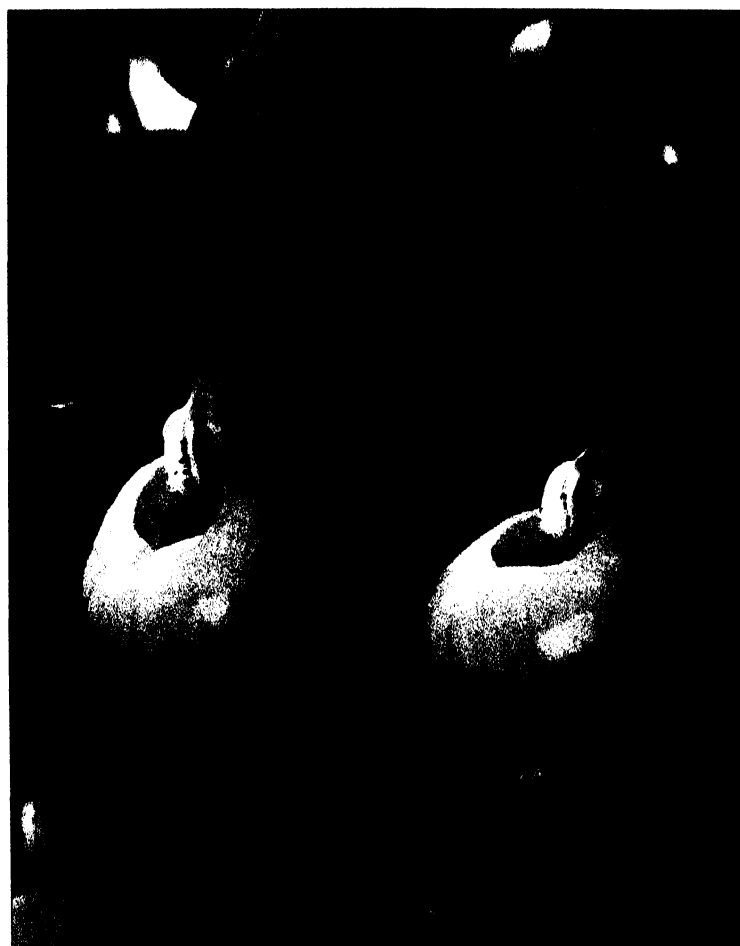
Genus of about 35 species of deciduous, terrestrial orchids found in dry woodland or marshy places in temperate areas of the N. hemisphere, and in S. Asia and Mexico. They have slender rhizomes and several soft, folded, ovate to fan-shaped leaves, which are either spirally arranged or borne in opposite pairs. The flowers, produced singly or in terminal racemes of up to 12 flowers in summer, each have 3 spreading, white, pink, red, or purple tepals, and a slipper-shaped, yellow, white, pink, or dark purple pouch (an adaptation of the lip), hence the common name. *Cypripedium* species are suitable for a shady rock garden, peat bed, or woodland garden.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in moist, fertile, leafy, humus-rich, neutral to acid soil, in a sheltered site, in light dappled or partial shade. *C. calceolus* prefers slightly alkaline soil; *C. reginae* prefers acid soil. Provide an annual winter mulch of leaf mould. See also p.46.



*Cypripedium acaule*



*Cypripedium calceolus*

• **PROPAGATION** Divide carefully in early or mid-spring, and replant immediately. Some of the soil from the root ball, which contains beneficial fungi, should be planted with each division.

• **PESTS AND DISEASES** Susceptible to grey mould (*Botrytis*) and slugs.

*C. acaule* ■ Terrestrial orchid with 2 elliptic leaves, 10-23cm (4-9in) long. Solitary, nodding, light greenish brown flowers, 5cm (2in) long, with pink lips, are borne on upright stems in summer. ½-23cm (9in). Canada, E. USA. \*\*\*

*C. calceolus* ■ (Lady's slipper orchid). Terrestrial orchid with 3-5 ovate to elliptic leaves, 5-20cm (2-8in) long. In summer, bears purple-brown flowers, 9cm (3½in) long, with twisted petals and large, deep yellow lips, singly or in



*Cypripedium macranthos*

pairs on upright stems. ½-40cm (16in). Europe, Asia, North America. \*\*\*

*C. macranthos* ■ Terrestrial orchid with 3 or 4 ovate to elliptic leaves, 8-15cm (3-6in) long. Usually solitary, violet to purple-red or greenish brown flowers, 8cm (3in) across, with arching and downward-pointing tepals, are produced on upright stems in summer. ½-45cm (18in), ½-30cm (12in). N. Mongolia, N. and W. China, Korea, Japan. \*\*\*

*C. reginae* ■ (Showy lady's slipper orchid). Terrestrial orchid with 3-7 ovate to lance-shaped leaves, 10-23cm (4-9in) long. White flowers, almost 10cm (4in) long, with rose-pink lips, are borne singly or in pairs on upright stems in summer. ½-75cm (30in), ½-30cm (12in). E. North America. \*\*\*



*Cypripedium reginae*

## CYRILLA

## CYRILLACEAE

Genus of one species of spreading, deciduous, semi-evergreen, or evergreen shrub or tree, found in moist woodland from S.E. USA to N. South America and Brazil. It is grown for its colourful autumn foliage, arranged alternately or occasionally in whorls, and for its long racemes of small, cup-shaped flowers, 5mm (¼in) long. *C. racemiflora* varies in hardiness according to its origin. In frost-prone climates, it is important to select stock from the northerly parts of the range to ensure that plants are hardy. Grow in a sheltered shrub border. In milder areas (particularly with hot summers), it grows vigorously and is evergreen.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained, acid soil in sun or partial shade, sheltered from cold, drying winds. Pruning group 9.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe in autumn. Root semi-ripe cuttings in winter. Insert root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

*C. racemiflora* ♀ (Leatherwood). Rounded shrub or, rarely, small tree with inversely lance-shaped to obovate, glossy, dark green leaves, to 10cm (4in) long, turning orange and red in autumn. From late summer to autumn, produces small, fragrant white flowers in slender, axillary racemes, to 15cm (6in) long. ± 1.2m (4ft). S.E. USA to Brazil (including West Indies). \*\*\* for plants from S.E. USA; \* for plants from Brazil.

## CYRTANTHUS

Fire lily

## AMARYLLIDACEAE

Genus of about 50 species of clump-forming, bulbous perennials from grassland to forest and cliffs in Africa. Most cultivated species are from South Africa. Usually deciduous, sometimes semi-evergreen, lance- to strap-shaped, mostly mid-green, basal leaves may be present or absent at flowering. Umbels of showy, tubular or tubular-bell-shaped to funnel-shaped flowers are produced on leafless stems mainly from spring to autumn. In frost-prone areas, grow in a cool or temperate greenhouse, or as a houseplant. Elsewhere, grow in a border or at the base of a warm, sunny wall.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, plant bulbs with the neck at soil level in loam-based potting compost (JI No.2), with added leaf mould and sharp sand, in bright filtered or full light with shade from hot sun. Water freely when in active growth, sparingly in winter; when dormant, keep deciduous species barely moist at not less than 5–10°C (41–50°F). In summer, apply a dilute, balanced liquid fertilizer every 2–3 weeks. Outdoors, plant at twice the bulb's depth in moderately fertile, humus-rich, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) when ripe. Remove offsets in spring.

- **PESTS AND DISEASES** Trouble free.



*Cyrtanthus brachyscyphus*

*C. brachyscyphus* ♂ syn. *C. parviflorus*. Deciduous perennial with semi-erect, lance-shaped, bright green leaves, 30cm (12in) long. From spring to summer, produces 6–12 narrowly tubular, slightly curved red flowers, 2.5–3cm (1–1¼in) long. ± 20–30cm (8–12in), ± 10cm (4in). S.E. South Africa. \*

*C. breviflorus*, syn. *Anoiganthus breviflorus*, *A. luteus*. Deciduous perennial with erect, lance-shaped leaves, 20cm (8in) long. Up to 20 bell-shaped yellow flowers, to 3cm (1¼in) long, are produced at any time of year. ± 20cm (8in), ± 10cm (4in). South Africa (widespread). \*\* (borderline)

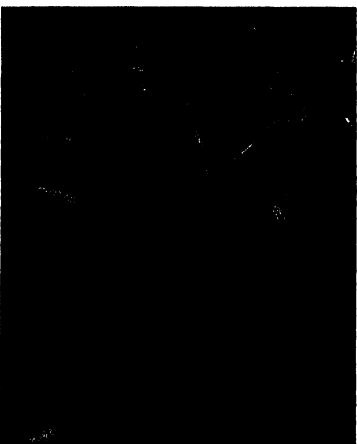
*C. elatus* ♂ syn. *C. purpureus*, *Vallota speciosa* (Scarborough lily). Deciduous perennial with erect, strap-shaped leaves, 20–45cm (8–18in) long. Produces up to 9 open funnel-shaped, bright scarlet flowers, 7–10cm (3–4in) long, in late summer. Easily grown on a window-sill. ± 30–60cm (12–24in), ± 10cm (4in). South Africa (Western Cape). \*

'Delicata' has soft salmon-pink flowers.

*C. falcatus*. Deciduous perennial with broadly strap-shaped, curved leaves, to 25cm (10in) long. Up to 10 pendent, funnel-shaped red flowers, 6cm (2½in) long, are produced in spring. ± 30cm (12in), ± 10cm (4in). South Africa. \*

*C. mackenii* var. *cooperi*. Deciduous perennial with semi-erect, linear leaves, to 30cm (12in) long. From spring to summer, bears 4–10 narrowly tubular, scented, yellow or cream flowers, 5cm (2in) long. ± 20–30cm (8–12in), ± 10cm (4in). South Africa (Eastern Cape). \*

*C. obliquus*. Deciduous perennial with strap-shaped, curved leaves, 20–60cm



*Cyrtanthus elatus*



*Cyrtanthus mackenii* var. *cooperi*

(8–24in) long. From winter to early summer, bears umbels of 6–12 funnel-shaped, bicoloured yellow and red, slightly green-tinged flowers, 7cm (3in) long. ± 30–60cm (12–24in), ± 8cm (3in). South Africa (S. KwaZulu/Natal, Eastern Cape). \*

*C. parviflorus* see *C. brachyscyphus*.

*C. purpureus* see *C. elatus*.

*C. sanguineus*. Deciduous perennial with semi-erect, strap-shaped leaves, to 40cm (16in) long. In summer, produces 1 or 2, rarely 3, open funnel-shaped, bright scarlet flowers, 8–10cm (3–4in) long. ± 30–50cm (12–20in), ± 10cm (4in). South Africa. \*

▷ *Cyrtochilum macranthum* see *Oncidium macranthum*

## CYRTOMIUM

syn. PHANEROPHLEBIA

## DRYOPTERIDACEAE

Genus of 12 species of evergreen or deciduous ferns from often moist, rocky areas or woodland in C. and E. Asia.

They have erect rhizomes and pinnate, leathery fronds with sickle-shaped, sharp-pointed pinnae. Sori, each with a peltate indusium, are scattered over the undersides of the pinnae. Most species have distinctive fronds, which provide strong contrast to more lacy ferns. Grow in a shady border or a rock garden. *C. falcatum* is also a handsome houseplant.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in partial to full shade. In frost-prone areas, plant *C. falcatum* in



*Cyrtomium falcatum*

the shelter of a rock and cover the crown with straw in winter. Under glass, grow in 1 part each loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould, in bright indirect light. In growth, water freely and apply a dilute liquid fertilizer every 2 weeks; water moderately in winter.

- **PROPAGATION** Sow spores at 16°C (61°F) in late summer. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*C. falcatum* ♂ syn. *Phanerophlebia falcata* (Japanese holly fern). Evergreen fern, often deciduous in harsh climates. Spreading, glossy, dark green fronds, 20–60cm (8–24in) long, have holly-like pinnae, 4–6cm (1½–2½in) long. ± 60cm (24in), ± 1.1m (3½ft). Japan. \*\*.

'Cristatum', syn. 'Mayi', has heavily crested frond tips and twisted pinnae tips; it is reluctant to spore. 'Mayi' see 'Cristatum'. 'Rochfordianum' has deeply cut pinnae margins.

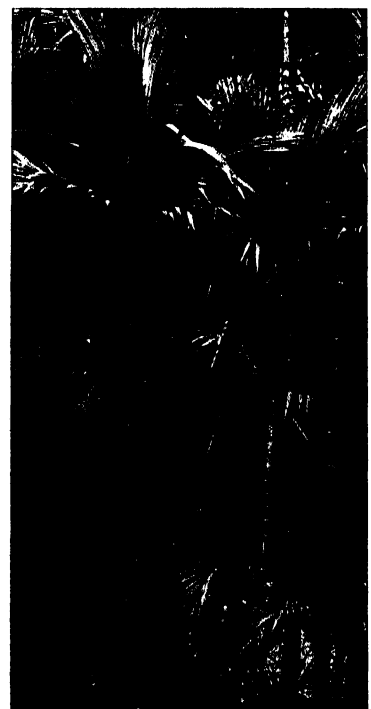
*C. fortunei*, syn. *Phanerophlebia fortunei*. Evergreen fern with erect, dull, pale green fronds, 30–60cm (12–24in) long, with broadly sickle-shaped pinnae, 2.5–5cm (1–2in) long. ± 60cm (24in), ± 40cm (16in). E. Asia. \*\*\*

*C. macrophyllum* (Large-leaved holly fern). Evergreen fern with spreading, broad fronds, 20–50cm (8–20in) long, with ovate to ovate-oblong pinnae, 10–20cm (4–8in) long. ± 45cm (18in), ± 60cm (24in). E. Asia. \*\*\*

## CYRTOSTACHYS

## AREACEAE/PALMAE

Genus of 8 or 9 species of single- or cluster-stemmed palms occurring in swampy ground and tropical forest from Malaysia, Indonesia (Sumatra), and Borneo to New Guinea and the Solomon Islands. Terminal clusters of ascending, pinnate leaves are borne above distinct crownshafts. Small, bowl-shaped, 3-petalled flowers are produced in panicles between the leaf clusters. In frost-prone climates, grow *C. lakka* as a



*Cyrtostachys lakka*



houseplant or in a warm greenhouse; in humid tropical areas, use as a specimen tree or in a courtyard garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered light, with moderate humidity. In growth, water freely, applying a balanced liquid fertilizer monthly; water moderately in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade.
- **PROPAGATION** Sow seed at 27°C (81°F) in spring. Remove and pot up suckers in spring.
- **PESTS AND DISEASES** Scale insects and red spider mites may be troublesome under glass.

*C. lakka* ■✱ (Lipstick palm, Sealing wax palm). Clump-forming, cluster-stemmed palm with erect, slender stems. Each stem is topped by a scarlet crown-shaft and a head of erect to ascending leaves, to 1.5m (5ft) long, with scarlet stalks and midribs, and many linear, mid-green leaflets, grey-tinted beneath. Panicles of bowl-shaped green flowers, 1cm (½in) long, are produced in summer. ‡ to 5m (15ft), ↔ to 3m (10ft). Malaysian Peninsula, Indonesia (Sumatra), Borneo. ☀ (min. 16°C/61°F)

## CYSTOPTERIS

Bladder fern

DRYOPTERIDACEAE/WOODSIACEAE

Genus of 10–20 species of deciduous, rhizomatous ferns found among calcareous rocks in temperate and sub-tropical areas. Very finely divided, lance-shaped or triangular fronds, usually pinnate or 2- to 4-pinnate to pinnatifid, arise from creeping or erect rhizomes; the sori are protected by bladder-shaped indusia, giving rise to the common name. Grow in a rock garden or shady fern border, or in an alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in partial shade. Shelter from cold, drying winds. Under glass, grow in 1 part each of loam, medium-grade bark, charcoal, and limestone chippings, 2 parts sharp sand, and 3 parts coarse leaf mould.
- **PROPAGATION** Sow spores at 16°C (61°F), or plant bulbils in late summer. Alternatively, divide rhizomes in spring. See also p.51.
- **PESTS AND DISEASES** Trouble free.



*Cystopteris fragilis*

*C. bulbifera*. Delicate, rosette-forming fern with erect rhizomes and tufts of erect, lance-shaped, 2-pinnate, pale green fronds, to 75cm (30in) long, with lance-shaped to linear-oblong segments. Bulbils develop beneath the often red-tinged midribs. Establishes quickly. ‡30cm (12in), ↔ 20cm (8in). North America. ✱✱✱

*C. dickieana* (Dickie's fern). Clump-forming fern with erect rhizomes and tufts of lance-shaped, 2- or 3-pinnate, grey-green fronds, 10–25cm (4–10in) or more long, with rounded lobes at the tips, and overlapping, ovate to oblong-lance-shaped segments. ‡15cm (6in), ↔ 20cm (8in). Europe. ✱✱✱

*C. fragilis* ■ (Brittle bladder fern). Clump-forming fern with erect rhizomes and tufts of lance-shaped, 2- or 3-pinnate, pale grey-green fronds, 15–45cm (6–18in) long, with oblong-lance-shaped segments, sharply pointed at the frond tips; frond segments do not overlap. ‡↔ 20cm (8in). Mainly N. temperate regions, Chile. ✱✱✱

▷ *Cytisophyllum sessilifolium* see *Cytisus sessilifolius*

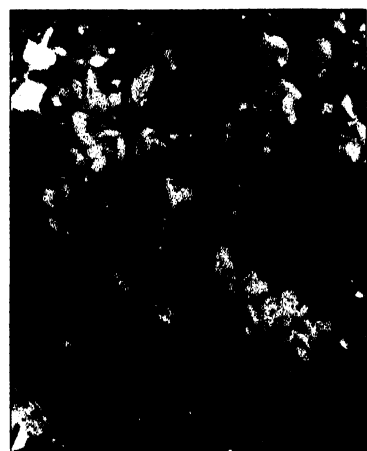
## CYTISUS syn. ARGYROCYTISUS

Broom

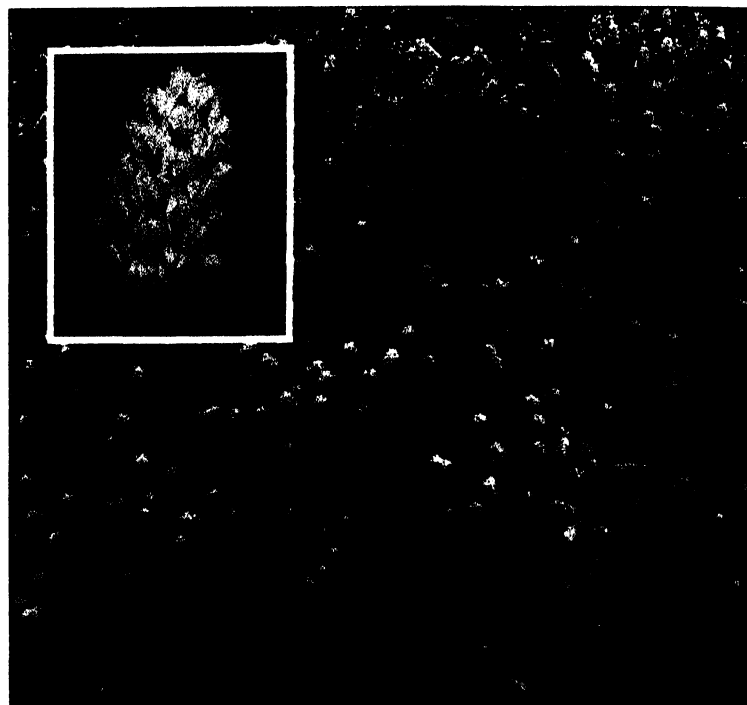
LEGUMINOSAE/PAPILIONACEAE

Genus of about 50 species, similar to *Genista*, of deciduous to evergreen shrubs, rarely small trees, from Europe, W. Asia, and N. Africa, found in well-drained soils, usually in open sites, from high mountains to scrub and heathland at lower altitudes. Brooms have alternate, usually 3-palmate, occasionally simple, mostly mid-green leaves, but are occasionally leafless when mature. They are cultivated for their abundant pea-like, sometimes very fragrant flowers, borne singly or in terminal or leafy, axillary racemes or clusters. Flowers are followed by linear or oblong, usually mid-green, often hairy or downy seed pods. The smaller species and cultivars are suitable for a rock garden or raised bed. Grow larger brooms in a shrub border; use prostrate variants as ground cover. In frost-prone regions, grow *C. x spachianus* as a houseplant, or in a conservatory or cool greenhouse. All parts, especially the seeds, may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2)



*Cytisus ardoinoi*



*Cytisus battandieri* (inset: flower detail)

in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Provide less hardy species with shelter from cold, drying winds. Brooms thrive in poor, acid soils. Most are also lime-tolerant, but often become chlorotic on shallow chalk soils. Plant directly from containers when small; they resent transplanting. Pruning group 1 or 3; do not cut into the old wood. Prune *C. nigricans* in early spring. Prostrate and decumbent species generally need minimal pruning.

- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root ripewood cuttings in midsummer, and semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Gall mites may be a problem.

*C. albus* of gardens see *C. multiflorus*.

*C. ardoinoi* ■♀ Semi-prostrate, hummock-forming, deciduous shrub with arching, ridged stems and 3-palmate leaves, 8mm (⅜in) long. Axillary clusters of 1–3 bright yellow flowers, 1cm (½in) long, are borne from late spring to summer. ‡↔ 20–60cm (8–24in). Maritime Alps. ✱✱✱

*C. battandieri* ■♀ syn. *Argyrocytisus battandieri* (Pineapple broom). Vigorous, upright, tree-like deciduous shrub, spreading with age, with 3-palmate, silvery grey leaves, to 10cm (4in) long. Dense, upright, terminal racemes, to 15cm (6in) long, of pineapple-scented yellow flowers, 1.5–2cm (½–¾in) long, are produced in mid- and late summer. Tolerates an open but not exposed position. Pruning group 1. ‡↔ 5m (15ft). Morocco. ✱✱

*C. x beanii* ■♀ (*C. ardoinoi* x *C. purgans*). Semi-procumbent, deciduous shrub with arching, cylindrical stems and simple, linear, hairy leaves, to 1cm (½in) long. In spring, rich yellow flowers, 0.8–1.5cm (⅜–½in) long, are produced in axillary clusters of 1–3.

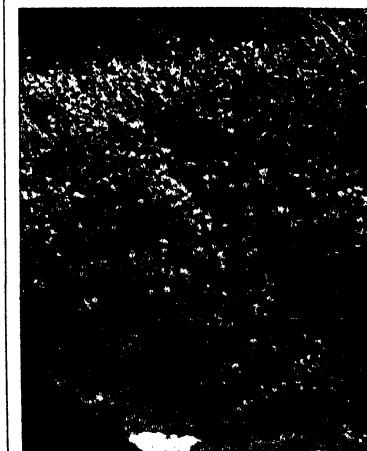
‡ to 60cm (24in), ↔ to 1m (3ft). Garden origin. ✱✱✱

*C. 'Burkwoodii'* ♀ Rounded, bushy, deciduous shrub with slender shoots and 3-palmate leaves, 1–2cm (½–¾in) long. Dark pink flowers, 2cm (½in) long, with yellow-margined crimson wings, are produced in axillary clusters in late spring and early summer. ‡↔ 1.5m (5ft). ✱✱✱

*C. canariensis* of gardens see *C. x spachianus*.

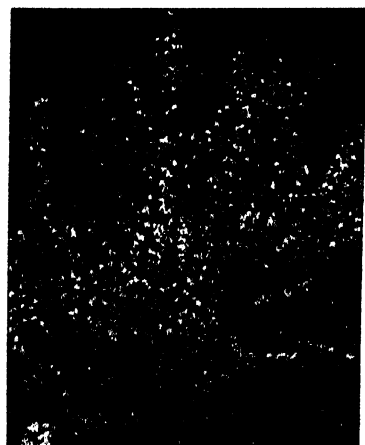
*C. 'Cornish Cream'*. Bushy, spreading, deciduous shrub with slender, arching shoots and 3-palmate leaves, 1–2cm (½–¾in) long. In late spring and early summer, abundant flowers, 2.5cm (1in) long, in a mixture of creamy yellow and white, are produced in axillary clusters. ‡↔ 1.5m (5ft). ✱✱✱

*C. decumbens*, syn. *Genista decumbens*. Ascending or prostrate, deciduous shrub with wiry, branching stems and simple, oblong, finely hairy, stalkless leaves, 0.6–2cm (¼–¾in) long. Produces axillary clusters of 1–3 brilliant yellow flowers, 0.9–1.5cm (⅜–½in) long, in late spring and early summer. ‡10–30cm (4–12in), ↔ to 1m (3ft). S. Alps, Italy (Apennines). ✱✱✱



*Cytisus x beanii*

C

*Cytisus* 'Hollandia'

**C. 'Dragonfly'**. Compact, deciduous shrub with slender, arching shoots and 3-palmate leaves, to 1cm (½in) long. Dark yellow flowers, 1.5cm (½in) long, with crimson wings, are produced in axillary clusters in late spring and early summer.  $\pm$  1.5m (5ft). \*\*\*

**C. 'Firefly'**. Rounded, bushy, deciduous shrub with slender, arching shoots and 3-palmate leaves, 1–2cm (½–¾in) long. In late spring and early summer, bears axillary racemes of abundant yellow flowers, 1.5cm (½in) long, with wings marked dark bronze-red.  $\pm$  1.5m (5ft). \*\*\*

**C. 'Golden Sunlight'**. Rounded, deciduous shrub producing slender, arching branches and 3-palmate leaves, 1–2cm (½–¾in) long. Abundant pale gold flowers, 1.5cm (½in) long, are borne in axillary racemes in late spring and early summer.  $\pm$  1.5m (5ft). \*\*\*

**C. 'Hollandia'**  $\square$   $\nabla$  Rounded, deciduous shrub with slender, arching branches and 3-palmate leaves, 1–2cm (½–¾in) long. Abundant cream and dark pink flowers, 1.5cm (½in) long, are borne in axillary clusters in late spring and early summer.  $\pm$  1.5m (5ft). \*\*\*

**C. 'Johnson's Crimson'**. Rounded, deciduous shrub with long, arching shoots and 3-palmate leaves, 1–2cm (½–¾in) long. In late spring and early summer, produces axillary clusters of abundant carmine-red flowers, to 2cm (¾in) long, with pink wings.  $\pm$  1.5m (5ft). \*\*\*

**C. x *hewensis***  $\nabla$  (*C. ardoinoi* x *C. multiflorus*). Prostrate, deciduous shrub with arching stems, clothed in 3-palmate, softly hairy leaves, to 2cm

*Cytisus nigricans*

(¾in) long. Axillary racemes of 1–3 cream flowers, 1.5cm (½in) long, are produced along the lengths of downy branches in late spring.  $\pm$  30cm (12in),  $\pm$  to 1.5m (5ft). Garden origin. \*\*\*

**C. 'Killiney Red'**. Compact, deciduous shrub with arching branches and 3-palmate leaves, 1–2cm (½–¾in) long. Abundant rich red flowers, 1.5cm (½in) long, with darker wings, are borne in axillary clusters in late spring and early summer.  $\pm$  1.2m (4ft),  $\pm$  1.5m (5ft). \*\*\*

**C. 'Lena'**  $\nabla$  Compact, spreading, deciduous shrub with 3-palmate leaves, 0.8–1.5cm (⅜–½in) long. In late spring and early summer, produces axillary clusters of dark yellow flowers, to 2cm (¾in) long, with the backs of the standards and wings bright red.  $\pm$  1.2m (4ft),  $\pm$  1.5m (5ft). \*\*\*

**C. *leucanthus*** see *C. multiflorus*.

**C. 'Maria Burkwood'**. Vigorous, spreading, deciduous shrub with slender, arching shoots and 3-palmate leaves, 1–2cm (½–¾in) long. Carmine-red flowers, 1.5cm (½in) long, with copper-bronze wings, are produced in axillary clusters in late spring and early summer.  $\pm$  1.5m (5ft). \*\*\*

**C. *multiflorus***  $\square$   $\nabla$  syn. *C. albus* of gardens, *C. leucanthus* (Portuguese broom, White Spanish broom). Upright then spreading, deciduous shrub with 3-palmate or simple, linear-oblong leaves, to 1cm (½in) long. Abundant white flowers, to 1.5cm (½in) long, are borne in axillary clusters in late spring and early summer.  $\pm$  3m (10ft),  $\pm$  2.5m (8ft). Portugal, Spain. \*\*\*

**C. *nigrescens*** see *C. nigricans*.

**C. *nigricans***  $\square$  syn. *C. nigrescens*, *Lembotropis nigricans*. Erect, deciduous shrub with upright shoots and 3-palmate leaves, to 2.5cm (1in) long. Yellow flowers, 1.5cm (½in) long, are produced in slender, terminal racemes in late summer.  $\pm$  1.5m (5ft),  $\pm$  1m (3ft). C. and S.E. Europe. \*\*\*

**C. 'Porlock'**  $\nabla$  Vigorous, arching, semi-evergreen shrub with upright shoots and 3-palmate leaves, 1–2cm (½–¾in) long. Terminal racemes of very fragrant, clear yellow flowers, 2cm (¾in) long, are produced in spring and, rarely, in mild weather in winter.  $\pm$  3m (10ft). \*\*\*

**C. x *praecox*** (*C. multiflorus* x *C. purgans*). Compact, deciduous shrub with arching shoots and simple leaves, to 2cm (¾in) long. Produces axillary clusters of abundant pale yellow flowers, 1–2cm (½–¾in) long, in mid- and late spring.  $\pm$  1.2m (4ft),  $\pm$  1.5m (5ft). Garden origin. \*\*\*

**'Allgold'**  $\square$   $\nabla$  produces dark yellow flowers.

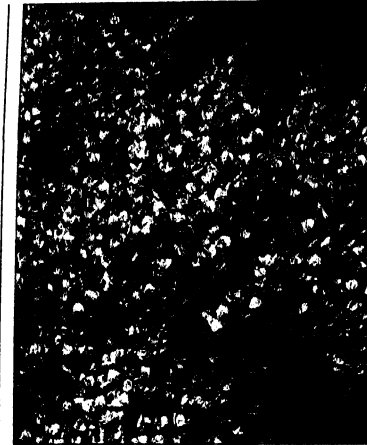
**'Warminster'**  $\square$   $\nabla$  (Warminster broom) has creamy yellow flowers.

**C. *purpureus*** see *Chamaecytisus purpureus*.

**C. *scoparius*** (Common broom).

Upright, deciduous shrub with slender, arching shoots and usually 3-palmate leaves, 1–2cm (½–¾in) long. Abundant bright yellow flowers, 1.5–2.5cm (½–1in) long, are produced in axillary clusters in late spring.  $\pm$  1.5m (5ft). W. Europe. \*\*\*

**f. *andreaeanus***  $\nabla$  has yellow flowers, splashed red on the backs of the wings. **subsp. *maritimus***, syn. var. *prostratus*, is low-growing,

*Cytisus* x *praecox* 'Allgold'

forming a dense mound, with grey-green leaves;  $\pm$  20cm (8in),  $\pm$  1.5m (5ft). **'Moonlight'** is compact, with large, pale sulphur-yellow flowers, 1.5cm (½in) long;  $\pm$  75cm (30in).

**var. *prostratus*** see subsp. *maritimus*.

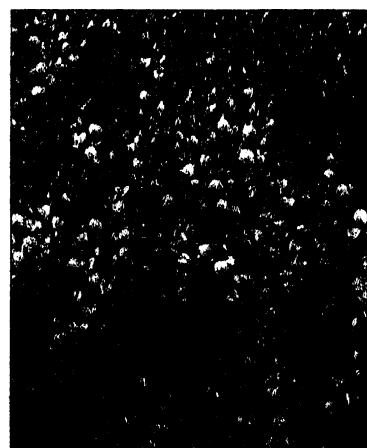
**C. *sessilifolius***, syn. *Cytisophyllum sessilifolium*. Bushy, deciduous shrub with angled shoots and more or less stalkless, 3-palmate leaves, 0.8–2cm (⅜–¾in) long. Yellow flowers, 1cm (½in) long, are produced in short, terminal racemes in early summer.  $\pm$  1.5m (5ft). S. France, E. Spain, Italy. \*\*\*

**C. x *spachianus***  $\nabla$  (*C. canariensis* x *C. stenopetalus*), syn. *C. canariensis* of gardens, *Genista fragrans* of gardens, *G. x spachiana*. Vigorous, evergreen shrub with upright, later arching branches and 3-palmate leaves, to 4cm (1½in) long. Bears slender, terminal racemes of very fragrant, golden yellow flowers, 1cm (½in) long, in late winter and early spring.  $\pm$  3m (10ft). Garden origin. \*

**C. *supinus*** see *Chamaecytisus supinus*.

**C. 'Windlesham Ruby'**. Rounded, bushy, deciduous shrub with slender, arching shoots and 3-palmate leaves, 1–2cm (½–¾in) long. Abundant rich red flowers, 1.5cm (½in) long, are borne in axillary racemes in late spring and early summer.  $\pm$  1.5m (5ft). \*\*\*

**C. 'Zeelandia'**  $\nabla$  Rounded, bushy, deciduous shrub with slender, arching shoots and 3-palmate leaves, 1–2cm (½–¾in) long. Abundant creamy white and lilac-pink flowers, to 2cm (¾in) long, are borne in axillary clusters in late spring and early summer.  $\pm$  1.5m (5ft). \*\*\*

*Cytisus multiflorus**Cytisus* x *praecox* 'Warminster'

## D

## DABOECIA

ERICACEAE

Genus of 2 species of evergreen shrubs from W. Ireland, W. France, N.W. Spain, N. Portugal, and the Azores; they occur from coastal cliffs to mountain heathland. Urn-shaped flowers are borne in racemes above alternate, lance-shaped to elliptic, usually dark green leaves. Use for ground cover in a heather garden or grow among other ericaceous shrubs. In frost-prone climates, grow half-hardy species in a cool greenhouse.

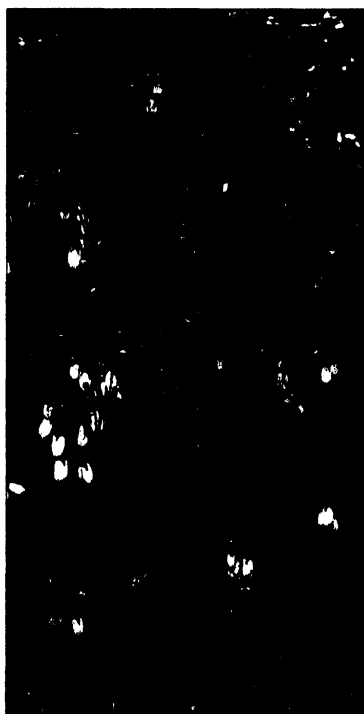
• **HARDINESS** Fully hardy to half hardy. *D. x scotica* is hardy to -10°C (14°F).

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light. In growth, water freely, applying a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in well-drained, acid soil in full sun; will tolerate neutral soil and partial shade. Pruning group 10, in early to mid-spring.

• **PROPAGATION** Root semi-ripe cuttings in midsummer.

• **PESTS AND DISEASES** Susceptible to *Phytophthora* root rot.

*D. azorica*, syn. *D. cantabrica* subsp. *azorica* (Azores heath). Compact shrub bearing narrowly elliptic leaves, 5–8mm (¼–⅓in) long, dark green above and silvery grey beneath, with recurved margins. Produces spherical-urn-shaped, ruby-crimson, sometimes paler flowers, 8mm (⅓in) long, in racemes 5cm (2in)



*Daboecia cantabrica* 'Bicolor'



*Daboecia cantabrica* 'Snowdrift'

long, in early summer. †20cm (8in), ↔40cm (16in). Azores. \* *f. albiflora* has white flowers.

*D. cantabrica*, syn. *D. polifolia* (Cantabrian heath, St. Dabeoc's heath). Prostrate to erect shrub bearing lance-shaped to oval leaves, 7–10mm (¼–½in) long, usually dark green and lustrous above and densely silver-hairy beneath. Produces ovoid-urn-shaped, pinkish purple flowers, 1cm (½in) long, in racemes 10cm (4in) long, from early summer to mid-autumn. †25–40cm (10–16in), ↔65cm (26in). W. Europe. \*\*\* *subsp. azorica* see *D. azorica*.

'Bicolor' □♀ has mid-green foliage and white, pink, and beetroot-red flowers, some striped, often on the same raceme. 'Pragerae' has mid-green leaves, which may be deciduous in hard winters, and glowing, deep cerise flowers; †40cm (16in), ↔70cm (28in); \* (borderline). 'Snowdrift' □ has white flowers and bright green leaves. 'Waley's Red' ♀ syn. 'Whalley', has glowing, deep magenta flowers; ↔50cm (20in).

*D. polifolia* see *D. cantabrica*.

*D. x scotica* (*D. azorica* x *D. cantabrica*). Compact shrub with elliptic to elliptic-ovate, dark green leaves, 6–9mm (¼–⅓in) long. Racemes, 10cm (4in) long, of ovoid-urn-shaped, crimson to lilac-pink or white flowers, 9mm (⅓in) long, are borne from late spring to mid-autumn. †25cm (10in), ↔40cm (16in). Garden origin. \*\* 'Silverwells' ♀ produces mid-green foliage and white flowers; †15cm (6in), ↔35cm (14in). 'William Buchanan' □♀ produces purple-crimson flowers; †35cm (14in), ↔55cm (22in).



*Daboecia x scotica* 'William Buchanan'

## DACRYDIUM

POIEXCARPACEAE

Genus of 25–30 species of dioecious, evergreen, coniferous trees and shrubs found in habitats ranging from swamps to dry, mountainous areas in subtropical S.E. Asia, W. Pacific islands, and New Zealand. They have linear juvenile leaves and spirally arranged, scale-like adult leaves, which lie flat along the shoots. The male cones are cylindrical and borne in short, axillary spikes; female cones are erect and terminal. In areas with humid summers and mild, damp winters, grow as specimen plants or in a shrub border; in frost-prone areas, grow in a cool greenhouse or conservatory.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full or bright filtered light, with high humidity. In summer, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, humus-rich soil in sun or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame, or root semi-ripe cuttings from mid- to late summer.

• **PESTS AND DISEASES** Trouble free.

*D. cupressinum* ♂ (Rimu). Conical, later rounded, coniferous tree with dark green foliage. Pointed, linear juvenile leaves, to 7mm (¼in) long, are arching or pendent; scale-like adult leaves are up to 3mm (⅓in) long. Female cones each contain a single, blue-black seed with a red or orange aril. †to 10m (30ft), ↔3–10m (10–30ft). New Zealand. \*\*\*

## DACTYLIS

GRAMINEAE/POACEAE

Genus of 2 species of evergreen, perennial grasses from open grassland in Europe, N. Africa, and Asia. They have linear leaves and one-sided panicles of compressed, pale green spikelets. *D. glomerata* 'Variegata' looks best at the front of a border or in a rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade.

• **PROPAGATION** Divide in early or mid-spring.

• **PESTS AND DISEASES** Trouble free.

*D. glomerata* 'Variegata'. Densely tufted, clump-forming, perennial grass with linear, white-variegated leaves, to 15cm (6in) long. Pale green spikelets in one-sided panicles, 5cm (2in) long, are borne on stems 25cm (10in) long, throughout summer. †to 45cm (18in) in flower, ↔25cm (10in). \*\*\*

## DACTYLORHIZA

Marsh orchid, Spotted orchid

ORCHIDACEAE

Genus of about 30 species of tuberous, deciduous, terrestrial orchids found in meadows, heathland, or marshy stream-sides in Europe, N. Africa, Asia, and North America. They have finger-like, flattened tubers and linear to lance-shaped, fleshy, usually mid-green, sometimes spotted leaves, 10–20cm (4–8in) long. Purple, lilac-purple, red, pink, or

white flowers, with green, sometimes purplish bracts, are borne in dense, upright, terminal racemes, mostly 5–15cm (2–6in) long. Grow in a rock or woodland garden, or in meadowland.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, humus-rich, leafy soil in partial shade. See also p.46.

• **PROPAGATION** Divide in early spring.

• **PESTS AND DISEASES** Trouble free.

*D. elata* ♀ syn. *Orchis elata* (Robust marsh orchid). Terrestrial orchid with 6–10 linear to ovate-lance-shaped, sometimes brown- or purple-spotted leaves. Deep purple flowers, with long, protruding bracts, are produced in racemes 10–25cm (4–10in) long, in late spring. †to 60cm (24in), ↔15cm (6in). S.W. Europe. \*\*\*

*D. foliosa* □♀ syn. *D. maderensis*, *Orchis maderensis*. Robust, terrestrial orchid with 4–6 lance-shaped leaves, sometimes brown- or purple-spotted. Pink to bright purple flowers, with bracts protruding or just hidden, are produced in racemes 5–13cm (2–5in) long, in late spring and early summer. †60cm (24in), ↔15cm (6in). Madeira. \*\*\*

*D. fuchsii*, syn. *D. maculata* subsp. *fuchsii*. Terrestrial orchid with 8–12 lance-shaped, purple-spotted leaves. Pale pink to white or mauve flowers, marked deep red or purple, are produced in late spring and early summer. †20–60cm (8–24in), ↔10cm (4in). Europe, W. Asia. \*\*\*

*D. maculata* (Heath spotted orchid). Terrestrial orchid with 5–12 lance-shaped, plain or brown- or purple-spotted leaves. Bears white, rose-pink, red, or mauve flowers from mid-spring to late summer. †15–60cm (6–24in), ↔15cm (6in). Europe, N. Africa. \*\*\* *subsp. fuchsii* see *D. fuchsii*.

*D. maderensis* see *D. foliosa*.

▷ **Daffodil** see *Narcissus*

**Autumn** see *Sternbergia*

**Hoop-petticoat** see *Narcissus bulbocodium*

**Peruvian** see *Hymenocallis narcissiflora*

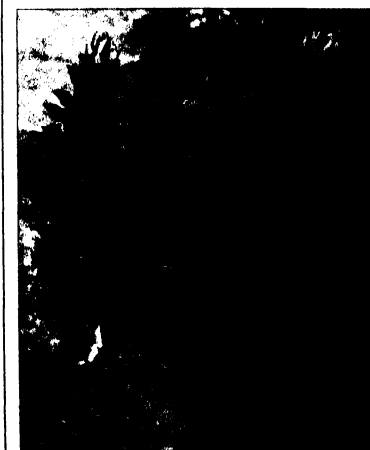
**Queen Anne's double** see *Narcissus 'Eystettensis'*

**Sea** see *Pancratium maritimum*

**Tenby** see *Narcissus obvallaris*

**White hoop-petticoat** see *Narcissus cantabricus*

**Wild** see *Narcissus pseudonarcissus*



*Dactylorhiza foliosa*

D

## DAHLIA

ASTERACEAE/COMPOSITAE

Genus of about 30 species – and some 20,000 cultivars, predominantly derived from *D. pinnata* and *D. coccinea* – of bushy, usually tuberous-rooted perennials from mountainous areas of Mexico and Central America. The mid- to dark green leaves, 20–50cm (8–20in) long, are usually pinnate, the toothed, oval leaflets having rounded tips, or are sometimes pinnatifid to pinnatisect. Dahlias are grown for their flowerheads, cultivated in a variety of forms (see panel below), and in colours from white to red, orange to yellow, and pink to dark purple. They flower from mid-summer to autumn (until the first frosts in cool-temperate regions), when many other plants are past their best. Although often informally divided into 2 types – tall-growing “border” dahlias and low-growing “bedding” dahlias – all are good for garden display and cutting. Many, especially the giant-flowered dahlias, are also suitable for exhibition. Bedding dahlias, which may be raised from seed and treated as annuals, flower from early or midsummer to autumn, particularly if dead-headed, and are suitable for massed plantings, for edging a border, or for growing in a container.

Those grown for exhibition or cutting look best in rows on their own, free from competition with other plants.

Most dahlias are classified according to the form of their flowerheads. In addition, the groups most commonly grown for exhibition are classified by the width of the flowerhead (see table below), although the precise dimensions may vary according to the specifications of the various national dahlia societies.

## EXHIBITION FLOWERHEAD SIZES

GIANT	over 25cm (10in)
LARGE	20–25cm (8–10in)
MEDIUM	15–20cm (6–8in)
SMALL	10–15cm (4–6in)
MINIATURE	less than 10cm (4in)

## Single-flowered dahlias

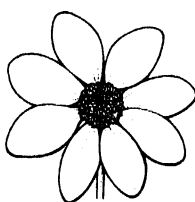
Flowerheads are open-centred, with 1 or 2 rows of ray-florets, which may overlap, surrounding a central cluster of tiny disc-florets. Flowerheads are usually less than 10cm (4in) across.

## Waterlily dahlias

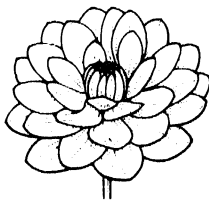
Flowerheads are double with relatively few, broad ray-florets, which are either flat, or slightly incurved or recurved along their margins, giving the blooms a flattened, shallow appearance. Blooms are classified by size, and range from miniature- to giant-flowered.

## DAHLIA GROUPS

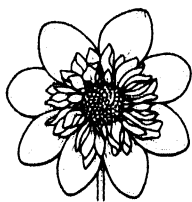
Most dahlias are divided into groups determined by the form of their flowerheads. Those groups commonly cultivated for exhibition purposes – waterlily, ball, semi-cactus, cactus, and decorative – are also classified by size (see table above).



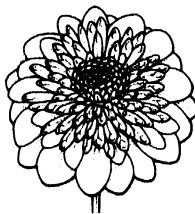
SINGLE



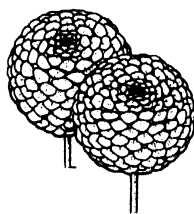
WATERLILY



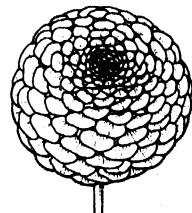
COLLERETTE



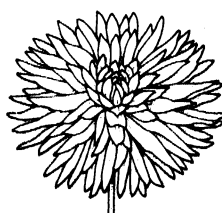
ANEMONE



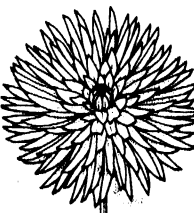
POMPON



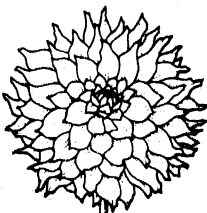
BALL



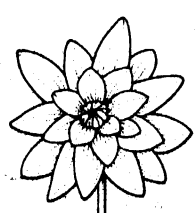
SEMI-CACTUS



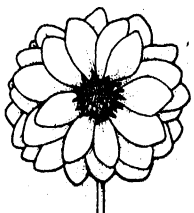
CACTUS



DECORATIVE



ORCHID



PEONY

MISCELLANEOUS

## Collerette dahlias

Flowerheads have an outer, single row of usually flat ray-florets, which may overlap, surrounding an inner ring of shorter florets (the collar) around a central disc. Flowerheads are usually 10–15cm (4–6in) across.

## Anemone-flowered dahlias

Flowerheads are double with one or more rings of usually flattened ray-florets surrounding a dense group of upward-pointing, tubular florets, which are longer than the disc-florets of single-flowered dahlias. Flowerheads are usually 10–15cm (4–6in) across.

## Pompon dahlias

Pompons are similar to ball dahlias but more spherical, with florets incurved for the whole of their length. Flowerheads are no more than 5cm (2in) across.

## Ball dahlias

Flowerheads are fully double, ball-shaped, or slightly flattened at the top. The ray-florets are spirally arranged, incurved for more than half of their length, and blunt or rounded at the tips. Blooms are classified by size, and range from miniature- to small-flowered.

## Semi-cactus dahlias

Blooms are fully double with slightly pointed ray-florets, broader at the base than those of cactus dahlias. They are recurved for up to half of their length towards the petal tips, and either straight or curling towards the centre. Blooms are classified by size, ranging from miniature- to giant-flowered.

## Cactus dahlias

Flowerheads are fully double with long, narrow, pointed ray-florets, strongly recurved for more than half of their length, and either straight or curling towards the centre of the bloom. Blooms are classified by size, and range from miniature- to giant-flowered.

## Decorative dahlias

Flowerheads are fully double, showing no central disc, with ray-florets that are broad, generally flat or slightly incurved at their margins, sometimes slightly twisted, and usually with blunt points. Blooms are classified by size, and range from miniature- to giant-flowered.

## Miscellaneous dahlias

Dahlias that do not fall into any of the above groups may be classified into informal groups, including orchid-, chrysanthemum-, and peony-flowered, and star and lilliput dahlias.

## • HARDINESS Frost hardy to frost tender.

• CULTIVATION Grow in fertile, humus-rich, well-drained soil in full sun. All dahlias benefit from a high-nitrogen liquid fertilizer every week in early summer, then a high-potash fertilizer every week from midsummer to early autumn. Bedding dahlias need no staking or disbudding: simply pinch out the growing point to encourage bushiness, and dead-head as the flowers fade. For taller dahlias, insert canes or stakes at planting time; when plants are about 40cm (16in) tall, pinch out the growing tips to encourage branching. For giant blooms, restrict plants to 3–5 flowering stems; for smaller blooms, allow 7–10 flowering stems. To produce high-quality blooms, remove the 2 pairs of buds developing in the leaf axils below the terminal bud; for giant blooms, remove 3 pairs. Dead-head as the flowers fade. In mid-autumn,

preferably when the foliage has been blackened by the first frosts, cut back stems to 15cm (6in), and lift the tubers. Gently brush off the soil, and place upside down in frost-free conditions to dry naturally. Dust with fungicide, then pack in boxes of peat or dry sand and store over winter in a well-ventilated, frost-free place. Check periodically for fungal infection, cut out any damaged tissue, and re-treat with fungicide, then return to store. In frost-free areas, dahlias may be left in the ground over winter, but where occasional frosts are expected, apply a deep, dry mulch.

• PROPAGATION Sow seed of bedding dahlias in trays at 16°C (61°F) in early spring; harden off and plant out when all danger of frost has passed. Take basal shoot cuttings from tubers started into growth in late winter or early spring under glass, and root in a propagating case. Alternatively, start tubers into growth in early spring and, when shoots are 2cm (¾in) long, divide tubers into 2 or 3 pieces, each with a shoot; plant these out, 12cm (5in) deep, after all danger of frost has passed.

• PESTS AND DISEASES Aphids, capsid bugs, red spider mites, caterpillars, earwigs, and slugs may be troublesome. Also prone to powdery mildew, mosaic virus, tomato spotted wilt virus, and rotting of tubers in store.

*D. 'Abingdon Ace'*. Small-flowered decorative dahlia with dark red blooms on strong stems. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

*D. 'Abridge Natalie'* ■ Small-flowered waterlily dahlia bearing blooms in blends of light and dark pink, with a touch of yellow at the base of each petal. † 1.1m (3½ft), ↔ 60cm (24in). \*

*D. 'Abridge Patricia'*. Small-flowered waterlily dahlia producing blooms in blends of lilac and white on strong, slender stems. † 1.2m (4ft), ↔ 60cm (24in). \*

*D. 'Alfred C'*. Giant-flowered semi-cactus dahlia with blooms in blends of orange and bronze. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

*D. 'Alloway Cottage'* ■ Medium-flowered decorative dahlia producing very full, formal blooms in soft yellow, with a touch of lavender-blue on the tip of each petal. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

*D. 'Altami Alpine'*. Medium-flowered decorative dahlia bearing white blooms, each with a touch of lavender-blue in the centre. Good for exhibition. † 1.5m (5ft), ↔ 75cm (30in). \*

*D. 'Altami Apollo'*. Short-growing, giant-flowered semi-cactus dahlia producing waxy white blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

*D. 'Altami Cherry'*. Small-flowered ball dahlia with vivid, cherry-red blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

*D. 'Altami Classic'*. Medium-flowered decorative dahlia bearing clear yellow blooms on strong, compact stems. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

*D. 'Altami Corsair'* ■ Very free-flowering, medium-flowered semi-cactus dahlia with blooms in very rich, unfading crimson. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Alltami Cosmic'** ■ Large-flowered decorative dahlia producing rich orange blooms, each with a pink tinge in the centre. Good for exhibition. †1.5m (5ft), ↔ 75cm (30in). \*

**D. 'Alva's Doris'** ■ Very free-flowering, small-flowered cactus dahlia bearing blood-red blooms on strong stems. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Alva's Supreme'** ■ Giant-flowered decorative dahlia with blooms in soft yellow. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Apricot Honeymoon Dress'** ■ Small-flowered decorative dahlia with apricot blooms. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Athalie'**. Small-flowered cactus dahlia bearing dark pink blooms with bronze blends. Good for exhibition. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Barberry Carousel'** ■ Small-flowered ball dahlia bearing blooms in blends of lilac and purple with a white base to each petal. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Bern'**. Dwarf bedding dahlia bearing double, bright red blooms, to 10cm (4in) across. †60cm (24in), ↔ 45cm (18in). \*

**D. 'Berwick Wood'**. Medium-flowered decorative dahlia bearing purple-pink blooms on strong stems. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Biddenham Strawberry'**. Small-flowered decorative dahlia. Blooms are bright red with a touch of carmine-red and a splash of creamy yellow at the base of each petal. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Biddenham Sunset'**. Strong-stemmed, medium-flowered semi-cactus dahlia with blooms in blends of deep orange-red, with a yellow base to each petal. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Bishop of Llandaff'** ■ Peony-flowered (miscellaneous group) dahlia with semi-double, bright red blooms, 5–6cm (2–2½in) across, bright yellow anthers, and black-red foliage. †1.1m (3½ft), ↔ 45cm (18in). \*

**D. 'B.J. Beauty'** ■ Very free-flowering, medium-flowered decorative dahlia bearing pure white blooms. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Black Monarch'**. Giant-flowered decorative dahlia with oxblood-red blooms, shading to crimson. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Bonaventure'**. Giant-flowered decorative dahlia with blooms in blends of bronze and yellow. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Border Princess'**. Strong-stemmed, very free-flowering, small-flowered cactus dahlia, often used for bedding, with golden bronze blooms. †1.2m (4ft), ↔ 45cm (18in). \*

**D. 'Boy Mick'**. Medium-flowered decorative dahlia bearing yellow blooms on strong stems. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Candy Cupid'**. Miniature-flowered ball dahlia producing lavender-pink blooms. Good for exhibition. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Charlie Kenwood'**. Miniature-flowered decorative dahlia bearing bright lavender-pink blooms with a white base to each petal. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Charlie Two'** ■ Medium-flowered decorative dahlia with yellow blooms. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Chimborazo'** ■ Very free-flowering collerette dahlia, each bloom with dark maroon outer petals surrounding a yellow collar and central disc. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Christopher Nickerson'**. Medium-flowered semi-cactus dahlia bearing gold-tipped, rich yellow blooms. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Christopher Taylor'** ■ Strong-stemmed, small-flowered waterlily dahlia producing red blooms with silver undersides. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Clair de Lune'** ■ Collerette dahlia, each bloom with an outer ring of clear to pale yellow petals, a cream inner ring and centre, and deep yellow anthers. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Coltness Gem'**. Bushy, dwarf bedding dahlia, grown as an annual, producing single, yellow-eyed flower-heads, 5–7cm (2–3in) across, in colours including white, yellow, apricot-yellow, scarlet-red, purple, and pink, many zoned with a second colour. †1.1m (3½ft), ↔ 45cm (18in). \*

**D. 'Comet'**. Anemone-flowered dahlia bearing dark velvet-red blooms. †1.1m (3½ft), ↔ 60cm (24in). \*

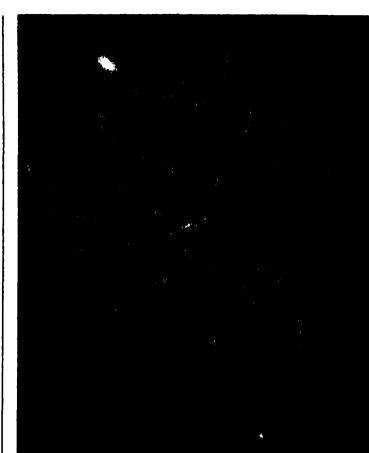
**D. 'Connie Bartlam'**. Medium-flowered decorative dahlia producing salmon-pink blooms with a gold tip to each petal. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Conway'** ■ Small-flowered semi-cactus dahlia bearing blooms in blends of dusky purple with a hint of buff. Begins flowering in early summer. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Corton Olympic'** ■ Giant-flowered decorative dahlia producing orange blooms on strong stems. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Cream Alva's'**. Giant-flowered decorative dahlia with cream blooms. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Cryfield Bryn'**. Very free-flowering, small-flowered semi-cactus dahlia



*Dahlia 'Conway'*

producing clear yellow blooms. †1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Cryfield Keene'**. Large-flowered semi-cactus dahlia with light pink blooms. Good for exhibition. †1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Daddy's Choice'** ■ Strong-growing, small-flowered semi-cactus dahlia bearing pale lemon-yellow blooms with a pale lilac tinge. †1.3m (4½ft), ↔ 60cm (24in). \*

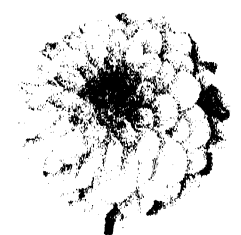
**D. 'Daleko Jupiter'**. Giant-flowered semi-cactus dahlia with blooms in blends of rose-red to pink-yellow, held well above the foliage. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Dana Iris'** ■ Outstanding, small-flowered cactus dahlia with red blooms. Good for exhibition. †1.3m (4½ft), ↔ 60cm (24in). \*

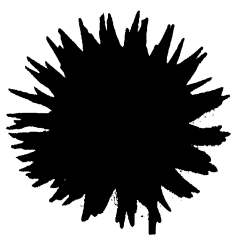
**D. 'Dandy'** ■ Bushy bedding dahlia grown as an annual. Flowerheads, to 7cm (3in) across, each with a collar-like ring of lighter, quilled petals around the central disc, are produced in many



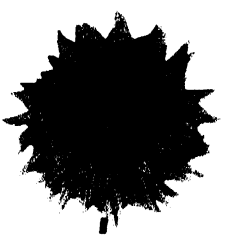
*Dahlia 'Abridge Natalie'*



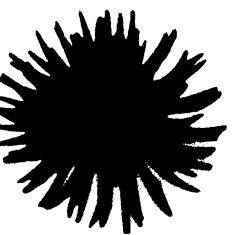
*Dahlia 'Alloway Cottage'*



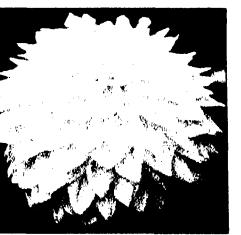
*Dahlia 'Alltami Corsair'*



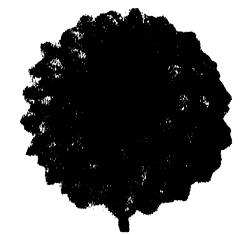
*Dahlia 'Alltami Cosmic'*



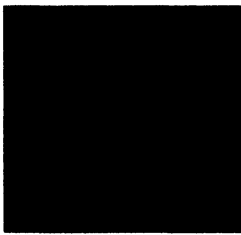
*Dahlia 'Alva's Doris'*



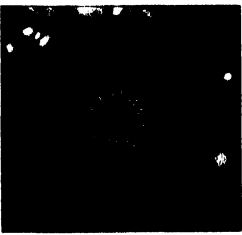
*Dahlia 'Alva's Supreme'*



*Dahlia 'Apricot Honeymoon Dress'*



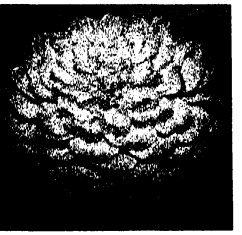
*Dahlia 'Barberry Carousel'*



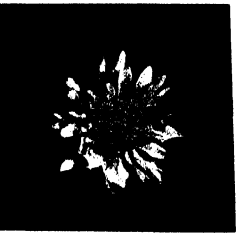
*Dahlia 'Bishop of Llandaff'*



*Dahlia 'B.J. Beauty'*



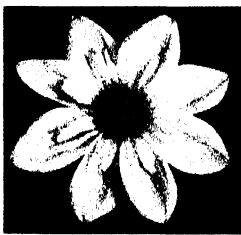
*Dahlia 'Charlie Two'*



*Dahlia 'Chimborazo'*



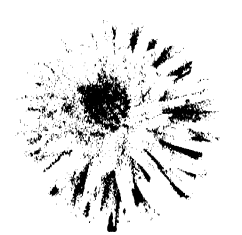
*Dahlia 'Christopher Taylor'*



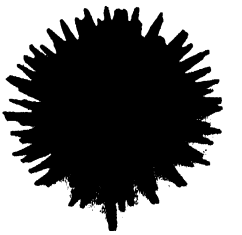
*Dahlia 'Clair de Lune'*



*Dahlia 'Corton Olympic'*



*Dahlia 'Daddy's Choice'*



*Dahlia 'Dana Iris'*



*Dahlia 'Dandy'*

D

colours, including white, yellow, pink, and red.  $\uparrow$  to 60cm (24in). \*

**D. 'Davenport Honey'**  $\square$  Miniature-flowered decorative dahlia with amber blooms. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Davenport Lesley'**. Miniature-flowered decorative dahlia with bright scarlet blooms. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Davenport Pride'**. Medium-flowered semi-cactus dahlia bearing apricot-orange blooms on strong stems.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Davenport Sunlight'**  $\square$  Medium-flowered semi-cactus dahlia with vivid yellow blooms held well above the foliage. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Debra Ann Craven'**. Giant-flowered semi-cactus dahlia bearing deep red blooms, with a velvet texture, held well above the foliage on strong stems. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Diablo'**  $\varnothing$  Bushy, fast-growing, free-flowering, dwarf bedding dahlia grown as an annual. Mainly double flowerheads, 5–7cm (2–3in) across, in colours ranging from white and yellow to pink, red, or orange, are borne above dark bronze leaves.  $\uparrow$  15–18cm (6–7in),  $\leftrightarrow$  30–35cm (12–14in). \*

**D. 'Doc van Horn'**. Large-flowered semi-cactus dahlia. Dark pink blooms have a gold sheen. Good for exhibition.  $\uparrow$  1m (3ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Dr. Caroline Rabbett'**. Small-flowered decorative dahlia bearing blooms in blends of yellow and orange on strong stems.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Easter Sunday'**  $\square$  Collerette dahlia producing creamy white blooms, each with a central yellow disc. Blooms are held well above the foliage.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Eastwood Moonlight'**. Medium-flowered semi-cactus dahlia with pale yellow blooms on strong stems. Good for exhibition.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Edna C.'** Medium-flowered decorative dahlia that produces clear yellow blooms with reflexed petals. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Emmerdale'**. Small-flowered cactus dahlia producing red-tipped yellow blooms.  $\uparrow$  1m (3ft),  $\leftrightarrow$  45cm (18in). \*

**D. 'Ernest Pitt'**. Small-flowered decorative dahlia producing salmon-pink blooms with a yellow base to each petal. Good for exhibition.  $\uparrow$  1m (3ft),  $\leftrightarrow$  45cm (18in). \*

**D. 'Evelyn Rumbold'**. Giant-flowered decorative dahlia producing purple blooms on very strong, long stems.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Fascination'**  $\square$   $\varnothing$  Peony-flowered (miscellaneous group) dwarf bedding dahlia with dark bronze foliage and light purplish pink flowerheads, to 10cm (4in) across.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). \*

**D. 'Figaro'**. Fast-growing, dwarf bedding dahlia, grown as an annual, producing double, sometimes semi-double flowerheads, 5–7cm (2–3in) across, in mixed colours, including white, yellow, red, and pink.  $\uparrow$  to 40cm (16in). \*

**D. 'Frank Hornsey'**  $\square$  Strong-stemmed, small-flowered decorative dahlia that produces blooms in blends of yellow-bronze and apricot. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Freestyle'**. Small-flowered cactus dahlia with vivid purple blooms held well above the foliage.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Garden Festival'**. Small-flowered waterlily dahlia bearing red blooms with

yellow tips and margins.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Gateshead Festival'**  $\square$  Small-flowered decorative dahlia bearing peach to orange blooms with lemon-yellow petal bases. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Gay Princess'**  $\square$  Small-flowered waterlily dahlia bearing shimmering, lilac-pink blooms on strong stems well above the foliage.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75cm (30in). \*

**D. 'Geerlings Indian Summer'**  $\varnothing$  syn. *D. 'Indian Summer'*. Very free-flowering, small-flowered cactus dahlia producing red blooms.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Gerrie Hoek'**. Very free-flowering, small-flowered waterlily dahlia with silvery pink blooms on strong stems.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Gilt Edge'**  $\square$  Very free-flowering, compact, medium-flowered decorative dahlia bearing dark pink blooms, with yellow-tipped ray-florets, on strong stems.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Glorie van Heemstede'**  $\square$   $\varnothing$  Very free-flowering, small-flowered waterlily dahlia bearing yellow blooms on strong stems.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Golden Impact'**. Medium-flowered semi-cactus dahlia with deep yellow blooms. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Grenidor Pastelle'**  $\square$  Medium-flowered semi-cactus dahlia bearing salmon-pink blooms with cream petal bases. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hallmark'**. Pompon dahlia bearing white flowerheads, with lilac petal margins, held well above the leaves.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hamari Accord'**  $\square$   $\varnothing$  Large-flowered semi-cactus dahlia producing pale, clear yellow blooms held well above the foliage on strong stems. Good

for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hamari Bride'**  $\square$   $\varnothing$  Medium-flowered semi-cactus dahlia with pure white blooms. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hamari Gold'**  $\square$   $\varnothing$  Giant-flowered decorative dahlia bearing deep gold-bronze blooms. Good for exhibition.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hamari Katrina'**  $\square$  Large-flowered semi-cactus dahlia with very pale lemon-yellow blooms. Good for exhibition.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hamilton Lillian'**  $\varnothing$  Small-flowered decorative dahlia bearing bronze blooms with light pink blends.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hans Ricken'**  $\square$  Small-flowered waterlily dahlia bearing bright yellow blooms on strong stems.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Hayley Jane'**  $\square$  Small-flowered semi-cactus dahlia producing white blooms heavily tipped with purplish pink.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

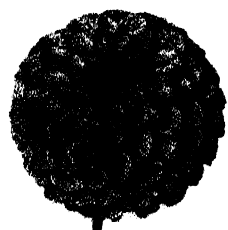
**D. 'Highgate Lustre'**  $\square$  Medium-flowered semi-cactus dahlia with bright orange blooms.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Highgate Torch'**  $\square$  Strong-growing, medium-flowered semi-cactus dahlia with blooms in an unusual shade of orange verging on flame-red, held well above the foliage.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). \*

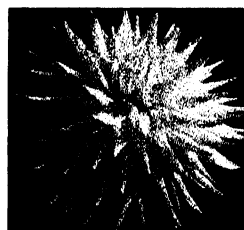
**D. 'Hillcrest Hillton'**. Large-flowered semi-cactus dahlia with weather-resistant, deep rich yellow blooms. Good for exhibition.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  75cm (30in). \*

**D. 'Hillcrest Royal'**  $\square$   $\varnothing$  Medium-flowered cactus dahlia with rich purple blooms, with incurving petals, on strong stems.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*

**D. 'Honeymoon Dress'**. Small-flowered decorative dahlia producing



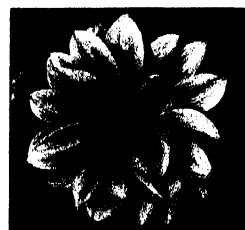
*Dahlia* 'Davenport Honey'



*Dahlia* 'Davenport Sunlight'



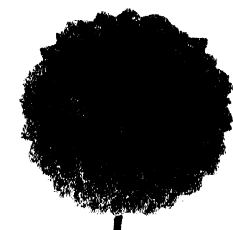
*Dahlia* 'Easter Sunday'



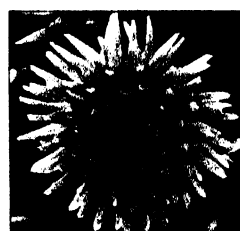
*Dahlia* 'Fascination'



*Dahlia* 'Frank Hornsey'



*Dahlia* 'Gateshead Festival'



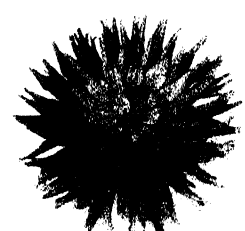
*Dahlia* 'Gay Princess'



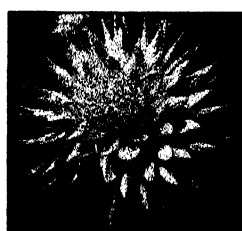
*Dahlia* 'Gilt Edge'



*Dahlia* 'Glorie van Heemstede'



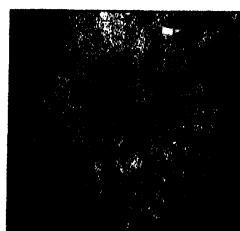
*Dahlia* 'Grenidor Pastelle'



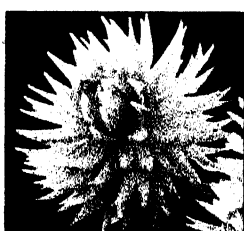
*Dahlia* 'Hamari Accord'



*Dahlia* 'Hamari Bride'



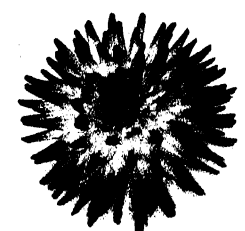
*Dahlia* 'Hamari Gold'



*Dahlia* 'Hamari Katrina'



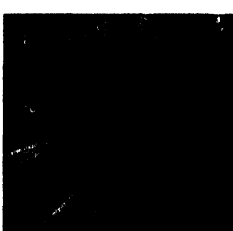
*Dahlia* 'Hans Ricken'



*Dahlia* 'Hayley Jane'



*Dahlia* 'Highgate Lustre'



*Dahlia* 'Highgate Torch'



pure salmon-pink blooms with a gold base to each petal. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Hugh Mather'** ■ Very free-flowering, miniature-flowered waterlily dahlia producing orange-amber blooms on strong, slender stems. Best not disbudded.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Inca Dambuster'**. Very strong-growing, giant-flowered semi-cactus dahlia with blooms in the palest yellow verging on white. Good for exhibition.  $\uparrow 1.3\text{m}$  (4½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Indian Summer'** see D. 'Geerlings Indian Summer'.

**D. 'Jeanette Carter'** ■ Miniature-flowered decorative dahlia with pale yellow blooms, sometimes flushed pink in the centres.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Jescot Julie'** ■ Orchid-flowered (miscellaneous group) dahlia producing burnt-orange blooms, 6–8cm (2½–3in) across, plum beneath.  $\uparrow 1\text{m}$  (3ft),  $\leftrightarrow 45\text{cm}$  (18in). \*

**D. 'Jill Doc'**. Medium-flowered decorative dahlia. The rich orange blooms are shaded with amber. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Jim Branigan'** ■ Large-flowered semi-cactus dahlia with bright red blooms held well above the foliage. Good for exhibition.  $\uparrow 1.3\text{m}$  (4½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Jocondo'**. Giant-flowered decorative dahlia bearing blooms in bright reddish purple on strong stems. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'John Prior'** ■ Small-flowered decorative dahlia with wine-red blooms on erect stems. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'John Street'** ■ Compact, small-flowered waterlily dahlia with bright

scarlet blooms held well above the foliage on strong, thin stems.  $\uparrow 1\text{m}$  (3ft),  $\leftrightarrow 45\text{cm}$  (18in). \*

**D. 'Karenglen'** ■ Miniature-flowered decorative dahlia bearing well-formed, vibrant orange-scarlet flowerheads. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Kathryn's Cupid'** ■ Miniature-flowered ball dahlia with peach blooms. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Kay Helen'** ■ Very free-flowering pompon dahlia with light pink blooms held well above the foliage. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Kenora Fireball'**. Miniature-flowered ball dahlia bearing cerise-red blooms, with a yellow base to each petal, on strong stems. Good for exhibition.  $\uparrow 1\text{m}$  (3ft),  $\leftrightarrow 45\text{cm}$  (18in). \*

**D. 'Kidd's Climax'**. Giant-flowered decorative dahlia with gold-suffused pink blooms. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Kiwi Gloria'** ■ Very free-flowering, small-flowered cactus dahlia with white blooms suffused lavender-pink.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Klankstad Kerkrade'**. Small-flowered cactus dahlia with pale lemon-yellow blooms. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Lady Kerkrade'** ■ Small-flowered cactus dahlia bearing purple-lilac blooms, with creamy white petal bases, on strong stems. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Lady Linda'**. Very vigorous, very free-flowering, small-flowered decorative dahlia bearing well-formed, primrose-yellow blooms, held well above the foliage. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Lady Sunshine'** ■ Compact, small-flowered cactus dahlia with very bright,

clear yellow blooms on strong stems.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'L'Ancrese'**. Miniature-flowered ball dahlia bearing neat white blooms with a hint of lavender-blue on each petal margin. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Lavender Athalie'** ■ Small-flowered cactus dahlia with lavender-pink blooms held well above the foliage. Good for exhibition.  $\uparrow 1.3\text{m}$  (4½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Liberator'**. Giant-flowered decorative dahlia with velvet-red blooms held well above the foliage on strong stems.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Lifesize'**. Large-flowered decorative dahlia with canary-yellow blooms. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Light Music'**. Large-flowered cactus dahlia that produces lilac blooms. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Lilian Ingham'**. Small-flowered cactus dahlia with rose-red blooms.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Linda's Chester'**. Small-flowered cactus dahlia with yellow blooms overlaid with bronze at the petal tips. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Love's Dream'**. Small-flowered waterlily dahlia with sparsely petalled, light raspberry-red blooms shading to salmon-pink, borne on long, strong stems.  $\uparrow 1.5\text{m}$  (5ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Majestic Kerkrade'** ■ Small-flowered cactus dahlia bearing soft salmon-pink blooms with a yellow base to each petal. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Mark Damp'**. Large-flowered semi-cactus dahlia with light orange blooms on strong stems well above the foliage. Flowers early. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Mark Hardwick'** ■ Compact, giant-flowered decorative dahlia producing bright deep yellow blooms on strong stems. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Match'**. Small-flowered semi-cactus dahlia producing purple-splashed white blooms well above the foliage on strong stems.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. merckii**. Tuberous-rooted perennial with many-branched stems and pinnate or 2-pinnate, mid-green leaves, to 40cm (16in) long. Saucer-shaped, single, purple to pink or white flowerheads, to 8cm (3in) across, with purple or yellow disc florets, and with often arching flower stalks, are produced from summer to autumn, either in cyme-like racemes or singly from the leaf axils.  $\uparrow$  to 2m (6ft),  $\leftrightarrow 1\text{m}$  (3ft). Mexico. \*\*\* (borderline)

**D. 'Mistill Beauty'**. Small-flowered cactus dahlia. Dark pink blooms, with a yellow base to each petal, are held well above the foliage. Good for exhibition.  $\uparrow 1.2\text{m}$  (4ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

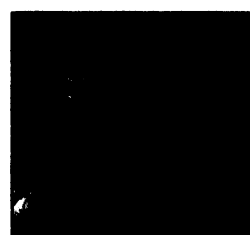
**D. 'Mi Wong'** ■ Pompon dahlia bearing white blooms suffused pink. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Moor Place'** ■ Outstanding pompon dahlia with wine-red blooms. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Neal Gillson'** ■ Medium-flowered decorative dahlia bearing rich corn-yellow blooms, suffused apricot, on strong stems. Good for exhibition.  $\uparrow 1.3\text{m}$  (4½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Nina Chester'** ■ Strong-stemmed, small-flowered decorative dahlia bearing white blooms with a hint of lilac at the tip of each petal. Good for exhibition.  $\uparrow 1.1\text{m}$  (3½ft),  $\leftrightarrow 60\text{cm}$  (24in). \*

**D. 'Noreen'** ■ Pompon dahlia with pure pink blooms. Good for exhibition.  $\uparrow 1\text{m}$  (3ft),  $\leftrightarrow 45\text{cm}$  (18in). \*



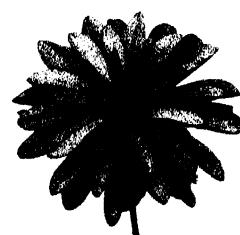
Dahlia 'Hillcrest Royal'



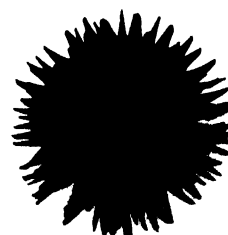
Dahlia 'Hugh Mather'



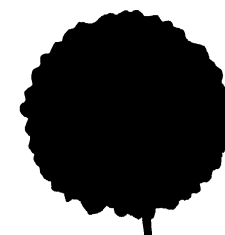
Dahlia 'Jeanette Carter'



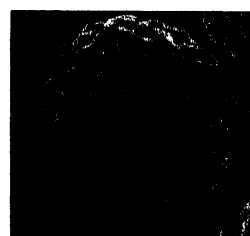
Dahlia 'Jescot Julie'



Dahlia 'Jim Branigan'



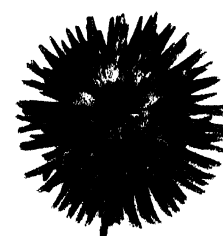
Dahlia 'John Prior'



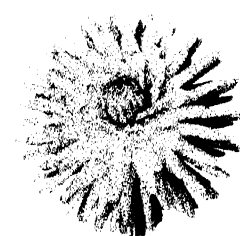
Dahlia 'Kathryn's Cupid'



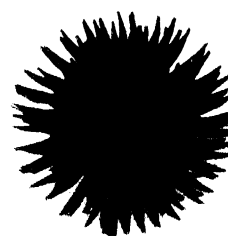
Dahlia 'Kiwi Gloria'



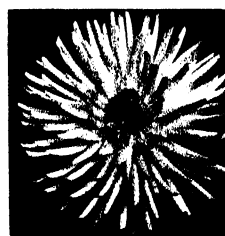
Dahlia 'Lady Kerkrade'



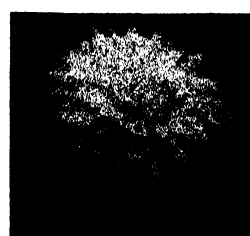
Dahlia 'Lady Sunshine'



Dahlia 'Lavender Athalie'



Dahlia 'Majestic Kerkrade'



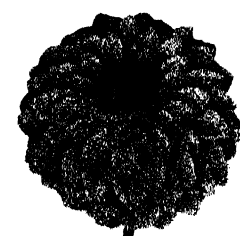
Dahlia 'Mark Hardwick'



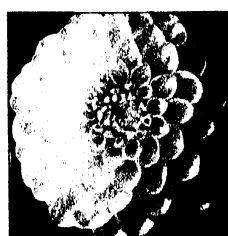
Dahlia 'Mi Wong'



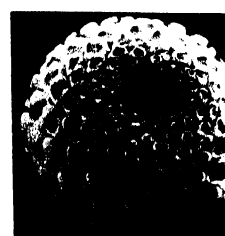
Dahlia 'Moor Place'



Dahlia 'Neal Gillson'



Dahlia 'Nina Chester'



Dahlia 'Noreen'

D

**D. 'Pamela'.** Small-flowered waterlily dahlia producing golden amber blooms with few petals. † 1m (3ft), ↔ 45cm (18in). \*

**D. 'Pearl of Heemstede'.** Low-growing, very free-flowering, small-flowered waterlily dahlia bearing pale silvery pink blooms on long, thin stems. † 1m (3ft), ↔ 45cm (18in). \*

**D. 'Periton'.** Miniature-flowered ball dahlia bearing dark red blooms. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Piccolo'.** Compact, fast-growing, single-flowered, dwarf bedding dahlia, grown as an annual. Flowerheads, 5–7 cm (2–3in) across, in a range of clear, bright, mixed colours, including shades of red, rose-pink, yellow, and white, are borne in summer and autumn. † ↔ 30cm (12in). \*

**D. 'Pink Cloud'.** Small-flowered semi-cactus dahlia producing blooms in blends of light and dark pink on long, strong stems. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Pink Frank Hornsey'.** Small-flowered decorative dahlia producing clear lilac-pink flowerheads with white blends. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Pink Jupiter'.** Giant-flowered semi-cactus dahlia producing deep pinkish mauve blooms. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Pink Kerkrade'.** Small-flowered cactus dahlia producing deep lilac-pink blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Pink Pastelle'.** Medium-flowered semi-cactus dahlia producing dark pink blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Pink Shirley Alliance'.** Small-flowered cactus dahlia producing soft lilac-pink blooms. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Pink Symbol'.** Medium-flowered semi-cactus dahlia bearing blooms in blends of lilac-pink, with a yellow base to each petal. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Polar Sight'.** Giant-flowered cactus dahlia with pure white blooms. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Pontiac'.** Very free-flowering, small-flowered cactus dahlia producing bright pink blooms overlaid with salmon-pink. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Porcelain'.** Small-flowered waterlily dahlia producing almost translucent, white blooms delicately shaded with violet-lilac. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Preston Park'.** Single-flowered, dwarf bedding dahlia producing nearly black foliage and bright scarlet flowerheads, each with a purple centre and prominent yellow anthers, on short stems. † ↔ 45cm (18in). \*

**D. 'Purple Joy'.** Medium-flowered decorative dahlia with deep purple blooms held well above the foliage. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Red Admiral'.** Miniature-flowered ball dahlia that produces mid-red blooms held well above the foliage. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Red Sensation'.** Medium-flowered decorative dahlia bearing bright orange-red blooms, with slightly reflexed petals. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Redskin'.** Dwarf bedding dahlia grown as an annual. Semi-double or double flowerheads, 5cm (2in) across, in a broad range of colours, including scarlet-red, lilac-pink, and orange, are held above bronze foliage. † ↔ 45–60cm (18–24in). \*

**D. 'Reginald Keene'.** Large-flowered semi-cactus dahlia producing orange flowerheads with flame-red blends. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Rhonda'.** Pompon dahlia producing white blooms with a touch of lilac on the margin of each petal. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Risca Miner'.** Small-flowered ball dahlia with deep purple blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Rokesley Mini'.** Very free-flowering, miniature-flowered cactus dahlia bearing pure white blooms. † 1m (3ft), ↔ 45cm (18in). \*

**D. 'Rose Jupiter'.** Giant-flowered semi-cactus dahlia with rose-pink blooms. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Rothsay Superb'.** Very free-flowering, miniature-flowered ball dahlia bearing bright scarlet blooms on strong stems. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Rotonde'.** Small-flowered cactus dahlia producing deep salmon-pink blooms with incurving petals, resembling incurved chrysanthemums. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Ruby Wedding'.** Miniature-flowered decorative dahlia producing ruby red blooms. † 1m (3ft), ↔ 60cm (24in). \*

**D. 'Ruskin Belle'.** Medium-flowered semi-cactus dahlia producing purplish pink blooms. Good for exhibition. † 1m (3ft), ↔ 45cm (18in). \*

**D. 'Ruskin Diane'.** Small-flowered decorative dahlia with well-formed, clear yellow blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Rustig'.** Medium-flowered decorative dahlia producing pale yellow blooms on strong stems well above the

foliage. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Salmon Athalie'.** Small-flowered cactus dahlia that produces blooms in pale salmon-pink with a touch of yellow at the base of each petal. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Salmon Keene'.** Large-flowered semi-cactus dahlia with deep, salmon-pink blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Sara G'.** Large-flowered semi-cactus dahlia producing light pink blooms, with yellow blends at the petal bases, on strong stems. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Scarlet Beauty'.** Small-flowered waterlily dahlia with scarlet blooms. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Scarlet Comet'.** Anemone-flowered dahlia bearing scarlet blooms with upright, tubular disc-florets. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Scottish Relation'.** Small-flowered semi-cactus dahlia producing vivid purple blooms with cream petal bases. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Senzoe Ursula'.** Small-flowered decorative dahlia that produces violet blooms with a white base to each petal. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

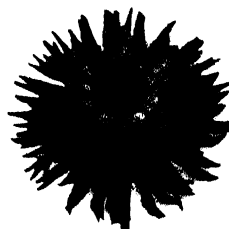
**D. 'Shirley Alliance'.** Small-flowered cactus dahlia bearing soft orange blooms with a gold base to each petal. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Silver City'.** Large-flowered decorative dahlia with waxy white blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

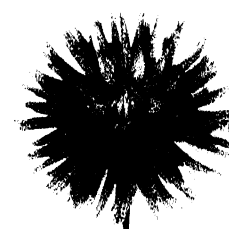
**D. 'Small World'.** Pompon dahlia with pure white blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*



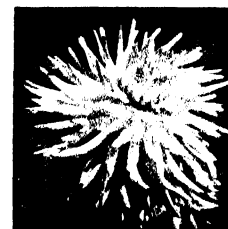
*Dahlia* 'Pearl of Heemstede'



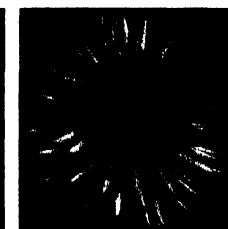
*Dahlia* 'Pink Jupiter'



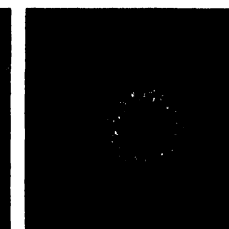
*Dahlia* 'Pink Shirley Alliance'



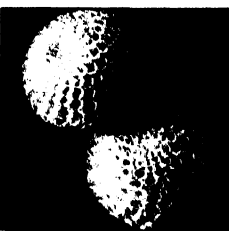
*Dahlia* 'Polar Sight'



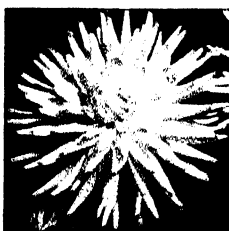
*Dahlia* 'Pontiac'



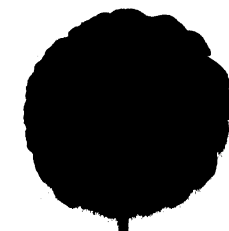
*Dahlia* 'Preston Park'



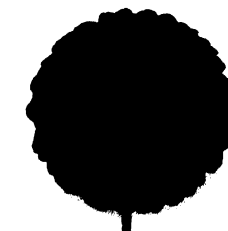
*Dahlia* 'Rhonda'



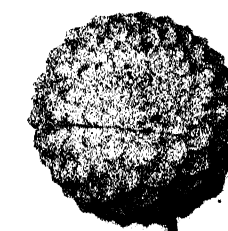
*Dahlia* 'Rokesley Mini'



*Dahlia* 'Rothsay Superb'



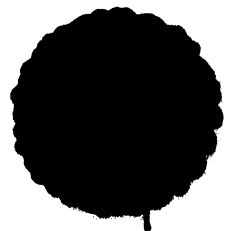
*Dahlia* 'Ruby Wedding'



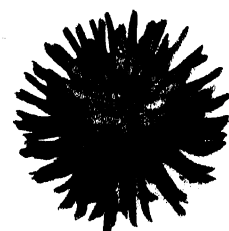
*Dahlia* 'Ruskin Diane'



*Dahlia* 'Scarlet Comet'



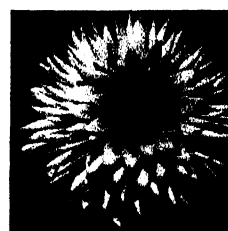
*Dahlia* 'Senzoe Ursula'



*Dahlia* 'Shirley Alliance'



*Dahlia* 'Small World'



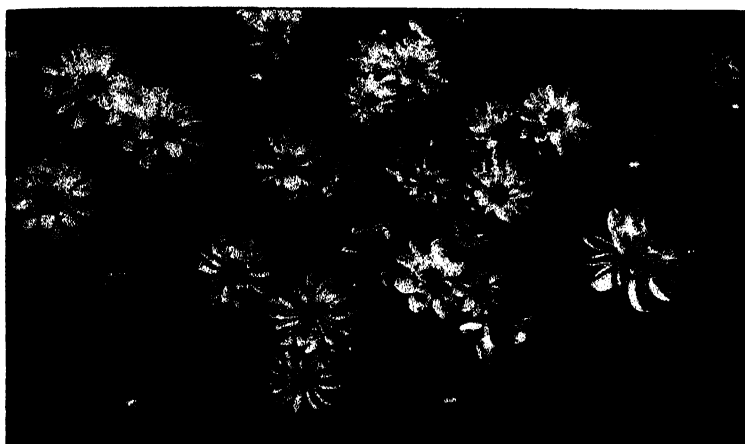
*Dahlia* 'So Dainty'



*Dahlia* 'Trengrave Tauranga'



*Dahlia* 'Vicky Crutchfield'

*Dahlia* 'Sunny Yellow'

**D. 'So Dainty'** [M] Miniature-flowered semi-cactus dahlia producing golden bronze blooms, with an apricot tinge, on strong stems. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Sunny Yellow'** [M] Bushy, fast-growing, dwarf bedding dahlia, grown as an annual, producing semi-double to double, bright yellow flowerheads, 5–7cm (2–3in) across. † 45–50cm (18–20in). \*

**D. 'Sunray Glint'**. Medium-flowered semi-cactus dahlia producing bright pink blooms with pale lemon-yellow at the base of each petal. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Susannah Yorke'**. Small-flowered waterlily dahlia producing soft rose-pink blooms with few petals. † 1.1m (3½ft), ↔ 45cm (18in). \*

**D. 'Swanvale'**. Small-flowered decorative dahlia producing clear yellow blooms on long, firm stems. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Temptress'**. Small-flowered cactus dahlia bearing light lavender-blue blooms with white petal bases. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Trelawny'**. Giant-flowered decorative dahlia producing large-petalled, bronze-red flowerheads and distinctive, leathery, very dark green leaves with well-spaced, prominent veins. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Trengrave Jill'**. Medium-flowered decorative dahlia with deep bronze blooms held well above the foliage on strong stems. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Trengrave Summer'**. Medium-flowered decorative dahlia with shining yellow blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Trengrave Tauranga'** [M] Medium-flowered decorative dahlia with blooms in shades of bronze. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. Unwins Dwarf Group** [M] Bushy, dwarf bedding dahlias, grown as

*Dahlia* Unwins Dwarf Group

annuals, producing semi-double to double flowerheads, to 10cm (4in) across, in a range of bright colours, including yellow, red, and white, some flushed with a second colour. † 60cm (24in). \*

**D. 'Vantage'**. Giant-flowered semi-cactus dahlia with large-petalled, deep yellow blooms borne well above the foliage on very strong stems. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Vicky Crutchfield'** [M] Small-flowered waterlily dahlia producing shell-pink flowerheads with slightly curled petals. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Vigor'**. Very free-flowering, small-flowered waterlily dahlia producing pale yellow blooms on strong stems. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Wanda's Capella'** [M] Giant-flowered decorative dahlia with bright yellow blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Wanda's Moonlight'**. Giant-flowered decorative dahlia with yellow blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Wendy's Place'**. Pompon dahlia with bright purple blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Whale's Rhonda'**. Pompon dahlia bearing bright purple blooms with light silver undersides. Good for exhibition. † 1m (3ft), ↔ 45cm (18in). \*

**D. 'White Alva's'** [M] Giant-flowered decorative dahlia with pure white blooms held well above the foliage on strong stems. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

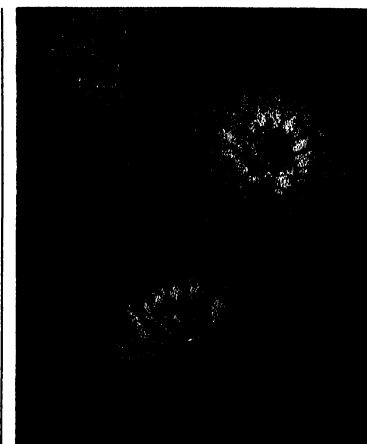
**D. 'White Klankstad'** [M] Small-flowered cactus dahlia that produces white blooms. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'White Linda'**. Small-flowered decorative dahlia bearing white blooms with a touch of light lavender-blue. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'White Moonlight'**. Medium-flowered semi-cactus dahlia with white blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'White Perfection'**. Very free-flowering, giant-flowered decorative dahlia producing pure white blooms with a neat petal formation. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'White Rustig'**. Medium-flowered decorative dahlia with white blooms.

*Dahlia* 'Wootton Impact'

Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'White Swallow'**. Small-flowered semi-cactus dahlia with white blooms borne on strong stems. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Willo's Surprise'**. Pompon dahlia with wine-red blooms. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Wootton Cupid'** [M] Miniature-flowered ball dahlia with sugar-pink blooms held well above the foliage on strong stems. Good for exhibition. † 1.1m (3½ft), ↔ 60cm (24in). \*

**D. 'Wootton Impact'** [M] Medium-flowered semi-cactus dahlia producing blooms in shades of bronze held well above the foliage on strong stems. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Yellow Frank Hornsey'**. Small-flowered decorative dahlia bearing bright yellow blooms with a touch of bronze on each petal. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Yellow Hammer'** [M] Single-flowered, dwarf bedding dahlia producing yellow flowerheads above bronze foliage. † 60cm (24in), ↔ 45cm (18in). \*

**D. 'Yellow Spiky'** [M] Medium-flowered semi-cactus dahlia bearing yellow blooms overlaid with bronze. Good for exhibition. † 1.3m (4½ft), ↔ 60cm (24in). \*

**D. 'Yelno Enchantment'** [M] Small-flowered waterlily dahlia producing blooms in shades of peach-pink with a touch of apricot. † 1.2m (4ft), ↔ 60cm (24in). \*

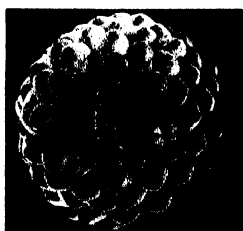
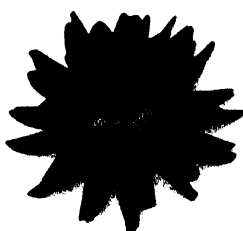
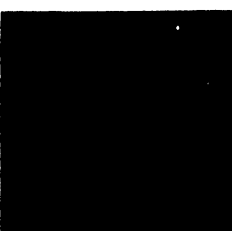
**D. 'Yelno Firelight'** [M] Small-flowered waterlily dahlia producing red and yellow blooms, with a neat petal formation, on strong stems. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Yelno Royal'**. Small-flowered waterlily dahlia producing red-purple blooms, with a neat petal formation, on strong stems. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Yelno Velvena'**. Small-flowered waterlily dahlia producing deep maroon blooms on strong stems. † 1.2m (4ft), ↔ 60cm (24in). \*

**D. 'Zorro'** [M] Giant-flowered decorative dahlia producing bright blood-red blooms. Good for exhibition. † 1.2m (4ft), ↔ 60cm (24in). \*

▷ *Daily dew* see *Drosera*

*Dahlia* 'Wanda's Capella'*Dahlia* 'White Alva's'*Dahlia* 'White Klankstad'*Dahlia* 'Wootton Cupid'*Dahlia* 'Yellow Hammer'*Dahlia* 'Yellow Spiky'*Dahlia* 'Yelno Enchantment'*Dahlia* 'Yelno Firelight'*Dahlia* 'Zorro'

## DAIS

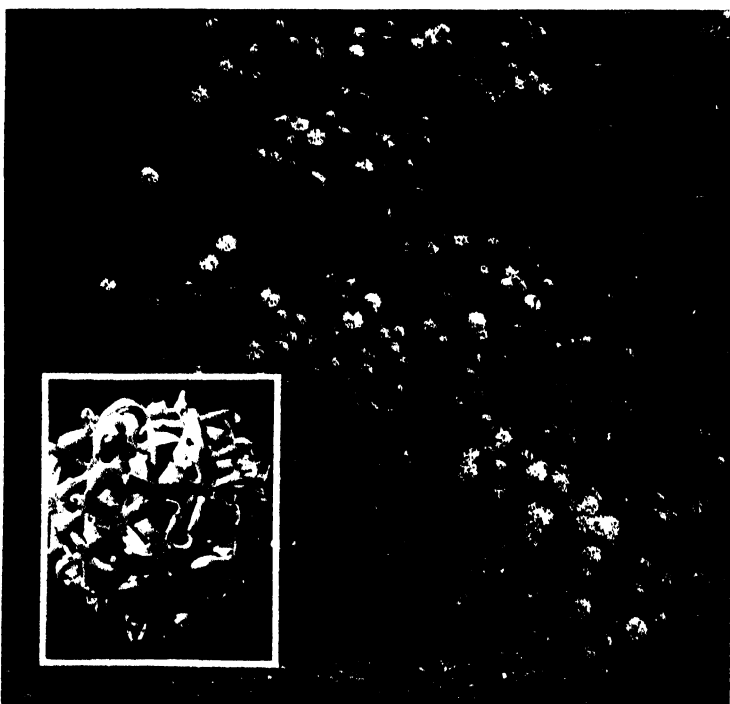
## THYMELAEACEAE

Genus of 2 species of deciduous or evergreen shrubs and trees from forest margins and damp, wooded slopes in Madagascar and South Africa. They have alternate or opposite, obovate to oblong-elliptic leaves, and are grown for their terminal umbels of tubular flowers, with 5 spreading lobes. Grow in a border or as specimen plants. In frost-prone areas, grow in a cool greenhouse.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light. In growth, water freely and apply balanced liquid fertilizer monthly; keep just moist in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Detach suckering shoots when dormant.
- **PESTS AND DISEASES** Red spider mites may infest greenhouse plants.

**D. cotinifolia** ☐ ◐ Bushy, rounded shrub or small tree, deciduous in cool climates but evergreen in warm areas, with obovate to ovate or oblong, glossy, bluish green leaves, 4–7cm (1½–3in) long. In summer, bears erect, rounded umbels, 3–5cm (1¼–2in) across, of up to 15 fragrant, lilac or lilac-pink flowers, 1.5cm (½in) long. † 1.5–3m (5–10ft), ↔ 2–4m (6–12ft). Madagascar, South Africa. \* (borderline)

- ▷ **Daiswa** see *Paris*
- D. polyphylla** see *P. polyphylla*
- ▷ **Daisy** see *Bellis*
- African** see *Arctotis*, *Dimorphotheca*
- Barborton** see *Gerbera jamesonii*
- Blue** see *Felicia*, *F. amelloides*
- Blue-eyed African** see *Arctotis venusta*
- Common** see *Bellis perennis*



*Dais cotinifolia* (inset: flower detail)

▷ **Daisy cont.**

- Dahlberg** see *Thymophylla tenuiloba*
- Globe** see *Globularia*
- Kingfisher** see *Felicia bergeriana*
- Livingstone** see *Dorotheanthus*, *D. bellidifloris*
- Marlborough rock** see *Pachystegia insignis*
- Michaelmas** see *Aster novi-belgii*
- New Zealand** see *Celmisia*
- Ox-eye** see *Leucanthemum vulgare*
- Painted** see *Chrysanthemum carinatum*, *Tanacetum coccineum*
- Palm Springs** see *Cladanthus*
- Rain** see *Dimorphotheca pluvialis*
- Rock** see *Brachyscome multifida*
- Shasta** see *Leucanthemum x superbum*
- Star** see *Lindheimera*, *L. texana*
- Swan river** see *Brachyscome*, *B. iberidifolia*
- Transvaal** see *Gerbera jamesonii*
- ▷ **Daisy bush** see *Olearia*
- ▷ **Damask rose** see *Rosa x damascena*

## DAMASONIUM

Starfruit

## ALISMATACEAE

Genus of 6 species of marginal aquatic, herbaceous perennials, closely related to water plantains (*Alisma*), found in the N. hemisphere and Australia. The long-stalked, linear-oblong, often floating leaves have prominent midribs. Whorls of shallowly cup-shaped, white or pink flowers are borne in umbels, racemes, or panicles. The clusters of ellipsoid fruits grow in radiating, star-like whorls, hence the common name. Grow in the shallow margins of a small pool.

- **HARDINESS** Frost hardy if rootstocks are submerged.
- **CULTIVATION** Grow in full sun, in water no deeper than 15cm (6in), or in wet mud at the side of still water.
- **PROPAGATION** Sow seed in seed trays or containers half-submerged in shallow trays of water, as soon as ripe or in the following spring if kept damp. Divide rhizomes when dormant.

• **PESTS AND DISEASES** Larvae of certain moths, particularly the brown china-mark moth, may feed on the leaves.

**D. alisma**. Variable, marginal aquatic perennial with oblong or ovate-oblong, floating leaves, 8cm (3in) long, which are produced from congested rhizomes. Numerous white flowers, 6–8mm (¼–⅜in) across, with a yellow spot at the base of each petal, are produced in whorled panicles, 3–7cm (1¼–3in) long, in late spring and early summer. The star-shaped fruit are 5–12mm (¼–½in) across. † 15–20cm (6–8in). W., S., and S.E. Europe. \*\*

**D. californicum**. Marginal aquatic, rhizomatous perennial with erect or floating, linear-oblong to ovate leaves, 10cm (4in) long. Numerous white or pink flowers, 4–6mm (⅛–¼in) across, are borne in whorled panicles, to 45cm (18in) long, in late spring and early summer. † 45cm (18in), ↔ 40cm (16in). S. USA. \*\*

▷ **Dammara** see *Agathis*

## DAMPIERA

## GOODENIACEAE

Genus of about 70 species of soft-stemmed herbaceous perennials or deciduous or evergreen subshrubs from heath to high mountains in Australia. The variable, alternate leaves are often densely woolly. Flowers are usually blue and have a split corolla tube, the 3 lower petals spreading, the upper 2 widely separated and erect; they are solitary or borne in cymes, panicles, or racemes. Suckering species are useful for ground cover. In frost-prone areas, grow tender species in a temperate greenhouse.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light with some midday shade. In growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, neutral to acid soil in sun or partial shade. *D. hederacea* and *D. diversifolia* grow well in partial shade.
- **PROPAGATION** Divide rootstocks and separate suckers of perennials in spring; root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**D. diversifolia** ☐ Densely branched, suckering, prostrate perennial. The lance-shaped to inversely lance-shaped, hairless, leathery leaves, to 3cm (1¼in) long, are entire or minutely toothed. Solitary, dark blue flowers, 1cm (½in) across, on short peduncles, are produced from the leaf axils in summer. † 1m (3ft), ↔ 2m (6ft). Australia (Western Australia). ☐ (min. 7°C/45°F)

**D. hederacea**. Procumbent perennial with ovate, often lobed, hairless leaves, to 4cm (1½in) long, broadly ovate to heart-shaped at the bases and densely woolly beneath. The upper leaves are smaller. Bears 3–7 pale to rich blue or white flowers, to 1cm (½in) long, softly hairy on the outside, in slender cymes, to 5cm (2in) long, from midwinter to midsummer. † 30cm (12in), ↔ 1m (3ft). Australia (Western Australia). \*

**D. linearis**. Erect or spreading, suckering perennial with blunt-tipped, obovate to elliptic, entire or toothed,



*Dampiera diversifolia*

stalkless, leathery leaves, 4cm (1½in) long. Produces 1–7 blue flowers, 1.5cm (½in) across, in cymes to 5cm (2in) long, in summer. † 30cm (12in), ↔ 1m (3ft). Australia (Western Australia). ☐ (min. 10°C/50°F)

**D. rosmarinifolia** (Wild rosemary). Erect or procumbent, suckering, evergreen subshrub with densely woolly stems and blunt-tipped, linear-oblong or oblong, entire, silver leaves, 2.5cm (1in) long. Bears solitary, deep blue, rarely pink flowers, 1.5cm (½in) across, in summer. † 50cm (20in), ↔ 1m (3ft). Australia (South Australia, Victoria). ☐ (min. 10°C/50°F)

**D. trigona**. Erect or spreading perennial or evergreen subshrub with narrowly elliptic to linear, entire to minutely toothed, hairless leaves, 5cm (2in) long. Usually solitary, blue, violet-blue, or white flowers, to 1.5cm (½in) across, are produced in summer. † 20–75cm (8–30in), ↔ 40–120cm (16–48in). Australia (Western Australia). ☐ (min. 10°C/50°F)

## DANAE

## LILIACEAE/RUSCACEAE

Genus of one species of clump-forming, shrub-like, evergreen, rhizomatous perennial found in woodland in Turkey and Iran. Upright then arching, branched shoots bear flattened, leaf-like stems. Small, greenish yellow flowers are followed by red berries. Valued for its attractive foliage, stems, and fruit.

*D. racemosa* is suitable for light woodland or a shrub border.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or shade, sheltered from strong winds. Cut old shoots back to ground level in spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide from autumn to early spring.
- **PESTS AND DISEASES** Trouble free.

**D. racemosa** ♀ (Alexandrian laurel). Shrub-like perennial with slender green shoots and alternate, lance-shaped to ovate-lance-shaped, tapering, glossy, leaf-like stems, to 10cm (4in) long. Terminal racemes, 5cm (2in) long, of 5–8 small, greenish yellow flowers are borne in early summer. Berries are orange-red or red, 6mm (¼in) across. † 1m (3ft). Turkey, Iran. \*\*

▷ **Dandelion, Pink** see *Crepis incana*

## DAPHNE

## THYMELAEACEAE

Genus of about 50 species of deciduous, semi-evergreen, or evergreen shrubs from Europe, N. Africa, and temperate and subtropical Asia, found in habitats ranging from lowland woodland to mountains. They are grown mainly for their 4-lobed, tubular, usually fragrant, terminal or axillary flowers, borne singly or in short racemes or clustered heads, and varying from red-purple to pink, white, yellow, lavender-pink, and lilac. Daphnes are also sometimes grown for their foliage, fruit, or upright, rounded, or prostrate habit. The simple, linear to ovate, entire leaves are alternate, rarely opposite, and hairless to softly hairy.

The spherical to ovoid fruits, 2–10mm ( $\frac{1}{16}$ – $\frac{1}{2}$ in) across, may be fleshy or dry, and white, pink, orange, red, or purple-black. Grow in a rock garden, a shrub border, or in woodland. All parts, including the seed, are highly toxic if ingested, and contact with the sap may irritate skin.

• **HARDINESS** Fully hardy to frost hardy.

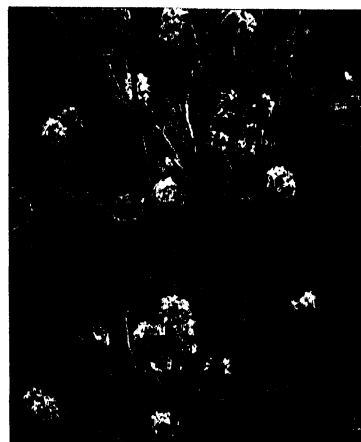
• **CULTIVATION** Grow in moderately fertile, humus-rich, well-drained but not dry soil. Mulch to keep roots cool. Most prefer slightly alkaline to slightly acid soil in sun or partial shade. *D. arbuscula* and *D. genkwa* need full sun, while *D. laureola* and *D. pontica* tolerate deep shade. All resent transplanting. Pruning group 1 or 8; keep to a minimum.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Insert softwood cuttings in early and mid-summer, and semi-ripe and evergreen cuttings in mid- or late summer. Graft in winter or layer in spring.

• **PESTS AND DISEASES** Aphids, leaf spot, grey mould (*Botrytis*), and viruses may be troublesome.

*D. acutiloba*. Erect, sometimes spreading, evergreen shrub with oblong-lance-shaped to inversely lance-shaped, leathery, glossy, bright green leaves, to 10cm (4in) long. Bears terminal clusters of 5–7 white, usually scented flowers, to 1.5cm ( $\frac{1}{2}$ in) across, in summer, followed by fleshy, spherical red fruit.  $\pm$  1.5m (5ft). W. and C. China. \*\*\*

*D. alpina*  $\square$  Upright, compact, deciduous shrub with downy shoots and obovate to inversely lance-shaped, hairy, grey-green leaves, 1–4cm ( $\frac{1}{2}$ – $\frac{1}{2}$ in) long. Bears terminal clusters of 4–10



*Daphne bholua* 'Gurkha'

fragrant white flowers, to 1cm ( $\frac{1}{2}$ in) across, in late spring and early summer, followed by fleshy, spherical, orange-red fruit.  $\pm$  60cm (24in). C. and S. Europe. \*\*\*

*D. arbuscula*  $\varnothing$  Dwarf, semi-prostrate, evergreen shrub with linear to linear-oblong, leathery, glossy, dark green leaves, to 2cm ( $\frac{3}{4}$ in) long. In late spring and early summer, produces dense terminal clusters of 3–30 very fragrant, deep pink flowers, to 1.5cm ( $\frac{1}{2}$ in) across, followed by dry, ovoid, greyish white fruit.  $\pm$  to 15cm (6in),  $\leftrightarrow$  to 45cm (18in). Czech Republic and Slovakia (Carpathians). \*\*\*

*D. bholua*  $\square$  Upright, rarely spreading, deciduous or evergreen shrub with narrowly elliptic to inversely lance-shaped, leathery, dark green leaves, to 10cm (4in) long. Terminal clusters of 7–15 richly fragrant white flowers, to 1.5cm ( $\frac{1}{2}$ in) across, flushed purple-pink, are produced in late winter, followed by fleshy, spherical, blackish purple fruit.  $\pm$  2–4m (6–12ft),  $\leftrightarrow$  1.5m (5ft). E. Himalayas. \*\*

'Gurkha'  $\square$  is deciduous; \*\*\*. 'Jacqueline Postill'  $\square$   $\varnothing$  is evergreen, with intensely fragrant flowers, to 2cm ( $\frac{1}{2}$ in) across, deep purple-pink outside and white within; \*\*\* (borderline)

*D. blagayana*  $\square$  Prostrate, trailing, evergreen or semi-evergreen shrub with broadly ovate to obovate, leathery, dark green leaves, 3–5cm (1 $\frac{1}{4}$ –2in) long. In spring, bears terminal clusters of 20–30 fragrant, creamy white flowers, to 1cm ( $\frac{1}{2}$ in) across, followed by fleshy, spherical, white or pink fruit.  $\pm$  to 40cm (16in),  $\leftrightarrow$  1m (3ft). Balkans. \*\*\*



*Daphne blagayana*

*D. x burkwoodii* cultivars. Upright, densely branched, semi-evergreen shrubs with linear to inversely lance-shaped, mid-green leaves, to 4cm (1 $\frac{1}{2}$ in) long. Bears terminal clusters of up to 16 fragrant white flowers, 8mm ( $\frac{3}{8}$ in) across, flushed pink to pale purplish pink, in late spring, and sometimes again in autumn.  $\pm$  1–1.5m (3–5ft).

\*\*\*. 'Albert Burkwood' is rounded, usually broader than tall, and has pink-flushed white flowers;  $\pm$  75cm (30in),  $\leftrightarrow$  1m (3ft). 'Astrid'  $\square$  has narrow, creamy white leaf margins. 'Carol Mackie' has leaves margined golden yellow, later creamy white. 'G.K.

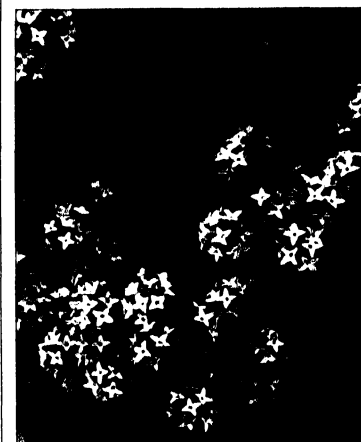
Argles' has leaves with golden yellow margins. 'Lavenirii' is spreading, and has deep purple-pink flowers with light pink lobes and deep pink throats;  $\pm$  1m (3ft),  $\leftrightarrow$  1.3m (4 $\frac{1}{2}$ ft). 'Somerset'  $\square$  is vase-shaped and has purple-pink flowers with light pink lobes;  $\pm$  1.5m (5ft),  $\leftrightarrow$  1m (3ft). 'Somerset Variegated' has broad cream leaf margins.

*D. caucasica*. Upright, deciduous shrub with inversely lance-shaped to linear-lance-shaped, hairless, pale green leaves, to 7cm (3in) long. Produces terminal and axillary clusters of up to 20 fragrant white flowers, to 1.5cm ( $\frac{1}{2}$ in) across, in late spring and early summer, followed by fleshy, spherical black fruit (red in one variant).  $\pm$  1.5m (5ft). Caucasus, Georgia, Armenia, Azerbaijan. \*\*\*

*D. cneorum*  $\square$  (Garland flower). Low-growing, evergreen shrub with trailing, branching stems and smooth, inversely lance-shaped leaves, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, dark green above and grey-green beneath. Bears abundant dense, terminal



*Daphne x burkwoodii* 'Astrid'



*Daphne x burkwoodii* 'Somerset'

clusters of 6–20 strongly scented, pale to deep rose-pink, occasionally white flowers, to 1cm ( $\frac{1}{2}$ in) long, in late spring.  $\pm$  15cm (6in) or more,  $\leftrightarrow$  to 2m (6ft). Mountains of C. and S. Europe. \*\*\*. 'Eximia'  $\varnothing$  is vigorous, with crimson buds and deep rose-pink flowers, to 1cm ( $\frac{1}{2}$ in) long;  $\pm$  to 20cm (8in). var. *pygmaea* is very compact, with leaves 6–8mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) long;  $\pm$  to 10cm (4in),  $\leftrightarrow$  to 30cm (12in); Alps (S.E. France, N. Italy).

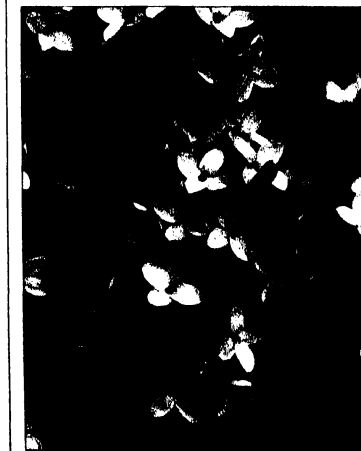
*D. collina*, syn. *D. sericea* Collina Group. Domed, many-branched, dense, evergreen shrub with obovate, glossy, mid-green leaves, 2–4cm ( $\frac{3}{4}$ –1 $\frac{1}{2}$ in) long, hairy beneath. In late spring and early summer, bears terminal clusters of up to 15 strongly fragrant, deep purplish pink flowers, to 8mm ( $\frac{3}{8}$ in)



*Daphne alpina*



*Daphne bholua* 'Jacqueline Postill'



*Daphne cneorum*



*Daphne genkwa*

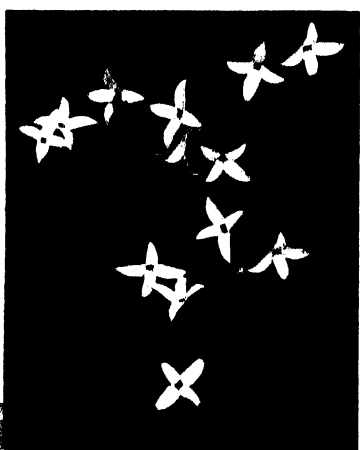
across, with silky-haired tubes, and becoming paler with age. The fleshy, spherical fruit are orange-red.  $\pm$  to 50cm (20in). S. Italy. \*\*\*

***D. genkwa***  $\square$  Upright, open, deciduous shrub with opposite, occasionally alternate, lance-shaped to ovate, mid-green, initially silky leaves, to 7cm (3in) long. Axillary clusters of 2–7 fragrant lilac flowers, 0.6–2cm ( $\frac{1}{4}$ – $\frac{3}{4}$ in) across, are borne before the leaves, in mid- and late spring. The dry, ovoid fruit are greyish white.  $\pm$  to 1.5m (5ft). China (W. Hubei). \*\*\*

***D. giraldii*** Upright, bushy, deciduous shrub bearing inversely lance-shaped, slightly glaucous, pale green leaves, to 6cm (2 $\frac{1}{2}$ in) long. Produces terminal clusters of 4–8 fragrant, golden yellow flowers, 8mm ( $\frac{3}{8}$ in) across, in early



*Daphne x houtteana*



*Daphne jasmineea*

summer; flowers are followed by fleshy, spherical red fruit.  $\pm$  to 60cm (24in). China. \*\*\*

***D. glandulosa*** see *D. oleoides*.

***D. gnidium*** Upright, evergreen shrub with linear to obovate-oblong, pointed, leathery, grey-green leaves, to 5cm (2in) long. Bears terminal and axillary panicles of 10 or more fragrant, creamy white flowers, to 6mm ( $\frac{1}{4}$ in) across, from late spring to autumn, followed by fleshy, spherical red fruit.  $\pm$  1.5m (5ft),  $\leftrightarrow$  1.2m (4ft). Coastal areas of Spain to Greece, N. Africa, Canary Islands. \*\*

***D. x houtteana***  $\square$  (*D. laureola* x *D. mezereum*). Erect, semi-evergreen shrub with inversely lance-shaped, glossy, dark green leaves, suffused purple, to 9cm (3 $\frac{1}{2}$ in) long. Bears axillary clusters of 2–5 purple-pink flowers, 6mm ( $\frac{1}{4}$ in) across, in early spring.  $\pm$  1.2m (4ft),  $\leftrightarrow$  1.5m (5ft). Garden origin. \*\*\*

***D. jasminea***  $\square$  Semi-prostrate, occasionally upright, many-branched, evergreen shrub with scattered, oblong-obovate, hairless, grey-green or blue-green leaves, to 1cm ( $\frac{1}{2}$ in) long.

Terminal pink buds, in pairs (rarely in groups of 3), open to fragrant, sometimes pink-flushed, white or cream flowers, to 8mm ( $\frac{3}{8}$ in) across, from late spring to summer.  $\pm$  10–30cm (4–12in),  $\leftrightarrow$  to 30cm (12in). S.E. Greece (including Crete), Libya. \*\*\*

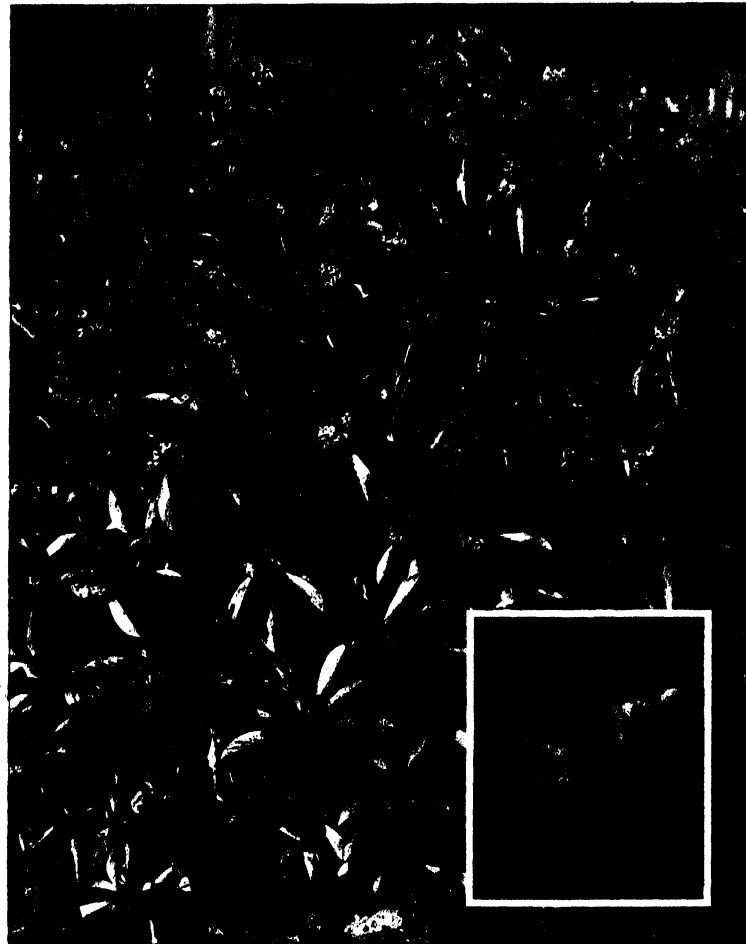
***D. jezoensis***  $\square$  Slow-growing, rounded, upright, summer-deciduous shrub with inversely lance-shaped leaves, to 9cm (3 $\frac{1}{2}$ in) long, slightly shiny above, pale green at first, later mid-green. Bears up to 10 fragrant, golden yellow flowers, to 1.5cm ( $\frac{1}{2}$ in) across, in terminal clusters, from winter to early spring, followed by fleshy, spherical red fruit.  $\pm$  45cm (18in),  $\leftrightarrow$  60cm (24in). N. Japan. \*\*\*

***D. 'Kilmeston'*** Semi-prostrate, evergreen shrub with narrowly ovate, leathery, dark green leaves, 1.5cm ( $\frac{1}{2}$ in) long. Terminal clusters of 6–12 fragrant, mid-pink flowers, 8–12mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) across, are produced in early and mid-spring and sporadically in early and midsummer.  $\pm$  30cm (12in),  $\leftrightarrow$  40cm (16in). \*\*\*

***D. laureola*** (Spurge laurel). Bushy, evergreen shrub with obovate to inversely lance-shaped, leathery, glossy, dark green leaves, to 8cm (3in) long. In late winter and early spring, bears axillary clusters of up to 10 slightly fragrant, pale green or yellow-green flowers, to 8mm ( $\frac{3}{8}$ in) across, followed by fleshy, ovoid black fruit.  $\pm$  1m (3ft),



*Daphne jezoensis*



*Daphne laureola* subsp. *philippi* (inset: flower detail)

$\leftrightarrow$  1.5m (5ft). W. to S.E. Europe, Sicily, Corsica, North Africa, Azores. \*\*\*

**subsp. *philippi***  $\square$  is semi-prostrate, mildly suckering, and compact, with leaves to 6cm (2 $\frac{1}{2}$ in) long and flowers to 5mm ( $\frac{1}{4}$ in) across;  $\pm$  45cm (18in),  $\leftrightarrow$  60cm (24in). Pyrenees.

***D. longilobata*** Erect, sometimes spreading, evergreen shrub with oblong-lance-shaped to inversely lance-shaped, leathery, glossy, mid-green leaves, to 10cm (4in) long. Bears terminal clusters of 5–7 fragrant, softly hairy white flowers, 1.5cm ( $\frac{1}{2}$ in) across, above new growth in early summer, followed by abundant, fleshy, spherical, glossy red fruit.  $\pm$  to 1.5m (5ft). W. China, S.E. Tibet. \*\*\*

**'Peter Moore'** has grey-green leaves with creamy white margins. ***D. x mantensiana*** 'Manten'. Dwarf, rounded, evergreen shrub with oblong to obovate, glossy, mid-green leaves, to 3.5cm (1 $\frac{1}{2}$ in) long. Terminal clusters of up to 12 fragrant, purple-pink flowers, to 1cm ( $\frac{1}{2}$ in) across, paler within, are borne in late spring and early summer, and often again from summer to autumn.  $\pm$  to 75cm (30in). \*\*\*

***D. mezereum***  $\square$  (Mezereon). Upright, deciduous shrub with inversely lance-shaped, pale green to soft grey-green leaves, to 12cm (5in) long. Lateral clusters of 2–4 fragrant, pink to purplish pink flowers, to 6mm ( $\frac{1}{4}$ in) long, are borne in late winter and early spring, before the leaves, followed by fleshy, spherical red fruit.  $\pm$  1.2m (4ft),  $\leftrightarrow$  1m (3ft). Europe, Caucasus, Turkey, Siberia. \*\*\* **f. *alba*** has creamy white flowers and yellow fruit. **'Bowles' Variety'**  $\square$  syn. 'Bowles' White', is very

vigorous and upright, with pure white flowers and yellow fruit;  $\pm$  to 2m (6ft).

***D. x napolitana***  $\square$  (*D. cneorum* x *D. sericea*), syn. *D. neapolitana*. Compact, densely branched, evergreen shrub with inversely lance-shaped to narrowly obovate, glossy, dark green leaves, to 3.5cm (1 $\frac{1}{2}$ in) long, greyish green beneath. Bears terminal clusters of 6–8 (occasionally up to 16) fragrant, rose-pink flowers, to 8mm ( $\frac{3}{8}$ in) across, in spring, with further flushes from summer to autumn.  $\pm$  to 75cm (30in). Garden origin. \*\*

***D. neapolitana*** see *D. x napolitana*.

***D. odora***. Rounded, evergreen shrub with inversely lance-shaped to narrowly oval, leathery, glossy, deep green leaves, to 8cm (3in) long. Bears fragrant, deep purple-pink and white flowers, to 1.5cm



*Daphne mezereum*





*Daphne mezereum* 'Bowles' Variety

( $\frac{1}{2}$ in) across, in terminal, sometimes axillary clusters of 10–15 or more, from midwinter to early spring, followed by fleshy, spherical red fruit.  $\pm$  1.5m (5ft). China, Japan. \*\*\*. *f. alba*, syn. var. *leucantha*, bears white or creamy white flowers. 'Aureomarginata'  $\square$  syn. 'Marginata', has leaves with narrow, irregular yellow margins, and red-purple flowers, paler and sometimes almost white within. var. *leucantha* see *f. alba*. 'Marginata' see 'Aureomarginata'. *D. oleoides*, syn. *D. glandulosa*. Slow-growing, variable, evergreen shrub with spreading branches and elliptic to obovate, leathery, grey-green leaves, 1–4.5cm ( $\frac{1}{2}$ –1 $\frac{1}{4}$ in) long. Produces terminal clusters of up to 8 usually scented, sometimes pink-tinged, creamy white flowers, to 1.5cm ( $\frac{1}{2}$ in) across, in early summer, followed by downy, fleshy orange fruit.  $\pm$  20cm (8in),  $\pm$  25cm (10in). S. Europe, N. Africa, Turkey, Caucasus. \*\*\*. *D. petraea* 'Grandiflora'  $\square$   $\nabla$  Slow-growing, very compact, many-branched, evergreen shrub with narrowly spoon-shaped, leathery, shiny, dark green leaves, to 1cm ( $\frac{1}{2}$ in) long. Bears dense, terminal clusters of 3–5 or more,



*Daphne petraea* 'Grandiflora'

scented, deep rose-pink flowers, to 1cm ( $\frac{1}{2}$ in) across, in late spring.  $\pm$  10cm (4in),  $\pm$  25cm (10in). \*\*\*. *D. pontica*  $\nabla$  Spreading, evergreen shrub with obovate, pointed, glossy, dark green leaves, to 10cm (4in) long. Clusters of up to 10 pairs of fragrant, yellow-green flowers, to 2cm ( $\frac{3}{4}$ in) across, with slender, pointed lobes, are borne at the base of overlapping shoots, in mid- and late spring, followed by fleshy, ovoid black fruit.  $\pm$  1m (3ft),  $\pm$  1.5m (5ft). S.E. Europe, N. Turkey, S.E. Bulgaria, Caucasus. \*\*\*. *D. retusa*  $\square$   $\nabla$  syn. *D. tangutica* Retusa Group. Compact, dwarf, evergreen shrub with inversely lance-shaped to elliptic, leathery, glossy, dark green leaves, to 5cm (2in) long, notched at the tips. Bears terminal clusters of up to 10 or more fragrant flowers, to 1cm ( $\frac{1}{2}$ in) across, purple-red outside, white within, in late spring and early summer; flowers are followed by fleshy, spherical red fruit.  $\pm$  75cm (30in). W. China (W. Sichuan, Yunnan). \*\*\*. *D. sericea*  $\nabla$  Compact or open, rounded, evergreen shrub with inversely lance-shaped, obovate, or narrowly elliptic, dark green leaves, to 5cm (2in) long, glossy above, softly hairy beneath. Terminal and axillary clusters of up to 15 fragrant, purple-pink and white flowers, to 1cm ( $\frac{1}{2}$ in) across, fading to buff, are produced in late spring.  $\pm$  50cm (20in). Italy (including Sicily), Greece (Crete), S. and W. Turkey, Syria, Caucasus. \*\*\*. *Collina* Group see *D. collina*. *D. tangutica*  $\nabla$  Upright, open to dense, evergreen shrub with inversely lance-

shaped, oblong or elliptic, leathery, dull, dark green leaves, to 7cm (3in) long, with pointed or notched tips. Terminal clusters of 6–8 fragrant, purple- or pink-flushed white flowers, to 1cm ( $\frac{1}{2}$ in) across, are produced in late spring and early summer, followed by fleshy, spherical red fruit.  $\pm$  1m (3ft). Tibet, China (Gansu, Hubei, Sichuan), possibly Taiwan. \*\*\*. **Retusa Group** see *D. retusa*.

## DAPHNIPHYLLUM

DAPHNIPHYLLACEAE

Genus of about 15 species of evergreen trees and shrubs found in woodland in E. Asia, grown for their handsome foliage. The alternate, rhododendron-like leaves often appear whorled at the ends of the shoots. Inconspicuous, petalless, pink, green, or yellow flowers are borne in short racemes, the male and female on separate plants. The rounded or ovoid, fleshy fruits have large, hard, blue-black seeds. Grow in a large shrub border or woodland garden. In frost-prone areas, grow frost-tender and half-hardy species in a temperate greenhouse. • **HARDINESS** Frost hardy to frost tender. • **CULTIVATION** Grow in moist but well-drained, humus-rich soil in sun or partial shade. Provide shelter from cold, drying winds. Pruning group 8; tolerates hard pruning. • **PROPAGATION** Insert semi-ripe or evergreen cuttings in late summer. • **PESTS AND DISEASES** Trouble free.

*D. himalense* subsp. *macropodum* see *D. macropodum*. *D. macropodum*  $\nabla$  syn. *D. himalense* subsp. *macropodum*. Dense, rounded shrub or small tree with narrowly oval to oblong, leathery, dark green leaves, to 20cm (8in) long, glaucous beneath. Axillary racemes of small, petalless, deep purple-pink male or green female flowers are borne on separate plants in late spring and early summer.  $\pm$  6m (20ft). China, Korea, Japan. \*\*

## DARWINIA

SAXIFRAGACEAE

Genus of one species of rhizomatous perennial from mountain streamsides in woodland in W. USA. With its large, bold, peltate leaves, which appear after the star-shaped, white to pink flowers, *D. peltata* forms an imposing, umbrella-like clump for a pond or streambank.

- **HARDINESS** Fully hardy, but flowers may be damaged by late frosts.
- **CULTIVATION** Grow in moist or boggy soil (although it will tolerate drier conditions), in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn, or divide in spring.
- **PESTS AND DISEASES** Trouble free.

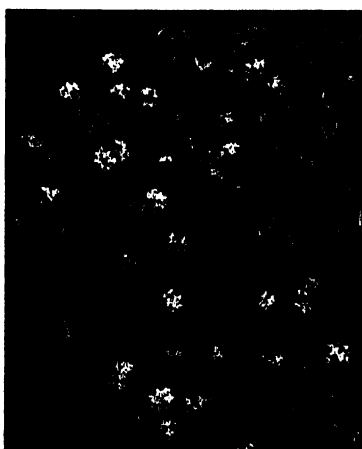
*D. peltata*  $\square$   $\nabla$  syn. *Peltiphyllum peltatum*. Slowly spreading, rhizomatous perennial with leaf-stalks to 2m (6ft) long, and peltate, rounded, deeply lobed, coarsely toothed, conspicuously veined, dark green leaves, to 60cm (24in) across, that turn red in autumn. Rounded cymes of numerous 5-petaled, white to bright pink flowers, to 1.5cm ( $\frac{1}{2}$ in) across, are borne on flower stems to 2m (6ft) long in late spring.  $\pm$  to 2m (6ft),  $\pm$  1m (3ft) or more. USA (S.W. Oregon to N.W. California). \*\*\*

## DARWINIA

MYRTACEAE

Genus of at least 60 species of evergreen, heather-like shrubs found on heaths, on sandy plains, and in scrub in Australia. They are grown for their dense, terminal heads of tiny, petalless flowers, enclosed by sometimes large, petal-like, colourful bracts. The crowded, opposite, linear to rounded leaves are small and sometimes aromatic. In frost-prone areas, grow in a cool greenhouse. In warmer areas, plant at the base of a wall or in a border. • **HARDINESS** Frost tender. • **CULTIVATION** Under glass, grow in loamless potting compost in full light, with shade from hot sun, and good ventilation. In the growing season, water moderately, applying a low-nitrogen liquid fertilizer monthly; keep just moist in winter. Top-dress or pot on in spring. Outdoors, grow in humus-rich, well-drained, sandy soil in full sun. Pruning group 10, after flowering. • **PROPAGATION** Sow seed at not less than 16°C (61°F) in spring. Root semi-ripe cuttings in summer, with bottom heat. Layer in spring. • **PESTS AND DISEASES** Scale insects may be a problem.

*D. citriodora*  $\square$  (Lemon-scented myrtle). Erect to spreading, bushy shrub with narrowly ovate to lance-shaped, lemon-scented, grey-green leaves, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, sometimes heart-shaped at the bases, with slightly



*Daphne odora* 'Aureomarginata'



*Daphne retusa*



*Darwinia peltata*



*Darwinia citriodora*

D

## DARWINIA

recurved margins. Produces pendent to erect flowerheads, 2.5–3cm (1–1¼in) across, with prominent, bell-shaped, orange-red and green outer bracts, usually in spring. †0.5–2m (20–72in), ↔ 1–2.5m (3–8ft). Western Australia. ♀ (min. 5°C/41°F)

▷ **Dasheen** see *Colocasia esculenta*

## DASYLIRION

DRACAENACEAE/LILIACEAE

Genus of 18 species of yucca-like, evergreen shrubs, trees, and perennial succulents found in dry, mountainous areas and deserts in S. USA and Mexico. They have thick, woody stems and bear narrowly lance-shaped, mostly spiny-margined leaves, usually about 1m (3ft) long, in dense, terminal rosettes. Mature plants bear star- or bell-shaped flowers, to 2mm (¼in) across, in long, narrow panicles intermittently throughout summer. Male and female flowers are borne on separate plants. In frost-prone areas, grow in a temperate or warm greenhouse or conservatory. Elsewhere, use at the base of a wall or as a focal feature on a lawn or in a desert garden.

• **HARDINESS** Frost tender, although mature plants may withstand several degrees of frost if kept dry.

• **CULTIVATION** Under glass, grow in a mix of 2 parts each loam and sand and 1 part each leaf mould and peat (or peat substitute). Provide full light with low humidity. From early spring to autumn, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. In summer, move containerized specimens outside. Outdoors, grow in well-drained soil in a sheltered site in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring.

• **PESTS AND DISEASES** Susceptible to scale insects.

**D. acrotrichum** □ syn. *D. gracile*.

Evergreen shrub, eventually forming a trunk 0.9–1.5m (3–5ft) high. Upright then arching, fibrous-tipped, pale green leaves are margined with hooked yellow spines. Dense, narrow inflorescences, 2.5–4m (8–12ft) long, of star-shaped white flowers are produced in summer. †3.5–6m (11–20ft), ↔ 2.2m (7ft). Mexico. ♀ (min. 10°C/50°F)

**D. gracile** see *D. acrotrichum*.

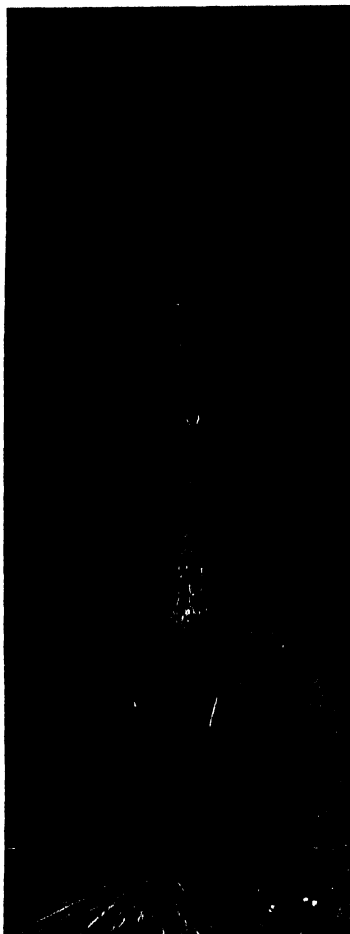
**D. hartwegianum** see *Calibanus hookeri*.

**D. longissimum** (Mexican grass plant).

Tree-like succulent with erect then spreading, entire, 4-angled, stiff, slightly fleshy, olive-green leaves, 1.5m (5ft) or more long, on a trunk 1–2m (3–6ft) tall. Dense inflorescences, 1.5–5m (5–15ft) long, of bell-shaped white flowers, are produced in summer. † to 4m (12ft) or more, ↔ 1.5m (5ft). E. Mexico. ♀ (min. 7°C/45°F)

**D. texanum**. Tall, evergreen shrub with semi-pendent, glossy, mid-green leaves margined with yellow spines, which fade to brown. Leaves persist when dead, usually concealing the trunk, 3m (10ft) tall. Dense inflorescences, to 1.5m (5ft) long, of bell-shaped white flowers are produced in early summer. † to 5m (15ft), ↔ 3m (10ft). USA (Texas), N. Mexico. ♀ (min. 7°C/45°F)

• **wheeleri** ♀ Small, evergreen tree bearing flexible, ribbed, slightly fleshy,



*Dasyliirion acrotrichum*

glaucous silver leaves, with fine, hooked, yellow to rust-brown marginal spines, on a trunk 1–1.5m (3–5ft) tall. Bell-shaped white flowers are produced in inflorescences 2.5–4m (8–12ft) tall, in summer. †3.5–6m (11–20ft), ↔ 1m (3ft) or more. USA (Arizona, Texas). ♀ (min. 7°C/45°F)

▷ **Date palm** see *Phoenix dactylifera*

**Canary Island** see *P. canariensis*

**Miniature** see *P. roebelenii*

**Pigmy** see *P. roebelenii*

▷ **Datura arborea** see *Brugmansia arborea*

▷ **Datura aurea** see *Brugmansia aurea*

▷ **Datura x candida** see *Brugmansia x candida*

▷ **Datura rosei of gardens** see *Brugmansia sanguinea*

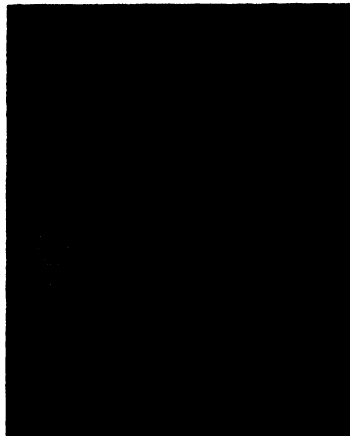
▷ **Daubentonia** see *Sesbania*

**D. punicea** see *S. punicea*

## DAVALLIA

DAVALLIACEAE

Genus of 34 species of mostly epiphytic ferns found by streams or on rocks in the W. Mediterranean region, N. Africa; from China to Japan, and from tropical Asia to Australia and the Pacific islands. Creeping surface rhizomes, densely covered with scales, produce triangular, usually finely dissected, shiny fronds, which, in many species, are short-lived and deciduous. The sori are marginal or submarginal, with tubular to urn-shaped indusia. In frost-prone climates, *Davallia* species are suitable for a warm or cool greenhouse or bathroom; they look particularly effective when grown



*Davallia fejeensis*

in hanging baskets, and their cut fronds may also be used in flower arranging. In warmer climates, grow in a moist, shaded site.

• **HARDINESS** Most are half hardy to frost tender; *D. mariesii* is hardy to -7°C (19°F) if protected in winter.

• **CULTIVATION** Under glass, grow in equal parts coarse leaf mould or peat substitute (or peat), moss, bark, sharp sand, charcoal, and pine needles, in bright indirect light with high humidity. In summer, water moderately and mist frequently; water sparingly in winter. Outdoors, grow epiphytically, or in moist, open, leafy soil in partial shade.

• **PROPAGATION** Sow spores of hardy species at 15°C (59°F), and tender species at 21°C (70°F), as soon as ripe. Divide rhizomes in spring, ensuring each division has roots. See also p.51.

• **PESTS AND DISEASES** Trouble free.

**D. bullata**. Deciduous fern with thin, long-trailing rhizomes covered with dark brown or black scales with toothed white margins. Bears 3- or 4-pinnate, pale green fronds, 15–20cm (6–8in) long, with narrowly triangular or linear segments. †20–35cm (8–14in), ↔ 50–80cm (20–32in) or more. India, China. ♀ (min. 10°C/50°F)

**D. canariensis** ♀ (Hare's foot fern).

Deciduous or semi-evergreen fern with thick, succulent rhizomes covered with dark brown scales. Produces broad, 3- to 4-pinnate, mid-green fronds, 20–50cm (8–20in) long, with narrowly triangular or linear segments. †20–50cm (8–20in), ↔ 30–100cm (12–39in). S.W. Europe, N.W. Africa. ♀ (min. 5°C/41°F)



*Davallia mariesii*

## DAVIDIA

**D. fejeensis** □ (Rabbit's foot fern).

Evergreen fern with thick, tough rhizomes covered with mid- to dark brown scales pressed tightly to the surface, with long, curly hairs on the margins. Produces very broad, 3- to 4-pinnate, mid-green fronds, 20–100cm (8–39in) long, with linear segments. †20–100cm (8–39in), ↔ 40–150cm (16–60in). Fiji. ♀ (min. 10°C/50°F). 'Major' has fronds 60–120cm (2–4ft) long; ↔ 1.2m (4ft).

**D. mariesii** □ ♀ (Squirrel's foot fern).

Deciduous fern with thin, creeping rhizomes covered with brown scales. Broad, very finely cut, 3- or 4-pinnate, mid-green fronds, 20–30cm (8–12in) long, have narrowly triangular or linear segments. †15cm (6in), ↔ indefinite. E. Asia, Japan. \*\*\*

## DAVIDIA

Dove tree, Ghost tree, Handkerchief tree

CORNACEAE/DAVIDIACEAE

Genus of one species of deciduous tree found in woodland in China, with small ellipsoid flowerheads surrounded by showy white bracts, which give rise to the common name. Its bark is smooth and mid-grey, and the leaves are simple, alternate, and broadly ovate. Grow *D. involucrata* as a specimen tree.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade, with shelter from strong winds. Pruning group 1; maintain a strong central leader in the formative years.

• **PROPAGATION** Sow the whole fruit in a seedbed, or in containers in an open frame, as soon as ripe. Germination normally occurs in spring after 2 winters outdoors. Seed-raised plants may not flower for up to 10 years. Insert leaf-bud cuttings in early autumn, or hardwood cuttings in winter.

• **PESTS AND DISEASES** Trouble free.

**D. involucrata** □ ♀ Conical tree with broadly ovate, sharp-pointed, toothed, red-stalked leaves, to 16cm (6in) long, with heart-shaped bases, mid-green above and softly hairy beneath. In late spring, produces dense, pendent, ellipsoid heads, to 2cm (¾in) across, of small male flowers, each with red-purple anthers and a single, ovoid green ovary. Each flower is surrounded by a pair of leafy, spherical white bracts of unequal size. Pendent, ridged fruit are greenish brown, 4cm (1½in) across.

*Davidia involocrata*

↑ 15m (50ft), ↔ 10m (30ft). S.W. China. \*\*\*. **var. vilmoriniana** ♀ has almost hairless leaves, yellow-green or glaucous above, dark green beneath.

- ▷ **Dawn flower, Blue** see *Ipomoea indica*
- ▷ **Day flower** see *Commelina*
- ▷ **Daylily** see *Heimerocallis*
- ▷ **Dead nettle** see *Lamium*
- ▷ **Pyrenean** see *Horminum pyrenaicum*

## DECAISNEA

LARDIZABALACEAE

Genus of 2 species of deciduous shrubs from woodland in the Himalayas and W. China. They are cultivated for their bold, alternate, pinnate leaves, borne on stout shoots, and their unusual, bean-like, pendent fruits. The bell-shaped

*Decaisnea fargesii*

flowers are petalless. Grow *D. fargesii* in a shrub border or woodland garden.

- **HARDINESS** Fully hardy, although late frosts may damage young foliage.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade, with shelter from strong winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in an open frame in autumn.
- **PESTS AND DISEASES** Trouble free.

*D. fargesii* ■ Upright, sparsely branched shrub with stout, hairless shoots bearing pinnate leaves, to 90cm (36in) long, dark green above, glaucous, mid-green beneath, with 13–25 ovate to elliptic leaflets. Bears pendent panicles, to 45cm (18in) long, of bell-shaped, petalless, green or yellow-green flowers in early summer, followed by pendent, cylindrical, dull, deep blue fruit, to 10cm (4in) long, in autumn. ↑↔ 6m (20ft). W. China. \*\*\* (borderline)

## DECARYA

DIDIEREACEAE

Genus of one species of deciduous, succulent shrub or small tree occurring from sea level to 500m (1,600ft) or more in Madagascar. It has zigzag twigs, borne on spreading branches, which produce a small, inversely heart-shaped leaf and 2 spines from each node, and a single cyme of small, cup-shaped white flowers in summer. In frost-prone areas, grow *D. madagascariensis* in a warm greenhouse. In warmer areas, grow at the base of a wall or in a courtyard garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with 10 per cent additional grit, in full light and low humidity. In the growing season, water moderately, applying a low-nitrogen liquid fertilizer monthly; keep just moist at other times. Outdoors, grow in sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F), or take stem cuttings from spring to summer.
- **PESTS AND DISEASES** Susceptible to scale insects.

*D. madagascariensis* ◊ Succulent shrub or small tree with a straight, brownish green trunk branching from the sides and base, and inversely heart-shaped, fleshy, spiny, dull, mid-green leaves, to 5mm (¼in) long. A single cyme, 5–7cm (2–3in) long, of small white flowers is produced in summer. ↑ 6–8m (20–25ft), ↔ indefinite. S.W. Madagascar. ☀ (min. 13°C/55°F)

## DECUMARIA

HYDRANGEACEAE

Genus of 2 species of woody, evergreen or deciduous climbers, occurring in China and S.E. USA, where they grow on forest trees. They climb by aerial roots, and produce opposite pairs of attractive, ovate to oblong, glossy, dark green leaves. Slightly fragrant, white or yellowish white flowers, each with 10 small petals and 20–30 stamens in a "brush", are produced in terminal corymbs or panicles. Grow *Decumaria* species at the base of a sheltered wall, or train into a tree. *D. barbara* is also useful for ground cover.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in reasonably fertile, preferably loamy, well-drained soil in sun or partial shade. Provide shelter in all but mild areas. Pruning group 13, if wall-grown; otherwise needs minimal pruning.
- **PROPAGATION** Root semi-ripe cuttings in late summer or early autumn.
- **PESTS AND DISEASES** Trouble free.

*D. barbara*. Deciduous climber with ovate to ovate-oblong, glossy, dark green leaves, to 10cm (4in) long. In summer, white flowers are produced in corymbs, to 8cm (3in) across. ↑ 10m (30ft). S.E. USA. \*\*

*D. sinensis*. Evergreen climber with narrowly ovate to ovate, glossy, dark green leaves, to 7cm (3in) long. Yellow or creamy white flowers are produced in pyramidal panicles, to 8cm (3in) across, in late spring and early summer. ↑ 2m (6ft) or more. C. China. \*\*

## DEINANTHE

HYDRANGEACEAE

Genus of 2 species of rhizomatous perennials, related to hydrangeas, found in moist, shady woodland in China and Japan. They produce short rhizomes and upright stems. The opposite leaves are ovate or ovate to elliptic, toothed, crinkled, hairy, and slightly glossy, mid- to dark green. Terminal panicles of showy, pendent, cup-shaped, waxy, fertile flowers with 5 fleshy petals and numerous stamens, and a few sterile

*Deinanthe caerulea*

outer flowers without petals, are borne in mid- and late summer. Suitable for a woodland or peat garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, humus-rich soil in partial shade, with shelter from cold, drying winds. Will not tolerate heat or drought.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, although germination is uncertain and seedlings take several years to reach flowering size. Divide in early spring; divisions are slow to re-establish.
- **PESTS AND DISEASES** Slugs may damage young shoots.

*D. bifida*. Clump-forming perennial with obovate to elliptic, mid-green leaves, to 20cm (8in) long, distinctly notched at the tips. White flowers, 1–2cm (½–¾in) across, have yellow stamens. ↑ 40cm (16in), ↔ 45cm (18in). Japan. \*\*\*

*D. caerulea* ■ Clump-forming perennial, usually with 2 pairs of ovate to elliptic, sharp-pointed, conspicuously veined, mid- to dark green leaves, to 15cm (6in) long. Mauve to violet-blue flowers, 2–4cm (¾–1½in) across, have grey-blue or blue stamens. ↑↔ 45cm (18in). C. China (Hubei). \*\*\*

▷ *Delairea odorata* see *Senecio mikanioides*

## DELONIX

CAESALPINIACEAE/LEGUMINOSAE

Genus of 10 species of deciduous, semi-evergreen, or evergreen trees from open, dry forest in Madagascar, tropical Africa, and India. They have elegant, alternate, 2-pinnate, fern-like leaves, and produce large, terminal, corymb-like racemes of irregularly shaped, 5-petalled flowers. In frost-prone areas, grow in a temperate greenhouse as foliage plants, since they rarely flower in a container. In warmer areas, they make effective specimen or shade trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In the growing season, water freely, applying a balanced liquid fertilizer monthly; keep just moist in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun, with shelter from strong winds. Pruning group 1; tolerates hard pruning under glass.



*Delonix regia*

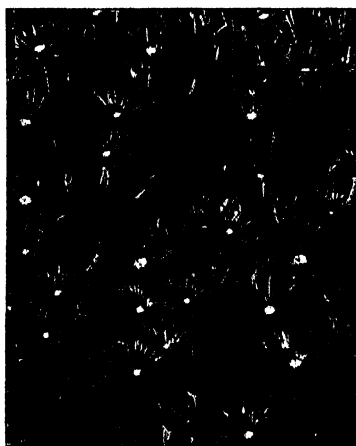
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root semi-ripe cuttings in summer, with bottom heat.
- **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

**D. regia** ■ ☉ syn. *Poinciana regia* (Flamboyant tree, Flame tree). Semi-evergreen tree (fully deciduous in areas with a long, dry season). It has a wide-spreading, dome-shaped crown and broadly ovate, 2-pinnate, bright green leaves, 30–50cm (12–20in) long, each pinna divided into 10–25 pairs of elliptic to oblong leaflets. From spring to summer, bears many scarlet flowers, 10–13cm (4–5in) across, the standard petals pale yellow and striped with red. ‡ to 10m (30ft), ↔ 5–10m (15–30ft). Madagascar. ☼ (min. 7°C/45°F)

## DELOSPERMA

AIZOACEAE

Genus of about 150 or more species of evergreen or semi-evergreen, succulent shrubs and mat-forming, succulent perennials (some with annual shoots from a tuberous caudex) found in hilly lowlands in C., E., and southern Africa.



*Delosperma abertense*

The triangular to cylindrical, fleshy leaves are borne in opposite pairs; the daisy-like flowers are produced singly or in open cymes in summer. In frost-prone areas, grow in a temperate greenhouse or as houseplants; elsewhere, grow in a desert garden or border.

- **HARDINESS** Frost hardy to frost tender; *D. cooperi* can survive to -8°C (18°F).
- **CULTIVATION** Under glass, grow in standard cactus compost in full light, with good but draught-free ventilation. In growth, water moderately, applying fertilizer every 3 weeks; keep dry at other times. Outdoors, grow in sharply drained soil in a sheltered site in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F), or take stem cuttings in spring or summer.
- **PESTS AND DISEASES** Susceptible to mealybugs and greenfly.

**D. abertense** ■ Dense, evergreen, succulent shrub with minutely warty, often prostrate branches with thick, semi-cylindrical, pointed, mid-green leaves, 1–2cm (½–¾in) long. Solitary, purplish red flowers, 1.5cm (½in) across, are freely produced in summer. ‡ to 12cm (5in), ↔ indefinite. South Africa (Western Cape, Eastern Cape). ☼ (min. 5°C/41°F)

**D. cooperi**. Creeping, mat-forming, subshrubby, succulent perennial with cylindrical, warty, light green leaves, to 5cm (2in) long. Solitary, glossy magenta flowers, to 5cm (2in) across, with white anthers, are produced in mid- and late summer. ‡ 5cm (2in), ↔ 60cm (24in) or more. South Africa (Orange Free State). \*\*

**D. velutinum**. Compact, bushy, semi-evergreen, succulent shrub with curved, warty-bristly branches and broadly cylindrical, tapering, pale green leaves, to 1.5cm (½in) long, keeled beneath. Solitary white flowers, 1.5cm (½in) across, are produced in summer. ‡ 5cm (2in), ↔ indefinite. South Africa (KwaZulu/Natal). ☼ (min. 5°C/41°F)

## DELPHINIUM

RANUNCULACEAE

Genus of about 250 species of annuals, biennials, and perennials found mainly in mountainous areas worldwide, except Australia and the polar regions. They are grown for their spikes, racemes, or occasionally panicles of shallowly cup-shaped, sometimes hooded, spurred, single to fully double flowers, often known as “florets”. Most have fibrous or fleshy roots, although some are tuberous. The basal leaves, mostly to 20cm (8in) long, are toothed and deeply or shallowly 3- to 5-lobed, occasionally 7-lobed. Grow tall delphiniums in a mixed border or island bed, and dwarf ones in a rock garden. All parts may cause severe discomfort if ingested, and contact with foliage may irritate skin.

For ease of reference, delphinium cultivars have been grouped as follows:

### Belladonna Group

Upright, branching perennials with palmately lobed leaves. Wiry stems bear loose, branched spikes of elf cap-shaped, single flowers, 2cm (¾in) or more across, with spurs up to 3cm (1¼in) long, in early and late summer. ‡ 1–1.2m (3–4ft), ↔ to 45cm (18in).

### Elatum Group

Clump-forming perennials with fleshy crowns producing flowering spikes in early and midsummer, and sometimes again in autumn if cut back. The spikes bear numerous single, semi-double, or double flowers, with 5 large outer sepals and an “eye” formed by 8 inner sepals. The flowers, at least 6cm (2½in) across, are usually larger at the base of the spike. Each stem also bears lateral shoots, flowering after the main spike, with slightly smaller flowers. Elatum Group cultivars are the most common garden delphiniums. They fall into 3 height categories: small, to 1.5m (5ft); medium, 1.7m (5½ft); and tall, 2m (6ft). Spreads are usually in the range 60–90cm (24–36in).

### Pacific Hybrids

Similar to Elatum Group cultivars, but grown as annuals or biennials. At one time they were raised from hand-pollinated, line-bred seed to produce

selections with clear, brightly coloured flowers; today, they are cross-pollinated and less uniform. The short-lived flowers are large, to 7cm (3in) across, and semi-double, and are produced on spikes in early and midsummer. ‡ 1.7m (5½ft), ↔ to 75cm (30in).

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun, with shelter from strong winds. Except for the dwarf perennials, most delphiniums need staking: the low-growing cultivars with twiggy, brushwood support; the taller, large-flowered ones with stout canes. Insert supports no later than mid-spring, or when the plants reach 30cm (12in) high. To ensure good-quality flower spikes, thin shoots when 7cm (3in) high; leave a minimum of 2 or 3 shoots on young plants and 5–7 strong shoots on well-established ones. In growth, water all plants freely, applying a balanced liquid fertilizer every 2–3 weeks. Dead-head by cutting spent flower spikes back to small, flowering sideshoots. Cut all growth to ground level after it has withered in autumn.
- **PROPAGATION** Sow seed at 13°C (55°F) in early spring. For Elatum and Belladonna Group cultivars, take pencil-thick basal cuttings, 7–10cm (3–4in) long, with solid heels, from close to the crown in early spring.
- **PESTS AND DISEASES** Susceptible to slugs, snails, leaf miners, delphinium moth caterpillars, leaf blotch, powdery mildew, crown rot (on mature plants), and occasionally cucumber mosaic virus.

- D. ‘Alice Artindale’**. Small Elatum Group perennial bearing neat, button-like, fully double mauve flowers, to 3cm (1¼in) or more across, margined with blue, on narrow spikes. Good for cut flowers. \*\*\*
- D. ‘Andenken an August Koenemann’** see *D. ‘Wendy’*.
- D. ‘Astolat’**. Pacific Hybrid perennial with lilac and pink flowers. \*\*\*
- D. ‘Bellamosum’** ■ Belladonna Group perennial with deep gentian-blue flowers. \*\*\*
- D. ‘Berghimmel’**. Tall Elatum Group perennial producing short, slim, wind-resistant stems and single, clear sky-blue

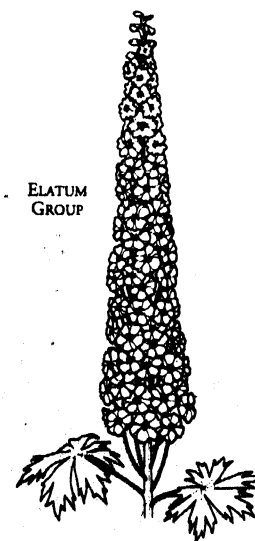
### DELPHINIUM INFLORESCENCES

Delphiniums are grown for their showy spikes of colourful summer flowers. The spikes are variable in height and shape: those produced by the Belladonna Group hybrids are loose and branched, while the tallest spikes (to 2m/6ft high) are produced by hybrids of the Elatum Group. Pacific Hybrids are similar to Elatum Group cultivars, although they are not as tall.

BELLADONNA GROUP



ELATUM GROUP



*Delphinium* 'Bellamosum'*Delphinium* 'Blue Nile'*Delphinium cardinale**Delphinium* 'Cliveden Beauty'*Delphinium* 'Conspicuous'*Delphinium* 'Emily Hawkins'

flowers with white eyes; the lower florets are often still in good condition as the top ones open. \*\*\*

*D.* 'Black Knight'. Pacific Hybrid perennial bearing deep purple flowers with black eyes. \*\*\*

*D.* 'Blue Bees' [B] Belladonna Group perennial producing clear blue flowers with white eyes. \*\*\*

*D.* 'Blue Dawn' ♀ Medium Elatum Group perennial bearing semi-double, pale blue flowers, with a touch of pink, and small, dark brown eyes. \*\*\*

*D.* 'Blue Jay'. Pacific Hybrid perennial with deep blue flowers. \*\*\*

*D.* 'Blue Nile' [B] ♀ Medium Elatum Group perennial. Semi-double, bright mid-blue flowers have white eyes. \*\*\*

*D.* 'Bruce' [B] ♀ Tall Elatum Group perennial bearing semi-double, violet-purple flowers, paler towards the centres, with dark brown eyes. \*\*\*

*D. brunonianum*. Upright perennial with hairy stems and deeply 3- to 5-lobed leaves. In early summer, bears racemes of hooded, single, short-

spurred, hairy, blue to purple flowers, 3–5cm (1¼–2in) across, with black-purple eyes and heavy veining. †↔ 20cm (8in). Pakistan to S.W. Tibet. \*\*\*

*D.* 'Butterball' [B] Small Elatum Group perennial. Semi-double, rich light cream flowers have deep yellow eyes. \*\*\*

*D.* 'Cameliard'. Pacific Hybrid perennial with deep purple flowers, shading to blue at the frilly sepal margins, and creamy white eyes. \*\*\*

*D.* 'Can-can'. Small Elatum Group perennial bearing fully double flowers. The sepals are light mauve with darker veining and frilled margins; outer sepals have dark blue margins. \*\*\*

*D. cardinale* [B] Short-lived perennial with deeply 3- to 5-lobed leaves. Bears loose racemes of elf cap-shaped, stout-spurred, single scarlet flowers, 2cm (¾in) across, with yellow centres, in early summer. †2m (6ft), ↔ 45cm (18in). USA (California), Mexico (Baja California). \*\*\*

*D.* 'Casablanca'. Belladonna Group perennial with white flowers. \*\*\*

*D. cashmerianum*. Perennial with rounded, toothed, shallowly 5- to 7-lobed leaves. In early and late summer, bears single, dark purple-blue flowers, 3–4cm (1¼–1½in) across, in open panicles. †30–40cm (12–16in), ↔ 15cm (6in). N. India to China. \*\*\*

*D.* 'Cassius'. Medium Elatum Group perennial with semi-double, deep blue flowers overlaid with purple and with brown-tinged eyes. \*\*\*

*D.* 'Chelsea Star'. Medium Elatum Group perennial bearing semi-double, rich velvety violet flowers with white eyes. \*\*\*

*D. chinense* sec *D. grandiflorum*.

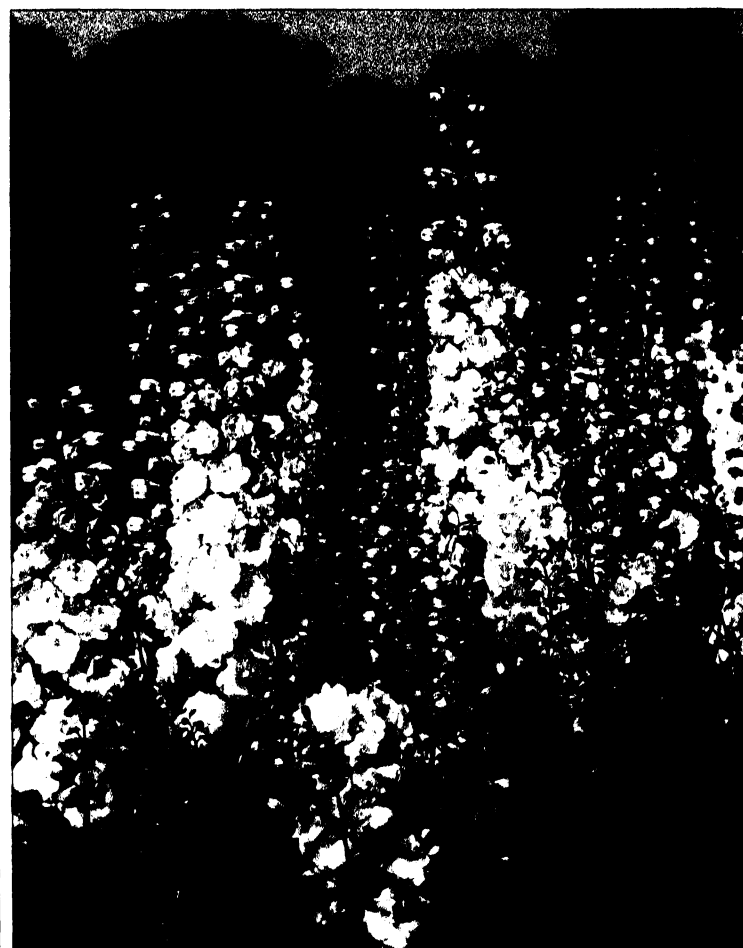
*D.* 'Cliveden Beauty' [B] Belladonna Group perennial with sky-blue flowers. \*\*\*

*D. consolida* sec *Consolida ajacis*.

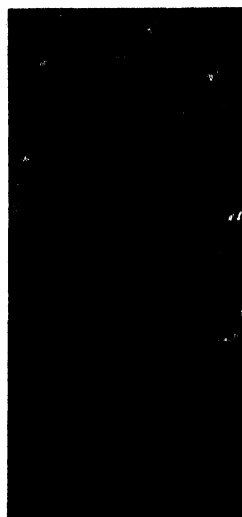
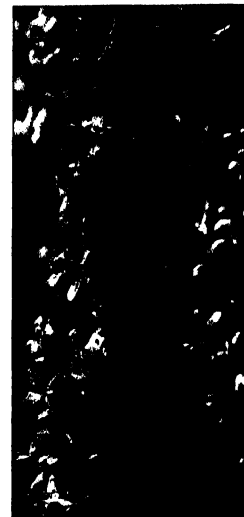
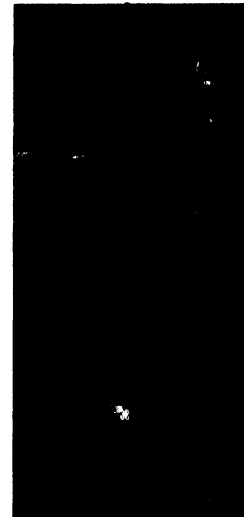
*D.* 'Conspicuous' [B] ♀ Small Elatum Group perennial bearing semi-double, lilac-mauve flowers with prominent brown eyes. \*\*\*

*D.* 'Crown Jewel'. Small Elatum Group perennial bearing semi-double, pink-tinged, pale blue flowers with prominent brown eyes. \*\*\*

*D.* 'Emily Hawkins' [B] ♀ Medium Elatum Group perennial producing neat, semi-double, light violet flowers with fawn eyes. \*\*\*

*Delphinium* 'Blue Bees'*Delphinium* 'Bruce'*Delphinium* 'Butterball'

D

*Delphinium* 'Fanfare'*Delphinium grandiflorum*  
'Blue Butterfly'*Delphinium* 'Langdon's  
Royal Flush'*Delphinium* 'Lord Butler'*Delphinium* 'Mighty Atom'*Delphinium nudicaule*

**D. 'Fanfare'** ■♀ Very tall Elatum Group perennial bearing semi-double, silvery mauve flowers with white eyes. †2.2m (7ft). \*\*\*

**D. 'Faust'** ♀ Tall Elatum Group perennial with semi-double, deep cornflower-blue flowers, overlaid with purple, and with indigo eyes. \*\*\*

**D. 'Fenella'** ♀ Small Elatum Group perennial bearing semi-double, gentian-blue flowers with black eyes. \*\*\*

**D. 'Finsteraarhorn'**. Medium Elatum Group perennial with short, slim, wind-resistant stems and single, dark gentian-blue flowers with black eyes. The lower florets are often still in good condition as the top ones open. \*\*\*

**D. 'Galahad'**. Pacific Hybrid perennial with pure white flowers. \*\*\*

**D. 'Gillian Dallas'** ♀ Small Elatum Group perennial producing semi-double, slate-grey flowers with a hint of mauve and white eyes. \*\*\*

**D. 'Giotto'** ♀ Medium Elatum Group perennial bearing semi-double flowers with clear violet inner sepals, gentian-blue outer sepals, and light yellowish brown eyes. \*\*\*

**D. 'Gletscher Wasser'**. Medium Elatum Group perennial with short, slim, wind-resistant stems and single, light ice-blue flowers. The lower florets are often still in good condition as the top ones open. \*\*\*

**D. 'Gordon Forsyth'**. Tall Elatum Group perennial producing semi-double, amethyst-purple flowers with grey-brown eyes. \*\*\*

**D. grandiflorum**, syn. *D. chinense*. Short-lived perennial usually grown as an annual. The elf cap-shaped, single, blue, violet, or white flowers, 3.5cm (1½in) across, are produced in open panicles in early summer. Leaves are 5-lobed, with each lobe further divided into narrow segments. †20–50cm (8–20in), ↔ 23–30cm (9–12in). Siberia, Mongolia, China, Japan. \*\*\*

**'Album'** produces white flowers. **'Blauer Zwerg'** is upright and produces gentian-blue flowers; †to 20cm (8in).

**'Blue Butterfly'** ■ is stocky, and produces bright blue flowers. **'Sky Blue'** bears flowers with almost pure white sepals, turning very pale blue, with dark veins beneath.

**D. 'Guinevere'**. Pacific Hybrid perennial producing pale purple flowers, tinged pink with white eyes. \*\*\*

**D. 'Jubelruf'**. Tall Elatum Group perennial producing short, slim, wind-resistant stems bearing semi-double, bright mid-blue flowers with white eyes. The lower florets are often still in good condition as the top ones open. \*\*\*

**D. 'King Arthur'**. Pacific Hybrid perennial bearing plum-purple flowers with white eyes. \*\*\*

**D. 'Lancelot'**. Pacific Hybrid perennial with purplish pink flowers. \*\*\*

**D. 'Langdon's Royal Flush'** ■ Small Elatum Group perennial bearing semi-double, pale mauve-pink flowers with white or pale yellow eyes. \*\*\*

**D. 'Loch Leven'** ♀ Medium Elatum Group perennial bearing semi-double, mid-blue flowers with white eyes. \*\*\*

**D. 'Lord Butler'** ■♀ Small Elatum Group perennial with semi-double, mid-blue flowers, flushed mauve at the centres, with white eyes. \*\*\*

**D. 'Mighty Atom'** ■♀ Small Elatum Group perennial bearing semi-double, mid-violet flowers with brown-streaked eyes. May develop fused and flattened stems, especially if overfertilized. \*\*\*

**D. 'Min'** ♀ Medium Elatum Group perennial bearing semi-double, very pale purple flowers, suffused and veined with deeper purple; the brown eyes are striped with pale purple. \*\*\*

**D. 'Moerheimii'**. Belladonna Group perennial with white flowers. \*\*\*

**D. 'Mother of Pearl'** see *D. 'Perlmutterbaum'*.

**D. muscosum**. Perennial with rounded, 3- to 7-lobed, finely divided, softly hairy leaves, on long stalks. Bears single, dark blue to dark violet flowers, 3–4cm (1¼–1½in) across, in racemes in early and midsummer. †↔ 10–15cm (4–6in). Bhutan. \*\*\*

**D. 'Nachtwache'**. Tall Elatum Group perennial with short, slim, wind-resistant stems and semi-double, violet-blue flowers with white eyes. The lower florets are often still in good condition as the top ones open. \*\*\*

**D. nudicaule** ■ Short-lived perennial, often grown as an annual, with fleshy, 3- to 5-lobed leaves on long stalks. Half-closed, funnel-shaped, single, bright vermilion-red, orange-red, or yellow flowers, to 2cm (¾in) across, with red to yellow throats, are produced in open panicles on sturdy, unbranched stems in midsummer. †20–60cm (8–24in), ↔ 20cm (8in). USA (California). \*\*\*

**D. 'Percival'**. Pacific Hybrid perennial producing white flowers with black eyes. \*\*\*

**D. 'Pericles'**. Medium Elatum Group perennial producing semi-double, pale sky-blue flowers. The white eyes have a few cream hairs. \*\*\*

**D. 'Perlmutterbaum'**, syn. *D. 'Mother of Pearl'*. Tall Elatum Group perennial producing semi-double, light blue and soft pink, bicoloured flowers, with brown eyes, on short, slim, wind-resistant stems. The lower florets are often still in good condition as the top ones open. \*\*\*

**D. 'Piccolo'**. Belladonna Group perennial with bright gentian-blue flowers. \*\*\*

*Delphinium* 'Rosemary Brock'*Delphinium* 'Sandpiper'*Delphinium* 'Sungbeam'*Delphinium tatsienense*



**D. 'Princess Caroline'** ■ Perennial selected from hybrids of *D. cardinale*, *D. elatum*, and *D. nudicaule* cultivars. Bears semi-double, coral-pink flowers, 3–6cm (1¼–2½in) across, in short racemes in early summer. †1.1m (3½ft), ↔60cm (24in). \*\*\*

**D. requienii** ■ Vigorous annual or biennial with 5- to 7-lobed, glossy leaves. In early summer, produces many branched spikes of elf cap-shaped, green and mauve-grey flowers, 1cm (½in) across, with prominent purple anthers. †30–100cm (12–39in), ↔45cm (18in). S. France (including Iles d'Hyères and Corsica), Italy (Sardinia). \*\*\*

**D. 'Rosemary Brock'** ■ Small Elatum Group perennial bearing semi-double, deep dusky pink flowers with darker sepal tips and margins, and brown eyes with yellow hairs. \*\*\*

**D. x ruyssii 'Pink Sensation'**. Short-lived, upright perennial with small, glossy, finely divided, 3- to 5-lobed leaves. Nodding, yellowish pink buds, on short, straight, slim spikes, open to elf cap-shaped, dusty pink flowers, 2cm (¾in) across, from summer to autumn. †1m (3ft), ↔60cm (24in). \*\*\*

**D. 'Sandpiper'** ■ Small Elatum Group perennial producing semi-double white flowers with dark brown eyes. \*\*\*

**D. semibarbatum**, syn. *D. zalil*. Short-lived, tuberous perennial with 5-lobed leaves, further divided into narrow segments. In early and midsummer, bears unbranched spikes of elf cap-shaped, sulphur-yellow flowers, 1.5cm (½in) across, with orange tips to the central sepals. †1m (3ft), ↔23cm (9in). Afghanistan, Iran. \*\*\*

**D. 'Skyline'**. Small Elatum Group perennial with semi-double, sky-blue flowers tinged pink near the centres, the large white eyes tinted blue. \*\*\*

**D. 'Spindrift'** ♀ Medium Elatum Group perennial with semi-double, pale cobalt-blue flowers with creamy white eyes; sepals and eyes are suffused lilac. Variable in colour: the sepals often have turquoise and green tinges. \*\*\*

**D. 'Summer Skies'**. Pacific Hybrid perennial producing light sky-blue flowers. \*\*\*

**D. 'Sungbeam'** ■ Small Elatum Group perennial. Semi-double cream flowers, deeper cream near the margins, have pale sulphur-yellow eyes. \*\*\*

**D. tatsienense** ■ Perennial with deeply divided, 3- to 7-lobed leaves. In early and midsummer, branched stems bear panicles of elf cap-shaped, bright cornflower-blue flowers, 2.5–5cm (1–2in) across, with hooded eyes and azure tips to the sepals. †20–60cm (8–24in), ↔30cm (12in). W. China (including E. Tibet). \*\*\*

**D. 'Tiddles'** ♀ Small Elatum Group perennial with fully double, slate-mauve flowers. \*\*\*

**D. 'Turkish Delight'**. Medium Elatum Group perennial producing semi-double, pale pinkish mauve flowers with white eyes. \*\*\*

**D. 'Völkerfrieden'**. Strong-growing Belladonna Group perennial with deep blue flowers. \*\*\*

**D. 'Wendy'**, syn. *D. 'Andenken an August Koenemann'*. Belladonna Group perennial with gentian-blue flowers. \*\*\*

**D. zalil** see *D. semibarbatum*.

## DENDRANTHEMA

ASTERACEAE/COMPOSITAE

Genus of 20 species of erect perennials from Europe and C. and E. Asia, found in very variable habitats, from seashores to mountain summits. They were previously included in and commonly grown as *Chrysanthemum*, but are now considered distinct. Alternate, mostly rounded, aromatic, fleshy, mid- to dark green leaves are palmately 5-lobed. Disc- or bowl-shaped, white, yellow, pink, or purple flowerheads, 1–8cm (½–3in) across, are produced singly or in loose corymbs. Grow in a herbaceous or mixed border, a rock garden, or a scree bed. All parts may cause mild stomach upset if ingested, and contact with the foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. Tall plants may need staking in exposed situations.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Divide after flowering in autumn, or in spring.

• **PESTS AND DISEASES** Trouble free.

**D. pacificum** see *Ajania pacifica*.

**D. weyrichii**, syn. *Chrysanthemum weyrichii*. Mat-forming, rhizomatous perennial with rounded, 5-lobed, fleshy, mid- to dark green leaves, 5–10cm (2–4in) long. The smaller stem leaves are inversely lance-shaped and usually pinnatifid. Daisy-like flowerheads, to 5cm (2in) across, with pink or white ray-florets and yellow disc-florets, are produced in autumn. †to 30cm (12in), ↔45cm (18in). Russia (Kamchatka, Sakhalin). \*\*\*

▷ *Dendrobenthamia* see *Cornus*  
*D. capitata* see *C. capitata*

## DENDROBIUM

ORCHIDACEAE

Genus of about 900–1,400 species of deciduous, semi-evergreen, or evergreen, epiphytic and terrestrial orchids widely distributed from India and S.E. Asia to New Guinea, Australia, and the Pacific islands; they occur in low-altitude rain-forest or montane forest over 2,000m (7,000ft). Elongated, stem-like pseudobulbs, sometimes branched, bear linear or lance-shaped to ovate leaves, either at the ends of the stems or 2-ranked. Single- to many-flowered racemes or panicles of showy flowers are produced from nodes along the stems, mainly in spring.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow epiphytically on a bark slab, or in epiphytic orchid compost in a container or slatted basket. From late spring to summer, grow in humid, partial shade; water freely, adding fertilizer at every third watering, and mist twice daily. Admit full light from autumn to early spring; keep dry in winter. They resent disturbance and flower best in small containers. Provide support for the flowering stems. See also p.46.

• **PROPAGATION** Divide when plant fills and "overflows" the container. For deciduous species, take stem cuttings of the older stems, each with one or more

dormant buds, and lay them on damp moss in humid conditions. Pot up individually when rooted, usually after a few months.

• **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

**D. aggregatum** see *D. lindleyi*.

**D. amethystoglossum**. Semi-evergreen, epiphytic orchid with upright pseudobulbs and oval-oblong leaves, 10cm (4in) long. White flowers, to 3cm (1¼in) across, with bright amethyst lips, are borne in crowded racemes, 12cm (5in) long, from winter to spring. †60–90cm (24–36in), ↔15cm (6in). Philippines. ☀ (min. 10°C/50°F; max. 30°C/86°F)

**D. aphyllum** ■ syn. *D. pierardii*.

Deciduous, epiphytic orchid with pendent, slender pseudobulbs and lance-shaped to linear-lance-shaped, fleshy leaves, 12cm (5in) long. Pale mauve-pink flowers, 5cm (2in) across, with primrose yellow lips, are borne in pairs in spring. †1m (3ft), ↔15cm (6in). Himalayas, S.W. China to Malaysia. ☀ (min. 10°C/50°F; max. 30°C/86°F)

**D. bigibbum**. Semi-evergreen, epiphytic orchid with upright pseudobulbs and oblong-lance-shaped, leathery leaves, to 12cm (5in) long. In spring, produces white, lilac-purple, mauve, or pink flowers, to 6cm (2½in) across, in racemes 10–40cm (4–16in) long, from the upper nodes. †1m (3ft) or more, ↔15cm (6in). Australia (Queensland). ☀ (min. 13°C/55°F; max. 30°C/86°F). **var. phalaenopsis**, syn. *D. phalaenopsis*, has white flowers, flushed light pinkish mauve at the tips and on the lips.

**D. chrysanthum** ■ Evergreen, epiphytic orchid producing pendent pseudobulbs, 1–2m (3–6ft) long, with lance-shaped leaves, 10–20cm (4–8in) long, along their lengths. Deep golden yellow flowers, 4cm (1½in) across, are borne in pendent racemes, 4–20cm (1½–8in) long, in spring. †1–2m (3–6ft), ↔45cm (18in). E. Himalayas to Burma, Thailand. ☀ (min. 10°C/50°F; max. 30°C/86°F)

**D. densiflorum**. Evergreen, epiphytic orchid with 4-angled pseudobulbs and narrowly elliptic or lance-shaped leaves, to 16cm (6in) long. In spring, golden yellow flowers, 5cm (2in) across, are produced in dense, pendent racemes, to 26cm (10in) long, from the upper nodes. †to 30cm (12in). Himalayas, Burma, Vietnam, Thailand. ☀ (min. 10°C/50°F; max. 30°C/86°F)



*Dendrobium aphyllum*



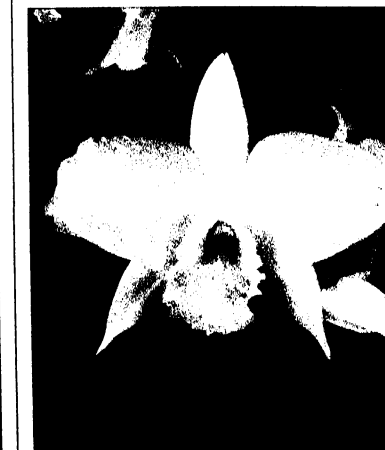
*Dendrobium chrysanthum*

**D. fimbriatum**. Evergreen, epiphytic orchid with slender, spindle-shaped pseudobulbs bearing oblong to lance-shaped leaves, 8–15cm (3–6in) long, with pointed tips. In spring, golden yellow or orange-yellow flowers, to 6cm (2½in) across, with fringed lips, are produced in pendent racemes, to 18cm (7in) long, from the upper nodes. †45cm (18in), ↔30cm (12in). Himalayas, Burma, Thailand, Malaysia, Vietnam, Laos, S. China. ☀ (min. 10°C/50°F; max. 30°C/86°F)

**D. infundibulum** ■ Semi-evergreen, epiphytic orchid with cylindrical, hairy pseudobulbs and ovate-oblong leaves, to 12cm (5in) long. From spring to summer, produces pure white flowers, 8cm (3in) across, with yellow throat markings, in racemes to 20cm (8in) long, from the upper halves of the pseudobulbs. †60cm (24in), ↔15cm (6in). Burma, Thailand. ☀ (min. 10°C/50°F; max. 30°C/86°F)

**D. kingianum** ♀ Evergreen, epiphytic orchid with narrowly ovate to narrowly obovate leaves, to 10cm (4in) long, produced from the upper portions of the narrowly conical pseudobulbs. In spring, fragrant, white, pink, mauve, purple, or red flowers, to 4cm (1½in) across, are produced in racemes 7–15cm (3–6in) long, from the pseudobulb tips. †to 15cm (6in). Australia (New South Wales, Queensland). ☀ (min. 13°C/55°F; max. 30°C/86°F)

**D. lindleyi**, syn. *D. aggregatum*. Evergreen, epiphytic orchid with spindle-shaped pseudobulbs, each bearing a single, oval leaf, 5–8cm (2–3in) long. Bright yellow or pale golden yellow



*Dendrobium infundibulum*

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D

*Dendrobium Malones 'Hope'*

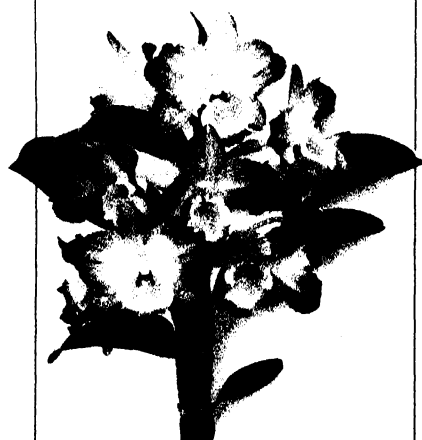
flowers, to 4cm (1½in) across, are produced in pendent racemes, 10–30cm (4–12in) long, in spring. †10cm (4in), ↔ 15cm (6in). Himalayas, Laos, Vietnam, Cambodia, S.W. China, Burma, Thailand. ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. loddigesii***. Deciduous, epiphytic orchid with cylindrical pseudobulbs, becoming pendent, and oblong, fleshy leaves, 7cm (3in) long. Pale rose-pink flowers, 5cm (2in) across, each with an orange disc on the fringed lip, are produced singly from the nodes in spring, usually after the leaves have fallen. †15cm (6in). S.W. China. ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. longicornu***. Semi-evergreen, epiphytic orchid with slender, black-hairy pseudobulbs bearing linear-lance-shaped leaves, 7cm (3in) long. Racemes of 1–3 fragrant white flowers, 5cm (2in) across, with red and yellow markings on the fringed lips, are produced from the upper halves of the leafy stems in spring. †30cm (12in), ↔ 15cm (6in). Himalayas, Burma, Thailand. ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. Malones 'Hope'*** ■ Evergreen orchid bearing oblong leaves, 10cm (4in) long. Dark pink flowers, 7cm (3in) across, with white-margined yellow lips, are produced in pairs in spring. †60cm (24in), ↔ 30cm (12in). ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. Momozono 'Princess'*** ■ Evergreen orchid bearing oblong leaves, 10cm (4in) long. Dark pink flowers, 7cm (3in) across, fading to white in the centres, and with white and pink marks on the lips, are produced in pairs in

*Dendrobium Momozono 'Princess'**Dendrobium nobile*

spring. †60cm (24in), ↔ 30cm (12in). ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. moschatum***. Evergreen, epiphytic orchid with cylindrical pseudobulbs and lance-shaped leaves, to 15cm (6in) long. Produces pale yellow flowers, 8cm (3in) across, with a pink flush and 2 maroon marks on each cupped lip, in racemes to 20cm (8in) long, from the upper nodes, in spring. †1.2m (4ft), ↔ 60cm (24in). Himalayas, Burma, Thailand, Laos. ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. nobile*** ■ ♀ Semi-evergreen, epiphytic orchid with cylindrical to club-shaped pseudobulbs and lance-shaped to ovate-lance-shaped leaves, 7–12cm (3–5in) long. Pale rose-pink flowers, 6cm (2½in) across, tipped with amethyst and with a maroon mark on each lip, are produced in pairs in spring. †45cm (18in), ↔ 15cm (6in). Himalayas, S. China, Taiwan. ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. ochreatum***. Deciduous, epiphytic orchid with stout, cylindrical, decumbent pseudobulbs, 10–13cm (4–5in) long, and lance-shaped leaves, 10–17cm (4–7in) long. Rich golden yellow flowers, 7cm (3in) across, with a maroon mark on each lip, are produced

*Dendrobium Oriental Paradise*

in pairs in spring. †15cm (6in). E. Himalayas, Burma, Thailand, Laos. ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. Oriental Paradise*** ■ Evergreen orchid bearing oblong leaves, 10cm (4in) long. White flowers, 7cm (3in) across, with dark pink notches on the petals and red and yellow marks on the lips, are borne in pairs in spring. †60cm (24in), ↔ 30cm (12in). ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. phalaenopsis*** see *D. bigibbum* var. *phalaenopsis*.

***D. pierardii*** see *D. aphyllum*.

***D. speciosum***. Evergreen, semi-epiphytic orchid with stout, cylindrical or club-shaped pseudobulbs bearing ovate or oblong leaves, to 25cm (10in) long, at the apexes. In spring, produces fragrant, creamy white flowers, to 8cm (3in) across, that do not open widely, in dense racemes, to 60cm (24in) long, from the pseudobulb tips. †45cm (18in), ↔ 30cm (12in). Australia (New South Wales, Queensland, Victoria). ♀ (min. 13°C/55°F; max. 30°C/86°F)

***D. Spiral Gem 'Universal Topaz'*** ■ Evergreen orchid producing narrowly ovate leaves, 10–25cm (4–10in) long. Produces racemes 30cm (12in) long of

*Dendrobium Spiral Gem 'Universal Topaz'*

6–9 green-yellow flowers, 8–12mm (¾–½in) across, with red lips, from winter to spring. †25–35cm (10–14in), ↔ 1m (3ft). ♀ (min. 10°C/50°F; max. 30°C/86°F)

***D. wardianum***. Deciduous, epiphytic orchid with jointed, cylindrical pseudobulbs, becoming pendent, and lance-shaped leaves, 8–12cm (3–5in) long. White flowers, to 10cm (4in) across, with purple-tipped segments and yellow and maroon marks on the lips, are produced in pairs from spring to autumn. †30cm (12in), ↔ 15cm (6in). E. Himalayas, S.W. China, Burma, Thailand. ♀ (min. 10°C/50°F; max. 30°C/86°F)

## DENDROCALAMUS

GRAMINEAE/POACEAE

Genus of about 30 species of giant, clump-forming, evergreen, rhizomatous bamboos from tropical and subtropical S. and E. Asia. They have thick canes and lance-shaped, downy or bristly leaf-blades. In their native regions, these huge bamboos are used in the construction industry; the hollowed stems are used in irrigation systems and to make paper pulp. They are suitable for specimen plantings or may be used for making a bamboo grove. In frost-prone areas, they are sometimes grown in a warm greenhouse or in interior landscapes in a public space.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), enriched with leaf mould, in bright filtered light with high humidity. Water freely in summer, moderately in winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in sun or partial shade.

• **PROPAGATION** Divide established clumps in spring. Cut sections of young culms in spring, then place horizontally in sphagnum moss in a closed, heated propagating case.

• **PESTS AND DISEASES** Trouble free.

***D. giganteus***, syn. *Sinocalamus giganteus* (Kyo-Chiku). Robust, clump-forming bamboo producing rapidly spreading rhizomes and erect, later gracefully arching, hairy-jointed canes that eventually reach 35cm (14in) wide. The lance-shaped, smooth, minutely toothed leaf-blades, to 55cm (22in) long, arise from the cane joints and clasp the canes at their bases. †25–30m (80–100ft), ↔ 3–4m (10–12ft). S.E. Asia. ♀ (min. 5°C/41°F)

## DENDROCHILUM

Golden chain orchid

ORCHIDACEAE

Genus of about 120–150 species of evergreen, epiphytic orchids from S.E. Asia and New Guinea, often found on trees and rocks by rivers at altitudes of 700–2,000m (2,300–7,000ft). Ovoid to cylindrical pseudobulbs produce 1 or 2 lance-shaped-elliptic leaves. Golden chain orchids are valued for their chain-like racemes of fragrant, dainty, star-shaped flowers, borne in early summer.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in a container. In summer, provide humid,

shaded conditions; water freely and apply fertilizer at every third watering. In winter, admit full light and water very sparingly. See also p.46.

- **PROPAGATION** Divide when plant "overflows" the container, or remove backbulbs and pot up separately.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*D. glumaceum*. Epiphytic orchid with ovoid pseudobulbs, each bearing one narrowly elliptic leaf, to 30cm (12in) long. Star-shaped white flowers, to 2cm (¾in) across, do not open widely. They are produced densely from the axils of conspicuous white bracts, in 2 rows on pendent racemes, from the centre of the new growth. ‡ to 50cm (20in), ↔ 30cm (12in). Philippines. ☀ (min. 13°C/55°F; max. 30°C/86°F)

## DENDROMECON

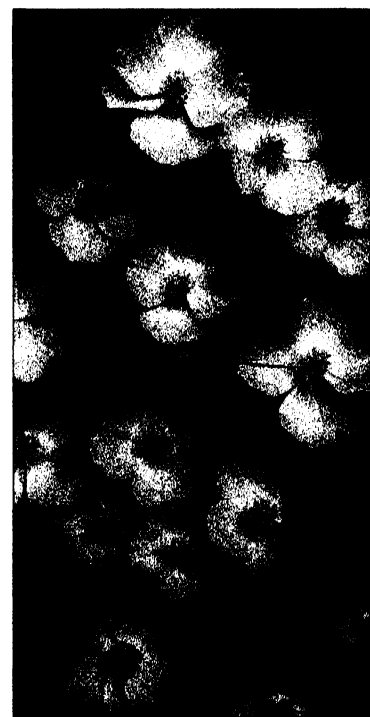
Tree poppy

PAPAVERACEAE

Genus of 1 or 2 species of evergreen shrubs and small trees found in scrub on dry, rocky slopes in S.W. USA and Mexico. *D. rigida* is cultivated for its lance-shaped, simple, leathery, glaucous leaves, arranged alternately along the stems, and for its showy, poppy-like, fragrant flowers. It looks best grown against a wall, but may be grown in a cool greenhouse in cold regions.

- **HARDINESS** Frost hardy, but may survive short periods at temperatures below -5°C (23°F) if protected.
- **CULTIVATION** Grow in well-drained soil in full sun. Pruning group 13, if wall-trained.
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) in autumn or spring. Root softwood cuttings in summer, or insert root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

*D. rigida* ☐ Spreading shrub with rigid, upright shoots and lance-shaped, leathery, glaucous, grey-green leaves, to



*Dendromecon rigida*

10cm (4in) long. Solitary, poppy-like, fragrant yellow flowers, to 7cm (3in) across, are produced from spring to autumn. ‡→ 3m (10ft). USA (California), Mexico. \*\*\*

## DENMOZA

CACTACEAE

Genus of 2 species of spherical to columnar, perennial cacti from hillsides in Argentina. They have very thick stems and densely spiny ribs. Tubular flowers are produced mainly near the top of the stems, the style and stamens protruding in a cluster from each almost closed throat. Spherical, scaly fruits have woolly tufts, which later fall, and large, helmet-shaped black seeds. In frost-prone areas, grow in a warm greenhouse. In warmer climates, grow in a border with other succulents.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light and low humidity. In growth, water moderately and apply fertilizer monthly; keep completely dry at other times. Outdoors, grow in sharply drained, gritty soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in spring or early summer.
- **PESTS AND DISEASES** Mealybugs and root mealybugs may be troublesome, especially in containers.

*D. rhodacantha*. Spherical cactus with 15–30 deeply furrowed ribs. Areoles have brownish red spines (8–10 radials and usually 1 central). Diurnal, tubular red flowers, 7cm (3in) long, are borne in summer. ‡ 15–30cm (6–12in), ↔ 16cm (6in). N.W. and W. Argentina. ☀ (min. 10°C/50°F)

## DENNSTAEDTIA

DENNSTAEDTIACEAE

Genus of about 70 species of deciduous ferns found mainly in woodland in tropical regions. In spring, erect, lance-shaped or roughly triangular fronds, usually 2- or 3-pinnate, arise from a creeping rhizome, soon forming colonies that may become invasive. Sori develop along the margins of the frond segments, and are covered by cup-shaped indusia. Use *Dennstaedtia* species for ground cover in a shady border. In frost-prone areas, grow tender species in a cool or warm greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered light. Water freely in growth, sparingly in winter. Pot on regularly. Outdoors, grow in moist, humus-rich, acid soil in deep to light dappled shade.
- **PROPAGATION** Sow spores at 15°C (59°F) for hardy species, and 21°C (70°F) for tender species, as soon as ripe. Divide in spring. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*D. davallioides*. Spreading fern with long-creeping rhizomes. Broadly triangular, mid-green fronds, 40–70cm (16–28in) long, are 4- or 5-pinnate with linear segments. ‡ 75cm (30in), ↔ indefinite. Australia (Queensland, New South Wales, Victoria). \*

*D. punctiloba* (North American hay-scented fern). Fern with long-creeping rhizomes. Erect to arching, yellow-green fronds, 15–45cm (6–18in) long, are lance-shaped and 2- or 3-pinnate, with linear segments. May be invasive. ‡ 45cm (18in), ↔ indefinite. North America. \*\*\*

- ▷ *Dentaria* see *Cardamine*
- ▷ *D. digitata* see *C. pentaphyllos*
- ▷ *D. enneaphyllos* see *C. enneaphyllos*
- ▷ *D. pentaphyllos* see *C. pentaphyllos*
- ▷ *Derwentia* see *Parahebe*

## DESCHAMPSIA

Hair grass

GRAMINEAE/POACEAE

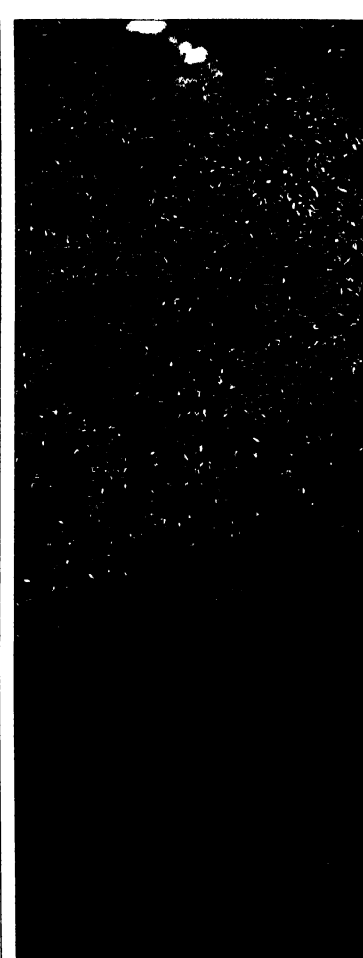
Genus of about 50 species of tufted or tussock-forming, herbaceous or evergreen, perennial grasses. They are widely distributed in arctic and temperate zones, found in damp meadows, moorland, and woodland clearings, and on high mountains in tropical regions. The leaves are thread-like, linear, or oblong. Grown for their habit and graceful, airy panicles, they are suitable for a mixed, herbaceous, or shrub border, or for a wildflower or rock garden. The flowerheads of the taller species are useful for fresh or dried flower arrangements.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in dry to damp, neutral to acid soil in sun or partial shade. Incorporate garden compost before planting in dry soils. Remove flowerheads before new growth begins in early spring.
- **PROPAGATION** Sow seed *in situ* in spring or autumn, or divide in mid-spring or early summer.
- **PESTS AND DISEASES** Trouble free.

*D. cespitosa* (Tufted hair grass, Tussock grass). Dense, tussock-forming, evergreen grass with rigid, linear, rough, mid-green leaves, to 60cm (24in) long. Produces airy, arching panicles, to 45cm (18in) long, of glistening, silver-tinted purple spikelets, from early to late summer. ‡ to 2m (6ft), ↔ 1.2–1.5m (4–5ft). Eurasia, tropical Africa. \*\*\*. 'Fairy's Joke' see var. *vivipara*. 'Golden Dew' see 'Goldtau'. 'Golden Veil' see 'Goldschleier'. 'Goldschleier', syn. 'Golden Veil', has dark green leaves and spikelets that age to bright silvery yellow; ‡→ to 1.2m (4ft). 'Goldtau' ☐ syn. 'Golden Dew', is more compact, with silvery reddish brown spikelets that



*Deschampsia cespitosa* 'Goldtau'



*Deschampsia flexuosa* 'Tatra Gold'

age to golden yellow; ‡→ to 75cm (30in). var. *vivipara*, syn. 'Fairy's Joke', produces young plantlets in place of seed, eventually weighing the slender culms to the ground; ‡→ to 1.2m (4ft). *D. flexuosa*, syn. *Aira flexuosa* (Wavy hair grass). Tufted, often rhizomatous, evergreen grass with thread-like, smooth, bluish green leaves, to 20cm (8in) long. Open panicles, to 12cm (5in) long, of glistening, silver-tinted, purple or brown spikelets are borne on wavy stalks in early and midsummer. Prefers acid soil. ‡ to 60cm (24in), ↔ 30cm (12in). Europe, Asia, N.E. USA, South America. \*\*\*. 'Tatra Gold' ☐ syn. 'Aurea', has arching, bright yellow-green leaves and bronze-tinted inflorescences; ‡ 50cm (20in).

- ▷ *Desert candle* see *Eremurus*
- ▷ *Desert pea*, *Sturt's* see *Clianthus formosus*
- ▷ *Desert rose* see *Adenium*

## DESFONTAINIA

DESFONTAINIACEAE/LOGANIACEAE

Genus of one species of evergreen shrub from rainforest and mountain slopes in the Andes, cultivated for its holly-like, opposite leaves and its showy, solitary, tubular flowers. In areas of high rainfall, *D. spinosa* will tolerate open situations, but in drier places a cool, sheltered shrub border or peat garden is essential.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in moist, peaty, lime-free soil in cool, dappled shade, with shelter from cold, drying winds. Pruning group 9.



*Desfontainia spinosa*

- **PROPAGATION** Insert semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**D. spinosa** [ ] Dense, bushy shrub with oval or ovate, spiny, glossy, dark green leaves, to 6cm (2½in) long. Pendent, yellow-tipped red flowers, to 4cm (1½in) long, are produced from the upper leaf axils from midsummer to late autumn. †↔ 2m (6ft). Andes (from Colombia to Straits of Magellan). \* \*

## DESMODIUM

LEGUMINOSAE/PAPILIONACEAE

Genus of more than 450 species of deciduous shrubs, subshrubs, and herbaceous perennials from tropical and subtropical regions. They are grown for their loose, terminal or axillary panicles or racemes of small, pea-like, white to purple flowers. The alternate leaves are pinnate to 3-palmate. Grow against a wall. In frost-prone areas, grow half-hardy and frost-tender species in a temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in well-drained soil in full sun. Pruning group 4 or 6.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert softwood cuttings in late spring.
- **PESTS AND DISEASES** Trouble free.

**D. elegans** [ ] syn. *D. tiliifolium*. Upright subshrub with leaves to 25cm (10in) long, composed of 3 obovate leaflets, dark green above and grey and hairy beneath. Terminal panicles, 20cm (8in) long, of pea-like, lilac to deep pink



*Desmodium elegans*

flowers are produced from late summer to autumn. †↔ 1.5m (5ft). Himalayas, China. \* \*

**D. praestans** see *D. yunnanense*.

**D. tiliifolium** see *D. elegans*.

**D. yunnanense**, syn. *D. praestans*.

Vigorous, spreading shrub with pale green leaves, 10–20cm (4–8in) long, downy, grey-green beneath, composed of 1 broadly ovate central leaflet and 2 much smaller lateral ones; they are occasionally reduced to a single, large, central leaflet. Pea-like purple flowers are produced in terminal panicles, to 40cm (16in) long, in late summer. †↔ 4m (12ft). S.W. China. \* \*

## DEUTZIA

HYDRANGEACEAE/SAXIFRAGACEAE

Genus of about 60 species of mainly deciduous shrubs, found in scrub and woodland from the Himalayas to E. Asia. Many have peeling bark, especially when mature. Leaves, usually to 7cm (3in) long, are opposite, ovate to lance-shaped, and mainly toothed. Numerous 5-petalled, cup- to star-shaped, often fragrant, white to pink flowers are borne in axillary or terminal racemes, panicles, cymes, or corymbs from mid-spring to midsummer. All are suitable for a shrub border; the larger ones are also good specimen plants. In colder regions, grow frost-hardy deutzias against a wall or among trees and other shrubs.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in reasonably fertile, not too dry soil, preferably in full sun; some will tolerate partial shade. Pruning group 2.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert softwood cuttings in summer; root hardwood cuttings in autumn.
- **PESTS AND DISEASES** Trouble free.

**D. 'Candelabra'**. Upright, arching shrub with broadly lance-shaped, bright green leaves. Bears star-shaped white flowers, to 2.5cm (1in) across, in dense, upright panicles, 6–8cm (2½–3in) long, in mid- and late spring. † 1m (3ft), ↔ 1.5m (5ft). \* \* \*

**D. chunii** see *D. ningpoensis*.

**D. compacta**. Spreading shrub with lance-shaped to inversely lance-shaped, tapered leaves, to 6cm (2½in) long, dark green above and grey-green beneath. In midsummer, produces compact, corymb-like panicles, 5cm (2in) across,



*Deutzia x elegantissima* 'Rosealind'

of cup-shaped, fragrant white flowers, 1cm (½in) across. † 2m (6ft), ↔ 2.5m (8ft). China. \* \* \*. **'Lavender Time'** produces lilac flowers, fading with age.

**D. 'Contraste'**. Bushy shrub with arching branches and narrowly ovate, dark green leaves. Star-shaped, wavy-petalled, yellow-anthered, pink to purplish pink flowers, to 2.5cm (1in) across, with deep pink bands on the backs of the petals, are produced in corymb-like panicles, 5–7cm (2–3in) across, in early summer. † 1.5m (5ft), ↔ 1.2m (4ft). \* \* \*

**D. crenata** var. **nakaiana** 'Nikko' [ ] Compact shrub with lance-shaped, rich green leaves, 3–6cm (1¼–2½in) long, turning red-purple in autumn. Produces racemes or panicles, 10–15cm (4–6in) long, of star-shaped white flowers, 1.5cm (½in) across, in summer. Suitable for a rock garden. † 60cm (24in), ↔ 1.2m (4ft). \* \* \*

**D. discolor** 'Major'. Spreading shrub with arching branches and narrowly ovate-oblong, mid-green leaves, to 10cm (4in) long. Produces star-shaped, pink-flushed white flowers, 1.5–2.5cm (½–1in) across, in corymbs, 8cm (3in) across, in late spring and early summer. † 1.5m (5ft), ↔ 2m (6ft). \* \* \*

**D. x elegantissima** 'Rosealind' [ ] Compact, rounded, upright shrub with ovate to ovate-oblong, dull, mid-green leaves. Star-shaped, pink-flushed white flowers, 2cm (¾in) across, are produced in corymb-like cymes, 4–8cm (1½–3in) across, in late spring and early summer. † 1.2m (4ft), ↔ 1.5m (5ft). \* \* \*

**D. gracilis** [ ] Bushy, erect shrub with lance-shaped to ovate, tapered, bright



*Deutzia gracilis*

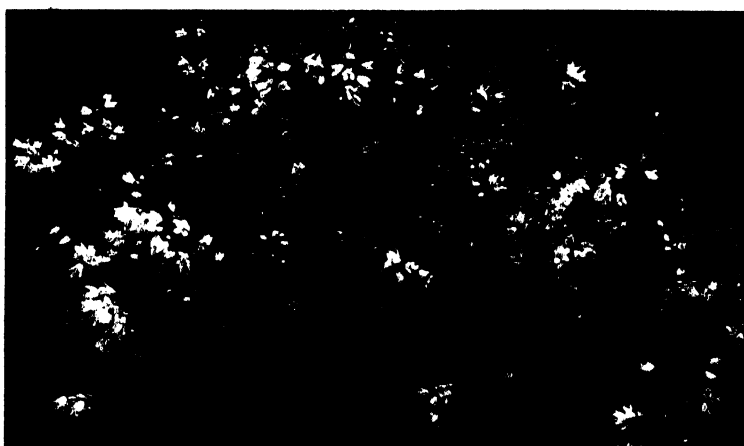
green leaves, to 6cm (2½in) long. Fragrant, star-shaped white flowers, to 2cm (¾in) across, are produced in upright racemes, 5–7cm (2–3in) long, from spring to early summer. †↔ 1m (3ft). Japan. \* \* \*

**D. 'Joconde'**. Bushy, upright shrub with narrowly ovate, long-pointed, mid-green leaves. Panicles, 5–7cm (2–3in) long, of cup-shaped, yellow-anthered white flowers (purple in bud), 2.5–3cm (1–1¼in) across, streaked purple on the backs of the wavy petals, are produced in summer. †↔ 1.5m (5ft). \* \* \*

**D. x kalmiiiflora** (*D. parviflora* x *D. purpurascens*). Open shrub with arching branches and narrowly oval, mid-green leaves, 4–7cm (1½–3in) long. Bears star-shaped, deep pink flowers, to 2cm (¾in) across, paler inside, in upright



*Deutzia longifolia* 'Veitchii'



*Deutzia crenata* var. *nakaiana* 'Nikko'



*Deutzia x magnifica* 'Staphyleoides'

*Deutzia monbeigii*

panicles, 5–7cm (2–3in) long, in early summer.  $\updownarrow$  1.5m (5ft). Garden origin. \*\*\*

**D. 'longifolia'**. Spreading shrub with arching branches and lance-shaped, grey-green leaves, to 12cm (5in) long. Panicle-like cymes, 5–7cm (2–3in) long, of star-shaped white flowers, to 2.5cm (1in) across, purple-pink on the backs of the petals, are borne in early and midsummer.  $\updownarrow$  2m (6ft),  $\leftrightarrow$  3m (10ft). W. China (Sichuan, Yunnan). \*\*\*.

**'Veitchii'**  $\square$   $\varnothing$  has deep lilac-pink flowers, to 3cm (1 1/4in) across, with white margins.

**D. 'Magicien'**. Bushy, upright shrub with narrowly ovate, mid-green leaves. In early summer, bears panicles, 5–7cm (2–3in) long, of cup-shaped flowers, 2.5cm (1in) across, pink inside, white

*Deutzia 'Mont Rose'**Deutzia ningpoensis**Deutzia x rosea*

with deep pink stripes outside, and with yellow anthers.  $\updownarrow$  1.5m (5ft). \*\*\*

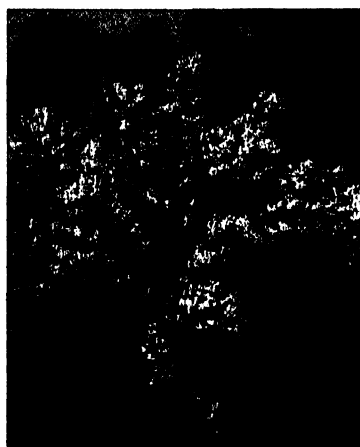
**D. x magnifica 'Staphyleoides'**  $\square$  Vigorous, upright shrub with arching branches and ovate-oblong, bright green leaves, to 10cm (4in) long, hairy below. In early summer, bears star-shaped white flowers, 2–2.5cm (3/4–1in) across, with recurved petals, in panicles 10cm (4in) long.  $\updownarrow$  3m (10ft),  $\leftrightarrow$  2m (6ft). \*\*\*

**D. monbeigii**  $\square$  Arching shrub with slender shoots and ovate-lance-shaped, dark green leaves, to 5cm (2in) long, white hairy beneath. Bears star-shaped white flowers, to 1.5cm (1/2in) across, in corymbs, 6cm (2 1/2in) across, in early and midsummer.  $\updownarrow$  1.2m (4ft),  $\leftrightarrow$  1.5m (5ft). S.W. China (Yunnan). \*\*\*

**D. 'Mont Rose'**  $\square$  Bushy, upright shrub with narrowly ovate, dark green leaves. Star-shaped, purple-pink flowers, to 1.5cm (1/2in) across, with wavy petals and yellow anthers, are produced in panicles, 2–3cm (3/4–1 1/4in) long, in early summer.  $\updownarrow$  1.2m (4ft). \*\*\*

**D. ningpoensis**  $\square$  syn. *D. chunii*. Open shrub with slender, lance-shaped to ovate, generally entire, mid-green leaves, densely hairy beneath. Panicles, to 10cm (4in) long, of star-shaped white or pink-tinged flowers, to 1cm (1/2in) across, are produced in summer.  $\updownarrow$  2m (6ft). E. China (Zhejiang, Anhui). \*\*\*

**D. pulchra**. Upright shrub with arching branches and peeling, orange-brown bark. Lance-shaped to narrowly ovate, entire or toothed, dark green leaves are densely hairy, to 10cm (4in) long. Bears star-shaped, pink-tinged white flowers, to 2cm (3/4in) across, in slender, pendent panicles, to 12cm (5in) long, in late

*Deutzia scabra**Deutzia setchuenensis* var. *corymbiflora*

spring and early summer.  $\updownarrow$  2.5m (8ft),  $\leftrightarrow$  2m (6ft). Taiwan, Philippines. \*\*

**D. x rosea**  $\square$  (*D. gracilis* x *D. purpurascens*). Compact, rounded, bushy shrub with ovate-lance-shaped to ovate-oblong, dark green leaves. In early summer, bears a profusion of star-shaped white flowers, to 1.5cm (1/2in) across, pink- to red-tinged outside, in broad, corymb-like panicles, 5–7cm (2–3in) long.  $\updownarrow$  1.2m (4ft). Garden origin. \*\*\*.

**'Campanulata'** has bell-shaped white flowers, 2cm (3/4in) across.

**D. scabra**  $\square$  Upright shrub with arching shoots, peeling, pale brown bark when mature, and broadly ovate, dark green leaves, to 8cm (3in) long. Produces dense, upright, cylindrical panicles, 8–16cm (3–6in) long, of star-shaped, single, honey-scented, white or pink-tinged flowers, to 1.5cm (1/2in) across, in early and midsummer.  $\updownarrow$  3m (10ft),  $\leftrightarrow$  2m (6ft). Japan. \*\*\*.

**'Candidissima'** produces double white flowers. **'Pride of Rochester'** has double white flowers tinged with pink.

**D. setchuenensis** var. *corymbiflora*  $\square$   $\varnothing$  Upright shrub with peeling, pale brown bark when mature, and ovate to lance-shaped, long-pointed, grey-green leaves, to 11cm (4 1/2in) long. In early and midsummer, produces cup-shaped white flowers, to 1.5cm (1/2in) across, in corymbs 7–10cm (3–4in) across.  $\updownarrow$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). W. China. \*\*

▷ **Devil flower** see *Tacca chantrierei*

▷ **Devil-in-a-bush** see *Nigella*, *N. damascena*

▷ **Devil's apples** see *Mandragora officinarum*

▷ **Devil's bit scabious** see *Succisa pratensis*

▷ **Devil's claw**, Common see *Proboscidea louisianica*

▷ **Devil's tongue** see *Amorphophallus*, *A. konjac*

▷ **Devil's walking stick** see *Aralia spinosa*

▷ **Dewdrop**, Golden see *Duranta erecta*

▷ **Dhak** see *Butea monosperma*

## DIANELLA

LILIACEAE/PHORMIACEAE

Genus of 25–30 species of variable, evergreen, rhizomatous perennials, sometimes with fibrous roots, found in subtropical and temperate woodland, heath, or more open areas in E. Africa, Madagascar, E. Asia, W. Pacific, and Australasia. They are grown for their loose panicles of slightly pendent, star-shaped, usually blue flowers, followed by spherical or oblong-ovoid berries. Grass-like, linear to lance-shaped leaves are radical or borne in 2 ranks on the stems, which are usually 40–80cm (16–32in) tall, although they may reach 2m (6ft). Grow in a woodland garden or a warm, sheltered border. In frost-prone areas, grow tender species in a cool greenhouse, preferably in a border.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), in full light with shade from hot sun.

In the growing season, water freely and apply a balanced liquid fertilizer weekly; keep just moist in winter. Outdoors, grow in moderately fertile, humus-rich, well-drained, neutral to acid soil in a sheltered site in sun or partial shade.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F), or divide in spring.

• **PESTS AND DISEASES** Trouble free.

**D. caerulea**. Tufted or mat-forming perennial with broadly lance-shaped, keeled, stiff leaves, to 75cm (30in) long, with rough margins. Panicles, to 30cm (12in) long, of pendent, star-shaped, blue, blue-green, or white flowers, 1–2cm (1/2–1/4in) long, with conspicuous yellow anthers, are produced in early summer, followed by spherical, shiny blue berries, 7–12mm (1/4–1/2in) long.  $\updownarrow$  60cm (24in),  $\leftrightarrow$  30cm (12in). E. Australia, New Guinea. \*\*

**D. tasmanica**  $\square$  Tufted perennial forming clumps of strap-shaped, stiff, rough-margined leaves, to 1.2m (4ft) long, sometimes also producing tall, cane-like stems with tufts of smaller leaves at the top. Branching panicles, to 60cm (24in) long, of star-shaped, lavender-blue to violet flowers, to 2cm (3/4in) across, with pale yellow anthers, are borne in early summer, followed by persistent, oblong-ovoid, dark blue berries, to 2cm (3/4in) long.  $\updownarrow$  to 1.2m (4ft),  $\leftrightarrow$  45cm (18in). S.E. Australia (including Tasmania). \*\*

*Dianella tasmanica*



## DIANTHUS

Carnation, Pink

CARYOPHYLLACEAE

Genus of over 300 species of low-growing, evergreen subshrubs and perennials, annuals, and biennials – including the popular bedding plant *D. barbatus* (Sweet William) – found in mountains and meadows in Europe, Asia, and southern Africa. The tens of thousands of cultivars, bred for garden use and exhibition, are usually divided into several subgroups, described below. The leaves of all *Dianthus* species and cultivars are linear to lance-shaped, mostly pointed, and often blue-grey or grey-green with a waxy bloom. Leaves of the alpine species are 1.5–5cm (½–2in) long; those of carnations and larger pinks may be up to 13cm (5in) long.

Carnations and pinks are similar in habit and flower, although pinks are smaller and frequently have fewer petals, often distinctively patterned. Both are grown mainly for their flowers, borne in profusion over a long period in summer, and exceptionally long-lasting when cut. The blooms are often fragrant (referred to as “clove-scented”), and are solitary or borne in few- to many-flowered, terminal, cyme-like umbels or cymes. Each flower has a short tubular base and usually 5 spreading tepals (fully double cultivars have up to 60); these are sometimes toothed or fringed, and bearded.

For exhibition purposes, carnations and pinks are grouped according to the colouring and marking of their flowers (see panel below). Carnations and pinks are also divided into the following broader subgroups:

**Border carnations**

Fully hardy, annual or evergreen, perennial border plants, also good for cutting. In midsummer, each stem bears 5 or more double flowers, to 8cm (3in) across, with no fewer than 25 petals. These are of the self, fancy, or picotee types, and may be clove-scented. †45–60cm (18–24in), ↔ 40cm (16in).

**Perpetual-flowering carnations**

Half-hardy, evergreen perennials; they are usually grown under glass for cut flowers, and for exhibition. Flowers, produced throughout the year, are double, to 10cm (4in) across, and are of the self, fancy, or picotee types. Modern cultivars are often scented, although few of the older ones are fragrant. †90–150cm (3–5ft), ↔ 30cm (12in).

**Malmaison carnations**

Half-hardy, evergreen perennials, derived from *D. 'Souvenir de la Malmaison'*, grown for their intensely fragrant flowers. Under glass and in conservatories, they bloom sporadically throughout the year, producing large, double flowers, to 13cm (5in) across. Most Malmaisons are selfs, with thick stems and broad, curled leaves. They generally produce blooms with such a large number of petals that the calyces split, and are usually disbudded to leave only the crown bud on each stem. †50–70cm (20–28in), ↔ 40cm (16in).

**Old-fashioned pinks**

Fully hardy, evergreen perennials, grown for border decoration and cutting. Most form compact mounds, although some are more open in habit. They bloom for 2–3 weeks in early summer, bearing 4–6 usually clove-scented, single, semi-double, or double flowers per stem, each 3.5–6cm (1½–2½in) across; these may be selfs, bicolours, or laced. The sterile “Mule” pinks are crosses between *D. barbatus* and border carnations. †25–45cm (10–18in), ↔ 30cm (12in).

**Modern pinks**

Fully hardy, evergreen perennials, grown for border decoration and cutting, most forming compact mounds. Flowers, 3.5–6cm (1½–2½in) across, are single, semi-double, or double, usually with 4–6 but occasionally 1–3 flowers per stem, and with 2 or 3 flushes of bloom from early summer to autumn; they may be selfs, bicolours, fancies, or laced, and some are clove-scented. †25–45cm (10–18in), ↔ 40cm (16in).

**Alpine pinks**

Fully hardy, evergreen, alpine species, and cultivars derived from them, with a

neat, mat- or cushion-forming habit. They grow easily at the edge of a border or in a rock garden, raised bed, trough, or alpine house. Single, semi-double, or double flowers, 1–4cm (½–1½in) across, borne in summer, are solitary or in few-flowered clusters and often clove-scented. Many have grey foliage. †8–10cm (3–4in), ↔ 20cm (8in).

• **HARDINESS** Fully hardy, except for perpetual-flowering and Malmaison carnations, which are half hardy.

• **CULTIVATION** All fully hardy *Dianthus* species and cultivars prefer well-drained, neutral to alkaline soil, in full sun, although *D. glacialis*, *D. microlepis*, and *D. pavonius* prefer acid conditions.

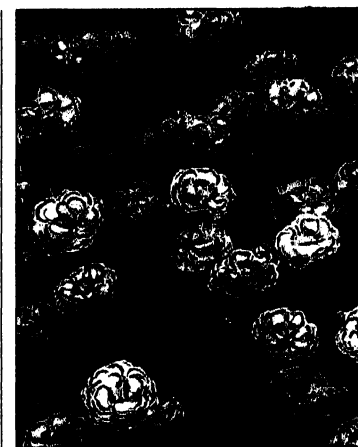
Alpine species benefit from the sharp drainage of a raised bed, wall, or trough. Grow annual and biennial pinks in full sun in well-drained, neutral to acid soil, enriched with well-rotted manure and top-dressed with a balanced granular fertilizer. Discard after flowering. Grow biennials in well-drained, neutral to alkaline soil in full sun. Provide twiggy support in exposed areas. Remove flower stems after flowering to induce a second crop in the following year.

Plant young border carnations and pinks in soil enriched with well-rotted manure or garden compost, and apply a balanced fertilizer in spring. Do not bury the lowest leaves. Support border carnations in late spring, using thin canes or twigs, 75cm (30in) long, and wire rings. In the first year, remove only the small bud below each crown bud; second-year plants need moderate disbudding; disbud 3-year-old border carnations to leave 1 or 2 buds per stem.

Grow perpetual-flowering and Malmaison carnations under glass at 7–10°C (45–50°F) in loam-based potting compost (J1 No.2). Stop cuttings to leave 6 pairs of leaves. Admit full light in winter, and bright filtered light in summer with good ventilation at all times. Provide low humidity in winter. To prevent formation of split calyces, prevalent in older cultivars, avoid fluctuating temperatures, erratic watering, and overfertilizing. In spring and summer, water moderately and apply a balanced liquid fertilizer every 10 days; water sparingly in autumn and winter. Support flowering stems with rings and 1.2m (4ft) canes. Disbud gradually over several days, to leave only the crown buds. Dead-head all *Dianthus* species and cultivars to maintain a compact habit or to prolong flowering.

• **PROPAGATION** Sow seed of alpine species in containers in a cold frame from autumn to early spring. Sow seed of annuals at 13–15°C (55–59°F) in early spring. Sow biennials *in situ* in autumn or at 13°C (55°F) in early spring to flower in the same year. Take cuttings from non-flowering shoots of perennial *Dianthus* species and pinks in summer, and of perpetual-flowering and Malmaison carnations in late winter. Layer border carnations after flowering.

• **PESTS AND DISEASES** Aphids and slugs may weaken garden plants. Aphids, thrips, tortrix moth caterpillars, and red spider mites may damage carnations under glass. Rust affects the leaves and stems of carnations and pinks, and of *D. barbatus*. Virus diseases and *Fusarium* wilt are easily transmitted by aphids.



*Dianthus* 'Becky Robinson'

*D. 'A.J. MacSelf'* see *D. 'Dad's Favourite'*.

*D. 'Aldridge Yellow'*. Self border carnation producing double, pale yellow flowers on stiff stems. \*\*\*

*D. 'Alice'* ■ Bicolour modern pink. Clove-scented, semi-double, ivory-white flowers have dark crimson eyes. \*\*\*

*D. 'Alice Forbes Improved'*. Fancy border carnation producing double, pure white flowers with pinkish mauve stripes. \*\*\*

*D. 'Allen's Maria'* see *D. 'Maria'*.

*D. alpinus* ♀ (Alpine pink). Short-lived, cushion-forming perennial with glossy, dark green leaves, to 3cm (1¼in) long. Bears solitary, single, pale-spotted, deep pink to crimson flowers, 2.5–4cm (1–1½in) across, with bearded, toothed petals, in summer. Best in humus-rich soil. †8cm (3in), ↔ to 10cm (4in). S.E. European Alps. \*\*\*.

*D. 'Joan's Blood'* ■ ♀ Bears deep magenta-pink flowers with crimson centres.

*D. amurensis*. Short-lived, upright, mat-forming, loosely branched perennial with bright green leaves, to 5cm (2in) long. Terminal cymes of 1–3 single, deep purplish pink to mauve flowers, 1–2.5cm (½–1in) across, with darker centres and deeply toothed, bearded petals, are produced in summer. †to 40cm (16in), ↔ to 30cm (12in). E. Asia. \*\*\*

*D. 'Annabelle'*. Alpine pink bearing masses of solitary, clove-scented, double, cerise-pink flowers. \*\*\*

*D. arenarius*. Tufted, slender perennial with bright green leaves, to 4cm (1½in) long. Produces solitary, deeply fringed, bearded, single white flowers, to 2.5cm (1in) across, often purple at the bases, in summer. †to 30cm (12in). N. and E. Europe. \*\*\*

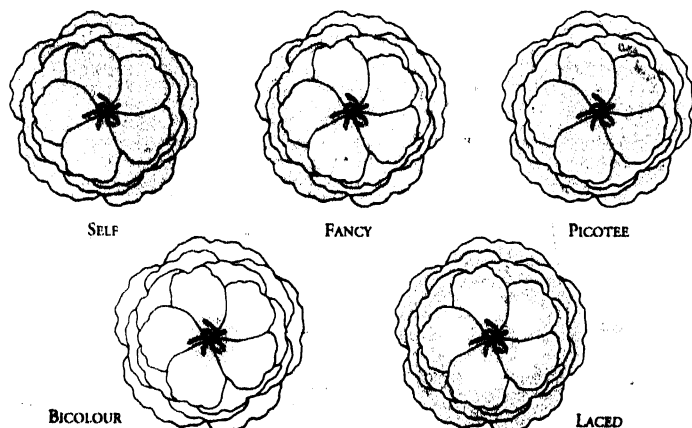
*D. armeria* ♀ (Deptford pink). Basal-rosetted, stiffly hairy annual or biennial with dark green leaves, 5cm (2in) long. In summer, bears dense, terminal cymes, 3–6cm (1¼–2½in) across, of numerous single, toothed, bearded, bright rose-pink flowers, to 1.5cm (½in) across, with prominent bracts, dotted pale pink at the bases. †to 40cm (16in), ↔ 45cm (18in). Europe, W. Asia. \*\*\*

*D. barbatus* (Sweet William). Bushy, short-lived perennial, grown as a biennial, with light to mid-green leaves, to 10cm (4in) long, sometimes deep bronze-green. In late spring and early summer, leafy bracts surround dense, flat, terminal clusters, 8–12cm (3–5in) across, of many small, single, sweet-

## CARNATIONS AND PINKS

For exhibition purposes, carnations and pinks are classified as: self-coloured (selfs), which are of any one colour; fancies, with stripes, flakes, or flecks that contrast with the ground colour; picotee carnations, usually white or yellow, each

petal margined in a contrasting colour; bicolour pinks, which have a central zone or eye of contrasting colour; and laced pinks, which have a contrasting centre and each petal margined in the same colour.





*Dianthus* 'Bovey Belle'

scented, purple-red, pink, salmon-pink, or white flowers, sometimes bicoloured, each petal bearded and dotted with a paler colour at the base. † to 70cm (28in), ↔ to 30cm (12in). S. Europe. \*\*\*. **'Dunnet's Dark Crimson'** has deep bronze-green foliage and blood-red flowers; † to 60cm (24in). **'Giant Auricula-eyed'** has bicoloured crimson, red, purple, rose-pink, or salmon-pink flowers, with well-defined, pale centres; † to 60cm (24in). **'Indian Carpet'** has crimson, purple, or pink flowers, with many bicolours; † 15–22cm (6–9in). **Monarch Series** cultivars have flowers in pink, white, crimson-red, or purple, many flushed and patterned with contrasting colours or with well-defined centres; † to 60cm (24in). **Roundabout Series** cultivars are bushy, with flowers in a range of single colours and bicolours, and may be grown as hardy annuals; † 20cm (8in). **'Super Duplex Double'** has double and semi-double flowers in crimson, purple, red, or pink. Good for cutting; † 45cm (18in). **'Wee Willie'** has crimson, rose-pink, or white flowers, and may be grown as a hardy annual; † 10–15cm (4–6in). **D. 'Becky Robinson'** ♀ Laced modern pink bearing clove-scented, double, warm pink flowers with ruby-red centres and margins. \*\*\* **D. 'Bombardier'**. Alpine pink with solitary, double, scarlet flowers. \*\*\* **D. 'Bookham Fancy'** ♀ Fancy border carnation. Bears double, bright yellow

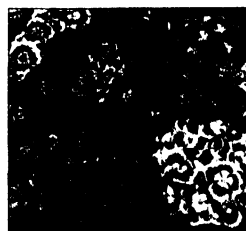
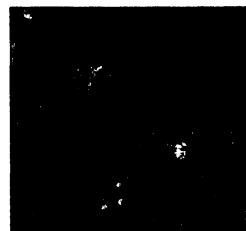
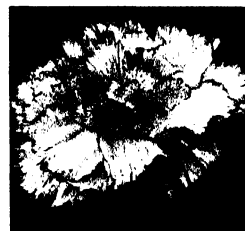
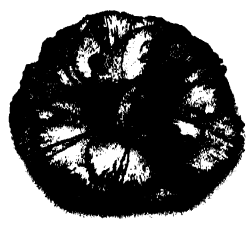
*Dianthus caryophyllus* Knight Series

flowers, with red-purple margins and flecks, on short, stiff stems. \*\*\* **D. 'Bookham Perfume'**. Self border carnation with clove-scented, double, clear crimson flowers. \*\*\* **D. 'Bourboule'** see *D. 'La Bourboule'*. **D. 'Bovey Belle'** ♀ Vigorous, self modern pink producing long-stemmed, clove-scented, double, bright deep pink flowers. \*\*\* **D. 'Brompton Red'**. Laced old-fashioned pink producing single, bright crimson flowers with deeper crimson stripes. \*\*\* **D. caesioides** see *D. gratianopolitanus*. **D. 'Carolyn Hardy'**. Self perpetual-flowering carnation with clove-scented, pale lavender-pink flowers. \* **D. carthusianorum** (Carthusian pink). Tufted perennial with usually pale green leaves, 2cm (¾in) long. In summer, bears flattened, terminal clusters, 3–5cm (1¼–2in) across, of toothed, bearded, single, deep red-pink, occasionally white flowers, to 2cm (¾in) across, on slender stems. † to 40cm (16in), ↔ to 20cm (8in). S. and C. Europe. \*\*\* **D. caryophyllus** (Wild carnation). Loosely tufted, woody perennial with flattened, soft mid-green leaves, to 15cm (6in) long, with conspicuous sheaths. Bears loose cymes, 5cm (2in) across, of 1–5 strongly fragrant, single, toothed, bright pink-purple flowers, to 1.5cm (½in) across, on stiff stems in summer. † to 80cm (32in), ↔ 15–23cm (6–9in). Mediterranean. \*\*\* **Floristan Series**

cultivars are biennials producing double flowers in single colours, including yellow, salmon-pink, scarlet, and white, with some picotees. Good for cut flowers; † to 75cm (30in), ↔ to 30cm (12in). Cultivars of **Knight Series** are dwarf, very bushy, and grown as annuals, with double flowers; colours include crimson, yellow, white, and orange, with some picotees; † to 30cm (12in), ↔ to 23cm (9in). **Lilliput Series** cultivars are dwarf, bushy, and grown as annuals or biennials, with double flowers in colours including lavender-pink, purple, yellow, scarlet, and orange, with some bicolours; † 20–25cm (8–10in), ↔ 20cm (8in). **'Scarlet Luminette'** is grown as an annual or biennial, with double, bright scarlet flowers. Best in a cold greenhouse; † to 45cm (18in), ↔ to 23cm (9in). **D. 'Catherine Glover'**. Fancy border carnation. Double, bright yellow flowers have scarlet margins and bars. \*\*\* **D. 'Charles Musgrave'** see *D. 'Musgrave's Pink'*. **D. 'Cheryl'** see *D. 'Houndspool Cheryl'*. **D. chinensis** (Chinese pink, Indian pink). Bushy, short-lived, hairy perennial or biennial, usually grown annually from seed. Leaves are pale to mid-green, up to 8cm (3in) long. In summer, bears loose, terminal cymes, to 8cm (3in) across, of up to 15 single pink, red, or white flowers, often with purple eyes, fringed to nearly half their lengths and often intricately patterned. † to 70cm (28in), ↔ 16–23cm (6–9in). China. \*\*\*. Cultivars of **Baby Doll Series** have large, single, patterned flowers, mainly crimson to white; † 15–20cm (6–8in). Cultivars of **Carpet Series** have single, self-coloured flowers in crimson, rose-pink, or white; the series includes **'Fire Carpet'** which has scarlet flowers; † to 20cm (8in). **Heddewigii Group 'Colour Magician'** is compact and free-flowering, with small, single flowers that age from clear white to rose-pink; † to 25cm (10in). **'Parfait'** bears small, weather-resistant, single, lightly fringed flowers, with some bicolours, throughout summer; † to 30cm (12in). **'Persian Carpet'** is compact and free-flowering, with flowers in carmine-red, pink, or rose-red, together with white; † 10cm (4in).

*Dianthus* 'Dad's Favourite'

**D. 'Clara'** ♀ Fancy perpetual-flowering carnation bearing clear yellow flowers, striped salmon-pink. \* **D. 'Clara's Lass'** ♀ Fancy perpetual-flowering carnation with pure white flowers, striped salmon-pink. \* **D. 'Constance Finnis'** see *D. 'Fair Folly'*. **D. 'Coronation Ruby'** ♀ Laced modern pink with clove-scented, double, warm pink flowers, with ruby-red margins and centres. \*\*\* **D. 'Cream Sue'** ♀ Self perpetual-flowering carnation producing cream flowers. \* **D. 'Crompton Princess'** ♀ Self perpetual-flowering carnation with perfectly formed, pure white flowers. \* **D. 'Dad's Favourite'** ♀ syn. *D. 'A.J. MacSelf'*. Laced old-fashioned pink. Semi-double white flowers have ruby-red margins and purple centres. \*\*\* **D. deltoides** (Maiden pink). Mat-forming perennial with narrow, dark green leaves, 1–1.5cm (½in) long. Usually solitary, single flowers, to 2cm (¾in) across, with toothed, bearded petals, are borne on upright, leafy stems in summer. Flowers are white, deep pink, or red, often with darker eyes. † to 20cm (8in), ↔ 30cm (12in) or more. Europe, Asia. \*\*\*. **'Leuchtfunk'**, syn. **'Flashing Light'** ♀ produces numerous brilliant cerise flowers. **D. 'Doris'** ♀ Bicolour modern pink producing scented, double, pale pink flowers with dark pink centres. \*\*\*

*Dianthus* 'Alice'*Dianthus alpinus* 'Joan's Blood'*Dianthus barbatus* Roundabout Series*Dianthus* 'Bookham Fancy'*Dianthus chinensis* Carpet Series 'Fire Carpet'*Dianthus* 'Clara'*Dianthus* 'Clara's Lass'*Dianthus* 'Coronation Ruby'*Dianthus* 'Cream Sue'*Dianthus* 'Crompton Princess'*Dianthus deltoides* 'Leuchtfunk'*Dianthus* 'Doris'

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**D. 'Duchess of Westminster'** ■ Vigorous, self Malmaison carnation producing salmon-pink flowers with stronger calyces than most Malmaison carnations. \*

**D. 'Earl of Essex'**. Bicolour old-fashioned pink producing double, rose-pink flowers with darker eyes. \*\*\*

**D. 'Emile Paré'**. Self old-fashioned "Mule" pink with bright green foliage and clusters of double, salmon-pink flowers. \*\*\*

**D. erinaceus** ■ Cushion-forming perennial with stiff, mid-green leaves, to 2cm (¾in) long. Solitary, occasionally paired pink flowers, 1.5cm (½in) across, with toothed, bearded petals, are produced on short stems in summer. (Flowers are generally sparsely produced in cool climates.) † 5cm (2in), ↔ 50cm (20in) or more. Mountainous regions of Turkey. \*\*\*

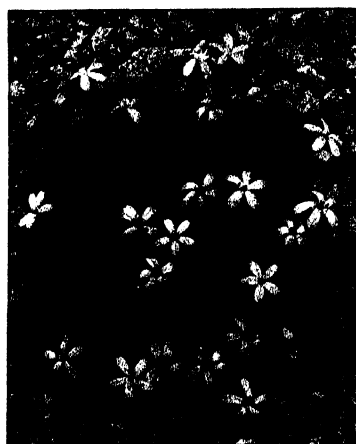
**D. 'Eva Humphries'**. Picotee border carnation producing double, white flowers with very narrow purple margins. \*\*\*

**D. 'Excelaior'**. Self old-fashioned pink producing clove-scented, double, pink flowers with fringed petals. \*\*\*

**D. 'Fair Folly'**, syn. *D. 'Constance Finnis'*. Laced old-fashioned pink producing single white flowers with strawberry-pink centres and margins. \*\*\*

**D. Festival Series** (*D. barbatus* × *D. chinensis*). Bushy, short-lived perennials, usually grown as annuals or biennials, with bright green leaves, 8–12cm (3–5in) long. They produce terminal clusters, 8–10cm (3–4in) across, of small, single pink, red, or white flowers, in summer. † 20–35cm (8–14in), ↔ 23cm (9in). \*\*\*

**D. 'Fiery Cross'**. Self border carnation producing perfectly formed, double, bright scarlet flowers. \*\*\*



*Dianthus erinaceus*

**D. 'Forest Treasure'** ■ Fancy border carnation with double white flowers, flecked red-purple. \*\*\*

**D. 'Freckles'**. Fancy modern pink of dwarf habit with clove-scented, well-formed, double, bright pink flowers, flecked and spotted scarlet. \*\*\*

**D. glacialis**. Compact, densely tufted, cushion-forming perennial with soft, glossy, dark green leaves, to 1.5cm (½in) long. Usually solitary, short-stemmed, single, pale to deep pink flowers, to 2cm (¾in) across, with finely toothed, bearded petals, are produced in summer. † 5cm (2in), ↔ 15cm (6in). E. Alps. \*\*\*

**D. 'Golden Cross'** ■ Self border carnation with well-formed, double, bright yellow flowers borne on short, stiff stems. \*\*\*

**D. 'Gran's Favourite'** ■ Laced modern pink with short-stemmed, clove-scented, double white flowers with mauve centres and margins. \*\*\*

**D. gratianopolitanus** ♀ syn. *D. caesius* (Cheddar pink). Mat-forming perennial

with grey-green leaves, to 5cm (2in) long. Solitary, very fragrant, single, deep pink flowers, to 3cm (1¼in) across, with slightly bearded, toothed petals, are produced in summer. † to 15cm (6in), ↔ to 40cm (16in). N.W. and C. Europe. \*\*\*

**D. 'Green Eyes'** see *D. 'Musgrave's Pink'*.

**D. haematocalyx**. Compact, cushion-forming perennial with grey-green leaves, 2.5–5cm (1–2in) long. Bears terminal clusters, 2–6cm (¾–2½in) across, of 1–4 single flowers, 1.5–2.5cm (½–1in) across, with toothed, bearded, deep pink petals, tinged with yellow on the reverse, in summer. † to 12cm (5in), ↔ to 20cm (8in). Balkan Peninsula, mountains in N. Greece. \*\*\*

**D. 'Hannah Louise'**. Picotee border carnation of neat but vigorous habit. Double, bright yellow flowers have broad scarlet margins. \*\*\*

**D. 'Happiness'**. Fancy border carnation with double, primrose-yellow flowers, and scarlet stripes and margins. \*\*\*

**D. 'Harmony'**. Fancy border carnation producing double grey flowers, striped cerise. \*\*\*

**D. 'Haytor'** see *D. 'Haytor White'*.

**D. 'Haytor White'** ■ ♀ syn. *D. 'Haytor'*. Self modern pink with perfectly formed, clove-scented, double, pure white flowers. \*\*\*

**D. 'Hidcote'**. Alpine pink producing clusters of 1–3 double, deep red flowers. \*\*\*

**D. 'Houndspool Cheryl'**, syn.

*D. 'Cheryl'*. Self modern pink with double, currant-red flowers. \*\*\*

**D. 'Houndspool Ruby'** ■ ♀ syn.

*D. 'Ruby'*, *D. 'Ruby Doris'*. Bicolour modern pink with double, rose-pink flowers with currant-red centres. \*\*\*

**D. Ideal Series** (*D. barbatus* × *D. chinensis*). Bushy, short-lived perennials, usually grown as annuals or biennials

and producing bright green leaves, 8–12cm (3–5in) long. In summer, bear terminal clusters, 10–12cm (4–5in) across, of small, single flowers in a range of vivid, single colours, including deep violet-blue, purple-pink, and crimson-red, some flushed with a different colour. † 20–35cm (8–14in), ↔ 23cm (9in). \*\*\*

**D. 'Inchmery'**. Self old-fashioned pink with double, pale lavender-pink flowers. \*\*\*

**D. 'Inshriach Dazzler'** ♀ Alpine pink bearing solitary, short-stemmed, single, deep carmine-red flowers with fringed petals. \*\*\*

**D. 'Irene Della-Torre'** ♀ Fancy border carnation with clove-scented, double, pure white flowers, margined and lightly striped bright pink. \*\*\*

**D. 'Jacqueline Ann'** ♀ Fancy perpetual-flowering carnation producing clove-scented white flowers, flecked cerise. \*

**D. japonicus Ginza Series**. Bushy, erect, short-lived perennials, usually grown as annuals, with blunt-tipped, light to mid-green leaves, 4–5cm (1½–2in) long. Dense, flat terminal clusters, 7–12cm (3–5in) across, of small, toothed, single lilac to deep rose-pink flowers are produced in summer. † 45cm (18in). \*\*\* (borderline)

**D. 'Joanne'**. Self perpetual-flowering carnation with deep cerise flowers. \*

**D. 'Joanne's Highlight'**. Self perpetual-flowering carnation producing light pink flowers. \*

**D. 'Joe Vernon'**. Self perpetual-flowering carnation with clove-scented, rich purple flowers. \*

**D. 'Joy'**. Self modern pink with semi-double, carmine-red flowers on strong stems. \*\*\*

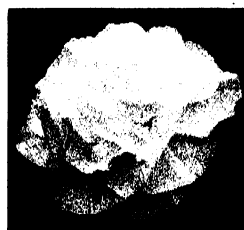
**D. 'La Bourville'** see *D. 'La Bourboule'*.



*Dianthus 'Duchess of Westminster'*



*Dianthus 'Forest Treasure'*



*Dianthus 'Golden Cross'*



*Dianthus 'Gran's Favourite'*



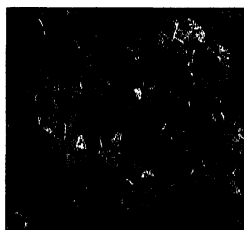
*Dianthus 'Haytor White'*



*Dianthus 'Houndspool Ruby'*



*Dianthus Ideal Series 'Cherry Picotee'*



*Dianthus 'La Bourboule'*



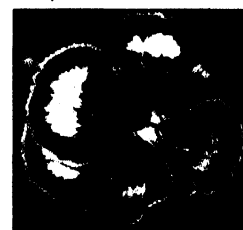
*Dianthus 'Laced Monarch'*



*Dianthus 'Lavender Clove'*



*Dianthus 'Little Jock'*



*Dianthus 'London Brocade'*



*Dianthus 'London Delight'*



*Dianthus 'Marmion'*



*Dianthus microlepis*



*Dianthus 'Monica Wyatt'*



*Dianthus 'Mrs. Sinkins'*



*Dianthus 'Musgrave's Pink'*

**D. 'La Bourboule'** ■ ♀ syn. *D. 'Bourboule'*, *D. 'La Bourville'*. Alpine pink with clusters of clove-scented, single, clear pink flowers with fringed petals. \*\*\*

**D. 'Laced Monarch'** ■ Laced modern pink producing double pink flowers with deep red centres and margins. \*\*\*

**D. 'Laced Prudence'** see *D. 'Prudence'*.

**D. 'Lavender Clove'** ■ Vigorous self border carnation producing large, clove-scented, double, greyish lavender-pink flowers. \*\*\*

**D. 'Leslie Rennison'**. Fancy border carnation with clove-scented, double flowers, a blend of purple and rose-pink, creating a "shot-silk" effect. \*\*\*

**D. 'Little Jock'** ■ Alpine pink with very short-stemmed, solitary, clove-scented, semi-double, maroon-eyed, pale pink flowers with deeply fringed petals. \*\*\*

**D. 'London Brocade'** ■ Laced modern pink bearing clove-scented, double pink flowers with crimson centres and margins. \*\*\*

**D. 'London Delight'** ■ Laced modern pink with clove-scented, semi-double, pale pink flowers with maroon centres and margins. \*\*\*

**D. 'Manon'**. Self perpetual-flowering carnation producing salmon-pink flowers. \*

**D. 'Maria'**, syn. *D. 'Allen's Maria'*. Bicolour modern pink producing clove-scented, double, pale pink flowers with cochineal-pink centres. \*\*\*

**D. 'Marmion'** ■ Malmaison carnation bearing flowers in deep warm pink with broad, blush-pink margins and stronger calyces than most Malmaisons. \*

**D. 'microlepis'** ■ Neat, cushion-forming perennial with tufts of silvery grey to green leaves, to 2cm (¾in) long. Solitary, single pink or purple flowers, 1.5cm (½in) across, with slightly

toothed petals, are borne just above the leaves in early summer. †5cm (2in), ↔ to 15cm (6in). Mountains in Bulgaria. \*\*\*

**D. 'Monica Wyatt'** ■ ♀ Bicolour modern pink with clove-scented, double, pale lavender-pink flowers, centred magenta. \*\*\*

**D. 'monspessulanus'** (Fringed pink). Loosely tufted perennial with soft, grey-green leaves, to 1.5cm (½in) long. Terminal cymes, 2–6cm (¾–2½in) across, of 2–7 fragrant white or pink flowers, with deeply fringed petals, are produced on slender stems in summer. †to 50cm (20in), ↔ to 20cm (8in). Mountains in C. and S. Europe. \*\*\*

**D. 'Mrs. Sinkins'** ■ Self old-fashioned pink producing double, fringed white flowers. Grown for its powerful scent, although the flowers are shaggy with split calyces. \*\*\*

**D. 'Murcia'**. Self perpetual-flowering carnation producing orange-yellow flowers. \*

**D. 'Musgrave's Pink'** ■ syn. *D. 'Charles Musgrave'*, *D. 'Green Eyes'*. Bicolour old-fashioned pink producing clove-scented, single white flowers with green eyes. \*\*\*

**D. 'myrtinervius'** ■ Dense, mat-forming perennial with bright green leaves, to 5mm (¼in) long. Numerous solitary, single, deep pink flowers, 1cm (½in) across, with pale eyes, are produced just above the leaves in summer. Best in scree. †to 5cm (2in), ↔ to 20cm (8in). Balkans, Macedonia, N. Greece. \*\*\*

**D. 'neglectus'** see *D. pavonius*.

**D. 'Nina'** ■ Self perpetual-flowering carnation with smooth-margined crimson flowers. \*

**D. 'nitidus of gardens'** see *D. scardicus*. **D. 'Old Blush'**, syn. *D. 'Souvenir de la Malmaison'*. Self Malmaison carnation producing large, blush-pink flowers. \*

**D. pavonius** ♀ syn. *D. neglectus*. Mat-forming perennial with basal, grey-green leaves, to 4cm (1½in) long. Produces usually solitary, occasionally 2 or 3, toothed, bearded, single, pale to deep pink flowers, to 3cm (1¼in) across, buff-coloured on the reverses, in summer. †8cm (3in), ↔ to 20cm (8in). S.W. Alps. \*\*\*

**D. 'Peter Wood'** ♀ Fancy border carnation producing double, light pink flowers, striped and flaked with bright red. \*\*\*

**D. 'petraeus'**, syn. *D. suendermannii*. Variable, mat-forming perennial with stiff, basal, mid-green leaves, to 2.5cm (1in) long. Usually solitary, fragrant, single white flowers, 8–10mm (⅜–½in) across, with toothed or notched petals, are produced in summer. †15cm (6in), ↔ to 20cm (8in). S.E. Europe, Balkan peninsula, Romania. \*\*\*

**D. 'Pierrot'** ■ Picotee perpetual-flowering carnation producing pale lilac flowers with deep purple margins. \*

**D. 'Pike's Pink'** ♀ Alpine pink with solitary, double, clove-scented, pale pink flowers, darker zoned at the bases. †15cm (6in). \*\*\*

**D. 'Pink Calypso'** see *D. 'Truly Yours'*.

**D. 'Princess of Wales'**. Self Malmaison carnation producing large, salmon-pink flowers. \*

**D. 'Prudence'**, syn. *D. 'Laced Prudence'*. Laced modern pink of neat habit, producing double, pale pink flowers with crimson centres and margins. \*\*\*

**D. 'Raggio di Sole'** ■ Fancy perpetual-flowering carnation with bright orange flowers with red flecks. \*

**D. 'Ron's Joanne'**. Fancy perpetual-flowering carnation with light cerise flowers, marked very pale pink. \*

**D. 'Ruby'** see *D. 'Houndspool Ruby'*.

**D. 'Ruby Doris'** see *D. 'Houndspool Ruby'*.

**D. 'Sam Barlow'**. Bicolour old-fashioned pink producing clove-scented, double white flowers with deep purple centres. \*\*\*

**D. 'Sandra Neal'** ■ ♀ Fancy border carnation with double, golden apricot flowers, flaked deep rose-pink. \*\*\*

**D. 'Santa Claus'**. Picotee border carnation producing double, pale yellow flowers with light crimson margins. \*\*\*

**D. 'scardicus'**, syn. *D. nitidus of gardens*. Domed, cushion-forming perennial with dark green leaves, 2cm (¾in) long. Bears solitary, short-stemmed, single pink flowers, to 1.5cm (½in) across, in summer. †10cm (4in), ↔ to 15cm (6in). Mountains of Slovenia and E. Albania. \*\*\*

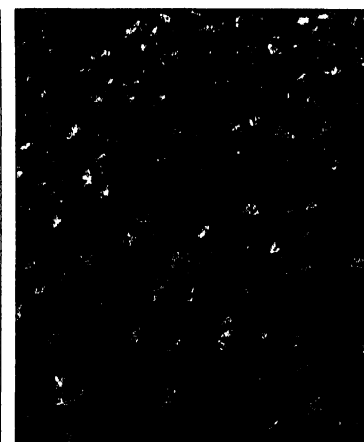
**D. 'Scarlet Joanne'**. Self perpetual-flowering carnation producing scarlet flowers. \*

**D. 'Souvenir de la Malmaison'** see *D. 'Old Blush'*.

**D. subacaulis** ■ Mat-forming or densely tufted perennial with basal, dark green leaves, to 1.5cm (½in) long. Bears solitary, single, deep pink flowers, to 1.5cm (½in), or occasionally 2cm (¾in) across, with entire or finely toothed, rounded petals, on very short stems in summer. †5cm (2in), ↔ to 10cm (4in). Mountains in S.W. Europe. \*\*\*

**D. suendermannii** see *D. petraeus*.

**D. 'superbus'**. Loosely tufted perennial with mid-green leaves, to 8cm (3in)



*Dianthus subacaulis*

long. Upright, slender, terminally branching stems bear fragrant, single, purplish pink flowers, 4–6cm (1½–2½in) across, with deeply fringed petals, either singly or in pairs at the ends of the shoots, in summer. †to 20cm (8in). Mountains of Europe and Asia. \*\*\*

**D. 'Tayside Red'**. Self Malmaison carnation with very large, brick-red flowers. \*

**D. Telstar Series** (*D. barbatus* × *D. chinensis*). Bushy, short-lived perennials, usually grown as annuals or biennials, with dark green leaves, 5–8cm (2–3in) long. In summer, they bear terminal clusters, 5–8cm (2–3in) across, of small, weather-resistant, single flowers, in separate, strong shades of pink, red, or white, including some bicolours and picotees. †20–25cm (8–10in), ↔ 23cm (9in). \*\*\*. **'Telstar Crimson'** ■ has deep blood-red flowers. **'Telstar Picotee'** is a very free-flowering red picotee. **'Telstar White'** bears white flowers with a slight pink blush.

**D. 'Thora'**. Self Malmaison carnation producing pale pink flowers, fading to white. \*

**D. 'Tony Langford'**. Fancy perpetual-flowering carnation with lavender-pink flowers, margined and flecked carmine-red. \*

**D. 'Truly Yours'** ■ syn. *D. 'Pink Calypso'*. Self perpetual-flowering carnation with salmon-pink flowers. \*

**D. 'Valda Wyatt'** ■ ♀ Bicolour modern pink bearing clove-scented, double, lavender-pink flowers, slightly deeper in colour at the centres. \*\*\*

**D. 'Valencia'**. Self perpetual-flowering carnation with bronze-yellow flowers. \*

**D. 'White Ladies'** ■ Bicolour old-fashioned pink producing clove-scented, double, fringed white flowers with light green centres. \*\*\*

**D. 'White Sim'**, syn. *D. 'White William Sim'*. Self perpetual-flowering carnation producing white flowers. \*

**D. 'Whitesmith'** ♀ Self border carnation of neat habit, producing clove-scented, double, pure white flowers. \*\*\*

**D. 'White William Sim'** see *D. 'White Sim'*.

**D. 'Widcombe Fair'**. Bicolour modern pink with strongly clove-scented, double, peach-apricot flowers, opening to blush-pink. \*\*\*

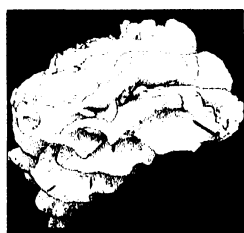
**D. 'William Sim'**. Tall, self perpetual-flowering carnation producing scarlet flowers. \*



*Dianthus myrtinervius*



*Dianthus 'Nina'*



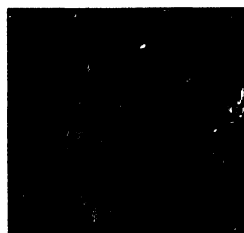
*Dianthus 'Pierrot'*



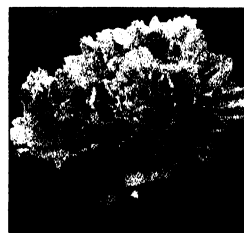
*Dianthus 'Raggio di Sole'*



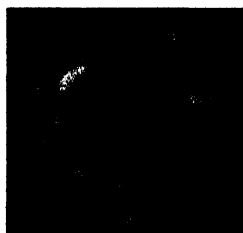
*Dianthus 'Sandra Neal'*



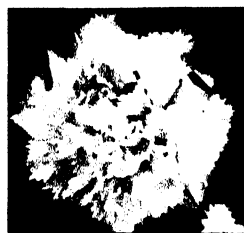
*Dianthus Telstar Series 'Telstar Crimson'*



*Dianthus 'Truly Yours'*



*Dianthus 'Valda Wyatt'*



*Dianthus 'White Ladies'*

## DIASCIA

## SCROPHULARIACEAE

Genus of about 50 species of annuals and semi-evergreen, occasionally evergreen, sometimes suckering perennials found mainly in mountains in southern Africa. Erect, semi-erect or prostrate stems bear opposite, ovate or heart-shaped to elliptic or linear, toothed, mainly mid-green leaves. Diascias are valued for their long flowering season; they produce terminal racemes of tubular, 5-lobed flowers, the lower lobes broad, the paired upper lobes having 2 backward-pointing spurs and a translucent yellow "window" at each base. Grow at the front of a border, on a sunny bank, or in a rock garden.

• **HARDINESS** Most are hardy to -8°C (18°F).

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. Water in dry periods. Dead-head regularly.

• **PROPAGATION** Sow seed at 16°C (61°F) as soon as ripe or in early spring. Divide suckering species in spring. Take softwood cuttings in spring, or semi-ripe cuttings in summer. Overwinter young plants under glass.

• **PESTS AND DISEASES** May be damaged by slugs and snails.

*D. anastrepta*. Decumbent, mat-forming perennial with ovate leaves, to 2.5cm (1in) long. Bears loose racemes of nodding, deep pink flowers, to 2cm (¾in) across, with upward-curving spurs and purple-marked "windows", on slender stems in summer. ‡25–40cm (10–16in), ↔ to 50cm (20in). South Africa (Drakensberg Mountains). \*\*

*D. 'Blackthorn Apricot'* ■ Mat-forming perennial with narrowly heart-shaped, tapering, leaves, 2–3cm (¾–1¼in) long. From summer to autumn, bears loose racemes of apricot flowers, 1.5–2cm (½–¾in) across, with small, narrow "windows" and almost straight, downward-pointing spurs.



*Diascia* 'Blackthorn Apricot'



*Diascia cordata* of gardens

Probably a selection of *D. barberae*.

‡25cm (10in), ↔ to 50cm (20in). \*\*

*D. cordata* of gardens ■ Mat-forming perennial with branching stems and heart-shaped, tapering, pale green leaves, 1.5–2cm (½–¾in) long. From early summer to early autumn, bears loose racemes of long-stalked, deep pink flowers, 2cm (¾in) across, with small, narrow "windows" and slightly curved, downward-pointing spurs. Probably a selection of *D. barberae*. ‡15cm (6in), ↔ to 50cm (20in). South Africa. \*\*

*D. elegans* see *D. vigilis*.

*D. felthamii* see *D. fetcaniensis*.

*D. fetcaniensis*, syn. *D. felthamii*.

Creeping perennial with ovate, hairy leaves, 2.5cm (1in) long, heart-shaped at the bases. Loose racemes of rose-pink flowers, 2cm (¾in) long, with concave "windows" and incurved, downward-pointing spurs, are produced from summer to early autumn. ‡25cm (10in), ↔ to 50cm (20in). South Africa, Lesotho (Drakensberg Mountains). \*\*

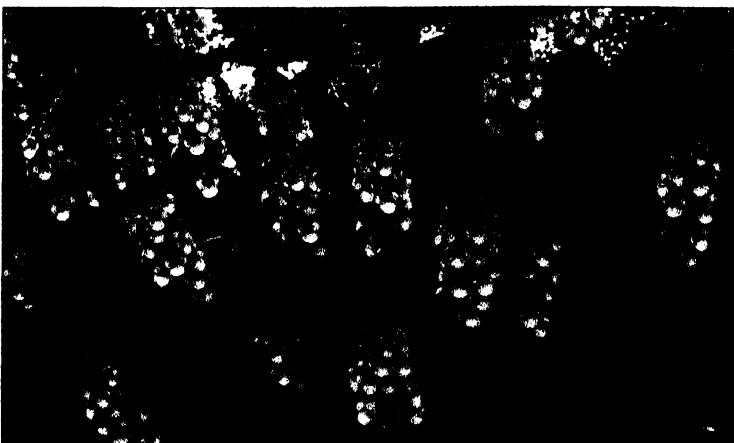
*D. 'Hector Harrison'* see *D. 'Salmon Supreme'*.

*D. integrifolia*, syn. *D. integrifolia*.

Creeping perennial with slender, wiry, upright stems bearing linear to oblong-lance-shaped, sparsely toothed leaves, 2–2.5cm (¾–1in) long. Loose racemes of purplish pink flowers, 2cm (¾in) long, with broad, horizontal lower lips, concave "windows", and downward-pointing, incurved spurs, are produced in summer. ‡30cm (12in) or more, ↔ to 50cm (20in). South Africa. \*\*

*D. integrifolia* see *D. integrifolia*.

*D. rigescens* ■ Trailing perennial with stiff, erect and semi-erect,



*Diascia rigescens*



*Diascia* 'Salmon Supreme'

branching stems and heart-shaped, deeply toothed, mainly stalkless leaves, 4cm (1½in) long. Produces tall, dense racemes of mid- to deep pink flowers, 2cm (¾in) across, with small, round "windows" and short, incurved spurs, in summer. ‡30cm (12in), ↔ to 50cm (20in). South Africa. \*\*

*D. 'Ruby Field'* ♀ Mat-forming perennial with short, wiry stems clothed in heart-shaped leaves, 2.5–4cm (1–1½in) long. Masses of rich salmon-pink flowers, 1cm (½in) long, with small, narrow "windows" and spurs curving inwards and downwards, are produced from summer to autumn. ‡25cm (10in), ↔ to 60cm (24in). \*\*

*D. 'Rupert Lambert'*. Mat-forming perennial with narrowly elliptic to ovate, pointed, shallowly toothed leaves, 2.5–4cm (1–1½in) long. Long racemes of deep pink flowers, 2.5cm (1in) long, with double "windows" and long, parallel spurs, are produced from summer to autumn. ‡25cm (10in), ↔ to 50cm (20in). \*\*

*D. 'Salmon Supreme'* ■ syn. *D. 'Hector Harrison'*. Mat-forming perennial with heart-shaped, sparsely toothed leaves, 2.5–4cm (1–1½in) long. Dense racemes of pale apricot flowers, 1.5cm (½in) long, with very small, deeply concave "windows" and short, straight, downward-pointing spurs, are produced from summer to autumn. ‡15cm (6in), ↔ to 50cm (20in). \*\*

*D. vigilis* ♀ syn. *D. elegans*. Vigorous, creeping, prostrate perennial with ovate-lance-shaped, fleshy, deeply toothed leaves, 2.5–4cm (1–1½in) long. Loose racemes of clear pink flowers, 2–2.5cm

(¾–1in) long, with deep-set yellow and maroon "windows" and short, incurved spurs, are produced from early summer to early autumn. One of the hardiest and most free-flowering species. ‡30cm (12in), ↔ to 60cm (24in). South Africa, Lesotho (Drakensberg Mountains). \*\*

## DICENTRA

## FUMARIACEAE/PAPAVERACEAE

Genus of 20 or more species of annuals and perennials from Asia and North America, often found in moist habitats, including woodland, especially in mountainous areas. The perennial species may be rhizomatous or tuberous, or have fleshy tap roots. The hairless, sometimes silvery grey leaves are fern-like and much divided. Pendent, heart-shaped flowers, in red, pink, white, purple, or yellow, are borne in panicles or racemes, often arching, or are occasionally solitary. Some species are excellent woodland plants or useful border plants; the smaller species are best in a rock garden or alpine house. All parts of the plant may cause mild stomach upset if ingested. Contact with the foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy, although early growth may be damaged by frost.

• **CULTIVATION** Grow most species and cultivars in moist, fertile, humus-rich soil, preferably neutral or slightly alkaline, in partial shade. *D. chrysanth* needs a dry, sunny site; *D. spectabilis* tolerates sun in reliably moist soil. Grow *D. peregrina* in sharply drained, volcanic soil or very gritty potting compost in a scree bed or alpine house.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide carefully in early spring or after the leaves have died down. Insert root cuttings of *D. spectabilis* in winter. Hybrids self-seed to produce a wide range of seedlings that vary widely in foliage and flower characteristics.

• **PESTS AND DISEASES** Slugs may cause damage.

*D. 'Adrian Bloom'*. Clump-forming, rhizomatous perennial with pinnate, grey-green leaves, 10–50cm (4–20in) long. Nodding racemes of narrow, dark carmine-red flowers, 3cm (1¼in) long, are produced in late spring and intermittently to early autumn. ‡35cm (14in), ↔ 45cm (18in). \*\*\*

*D. 'Bacchanal'* ■ Rhizomatous perennial with finely lobed, grey-green



*Dicentra* 'Bacchanal'

*Dicentra cucullaria*

leaves, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long. Racemes of dusky crimson flowers, 2.5cm (1in) long, are produced in mid- and late spring.  $\uparrow$  45cm (18in),  $\leftrightarrow$  60cm (24in). \*\*\*

**D. 'Boothman's Variety'** see *D. 'Stuart Boothman'*.

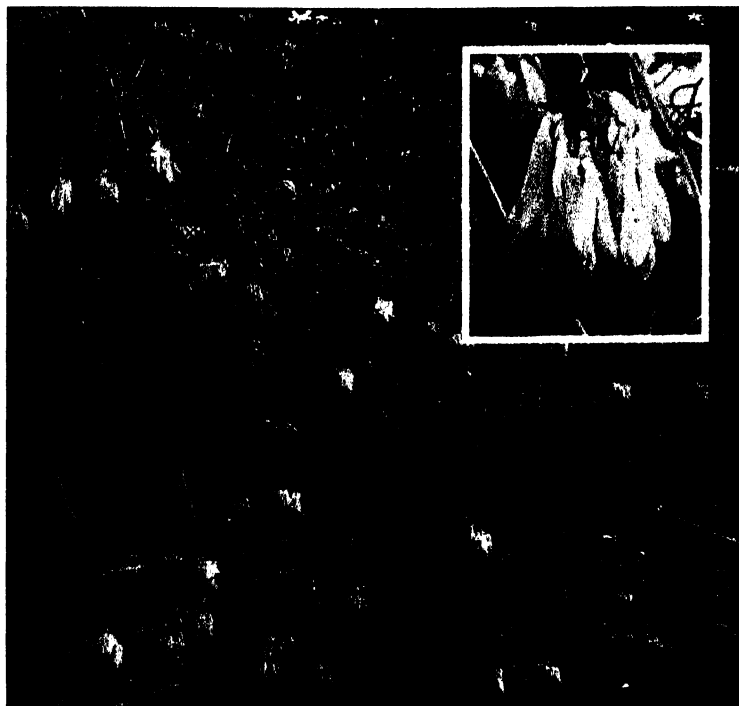
**D. 'Bountiful'**. Clump-forming, rhizomatous perennial with red-ringed stems bearing pinnate, mid-green leaves, 10–50cm (4–20in) long. In late spring and intermittently to early autumn, bears nodding racemes or panicles of purplish pink flowers, 1.5–2.5cm ( $\frac{1}{2}$ –1in) long.  $\uparrow$  30cm (12in),  $\leftrightarrow$  45cm (18in). \*\*\*

**D. chrysanthra** (Golden eardrops). Upright perennial with 2-pinnate, glaucous, mid-green leaves, 10–45cm (4–18in) long, with linear, lobed leaflets. Numerous golden yellow flowers, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, are produced in upright panicles, to 30cm (12in) long, from midsummer to early autumn.  $\uparrow$  1–1.5m (3–5ft),  $\leftrightarrow$  45cm (18in). W. USA (S. Oregon to dry chaparral of S. California). \*\*\*

**D. cucullaria**  $\square$  (Dutchman's breeches). Compact, clump-forming, tuberous perennial with 3-ternate, blue-green leaves, 10–25cm (4–10in) long, deeply lobed or divided into linear to elliptic leaflets. Racemes of white, rarely pink-flushed, yellow-tipped flowers, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, on arching stems, are borne in early spring. Needs gritty, humus-rich soil in partial shade. Dies down quickly after flowering and should be kept almost dry in summer, when dormant.  $\uparrow$  to 20cm (8in),  $\leftrightarrow$  to 25cm (10in). E. North America (Nova Scotia to Kansas and N. Carolina). \*\*\*

**D. eximia**. Clump-forming, rhizomatous perennial with red-tinged stems bearing pinnate, mid- to grey-green leaves, 15–50cm (6–20in) long, with lance-shaped to oblong or ovate lobes. In late spring and intermittently to early autumn, nodding racemes or panicles of deep rose-pink buds open to narrow pink, purple-pink, or white flowers, 1.5–3cm ( $\frac{1}{2}$ –1 $\frac{1}{4}$ in) long, with reflexed outer petals.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). E. USA. \*\*\*

**D. eximia of gardens** see *D. formosa*. **D. formosa**, syn. *D. eximia* of gardens (Wild bleeding heart). Wide-spreading, rhizomatous perennial with abundant, lobed, basal leaves, 15–50cm (6–20in) long, mid-green above, glaucous beneath. Deep rose-pink buds, borne high above the foliage in branching

*Dicentra scandens* (inset: flower detail)

racemes, open to pink flowers, 1–2.5cm ( $\frac{1}{2}$ –1in) long, fading almost to white, in late spring and early summer. Self-seeds freely.  $\uparrow$  45cm (18in),  $\leftrightarrow$  60–90cm (24–36in). W. North America. \*\*\*

**var. alba** has white flowers. **subsp.**

**oregona**, syn. *D. oregona*, has more glaucous leaves and soft bluish pink flowers. USA (Oregon, California).

**D. 'Langtrees'**  $\square$  Vigorous, rhizomatous perennial with abundant, lobed, silvery grey leaves, to 30cm (12in) long. Bears pink-tinted white flowers, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, in racemes from mid-spring to early or midsummer.  $\uparrow$  30cm (12in),  $\leftrightarrow$  45cm (18in). \*\*\*

**D. 'Luxuriant'**  $\square$  Spreading perennial with lobed, mid- to deep green leaves, to 30cm (12in) long. Racemes of red flowers, 1.5–2.5cm ( $\frac{1}{2}$ –1in) long, are produced from mid-spring to early or midsummer.  $\uparrow$  30cm (12in),  $\leftrightarrow$  45cm (18in). \*\*\*

**D. macrantha**. Spreading perennial with 2-ternate, coarsely toothed, pale to yellow-green leaves, 20–30cm (8–12in) long, divided into ovate leaflets, borne on yellowish green stalks. Bears narrow, creamy yellow flowers, 8cm (3in) long,

solitary or in short racemes, in late spring. May be damaged by cold, drying winds and late frosts.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). E. China. \*\*\*

**D. oregona** see *D. formosa* subsp. *oregona*.

**D. 'Pearl Drops'**. Rhizomatous perennial with lobed, glaucous, blue-green leaves, to 30cm (12in) long. Racemes of pink-tinted white flowers, 1cm ( $\frac{1}{2}$ in) long, are produced from mid-spring to early or midsummer.  $\uparrow$  30cm (12in),  $\leftrightarrow$  45cm (18in). \*\*\*

**D. peregrina**. Tuft-forming perennial with deeply cut and finely lobed, blue-green leaves, 4–16cm (1 $\frac{1}{2}$ –6in) long. Short-stemmed racemes of purple-tipped pink, white, or purple flowers, 1.5–2.5cm ( $\frac{1}{2}$ –1in) long, are produced in early summer.  $\uparrow$  to 7cm (3in),  $\leftrightarrow$  to 10cm (4in). E. Siberia, China, Japan. \*\*\*

**D. scandens**  $\square$  syn. *D. thalictrifolia*. Climbing perennial with slender stems and deeply lobed, mid-green leaves, 15–35cm (6–14in) long, divided into ovate to lance-shaped leaflets. White or yellow, sometimes purple- or pink-tipped flowers, 2–2.5cm ( $\frac{3}{4}$ –1in) long, are borne in long racemes on leafy

*Dicentra 'Stuart Boothman'*

peduncles in summer.  $\uparrow$   $\leftrightarrow$  1m (3ft). Himalayas. \*\*\* (borderline)

**D. 'Silver Smith'**. Clump-forming, rhizomatous perennial with pinnate, blue-green leaves, 10–50cm (4–20in) long. In late spring and intermittently to early autumn, bears nodding racemes or panicles of pink-flushed, creamy white flowers, 1.5–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long.  $\uparrow$   $\leftrightarrow$  45cm (18in). \*\*\*

**D. spectabilis**  $\square$   $\square$  (Bleeding heart, Dutchman's breeches, Lyre flower). Clump-forming perennial with thick, fleshy roots and 2-ternate, pale green leaves, 15–40cm (6–16in) long, with ovate, sometimes cut or lobed leaflets. Arching, fleshy stems produce racemes of flowers, 2–3cm ( $\frac{3}{4}$ –1 $\frac{1}{4}$ in) long, with rose-pink outer petals and white inner ones, in late spring and early summer.  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  45cm (18in). Siberia, N. China, Korea. \*\*\* **f. alba**  $\square$   $\square$  is more robust, and produces pure white flowers until midsummer.

**D. 'Spring Morning'**. Clump-forming, rhizomatous perennial with finely cut, mid- to dark green leaves, 10–50cm (4–20in) long. Bears nodding racemes or panicles of light pink flowers, 2–3cm ( $\frac{3}{4}$ –1 $\frac{1}{4}$ in) long, in late summer and intermittently to early autumn.  $\uparrow$  30cm (12in),  $\leftrightarrow$  45cm (18in). \*\*\*

**D. 'Stuart Boothman'**  $\square$   $\square$  syn.

*D. 'Boothman's Variety'*. Spreading, rhizomatous perennial with 3-palmate, blue-grey leaves, 10–20cm (4–8in) long, with narrow leaflets. From mid-spring to early or midsummer, bears deep pink flowers, 1.5–2.5cm ( $\frac{1}{2}$ –1in) long.  $\uparrow$  30cm (12in),  $\leftrightarrow$  40cm (16in). \*\*\*

**D. thalictrifolia** see *D. scandens*.

*Dicentra spectabilis**Dicentra spectabilis f. alba*

## DICHELOSTEMMA

syn. BREVCORTIA

ALLIACEAE/LILIACEAE

Genus of 7 species of cormous perennials found in chaparral and grassland in W. North America. They are grown for their umbels or racemes of tubular to bell-shaped flowers, clustered at the ends of long, thin stems. Narrow, grass-like leaves, 30cm (12in) long, produced in spring, die off as the flowers open. Grow in a warm, sheltered border or, in cool climates with damp summers, in a bulb frame or cold greenhouse to ensure a warm, dry dormancy.

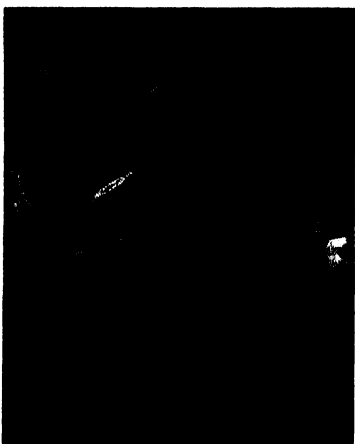
- **HARDINESS** Frost hardy.
- **CULTIVATION** Plant 10cm (4in) deep in autumn, in well-drained soil in full sun. Keep warm and dry after flowering.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) as soon as ripe, or remove offsets in late summer.
- **PESTS AND DISEASES** Trouble free.

**D. congestum**, syn. *Brodiaea congesta*. Cormous perennial producing dense racemes, 5cm (2in) across, of numerous tubular, lilac-blue flowers, 2cm (¾in) long, in early summer. Similar to *D. pulchellum* but flower stalks are joined at the base. † 40–90cm (16–36in), ↔ 5cm (2in). USA (Washington, Oregon, California). \*\*

**D. ida-maia** ■ syn. *Brodiaea ida-maia* (Californian firecracker). Cormous perennial bearing umbels, 6cm (2½in) across, of up to 8 pendent, narrowly tubular, crimson flowers, 2–3cm (¾–1¼in) long, with short, reflexed sepals with greenish yellow tips, in summer. Excellent for cutting. Requires a dormant season to ripen the corm, so best grown in an alpine house or cold frame. † 20–30cm (8–12in), ↔ 5cm (2in). USA (Oregon, California). \*\*

**D. pulchellum**, syn. *Brodiaea capitata*, *B. pulchella*. Cormous perennial bearing dense umbels, 5cm (2in) across, of many tubular, lilac-blue flowers, 1.5cm (½in) long, in early summer. † 30–60cm (12–24in), ↔ 5cm (2in). USA (Oregon, California). \*\*

**D. volubile**, syn. *Brodiaea volubilis* (Twining brodiaea). Scrambling, cormous perennial producing umbels, 8cm (3in) across, of many tubular pink or pinkish mauve flowers, 2cm (¾in) long, in summer. Needs support. † to 1.5m (5ft), ↔ 5cm (2in). USA (California). \*\*

*Dichelostemma ida-maia**Dichorisandra reginae*

## DICHORISANDRA

COMMELINACEAE

Genus of about 25 species of robust, erect, soft-stemmed, evergreen perennials from woodland in tropical North, Central, and South America. The linear to elliptic leaves are spirally arranged or 2-ranked, and the angular, cup-shaped flowers, with 3 sepals and 3 intense blue or sometimes white petals of unequal size, are borne in terminal or axillary racemes, followed by fleshy, orange-red fruit. In frost-prone areas, grow in a warm greenhouse; in warmer climates, use in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light and high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, fertile soil in partial shade.

• **PROPAGATION** Divide or root stem cuttings at any time.

• **PESTS AND DISEASES** Mealybugs may be troublesome.

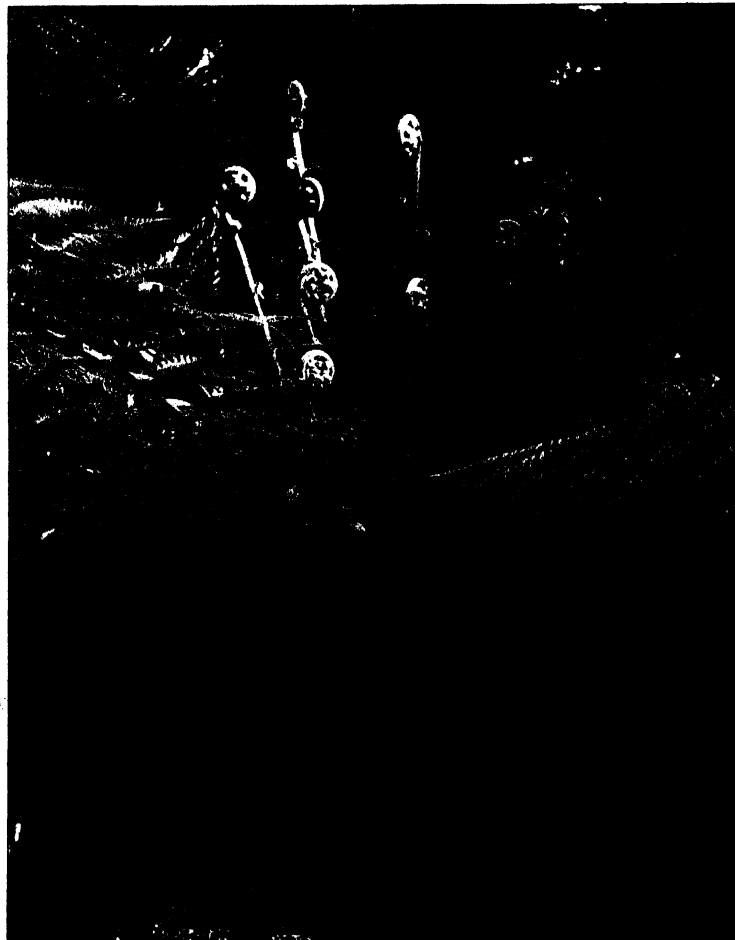
**D. reginae** ■ Erect perennial with fleshy, rhizomatous roots and 2-ranked, elliptic, dark green leaves, 18cm (7in) long, suffused with reddish purple when young, often streaked with silver, and purple beneath. White flowers, to 2cm (¾in) across, violet-blue on the upper half of the petals, are borne in compact racemes, 15–20cm (6–8in) long, from summer to autumn. † 30cm (12in). Peru. ☀ (min. 12°C/54°F)

**D. thyrsiflora**. Erect perennial with short, rhizomatous roots and spirally arranged, elliptic-lance-shaped, lustrous, dark green leaves, 20–30cm (8–12in) long. Deep violet flowers, 1–2cm (½–¾in) across, are produced in dense racemes, 13–20cm (5–8in) long, in autumn. † 2.5m (8ft), ↔ 1m (3ft). Brazil. ☀ (min. 12°C/54°F)

## DICKSONIA

CYATHEACEAE/DICKSONIACEAE

Genus of about 25 species of evergreen or semi-evergreen ferns, usually with upright, trunk-like rhizomes or caudices, but occasionally creeping in habit. They are found in sheltered, upland forest in temperate and tropical regions of S.E. Asia, Australasia, and South America.

*Dicksonia antarctica*

The often massive rhizomes or caudices are usually clothed in old leaf bases and fibrous roots, and crowned with spreading, 2- to 4-pinnate or pinnatifid, leathery fronds. The sori are round and form along the margins of the segments, on the underside, each protected by an indusium. *Dicksonia* species are fine specimen plants, whether in a cool greenhouse or conservatory, or outdoors in frost-free areas.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in a mix of 1 part each loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould, in bright filtered light with moderate humidity; if possible, move plants outside during summer. In growth, water freely, applying a high-nitrogen liquid fertilizer monthly; keep just moist and admit full light in winter. Top-dress or pot on annually in spring. Outdoors, grow in humus-rich, acid soil in partial or full shade. In hot, dry weather, hose the rhizomes or caudices with water daily.
- **PROPAGATION** Sow spores at 15–16°C (59–61°C) as soon as ripe. See also p.51.
- **PESTS AND DISEASES** Trouble free.

**D. antarctica** ■ ♀♂ (Man fern, Soft tree fern, Woolly tree fern). Tree-like fern, evergreen in mild climates, with an erect rhizome, covered with a thick mass of roots, forming a trunk up to 60cm (24in) across. The 2- or 3-pinnate fronds, to 3m (10ft) long, are pale green when young and darken with age. † to 6m (20ft) (usually considerably less), ↔ 4m (12ft). E. Australia (including Tasmania). \*\*

## DICLIPTERA

ACANTHACEAE

Genus of 150 species of annuals, soft-stemmed or woody, evergreen subshrubs, perennials, and climbers with angled stems, found in many tropical or warm-temperate regions. They are grown for their opposite, lance-shaped to rounded, velvety, grey-green leaves and their slender, tubular, 2-lipped, brightly coloured flowers, borne in terminal and axillary clusters with prominent, colourful bracts. Grow in a border; in frost-prone areas, grow as a houseplant or in a warm greenhouse.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3)

*Dicliptera suberecta*



in full light with shade from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer every 3–4 weeks; keep just moist in winter. Outdoors, grow in moderately fertile, well-drained soil in sun or partial shade. Cut back leggy plants after flowering.

• **PROPAGATION** Root softwood cuttings in spring, or greenwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*D. suberecta* ■ syn. *Jacobinia suberecta*, *Justicia suberecta*. Erect or arching subshrub with slender stems and ovate, dull, mid-green leaves, 4–8cm (1½–3in) long, covered in grey down. Bears orange-red flowers, 3.5cm (1½in) long, in axillary and terminal clusters, in summer. †60cm (24in), ↔ 45cm (18in). Uruguay. ☀ (min. 13°C/55°F)

## DICRANOSTIGMA

PAPAVERACEAE

Genus of 3 species of annuals and perennials found on mountain slopes, especially screes, in the Himalayas and W. and C. China. They produce basal rosettes of pinnatifid leaves, arising from a deep rootstock, and terminal, poppy-like flowers. Use in an informal border, or in a wildflower or rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, humus-rich soil in partial shade. Will tolerate sun in cool climates, if the soil remains moist during growth.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; self-seeds freely.

• **PESTS AND DISEASES** May be damaged by slugs and snails.

*D. lactuoides*. Rosette-forming perennial with elliptic to inversely lance-shaped, pinnatifid, 4- to 7-lobed, blue-green leaves, 12–25cm (5–10in) long. Deep yellow or orange flowers, 5cm (2in) across, are borne on sparsely leafy stems in summer. † to 60cm (24in), ↔ 35cm (14in). Himalayas. \*\*\*

## DICTAMNUS

RUTACEAE

Genus of one species of woody-based perennial, with several geographical variants, native to open woodland, dry grassland, and rocky sites, in C. and S. Europe, and from S. and C. Asia to China and Korea. It has pinnate, ash-



*Dictamnus albus*



*Dictamnus albus* var. *purpureus*

like, alternate leaves, each with 3–6 pairs of leaflets and a single terminal leaflet. The 5-petalled, asymmetrical flowers, with long, projecting stamens, are borne in long, open racemes. They, and the unripe fruit, produce an aromatic, volatile oil, which may be ignited in hot weather. *D. albus* is suitable for a border. Its foliage, roots, and seeds may cause mild stomach upset if ingested, and contact with the foliage may cause photodermatitis.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any dry, well-drained, moderately fertile soil in full sun or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in autumn or spring, although the woody rootstock does not re-establish easily.

• **PESTS AND DISEASES** Trouble free.

*D. albus* ■ ♀ syn. *D. fraxinella* (Burning bush, Dittany). Clump-forming perennial with pinnate, leathery, lemon-scented leaves, to 35cm (14in) long, with lance-shaped to ovate leaflets. White or pinkish white flowers, 2–2.5cm (¾–1in) across, with darker veins, are produced in early summer. †40–90cm (16–36in), ↔ 60cm (24in). C. and S. Europe to N. China, Korea. \*\*\*. **var. purpureus** ■ ♀ has purple-mauve flowers with darker veins. *D. fraxinella* see *D. albus*.

## DICTYOSPERMA

Princess palm

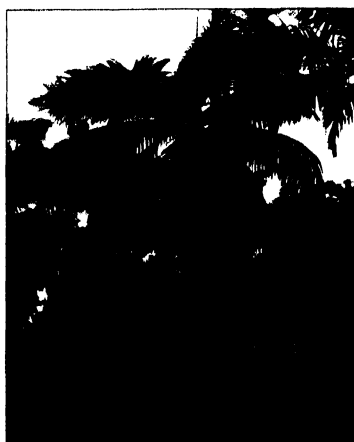
ARECACEAE/PALMAE

Genus of one species of monoecious, single-stemmed palm from Mauritius and the Réunion Islands. Pinnate leaves are produced in a terminal head above a distinct crownshaft, and 3-petalled, cup-shaped flowers, arranged in groups of 3 (2 male and 1 female), develop in simple panicles between them. *D. albus* is an effective specimen tree. In frost-prone areas, grow in a warm greenhouse.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. In the growing season, water freely, applying a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade, with shelter from scorching winds.

• **PROPAGATION** Sow seed at 24–29°C (75–84°F) in spring.



*Dictyosperma albus*

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*D. albus* ■ ♀ Single-stemmed palm with a closely ringed, dark brown to grey trunk, sometimes wider at the base, with a woolly, red-brown to whitish grey crownshaft. Arching, pinnate leaves, to 3m (10ft) long, have up to 140 lance-shaped, often divided, mid- to dark green leaflets with yellow midribs and dark veins when young. Leaf-stalks are orange-yellow above, yellow-striped beneath. Bears yellow male flowers in panicles, to 1m (3ft) long, in summer, followed by ovoid, purplish black fruit, to 2cm (¾in) long. †20m (70ft), ↔ to 6m (20ft). Mauritius, Réunion Islands. ☀ (min. 16°C/61°F). **var. conjugatum** has maroon to red male flowers.

▷ *Didiscus* see *Trachymene*

*D. coeruleus* see *T. coerulea*

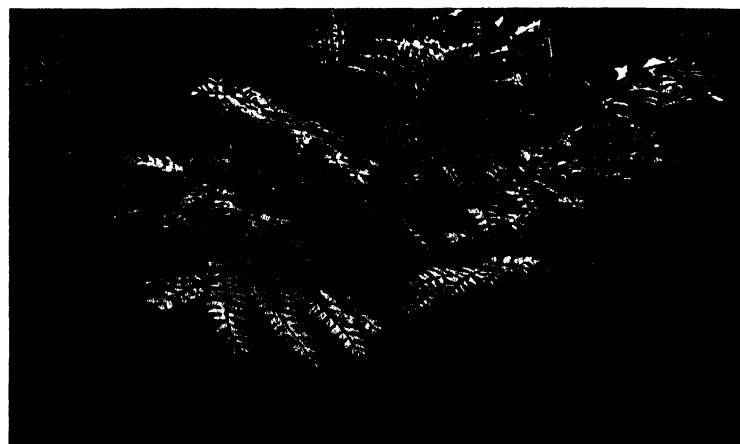
## DIDYMOCHLAENA

DRYOPTERIDACEAE

Genus of one species of evergreen fern from tropical Africa, America, and Polynesia, occurring in woodland and by streams. It produces tufts of glossy, mid-green fronds, tinged with rose-pink or red when young. Grow *D. truncatula* in a shady border; in frost-prone areas, grow in a warm greenhouse or as houseplants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould, in bright filtered



*Didymochlaena truncatula*

light with high humidity. In growth, water freely, applying a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moist, humus-rich soil in partial shade.

• **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe; divide established plants in spring. See also p.51.

• **PESTS AND DISEASES** Trouble free.

*D. lunulata* see *D. truncatula*.

*D. truncatula* ■ syn. *D. lunulata*.

Evergreen fern with erect rhizomes and triangular, 2-pinnate fronds, 60–150cm (2–5ft) long, with simple, obliquely ovoid-diamond-shaped segments. † to 1m (3ft). Tropical and southern Africa, Fiji, Argentina. ☀ (min. 10°C/50°F)

## DIEFFENBACHIA

Dumb cane, Mother-in-law's tongue

ARACEAE

Genus of about 30 species of evergreen perennials found in tropical forest in North and South America and the West Indies. Most cultivars are derived from *D. seguine*, now thought to include *D. maculata*, a name still used commercially. They are grown for their handsome, large, mainly paddle-shaped, oblong, or ovate, fleshy leaves, often heavily marked yellow or white and borne on sheathed stalks. As the lower leaves are shed, scars are left on the erect, thick, cane-like stems, although some modern cultivars are virtually stemless. Inflorescences with creamy spathes are produced intermittently throughout the year, although seldom in cultivation. In frost-prone areas, grow in a warm greenhouse or conservatory, or as houseplants; elsewhere, grow in a border. All parts may cause severe discomfort if ingested, and contact with sap may irritate skin.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light with high humidity. In the growing season, water moderately, applying a balanced liquid fertilizer monthly; mist daily in summer. Water sparingly and admit full light in winter. Pot on each spring. Outdoors, grow in fertile, moist but well-drained soil in partial shade.

• **PROPAGATION** Root tip cuttings in spring or summer, or take stem sections, each with a growth bud, and lay flat on the surface of the compost. Alternatively, increase by air layering.

D

*Dieffenbachia seguine* 'Amoena'

• **PESTS AND DISEASES** Soft new growth is susceptible to infestation by aphids.

*D. amoena* of gardens see *D. seguine* 'Amoena'.

*D. 'Exotica'* see *D. seguine* 'Exotica'.

*D. maculata* see *D. seguine*, *D. seguine* 'Maculata'.

*D. maculata* 'Hi-colour' see *D. seguine* 'Tropic Snow'.

*D. maculata* 'Snow Queen' see *D. seguine* 'Tropic Snow'.

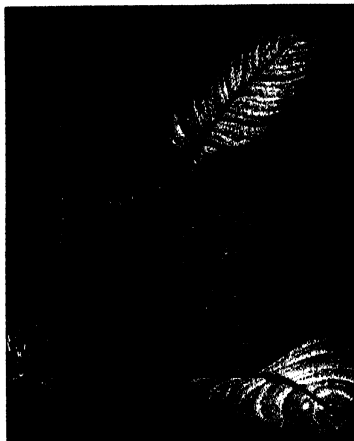
*D. maculata* 'Tropic Topaz' see *D. seguine* 'Tropic Snow'.

*D. 'Memoria'* see *D. seguine* 'Memoria Corsii'.

*D. x memoria-corsii* see *D. seguine* 'Memoria Corsii'.

*D. 'Pia'* see *D. seguine* 'Pia'.

*D. picta* see *D. seguine*.

*Dieffenbachia seguine* 'Exotica'*Dieffenbachia seguine* 'Maculata'*Dieffenbachia seguine* 'Rudolph Roehrs'

*D. seguine*, syn. *D. maculata*, *D. picta*. Robust perennial with alternate, broadly ovate to oblong or lance-shaped leaves, 30–45cm (12–18in) long, evenly spread along the stem. They are glossy, dark green, sparsely spotted white, with white midribs. † 1–3m (3–10ft), ↔ 60cm (24in). Brazil. ☉ (min. 15°C/59°F). 'Amoena' ☐ syn. *D. amoena* of gardens, has oblong-ovate leaves, 15–35cm (6–14in) long, with creamy white bands and marbling between the veins; † to 2m (6ft). 'Exotica' ☐ syn. *D. 'Exotica'*, *D. maculata* 'Exotica', is virtually stemless, with oblong-ovate leaves, heavily and irregularly white-variegated between the veins and on the midribs; † 1m (3ft), ↔ 40cm (16in). 'Maculata' ☐ syn. *D. maculata*, has bright green leaves, 25cm (10in) long, heavily veined and spotted creamy white, and mottled leaf-stalks; † 1.2m (4ft) or more, ↔ 1m (3ft). 'Memoria' see 'Memoria Corsii'. 'Memoria Corsii', syn. *D. 'Memoria'*, *D. x memoria-corsii*, 'Memoria', has elliptic to oblong, grey-green leaves, that darken with age, with large, dark green patches, darker veining, and sparse white spots; † 1m (3ft), ↔ 40cm (16in). 'Pia', syn. *D. maculata* 'Pia', *D. 'Pia'*, is virtually stemless, with oblong-lance-shaped white leaves, tinged pale green and deep green margins; † 40cm (16in), ↔ 30cm (12in). 'Roehrsii' see 'Rudolph Roehrs'. 'Rudolph Roehrs' ☐ syn. *D. maculata* 'Rudolph Roehrs', 'Roehrsii', has ovate to elliptic leaves, mostly creamy yellow or chartreuse-green, spotted white, with dark green midribs and margins; † 1m (3ft) or more, ↔ 40cm (16in). 'Tropic Snow', syn. *D. maculata* 'Hi-colour', *D. maculata* 'Snow Queen', *D. maculata* 'Tropic Snow', *D. maculata* 'Tropic Topaz', *D. 'Tropic Snow'*, is virtually stemless, with thick, ovate, mid-green leaves, with sage-green markings and cream feathering. † 1.2m (4ft). *D. 'Tropic Snow'* see *D. seguine* 'Tropic Snow'.

## DIERAMA

Angel's fishing rod, Wandflower

IRIDACEAE

Genus of 44 species of evergreen, cormous perennials usually found in moist, mountainous or submountainous grassland in Ethiopia, E. and S. tropical Africa, and South Africa. Gladiolus-like corms, produced annually, form chains of old corms on top of one another.

*Dierama dracomontanum*

Basal tufts of semi-erect to erect, thin, grass-like, mid- to grey-green leaves, to 90cm (36in) long, are overtopped in summer by a succession of pendent, funnel- or bell-shaped flowers, borne in spikes on long, slender, arching stems. Hybrids between *D. dracomontanum* and *D. pulcherrimum* are sometimes known as Slieve Donard Hybrids, a name wrongly applied to mixed seedlings. In frost-prone areas, grow half-hardy species in a cool greenhouse. Elsewhere, grow tall species at the back of a border or by a pool or stream, and dwarf species in a rock garden or at the front of a border.

• **HARDINESS** Frost hardy to half hardy; well-established clumps may tolerate temperatures to -10°C (14°F).

• **CULTIVATION** Plant corms 5–7cm (2–3in) deep in spring. Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely. Outdoors, grow in humus-rich, well-drained soil in a sheltered site in full sun, watering freely during the growing season. Divisions and young plants are slow to establish, but once settled are trouble free.

• **PROPAGATION** Sow seed in a seedbed or in containers in a cold frame as soon as ripe, or divide in spring.

• **PESTS AND DISEASES** Trouble free.

*D. dracomontanum* ☐ syn. *D. pumilum* of gardens. Clump-forming, cormous perennial. Produces arching stems of bell-shaped, light to rose-pink or light coral-pink to red, occasionally purple-pink or mauve flowers, 2–3cm (¾–1¼in) long, in summer. † 60cm

*Dierama* 'Miranda'*Dierama pulcherrimum*

(24in), occasionally to 1m (3ft), ↔ 30cm (12in). South Africa. \* \*

*D. ensifolium* see *D. pendulum*.

*D. luteoalbidum*. Cormous perennial producing narrowly bell-shaped, white or creamy yellow flowers, 3–5cm (1¼–2in) long, in summer. † 60–90cm (24–36in), ↔ 30cm (12in). South Africa (KwaZulu/Natal). \*

*D. 'Miranda'* ☐ Clump-forming, cormous perennial. Bell-shaped, bright pink flowers, 3–4cm (1¼–1½in) long, are produced in summer. † 75–90cm (30–36in), ↔ 30cm (12in). \* \*

*D. pendulum*, syn. *D. ensifolium*.

Tufted, clump-forming, cormous perennial. Bears clustered spikes of wide, open bell-shaped, purple-pink flowers, 3–5cm (1¼–2in) long, in summer.

† 1–2m (3–6ft), ↔ 60cm (24in). South Africa (Western and Eastern Cape). \* \*

*D. pulcherrimum* ☐ Cormous perennial bearing dense, pendent spikes of tubular-bell-shaped, pale to deep magenta-pink, occasionally purple-red or white flowers, 3.5–6cm (1½–2½in) long, in summer. † 1–1.5m (3–5ft), ↔ 60cm (24in). Zimbabwe, South Africa. \* \*. 'Blackbird' has deep wine-purple flowers, 4–5cm (1½–2in) long.

*D. pumilum* of gardens see

*D. dracomontanum*.

*D. 'Titania'*. Clump-forming, cormous perennial producing bell-shaped, pale pinkish red flowers, 3–5cm (1¼in–2in) long, in summer. † 60cm (24in), ↔ 30cm (12in). \* \*

## DIERVILLA

Bush honeysuckle

CAPRIFOLIACEAE

Genus of 3 species of suckering, deciduous shrubs from North America, found in light woodland. They are valued for their attractive habit and tubular, 2-lipped yellow flowers, borne in axillary or terminal cymes. Leaves are simple, oblong-lance-shaped to ovate, toothed, and opposite. Grow in a shrub border or light woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade. Mulch well. Pruning group 6.

• **PROPAGATION** Separate suckers in late winter. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*D. sessilifolia*. Thicket-forming shrub, spreading by suckers. Ovate-lance-

shaped, mid-green leaves, 6–18cm (2½–7in) long, are tapered at the tips and bronze tinged when young. Sulphur-yellow flowers, to 1.5cm (½in) long, are produced in terminal cymes, to 7cm (3in) across, in summer. † 1–1.5m (3–5ft), ↔ 1.5m (5ft). S.E. USA. \*\*\*

## DIETES

### IRIDACEAE

Genus of 6 species of evergreen, rhizomatous perennials from C., E., and S.E. tropical Africa, South Africa, and Lord Howe Island, Australia, occurring in open grassland, dry bushland, moist forest margins, and mountain cliffs. They have erect, linear to sword-shaped, leathery, basal leaves. Branching stems bear a succession of flat, individually short-lived, iris-like flowers, from spring to summer. In frost-prone areas, grow in a cool greenhouse or conservatory. In warmer climates, grow outdoors in a border.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light and good ventilation. In growth, water freely, applying balanced liquid fertilizer monthly; reduce water after flowering to keep just moist when dormant. Outdoors, grow in moist but well-drained soil in full sun or partial shade. Tolerates poor, dry soils. The flowering stems of *D. iridioides* should not be cut back after flowering.
- **PROPAGATION** Sow seed at 13–15°C (55–59°F) in autumn or spring. Divide rhizomes after flowering, although they may be difficult to establish.
- **PESTS AND DISEASES** Trouble free.

***D. bicolor*** ■ Rhizomatous perennial with narrowly sword-shaped, pale green, basal leaves, 60cm (24in) long. Pale to deep yellow flowers, 4cm (1½in) across, are produced from spring to summer. The 3 larger tepals each have a brown mark at the base. † 60–90cm (24–36in), ↔ 30cm (12in). South Africa. \*

***D. iridioides***, syn. *D. vegeta*. Rhizomatous perennial with a fan of sword-shaped, dark green, basal leaves, 60cm (24in) long. White flowers, 5–6cm (2–2½in) across, with a yellow mark at the centre of each of the 3 larger tepals, are produced from spring to summer. † 30–60cm (12–24in), ↔ 30cm (12in). South Africa, E. Africa to Kenya. \*

***D. vegeta*** see *D. iridioides*.



*Dietes bicolor*

## DIGITALIS

### Foxglove

#### SCROPHULARIACEAE

Genus of about 22 species of biennials and short-lived perennials from Europe, N.W. Africa, and C. Asia, found in open woodland, with a few occurring in subalpine meadows and on stony, grassy slopes. They produce simple, mainly oblong to lance-shaped to obovate, entire or toothed, mostly mid-green leaves. They have one or more basal leaf rosettes with smaller, alternate stem leaves. Inflated, tubular-bell-shaped, somewhat 2-lipped flowers, often spotted inside, are produced in tall, sometimes branched, often closely packed racemes, usually on one side of the stems. Most foxgloves are imposing plants, suitable for a border or for naturalizing in woodland. All parts may cause severe discomfort if ingested. Contact with foliage may irritate skin.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in almost any soil and situation, except very wet or very dry, although most prefer humus-rich soil in partial shade. Some species self-seed profusely, so, unless seedlings are required, dead-head after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame in late spring. Seed of *D. purpurea* may also be sown *in situ* in late spring.
- **PESTS AND DISEASES** Leaves are susceptible to leaf spot and powdery mildew.

***D. ambigua*** see *D. grandiflora*.

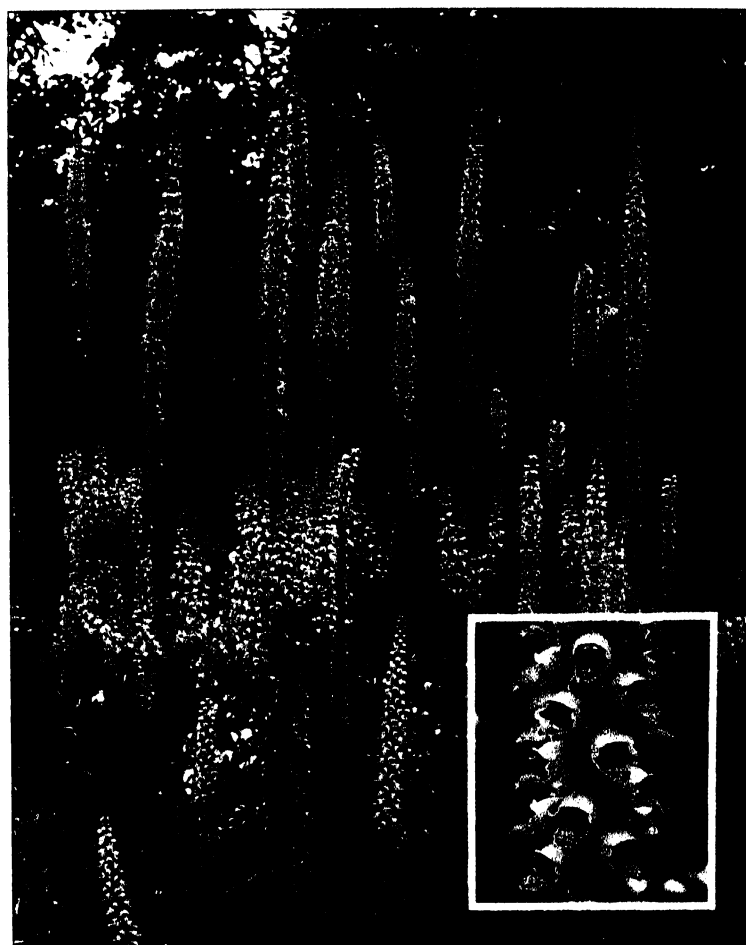
***D. davisia*** ■ Rhizomatous perennial with linear-lance-shaped, finely toothed, hairless, mid-green leaves, 7–12cm (3–5in) long. Pale yellow flowers, 3–4cm (1¼–1½in) long, with orange veins, are produced in loose-flowered racemes in early summer. † to 70cm (28in), ↔ 45cm (18in). Turkey. \*

***D. dubia***. Rosette-forming perennial with lance-shaped, wrinkled, entire or shallowly toothed, dark green leaves, 3–12cm (1¼–5in) long, hairless above and downy beneath. Bears few-flowered racemes of purplish pink or white flowers, 3.5–4cm (1½–1½in) long, heavily spotted inside, in early summer. † 45cm (18in), ↔ 30cm (12in). Spain (Balearic Islands). \*\*

***D. eriostachya*** see *D. lutea*.

***D. ferruginea*** (Rusty foxglove). Rosette-forming, robust biennial or perennial with oblong to oblong-lance-shaped, entire, dark green leaves, 5–20cm (2–8in) long, sometimes slightly hairy beneath. Bears racemes of golden brown flowers, 3.5cm (1½in) long, with red-brown veins inside and sepals with translucent margins, in midsummer. † to 1.2m (4ft), ↔ 45cm (18in). S. and S.E. Europe, Hungary, Balkans, Turkey, Lebanon, Caucasus. \*\*\*

***D. grandiflora*** ■ ♀ syn. *D. ambigua*, *D. orientalis* (Yellow foxglove). Clump-forming biennial or perennial with ovate-oblong, finely toothed, conspicuously veined, usually hairless, often glossy, mid-green leaves, 7–25cm (3–10in) long. Racemes of well-spaced, pale yellow flowers, 4–5cm (1½–2in) long, with brown veins inside, are produced in early and midsummer.



*Digitalis davisiana* (inset: flower detail)

† to 1m (3ft), ↔ 45cm (18in). C. and S. Europe to Siberia, Turkey. \*\*\*

***D. kishinskyi*** see *D. parviflora*.

***D. laevigata***. Clump-forming, hairless perennial with obovate, mid-green basal leaves and linear-lance-shaped stem leaves, 5–25cm (2–10in) long. Loose racemes of horizontally borne, brown-yellow flowers, to 3.5cm (1½in) long, each with a white lower lip, and reddish brown veins and speckles inside, open in midsummer. † to 1m (3ft), ↔ 45cm (18in). W. and C. Balkans. \*\*\*

***D. lanata*** ♀ Clump-forming biennial or perennial with oblong-lance-shaped or inversely lance-shaped, mid-green leaves, to 12cm (5in) long, hairless beneath or with toothed margins. Dense, leafy racemes of pale cream or fawn flowers, 3cm (1¼in) long, each

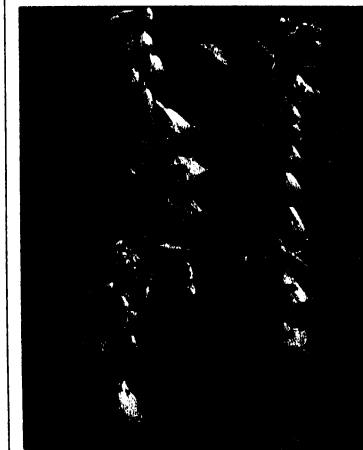
with brown or violet-brown veins and a lighter cream lower lip, are produced from mid- to late summer. † 60cm (24in), ↔ 30cm (12in). Italy, Balkans, Hungary, Turkey. \*\*\*

***D. lutea***, syn. *D. eriostachya*. Clump-forming perennial with oblong to inversely lance-shaped, toothed to almost entire, hairless, glossy, dark green leaves, 5–20cm (2–8in) long. Slender racemes of narrow, pale yellow flowers, 1–2.5cm (½–1in) long, are produced in early and midsummer. Prefers alkaline soil. † 60cm (24in), ↔ 30cm (12in). S.W. central Europe to Italy, N.W. Africa. \*\*\*

***D. x mertonensis*** ■ ♀ (*D. grandiflora* × *D. purpurea*). Robust, clump-forming perennial with ovate-lance-shaped to lance-shaped, toothed, conspicuously



*Digitalis grandiflora*

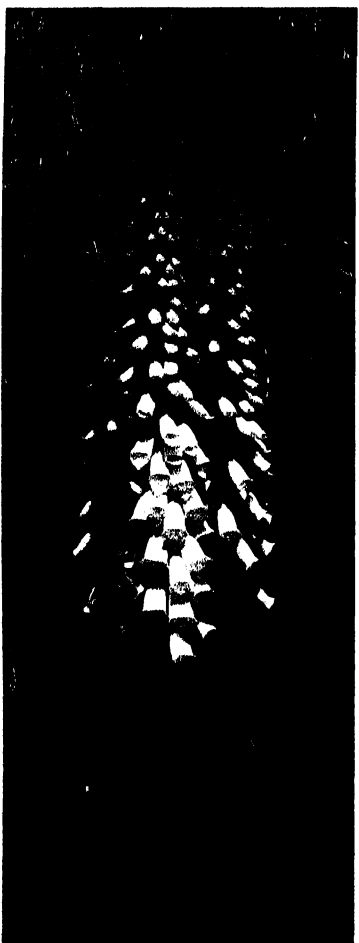


*Digitalis x mertonensis*

*Digitalis obscura*

veined, glossy, dark green leaves, 7–30cm (3–12in) long, slightly hairy beneath. Bears racemes of pinkish buff flowers, to 6cm (2½in) long, in late spring and early summer. Comes true from seed. † to 90cm (36in), ↔ 30cm (12in). Garden origin. \*\*\*

***D. obscura*** ■ Subshrubby perennial with lance-shaped to linear, entire, hairless, grey-green leaves, 8–15cm (3–6in) long. Racemes of rust-brown to yellow or orange-yellow flowers, 2–3cm (¾–1¼in) long, with red veins and spotting inside, are produced from late spring to midsummer. † 30–120cm (12–48in), ↔ 45cm (18in). Spain. \*\*  
***D. orientalis*** see *D. grandiflora*.  
***D. parviflora***, syn. *D. kishinskyi*. Clump-forming perennial with oblong to inversely-lance-shaped to lance-

*Digitalis purpurea* f. *albiflora*

shaped, entire or slightly toothed, leathery, softly hairy, dark green leaves, 8–20cm (3–8in) long. Dark orange-brown flowers, 1–2cm (½–¾in) long, each with a purple-brown lip, are produced in dense racemes in early summer. † 60cm (24in), ↔ 30cm (12in). N. Spain. \*\*\*

***D. purpurea*** (Common foxglove). Rosette-forming, very variable, hairy biennial or short-lived perennial with ovate to lance-shaped, usually toothed, dark green, sometimes white-woolly leaves, 10–25cm (4–10in) long. Tall, one-sided spikes of purple, pink, or white flowers, to 6cm (2½in) long, spotted maroon to purple inside, are produced in early summer. Best grown annually from seed. † 1–2m (3–6ft), ↔ to 60cm (24in). S.W. and W. central Europe. \*\*\*. f. *albiflora* ■ ♀ has white flowers. 'Dwarf Sensation' is compact, with densely packed flowers, to 8cm (3in) long; † 1.2m (4ft).

**Excelsior Hybrids** ■ ♀ bear flowers in pastel shades of creamy yellow, white, purple, or pink, held horizontally and arranged evenly around each spike. Good for cut flowers. **Foxy Hybrids** produce flowers in carmine-red, pink, creamy yellow, or white, heavily spotted maroon, and may be grown as annuals; † to 90cm (36in). 'Gloxinioides' has horizontally held, wide-open, frilly-margined flowers in salmon-pink, creamy yellow, purple, or pink, richly spotted and blotched inside; † 2m (6ft) or more. 'Sutton's Apricot' ♀ has apricot-pink flowers.

▷ Dill see *Anethum*, *A. graveolens*

*Digitalis purpurea* Excelsior Hybrids*Dillenia indica*

## DILLENIA

### DILLENACEAE

Genus of about 60 species of magnolia-like, evergreen or briefly deciduous shrubs and trees usually found in forest from Asia to Australia. They are grown for their flowers and their large, alternate, usually ovate to rounded, conspicuously veined leaves. The 5-petalled, saucer- to cup-shaped flowers are solitary or borne in racemes or panicles; they are followed by edible, fleshy, star-shaped to spherical fruits in enlarged calyces. In frost-prone areas, grow *D. indica* in a temperate or warm greenhouse; in warmer regions, it is an effective specimen or shade tree.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3), with additional sharp sand, in full light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained, neutral to acid soil in full sun. Pruning group 1; under glass, may need light restrictive pruning after flowering.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

***D. indica*** ■ ♂ (Chulta). Bushy shrub or spreading tree with elliptic-oblong, toothed, lustrous, bright, dark green leaves, 30cm (12in) or more long, boldly patterned with sunken veins. Solitary, cup-shaped white flowers, 20cm (8in) or more across, are produced from the upper leaf axils in summer, followed by spherical, yellowish green fruit, to 10cm (4in) across. † 15m (50ft), ↔ 10–15m (30–50ft). India to Java. ☞ (min. 15°C/59°F)

## DILLWYNIA

### LEGUMINOSAE/PAPILIONACEAE

Genus of 15 species of evergreen shrubs from dry scrub, heath, and sandy plains in Australia. They are grown for their pea-like flowers, with large wing petals, which are borne singly, or in terminal or axillary racemes or corymbs. The small, alternate, linear leaves are often crowded. Grow in a border or rock garden. In frost-prone areas, grow in a cool greenhouse.

- **HARDINESS** Generally frost tender, but *D. floribunda* and *D. sericea* may be half hardy in a sheltered site.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) with additional sharp sand, in full light and with good ventilation. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in moist but well-drained, poor to moderately fertile soil in sun or partial shade. Pruning group 10, after flowering.

- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring after soaking in hot water. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites may infest greenhouse plants.

***D. floribunda***. Freely branching, softly hairy shrub with crowded, linear, warty, mid- to deep green leaves, 5–15mm (¼–½in) long. Produces a profusion of yellow, or yellow and orange flowers, 7mm (¼in) across, in leafy, spike-like, terminal and axillary racemes, mainly from spring to summer. † 1–1.5m (3–5ft). Australia (Queensland, New South Wales). \* (borderline)

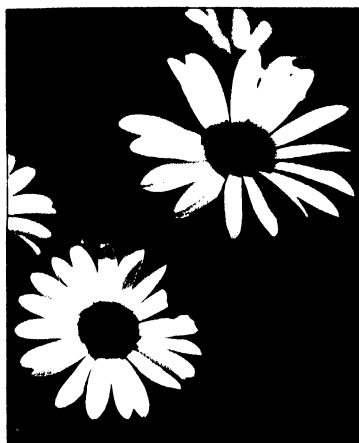
***D. sericea***. Erect, freely branching shrub with silky-white-hairy shoots bearing linear, warty, usually mid- to deep green leaves, 7–12mm (¼–½in) long. Spike-like terminal racemes of single or paired flowers, 1.5cm (½in) across, in shades of yellow and red, apricot, orange, or pink, are produced from spring to summer. † 60–120cm (2–4ft), ↔ 0.9–1.5m (3–5ft). Australia (Queensland to South Australia and Tasmania). \* (borderline)

## DIMORPHOTHECA

### African daisy

### ASTERACEAE/COMPOSITAE

Genus of 7 species of low-branching, erect annuals or evergreen, subshrubby perennials occurring in open, semi-arid, sandy areas in tropical Africa and South Africa, closely related to *Osteospermum* and at one time considered to include species now placed in that genus. All produce alternate, obovate to inversely lance-shaped, entire to pinnatisect, wavy-margined, toothed leaves, and daisy-like flowerheads, on stiff stems, that close in dull weather. They are attractive container, bedding, or border plants, flowering from summer until



*Dimorphotheca pluvialis*

first frosts. The perennial species may also be treated as annuals.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in light, well-drained, fertile soil in full sun, in a sheltered position. Dead-head regularly to prolong flowering.
- **PROPAGATION** Sow seed at 18°C (64°F) in early spring and plant out seedlings when danger of frost has passed, or sow *in situ* in mid-spring.
- **PESTS AND DISEASES** Grey mould (*Botrytis*) may be a problem.

*D. annua* see *D. pluvialis*.

*D. aurantiaca* of gardens see *D. sinuata*.

*D. barbae* of gardens see *Osteospermum jucundum*.

*D. ecklonis* see *Osteospermum ecklonis*.

*D. pluvialis* [ ] syn. *D. annua* (Rain daisy, Weather prophet). Erect, hairy annual with obovate to inversely lance-shaped, coarsely toothed or pinnatifid, aromatic, dark green leaves, to 10cm (4in) long. In summer, produces single white flowerheads, to 6cm (2½in) across, violet-blue beneath, with violet-purple zoning at the bases of the ray florets and violet-brown central discs. ↑ to 40cm (16in), ↔ 15–30cm (6–12in). Namibia, South Africa. \* 'Glistening White' has white flowerheads, tinged with violet. 'Tetra Polar Star' has white flowerheads, to 7cm (3in) across, with deep violet-blue central discs.

*D. sinuata*, syn. *D. aurantiaca* of gardens (Star of the veldt). Erect annual with oblong to lance-shaped, coarsely toothed, aromatic, mid-green leaves, to 10cm (4in) long. In summer, bears white, yellow, orange, or pink flowerheads, to 4cm (1½in) across, often tinged violet-blue, with violet-brown central discs. ↔ to 30cm (12in). South Africa. \*

## DIONAEA

Venus fly trap

DROSERACEAE

Genus of one species of insectivorous perennial found in bogs in coastal areas of North and South Carolina, USA. It has hinged, rounded, 2-lobed leaves, with stiff marginal spines and 3 or 4 sensitive hairs in the centre of each lobe. When an insect, attracted by the plant's nectar, touches the hairs, the hinge mechanism is triggered, and the leaves close, trapping the insect. Cup-shaped flowers are borne in umbel-like cymes.



*Dionaea muscipula*

In frost-prone areas, grow *D. muscipula* in a conservatory or as a houseplant; elsewhere, grow in a bog garden.

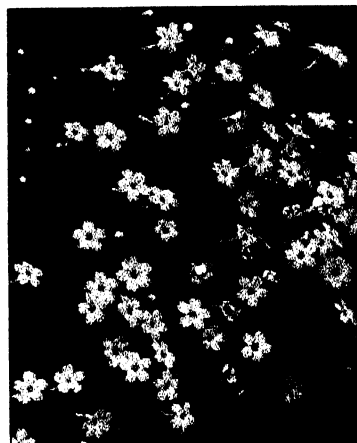
- **HARDINESS** Half hardy; needs 5°C (41°F) to start into growth.
- **CULTIVATION** Under glass, grow in an acidic mix of equal parts moss peat and lime-free sand in full or bright filtered light. Keep wet by standing in a saucer with 1cm (½in) of soft water. Growth ceases in autumn, leaving swollen leaf bases in a bulb-like structure below soil level; keep just moist when dormant. Pot on each spring as new growth appears. Outdoors, grow in moist, acid soil in full sun. To encourage "trap" production, pinch out emerging flower stems and remove dead "traps".
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) in spring; place the container in a water tray to keep the potting compost moist. Germination is often very slow. Divide in spring, or take leaf cuttings in late spring or early summer.
- **PESTS AND DISEASES** Trouble free.

*D. muscipula* [ ] (Venus fly trap). Very variable, rosette-forming perennial with rounded, yellow-green to red leaves with winged stalks. Each leaf has 2 hinged lobes with 15–20 stiff, marginal spines. Winter and early summer leaves are 8cm (3in) long, with "traps" 2.5cm (1in) long; many plants also produce summer leaves, to 15cm (6in) long, with "traps" 3cm (1¼in) long and flatter, narrower stalks. In early and midsummer, bears 3–10 white flowers, 1cm (½in) across, in umbel-like cymes on bare stems, 30cm (12in) or more tall. ↑ 15–45cm (6–18in), ↔ 15cm (6in). USA (North Carolina and South Carolina). \*

## DIONYSIA

PRIMULACEAE

Genus of 42 species of tufted or cushion-forming, subshrubby, evergreen perennials found on shady cliffs in arid mountainous areas of C. Asia. The leaves, usually oblong to spoon-shaped, often with a woolly coating (farina) beneath, are borne in rosettes at the ends of branching shoots. Long-tubed, 5-petalled, salverform flowers, with spreading lobes, are solitary or borne in umbels in spring or early summer. They may be pin- or thrum-eyed and, except for *D. involucrata*, both variants must be grown together to produce seed. Grow in an alpine house or outdoors in tufa, protected from excess rainfall.

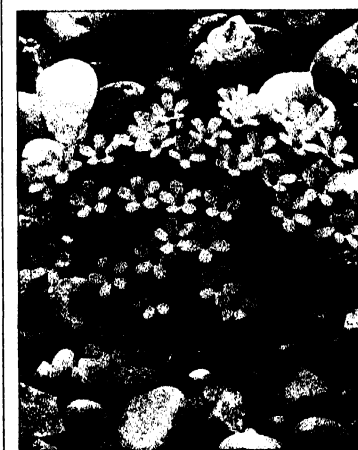


*Dionysia aretioides*

- **HARDINESS** Fully hardy.
- **CULTIVATION** Under glass, grow in a mix of 3 parts grit and 1 part each loam and leaf mould, with a deep collar of grit around the neck of the plant; provide full light and good ventilation. When in growth, water freely from below, keeping the collar dry; water sparingly in winter. Outdoors, grow in tufa in full sun. Water the material into which the plants are plunged; the leaves and plant collar must be kept dry.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Take cuttings of single rosettes in summer, and root in a propagating case, watering only from below.
- **PESTS AND DISEASES** Very susceptible to grey mould (*Botrytis*), especially if overwatered or poorly ventilated. May be infested with aphids.

*D. aretioides* [ ] ♀ Cushion-forming perennial with dense rosettes of linear-oblong to narrowly spoon-shaped, softly hairy, grey-green leaves, to 7mm (¼in) long, with turned-back margins, yellow- or white-mealy beneath. Produces numerous solitary, stemless, scented, bright yellow flowers, to 1cm (½in) across, with notched petals, in early spring. Relatively easy to grow. ↑ 7cm (3in), ↔ to 30cm (12in). N. Iran. \*\*\*

*D. involucrata*. Dense, cushion-forming perennial with obovate to broadly spoon-shaped, finely toothed, dark green leaves, 4–12mm (⅛–½in) long. In early summer, bears stalked umbels of violet or violet-purple flowers, 7–15mm (¼–½in) across, with white eyes that darken with age. Relatively



*Dionysia michauxii*



*Dionysia tapetodes*

easy to grow. ↑ 7cm (3in), ↔ to 10cm (4in). N.E. Afghanistan and Tajikistan (Pamir Mountains). \*\*\*

*D. michauxii* [ ] Dense, cushion-forming perennial with tight, rounded rosettes of oblong to oblong-spoon-shaped, silver-grey-hairy leaves, to 3mm (⅛in) long. In spring, the cushions are studded with stemless yellow flowers, to 6mm (¼in) across. ↑ 5cm (2in), ↔ to 15cm (6in). S.W. Iran. \*\*\*

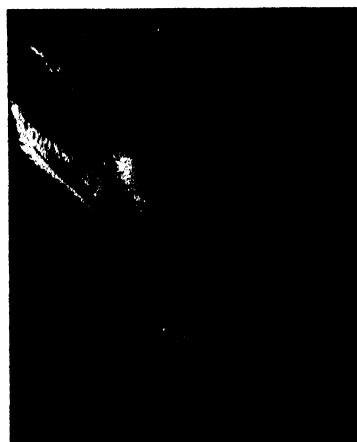
*D. microphylla*. Dense, cushion-forming perennial with hard, compact rosettes of entire, obovate to rounded, often sharp-pointed, grey-green leaves, to 2mm (⅛in) long, with a mealy yellow coating beneath. In early summer, bears short-stemmed umbels of white-eyed, pale to deep violet flowers, to 1cm (½in) across, with darker petal bases. ↑ 5cm (2in), ↔ to 15cm (6in). N.W. Afghanistan. \*\*\*

*D. tapetodes* [ ] Tight, cushion-forming perennial with rosettes of oblong, obovate, or spoon-shaped, glandular, mid-green leaves, to 4mm (⅛in) long, sometimes with a dense, woolly white or yellow farina beneath. Bears masses of solitary, stemless, long-tubed, sometimes scented yellow flowers, to 1cm (½in) across, in late spring and early summer. Relatively easy to grow. ↑ 5cm (2in), ↔ to 20cm (8in). Turkmenistan, N.E. Iran, C. Afghanistan. \*\*\*

## DIOON

ZAMIACEAE

Genus of 10 species of dioecious, evergreen, palm-like cycads, with strong, woody stems, found on steep, rocky slopes or in open woodland in Central America. The stiff, leathery leaves are pinnate with many slender leaflets. Large, elliptic-ovoid, woolly female cones are produced in the centre of the terminal leaf rosettes; the male cones are cylindrical and smaller. Grow as specimen plants. In frost-prone areas, *Dioon* species need the protection of a temperate or warm greenhouse.

*Dioon edule*

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts fibrous loam, coarse bark, and garden compost, in full light with shade from hot sun. In the growing season, water *D. edule* freely and *D. spinulosum* moderately, applying a balanced liquid fertilizer monthly. Water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow most species in fertile, moist but well-drained, humus-rich, neutral to acid soil in full sun. *D. spinulosum* prefers partial shade, high humidity, and neutral to slightly alkaline soil.
- **PROPAGATION** Sow seed at 24–32°C (75–90°F) in spring in very sandy potting compost.
- **PESTS AND DISEASES** Scale insects may be a problem under glass.

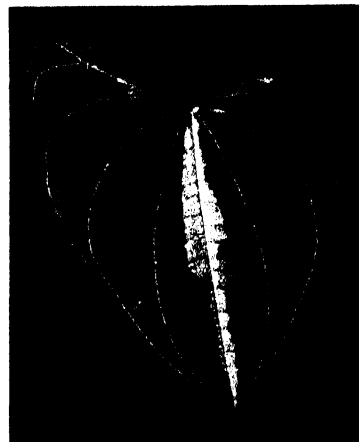
*D. edule* ♀ (Mexican fern palm). Very slow-growing cycad with a robust, solitary stem, inclining with age. Semi-erect leaves, 0.9–1.5m (3–5ft) long, have up to 200 linear-lance-shaped, sharp-tipped, hairy, grey- to bluish green leaflets, the lower ones almost spine-like. Female cones, to 30cm (12in) long, are rarely produced in cultivation. ‡ to 1.8m (6ft), ↔ 1.5–2.5m (5–8ft). Mexico. ☀ (min. 13°C/55°F)

*D. spinulosum* ♀ One of the tallest cycads, with a slender stem, inclining with age. Arching to ascending leaves, 1–2m (3–6ft) long, have up to 150 lance-shaped, spiny-toothed leaflets, downy and grey-blue initially, maturing to mid-green. Grey to brown female cones, 30cm (12in) or more long, are borne in summer. ‡ to 15m (50ft), ↔ to 4m (12ft). Mexico. ☀ (min. 13°C/55°F)

## DIOSCOREA

### DIOSCOREACEAE

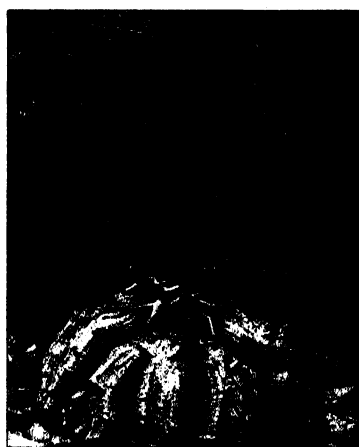
Genus of 600 species of tuberous, deciduous or evergreen, monoecious or dioecious, climbing perennials, some of which are succulent, from tropical forest and relatively dry, often arid areas in tropical and subtropical regions, and from woodland and open scrub in temperate areas. In a few species, the tubers are at or above ground level and covered with bosses of corky bark, resembling a caudex. The stems are mostly woody based and often become vine-like, with alternate, occasionally opposite, simple or palmate leaves, and axillary racemes of small, bell-shaped, 6-tepalled flowers. Some species produce

*Dioscorea discolor*

bulbils in the leaf axils. Use to clothe a pillar or pergola; *D. elephantipes* is also suitable for a desert garden. In frost-prone areas, grow tender species in a temperate or warm greenhouse or conservatory.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in bright filtered light. Provide support. In the growing season, water freely, applying a balanced liquid fertilizer monthly; keep just moist at other times. Outdoors, grow in fertile, humus-rich soil in partial shade. Under glass, *D. elephantipes* needs full light and gritty, sharply drained potting compost, top-dressed with grit. In growth, water moderately; reduce water as the stems wither to keep completely dry when dormant. Outdoors, provide sharply drained soil in full sun. Pruning group 11, in spring, if necessary to restrict size.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or plant bulbils in spring. Divide tubers when dormant. Root cuttings of young shoots as they arise from the tuber in spring.
- **PESTS AND DISEASES** Prone to aphids.

*D. discolor* ♀ (Ornamental yam). Moderately vigorous, erect, evergreen, twining climber with slightly angled stems. Heart-shaped or ovate, pointed leaves, 10–15cm (4–6in) long, are velvety olive-green, marbled silver, paler green, and brown, and have silvery pink veins above, purple beneath. In summer, produces green flowers, 2mm (1/16in) across. ‡ 2–3m (6–10ft). Tropical South America. ☀ (min. 13–15°C/ 55–59°F)

*Dioscorea elephantipes*

*D. elephantipes* ♀ syn. *Testudinaria elephantipes* (Elephant's foot). Slow-growing, deciduous, climbing perennial with a partially buried, pyramidal or hemispherical, woody tuber, to 90cm (3ft) across, divided into angled, corrugated fissures. Blue-green leaves, to 6cm (2 1/2in) long, are heart- or kidney-shaped. Dark-spotted, greenish yellow flowers, 4mm (1/8in) across, are borne in summer. ‡ 1m (3ft). South Africa. ☀ (min. 7–10°C/45–50°F)

▷ *Diosphaera* see *Trachelium*  
*D. asperuloides* see *T. asperuloides*

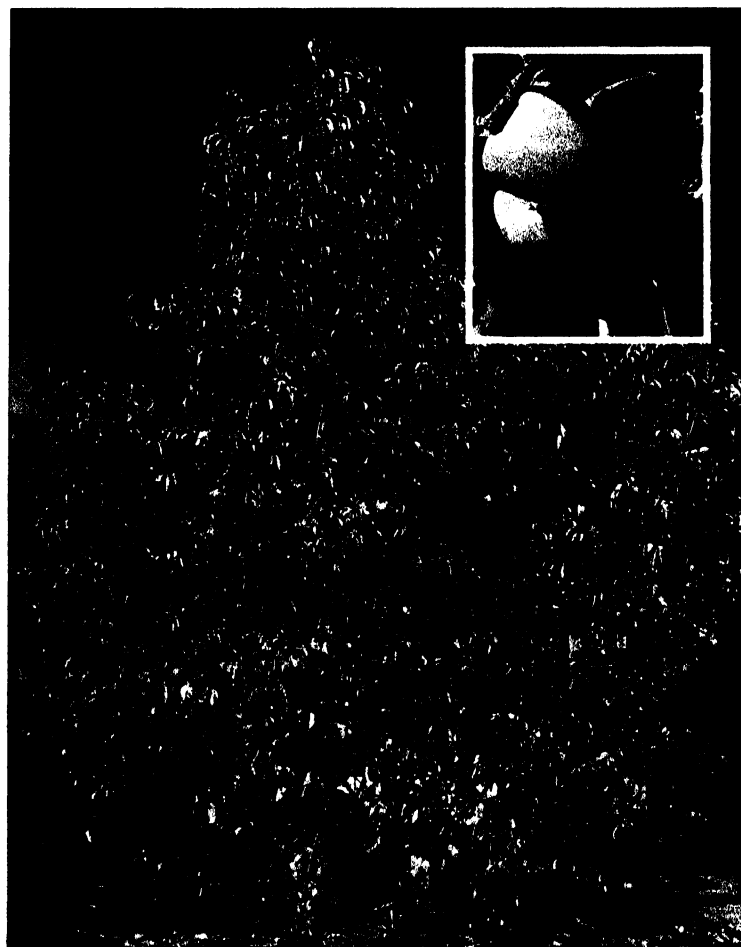
## DIOSPYROS

### EBENACEAE

Genus of 475 species of deciduous or evergreen trees and shrubs found in forest in tropical, subtropical, and warm-temperate regions worldwide. They are grown for their attractive habit, their bold, alternate, lance-shaped to broadly ovate, simple, often glossy leaves (sometimes with heart-shaped bases), and their fleshy fruits. Bell- or urn-shaped, male and female flowers are usually borne on separate plants, on the previous year's wood. Although some female cultivars of *D. kaki* produce fruit without a male, pollination will generally result in larger crops. In cool-temperate climates, the species and cultivars described here make attractive specimen trees, but most need long, warm summers to fruit well. If growing for fruit, train *D. kaki* as an espalier on a warm, sunny wall, or in frost-prone climates, in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in deep, fertile, well-drained, loamy soil in full sun, preferably sheltered from cold, drying winds and late frosts. Pruning group 1.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Graft cultivars of *D. kaki* in winter.
- **PESTS AND DISEASES** Trouble free in cool climates; in warmer regions and under glass, mealybugs, leaf rollers, and scale insects may be troublesome.

*D. kaki* ♀ (Chinese persimmon, Japanese persimmon, Kaki). Spreading, deciduous tree with oval, glossy, dark green leaves, to 20cm (8in) long, which turn yellow to orange-red and purple in autumn. Small, bell-shaped, pale yellow flowers, to 1.5cm (1/2in) across, are produced in summer. Female plants bear edible, conical to spherical yellow to orange fruit, to 8cm (3in) across. ‡ 10m (30ft), ↔ 7m (22ft). China. ✱✱  
**'Hachiya'** ♀ is female, with conical, orange-red fruit, 8cm (3in) long.  
*D. lotus* (Date plum) ♀ Spreading, deciduous tree with lance-shaped, elliptic, or oval, glossy, dark green leaves, to 12cm (5in) long. Bears tiny, bell-shaped, red-tinged green flowers in mid- to late summer, followed (on female plants) by inedible, spherical to ovoid, yellow to purple fruit, to 2cm (3/4in) across. ‡ 10m (30ft), ↔ 6m (20ft). S.W. Asia to China. ✱✱✱

*Diospyros kaki* 'Hachiya' (inset: fruit detail)



## DIPCADI

## HYACINTHACEAE/LILIACEAE

Genus of 55 species of small, bulbous perennials found in dry, rocky areas in S. and W. Europe and N. and southern Africa. Leaves are linear to strap-shaped, and the narrowly bell-shaped or tubular flowers, reminiscent of bluebells, are borne in loose racemes. Grow in a rock garden; where winters are cold and wet, grow in an alpine house or bulb frame.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Plant bulbs 5cm (2in) deep in winter or early spring. Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand in full light. In growth, water freely; reduce water as leaves wither, and keep dry during summer dormancy. Outdoors, grow in light, well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets during summer dormancy.
- **PESTS AND DISEASES** Trouble free.

**D. serotinum.** Bulbous perennial with narrowly linear, grey- or light green, basal leaves, to 30cm (12in) long. In spring, bears racemes of tubular bronze, green, or dull orange-red flowers, 2.5cm (1in) long, with spreading or reflexing tips, on leafless stems, 45cm (18in) long. ↑ 10–45cm (4–18in), ↔ 5cm (2in). S.W. Europe, N. Africa. \* \*

## DIPELTA

## CAPRIFOLIACEAE

Genus of 4 species of deciduous shrubs found in scrub and woodland in C. and W. China. They are valued for their peeling bark, their fragrant, tubular to bell-shaped flowers, borne singly or in short corymbs, and for the papery bracts that surround the fruits. The simple, ovate to oval-lance-shaped, pointed leaves are borne in opposite pairs. Grow as a specimen or in a large shrub border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained, preferably alkaline soil in sun or partial shade. Pruning group 2.
- **PROPAGATION** Sow seed in a seedbed in autumn or spring. Root softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**D. floribunda** ■ Upright, multi-stemmed shrub with pale brown bark and ovate to oval-lance-shaped, sharp-



Dipelta floribunda

pointed, pale green leaves, to 10cm (4in) long. Produces terminal and axillary corymbs of 1–6 tubular, yellow-marked, pale pink flowers, to 3cm (1¼in) long, in late spring and early summer. ↑ 4m (12ft). C. and W. China. \* \* \*

**D. yunnanensis.** Arching shrub with pale brown bark and ovate-lance-shaped, pointed, glossy, mid-green leaves, to 12cm (5in) long. Corymbs of 1–4 tubular, orange-marked white flowers, to 2.5cm (1in) long, are borne on short, leafy stems in late spring. ↑ 3m (10ft), ↔ 4m (12ft). W. China. \* \* \*

## DIPHYLLEIA

## BERBERIDACEAE

Genus of 2 or 3 species of rhizomatous perennials found in woodland and by mountain streams in Japan and North America. They produce large, peltate, dark green leaves and terminal cymes of 6-petalled, bowl-shaped white flowers that quickly lose their petals. Grow in a woodland or peat garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, leafy, or humus-rich soil in full or partial shade, preferably sheltered from wind.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide rhizomes in spring.
- **PESTS AND DISEASES** Slugs and snails eat resting buds and young growth.

**D. cymosa** (Umbrella leaf). Rhizomatous perennial with cleft radical leaves, 30–60cm (12–24in) across, each segment with 5–7 shallow, pointed, toothed lobes. Upright flowering stems each bear 2 deeply 2-lobed leaves, to 40cm (16in) across. Bears flowers to 2cm (¾in) across in umbel-like cymes in late spring and early summer, followed by blue berries, 1cm (½in) across, on red stalks. ↑ to 1m (3ft), ↔ 30cm (12in). USA (S. Appalachians). \* \* \*

- ▷ **Diplacus** see *Mimulus*
- D. glutinosus** see *M. aurantiacus*
- ▷ **Dipladenia** see *Mandevilla*
- D. boliviensis** see *M. boliviensis*
- D. splendens** see *M. splendens*

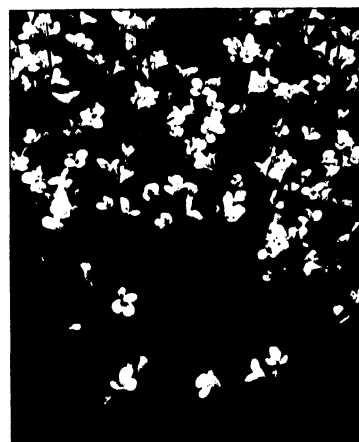
## DIPLARRHENA

## syn. DIPLARRHENA

## IRIDACEAE

Genus of 2 species of rhizomatous, evergreen perennials from moist, grassy mountain slopes in S.E. Australia and Tasmania. They form basal tufts of long, flat, linear to sword-shaped leaves, and the usually unbranched flowering stems produce clusters of fragrant, short-lived, iris-like flowers, enclosed by 2 bracts. Grow in a sheltered herbaceous border, at the base of a house wall, or in a cool greenhouse or conservatory.

- **HARDINESS** Frost hardy; may survive to -10°C (14°F) in well-drained soil.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. Water freely when in growth, sparingly in winter. Outdoors, grow in moist but well-drained, sandy, humus-rich, neutral to acid soil in full sun, or partial shade in a hot site.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring, or divide in spring.
- **PESTS AND DISEASES** Trouble free.



Diplarrhena moraea

**D. moraea** ■ Tufted perennial with short rhizomes and linear to sword-shaped, dark green, sometimes slightly glaucous, basal leaves, 45cm (18in) long. Bears a succession of 3–6 white flowers, 4–6cm (1½–2½in) across, the inner tepals marked with yellow and purple, in late spring and early summer. ↑ 60cm (24in), ↔ 23cm (9in). S.E. Australia, Tasmania. \* \*

## DIPLAZIUM

## ATHYRIACEAE/DRYOPTERIDACEAE

Genus of about 350 terrestrial or epiphytic, evergreen ferns, often with trunk-like rhizomes, found worldwide, in tropical, and warm- or cool-temperate forest. The pinnate to 3-pinnate or simple fronds, arise from erect or sometimes creeping rhizomes. Spores, formed in single or often V-shaped, double lines along the veins on the lower surfaces of the fronds, are covered by indusia when young. In frost-prone areas, grow in a warm greenhouse; elsewhere, use in a moist, sheltered site.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 1 part each loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered light and high humidity. Water freely when in growth, sparingly in winter. Pot on annually in spring. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Separate underground runners of species such as *D. esculentum* in spring.



Diplazium esculentum

- **PESTS AND DISEASES** Snails, slugs, and various insects often cause serious damage to tender young fronds.

**D. esculentum** ■ Evergreen fern, which spreads by underground runners. Ovate-triangular, pinnate or 2-pinnate, leathery, dark green fronds, to 60cm (24in) long, with oblong-lance-shaped segments, are produced in tufts from an erect, stem-like rhizome. ↑ to 1m (3ft). S.E. Asia, Polynesia. ♀ (min. 8–10°C/46–50°F)

▷ **Diplorhiza ciliata** see *Orbea ciliata*

## DIPSACUS

## Teasel

## DIPSACACEAE

Genus of 15 species of hairy or prickly biennials or short-lived perennials from damp grassland and woodland in Europe, N. Africa, and Asia. The simple or pinnatifid, toothed or cut leaves are borne in opposite pairs, with the bases of the upper leaves usually forming a "cup" around each stem. In the second summer, teasels bear cone-shaped flowerheads on long, upright, branching stems. Grow in a wild garden or wild-flower border; the dried flowerheads are good in floral arrangements.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moderately fertile soil, including heavy clay, in sun or partial shade. Flowerheads should be harvested for air-drying from mid- to late summer.
- **PROPAGATION** Sow seed *in situ* in autumn or spring.
- **PESTS AND DISEASES** Prone to aphids.

**D. fullonum** ■ syn. *D. sylvestris*. Prickly biennial producing a basal rosette of simple, oblong-lance-shaped, toothed, dark green leaves, 30cm (12in) or more long, covered in spiny pustules; these leaves usually wither before flowers appear. Paired lance-shaped leaves are borne on upright stems in the second summer, each pair joined at the base to form a cup. Oblong-ovoid, thistle-like, pinkish purple or white flowerheads, 3–8cm (1¼–3in) long, with stiff, curved, prickly bracts, are borne in mid- and late summer. ↑ 1.5–2m (5–6ft), ↔ 30–80cm (12–32in). Europe, Asia. \* \* \*

**D. sylvestris** see *D. fullonum*.

▷ **Dipteracanthus** see *Ruellia*



Dipsacus fullonum

## DIPTERONIA

## ACERACEAE

Genus of 2 species of deciduous trees and shrubs found in woodland in C. and S. China. *D. sinensis* is grown for its pinnate leaves, produced in opposite pairs, and for its large clusters of winged, red-brown fruit. Small, greenish white flowers are produced in erect terminal panicles in summer. Grow in a large shrub border or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained, loamy soil in sun or partial shade. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Layer in late spring or early summer; shoots often layer naturally. Insert softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*D. sinensis* ♀ Spreading tree or shrub with pinnate leaves, to 30cm (12in) long, with 7–11 ovate or lance-shaped, toothed leaflets. Bears erect, pyramidal panicles, 15–30cm (6–12in) long, of small, greenish white flowers in summer, followed by large clusters of flat, winged, red-brown fruit, 2.5cm (1in) across, ripening to brown-red in autumn.  $\updownarrow$  10m (30ft). C. China. \*\*\*

## DIRCA

## THYMELEACEAE

Genus of 2 species of deciduous shrubs found in woodland in E. North America and on wet slopes in evergreen forest on rocky hills in California, USA. The oval to obovate or broadly elliptic leaves are simple, entire, and alternate. They are cultivated for their early, *Daphne*-like flowers, borne on bare branches in axillary clusters of 2 or 3 in early spring. Grow in a sheltered shrub border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich soil in partial shade. Provide shelter from frosts, which may spoil the early flowers. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Layer in autumn or spring.
- **PESTS AND DISEASES** Trouble free.

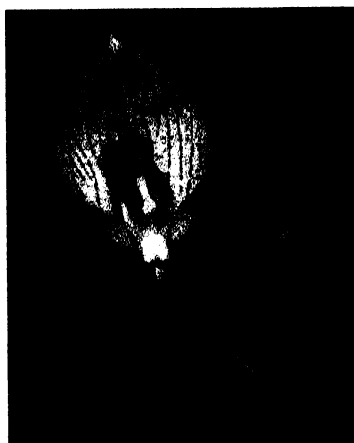
*D. palustris* (Leatherwood). Upright shrub with fibrous bark and very flexible shoots bearing oval to obovate leaves, to 7cm (3in) long, mid-green above, blue-green beneath. Narrowly funnel-shaped, pale yellow flowers, 1cm (½in) long, are borne in clusters of 3 in early spring.  $\updownarrow$  1.5m (5ft). E. North America. \*\*\*

## DISA

## ORCHIDACEAE

Genus of approximately 100 species of deciduous, occasionally evergreen, terrestrial orchids found at low to high altitudes, often by running water, in tropical C. and E. Africa, South Africa, and Madagascar. They have tuberous, sometimes also stoloniferous roots. The erect stems, with ovate to lance-shaped or linear leaves, bear one to many richly coloured flowers, with hooded upper and spreading lower perianth segments, in terminal racemes or corymbs.

- **HARDINESS** Frost tender.



Disa uniflora

- **CULTIVATION** Cool-growing orchids. Grow in a mix of equal parts peat, perlite, and chopped sphagnum moss, and cover the compost surface with sphagnum moss. In summer, provide cool, humid, shady conditions. In the growing season, water freely with soft water, to keep the roots continually moist, but avoid wetting the leaves, which are prone to black rot; keep cool and dry in winter. Do not fertilize. Repot annually after new growth has started. See also p.46.
- **PROPAGATION** Divide plants when repotting.
- **PESTS AND DISEASES** Red spider mites may be troublesome.

*D. grandiflora* see *D. uniflora*.

*D. Kirstenbosch* Pride (*D. cardinalis* × *D. uniflora*). Hybrid terrestrial orchid producing a basal rosette of lance-shaped leaves, 7–15cm (3–6in) long. Racemes of up to 8 scarlet and orange-red flowers, 7cm (3in) across, are produced on tall stems in late summer.  $\updownarrow$  90cm (36in),  $\leftrightarrow$  20cm (8in).  $\hat{=}$  (min. 5°C/41°F; max. 24°C/75°F)

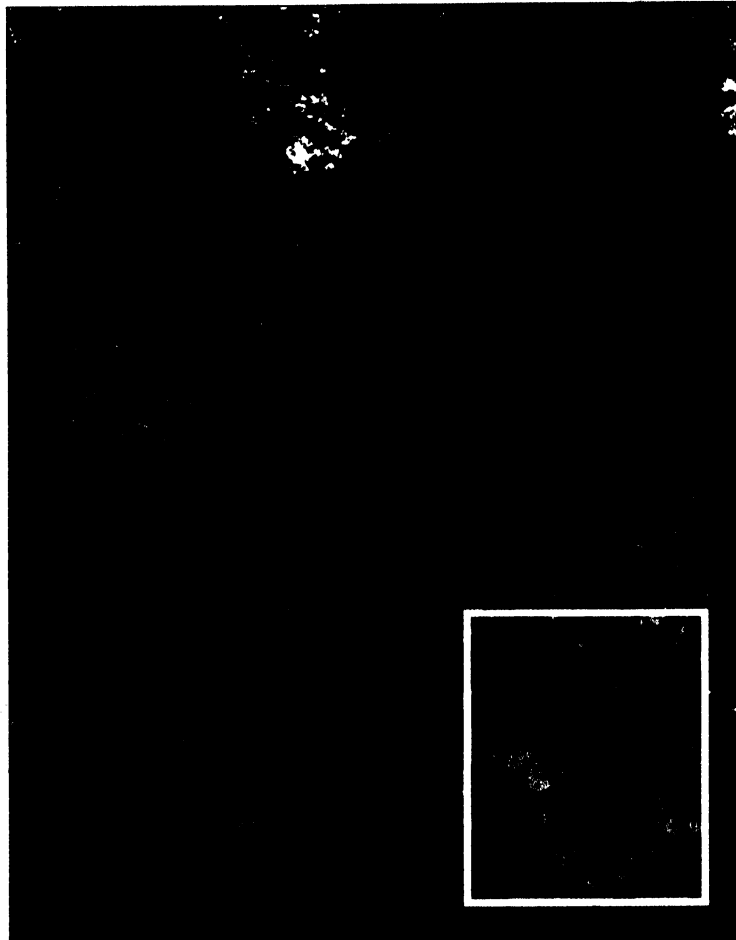
*D. uniflora* ♂ syn. *D. grandiflora*. Terrestrial orchid with lance-shaped leaves, to 25cm (10in) long. Produces short racemes of up to 3, or very rarely 10, brilliant scarlet flowers, 8–12cm (3–5in) across, with red and gold veining, in midsummer.  $\updownarrow$  60cm (24in),  $\leftrightarrow$  20cm (8in). South Africa (Northern Cape, Western Cape, Eastern Cape).  $\hat{=}$  (min. 5°C/41°F; max. 24°C/75°F)

## DISANTHUS

## HAMAMELIDACEAE

Genus of one species of deciduous shrub found in woodland and mountains in China and Japan. It is grown for its striking autumn colour, graduating from yellow through red to purple, and displaying all these shades at once. The ovate to rounded leaves are alternate, and the slightly fragrant, spidery flowers are borne in pairs in mid-autumn as the leaves fall. Grow *D. cercidifolius* as a specimen in a woodland garden.

- **HARDINESS** Fully hardy, but late frosts may damage young growth.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, lime-free soil in sun or partial shade, sheltered from strong winds. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn or spring. Layer in spring.
- **PESTS AND DISEASES** Trouble free.



Disanthus cercidifolius (inset: leaf detail)

*D. cercidifolius* ♂♀ Rounded shrub with ovate to rounded, glaucous, blue-green leaves, to 10cm (4in) long, with heart-shaped bases, turning yellow, orange, red, and purple in autumn. Slightly fragrant, axillary, spidery, bright rose-red flowers, 2cm (¾in) across, are produced in mid-autumn.  $\updownarrow$  3m (10ft). C. China, Japan. \*\*\*

## DISCARIA

## RHAMNACEAE

Genus of about 15 species of spiny, deciduous shrubs and small trees from Australia, New Zealand, and temperate South America, found in rocky places and scrub, and closely allied to *Colletia*. They produce opposite or clustered, mainly elliptic to obovate or oblong leaves, opposite pairs of spines on stiff or flexuous branches, and star- or bell-shaped flowers, often with petals absent. *Discaria* species are grown for their numerous thick spines and their abundant, densely clustered flowers. In warm climates, they are suitable for an open shrub border; in cooler conditions, they grow best at the base of a warm, sunny, sheltered wall.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun. In cold regions, shelter from hard frost and cold, drying winds. Pruning group 1, after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Insert greenwood cuttings in early summer or semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

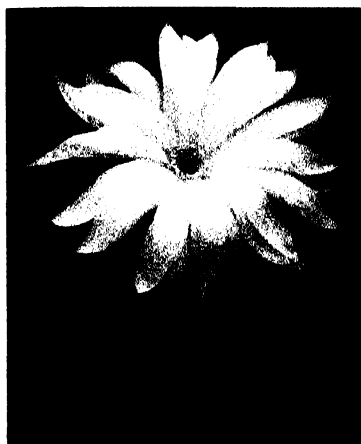
*D. toumatou* ♀ (Wild Irishman). Large shrub or small tree bearing cylindrical, flexuous, slender green stems; numerous slender, opposite green spines, to 5cm (2in) long, are borne at right-angles to the stems. Obovate to narrowly oblong, glossy leaves, to 2cm (¾in) long, borne below the spines on year-old shoots, fall early. Bears dense clusters of star-shaped, greenish white flowers, 3mm (¼in) across, composed of 4 or 5 small sepals, in late spring.  $\updownarrow$  2.5m (8ft),  $\leftrightarrow$  3m (10ft). New Zealand. \*\*

## DISCOCACTUS

## CACTACEAE

Genus of 5–7 species of ribbed, spherical, perennial cacti from hilly lowlands in Brazil, E. Bolivia, and N. Paraguay. Most have prominent areoles and strong, often horny spines. Mature plants develop a woolly and bristly-spiny cephalium, from which funnel-shaped or tubular, salverform, scented, white or pink flowers, 5–10cm (2–4in long), are produced at night in summer. The berries contain minute black seeds. Suitable for a desert garden. In frost-prone areas, grow in a warm greenhouse or as houseplants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. In the growing season, water moderately, applying a nitrogen- and potassium-based fertilizer every 3 weeks. Keep completely dry from autumn to early spring. Outdoors, grow in sharply drained, mineral soil, low in organic matter, in full sun. See also pp.48–49.

*Discocactus horstii*

- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring or early summer.
- **PESTS AND DISEASES** Vulnerable to mealybugs.

**D. hartmannii**, syn. *Echinocactus hartmannii*. Flattened-spherical cactus with a white-woolly, tufted cephalium, 15–22 dark green ribs, and well-spaced areoles bearing blackish brown spines (6–12 radials and 1 central). Funnel-shaped, many-petalled white flowers, to 10cm (4in) across, are produced in summer. ‡ 10cm (4in), ↔ 25cm (10in). Brazil, N. Paraguay. ☀ (min. 16°C/61°F)

**D. horstii** ☐ Flattened-spherical cactus with a white-woolly cephalium, 15–22 prominent, brownish green to purple-brown ribs, and close-set areoles, each bearing 8–10 minute, greyish white to chalky white radial spines. Open funnel-shaped white flowers, to 8cm (3in) across, are produced in summer. ‡ 2–3cm (¾–1¼in), ↔ to 6cm (2½in). E. Brazil. ☀ (min. 16°C/61°F)

**D. placentiformis**, syn. *D. tricornis*. Flattened-spherical cactus, sometimes producing offsets, with a white-woolly cephalium, 10–16 light to dark green or blue-green ribs, and few areoles, bearing brownish white spines (3–8 curved radials and often a shorter, straight central). Funnel-shaped white flowers, to 9cm (3½in) across, are borne in summer. ‡ 5–10cm (2–4in), ↔ 10cm (4in). E. Brazil. ☀ (min. 16°C/61°F)

**D. tricornis** see *D. placentiformis*.

## DISOCACTUS

CACTACEAE

Genus of 10 species of freely branching, epiphytic or rock-dwelling, perennial cacti, found in rainforest in subtropical and tropical Central and South America, and the West Indies. They have cylindrical primary stems, rounded in cross-section, and flattened lateral stems. Funnel-shaped or tubular, diurnal flowers, sometimes sweetly scented, are borne on marginal areoles, followed by spherical to ovoid, usually white or greenish white fruits with black seeds. In frost-prone areas, grow in a container or hanging basket in a warm greenhouse; in warmer regions, grow epiphytically.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in acidic, epiphytic cactus compost in bright filtered light and low humidity. In the growing season, water freely,

*Discocactus nelsonii*

applying fertilizer in spring and again in late autumn; keep just moist in winter. Outdoors, grow epiphytically in partial shade. See also pp.48–49.

- **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe in loamless seed compost, in a closed case and filtered light; keep the compost moist. Root stem cuttings in late spring.
- **PESTS AND DISEASES** Vulnerable to mealybugs.

**D. alatus**, syn. *Pseudorhipsalis alata*. Freely branching cactus with pendent primary stems, to 5m (15ft) across, bearing broadly linear to lance-shaped or oblong, leaf-like, flat, scalloped-wavy lateral stems. Open funnel-shaped, yellowish cream or greenish white flowers, 1.5cm (½in) across, are borne in late spring. ‡ 30cm (12in), ↔ 15cm (6in). Jamaica. ☀ (min. 16°C/61°F)

**D. amazonicus**, syn. *Wittia amazonica*, *Wittiocactus amazonicus*. Freely branching cactus bearing oblong-lance-shaped, leaf-like, flattened stems, 15–30cm (6–12in) long, with coarsely toothed margins and prominent mid-ribs. Bears tubular magenta flowers, 2–3cm (¾–1¼in) across, in late spring. ‡ 45cm (18in), ↔ 20cm (8in). N.W. Peru, Colombia. ☀ (min. 16°C/61°F)

**D. biformis**, syn. *Phyllocactus biformis*. Freely branching cactus with cylindrical primary stems, to 20cm (8in) long, bearing linear or narrowly oblong lateral stems with toothed margins. Narrowly funnel-shaped, deep red to magenta flowers, 5–6cm (2–2½in) long, are produced in early spring. ‡ 20cm (8in). Guatemala, Honduras. ☀ (min. 16°C/61°F)

**D. eichlamii**, syn. *Phyllocactus eichlamii*. Freely branching cactus with slender primary stems, to 75cm (30in) long, bearing narrowly lance-shaped, toothed, flattened lateral stems. Funnel-shaped, carmine-red flowers, to 6cm (2½in) long, are borne in early spring. ‡ 30cm (12in), ↔ 45cm (18in). Guatemala. ☀ (min. 16°C/61°F)

**D. macranthus**, syn. *Pseudorhipsalis macrantha*. Bushy cactus producing a cylindrical base and pendent, strap-shaped, slightly toothed stems, to 90cm (36in) across. Bears numerous tubular-salverform, sweetly scented flowers, 6cm (2½in) across, pink-purple at the bases, with pale orange-brown outer tepals, lemon-yellow inside, in late winter and early spring. ‡ 60cm (24in), ↔ 30cm (12in). S. Mexico. ☀ (min. 16°C/61°F)

**D. nelsonii** ☐♀ syn. *Chiapasia nelsonii*. Freely branching cactus with cylindrical primary stems, to 1.5m (5ft) long, and pendent, inversely lance-shaped, slightly toothed, flattened lateral stems. Funnel-shaped, scented, purplish pink flowers, 9–11cm (3½–4½in) across, are borne from spring to early summer. ‡ 50cm (20in) or more, ↔ 25cm (10in). Mexico to Honduras. ☀ (min. 16°C/61°F)

**D. quezaltecus**, syn. *Bonifazia quezalteca*. Freely branching cactus with primary stems, to 80cm (32in) long, flattened at the top, and toothed, leaf-like lateral stems. Tubular-salverform, pale purple to purple-red flowers, 9cm (3½in) across, are borne from spring to early summer. ‡ 60cm (24in), ↔ 30cm (12in). Guatemala. ☀ (min. 16°C/61°F)

## DISPOROPSIS

CONVALLARIACEAE/LILIACEAE

Genus of 4 species, closely allied to *Polygonatum*, of rhizomatous, evergreen perennials, occurring in upland forest in S.E. China. Mottled, dark green stems bear lance-shaped-elliptic, waxy leaves, which gradually die back as new growth is fully formed. Pendent, narrowly bell-shaped flowers are solitary or produced in pairs from the leaf axils. Grow in a woodland garden or peat bed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich, leafy soil in partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring, or divide rhizomes in spring.
- **PESTS AND DISEASES** Trouble free.

**D. pernyi** ☐ syn. *Polygonatum cyrtoneura* of gardens. Rhizomatous perennial with lance-shaped to elliptic, glossy, dark green leaves, to 12cm (5in) long. Lemon-scented white flowers, 2cm (¾in) long, with pale green outer tips that are slightly reflexed, are produced singly or in pairs in early summer. ‡ 40cm (16in), ↔ 30–40cm (12–16in). S.E. China. \*\*\*

## DISPORUM

syn. *PROSARTES*

Fairy bells

CONVALLARIACEAE/LILIACEAE

Genus of 10–20 species of rhizomatous perennials occurring in woodland in the Himalayas, E. and S.E. Asia, and temperate North America. The mid- to dark green leaves are ovate to lance-shaped, stalkless or with short stalks, usually hairless, and borne alternately on sparsely branched stems. Often pendent, narrowly bell-shaped, tubular, open trumpet-shaped, or cup-shaped, white to green-yellow, purple-red, or brown-red flowers, 1–3cm (½–1¼in) long, are usually borne in few-flowered umbels, occasionally singly. They are followed by orange, red, or black berries. Grow in a woodland garden or on a peat bank. In frost-prone areas, grow half-hardy and tender species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in cool, moist, well-drained, humus-rich soil in partial shade. *D. smithii* tolerates deep shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn; alternatively, divide rhizomes in spring, before or as growth begins.

*Disporopsis pernyi*

D

D

*Disporum sessile* 'Variegatum'

• **PESTS AND DISEASES** Slugs and vine weevils may be troublesome.

***D. cantoniense***. Clump-forming, rhizomatous perennial bearing lance-shaped leaves, 5–15cm (2–6in) long. Bears umbels of 3–6 pendent, tubular, purplish red, brownish red, or white flowers, on short stalks, in late spring and early summer, followed in early autumn by black-red berries. † to 90cm (36in), ↔ 30cm (12in). Himalayas, China, S.E. Asia. \* (borderline)

***D. flavens***. Clump-forming, rhizomatous perennial bearing lance-shaped leaves, 5–15cm (2–6in) long. In early spring, 1–3 pendent, tubular, soft yellow flowers are produced on axillary stalks, followed in early autumn by black berries. † to 75cm (30in), ↔ 30cm (12in). Korea. \*\*\*

***D. hookeri***. Clump-forming, rhizomatous perennial producing ovate to lance-shaped leaves, 3–14cm (1¼–5½in) long, with heart-shaped bases, hairy on the margins and on the veins beneath. Umbels of up to 3 pendent, tubular-bell-shaped, greenish cream flowers, with slightly spreading tepals, are produced in late spring, followed in early autumn by orange-red berries. † to 90cm (36in), ↔ 45cm (18in). N.W. USA. \*\*\*

***D. lanuginosum***. Clump-forming, rhizomatous perennial with ovate-lance-shaped leaves, 3–12cm (1¼–5in) long, with narrow, pointed tips, downy beneath. Umbels of up to 3 open trumpet-shaped, pale yellowish white or greenish white flowers, with narrow tepals, are borne in late spring, followed

in early autumn by black or red berries. † 30–90cm (12–36in), ↔ 30cm (12in). Central E. USA. \*\*\*

***D. sessile***. Spreading, rhizomatous perennial with almost stalkless, oblong or oblong-lance-shaped leaves, 5–15cm (2–6in) long. Each stem produces 2 or 3 flower stalks, each bearing up to 3 pendent, tubular, green-tipped white or very pale cream flowers in late spring and early summer, followed in early autumn by black berries. † 60cm (24in), ↔ 60cm (24in) or more. Japan. \*\*\*

**'Variegatum'** ■ has leaves broadly and variously striped white; † 45cm (18in), ↔ 90cm (36in) or more.

***D. smilacinum***. Sparsely branched, rhizomatous perennial with oblong to elliptic-ovate leaves, 4–7cm (1½–3in) long. Stems, 15–40cm (6–16in) long, produce 1 or 2 pendent or semi-pendent, cup-shaped white flowers in mid- and late spring. † to 40cm (16in), ↔ 30cm (12in). Korea, Japan. \*\*\*

***D. smithii*** ■ Clump-forming, rhizomatous perennial with red-tinged stems and ovate to ovate-lance-shaped leaves, 5–12cm (2–5in) long, rounded to heart-shaped at the bases. Umbels of 2–6 pendent, tubular-bell-shaped, greenish white flowers are borne from early to late spring; flowers are followed in late summer by orange berries. † 30–60cm (12–24in), ↔ 30cm (12in). W. North America (British Columbia to California). \*\*\*

## DISTICTIS

### BIGNONIACEAE

Genus of 9 species of climbing, evergreen perennials from Mexico and the West Indies, usually among thickets and at forest margins. They are valued for their colourful, tubular to trumpet-shaped or salverform flowers, produced in small, terminal racemes or panicles. The opposite leaves consist of 2 ovate-lance-shaped leaflets and a 3-branched tendril. In frost-prone climates, grow in a cool greenhouse; in warmer regions, train on a pergola or wall, or grow through trees.

• **HARDINESS** Frost tender, although *D. buccinatoria* may survive short periods near to or below 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Support with wires or trellis and tie in as growth proceeds. In the growing season, water freely, applying fertilizer monthly; water sparingly in

*Distictis buccinatoria*

winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 11, in early spring.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Layer in early spring.

• **PESTS AND DISEASES** Red spider mites and whiteflies may be troublesome under glass.

***D. buccinatoria*** ■ syn. *Phaedranthus buccinatorius*. Vigorous climber bearing ovate-lance-shaped, mid- to deep green leaflets, to 10cm (4in) long. Tubular-salverform, purple-red flowers, to 8cm (3in) long, with yellow towards the bases, are borne in racemes, 15–25cm (6–10in) long, from summer to autumn. † 10–25m (30–80ft). Mexico. \* (borderline)

## DISTYLUM

### HAMAMELIDACEAE

Genus of about 6–8 species of evergreen shrubs and trees found in woodland in E. Asia. They have alternate, obovate or ovate to lance-shaped, leathery, usually dark green leaves, and petalless, male and bisexual flowers in axillary spikes or racemes. *D. racemosum* is valued for its simple, glossy foliage, borne on arching branches, and for its unusual flowers. Grow in a sheltered position among trees and other shrubs.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow in moist but well-drained, humus-rich soil in partial shade, sheltered from strong, cold, drying winds. Pruning group 1, but pruning is not usually necessary.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Insert semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***D. racemosum*** ♀ Spreading shrub or tree with obovate to narrowly oblong, leathery, glossy, dark green leaves, 3–7cm (1¼–3in) long. Small flowers are produced in upright racemes, 2.5–5cm (1–2in) long, in late spring and early summer; they lack petals but have conspicuous, 5-parted red calyces and purple stamens. † 2–3m (6–10ft) (tree to 25m/80ft in the wild), ↔ 3m (10ft). S. Japan. \*\*

▷ **Dittany** see *Dictamnus albus*  
Cretan see *Origanum dictamnus*

▷ ***Disygotheca elegantissima*** see *Schefflera elegantissima*  
▷ **Dock** see *Rumex*  
    **Bloody** see *Rumex sanguineus*  
    **Prairie** see *Silphium*  
    **Red-veined** see *Rumex sanguineus*  
▷ **Dockmackie** see *Viburnum acerifolium*

## DOCYNIA

### ROSACEAE

Genus of 2 species of evergreen, semi-evergreen, or deciduous trees and shrubs, occurring in woodland in the Himalayas and E. Asia. The oblong to ovate or lance-shaped leaves, borne alternately, are either entire or toothed. Bowl-shaped, white or pinkish white flowers are produced in umbels of 2–6. *D. delavayi* is an attractive flowering specimen tree or shrub, suitable for a sheltered site.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade. Provide protection from strong winds. Pruning group 1, but pruning is not usually necessary.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring.

• **PESTS AND DISEASES** Susceptible to fireblight. Caterpillars may also be troublesome.

***D. delavayi*** ♀ Spreading, semi-evergreen to deciduous tree with tiered branches, spiny, blackish green shoots, and alternate, narrowly to broadly ovate-lance-shaped, usually entire, toothed, dark green leaves, to 7cm (3in) long. (On young seedlings, leaves are hawthorn-like and deeply lobed.) Produces umbels of 2–4 bowl-shaped white flowers, to 2.5cm (1in) across, from pink buds in spring, followed by small, apple-like yellow fruit, 4cm (1½in) across, in autumn. †↔ 8m (25ft). China (Sichuan, Yunnan). \*\*

## DODECATHEON

American cowslip, Shooting stars

### PRIMULACEAE

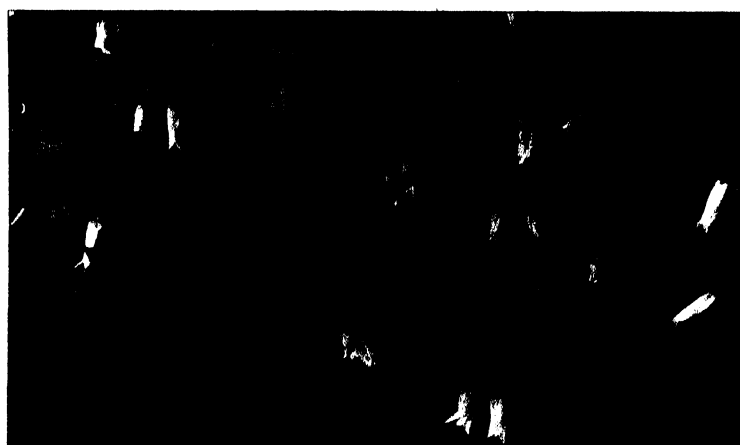
Genus of 14 species of perennials mostly found in damp grassland or high alpine meadows, occasionally in woodland, in North America. They have basal rosettes of ovate to inversely lance-shaped, spoon-shaped, or oblong, usually hairless leaves. Umbels of pendent, cyclamen-like flowers are produced on arching stems, the petals acutely reflexed, displaying long, pointed styles. American cowslips become dormant in summer, after flowering. They are suitable for a woodland or rock garden.

• **HARDINESS** Most are fully hardy, although *D. clevelandii* may be damaged by early frosts.

• **CULTIVATION** Grow in moist but well-drained, humus-rich soil in sun or partial shade, with abundant moisture in the growing season; grow *D. dentatum* and *D. pulchellum* in moist shade. During summer dormancy, keep *D. clevelandii* and *D. hendersonii* in a bulb frame.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe; the seed needs exposure to cold before it will germinate. Divide in spring.

• **PESTS AND DISEASES** Young leaves may be eaten by slugs and snails.

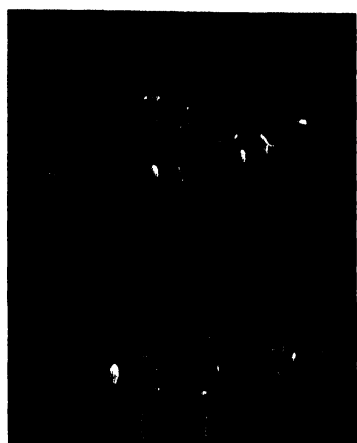
*Disporum smithii*

*Dodonaea viscosa*

*D. amethystinum* see *D. pulchellum*.  
*D. clevelandii* [M] Rosette-forming perennial with spoon-shaped to ovate, irregularly toothed, fleshy, pale green leaves, to 6cm (2½in) long. Produces umbels of up to 20 reddish purple flowers, to 2cm (¾in) long, with yellow tubes, spotted purple at the throats, in early spring. ‡ to 40cm (16in), ↔ to 15cm (6in). USA (California). \*\*\* (borderline). **subsp. insulare** flowers in late spring; \*\*\*

*D. dentatum* [M] Clump-forming perennial with rosettes of long-stalked, oblong-lance-shaped, sometimes toothed, pale to mid-green leaves, to 8cm (3in) long. In late spring, bears umbels of 2–5 slender-stemmed white flowers, 1–2cm (½–¾in) long, sometimes purple-spotted at the petal bases, with prominent, dark purple anthers. ‡ to 20cm (8in). W. North America. \*\*\*

*D. hendersonii* ♀ syn. *D. latifolium* (Mosquito bills, Sailor caps). Rosette-forming perennial with oblong-ovate, fleshy, dark green leaves, to 6cm (2½in) long. Sturdy stems produce umbels of 1–5 dark-centred, purplish pink flowers, 1.5–2.5cm (½–1in) long, each with a

*Dodonaea viscosa**Dodonaea viscosa* 'Red Wings'

white ring at the base, in early summer. ‡ 40cm (16in), ↔ 25cm (10in). USA (California). \*\*\*

*D. latifolium* see *D. hendersonii*.  
*D. meadia* ♀ syn. *D. pauciflorum* (Shooting star). Variable, clump-forming perennial with ovate, toothed, pale to mid-green leaves, to 25cm (10in) long. Umbels of up to 15 magenta-pink flowers, 1.5–2cm (½–¾in) long, are borne on strong stems in mid- and late spring. ‡ 40cm (16in), ↔ 25cm (10in). N.W. USA. \*\*\*. **f. album** ♀ has creamy white flowers, with dark centres, and yellow styles and anthers.

*D. pauciflorum* see *D. meadia*.

*D. pauciflorum* of gardens see *D. pulchellum*.

*D. pulchellum* ♀ syn. *D. amethystinum*, *D. pauciflorum* of gardens, *D. radicans*. Clump-forming perennial with ovate-spoon-shaped, mid-green leaves, to 20cm (8in) long. Umbels of up to 20 dark-centred, deep cerise-pink flowers, 1–2cm (½–¾in) long, are produced in mid- and late spring. ‡ to 35cm (14in), ↔ to 15cm (6in). High altitudes in W. North America. \*\*\*. **'Red Wings'** [M] has oblong-ovate, soft, pale green leaves, and produces deep magenta-pink flowers, 1–2cm (½–¾in) long, on strong stems in late spring and early summer; ↔ 20cm (8in).

*D. radicans* see *D. pulchellum*.

## DODONAEA

### SAPINDACEAE

Genus of 50–60 species of evergreen shrubs and small trees found in tropical and subtropical regions, but primarily in Australia, where they grow in dry, open forest, thickets, and scrub. They are grown mainly for their needle-like or oblong to broadly ovate or obovate, simple or pinnate, leathery leaves, dotted with glands and spiralling or scattered along the stems. The insignificant, petal-less flowers, with 3- to 5-lobed calyces, are borne in terminal and axillary cymes, male and female on separate plants. The fruits are membranous, 3-angled or 3-winged (sometimes up to 6-winged), often colourful capsules. In frost-prone areas, grow in a cool greenhouse. Elsewhere, use as a hedge or in a border. *D. viscosa* tolerates drought and exposure to wind, salt, and atmospheric pollution.

- **HARDINESS** Frost tender; *D. viscosa* survives short spells near to 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2)

*Dodonaea viscosa* 'Purpurea'

in full light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter.

Top-dress or pot on in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pinch out tips of young shoots to encourage bushy growth. Pruning group 1: clip hedges lightly in spring.

• **PROPAGATION** Sow seed at no less than 18°C (64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites may infest greenhouse plants.

*D. viscosa* ♀ (Hop bush). Vigorous, erect to spreading shrub or small tree with elliptic to almost obovate, simple, yellow to mid-green leaves, 7–13cm (3–5in) long, with irregular, wavy margins. Bears 2- or 3-winged, pink to reddish brown, light brown, purple, or yellow capsules, 2–2.5cm (¾–1in) across, from summer to autumn. ‡ 1–5m (3–15ft), ↔ 1–3m (3–10ft). Coastal regions in tropics and subtropics worldwide. \* (borderline). **'Purpurea'** [M] has leaves strongly suffused purplish red.

▷ **Dog violet** see *Viola canina*

**Common** see *V. riviniana*

**Western** see *V. adunca*

▷ **Dog's-tooth violet** see *Erythronium*

**European** see *E. dens-canis*

▷ **Dogwood** see *Cornus*

**Common** see *C. sanguinea*

**Creeping** see *C. canadensis*

**Flowering** see *C. florida*

**Pacific** see *C. nuttallii*

**Pagoda** see *C. alternifolia*

**Red-barked** see *C. alba*

**Red osier** see *C. stolonifera*

▷ **Dolichos** see *Lablab*

*D. lablab* see *L. purpureus*

*D. niger* see *L. purpureus*

*D. purpureus* see *L. purpureus*

▷ **Dolichothele baumii** see *Mammillaria baumii*

▷ **Dolichothele campotricha** see *Mammillaria campotricha*

▷ **Doll's eyes** see *Actaea alba*

## DOMBEYA

### STERCULIACEAE

Genus of 200–300 species of evergreen or deciduous shrubs and trees from Africa and Madagascar to the Mascarene Islands, found in habitats ranging from tropical woodland to upland scrub. Leaves are alternate, simple, and lobed or unlobed, often heart-shaped, with

long stalks. Dombeyas are grown mainly for their 5-petalled, white, pink, yellow, or red flowers, resembling those of mallows (*Malva*); they are produced in dense, axillary, terminal, or umbel-like cymes on long, nodding or pendent stalks. In frost-prone areas, grow in a warm greenhouse; elsewhere, use outdoors as a specimen or in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost, in bright filtered light or in full light with shade from hot sun. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade. Pruning group 6 (deciduous), 8 (evergreen); plants under glass may need restrictive pruning.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

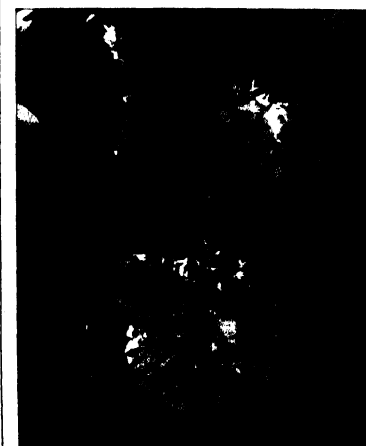
• **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

*D. burgessiae*, syn. *D. mastersii*. Strong-growing, open, evergreen shrub with softly hairy young stems and broadly ovate to rounded (heart-shaped at the bases), 3- to 5-lobed or unlobed, downy, mid-green leaves, 11–22cm (4½–9in) long. Axillary corymbs or cymes, 10cm (4in) or more across, of fragrant, red- or pink-veined white flowers, 5–8cm (2–3in) across, are borne from late summer to autumn. ‡ 2–4m (6–12ft), ↔ 1.5–3m (5–10ft). Kenya to South Africa. ☼ (min. 10°C/50°F)

*D. x cayeuxii* [M] (D. burgessiae x D. wallichii). Vigorous, evergreen shrub or small tree with bristly-hairy stems and ovate to heart-shaped, acute, toothed, hairy, mid- to dark green leaves, 20–30cm (8–12in) long. Produces pink flowers, 3–4cm (1¼–1½in) across, in many-flowered, spherical, umbel-like cymes, 10–13cm (4–5in) across, usually from autumn to spring. ‡ 3–5m (10–15ft), ↔ 2–3m (6–10ft). Garden origin. ☼ (min. 10°C/50°F)

*D. mastersii* see *D. burgessiae*.

*D. wallichii* ♀ Evergreen shrub or tree of variable habit but generally freely branching, with sturdy, downy stems. The broadly ovate to rounded, toothed, bright green leaves, 15–20cm (6–8in) long, softly hairy beneath, have pointed tips and heart-shaped bases. Deep pink or red flowers, 3–5cm (1¼–2in) across,

*Dombeya x cayeuxii*

are borne in dense, umbel-like cymes, 10–15cm (4–6in) across, mainly from winter to spring. †6–10m (20–30ft), ↔ 2.5–5m (8–15ft). E. Africa, Madagascar. ☞ (min. 10°C/50°F)

▷ *Dondia* see *Hacquetia*  
*D. epipactis* see *H. epipactis*

## DOODIA

BLECHNACEAE

Genus of about 11 species of usually evergreen, terrestrial ferns found mainly in damp, sunny or partially shaded sites, often rocky woodland margins, in Australasia. Fronds, produced in tufts from short, creeping rhizomes, are lance-shaped, pinnate or pinnatifid, and usually pink tinged when young. Fertile fronds are often more erect than sterile fronds, with slightly narrower divisions. The sori are covered by curved indusia. *Doodia* species are easy to grow, thriving in a rock garden or sheltered border; in frost-prone areas, grow tender and half-hardy species in a cool greenhouse.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in a mix of 1 part each loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered light and moderate humidity. Water freely when in growth. In winter, admit full light and water sparingly. Outdoors, grow in moist, acid soil in sheltered partial shade. In frost-prone areas, cover crowns with a straw mulch in winter.

• **PROPAGATION** Sow spores at 15°C (59°F) as soon as ripe. Divide in late spring. See also p.51.

• **PESTS AND DISEASES** Trouble free.

*D. media* (Common rasp fern). Tufted, evergreen fern with suberect rhizomes, and lance-shaped to inversely lance-shaped, leathery, dark green fronds, 30–60cm (12–24in) long, pinnatifid at the tips and pinnate towards the bases, often with brown midribs. Ovate-heart-shaped pinnae have a firm, prickly texture and very finely toothed margins. †30–40cm (12–16in), ↔ 50–100cm (20–39in). Australia, New Zealand, Pacific Islands to Hawaii. \*\*

## DORONICUM

Leopard's bane

ASTERACEAE/COMPOSITAE

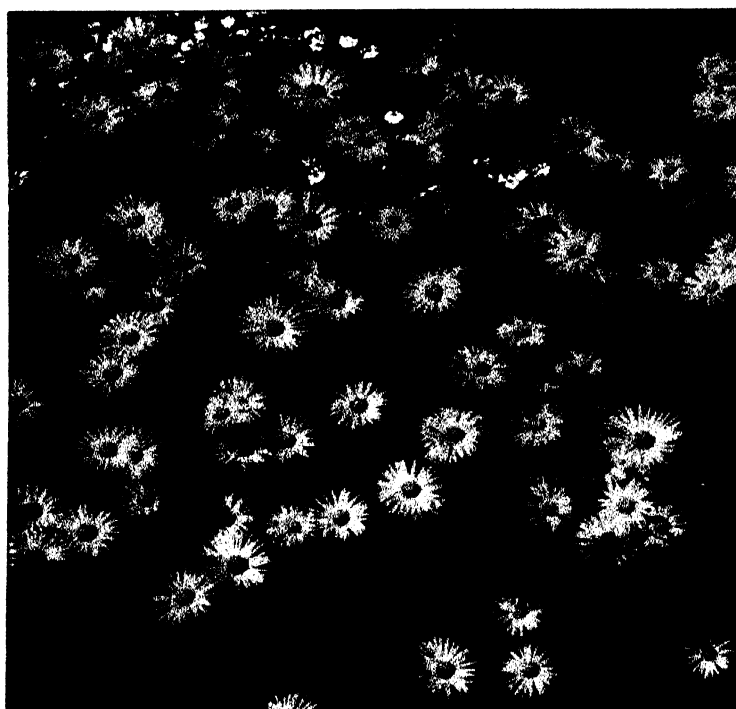
Genus of about 35 species of deciduous, rhizomatous or tuberous perennials from woodland, scrub, meadows, heathland, and rocky sites in Europe, S.W. Asia, and Siberia. They have alternate, elliptic to ovate basal leaves, with heart-shaped bases, and lance-shaped to ovate or oblong stem leaves. The daisy-like yellow flowerheads are borne singly or in cyme-like corymbs. Grow in a border or naturalize in a woodland garden. The flowers are also good for cutting.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, humus-rich soil in partial or dappled shade.

*D. orientale* and its cultivars are prone to root rot in wet areas, and need moist but well-drained, reasonably fertile, preferably sandy soil in partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Alternatively, divide in early autumn.



*Doronicum columnae* 'Miss Mason'

• **PESTS AND DISEASES** Leaf spot and root rot may be troublesome, and some species are susceptible to powdery mildew.

*D. austriacum*. Clump-forming, rhizomatous perennial bearing ovate-oblong, toothed, hairy basal leaves, 13cm (5in) long, heart-shaped at the bases, usually at or just after flowering; the stem leaves are smaller, narrower, and either entire or minutely toothed. Produces corymbs of yellow flowerheads, 3.5–6cm (1½–2½in) across, on slender, branched stems, in late spring and early summer. †to 1.2m (4ft). Mountain woodland in C. and S. Europe, Turkey. \*\*\*

*D. caucasicum* see *D. orientale*.



*Doronicum x excelsum* 'Harpur Crewe'

*D. columnae*, syn. *D. cordatum*.

Clump-forming, rhizomatous perennial bearing clustered, ovate-rounded to heart-shaped, toothed, hairy or hairless, scalloped basal leaves, 3–8cm (1¼–3in) long, and elliptic to ovate-lance-shaped stem leaves. Slender stems bear solitary yellow flowerheads, 2–7cm (¾–3in) across, from mid-spring to early summer. †12–60cm (5–24in), ↔ 30cm (12in). Mountains of S. and E. Europe. \*\*\*. 'Miss Mason' ☞ has bright yellow flowerheads, 8cm (3in) across, held well above the foliage, in mid- and late spring; ↔ 60cm (24in).

*D. cordatum* see *D. columnae*, *D. pardalianches*.

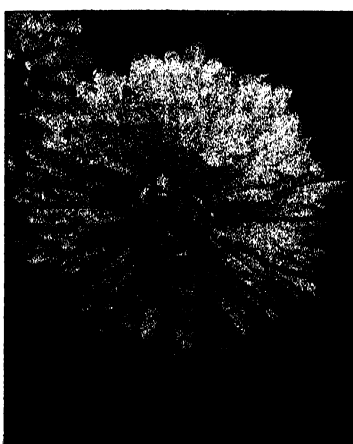
*D. x excelsum* 'Harpur Crewe' ☞ syn.

*D. plantagineum* 'Excelsium',

*D. plantagineum* 'Harpur Crewe'.

Rhizomatous perennial bearing ovate-elliptic, entire, softly hairy basal leaves, to 12cm (5in) long, heart-shaped at the bases; the stem leaves are ovate-lance-shaped and toothed. In spring, branched stems bear 3 or 4 golden yellow flowerheads, to 10cm (4in) across. †to 60cm (24in). \*\*\*

*D. orientale*, syn. *D. caucasicum*. Slowly spreading, rhizomatous perennial with



*Doronicum orientale* 'Frühlingspracht'



*Doronicum pardalianches*

ovate-elliptic, gently scalloped, sparsely hairy basal leaves, 6–10cm (2½–4in) long, with heart-shaped bases, and a few elliptic to ovate-lance-shaped stem leaves. Produces solitary, golden yellow flowerheads, 2.5–5cm (1–2in) across, on slender stems in mid- and late spring. †to 60cm (24in), ↔ 90cm (36in). S.E. Europe, Caucasus, Turkey, Lebanon. \*\*\*. 'Finesse' has slender ray-florets and long stems, comes true from seed, and is good for cutting; †to 50cm (20in). 'Frühlingspracht' ☞ syn.

'Spring Beauty', has double flowerheads; †to 40cm (16in). 'Gerhard' produces double, lemon-yellow flowerheads with greenish yellow centres. 'Goldzwerg' has golden yellow ray-florets; †25cm (10in). 'Magnificum' has flowerheads 4–5cm (1½–2in) across, and comes true from seed; †50cm (20in). 'Spring Beauty' see 'Frühlingspracht'.

*D. pardalianches* ☞ syn. *D. cordatum*.

Spreading, rhizomatous perennial with ovate to rounded, toothed, softly hairy basal leaves, 7–12cm (3–5in) long, with heart-shaped bases, and ovate to lance-shaped stem leaves. Corymbs of light yellow flowerheads, 3–5cm (1¼–2in) across, are borne on branching, softly hairy stems, from late spring to mid-summer. †90cm (36in), ↔ 60–90cm (24–36in) or more. W. and C. Europe to S. central Europe. \*\*\*.

'Goldstrass' flowers very freely.

*D. plantagineum*. Spreading, rhizomatous perennial with ovate-elliptic, entire or weakly toothed, hairy basal leaves, 5–11cm (2–4½in) long, and lance-shaped stem leaves. Branched stems bear golden yellow flowerheads, 3–5cm (1¼–2in) across, in late spring. Leaves die back soon after flowering. †80cm (32in), ↔ 45cm (18in). W. Europe to N. France. \*\*\*.

'Excelsium' see *D. x excelsum* 'Harpur Crewe'. 'Harpur Crewe' see *D. x excelsum* 'Harpur Crewe'.

'Strahlengold' flowers freely from spring to summer; the foliage persists in summer. Resists mildew and root rot.



## DOROTHEANTHUS

Ice plant, Livingstone daisy

## AIZOACEAE

Genus of 10 species of low-growing, basally branching, succulent annuals from open, sandy or rocky areas in South Africa. They have opposite or alternate, narrowly linear to spoon-shaped leaves, glistening with small, crystal-like structures. In summer, they produce numerous long-stalked, daisy-like, white, yellow, orange, pink, or red flowers that close in dull weather. Grow as border edging, to fill gaps in paving, or on a dry slope.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in well-drained, preferably low-fertility, sandy soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed at 16–19°C (61–66°F) in late winter or early spring. In frost-prone climates, harden off seedlings, and plant out when danger of hard frosts has passed.
- **PESTS AND DISEASES** Slugs, greenfly, snails, and foot rot may be troublesome.

*D. bellidiformis*, syn. *D. littlewoodii*, *Mesembryanthemum criniflorum* (Livingstone daisy). Low-growing annual bearing alternate, cylindrical, obovate to spoon-shaped, fleshy, light green leaves, to 7cm (3in) long. Solitary flowers, to 4cm (1½in) across, in white, crimson, rose-red, orange-gold, or buff-yellow, some zoned in a contrasting colour, are freely borne in summer. Plants with striped, light pink flowers, to 2.5cm (1in) across, and white throats, are sometimes listed as *D. littlewoodii*. † 10–15cm (4–6in), ↔ 30cm (12in). South Africa (Western Cape). \*

'Lunette', syn. 'Yellow Ice', produces red-centred, soft yellow flowers. 'Magic Carpet' produces pink, purple, cream, orange, or white flowers. 'Yellow Ice' see 'Lunette'.

*D. gramineus*, syn. *Mesembryanthemum tricolor*. Erect, red-stemmed annual with

opposite, linear, bright green leaves, to 5cm (2in) long, rounded on the lower surfaces. Bears solitary, crimson to deep rose-pink or white flowers, to 2.5cm (1in) across, with a dark central disc, in summer. † 10cm (4in), ↔ to 30cm (12in). South Africa (Western Cape). \* *D. littlewoodii* see *D. bellidiformis*.

## DORSTENIA

## MORACEAE

Genus of about 170 species of rhizomatous or shrubby perennials, a small number of which are succulent, from lowlands in the Arabian Peninsula, N.E. Africa, Madagascar, India, and tropical South and Central America. In many species, the rhizome is thick and tuber-like, and the caudex fleshy and thick, with leaves that are sometimes scale-like, especially on the upper nodes. The insignificant, petalless flowers and, later, ovoid green fruits are embedded in disc-shaped receptacles, produced from the upper leaf axils. In frost-prone areas, grow in a warm greenhouse for their bonsai-like growth, or use as ground cover beneath greenhouse staging. Elsewhere, grow in a desert garden. All parts are harmful if ingested.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam, peat (or peat substitute), leaf mould, and gritty sand, in full light. In the growing season, water freely, applying fertilizer monthly; keep just moist in winter. Outdoors, grow in sharply drained, gritty, humus-rich soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring or summer.
- **PESTS AND DISEASES** Susceptible to scale insects.

*D. foetida* [E] Erect or semi-prostrate, subshrubby succulent with a flattened caudex, thick, fleshy branches, and oblong-lance-shaped or obovate, spirally arranged leaves, 3–14cm (1¼–5½in) long. Circular, greenish white "flowers",

*Dorstenia foetida*

2cm (¾in) across, shaped like spinning-tops, with 6–10 bract-like "tentacles", are produced in summer. † 15–30cm (6–12in), ↔ indefinite. Saudi Arabia. ♀ (min. 16°C/61°F)

## DORYANTHES

Spear lily

## DORYANTHACEAE/LILIACEAE

Genus of 2 species of perennial succulents mainly from coastal, open *Eucalyptus* forests of E. Australia. They are grown for their loosely rosetted, linear to lance-shaped leaves, with long, cylindrical points, and huge, terminal inflorescences of tubular flowers, with spreading tips, borne on mature plants. Grow as specimen plants. In frost-prone areas, grow on a patio (overwinter under glass) or in a cool greenhouse.

- **HARDINESS** Frost tender, although mature plants may withstand several degrees of frost if kept dry.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely, applying a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in humus-rich, well-drained soil in sun, with plenty of water in the growing season, although they will tolerate poor soils, some drought, and partial shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) in spring. Sow bulbils, occasionally produced on flower stems, when mature. Separate suckers produced after flowering.
- **PESTS AND DISEASES** Trouble free.

*D. excelsa*. Succulent with erect clusters of 100 or more curving, linear or lance-shaped, dark green leaves, to 2.5m (8ft) long. Flowering stems, to 5m (15ft) long, bear many short, erect, linear-lance-shaped leaves and dense, spherical racemes, to 70cm (28in) across, of tubular red flowers, 10cm (4in) long, enclosed within leafy bracts, in late summer. † 5–6m (15–20ft), ↔ to 2.5m (8ft). Australia (New South Wales). ♀ (min. 2°C/36°F)

*D. palmeri* [E] Succulent with rosettes of upright then arching, linear or lance-shaped, lush, bright green leaves, 2.5–3m (8–10ft) long. Flowering stems, 3–4m (10–12ft) long, are also erect then arching. Along the upper halves, they bear smaller, linear-lance-shaped leaves and dense, oblong panicles, to 1m (3ft) long, of tubular, rich red or red-brown

*Doryanthes palmeri*

flowers, 4–6cm (1½–2½in) long, pale red or white inside, enclosed in deep red bracts, in late spring. † 2.5m (8ft), ↔ to 3m (10ft). Australia (Queensland, N. New South Wales). ♀ (min. 2°C/36°F)

- ▷ *Dorycnium* see *Lotus*
- ▷ *D. hirsutum* see *L. hirsutus*

## DORYOPTERIS

## ADIANTACEAE/PTERIDACEAE

Genus of about 25 species of evergreen ferns from dry, open areas or woodland in tropical regions. The tufted fronds, borne on erect or creeping rhizomes, have arrow-shaped, pedate, or palmate, sometimes pinnatifid blades on long, shining, black stalks. Grow in a warm, shady, sheltered border. In frost-prone areas, grow in a warm greenhouse.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 1 part loam, 2 parts sharp sand, and 3 parts leaf mould, in bright filtered light and moderate humidity. Water moderately when in full growth, sparingly in winter. Outdoors, grow in well-drained soil in partial shade.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe, or divide mature plants in spring. Pot up "bulblets" from fronds of *D. palmata* when 3–4cm (1¼–1½in) across. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*D. elegans* see *Hemionitis elegans*.

*D. palmata*, syn. *D. pedata* var. *palmata*. Evergreen fern bearing broadly ovate, dark green fronds, 20–60cm (8–24in) long, very deeply palmately lobed with 10–15 or more lobes. Proliferous buds ("bulblets") are borne at the frond bases. † to 35cm (14in), ↔ 30–50cm (12–20in). West Indies, C. and W. tropical South America to Peru and Brazil. ♀ (min. 8–10°C/46–50°F)

*D. pedata* var. *palmata* see *D. palmata*.

- ▷ *Douglas fir* see *Pseudotsuga menziesii*
- ▷ *Blue* see *P. menziesii* var. *glauca*
- ▷ *Douglasia* see *Androsace*, *Vitaliana*
- ▷ *D. laevigata* see *Androsace laevigata*
- ▷ *D. vitaliana* see *Vitaliana primuliflora*
- ▷ *Dove tree* see *Davidia*
- ▷ *Doxantha* see *Bignonia*, *Macfadyena*
- ▷ *D. capreolata* see *Bignonia capreolata*
- ▷ *D. unguis-cati* see *Macfadyena unguis-cati*

*Dorotheanthus bellidiformis* 'Magic Carpet'

## DRABA

Whitlow grass

BRASSICACEAE/CRUCIFERAE

Genus of about 300 species of annuals and mat- or cushion-forming, evergreen or semi-evergreen perennials found in scree and other rocky, mountainous areas in arctic and northern temperate regions and temperate South America. They have rosettes of mainly linear to ovate, oblong, or spoon-shaped leaves, and small, cross-shaped flowers, borne in terminal racemes, in spring or early summer. Grow in a rock garden, scree bed, or alpine house, or in tufa.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in gritty, sharply drained soil in full sun. Protect from excessive winter rain. Grow the densest cushion plants in an alpine house, in a mix of equal parts loam, leaf mould, and grit, with a layer of grit or small stones around the neck of the plant. Avoid wetting the foliage at all times.

• **PROPAGATION** Sow seed in containers in an open frame in autumn; they need exposure to cold to germinate. Root rosettes of larger species in late spring.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*D. aizoides* (Yellow whitlow grass).

Mat- or cushion-forming, semi-evergreen perennial bearing rosettes of linear-lance-shaped, bristle-margined, dark green leaves, to 1.5cm (½in) long. Dense racemes of 4–18 bright yellow flowers, 8–12mm (⅜–½in) across, are produced on stems 5–10cm (2–4in) long, in late spring. † 10cm (4in), ↔ to 25cm (10in). UK, C. and S. Europe to Carpathians. \*\*\*

*D. bryoides* see *D. rigida* var. *bryoides*.

*D. dedeana* □ Woody-based, cushion-forming, evergreen perennial with dense rosettes of linear-oblong, fringed and bristle-tipped, grey-green or bright green leaves, to 6mm (¼in) long. From spring to early summer, bears dense racemes of 3–10 white flowers, 8–10mm (⅜–½in) across, flushed pale violet at the bases, on stems to 8cm (3in) long. † to 8cm (3in), ↔ to 15cm (6in). N. and E. Spain (mountains). \*\*\*

*D. longisiliqua* ♀ Cushion-forming, evergreen perennial with firm rosettes of obovate, grey-hairy leaves, 6–8mm (¼–⅜in) long. Short, dense racemes of 3–14 yellow flowers, to 1cm (½in) across, are borne on stems 5–8cm

*Draba mollissima*

(2–3in) long, in spring. Grow in an alpine house or scree bed. † 9cm (3½in), ↔ to 25cm (10in). Caucasus. \*\*\*

*D. mollissima* □ Hummock-forming, evergreen perennial with rosettes of oblong, very hairy, grey-green leaves, to 6mm (¼in) long, forming a dense, domed cushion. In late spring, produces tight racemes of 6–8 bright yellow flowers, to 8mm (⅜in) across, on stems to 8cm (3in) long. Grow in an alpine house. † 8cm (3in), ↔ to 20cm (8in). Caucasus. \*\*\*

*D. rigida*. Hummock-forming, evergreen perennial with rosettes of linear to obovate, spreading, dark green, hairy-margined leaves, 3–6mm (⅛–¼in) long. In late spring, bears corymb-like racemes of 5–20 bright yellow flowers, 4–5mm (⅛–¼in) across, on stems to 5cm (2in) long. Grow in an alpine house. † to 5cm (2in), ↔ to 20cm (8in). Turkey (Anatolia). \*\*\*. var. *bryoides*, syn. *D. bryoides*, has smaller rosettes; leaves, to 2mm (⅛in) long, have inrolled margins; † 3cm (1¼in), ↔ to 15cm (6in). Caucasus, Georgia, Armenia.

## DRACAENA

AGAVACEAE/DRACAENACEAE

Genus of 40 species of sparsely branched, evergreen shrubs and trees from forest, scrub, and dry, open slopes. They occur in the Canary Islands and throughout tropical Africa, but mainly in W. Africa, with one species in South America. These striking architectural plants produce usually lance- to strap-shaped, leathery, glossy leaves, which are

*Dracaena fragrans* Deremensis Group 'Warneckei'

spirally arranged and often crowded at the stem tips. Small flowers, with tubular bases and 6 spreading tepals, are borne in terminal panicles, followed by red or yellow berries. Grow as specimen plants or in a border. In frost-prone areas, grow in a warm or temperate greenhouse, or as houseplants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun and moderate humidity. Green-leaved plants tolerate slightly lower light levels. From spring to autumn, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in moderately fertile, moist

but well-drained soil in full sun. Regular pruning is not necessary. If growth is weak, cut back to within 15cm (6in) of the base in spring.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring, although variegated cultivars will not come true. Root semi-ripe cuttings and leafless stem sections with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites, thrips, and scale insects may be troublesome under glass.

*D. australis* see *Cordyline australis*.

*D. deremensis* see *D. fragrans*

Deremensis Group.

*D. deremensis* 'Souvenir de Schriever' see *D. fragrans* Deremensis Group 'Warneckei'.

*D. draco* □ (Dragon tree). Robust, slow-growing, eventually widely branched tree, resembling an inside-out umbrella in outline when mature. Tufted or rosetted, glaucous, mid- to dark green leaves, 30–60cm (12–24in) long, are linear-lance-shaped and spine-tipped. Mature plants produce terminal panicles, to 30cm (12in) long, of white-tinged green flowers in summer, followed by large, spherical, orange-red fruit. † 3–10m (10–30ft) or more, ↔ 2–8m (6–25ft) or more. Canary Islands. ☞ (min. 13°C/55°F)

*D. fragrans* □ Erect, evergreen shrub or small tree, very sparsely branched when young, with spreading to strongly arching, inversely lance-shaped, keeled, mid-green leaves, 20–120cm (8–48in) long, confined to upper parts of the stems. When mature, bears strongly scented white flowers in erect to

*Dracaena marginata**Draba dedeana**Dracaena draco*

*Dracaena marginata* 'Tricolor'

arching, branched or unbranched, terminal panicles, to 50cm (20in) long, in summer, followed by spherical, orange-red fruit. ‡ 5–15m (15–50ft), ↔ 1–3m (3–10ft). W., C., and E. Africa. ☼ (min. 13°C/55°F).

**Deremensis Group**, syn. *D. deremensis*, includes cultivars with different patterns of longitudinal leaf striations of varying colours and widths. **Deremensis Group 'Warneckei'** ☼ syn. *D. deremensis* 'Souvenir de Schrijver', *D. deremensis* 'Warneckei', has dark grey-green leaves, 40–60cm (16–24in) long, with narrow lighter streaks, dark green margins, and near-central, longitudinal white stripes. **'Massangeana'** ♀ has recurved, dull green leaves, 20–60cm (8–24in) long, with greyish green streaks and a broad, longitudinal, yellow-green band, interspersed with narrow, grey-green stripes. *D. indivisa* see *Cordyline indivisa*.

*D. marginata* ☼ ♀ Erect, slow-growing shrub or small tree, often unbranched at first, then branching and spreading. Spreading, linear-lance-shaped, recurved, red-margined, dark green leaves, 30–60cm (12–24in) long, are densely borne on upper parts of the stems. Mature plants produce terminal panicles, 40–50cm (16–20in) across, of white flowers in summer, followed by yellow berries. ‡ 2–5m (6–15ft), ↔ 1–3m (3–10ft). Réunion Islands. ☼ (min. 13°C/55°F). **'Tricolor'** ☼ has leaves with cream marginal stripes shaded red at the edges.

*D. sanderiana* ☼ ♀ (Ribbon plant). Slender, erect shrub with cane-like stems that branch sparingly to moderately from the base. Arching, slightly wavy,

*Dracaena sanderiana*

lance-shaped, glossy, rich green leaves, 15–25cm (6–10in) long, tapering to false stalks, have bold, longitudinal, silvery white stripes. Not known to flower in cultivation. ‡ to 1.5m (5ft), ↔ 40–80cm (16–32in). Cameroon. ☼ (min. 13°C/55°F)

## DRACOCEPHALUM

Dragon's head

LABIATAE/LAMIACEAE

Genus of 50 species of annuals, perennials, and dwarf, evergreen shrubs found in a range of habitats, from dry, sunny steppes and rocky, grassy slopes to dry woodland, mostly in Eurasia, but also in N. Africa and N. USA. They are grown for their whorls of sage-like, tubular, 2-lipped flowers produced in upright, terminal or axillary racemes, 7–30cm (3–12in) or more long, in summer. They have square stems, and opposite, often aromatic, mainly linear to broadly ovate, entire or toothed, lobed or pinnatisect, mid-green leaves, usually 1.5–8cm (½–3in) long. Grow in a border or rock garden; some species are also suitable for naturalizing in partial shade. Annuals may be used to fill gaps in mixed plantings.

• **HARDINESS** Fully hardy.

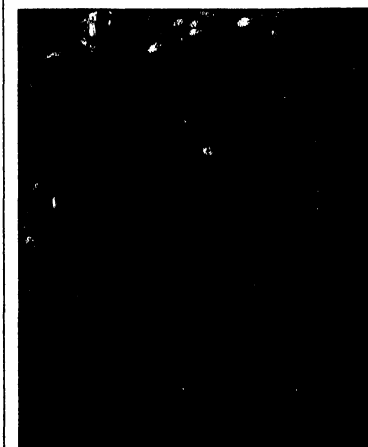
• **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun with some midday shade. *D. forrestii* requires sharply drained soil with some protection from excessive winter wet. *D. ruyschiana* tolerates dry soils.

• **PROPAGATION** Sow seed of annuals *in situ* in mid-spring, thinning as required. Divide or sow seed of perennials in containers in a cold frame in autumn or spring, or root basal cuttings of young growth in mid- or late spring.

• **PESTS AND DISEASES** Occasionally affected by rust and mildew.

*D. argunense* ☼ syn. *D. ruyschiana* var. *speciosum*, *D. speciosum*. Clump-forming perennial with oblong-lance-shaped to linear-lance-shaped, entire, minutely glandular, hairy leaves, 5–7cm (2–3in) long. Bluish purple flowers, to 4.5cm (1¾in) long, are borne in softly hairy, whorled, terminal racemes among ovate-lance-shaped stem leaves in midsummer. ‡ 45cm (18in), ↔ 30cm (12in). China, N.E. Asia. \*\*\*

*D. forrestii*. Rhizomatous perennial with obovate, pinnatisect leaves, 1.5–2cm (½–¾in) long, with 2 or 3 pairs of tightly inrolled, linear segments.

*Dracocephalum argunense*

Slender, very leafy, white-hairy stems bear dense, whorled racemes of softly white-hairy, deep purple-blue flowers, 2–3cm (¾–1¼in) long, from late summer to mid-autumn. ‡ to 50cm (20in), ↔ 30cm (12in). China (Yunnan). \*\*\*

*D. govanianum* see *Nepeta govaniana*.

*D. grandiflorum*. Upright, rhizomatous perennial with long-stalked, oblong-elliptic, toothed radical leaves, 2–5cm (¾–2in) long, and smaller, broadly ovate, scalloped, stalkless stem leaves. Bears short, spike-like racemes of hooded, intense deep blue flowers, to 4cm (1½in) long, with darker spots on the lower lips, in summer. ‡ 30cm (12in), ↔ 20cm (8in). Siberia. \*\*\*

*D. moldavica*, syn. *D. moldavicum*.

Erect, bushy, slightly hairy, aromatic annual with oblong-lance-shaped to ovate-triangular, toothed, grey-green leaves, 1.5–4cm (½–1½in) long. Slender, spike-like racemes of whorled, unevenly 2-lipped, hairy, violet-blue to purple flowers, to 2.5cm (1in) long, are produced in summer. ‡ 30–60cm (12–24in), ↔ 30cm (12in). E. and C. Europe, C. Asia, Siberia, China. \*\*\*

*f. album* has white flowers.

*D. moldavicum* see *D. moldavica*.

*D. ruyschiana*, syn. *D. ruyschianum*

(Siberian dragon's head). Clump-forming, bushy perennial with linear-lance-shaped, entire, hairless leaves, 3.5–6cm (1½–2½in) long, with inrolled margins, and erect, often downy stems. Short spikes of blue-purple flowers, to 2.5cm (1in) long, are borne in mid- and late summer. ‡ to 60cm (24in), ↔ 30cm (12in). C. Europe to Siberia. \*\*\*

*var. japonicum* has white flowers shaded blue; Japan. *var. speciosum* see *D. argunense*.

*D. ruyschianum* see *D. ruyschiana*.

*D. sibiricum* see *Nepeta sibirica*.

*D. speciosum* see *D. argunense*.

*D. tanguticum*. Clump-forming, variable perennial bearing ovate, pinnatisect, aromatic leaves, 2.5–8cm (1–3in) long, with 5–7 narrowly linear divisions. Produces whorled, spike-like racemes of long-lasting, deep violet-blue flowers, 2–3cm (¾–1¼in) long, from midsummer to early autumn. ‡ 40cm (16in), ↔ 30cm (12in). S.W. China. \*\*\*

## DRACULA

ORCHIDACEAE

Genus of about 60 species of evergreen, epiphytic orchids from around 2,000m (7,000ft) in the Andean regions of South America and adjacent highlands of Central America. They produce short, slender stems along creeping rhizomes, each stem having a single, lance-shaped to obovate, dark green leaf. The flowers are borne singly or in erect, or more usually pendent, arching racemes. The sepals are fused into wide, star-shaped cups, with the free parts of the sepals like long "tails". The lip has a short claw and a cup (or pouched blade).

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in a slatted basket. In summer, provide humid, shady conditions, and water moderately, applying fertilizer at every third watering. Water sparingly in winter to avoid root rot. See also p.46.

• **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.

• **PESTS AND DISEASES** Prey to red spider mites, aphids, whiteflies, and mealybugs.

*D. bella*. Epiphytic orchid with oblong to lance-shaped leaves, 12–20cm (5–8in) long. Flowers, 10–25cm (4–10in) long, densely spotted brown, with greenish yellow bases, long-tailed sepals, and small white lips, are borne singly, from winter to summer. ‡ 25cm (10in). Colombia. ☼ (min. 10°C/50°F; max. 24°C/75°F)

*D. chimaera*. Robust, epiphytic orchid with elliptic to obovate leaves, 15–25cm (6–10in) long. In winter, the erect or ascending stems each bear a succession of 3–8 densely spotted, dark maroon flowers, 12cm (5in) long, with yellow or greenish yellow bases, long-tailed sepals, and small cream lips. ‡ to 60cm (24in), ↔ 20cm (8in). Colombia. ☼ (min. 10°C/50°F; max. 24°C/75°F)

*D. erythrochaete*. Epiphytic orchid with elliptic to obovate leaves, 15–25cm (6–10in) long. Bears 1–3 cream flowers, 10cm (4in) across, with red-purple spotting and purple tails, on long, erect to pendent stems, from autumn to winter. ‡ 40–60cm (16–24in), ↔ 20cm (8in). Costa Rica to Colombia. ☼ (min. 10°C/50°F; max. 24°C/75°F)

## DRACUNCULUS

ARACEAE

Genus of 3 species of tuberous perennials from the Mediterranean, Madeira, and the Canary Islands found on waste ground, rocky areas, and hillsides, with pedate, sometimes white-mottled, dark green leaves. They are grown for their distinctive but foul-smelling, often very large, flat or curved spathes, borne in spring or summer. Although not reliably hardy, they grow well in open glades in sheltered woodland or at the base of a sunny wall.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant tubers 15cm (6in) deep in autumn or spring in humus-rich, well-drained soil that dries out in summer. Grows best in full sun but will tolerate partial shade. Protect with a winter mulch.

• **PROPAGATION** Separate offsets in autumn or spring.

• **PESTS AND DISEASES** Trouble free.

*D. vulgaris* ☼ syn. *Arum dracunculoides* (Dragon arum). Tuberous perennial

*Dracunculus vulgaris*

D

with pedate, dark green, basal leaves, 30cm (12in) or more long, marked purple-brown. In spring or summer, foul-smelling, maroon-purple spathes, 60–100cm (24–39in) long, with erect, almost black spadices, are borne above the leaves. † to 1.5m (5ft), ↔ 60cm (24in). C. and E. Mediterranean. \* \*

- ▷ **Dragonhead, False** see *Physostegia virginiana*  
 ▷ **Dragon's head** see *Dracocephalum*  
**Siberian** see *D. ruyschiana*  
 ▷ **Dragon's mouth** see *Horminum pyrenaicum*  
 ▷ **Dragon tree** see *Dracaena draco*

## DREGEA syn. WATTAKAKA

ASCLEPIADACEAE

Genus of 3 or more species of twining, woody, evergreen climbers found in tropical forest from South Africa to China, with opposite, heart-shaped to pointed ovate or lance-shaped leaves. They are cultivated for their small, bowl-shaped, fragrant, yellow or white flowers, produced in stalked umbels from the leaf axils. Grow *D. sinensis* against a sheltered wall.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in well-drained soil in sun or partial shade. Tie young shoots to their supports until they begin to twine. Pruning group 11, after flowering; remove dead wood in early spring.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Take stem cuttings in summer or autumn.
- **PESTS AND DISEASES** Trouble free.

*D. sinensis*, syn. *Wattakaka sinensis*. Twining climber with ovate-heart-shaped leaves, to 10cm (4in) long, mid-green above and grey-downy beneath. Produces fragrant, creamy white flowers, to 1.5cm (½in) across, pale pink and speckled red within, in umbels 6cm (2½in) across, in summer, followed by slender, paired seed pods, to 7cm (3in) long. † 3m (10ft). China. \* \*

- ▷ *Drejerella* see *Justicia*  
*D. guttata* see *J. brandegeana*  
 ▷ *Drepanostachyum falconeri* see *Himalayacalamus falconeri*

## DRIMYS syn. TASMANNIA

WINTERACEAE

Genus of about 30 species of evergreen shrubs and trees from woodland and mountains in Malaysia, Australasia, and Central and South America. They are grown for their handsome, usually elliptic to inversely lance-shaped, aromatic leaves, arranged alternately on the branches, and terminal, umbel-like clusters of small, star-shaped, sometimes unisexual flowers. Grow in a woodland garden or in a sheltered position among other trees and shrubs.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade. Shelter from cold, drying winds. Pruning group 8; cut out dead or damaged wood in spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.



*Drimys winteri*

- D. aromatica* see *D. lanceolata*.  
*D. colorata* see *Pseudowintera colorata*.  
*D. lanceolata* ♀ syn. *D. aromatica*, *Tasmannia aromatica* (Mountain pepper). Dense, upright shrub or tree with deep red shoots and elliptic to inversely lance-shaped, leathery, glossy, dark green leaves, to 8cm (3in) long. Clusters of 7–18 white flowers, 1.5cm (½in) across, are produced in mid- and late spring. † 4m (12ft), ↔ 2.5m (8ft). S.E. Australia, Tasmania. \* \*  
*D. winteri* ♀ syn. *Wintera aromatica* (Winter's bark). Vigorous, upright tree or shrub with aromatic bark and oblong-elliptic to narrowly inversely lance-shaped, leathery leaves, to 20cm (8in) long, dark green above, blue-white beneath. Produces large umbels of 5–20 fragrant, ivory-white flowers, 2.5cm (1in) across, from spring to early summer. † 15m (50ft), ↔ 10m (30ft). Mexico, Chile, Argentina. \* \*. var. *andina* is dwarf, and flowers when 30–40cm (12–16in) tall; † 90–100cm (36–39in). Andes of Chile, Argentina.

- ▷ **Droppwort** see *Filipendula vulgaris*

## DROSANTHEMUM

AIZOACEAE

Genus of about 90 species of erect or prostrate, succulent shrubs from semi-desert regions of Namibia and South Africa. They have slender, rough stems clad in minute, fine hairs, and leaves, triangular to cylindrical in cross-section, densely covered with papillae. Daisy-like, white or red flowers, produced singly or in threes, open after midday in summer. In frost-prone areas, grow in a cool greenhouse and transfer outdoors in summer; in warmer climates, grow outdoors in a desert garden or in a border with other succulents.

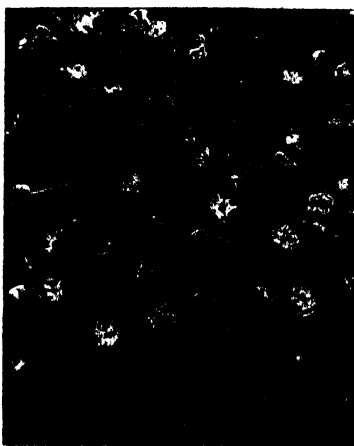
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water freely, applying a balanced liquid fertilizer

monthly; keep just moist at other times. Outdoors, grow in sharply drained soil in full sun. See also pp.48–49.

- **PROPAGATION** Sow seed at 16–19°C (61–66°F), or take stem cuttings from spring to summer.
- **PESTS AND DISEASES** Susceptible to aphids while flowering.

*D. hispidum* ■ Bushy, succulent shrub with erect then spreading, roughly hairy branches, which frequently root where they touch the ground. Cylindrical, fleshy, glossy, pale green to reddish green leaves, to 2.5cm (1in) long, are covered with transparent papillae. In summer, bears solitary, glossy-petalled, deep purplish red flowers, to 3cm (1¼in) across. † 15cm (6in), ↔ 1m (3ft). Namibia, South Africa (Western Cape). ☉ (min. 5°C/41°F)

*D. speciosum*. Bushy, succulent shrub with erect, spotted stems and curved, semi-cylindrical, fleshy leaves, 1.5cm (½in) long, covered with glistening papillae. Solitary, orange-red flowers, to 5cm (2in) across, with green centres, are produced in summer. South Africa (Western Cape). † 30–40cm (12–16in), ↔ 30cm (12in). ☉ (min. 5°C/41°F)



*Drosanthemum hispidum*

## DROSERA

Daily dew, Sundew

DROSERACEAE

Genus of about 100 species of rosette-forming or scrambling, evergreen or herbaceous, insectivorous perennials, also including some annuals, found in poor, acid, boggy soil throughout the world, but mainly in Australia. Leaves are alternate or whorled, often long-stalked, and linear to rounded, the blades covered and fringed with gland-tipped, red or green hairs, which trap and digest insects. The small flowers are usually 5-petalled, most often white, pink, or purple, and are solitary or borne in racemes or panicles. In frost-prone areas, grow in a cool greenhouse; in warmer climates, use in a bog garden.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts moss peat (or peat substitute) and sand in full light, with shade from hot sun. Keep continually moist by standing in a saucer of soft (lime-free) water. Outdoors, grow in wet, peaty, acid, nutritionally poor soil in full sun.
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) as soon as ripe. Take cuttings from young, fully developed leaves, or take root cuttings when dormant.
- **PESTS AND DISEASES** Trouble free.

*D. capensis* (Cape sundew). Evergreen perennial with loose, basal rosettes of linear-oblong to spoon-shaped leaves, 3–6cm (1¼–2½in) long, covered in glandular red or green hairs. Racemes of 6–20 rounded, rose-pink flowers, 2cm (¾in) across, are borne from spring to autumn, and sometimes into winter. † 20–30cm (8–12in), ↔ to 15cm (6in). Southern Africa. ☉ (min. 2°C/36°F)

- ▷ **Drumsticks** see *Craspedia globosa*.  
*Isopogon*  
**Broad-leaf** see *Isopogon anemonifolius*  
 ▷ **Drunkard's dream** see *Hatiora salicornioides*

## DRYANDRA

PROTEACEAE

Genus of about 60 species of evergreen shrubs and small trees found on sandy heath, on dry, rocky and sandy coasts, and in scrub in Australia. They are grown for their foliage and their very colourful flowerheads, both of which are suitable for dried flower arrangements. Leaves are alternate, sometimes whorled, linear to ovate, leathery, usually very boldly toothed, and often pinnatifid. Spherical to ovoid, often thistle-like flowerheads, borne at the ends of the shoots, consist of many slender, usually yellow florets enclosed by overlapping, sometimes coloured bracts. In frost-prone areas, grow in a cool greenhouse; elsewhere, grow in a border, against a warm wall, or in a sunny courtyard.

- **HARDINESS** Frost tender; *D. formosa* survives short periods near 0°C (32°F).
- **CULTIVATION** Under glass, use 1 part loam-based potting compost (J1 No.1) and 3 parts of a 50/50 mix of grit and peat (or peat substitute), and grow in full light. In the growing season, water moderately and apply a half-strength,



*Dryandra formosa*

phosphate-free fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in sharply drained, neutral to acid soil of low fertility (or at least with low levels of phosphates), in full sun. Pruning group 1 or 8.

• **PROPAGATION** Sow seed at not less than 18°C (64°F) in spring, ideally singly, in small containers. Root softwood cuttings with bottom heat in summer; rooting may be slow.

• **PESTS AND DISEASES** In warm areas, *Phytophthora* root rot may be fatal. In soil containing too much phosphate, plants may become chlorotic.

***D. formosa*** [U] (Showy dryandra). Erect, moderately bushy shrub or small tree. Crowded, linear, mid- to dark green leaves, to 20cm (8in) long, with triangular, teeth-like lobes, are sometimes downy beneath. Spherical, bright yellow-orange flowerheads, to 10cm (4in) across, are produced from spring to early summer. ‡ 2–3m (6–10ft), ↔ 2–5m (6–15ft). Australia (Stirling Range to Albany Mountains, Western Australia). \* (borderline)

▷ **Dryandra**, **Showy** see *Dryandra formosa*

## DRYAS

Mountain avens

ROSACEAE

Genus of 3 species of prostrate, evergreen subshrubs found on cliffs and rock ledges in alpine and arctic regions of the N. hemisphere. They are grown for their oak-like, leathery, wrinkled, dark green leaves, 3–4cm (1¼–1½in) long, and white downy beneath. Solitary, cup- to bell-shaped, 8-petaled flowers are followed by fluffy seed heads. They are easily cultivated carpeting plants, useful for a rock garden, wall, or border edge.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, humus-rich, preferably gritty soil in sun or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or take softwood cuttings in early summer. Lift and transplant rooted stems in spring.

• **PESTS AND DISEASES** Trouble free.

***D. drummondii***. Mat-forming subshrub with elliptic to obovate, coarsely scalloped leaves, to 4cm (1½in) long, and nodding, bell-shaped, pale



*Dryas octopetala*

yellow flowers, 1.5–2.5cm (½–1in) across, in early summer. ‡ 10cm (4in), ↔ 1m (36in) or more. North America. \*\*\*. '**Grandiflora**' bears large flowers, to 2.5cm (1in) across.

***D. octopetala*** [U] (Mountain avens). Mat-forming subshrub with oblong-elliptic to ovate, scalloped leaves, to 4cm (1½in) long. Upward-facing, cup-shaped, creamy white flowers, to 4cm (1½in) across, with yellow stamens, are produced in late spring and early summer. ‡ 10cm (4in), ↔ 1m (36in) or more. N. Europe. \*\*\*

***D. x suendermannii*** [U] (*D. drummondii* x *D. octopetala*). Mat-forming subshrub with oblong-elliptic to ovate, scalloped leaves, to 4cm (1½in) long. Produces slightly nodding, cup-shaped flowers, to 3cm (1¼in) across, pale yellow in bud, becoming pale creamy yellow, from spring to early summer. ‡ 10cm (4in), ↔ 1m (36in) or more. Garden origin. \*\*\*

## DRYNARIA

POLYPODIACEAE

Genus of 20 epiphytic, evergreen ferns found in tropical forest and scrub in tropical Africa, S.E. Asia, and Australia, with thick, creeping rhizomes and 2 types of frond. Basal fronds are papery, oak-like in shape, stalkless, and sterile. They turn brown quickly and form a "nest" in which humus collects. The taller, stalked, more upright fertile fronds remain green. They are either deeply pinnate, with linear pinnae, or pinnatisect; small groups of spores form on the undersides. The pinnae are often



*Drynaria rigidula*

shed in dry periods, leaving long, bare midribs. All fronds, even when fresh, have a thin, leathery texture. In frost-prone areas, grow in a warm greenhouse; elsewhere, grow epiphytically.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts medium-grade bark, perlite, and charcoal, in a hanging basket, or epiphytically on bark or a tree-fern slab, with a moss pad at the base. In summer, provide bright filtered light with high humidity and good ventilation, and water freely. Admit full light and water sparingly in winter. Repot in early spring. Outdoors, grow epiphytically on a tree trunk in humid, partial shade.

• **PROPAGATION** *D. rigidula* increases readily from spores, sown at 21°C (70°F) as soon as ripe; other species are less easy to propagate from spores. Divide the rhizomes of large specimens in spring, and make sure that each portion has at least one growing tip. See also p.51.

• **PESTS AND DISEASES** Scale insects may infest fronds.

***D. quercifolia***. Clump-forming, epiphytic fern with ovate, shallowly lobed basal fronds, and narrowly ovate, deeply pinnatisect, dark green fertile fronds, to 1m (36in) tall, which have linear-lance-shaped pinnae. Spores are formed in small sori in double rows running from midrib to margins. ‡ to 1m (3ft), ↔ 1m (3ft). S.E. Asia, Australia. ☉ (min. 10°C/50°F)

***D. rigidula*** [U] Clump-forming, epiphytic fern producing elongated, deeply lobed basal fronds, and ovate, pinnate, dark green fertile fronds, to 1.5m (5ft) tall. Young fronds are covered in soft down that often persists until the fronds wither. Spores form in a single row of sori between midrib and margins. ‡ to 1m (3ft), ↔ to 1.5m (5ft). India, S. China, Polynesia, New Guinea, Australia. ☉ (min. 10°C/50°F)

## DRYOPTERIS

Buckler fern

DRYOPTERIDACEAE

Genus of about 200 species of terrestrial ferns found mainly in temperate regions of the N. hemisphere, where they grow in woodland, by streams or lakes, and among mountain rocks. Most are deciduous, but in mild winters some stay green in sheltered sites. Pinnate to



*Dryopteris affinis*



*Dryopteris affinis* Polydactyla Group 'Mapplebeck'

4-pinnate, sometimes pinnatisect fronds form "shuttlecocks" in most cultivated species. Spores are produced in kidney-shaped sori. The foliage looks effective with most herbaceous plants and shrubs; in frost-prone areas, grow tender species in a cool greenhouse.

• **HARDINESS** Mostly fully hardy; some species are frost hardy or frost tender.

• **CULTIVATION** Grow in moist, humus-rich soil in partial shade and a sheltered site. *D. affinis* and its cultivars will tolerate more sun and wind than other species.

• **PROPAGATION** Sow spores at 15°C (59°F) as soon as ripe. Except in *D. affinis*, sporelings of cultivars differ in appearance from the parent. Divide mature plants in spring or autumn. See also p.51.

• **PESTS AND DISEASES** Trouble free, but moth larvae may feed on spores.

***D. affinis*** [U] syn. *D. borrieri*, *D. pseudomas* (Golden male fern). Virtually evergreen fern producing a shuttlecock of lance-shaped, 2-pinnate or pinnatisect fronds, 20–80cm (8–32in) tall, from an erect rhizome. Fronds are pale green as they unfurl in spring, in striking contrast to the scaly, golden brown midribs; they mature to dark green and often remain green through winter. Distinguished from *D. filix-mas* by a dark spot where each pinna joins the midrib. ‡↔ 90cm (36in). Europe to Himalayas. \*\*\*. '**Crispa Congesta**' see '**Crispa Gracilis**'. '**Crispa Gracilis**', syn. '**Crispa Congesta**', is dwarf and evergreen, with congested fronds and pinnae twisted at the tips; ‡↔ 30cm (12in). '**Cristata**', syn. '**Cristata The King**', has arching fronds, 10–15cm (4–6in) across, with crested tips and pinnae, and is the most handsome of numerous selected cultivars. '**Cristata Angustata**' is similar to '**Cristata**', but the fronds are 5cm (2in) wide. '**Cristata The King**' see '**Cristata**'. **Polydactyla Group 'Mapplebeck'** [U] has semi-erect fronds, with large, fingered crests at the tips, broader than the fronds; pinnae are also finger-crested; ‡↔ 1.2m (4ft).

***D. atrata of gardens*** see *D. cycadina*.

***D. austriaca*** see *D. dilatata*.

***D. borrieri*** see *D. affinis*.

***D. carthusiana*** (Narrow buckler fern). Usually deciduous, delicate fern with a slowly creeping rhizome producing a tuft of narrowly lance-shaped, 2- or 3-pinnate, pale green fronds, to 60cm

D



*Dryopteris wallichiana*

(24in) long, with uniformly pale scales on the midribs.  $\pm$  to 60cm (24in),  $\leftrightarrow$  30cm (12in). Europe (damp woods, marshy areas). \*\*\*. 'Cristata' has crested pinnae and frond tips.

***D. x complexa*** (*D. affinis* x *D. filix-mas*). Semi-evergreen fern, similar to *D. affinis*, with fronds 1m (3ft) tall.  $\pm$  to 1m (3ft). Garden origin. \*\*\*. 'Crispa Angustata' has crisped fronds;  $\pm$  60cm (24in),  $\leftrightarrow$  45cm (18in). 'Stablerae' has narrow pinnae;  $\pm$  1.2m (4ft).

***D. cycadina***, syn. *D. atrata* of gardens, *D. hirtipes*. Deciduous fern with an erect rhizome producing a shuttlecock of lance-shaped, pinnate, bright green fronds, 45cm (18in) tall, with green midribs.  $\pm$  60cm (24in),  $\leftrightarrow$  45cm (18in). N. India to China, Taiwan, Japan. \*\*\*

***D. dilatata***, syn. *D. austriaca* (Broad buckler fern). Usually deciduous fern with a shuttlecock of broadly triangular-lance-shaped, 2- or 3-pinnate, dark green fronds, to 1.5m (5ft) tall and 40cm (16in) wide, arising from an erect rhizome. Frond midribs and stalks are covered in conspicuous, dark brown scales with darker centres.  $\pm$  90cm (3ft),  $\leftrightarrow$  1.2m (4ft). N.W. and C. Europe. \*\*\*. 'Crispa Whiteside' has prettily crisped fronds. 'Lepidota Cristata' is crested, with narrower fronds, 20cm (8in) wide, more finely divided pinnules, and paler brown scales;  $\pm$  60-90cm (24-36in),  $\leftrightarrow$  45cm (18in).

***D. erythrosora*** ♀ Usually deciduous fern with a slow-creeping rhizome producing a tuft of triangular, 2- or 3-pinnate fronds, 25-60cm (10-24in) long; these are copper-red when young, slowly turning slightly shiny, dark green. Midribs are green; young sori are often red. A striking border fern, suitable for a protected, moist site.  $\pm$  60cm (24in),  $\leftrightarrow$  38cm (15in). China, Japan. \*\*\*

***D. filix-mas*** ♀ (Male fern). Deciduous fern forming a large clump of lance-shaped, 2-pinnate or pinnatifid, mid-green fronds, 1-1.2m (3-4ft) tall, with green midribs, arising from a crown of

large rhizomes.  $\pm$  to 1m (3ft). Europe, North America. \*\*\*. 'Barnesii' has long, narrow fronds;  $\pm$  to 1.2m (4ft). 'Crispa Cristata' has crested fronds, and pinnae that are both crested and crisped;  $\pm$  60cm (24in). 'Grandiceps Wills' is a striking plant: the tip of each frond has a heavy crest as wide as the frond, and the pinnae are also finely crested;  $\pm$  to 90cm (36in). **Linearis Group** cultivars have narrower pinna divisions than the species, giving a delicate, airy look; the Group includes 'Linearis Cristata', which has crested pinnae and frond tips;  $\pm$  90cm (36in),  $\leftrightarrow$  60cm (24in).

***D. goldieana*** (Goldie's fern). Deciduous fern with a slow-creeping rhizome producing tufts of long-stalked, broadly oval, 2-pinnate, pale green fronds, 1.2m (4ft) tall, with green midribs.  $\pm$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). North America. \*\*\*

***D. hirtipes*** see *D. cycadina*.

***D. pseudomas*** see *D. affinis*.

***D. wallichiana*** ♂♀ (Wallich's wood fern). Deciduous fern producing an erect rhizome and a shuttlecock of lance-shaped, 2-pinnate or pinnatifid, dark green fronds, yellow-green when young, 90cm (36in) or more long. Midribs are covered with dark brown or black scales, providing wonderful colour contrasts in spring.  $\pm$  90cm (36in), sometimes to 1.8m (6ft),  $\leftrightarrow$  75cm (30in). Himalayas. \*\*\*

## DUCHESNEA

ROSACEAE

Genus of 6 species of low-growing, more or less evergreen perennials from damp, shady woodland and streamsides in S. and E. Asia. The 5-petalled flowers are yellow and strawberry-like, as are the fruits that follow, although these are unpalatable. Rooting runners may be invasive in warm areas, but the fully divided, 3-palmate, conspicuously veined, toothed, strawberry-like leaves provide useful ground cover. *D. indica* also looks effective when grown as a houseplant, especially in a hanging basket.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any soil and position, although they prefer humus-rich, woodland soil in full or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring, or detach and replant rooted plantlets at almost any time of year.



*Duchesnea indica*

• **PESTS AND DISEASES** Slugs and snails may eat fruits.

***D. indica*** ♂ syn. *Fragaria indica* (Indian strawberry, Mock strawberry). Rosette-forming, more or less evergreen perennial producing numerous short runners that root at the nodes. The 3-palmate, hairy leaves, to 10cm (4in) long, have obovate leaflets. Bears solitary yellow flowers, to 2.5cm (1in) across, surrounded by large green calyces and epicalyces, in early and late summer, followed by unpalatable, bright red fruit, to 2cm (¾in) long.  $\pm$  10cm (4in),  $\leftrightarrow$  1.2m (4ft) or more. India, China, Japan. \*\*\*. 'Harlequin' has red-tinted foliage speckled with white.

▷ **Duck plant** see *Sutherlandia frutescens*

▷ **Duck potato** see *Sagittaria latifolia*

## DUDLEYA

CRASSULACEAE

Genus of 40 species of basal-rosetted, perennial succulents, closely related to *Echeveria*, mainly from hilly and low mountainous areas of S. and S.W. USA and N. and N.W. Mexico. Often low-growing, they produce dense rosettes of ovate to linear, succulent leaves. In spring or early summer, tubular, bell-, or star-shaped, yellow, white, or red flowers are borne in panicles from the leaf axils. In frost-prone areas, grow as houseplants or in a cool or temperate greenhouse; in warmer climates, use in a border with other succulents.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full or bright filtered light. During growth, water moderately, applying fertilizer monthly; water sparingly in summer when plants are semi-dormant. Outdoors, grow in sharply drained, humus-rich, moderately fertile soil in full sun. See also pp.48-49.

• **PROPAGATION** Sow seed at 16°C (61°F) in early spring, or take stem cuttings from spring to summer.

• **PESTS AND DISEASES** Vulnerable to mealybugs.

***D. attenuata***. Variable, perennial succulent with stems branching to form large rosettes of slender, linear-inversely-lance-shaped, fleshy, silvery grey leaves, 2-10cm (¾-4in) long; the stem leaves are linear-lance shaped. Produces tubular, yellowish red flowers, 2cm (¾in) across, in panicles, 5-20cm



*Dudleya pulverulenta*

(2-8in) tall, in spring or early summer.  $\pm$  10-15cm (4-6in),  $\leftrightarrow$  to 40cm (16in). USA (California), Mexico. ♂ (min. 7°C/45°F). **subsp. *orcuttii*** has pink-flushed white flowers.

***D. pulverulenta*** ♂ Variable, perennial succulent with an unbranched, silvery grey stem, often very thick and fleshy. Oblong to obovate-spoon-shaped, tapering, fleshy, silvery grey leaves are 7-30cm (3-12in) long. Star-shaped, red to yellow flowers, 2-3cm (¾-1¼in) across, are borne in panicles, 40-80cm (16-32in) tall, in spring or early summer.  $\pm$  30cm (12in) or more,  $\leftrightarrow$  to 55cm (22in). USA (California), N. Mexico. ♂ (min. 7°C/45°F)

***D. traskiae***. Perennial succulent with a short, branching stem and oblong, pointed, fleshy, silvery grey leaves, 4-15cm (1½-6in) long. Star-shaped yellow flowers, 2cm (¾in) across, are produced in panicles, to 30cm (12in) or more tall, in spring or early summer.  $\pm$  20cm (8in),  $\leftrightarrow$  25cm (10in). USA (Santa Barbara Island, California). ♂ (min. 7°C/45°F)

▷ **Dumb cane** see *Dieffenbachia*

▷ **Dungwort** see *Helleborus foetidus*

## DURANTA

VERBENACEAE

Genus of about 30 species of evergreen trees and shrubs found in tropical S. USA and Central and South America, in scrub, thickets, and open woodland. Simple, mainly ovate, often toothed leaves are opposite or sometimes in whorls. They are grown for their salver-



*Duranta erecta*



form flowers, borne in terminal or axillary racemes or panicles, followed by attractive, spherical berries. In frost-prone areas, grow in a temperate greenhouse; in warmer climates, use in a border, or as a hedge or windbreak.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun. During growth, water freely, applying a balanced liquid fertilizer every 2 weeks; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in moist but well-drained, moderately fertile soil in full sun. Pruning group 1; plants under glass may need restrictive pruning in late winter.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Layer in early spring.

• **PESTS AND DISEASES** Susceptible to red spider mites, mealybugs, and whiteflies under glass.

**D. erecta** [□] syn. *D. plumieri*, *D. repens* (Golden dewdrop, Pigeon berry, Sky flower). Erect to spreading, bushy shrub or small tree with ovate to obovate, sparsely to boldly toothed, usually rich green leaves, to 7cm (3in) long. Axillary, pendent panicles, 10–15cm (4–6in) long, of small, blue, lilac-blue, purple, or white flowers, are produced mainly in summer, followed by yellow fruit, to 1cm (½in) across. † 3–6m (10–20ft), ↔ 2–3m (6–10ft). USA (Florida) to Brazil. ☼ (min. 10°C/50°F)

**D. plumieri** see *D. erecta*.

**D. repens** see *D. erecta*.

▷ **Dusty miller** see *Lychnis coronaria*

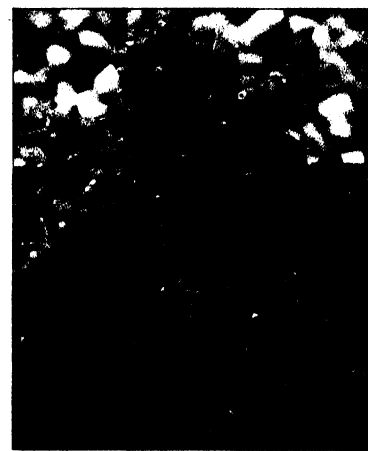
▷ **Dutchman's breeches** see *Dicentra cucullaria*, *D. spectabilis*

▷ **Dutchman's pipe** see *Aristolochia*, *A. macrophylla*

## DUVALIA

ASCLEPIADACEAE

Genus of about 19 species of prostrate or semi-erect, mainly leafless, clump-forming, perennial succulents from hilly lowlands of the Arabian Peninsula, E. Africa, and southern Africa. They have toothed stems, each with 4–6 blunt, warty ribs separated by transverse furrows. Star-shaped, stalked flowers have 5 fleshy lobes, recurved at the tips, and are solitary or produced in clusters



*Duvalia corderoyi*



*Duvalia sulcata*

at the base of the stems, from late spring to summer. In frost-prone areas, grow in a warm greenhouse; in warmer climates, grow outdoors with other succulents.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in bright filtered light. In the growing season, water moderately, and apply fertilizer monthly; keep almost completely dry when dormant. Overwatering may encourage black rot. Outdoors, grow in sharply drained, humus-rich, gritty soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 21–24°C (70–75°F), or take stem cuttings from spring to summer.

• **PESTS AND DISEASES** Susceptible to mealybugs and black rot.

**D. corderoyi** [□] Semi-erect succulent with short, somewhat rounded, 6-ribbed, leafless, green or purple stems. Produces 2–4 dull olive-green flowers, to 5cm (2in) across, covered with soft purple hairs, in summer. † to 5cm (2in), ↔ indefinite. South Africa (Northern Cape). ☼ (min. 10°C/50°F)

**D. maculata**. Prostrate succulent with oblong, leafless, dark green stems, each with 4 or 5 ribs and prominent, pointed teeth. Bears 4–8 olive-green or dark reddish brown flowers, 2cm (¾in) across, with lobes spotted red-brown, and the white tubes spotted maroon, in summer. † to 5cm (2in), ↔ indefinite. Namibia, South Africa (Western Cape). ☼ (min. 10°C/50°F)

**D. sulcata** [□] Prostrate succulent with 4-ribbed, leafless, whitish green stems with purple spots and prominent teeth. Clusters of 1–3 reddish brown flowers, 4.5cm (1¾in) across, with 5-furrowed, hairy-based lobes, covered with pale reddish hairs, are produced from late spring to summer. † to 7cm (3in), ↔ indefinite. Arabian Peninsula. ☼ (min. 10°C/50°F)

▷ **Duvernoia** see *Justicia*

▷ **D. adhatodoides** see *J. adhatoda*

## DYCKIA

BROMELIACEAE

Genus of over 100 species of rosette-forming, stemless, evergreen, succulent, terrestrial perennials (bromeliads) from South America, found in rocky areas, especially near coasts, and in mountains at altitudes up to 2,000m (6,500ft). They have linear to lance-shaped or

short, triangular, spiny-margined, stiff, often grey-scaly leaves, and tubular, sulphur-yellow to orange flowers, produced laterally from the rosettes in racemes or panicles, generally in spring. Many species develop a trunk-like stem, while some are mat-forming. In areas where temperatures drop below 10°C (50°F), grow as houseplants or in a temperate or warm greenhouse; in warmer regions, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light. From late spring to autumn, water moderately, applying fertilizer monthly; keep completely dry in winter.

Outdoors, grow in sharply drained, gritty, humus-rich soil in full sun. See also p.47.

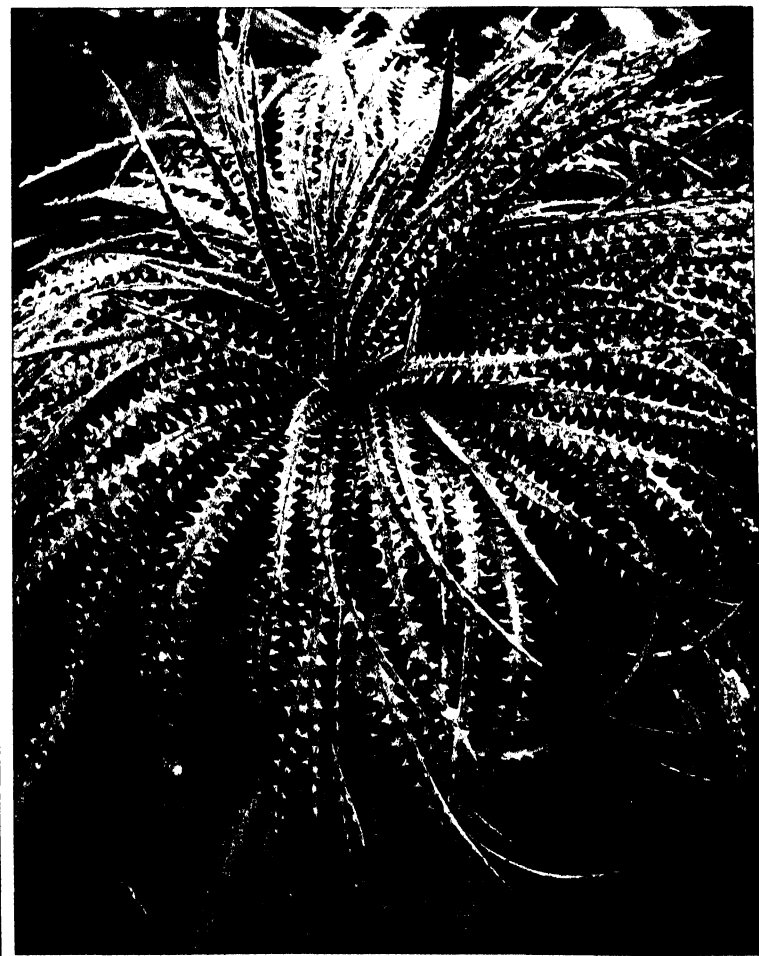
• **PROPAGATION** Sow seed at 27°C (81°F) in early spring. Divide clumps in late spring or early summer.

• **PESTS AND DISEASES** Scale insects may be troublesome.

**D. argentea** see *Hechtia argentea*.

**D. fosteriana** [□] Bromeliad with dense, flat rosettes of lance-shaped, grey-scaly leaves, 9–17cm (3½–7in) long, with sharp, recurved marginal spines. Densely scaly racemes, 45cm (18in) long, of bright orange flowers, 2.5cm (1in) long, are produced in late spring. † 20cm (8in), ↔ 12cm (5in). E. Brazil. ☼ (min. 10°C/50°F)

**D. platyphylla**. Bromeliad with spreading rosettes of thick, narrowly triangular, dark green leaves, to 23cm (9in) long, hairless above, with white scales pressed flat against the undersides.



*Dyckia fosteriana*



*Dyckia remotiflora*

Lax racemes, 80cm (32in) long, of bright yellow flowers, 2.5cm (1in) long, are produced in late spring. † 30cm (12in), ↔ 40cm (16in). E. Brazil. ☼ (min. 10–13°C/50–55°F)

**D. remotiflora** [□] Bromeliad with dense rosettes of very narrowly triangular, arching, dark green leaves, 10–25cm (4–10in) long, covered with grey scales, especially on the undersides, and with hooked marginal spines. Loose, sparsely hairy panicles, to 1m (36in) long, with lateral spikes of dark orange flowers, 2cm (¾in) long, are borne in late spring. † 30cm (12in), ↔ 30–50cm (12–20in). S. Brazil, Uruguay. ☼ (min. 10°C/50°F)

▷ **Dyer's greenweed** see *Genista tinctoria*

▷ **Dypsis lutescens** see *Chrysalidocarpus lutescens*

# E

E

- ▷ **Earth star** see *Cryptanthus*
- Green** see *C. acaulis*
- ▷ **Eaton's firecracker** see *Penstemon eatonii*
- ▷ **Ebony, Mountain** see *Bauhinia variegata*

## EBRACTEOLA

AIZOACEAE

Genus of 5 species of very fleshy, mat- or clump-forming, perennial succulents from low-lying hills in Namibia. They have extremely thick rootstocks and 3-sided, sometimes spotted, bluish green leaves. Solitary, almost stalkless, daisy-like, terminal flowerheads are borne in summer. In frost-prone areas, grow as ground cover in a warm greenhouse; in warm, dry climates, grow in a desert garden or in a raised bed.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. When in growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep dry at other times. Outdoors, grow in sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or summer, or take cuttings of stem sections in early summer.
- **PESTS AND DISEASES** Trouble free.

*E. derenbergiana*, syn. *Mesembryanthemum derenbergianum*, *Ruschia derenbergiana*. Mat- or cushion-forming succulent with a very thick tap root, 20cm (8in) long, producing fleshy stems, each with 2 or 3 pairs of 3-sided, densely spotted, light blue-green leaves, 3–4cm (1¼–1½in) long, bluntly margined, with the sides hatchet-shaped above. Daisy-like, pale pink flowers, 2–2.5cm (¾–1in) across, are borne in summer. ‡ to 7cm (3in), ↔ indefinite. Namibia. ☀ (min. 10°C/50°F)

## ECBALLIUM

Squirting cucumber

CUCURBITACEAE

Genus of one species of trailing or bushy, bristly-hairy, monoecious perennial found in rough, dry ground from the Mediterranean to S. Russia. The female flowers give rise to touch-sensitive fruit that squirt out seeds over great distances when ripe. It is usually grown for the curiosity value of its fruit. Needs an open, sunny site. In frost-prone areas, treat as a half-hardy annual.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in full sun.
- **PROPAGATION** Sow seed at 18°C (64°F) in early spring, and plant out

*Ecballium elaterium*

seedlings when risk of frost has passed.

- **PESTS AND DISEASES** Under glass, aphids and red spider mites may be a problem.

*E. elaterium* ■ Bushy or trailing perennial with long, bristly-hairy stems and ovate-triangular, palmately 5-lobed, dark greyish green leaves, 5–15cm (2–6in) long, with shallow, wavy-margined lobes, rough-textured above, downy on the undersides. In summer, produces widely funnel-shaped, pale yellow flowers, to 2.5cm (1in) across, sometimes with deeper yellow centres. Male flowers are produced in racemes; female flowers are solitary. Ovoid to cylindrical, hairy, blue-green fruit, to 5cm (2in) long, enclose many seeds in watery mucilage. ‡ to 50cm (20in), ↔ 1m (3ft) or more. Mediterranean. \*

▷ *Ecchremocactus bradei* see *Weberocereus bradei*

## ECCREMOCARPUS

Chilean glory flower

BIGNONIACEAE

Genus of 5 species of evergreen or herbaceous, climbing perennials from scrub and forest margins in Chile and Peru. They are grown for their colourful, terminal racemes of lopsidedly tubular flowers. The leaves are opposite and 2-pinnate, each with a terminal, branched tendril. In frost-prone areas, grow in a cool greenhouse, or outside as annuals. In warmer areas, grow as short-lived perennials, to clothe an arch, pergola, or house wall, or to clamber through a large shrub or small tree.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in well-drained, loam-based potting compost (J1 No.2) in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Provide support. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in late winter or early spring. Root tip cuttings with bottom heat in spring or summer.
- **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

*E. scaber* ■ ♀ (Chilean glory flower). Slender, fast-growing, evergreen climber with sharply 4-angled stems, erect at

*Ecchremocarpus scaber*

first, then branching and spreading. Pinnate leaves, 5–7cm (2–3in) long, have small, ovate, boldly veined, light green, sometimes grey-tinted leaflets. From late spring to autumn, bears tubular, orange-red flowers, to 2.5cm (1in) long, swollen near the mouths, in racemes 10–15cm (4–6in) long. ‡ 3–5m (10–15ft), sometimes more. Chile. \*\* (borderline). **Anglia Hybrids** is a mixed colour selection that produces red, pink, orange, or yellow flowers. *f. aureus* has golden yellow blooms. *f. carmineus*, syn. 'Ruber', has carmine-red flowers. *f. roseus* has bright pink to light red flowers. 'Ruber' see *f. carmineus*.

## ECHEVERIA

CRASSULACEAE

Genus of about 150 species of evergreen succulents and evergreen, occasionally deciduous subshrubs found in dry, often semi-desert areas in Texas, USA, Mexico, and from Central America to the Andes. The often spectacularly colourful leaves, usually in rosettes, are fleshy, alternate, and may be linear to cylindrical, spoon-shaped, or broadly triangular. The flowers have erect or spreading petal lobes, often slightly spreading at the tips or constricted at the mouths, and occasionally angled or keeled tubes. They are borne in racemes, cymes, or panicles, on long stalks from the leaf axils. In frost-prone areas, grow as houseplants or in a temperate greenhouse. Compact species may be used as annuals in carpet bedding. In warmer climates, plant outdoors in a border with other succulents.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. While in growth, water moderately and apply a half-strength balanced liquid fertilizer monthly; keep just moist in winter. Stand containerized plants outdoors during the frost-free months. Outdoors, grow in moderately fertile to poor, well-drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 16–19°C (61–66°F) as soon as ripe. Root stem or leaf cuttings in late spring, or separate offsets in spring.
- **PESTS AND DISEASES** Prone to greenfly, vine weevil larvae, and mealybugs.

*E. agavoides* ■ ♀ Often clump-forming, very short-stemmed succulent with solitary or tufted rosettes of thick, ovate to ovate-triangular, sharply pointed, waxy, pale green leaves, 3–9cm (1¼–3½in) long, with transparent, often reddish brown margins. From spring to early summer, bears ovoid, yellow-tipped red flowers, to 1.5cm (½in) long, yellow inside, in one-sided cymes, to 50cm (20in) long. ‡ 15cm (6in), ↔ 30cm (12in) or more. Mexico. ☀ (min. 7°C/45°F)

*E. ciliata*. Short-stemmed, hairy succulent with dense rosettes of wedge-shaped to obovate, bristle-tipped, dark green leaves, to 5cm (2in) long, often margined red. In early summer, bears ovoid, green then red or yellow-red flowers, 1.5cm (½in) long, in one-sided cymes, 4–14cm (1½–5½in) long. ‡ to 17cm (7in), ↔ to 10cm (4in). Mexico. ☀ (min. 7°C/45°F)

*E. cooperi* see *Adromischus cooperi*.

*E. crenulata*. Short-stemmed succulent with loose rosettes of broadly obovate-diamond-shaped, pointed, pale green leaves, to 30cm (12in) long, with or without bristle tips, and with wavy or flat, red or red-brown margins. From early summer to winter, bears ovoid, yellowish red flowers, 1.5cm (½in) long, yellow inside, in panicle-like cymes, to 1m (3ft) long. †30cm (12in) or more, ↔ 50cm (20in). Mexico. ☼ (min. 7°C/45°F)

*E. cuspidata*. Stemless succulent with dense rosettes of oblong-obovate, flat, rather thin, somewhat glaucous, grey-green leaves, 7cm (3in) long, that are blunt with small points, and suffused and tipped red-bronze. From spring to early summer, bears one-sided cymes, to 40cm (16in) long, of purplish red to deep pink flowers, 1.5cm (½in) long, with conical tubes. †12–15cm (5–6in), ↔ 15cm (6in). Mexico. ☼ (min. 7°C/45°F)

*E. derenbergii* ♀ Short-stemmed succulent with dense tufts or rosettes of wedge-shaped to obovate, thick, bristle-tipped, intensely white-frosted, light green leaves, to 4cm (1½in) long, tipped and margined red. From late winter to early summer, produces racemes, to 10cm (4in) long, of ovoid-bell-shaped yellow flowers, to 1.5cm (½in) long, with red petal lobes. †10cm (4in), ↔ to 30cm (12in). Mexico. ☼ (min. 7°C/45°F)

*E. elegans* □♀ Stemless or short-stemmed, clump-forming succulent with rounded rosettes of obovate to spoon-shaped, sometimes red-margined, silvery blue leaves, 3–6cm (1¼–2½in) long. From late winter to early summer, produces solitary, one-sided cymes, to 25cm (10in) long, of ovoid, yellow-tipped pink flowers, 1cm (½in) long, yellow-orange inside. †5cm (2in), ↔ 50cm (20in). Mexico. ☼ (min. 7°C/45°F)

*E. x fruticosa* see *x Pachyveria glauca*.

*E. gibbiflora*. Simple-stemmed or few-branched succulent that produces terminal rosettes of obovate-spoon-shaped, pointed, wavy-margined, grey-green leaves, to 35cm (14in) long, often tinged reddish brown. Panicle-like cymes, to 1m (3ft) long, of ovoid-bell-shaped, pale red flowers, to 2cm (¾in) long, yellow inside, are borne from late summer to winter. †30cm (12in), ↔ 15cm (6in). Mexico. ☼ (min. 7°C/45°F). 'Carunculata' has wart-like



*Echeveria elegans*

protuberances on the upper leaf surfaces, causing the margins to curl and twist. 'Metallica' bears white- or red-margined, purple-green leaves, maturing to green-bronze.

*E. goldieana*. Stemless or very short-stemmed, clump-forming succulent with dense rosettes of broadly obovate, thick, glossy, mid-green leaves, to 4cm (1½in) long, blunt with small points. From spring to early summer, produces racemes, 40cm (16in) long, of pitcher-shaped, nodding pink flowers, to 1.5cm (½in) long, with greenish yellow tips. †6cm (2½in), ↔ to 12cm (5in). Mexico. ☼ (min. 7°C/45°F)

*E. harmsii* ♀ syn. *Oliveranthus elegans*. Bushy succulent with softly hairy branches, each branch crowned with a rosette of narrow, inversely lance-shaped, pointed, slightly hairy, red-margined, light green leaves, 2–5cm (¾–2in) long. In spring, produces urn-shaped, orange-tipped red flowers, 3cm (1¼in) long, yellow inside, in racemes to 20cm (8in) long. †↔ 30cm (12in). Mexico. ☼ (min. 7°C/45°F)

*E. nodulosa*. Erect then prostrate succulent covered in minute, prickly-tipped white papillae. Thick, wedge-



*Echeveria pulvinata*

to spoon-shaped leaves, 5cm (2in) long, light green with red margins and keels, are arranged in loose rosettes or scattered. Ovoid-angular, pale reddish white flowers, yellow within, 1.5cm (½in) long, are produced in racemes to 30cm (12in) long, from early summer to autumn. †30cm (12in), ↔ to 40cm (16in). S. Mexico. ☼ (min. 7°C/45°F)

*E. peacockii*. Stemless or short-stemmed succulent producing dense rosettes of obovate-oblong, slightly tapering, pointed or bristle-tipped, white-frosted leaves, to 7cm (3in) long, with red tips and margins. In early summer, bears ovoid, deep red or red-pink flowers, to 1.5cm (½in) long, in one-sided cymes, 30cm (12in) or more long. †to 12cm (5in), ↔ 25cm (10in). Mexico. ☼ (min. 7°C/45°F)

*E. pilosa* □ Short-stemmed, sparsely branched or unbranched succulent, densely covered with white hairs. Reddish brown stems bear loose rosettes of thick, spoon-shaped, mid-green leaves, 7cm (3in) long, with wedge-shaped ends. From spring to summer, produces ovoid flowers, to 1.5cm (½in) long, dull orange-red outside, yellow inside and on the tips, in raceme-like cymes, 30cm (12in) long. †10cm (4in), ↔ 40cm (16in). Mexico. ☼ (min. 7°C/45°F)

*E. pulvinata* □♀ (Plush plant). Bushy succulent with brown-felted stems, each producing a lax rosette of spoon-shaped-obovate, fine-pointed, thick, softly white-hairy, mid-green leaves, 2.5–6cm (1–2½in) long, the margins turning red in autumn. From winter to early summer, produces loose panicles,

20–30cm (8–12in) long, of ovoid to urn-shaped, red-keeled, yellow or yellow-red flowers, to 2cm (¾in) long. †30cm (12in), ↔ 50cm (20in). S. Mexico. ☼ (min. 7°C/45°F)

*E. secunda* □ Short-stemmed, clump-forming succulent with often decumbent, dense, basal rosettes of spoon- to wedge-shaped, blunt, bristle-tipped, glaucous, pale green to grey leaves, to 5cm (2in) long, with red tips and margins. In late spring and early summer, produces ovoid red flowers, to 1.5cm (½in) long, yellow inside, in one-sided cymes, to 30cm (12in) long. †4cm (1½in), ↔ 30cm (12in). Mexico. ☼ (min. 7°C/45°F)

*E. setosa* ♀ (Mexican firecracker). Stemless succulent with dense, nearly spherical rosettes of inversely lance-shaped to spoon-shaped, pointed, bristle-tipped, mid-green leaves, 8cm (3in) long, densely covered with white hairs. From late spring to summer, urn-shaped, yellow-tipped red flowers, 1cm (½in) or more long, yellow inside, are produced in one-sided cymes, to 30cm (12in) long. †4cm (1½in), ↔ 30cm (12in). Mexico. ☼ (min. 7°C/45°F)

## ECHIDNOPSIS

### ASCLEPIADACEAE

Genus of about 20 species of very variable, perennial succulents from low hillsides in Saudi Arabia, Oman, Yemen, and tropical E. Africa and South Africa. They have branching, prostrate to erect, spherical to short-columnar stems, each with 6- to 20-angled, dark green ribs, usually divided into hexagonal tubercles. Tiny, grey-green leaves are short-lived, sometimes persisting as white spines on the tubercles. Saucer- to bell-shaped, 5-lobed, fleshy flowers, with whorled, cup-shaped corollas, are borne in clusters, mainly at the stem tips. In frost-prone areas, grow as houseplants or in a warm greenhouse; in warm, dry climates, grow outdoors in a border with other succulents.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.2) and grit, in full light and with good ventilation. In growth, water moderately and apply a balanced liquid fertilizer monthly; water very sparingly in winter. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** In spring or summer, sow seed at 21–24°C (70–75°F), or take stem cuttings ensuring the cut surface forms a complete callus before inserting.

• **PESTS AND DISEASES** Vulnerable to black rot if overwatered, especially if temperatures fall below 16°C (61°F).

*E. chrysantha* see *E. scutellata* subsp. *planiflora*.

*E. dammanniana*. Erect or curved succulent with 8-angled, ribbed stems, each rib divided into small, irregular tubercles. From late spring to summer, produces clusters of 2–5 flowers, to 1cm (½in) wide; the cup-shaped corollas and spreading lobes vary from yellow, densely spotted with purplish maroon, to purplish maroon; the coronas are yellowish purple. †20cm (8in), ↔ to 25cm (10in). N. Ethiopia. ☼ (min. 16°C/61°F)



*Echeveria agavoides*



*Echeveria pilosa*



*Echeveria secunda*

*E. scutellata*. Erect or prostrate succulent with 8- to 9-angled, ribbed stems, each rib divided into hexagonal-conical tubercles. In late spring, bears solitary or paired flowers, to 1cm (½in) wide: the saucer- to bell-shaped corollas are yellow or yellowish green (often with purple mottling on the exterior), with triangular to ovoid-triangular, minutely warty lobes; the coronas are yellow, with red-spotted throats. ‡ to 30cm (12in), ↔ indefinite. Saudi Arabia, Yemen, Somalia. ☉ (min. 16°C/61°F). **subsp. planiflora**, syn. *E. chrysantha*, has 8- to 15-angled, ribbed stems, and flowers varying in colour from brown, suffused yellow near the centres, to bright yellow with pale green outsides; coronas vary from yellow to red-brown; Ethiopia, Djibouti, Somalia.

## ECHINACEA

Coneflower

ASTERACEAE/COMPOSITAE

Genus of about 9 species of bold, stiff perennials from dry prairies, gravelly hillsides, and open woodland in C. and E. North America, usually with thick, black rootstocks and short rhizomes. Erect, hairy stems bear linear-lance-shaped to ovate, entire, toothed, or deeply pinnatifid, bristly, dark green leaves. Solitary, daisy-like, purple, red, or pink flowerheads, with pointed, stiff scales on the undersides and prominent, ovoid or cone-shaped, brownish yellow to orange central discs, are produced terminally on stout, sometimes sparsely branched stems. Grow in a herbaceous border or in open woodland.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in deep, well-drained, humus-rich soil in full sun, although they will tolerate some shade. Cut back stems as the blooms fade to encourage further flower production.

• **PROPAGATION** Sow seed at 13°C (55°F) in spring. Divide in autumn or spring, although they resent a lot of disturbance. Insert root cuttings from late autumn to early winter.

• **PESTS AND DISEASES** Trouble free.

*E. angustifolia*. Erect perennial with lance-shaped to linear, hairy, entire leaves, to 15cm (6in) long, the stem leaves stalkless. In early summer, produces flowerheads, to 15cm (6in) across, with conical, orange-brown discs and narrow, arching, pink or purple-pink, occasionally white ray-florets,



*Echinacea purpurea* 'White Lustre'

3–4.5cm (1¼–1¾in) long. ‡ to 1.2m (4ft), ↔ 45cm (18in). North America (S. Canada to Texas). \*\*\*

*E. purpurea*, syn. *Rudbeckia purpurea*. Erect perennial with smooth, sometimes rough-hairy, red-tinted green stems, ovate, toothed, rough-hairy basal leaves, 15cm (6in) long, and ovate-lance-shaped, toothed stem leaves. From mid-summer to early autumn, bears flowerheads to 12cm (5in) across, with golden brown, cone-shaped discs and partly reflexed, purplish red ray-florets, 3–8cm (1¼–3in) long. ‡ to 1.5m (5ft), ↔ 45cm (18in). USA (Michigan S. to Virginia, Louisiana, and Georgia). \*\*\*. 'Bright Star' see 'Leuchstern'. 'Leuchstern', syn. 'Bright Star', has purple-red flowerheads; ‡ to 80cm (32in). *Lustre* Hybrids have clear purple, red-purple,

or white flowerheads; ‡ 80–120cm (2½–4ft). 'Magnus' has flowerheads to 18cm (7in) across, with dark orange discs, the ray-florets deep purple and more horizontal than in other cultivars. 'Robert Bloom' has prominent, dark orange-brown discs and mauve-crimson ray-florets. 'The King' has arching, pinkish crimson ray-florets and ovate, orange-brown discs. 'White Lustre' has creamy white flowerheads with orange-brown discs; ‡ to 80cm (32in). 'White Swan' has white flowerheads, to 11cm (4½in) across, with orange-brown discs; ‡ to 60cm (24in).

## ECHINOCACTUS

CACTACEAE

Genus of about 15 species of slow-growing, spherical, barrel-shaped, or columnar, perennial cacti from low, open scrubland in S.W. USA and Mexico. They have prominent, heavily spined ribs and large areoles forming densely woolly crowns, from which rings of diurnal, bell-shaped, yellow, pink, red, or magenta flowers develop in summer on mature plants. Ovoid, white-woolly fruits contain large black or dark brown seeds. In frost-prone areas, grow in a warm greenhouse; elsewhere, plant in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From mid-spring to early autumn, water freely and apply a half-strength balanced liquid fertilizer every 4 weeks; keep totally dry at other times of the year. Outdoors, grow in fertile, well-drained

soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring.

• **PESTS AND DISEASES** Vulnerable to mealybugs, especially when young.

*E. asterias* see *Astrophytum asterias*.

*E. capricornis* see *Astrophytum capricorne*.

*E. chilensis* see *Neoporteria chilensis*.

*E. grusonii* (Golden barrel cactus, Mother-in-law's cushion). Spherical, eventually elongating cactus with a bright green stem bearing 20–40 sharply angled ribs. Yellow areoles produce golden yellow spines (8–10 radials and 3–5 centrals). Bears bright yellow flowers, 4–6cm (1½–2½in) long, in summer. ‡ to 60cm (24in), ↔ to 80cm (32in). C. Mexico. ☉ (min. 10°C/50°F)

*E. hartmannii* see *Discocactus hartmannii*.

*E. horizonthalonius*. Spherical to columnar cactus with a blue-green or grey-green stem bearing 7–13 often spirally arranged ribs. Brown areoles produce brown spines (6–9 radials and 1 central). Rose-red or pink flowers, 5–7cm (2–3in) long, darker near their bases, are produced in summer. ‡ to 25cm (10in), ↔ to 40cm (16in). USA (W. Texas, New Mexico), N. Mexico. ☉ (min. 10°C/50°F)

*E. ingens* see *E. platyacanthus*.

*E. myriostigma* see *Astrophytum myriostigma*.

*E. ornatus* see *Astrophytum ornatum*.

*E. platyacanthus*, syn. *E. ingens*.

Spherical cactus with a fresh green stem bearing 20–60 very pronounced ribs. Grey areoles produce greyish brown or yellow-brown spines (about 4 radials and 3 or 4 centrals). In summer, bears golden yellow flowers, 3–6cm (1¼–2½in) long, with brown-tipped outer tepals. ‡ to 1m (3ft). C. and N. Mexico. ☉ (min. 10°C/50°F)

*E. polycephalus* Spherical, often elongating, clump-forming cactus with 13- to 21-ribbed, grey-green stems. Whitish grey areoles bear reddish brown spines (4–8 flattish radials and 4 centrals). In summer, produces yellow flowers, 5–6cm (2–2½in) long, the outer tepals with pink midribs. ‡ to 70cm (28in), ↔ 25cm (10in). USA (California, S. Utah, N. Arizona), N. Mexico. ☉ (min. 10°C/50°F)

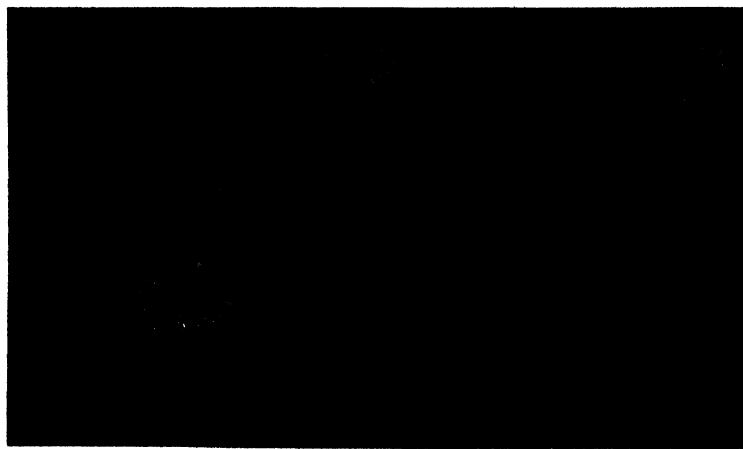
*E. ritteri* see *Aztekium ritteri*.

*E. scheeri* see *Sclerocactus scheeri*.

*E. texensis*, syn. *Homalocephala texensis*. Flattened-spherical or barrel-shaped



*Echinocactus grusonii*



*Echinacea purpurea* 'Robert Bloom'

*Echinocactus polycephalus*

cactus with a 13- to 27-ribbed, greyish green stem. Well-spaced, white-woolly areoles bear red-brown spines (6 or 7 radials and 1 thicker central). Bears satiny, pale reddish pink flowers, 5–6cm (2–2½in) long, with pink to orange-red throats and paler, irregular margins, in summer. ‡ to 15cm (6in), ↔ to 30cm (12in). USA (Texas, S. New Mexico), N.E. Mexico. ☼ (min. 10°C/50°F)

*E. uncinatus* see *Sclerocactus uncinatus*.

## ECHINOCEREUS

### CACTACEAE

Genus of about 45 species of simple or clump-forming, perennial cacti found in lowland deserts to open, dry uplands in S. and S.W. USA and Mexico. They produce spherical to cylindrical, prominently ribbed stems and are noted for their very colourful, diurnal flowers, which are generally large and usually funnel- or bell-shaped. In frost-prone areas, grow on a sunny window-sill or in a cool or temperate greenhouse; in warmer areas, plant in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From mid-spring to early autumn, water freely and apply a half-strength balanced liquid fertilizer monthly; keep totally dry at other times. Outdoors, grow in well-drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Root stem cuttings in spring or summer.

• **PESTS AND DISEASES** Vulnerable to mealybugs and scale insects.

*E. baileyi* see *E. reichenbachii* var. *baileyi*.

*E. brandegeei*. Erect or decumbent, clump-forming cactus with cylindrical, 6- to 8-ribbed, warty, dull, pale green stems, 4–6cm (1½–2½in) thick. Yellowish green areoles bear yellowish red or yellowish white spines (12 radials and 4 centrals). Produces bell-shaped, purplish pink flowers, to 7cm (3in) long, with red throats, in early summer. ‡ 1m (3ft), ↔ to 50cm (20in). Mexico (Baja California). ☼ (min. 7°C/45°F)

*E. cinerascens*. Clump-forming cactus with spherical to cylindrical, 5- to 12-ribbed, sometimes warty, bright green stems, 4–7cm (1½–3in) thick. Bright green areoles bear yellowish white or red spines (8–10 radials and 1–4 centrals). Funnel-shaped, bright pink or purple

*Echinocereus leucanthus*

flowers, 6–10cm (2½–4in) across, with paler, greenish pink throats, are borne in early summer. ‡ 10–60cm (4–24in), ↔ to 1m (3ft). N., C., and E. Mexico. ☼ (min. 7°C/45°F)

*E. engelmannii*. Semi-erect, clump-forming cactus with cylindrical, 10- to 14-ribbed, densely spiny, mid-green stems, 4–8cm (1½–3in) thick. Large, mid-green areoles bear variously coloured spines (10–12 radials and 2–6 longer centrals). Produces broadly funnel-shaped, purple-red to magenta or lavender-pink flowers, 7cm (3in) across, in early summer. ‡ 5–60cm (2–24in), ↔ to 45cm (18in). S.W. USA, N.W. Mexico. ☼ (min. 7°C/45°F)

*E. fendleri*. Simple or clump-forming cactus with ovoid to cylindrical, variably warty, 9- to 18-ribbed, dull or brownish green stems, 4–8cm (1½–3in) thick. Green areoles bear brown spines (about 8 radials and 1 longer central). From spring to early summer, produces broadly bell-shaped, purplish violet or purple-magenta to white flowers, 9cm (3½in) long, which darken towards the sometimes green-tinged centres and have jagged petal margins. ‡ 8–50cm (3–20in), ↔ to 30cm (12in). USA (S. Utah, Arizona, New Mexico), N.W. Mexico. ☼ (min. 7°C/45°F)

*E. knippelianus*. Erect, simple or clustering cactus with spherical, almost ovoid, dark green stems, to 8cm (3in) thick, offsetting from the base, with 5–8 rounded ribs divided by broad furrows. Small green areoles bear 1–3 bristly, short-lived, yellow radial spines. Funnel-shaped, pink, lavender-pink, purple, or white flowers, to 4cm (1½in) long, are

borne from spring to early summer. ‡ to 20cm (8in), usually smaller, ↔ 15cm (6in). N.E. Mexico. ☼ (min. 7°C/45°F)

*E. leucanthus* ☐ syn. *Wilcoxia albiflora*. Clambering cactus, freely branching from the base, with cylindrical, 8- to 12-ribbed, dark green stems, to 6mm (¼in) thick. Brown areoles bear 10–12 yellow, sometimes almost black radial spines.

Wide-spreading, funnel-shaped white flowers, 2–4cm (¾–1½in) long, with greenish brown throats, and sometimes pale pink midstripes, are borne in early summer. ‡ to 1m (3ft), ↔ 30cm (12in). N.W. Mexico. ☼ (min. 7°C/45°F)

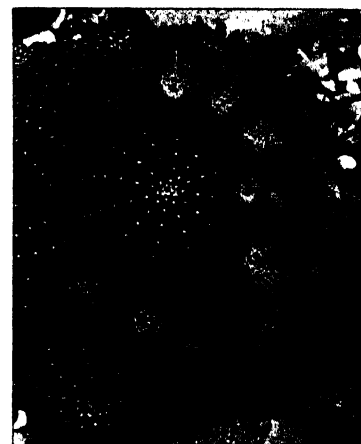
*E. maritimus*. Variable, erect, clump-forming cactus with spherical or slightly cylindrical, 8- to 10-ribbed, greenish grey stems, 2.5cm (1in) thick. Bright green areoles bear greyish white or red, later greyish yellow to grey spines (9 or 10 radials and 1–4 longer centrals). Funnel-shaped, brown- or red-tinged yellow flowers, 4cm (1½in) long, are produced in early summer. ‡ 15cm (6in), ↔ indefinite. N.W. Mexico. ☼ (min. 7°C/45°F)

*E. pectinatus*. Erect, simple or eventually sparsely branched cactus with spherical or cylindrical, 12- to 23-ribbed, mid-green stems, 7–10cm (3–4in) thick. Mid-green areoles produce comb-like, pinkish white spines (up to 30 radials and 3 shorter centrals). In late spring and early summer, bears funnel-shaped, pale pinkish lavender, sometimes magenta or yellow flowers, 7–12cm (3–5in) long, green at the bases, with white or maroon throats. ‡ 8–35cm (3–14in), ↔ 20cm (8in). S.W. USA, N. Mexico. ☼ (min. 7°C/45°F)

*E. pentalophus* ☐ syn. *E. procumbens*. Prostrate or erect, clump-forming cactus with cylindrical, 4- to 8-ribbed, pale to dark green stems, 2cm (¾in) thick. White areoles bear about 6 yellow or white radial spines. Bell-shaped, lilac to carmine-red or bright pink-magenta flowers, to 10cm (4in) long, with white or yellow throats, rarely entirely white, develop in early summer. ‡ 20cm (8in), ↔ 60cm (24in). USA (Texas), E. and N.E. Mexico. ☼ (min. 7°C/45°F)

*E. procumbens* see *E. pentalophus*.

*E. pulchellus* ☐ Erect, simple or clustering cactus that branches at the base. Spherical or hemispherical, grey to bluish green stems, 4–5cm (1½–2in) thick, have 11–13 low, warty ribs. White areoles bear 3 or 4 yellow to grey radial spines. Widely spreading, funnel-shaped, bright rose-pink, pink, magenta,

*Echinocereus pulchellus*

or white flowers, 4cm (1½in) long, with white margins, are produced in late spring and early summer. ‡ 5cm (2in), ↔ 15cm (6in). N. and S. central Mexico. ☼ (min. 7°C/45°F)

*E. reichenbachii* ♀ Variable, erect cactus with usually simple, spherical to cylindrical, light to dark green stems, to 10cm (4in) thick, with up to 19 ribs. Light to dark green areoles bear 12–40 white or brown radial spines. Bears broadly funnel-shaped, pink to purple or magenta flowers, 7cm (3in) across, with darker throats, from spring to early summer. ‡ to 35cm (14in), ↔ 20cm (8in). USA (Kansas, Oklahoma, Texas), N. Mexico. ☼ (min. 7°C/45°F). var. *baileyi*, syn. *E. baileyi*, is sparsely branched, with 12–15 ribs. Areoles bear up to 14 radial spines and sometimes 1–3 centrals. Rich pink flowers have darker petal bases. ‡ to 20cm (8in). USA (Oklahoma, Texas).

*E. schmollii* ☐ syn. *Wilcoxia schmollii*. Usually erect, simple or sparsely branched cactus with a tuberous rootstock and cylindrical, purplish green stems, 2cm (¾in) thick, with 8–10 warty ribs. Light to dark green areoles bear numerous hair-like white radial spines. Produces funnel-shaped, pinkish purple or bright pink flowers, 3.5cm (1½in) long, in early summer. ‡ 30cm (12in) or more, ↔ 25cm (10in). E. Mexico. ☼ (min. 7°C/45°F)

*E. subinermis* ♀ Erect, simple or sparsely clustered cactus with spherical then cylindrical, 5- to 8-ribbed, shallow-furrowed, bluish green or dark green stems, 7–9cm (3–3½in) thick at the bases. Dark green areoles bear yellow

*Echinocereus pentalophus**Echinocereus schmollii*



*Echinocereus triglochidiatus* var. *paucispinus*

spines (3–8 radials and often 1 central). Produces broadly funnel-shaped, bright yellow flowers, 8cm (3in) long, in early summer.  $\pm$  to 30cm (12in). N., N.W., and C. Mexico. ☉ (min. 7°C/45°F)

***E. triglochidiatus***. Very variable, erect, simple or clustering cactus with ovoid to cylindrical, 6- to 12-ribbed, sometimes warty, dark green stems, 5–15cm (2–6in) thick. Dark green, woolly areoles bear pale brown spines (3–16 radials and often 1 central). Funnel-shaped, bright red flowers, to 8cm (3in) long, are produced from spring to early summer.  $\pm$  30cm (12in),  $\leftrightarrow$  15cm (6in). S. USA, N. Mexico. ☉ (min. 7°C/45°F).

**var. *paucispinus*** ☐ has 6- or 7-ribbed stems, 10cm (4in) thick. Areoles bear 4–6 radial spines and no centrals. Orange-red flowers, 7cm (3in) long, are produced in spring.  $\pm$  20cm (8in),  $\leftrightarrow$  to 50cm (20in). USA (Texas).

- ▷ *Echinofossulocactus* see *Stenocactus*
- E. coptonogonus* see *S. coptonogonus*
- E. lamellosus* see *S. crispatus*
- E. multicostatus* see *S. multicostatus*
- E. pentacanthus* see *S. obvallatus*
- E. violaciflorus* see *S. obvallatus*
- ▷ *Echinomastus macdowellii* see *Thelocactus macdowellii*

## ECHINOPS

Globe thistle

ASTERACEAE/COMPOSITAE

Genus of about 120 species of perennials, biennials, and annuals found in hot, gravelly slopes and dry grassland from C. and S. Europe to C. Asia, India, and the mountains of tropical Africa. Globe thistles have simple, entire or pinnatifid to pinnatisect, spiny foliage, usually greyish white and woolly. They bear spherical, white, grey, or blue, terminal flowerheads with bristly bracts. Undemanding plants, they are suitable for a large border or wild garden. They are also good for cutting and drying.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Best grown in poor, well-drained soil in full sun, but will grow in almost any soil in full sun or partial shade. Dead-head to prevent self-seeding.

• **PROPAGATION** Sow seed in a seedbed in mid-spring. Divide perennials from autumn to spring, or insert root cuttings in winter.

• **PESTS AND DISEASES** Susceptible to infestation by aphids.



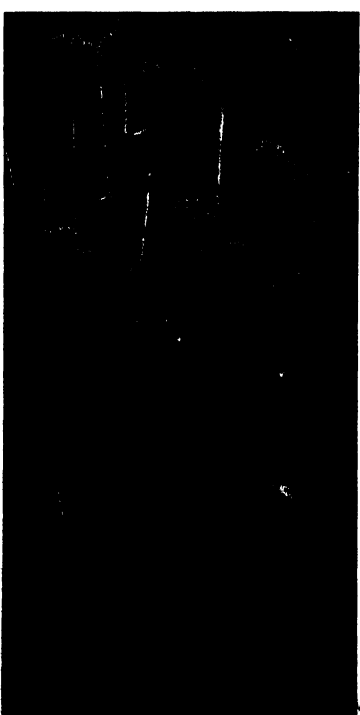
*Echinops bannaticus*

***E. bannaticus*** ☐ Clump-forming perennial with densely grey-woolly stems and ovate to elliptic, subtire to 2-pinnatisect, spiny, hairy, grey-green leaves, to 25cm (10in) long. Produces spherical, blue-grey to blue flowerheads, 2.5–5cm (1–2in) across, in mid- and late summer.  $\pm$  0.5–1.2m (1½–4ft),  $\leftrightarrow$  60cm (24in). S.E. Europe. \*\*\*.

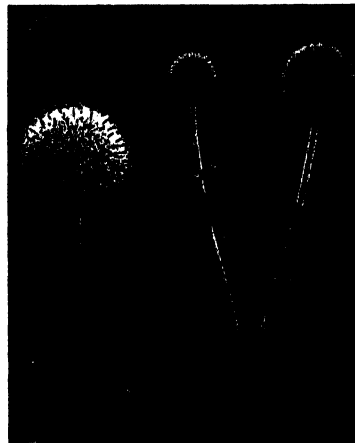
'Blue Globe' has dark blue flowerheads, 6cm (2½in) across, and blooms again if stems are cut back after flowering;  $\pm$  to 1m (3ft). 'Taplow Blue' ♀ has bright blue flowerheads.

***E. giganteus***. Imposing perennial with erect, woolly stems and obovate to lance-shaped, pinnatifid, bristly leaves, 45cm (18in) long, which are white-hairy beneath. In midsummer, produces solitary, sometimes several, spherical, greyish blue flowerheads, 20cm (8in) across.  $\pm$  to 5m (15ft),  $\leftrightarrow$  75cm (30in). Ethiopia. \*\*

***E. niveus***. Slender but sturdy, clump-forming perennial with lance-shaped to elliptic, deeply pinnatisect, spiny leaves, 7–20cm (3–8in) long, with linear segments, mid-green above, densely white-woolly beneath. In late summer,



*Echinops ritro* 'Veitch's Blue'



*Echinops sphaerocephalus*

grey stems bear spherical, blue-grey or white flowerheads, 3.5–8cm (1½–3in) across.  $\pm$  to 1.8m (6ft),  $\leftrightarrow$  60cm (24in). W. Himalayas. \*\*\*

***E. ritro*** ♀ Compact, clump-forming perennial with oblong-elliptic, pinnatifid to pinnatisect, stiff, spiny leaves, to 20cm (8in) long, dark green and cobwebby above, white-downy beneath. In late summer, bears spherical flowerheads, 2.5–4.5cm (1–1½in) across, metallic-blue before the florets open, maturing to a brighter blue.  $\pm$  to 60cm (24in),  $\leftrightarrow$  45cm (18in). S. central and S.E. Europe to C. Asia. \*\*\*.

'Veitch's Blue' ☐ is remountant, with slightly darker blue flowerheads, and is good for cutting;  $\pm$  to 90cm (36in).

***E. sphaerocephalus*** ☐ Vigorous, clump-forming perennial with oblong-elliptic, pinnatifid or 2-pinnatifid to pinnatisect, spiny, grey-green leaves, to 35cm (14in) long, hairy beneath. Spherical, silvery grey flowerheads, 3–6cm (1¼–2½in) across, are borne on stout grey stems in mid- and late summer.  $\pm$  to 2m (6ft),  $\leftrightarrow$  90cm (36in). C. and S. Europe, Caucasus, Russia (Siberia). \*\*\*

## ECHINOPSIS

CACTACEAE

Genus of 50–120 species of sometimes shrubby or tree-like, perennial cacti occurring in South America, in habitats ranging from lowland deserts to upland dry scrub. They have mainly spherical stems with straight ribs and spiny areoles. Large, trumpet-shaped to almost bell-shaped flowers are produced laterally or near the ends of the stems from spring to summer. On species native to mountainous regions to 3,000m (10,000ft) high, the flowers are white, yellow, red, purple, or pink, and open during the day; on plants that grow naturally at much lower altitudes, the flowers are mainly white or pale pink, and open at night. In frost-prone areas, grow as houseplants or in a temperate or warm greenhouse. In warmer areas, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. In growth, water freely and apply a nitrogen- and potassium-based fertilizer monthly; keep completely dry in winter. Outdoors, grow in well-drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring, or remove offsets in spring or summer.

• **PESTS AND DISEASES** Spherical species are particularly prone to mealybugs.

***E. backebergii*** ☐ syn. *Lobivia backebergii*. Simple or clump-forming cactus with spherical to obovoid, mid- to dark green stems, 4–5cm (1½–2in) thick, bearing about 15 spirally notched ribs. White-woolly areoles produce 3–7 red-brown, later grey radial spines, sometimes curved or hooked. In summer, bears diurnal, carmine-red or violet flowers, 5cm (2in) long, with paler throats.  $\pm$  to 5cm (2in). E. Bolivia, S. Peru. ☉ (min. 10°C/50°F)

***E. candicans*** ☐ syn. *Trichocereus candicans*. Erect or semi-prostrate, clump-forming cactus with cylindrical to hemispherical, bright, light green stems, 16cm (6in) thick, bearing 9–11 prominent ribs. Large white areoles produce yellowish brown spines (10–14 radials and 1 or more centrals). Nocturnal, fragrant white flowers, 18–25cm (7–10in) long, are produced in summer.  $\pm$  to 60cm (24in),  $\leftrightarrow$  to 50cm (20in). W. Argentina. ☉ (min. 10°C/50°F)

***E. chamaecereus***, syn. *Cereus silvestrii*, *Chamaecereus silvestrii*, *Lobivia silvestrii* (Peanut cactus). Clump- or mat-forming cactus with spreading, branching, cylindrical, mid-green stems, 9–15mm (¾–½in) thick, with 6–9 ribs. Areoles produce 10–15 bristly, white or brownish white radial spines. Bears diurnal, funnel-shaped, bright orange-scarlet flowers, to 7cm (3in) long, in summer.  $\pm$  to 10cm (4in),  $\leftrightarrow$  30–60cm (12–24in). Argentina. ☉ (min. 5°C/41°F)

***E. cinnabarina***, syn. *Lobivia cinnabarina*. Simple cactus with flattened-spherical to spherical, dark green stems, to 15cm (6in) thick, bearing about 20 notched, acutely warty ribs. White areoles produce light brownish grey spines (8–12 radials and



*Echinopsis backebergii*



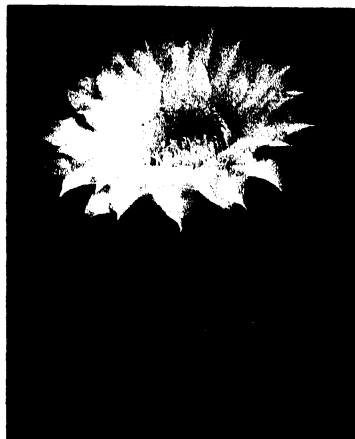
*Echinopsis candicans*

2 or 3 stouter centrals). Diurnal, short-tubed, rich scarlet flowers, 4cm (1½in) long, are produced from spring to summer. ↑ to 15cm (6in). Bolivia. ☼ (min. 10°C/50°F)

**E. eyriesii** ♀ Spherical, later cylindrical cactus, occasionally offsetting and clustering, with mid-green stems, 10–15cm (4–6in) thick, bearing 11–18 ribs separated by sharp furrows. Grey areoles bear short, dark brown, almost black spines (up to 10 radials and 4–8 centrals). White flowers, 17–25cm (7–10in) long, open in late afternoon in summer. ↑ to 30cm (12in), ↔ to 15cm (6in). N. Argentina to Uruguay, S. Brazil. ☼ (min. 10°C/50°F)

**E. ferox**, syn. *Lobivia ferox*. Simple cactus with spherical, 15– to 30-ribbed, pale grey-green stems, to 30cm (12in) thick. Grey areoles produce initially brown, then grey spines (8–12 radials and about 3 centrals). Diurnal white, rarely pink flowers, 7–11cm (3–4½in) long, are borne in summer. ↑ to 30cm (12in) or more. Bolivia to N. Argentina. ☼ (min. 10°C/50°F)

**E. huascha**, syn. *Trichocereus huascha*, *T. grandiflorus*. Offsetting, erect to semi-prostrate cactus with many-branched,

*Echinopsis lageniformis**Echinopsis oxygona* (hybrid)

12- to 18-ribbed, dark green stems, 5–8cm (2–3in) thick. Whitish brown areoles bear dark yellow to brown spines (9–11 radials and 1 or 2 centrals). Diurnal, golden yellow or red flowers, 7–10cm (3–4in) long, are produced in summer. ↑ to 1m (3ft). Argentina. ☼ (min. 10°C/50°F)

**E. lageniformis** □ syn. *Trichocereus bridgestii*. Tree-like cactus with columnar, somewhat glaucous, pale to dark green stems, to 15cm (6in) thick, bearing 4–8 rounded ribs. Grey areoles produce 2–6 yellow radial spines. Bears nocturnal white flowers, 18cm (7in) long, in summer. ↑ 2m (6ft) or more, ↔ 20cm (8in) or more. Bolivia. ☼ (min. 10°C/50°F)

**E. maximiliana**, syn. *Lobivia caespitosa*. Clump-forming cactus with depressed-spherical to obovoid or cylindrical, pale green stems, 6–8cm (2½–3in) thick, each with 12–17 ribs divided by cross-furrows into hatchet-shaped tubercles. White areoles bear brown spines (7–12 radials and 1 longer, up-curving central). Diurnal, red or scarlet flowers, 5–8cm (2–3in) long, with orange-yellow throats, and sometimes darker-tipped inner tepals, are produced in summer. ↑ to 7cm (3in). S. Peru, N. Bolivia. ☼ (min. 10°C/50°F)

**E. multiplex** see *E. oxygona*.

**E. oxygona** □ syn. *E. multiplex*. Clustering cactus with spherical or cylindrical, 12- to 15-ribbed, mid-green stems, to 20cm (8in) thick, offsetting from the base and sides. Large, white-woolly areoles bear yellowish brown spines (10–15 radials and 2–7 longer centrals). In summer, produces diurnal

flowers, to 20cm (8in) long, with dark reddish brown tubes and pink-flushed white outer petals. ↑ 25–30cm (10–12in), ↔ to 30cm (12in). N. Argentina, Uruguay, S. Brazil. ☼ (min. 10°C/50°F)

**E. pentlandii** □ syn. *Lobivia pentlandii*. Clump-forming cactus with spherical to obovoid, mid-green stems, to 15cm (6in) thick, bearing 15 or more warty ribs. Grey areoles produce brown spines (5–15 radials and sometimes 1 central). Diurnal, yellow, orange, pink, red, or purple flowers, 5–7cm (2–3in) long, with white throats, are produced from spring to summer. ↑ to 15cm (6in), ↔ 30cm (12in). S. Peru, N. Bolivia. ☼ (min. 10°C/50°F)

**E. rhodotricha**. Simple or clump-forming cactus with spherical, then cylindrical, 8- to 13-ribbed, mid-green stems, 9cm (3½in) thick. White-felted areoles bear brown-tipped, pale yellow spines (4–7 radials and sometimes 1 longer central). Diurnal white flowers, 15cm (6in) long, are produced from spring to summer. ↑ 30cm (12in), ↔ 20cm (8in). Paraguay, N.E. Argentina. ☼ (min. 10°C/50°F)

**E. schickendantzii**, syn. *Trichocereus shuferti*. Shrub-like cactus with oblong to cylindrical, bright green stems, 6cm (2½in) thick, bearing about 14–18 prominent ribs. White areoles produce about 10 yellow radial spines. White flowers, to 20cm (8in) long, are produced by day or night in summer. ↑ to 30cm (12in), ↔ 12cm (5in). W. Argentina. ☼ (min. 10°C/50°F)

**E. spachiana** □ syn. *Cereus spachianus*, *Trichocereus spachianus*. Shrub-like

cactus with cylindrical, 10- to 15-ribbed, dark green stems, to 6cm (2½in) thick, branching freely from the base. Areoles are initially yellow, later becoming grey, and bear yellowish brown spines (8–10 radials and often 2 or 3 centrals). Nocturnal flowers, to 20cm (8in) long, produced in midsummer, have white inner segments and green outer ones. ↑ 1–2m (3–6ft), ↔ 75cm (30in) or more. Argentina. ☼ (min. 10°C/50°F)

**E. spiniflora**, syn. *Acanthocalycium violaceum*. Simple cactus with a spherical to short-cylindrical and decumbent, dull green stem, 15cm (6in) thick, bearing about 15–20 ribs. Grey areoles produce slender, yellowish brown spines (12 or more radials and 3 or 4 longer centrals). Diurnal, erect, pale violet, pink, or white flowers, 4–5cm (1½–2in) long, with green tubes, are produced in summer. ↑ to 60cm (24in), ↔ 13cm (5in). W. Argentina. ☼ (min. 10°C/50°F)

**E. thionantha**, syn. *Acanthocalycium aurantiacum*. Simple cactus with spherical to cylindrical, 9- to 16-ribbed, dark greyish green stems, 10–15cm (4–6in) thick. White areoles produce dark, almost blackish brown spines (5–10 radials and occasionally 1 longer central). Diurnal, bright yellow, red, or white flowers, 5cm (2in) long, with yellowish orange inner throats, are borne in summer. ↑ to 5–12cm (2–5in). N.W. Argentina. ☼ (min. 10°C/50°F)

▷ *Echinospartum* see *Genista*

▷ *Echioides longiflorum* see *Arnebia pulchra*

## ECHIUM

BORAGINACEAE

Genus of 40 species of rosette-forming, stiffly hairy annuals and evergreen biennials, perennials (some monocarpic), and shrubs, from stony hillsides, cliffs, open woodland, and grassy steppes in Europe, the Canary Islands, the Mediterranean, Africa, and W. Asia. They are grown for their often one-sided, cyme-like panicles or spikes of roughly funnel-shaped, sometimes bell-shaped, blue, purple, yellow, white, or red flowers, usually 1–2cm (½–¾in) long, borne mainly in summer. The bristly-hairy, usually stalkless leaves are borne in basal rosettes and on the flower stems. Grow echiums in an annual, mixed, or herbaceous border. In frost-prone climates, grow tender species in a cool greenhouse. All parts may cause mild stomach upset if ingested; contact with the foliage may irritate skin.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light. Water freely when in growth, sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. In frost-prone areas, protect perennial species *in situ* with horticultural fleece in winter.

• **PROPAGATION** Sow seed of perennial and biennial species at 13–16°C (55–61°F) in summer, overwintering seedlings at 5–7°C (41–45°F). Sow seed of annuals in spring, either *in situ* or under glass. Root semi-ripe cuttings of shrubby perennials in midsummer.

*Echium  
vulgare*



• **PESTS AND DISEASES** Outdoors, slugs may attack young growth. Under glass, whiteflies and red spider mites may be a problem.

*E. bourgaeum* see *E. wilidpretii*.

*E. candicans* ■ syn. *E. fastuosum* (Pride of Madeira). Open, usually rounded, woody-based biennial with rosetted, lance-shaped, softly white-hairy, prominently veined leaves, 15–25cm (6–10in) long. Bears dense, cylindrical, panicle-like cymes, to 30cm (12in) long, of many narrowly funnel-shaped, white, bluish white, or deep purple-blue flowers, mainly from spring to summer.



*Echium vulgare* 'Blue Bedder'

‡ 1.5–2.5m (5–8ft), ↔ 1.5–2m (5–6ft). Madeira. ☉ (min. 5–7°C/41–45°F)

*E. fastuosum* see *E. candicans*.

*E. pininana*, syn. *E. pinnifolium*.

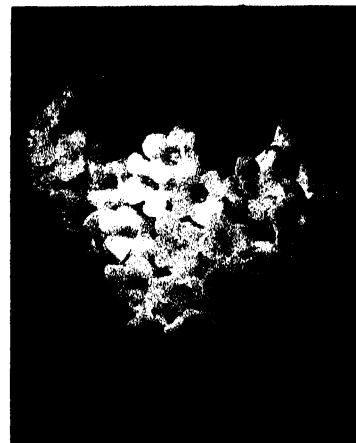
Rosette-forming biennial or short-lived perennial with elliptic-lance-shaped, densely and roughly silver-hairy leaves, to 7cm (3in) long. In mid- and late summer, each rosette produces a panicle-like cyme, 1.5–4m (5–12ft) long, of funnel-shaped blue flowers with large bracts. ‡ to 4m (12ft), ↔ 90cm (36in). Canary Islands. \* \*

*E. pinnifolium* see *E. pininana*.

*E. vulgare* ■ (Viper's bugloss). Bushy, upright, bristly biennial with narrowly lance-shaped to linear, toothed, white bristly-hairy leaves, to 15cm (6in) long. In early summer, produces short, dense spikes or cymes, 30cm (12in) long, of broadly bell-shaped flowers, purple in bud, violet-blue (occasionally pink or white) in flower, each bloom with a prominent, hairy green calyx. Suitable for an annual border or wildflower garden. ‡ 60–90cm (24–36in), ↔ to 30cm (12in). Europe. \* \* \*. 'Blue Bedder' ■ has light blue flowers, ageing to bluish pink; ‡ to 45cm (18in). Dwarf Hybrids bear flowers in pink, purple, lilac-blue, or white, often with darker streaks; ‡ to 45cm (18in).

*E. wilidpretii*, syn. *E. bourgaeum*.

Woody-stemmed, unbranched biennial or short-lived perennial with a dense rosette of narrowly lance-shaped, silver-hairy, light green leaves, to 20cm (8in) long. From late spring to summer, produces a dense, column-like cyme, 90cm (36in) or more long, of funnel-shaped red flowers. ‡ to 2m (6ft), ↔ 60cm (24in). Canary Islands. \*



*Edgeworthia chrysantha*

areas, grow against a warm wall or in a cool greenhouse; elsewhere, grow in a shrub border or woodland garden.

• **HARDINESS** Frost hardy to frost tender. Severe frost may damage the flowers.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in bright filtered light. When in growth, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, humus-rich, loamy soil in full sun or light dappled shade. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*E. chrysantha* ■ syn. *E. papyrifera*.

Open, rounded, deciduous shrub with supple shoots and lance-shaped to ovate, dark green leaves, to 15cm (6in) long. Small, fragrant yellow flowers, densely covered with silky white hairs, are borne in spherical heads, 3.5–5cm (1½–2in) across, in late winter and early spring. ‡ to 1.5m (5ft). China. \* \*

*E. papyrifera* see *E. chrysantha*.

## EDITHCOLEA

ASCLEPIADACEAE

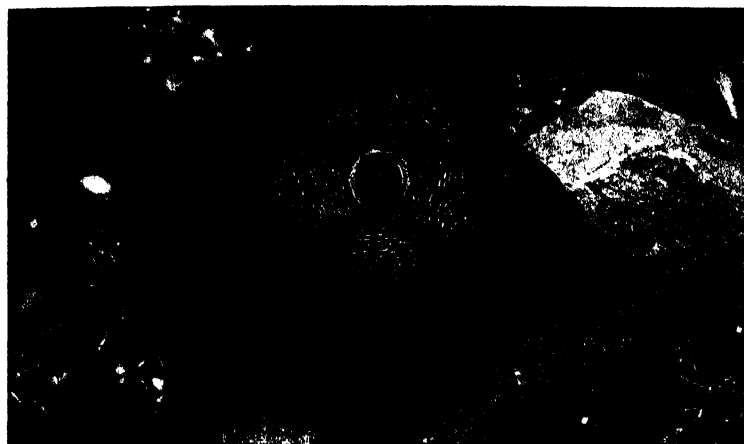
Genus of 1 or 2 species of perennial succulents, closely related to *Caralluma*, from low-lying hills in Yemen, Ethiopia, Somalia, Kenya, and Tanzania. The long, 5-angled stems are very fleshy and may be erect or decumbent. Solitary, colourful, star-shaped flowers, with short-tubed, 5-lobed corollas and fleshy, erect coronas, open during the day from summer to early autumn. Leaves are scale-like and short-lived. In frost-prone areas, grow in a warm greenhouse. In warm, dry areas, grow outdoors in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in equal parts loam-based potting compost (JI No.2) and grit in full light. From late spring to mid-autumn, water moderately and apply a balanced liquid fertilizer monthly; keep barely moist when dormant. Prone to stem rot if overwatered. Outdoors, grow in sharply drained, moderately fertile soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring. Root stem cuttings in spring or summer.

• **PESTS AND DISEASES** Trouble free.

*Edithcolea grandis*

***E. grandis*** ■ Variable, decumbent to semi-erect succulent with greyish green stems, 2.5cm (1in) thick, bearing very sharp, thorn-like brown teeth. Stalked, hairy-margined, reddish brown flowers, 10–13cm (4–5in) across, with pale creamy yellow spots and stripes and purple centres, are borne near the stem tips from summer to early autumn. † 30cm (12in), ↔ 13cm (5in). Yemen, Ethiopia, Somalia, Kenya, Tanzania. ☉ (min. 16°C/61°F)

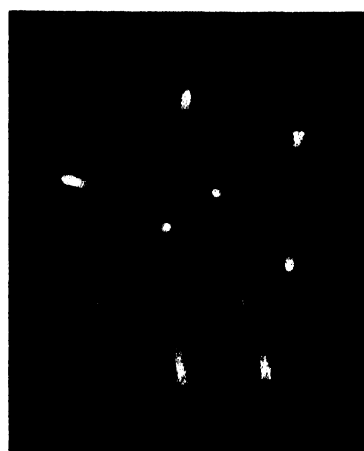
## EDRAIANTHUS

Grassy bells

CAMPANULACEAE

Genus of about 24 species of generally short-lived, herbaceous and evergreen perennials, closely allied to, and sometimes included in *Wahlenbergia*. They occur in well-drained, sunny habitats, sometimes in mountainous areas, from the Mediterranean region to the Caucasus. Delicate, bell-shaped flowers, surrounded by leafy bracts, are produced singly or in terminal heads in summer. The tufted, grass-like leaves usually arise from a central rootstock and, in winter, plants are often reduced to a small, resting bud, which is just visible on each rootstock. Suitable for a rock garden, scree bed, trough, alpine house, or dry wall.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, sharply drained, humus-rich, preferably alkaline soil in full sun. Resting buds are susceptible to winter wet.
- **PROPAGATION** Sow seed in containers in an open frame in autumn, or take

*Edraianthus pumilio*

softwood cuttings from sideshoots in early summer.

- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass, and to slugs and snails outdoors.

***E. graminifolius*** ♀ Tufted, herbaceous or semi-evergreen perennial with rosettes of linear to narrowly spoon-shaped, mid-green leaves, to 3.5cm (1½in) long, downy and sometimes bristly above. In early and midsummer, erect stems, to 7cm (3in) long, bear spherical heads of upturned, bell-shaped, deep purple flowers, 2.5cm (1in) long, each with a whorl of conspicuous, ovate, long-pointed bracts. † to 15cm (6in). Balkans, C. and S. Italy, Sicily. \*\*\*

***E. pumilio*** ■♀ syn. *Wahlenbergia pumilio*. Cushion-forming, herbaceous perennial with compact tufts of narrowly linear, finely hairy, silvery green leaves, to 1cm (½in) long. In early summer, produces solitary, almost stemless, upturned, bell-shaped, pale to deep violet flowers, 1cm (½in) long. † 2.5cm (1in), ↔ 15cm (6in). S. Croatia (Dalmatia). \*\*\*

***E. serpyllifolius***, syn. *Wahlenbergia serpyllifolia*. Tight mat-forming, evergreen perennial with tufts of linear-spoon-shaped, dark green leaves, to 2cm (¾in) long, with finely hairy margins. In early summer, spreading leafy stems, 2.5–12cm (1–5in) long, bear solitary, upturned, bell-shaped, deep violet flowers, to 2cm (¾in) long. † to 5cm (2in), ↔ 15cm (6in). Croatia (Dalmatia), Bosnia & Herzegovina, Albania. \*\*\*. 'Major' has flowers to 2.5cm (1in) long.

▷ *Edwardsia microphylla* see *Sophora microphylla*

## EGERIA

HYDROCHARITACEAE

Genus of 2 species of semi-evergreen and evergreen, marginal to deep-water aquatic perennials found in still or slow-moving water in South America. Multi-branched stems bear linear to narrowly oblong leaves in whorls or opposite pairs. Cymes of 2–5 white, 3-parted male flowers, and much smaller females, are borne within tubular, translucent spathes in summer. Use as oxygenators in a cold-water or tropical aquarium; *E. densa* will overwinter in ponds outdoors in all but the coldest winters.

- **HARDINESS** Hardy to 1°C (34°F).

*Egeria densa*

- **CULTIVATION** In an aquarium, grow in an inert, sandy medium in full light maintaining a temperature of 5–18°C (41–64°F). Outdoors, grow in full sun in water 30–90cm (12–36in) deep, rooted into the muddy bottom, or in an aquatic basket of loam-based potting compost (J1 No.2) topped off with shingle. Trim regularly to encourage fresh young growth. See also pp.52–53.
- **PROPAGATION** Insert stem cuttings into the pond or aquarium sediment. Allow stems to float just under the water surface; when roots develop, plant in the bottom of a pond or aquarium.
- **PESTS AND DISEASES** Young shoots may be nibbled by snails or fish.

***E. densa*** ■ syn. *Anacharis densa*, *Flodea densa*. Submerged, sometimes floating, aquatic perennial with many-branched stems, to 90cm (36in) long, bearing numerous whorls of stalkless, linear leaves, to 2.5cm (1in) long, with long, sharp-pointed tips. Tubular spathes, 2cm (¾in) long, of small but showy white male flowers are borne above the water surface in summer. ↔ indefinite. South America. \* (borderline)

▷ **Eggs and bacon** see *Pultenaea procumbens*

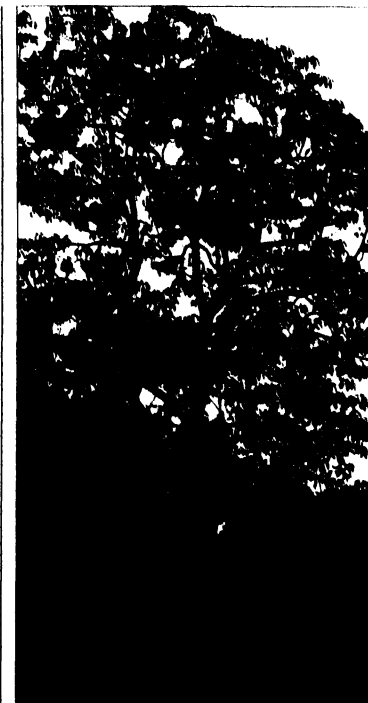
## EHRETIA

BORAGINACEAE/EHRETIACEAE

Genus of about 50 species of deciduous and evergreen trees and shrubs from Africa, Asia, and North and South America, mainly in woodland. They are grown for their spreading habit, ridged or furrowed bark, simple, entire or toothed, alternate leaves, and terminal panicles of small, 5-lobed, tubular to bell-shaped or star-shaped, scented flowers. Ideal for a woodland garden. In frost-prone areas, grow tender species in a cool or temperate greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun or partial shade, sheltered from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Insert softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***E. dicksonii*** ■♂ Spreading, deciduous tree with deeply ridged, grey-brown bark and elliptic to oblong-elliptic, glossy, dark green leaves, to 20cm (8in)

*Ehretia dicksonii*

long, rough-hairy above, velvety-hairy beneath. In late spring and early summer, bears tubular-bell-shaped white flowers in flattish panicles, 5–10cm (2–4in) across. † to 10m (30ft). China, Taiwan, Japan (Ryukyu Islands). \*\*

## EICHHORNIA

Water hyacinth

PONTEDERIACEAE

Genus of 7 species of rhizomatous, marginal to deep-water aquatic perennials, rarely annuals, from lakes, canals, rivers, and streams in subtropical and tropical South America. Submerged leaves are linear to strap-shaped and arranged in 2 ranks; floating and aerial leaves are stalked, mainly obovate, rounded, or heart-shaped, and borne in rosettes. Showy, funnel-shaped flowers are borne in terminal spikes, each within a leafy sheath. Grow in a greenhouse pool, in a tropical aquarium, or outdoors in a decorative pool. In frost-prone areas, overwinter under glass.

- **HARDINESS** Hardy to 1°C (34°F).
- **CULTIVATION** Under glass, provide full light with an air temperature of 13–16°C (55–61°F). Aquarium plants need 30–40cm (12–16in) of head space to grow well. Outdoors, grow on open water in full sun. In frost-prone areas, introduce plants on to the water surface when danger of frost has passed. Overwinter on trays of moist, loamless compost, at a minimum of 15°C (59°F) in full light. See also pp.52–53.
- **PROPAGATION** Detach offshoots at any time of year.
- **PESTS AND DISEASES** Trouble free.

***E. azurea***. Floating or submerged aquatic perennial with a thick stem that floats or roots in mud. Bears linear to strap-shaped submerged leaves, 10cm (4in) long, arranged in 2 ranks, and rounded-heart-shaped to diamond-shaped floating leaves, 10cm (4in) long, in rosettes to 20cm (8in) or more across. Pale blue flowers, 5–7cm (2–3in) long,

with yellow-spotted, dark purple throats, are borne in spikes 5–15cm (2–6in) long, throughout summer. ‡ 10–12cm (4–5in), ↔ 45cm (18in). Subtropical and tropical South America. \* (borderline)

*E. crassipes*, syn. *E. speciosa* (Water hyacinth). Floating aquatic perennial with a thick, floating or anchored stem bearing rosettes of rounded to ovate leaves, to 15cm (6in) across, with inflated, shiny, pale green stalks. Long, purplish green roots hang down 30cm (12in) in the water. Pale blue to violet flowers, 3cm (1¼in) across, have yellow markings on the upper petals and are borne in spikes 15cm (6in) tall, in summer. ‡↔ 45cm (18in). Tropical South America. \* (borderline)  
*E. speciosa* see *E. crassipes*.

## ELAEAGNUS

### ELAEAGNACEAE

Genus of about 45 species of deciduous or evergreen shrubs or trees mainly from Asia, but a few from S. Europe and North America, growing wild in thickets and dry places. They are cultivated for their often silvery leaves, which are alternate and lance-shaped to ovate or oblong, and for the small, tubular or bell-shaped, sometimes intensely fragrant flowers, produced in clusters from the leaf axils. The flowers are followed by edible, sometimes colourful berries, 1–2.5cm (½–1in) long. Grow in a shrub border or as specimen shrubs; evergreens are also suitable as a hedge.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil, ideally in full sun, although evergreens will grow well in partial shade. All tolerate dry soil and coastal winds, but may become chlorotic on shallow, chalky soil. Pruning group 1 or 2 (deciduous), or 9 (evergreens). Remove reverted shoots on variegated cultivars.
- **PROPAGATION** Sow seed in a cold frame in autumn. Insert greenwood cuttings in late spring or early summer, or semi-ripe cuttings of deciduous species in midsummer. Insert semi-ripe cuttings of evergreens in summer, or graft in late winter. Remove rooted suckers of deciduous species in autumn.
- **PESTS AND DISEASES** Susceptible to coral spot.

*E. angustifolia* ♀♂ (Oleaster). Deciduous shrub or tree with spreading, red-tinted, sometimes spiny branches,



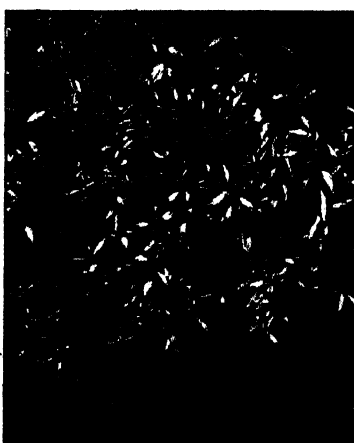
*Elaeagnus angustifolia* 'Quicksilver'



*Elaeagnus x ebbingei* 'Gilt Edge'

covered with silvery scales, and willow-like, lance-shaped leaves, to 10cm (4in) long, dark green above, silver-scaly beneath. In summer, produces yellowish white flowers, to 1cm (½in) long, followed in autumn by silver-scaly yellow fruit. ‡↔ 6m (20ft). S. Europe to C. Asia, Himalayas, China. \*\*\*  
'Quicksilver' ♀♂ syn. *E. 'Quicksilver'*, is a fast-growing, open, pyramidal, suckering shrub with silvery shoots, elliptic to lance-shaped, tapered, very silver-scaly leaves, to 5cm (2in) long, and yellow flowers produced from silvery buds; ‡↔ 4m (12ft).

*E. commutata* (Silver berry). Thicket-forming, deciduous shrub, spreading by suckers, with upright, red-brown shoots and broadly elliptic leaves, to 7cm (3in) long, completely covered with silvery



*Elaeagnus x ebbingei* 'Limelight'

scales. Pendent, silver-scaly, yellowish white flowers, 1cm (½in) long, are produced in late spring, followed in autumn by silver-mealy red fruit. ‡ to 4m (12ft), ↔ 2m (6ft). North America. \*\*\*

*E. x ebbingei* cultivars. Dense, rounded to spreading, evergreen shrubs with elliptic, leathery leaves, to 10cm (4in) long, glossy, dark or metallic sea-green on the upper surfaces, silver-scaly beneath. Silver-scaly, creamy white flowers, 1cm (½in) long, are produced in autumn. ‡↔ 4m (12ft). Garden origin. \*\*\*  
'Gilt Edge' ♀♂ has leaves with dark green centres and conspicuous, golden yellow margins.  
'Limelight' ♀ has silvery young leaves, which become marked with yellow and pale green in the centres; ‡↔ 3m (10ft).



*Elaeagnus pungens* 'Frederici'



*Elaeagnus pungens* 'Maculata'

'The Hague' produces silvery young leaves maturing to dark green above; ‡↔ 5m (15ft).

*E. macrophylla*. Vigorous, spreading, evergreen shrub with silvery white-scaly branches when young. Broadly ovate to elliptic leaves, to 10cm (4in) long, are very silver-scaly when young, becoming glossy, dark green above. Silver-scaly cream flowers, to 1cm (½in) long, are produced in autumn and followed by scaly red fruit. ‡ 3m (10ft), ↔ 5m (15ft). Korea, Japan. \*\*\*

*E. pungens*. Dense, slightly spiny, evergreen shrub with young branches covered in brown scales. Oblong-elliptic to oblong, lustrous, dark green leaves, to 10cm (4in) long, are often wavy-margined; the undersides are tinged white and brown-scaly. Bears pendent, silvery white flowers, 1cm (½in) long, in autumn, followed by brown fruit that ripen to red. ‡ 4m (12ft), ↔ 5m (15ft). Japan. \*\*\*  
'Argenteovariegata' see 'Variegata'. 'Aureovariegata' see 'Maculata'. 'Dicksonii' has leaves with broad, golden yellow margins; ‡↔ 3m (10ft). 'Frederici' ♀ is slow-growing, and has small, narrow, creamy yellow leaves, 3–4cm (1¼–1½in) long, with narrow, glossy, dark green margins; ‡↔ 2m (6ft). 'Goldrim', syn. 'Golden Rim', has glossy, dark green leaves with narrow, bright yellow margins.

'Maculata' ♀♂ syn. 'Aureovariegata', has leaves boldly marked dark yellow in the centres. 'Variegata', syn. 'Argenteovariegata', has leaves with narrow, creamy yellow margins.  
*E. 'Quicksilver'* see *E. angustifolia* 'Quicksilver'.

*E. x reflexa* (*E. glabra* x *E. pungens*). Vigorous, semi-scandent, sparsely thorny, evergreen shrub with long shoots and ovate to ovate-lance-shaped, glossy, deep green leaves, to 6cm (2½in) long, intensely brown-scaly beneath. Silvery white flowers, 1cm (½in) long, are borne in autumn. Will climb if supported. ‡ 4m (12ft), ↔ 6m (20ft). Garden origin. \*\*\*

*E. umbellata* ♀♂ Vigorous, frequently wide-spreading, deciduous shrub or small tree with brown-scaly, often spiny shoots. Elliptic to ovate-oblong, wavy-margined leaves, to 10cm (4in) long, are silvery at first, maturing to bright green above. Silvery yellow-white flowers, 1cm (½in) long, are borne in late spring and early summer, followed by silvery fruit that turn red in autumn. ‡↔ 5m (15ft). Himalayas, China, Japan. \*\*\*

*Elaeagnus umbellata*

'Titan' is a dense, upright, branched cultivar, with silver-tinged, olive-green leaves and bright yellow flowers; †4m (12ft), ↔ 2m (6ft).

## ELAEIS

Oil palm

ARECACEAE/PALMAE

Genus of 2 species of single-stemmed, monoecious palms occurring on moist, sandy soils in open forest in tropical regions of America and Africa. Large, pinnate leaves are borne in terminal clusters, the dead ones hanging down like a skirt before falling. The 3-petalled flowers are produced in panicles from the leaf axils. In frost-prone areas, grow young oil palms in a warm greenhouse; elsewhere, use as lawn specimens.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun.

• **PROPAGATION** Soak seed for 7 days and sow at 19–24°C (66–75°F) in spring. Germination is slow.

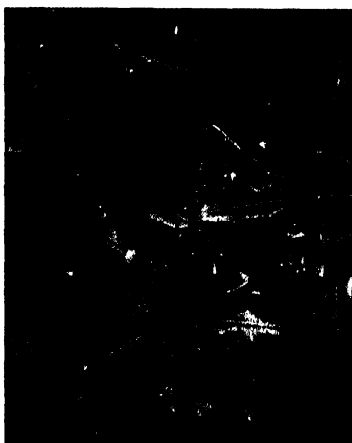
• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*E. guineensis* ♀ (African oil palm, Macaw fat palm). Erect palm with much of its stem covered with old, fibrous leaf bases. Bears a dense crown of arching leaves, 2.5–5m (8–15ft) long, composed of numerous, more or less pendent, crowded, slender, linear, rich green leaflets, held in differing planes along the midribs. Yellow flowers are borne intermittently throughout the year in separate male and female panicles, 30–45cm (12–18in) long. Females develop large, rounded bunches of ovoid fruit, rich in commercially valuable oil. † to 18m (60ft), ↔ 5–9m (15–28ft). Tropical Africa. ☀ (min. 18°C/64°F)

## ELAEOCARPUS

ELAEOCARPACEAE

Genus of 60 species of evergreen shrubs and trees occurring in forest and thickets from E. Asia to Indonesia and Malaysia, and from Australasia and the Pacific. They are grown for their axillary racemes of small, 3- to 5-petalled, bell-shaped, fringed, usually fragrant flowers,

*Elaeocarpus cyaneus*

and for their colourful berries. The mainly alternate leaves are lance-shaped to broad-ovate or oblong, leathery, and entire or toothed. In frost-prone areas, grow in a cool greenhouse; in warmer areas, grow as specimen plants or in a shrub border.

• **HARDINESS** Frost tender; *E. cyaneus* may survive short spells near 0°C (32°F).

• **CULTIVATION** Under glass, grow in well-drained, loam-based potting compost (J1 No.3) in full light. From spring to autumn, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained, neutral to acid soil in full sun. Pruning group 1.

• **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer (rooting may be slow).

• **PESTS AND DISEASES** Prone to white-flies and red spider mites under glass.

*E. cyaneus* ♂♀ syn. *E. reticulatus*. Erect to spreading tree or shrub bearing oblong-elliptic to oblong-lance-shaped, conspicuously veined and shallowly toothed, shiny, dark green leaves, 10–15cm (4–6in) long. Small, fragrant, white or pink flowers are produced in racemes, to 10cm (4in) long, from spring to summer. Long-lasting, lustrous, deep blue berries, 8–15mm (3/8–1/2in) long, ripen from autumn to winter. †6–15m (20–50ft), ↔ 2–5m (6–15ft). Australia (Queensland to Victoria). ☀ (min. 5°C/41°F)

*E. reticulatus* see *E. cyaneus*.

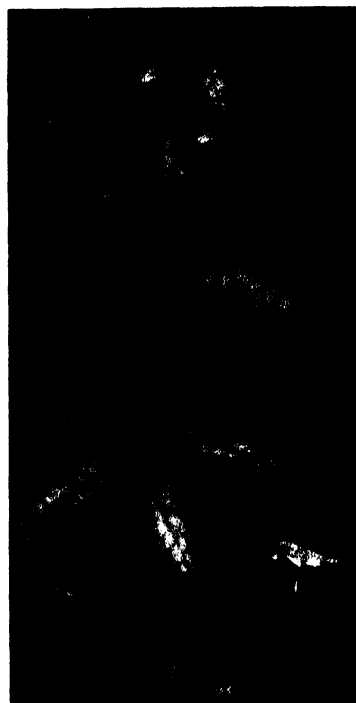
## ELATOSTEMA syn. PELLIONIA

URTICACEAE

Genus of about 50 species of evergreen perennials and subshrubs, some with succulent or partly woody stems, widely distributed in tropical and subtropical Asia, where they grow in forest clearings. Cultivated for their decorative leaves, which are alternate, 2-ranked, linear to rounded, entire or toothed, and heavily marked with silver and bronze. The inflorescences are relatively insignificant. Trailing species are ideal for a hanging basket or as ground cover. In frost-prone areas, grow as houseplants or in a warm greenhouse; elsewhere, grow in a border or under trees and shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright

*Elatostema repens*

indirect light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in humus-rich, fertile soil in deep shade. Shorten shoots in spring or summer to maintain shape.

• **PROPAGATION** Root cuttings at any time of year.

• **PESTS AND DISEASES** Trouble free.

*E. pulchra*, syn. *Pellionia pulchra*.

Creeping and trailing, evergreen perennial with fleshy, purple-tinged stems, and oblong to broadly elliptic, dark green leaves, 2–5cm (3/4–2in) long, tinged purple beneath, with very dark green midribs and veins above. †8cm (3in), ↔ 45cm (18in). Vietnam. ☀ (min. 13°C/55°F)

*E. repens* ♂♀ syn. *Pellionia daveauana*, *P. repens*. Creeping, evergreen perennial with fleshy, greenish pink stems. Wavy-margined leaves, to 6cm (2 1/2in) long, are oblong, elliptic, or sometimes rounded. They are dark blackish green above, marked grey and paler green, and often bronze-flushed; beneath, they are often tinged pink, with purple margins. †10cm (4in), ↔ to 60cm (24in). S.E. Asia. ☀ (min. 13°C/55°F)

▷ **Elder** see *Sambucus*

**American** see *Sambucus canadensis*

**Black** see *Sambucus nigra*

**Box** see *Acer negundo*

**Common** see *Sambucus nigra*

**European** see *Sambucus nigra*

**Ground** see *Aegopodium*

**Red-berried** see *Sambucus racemosa*

**Variegated ground** see *Aegopodium podagraria* 'Variegatum'

**Yellow** see *Tecoma stans*

▷ **Elderberry** see *Sambucus nigra*

▷ **Elecampane** see *Inula helenium*

▷ **Elephant foot tree** see *Beaucarnea recurvata*

▷ **Elephant's ear** see *Philodendron domesticum*

▷ **Elephant's ear plant** see *Alocasia*

▷ **Elephant's ears** see *Bergenia*, *Caladium bicolor*

▷ **Elephant's foot** see *Dioscorea elephantipes*

▷ **Elephant's tusk** see *Proboscidea*

▷ **Elephant tree** see *Bursera microphylla*, *Pachycormus discolor*

▷ **Elephantwood** see *Bolusanthus speciosus*

## ELETTARIA

ZINGIBERACEAE

Genus of 4 species of evergreen, rhizomatous perennials from tropical rainforest in India, Sri Lanka, Malaysia, and Sumatra. The rhizomes produce erect, reed-like shoots with 2 ranks of linear to lance-shaped leaves. Separate, horizontal flowering shoots, bearing large-bracted spikes of lipped, 3-petalled flowers, are followed by spherical or ellipsoid seed capsules. The only widely cultivated species, *E. cardamomum*, produces aromatic fruit used as a spice. It needs tropical conditions to fruit well, but in temperate regions is still an attractive foliage plant for a warm greenhouse. In frost-free areas, grow in a shady bed or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in fertile, loam-based potting compost (J1 No.2) with additional leaf mould or granulated bark, in bright filtered light with high humidity. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on in spring and remove flowered stems. Outdoors, grow in fertile, open, humus-rich soil, in full sun with some midday shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Susceptible to mosaic virus and thrips in tropical areas.

*E. cardamomum* (Cardamom).

Evergreen perennial with thick rhizomes bearing upright shoots with linear-lance-shaped, pointed, dark green leaves, 60cm (24in) long, paler and softly hairy beneath. During summer, almost prostrate shoots bear loose panicles, to 60cm (24in) long, of violet-veined white flowers, 2cm (3/4in) long, with yellow-margined, or pink-, lilac-, or violet-striped lips, followed by aromatic, pale green capsules, each containing 15–20 seeds. † to 3m (10ft) (much smaller in containers). India. ☀ (min. 10°C/50°F)

## ELEUTHEROCOCCUS

syn. ACANTHOPANAX

ARALIACEAE

Genus of about 30 species of mainly deciduous trees and shrubs, sometimes climbers, from scrub and woodland in E., S., and S.E. Asia. They have alternate, 3- to 7-palmate leaves, and bear terminal, simple or compound umbels of small, 5-petalled, greenish white flowers from spring to summer, followed by ivy-like, spherical to ellipsoid, black or purple-black fruits. Grown for their foliage and autumn fruits, they are useful as specimens or in a shrub border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained soil, ideally in full sun; *E. sieboldianus* thrives in poor, dry soil and will tolerate shade. Pruning group 1.

## E

*Eleutherococcus sieboldianus*

- **PROPAGATION** Sow seed in a seedbed in autumn or spring. Insert greenwood cuttings in early summer, or take root cuttings in winter. Separate suckers in winter.
- **PESTS AND DISEASES** Trouble free.

*E. pictus* see *Kalopanax septemlobus*.  
*E. sieboldianus* □ syn. *Acanthopanax sieboldianus*. Spiny, sometimes scandent shrub bearing slender, arching, cane-like branches. Bright green, 5- to 7-palmate leaves have ovate or obovate, toothed leaflets, to 9cm (3½in) long. Solitary umbels of star-shaped, greenish white flowers are borne in late spring and early summer, followed by spherical black fruit, to 8mm (⅜in) across. ↑↔ 2.5m (8ft). E. China. \*\*\*. 'Variegatus' has leaflets margined with creamy white.

- ▷ **Elkwood** see *Magnolia tripetala*
- ▷ **Elliottia** see *Tripetaleia*
- ▷ *E. paniculata* see *T. paniculata*
- ▷ **Elm** see *Ulmus*
- ▷ **American white** see *Ulmus americana*
- ▷ **Camperdown** see *Ulmus glabra* 'Camperdownii'
- ▷ **Caucasian** see *Zelkova carpinifolia*
- ▷ **Chinese** see *Ulmus parvifolia*
- ▷ **Cornish** see *Ulmus minor* 'Cornubiensis'
- ▷ **Cornish golden** see *Ulmus minor* 'Dicksonii'
- ▷ **Dickson's golden** see *Ulmus minor* 'Dicksonii'
- ▷ **Dutch** see *Ulmus x hollandica*
- ▷ **English** see *Ulmus procera*
- ▷ **European field** see *Ulmus minor*
- ▷ **Exeter** see *Ulmus glabra* 'Exoniensis'
- ▷ **Goodyer's** see *Ulmus minor* subsp. *angustifolia*
- ▷ **Huntingdon** see *Ulmus x hollandica* 'Vegeta'
- ▷ **Jersey** see *Ulmus minor* 'Sarniensis'
- ▷ **Siberian** see *Ulmus pumila*
- ▷ **Smooth-leaved** see *Ulmus minor*
- ▷ **Wheatley** see *Ulmus minor* 'Sarniensis'
- ▷ **Wych** see *Ulmus glabra*

## ELODEA

Pondweed

HYDROCHARITACEAE

Genus of 12 species of submerged aquatic perennials occurring in fresh water from North America to subtropical South America. The erect, spreading stems and lance-shaped to linear or ovate, bright green leaves, borne in whorls of 3, provide excellent cover for fish fry; they are also good oxygenators. Tiny, solitary flowers are produced within axillary spathes. Grow in a garden pond; the less vigorous species are suitable for an aquarium.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow in loamy soil, in an aquatic planting basket in a pond in full sun. Trim back periodically throughout summer and prune hard in autumn to within 30cm (12in) of the container. Grow *E. callitrichoides* in an aquarium in an inert medium, with full light and a water temperature of 5–22°C (41–72°F); it dies back rapidly at higher temperatures. See also pp.52–53.
- **PROPAGATION** Take stem cuttings, 15–30cm (6–12in) long, in summer.
- **PESTS AND DISEASES** Trouble free.

*E. callitrichoides*. Submerged aquatic perennial with slender, spreading stems, 3–4m (10–12ft) long. Forms dense masses of linear to narrowly lance-shaped or ovate, finely toothed, bright, pale green leaves, 8–15mm (⅜–½in) long. Floating, petalless white flowers, 2mm (⅛in) across, are produced in summer. ↔ indefinite. Temperate South America. \*

*E. canadensis* (Canadian pondweed). Submerged aquatic perennial with brittle, branching stems, 3–4m (10–12ft) long, bearing lance-shaped to ovate, finely toothed, flat, translucent, bright, dark green leaves, 0.5–1cm (¼–½in) long, which curl slightly downwards. Floating, petalless, purple-tinged green flowers, 8mm (⅜in) across, borne among the leaves in summer, have long, thread-like stalks. Too vigorous for an aquarium. ↔ indefinite. North America. \*\*\*

*E. crispata* of gardens see *Lagarosiphon major*.

*E. densa* see *Egeria densa*.

## ELSHOLTZIA

LABIATAE/LAMIACEAE

Genus of about 35 species of annuals, perennials, and semi-evergreen or deciduous shrubs and subshrubs occurring on dry, open hillsides and roadsides in C. and E. Asia. They are valued for their aromatic foliage and their slender panicles or racemes of 2-lipped, tubular flowers. The leaves are opposite and lance-shaped to ovate-elliptic. Grow in a herbaceous or shrub border. In frost-prone areas, grow tender species in a cool greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in any well-drained, fertile soil in full sun. Pruning group 6.
- **PROPAGATION** Sow seed at 13°C (55°F) as soon as ripe. Insert softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*Elsholtzia stauntonii*

*E. stauntonii* □ Open, rounded, deciduous subshrub with lance-shaped to ovate-elliptic, toothed, mint-scented, mid-green leaves, to 15cm (6in) long, turning red in autumn. From late summer to autumn, produces terminal racemes or panicles, 10–20cm (4–8in) long, of very small, purple-pink flowers. ↑↔ 1.5m (5ft). China. \*\*

## ELYMUS

Wild rye

GRAMINEAE/POACEAE

Genus of about 150 species of tufted or rhizomatous, mainly perennial grasses, widely distributed throughout N. and S. temperate regions, and often occurring on sandy soils. They have linear, flat or occasionally rolled leaves, and stout or slender, bristled flower spikes consisting of flattened, stalkless spikelets, arranged alternately along the flower stalks. The genus includes the invasive *E. repens* (couch grass or twitch), but those species described here are not invasive. Most are useful in a rock garden, or in a mixed or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moderately fertile, moist but well-drained soil in full sun. *E. canadensis* tolerates damp conditions. Cut back to ground level in late autumn, or leave those species with good winter leaf colour until late winter.
- **PROPAGATION** Sow seed *in situ* in autumn or spring. Divide from mid-spring to early summer.
- **PESTS AND DISEASES** May be attacked by rust.

*E. arenarius* see *Leymus arenarius*.

*E. canadensis* (Canadian wild rye). Loosely tufted, perennial grass with erect stems bearing linear, flat or rolled, rough-textured or slightly bristly, green to blue-green leaves, 20–35cm (8–14in) long. In late summer and early autumn, produces dense green flower spikes, 20–25cm (8–10in) long, nodding at the tips; 2- to 5-flowered spikelets, with

reddish brown bristles, are arranged alternately in groups of 4 along each spike. ↑ 1.2–1.8m (4–6ft), ↔ 60cm (24in). Temperate North America. \*\*\*

*E. glaucus* of gardens see *E. hispidus*.

*E. hispidus*, syn. *E. glaucus* of gardens (Hairy couch, Intermediate wheatgrass). Loosely tufted, perennial grass with erect or arching, linear, inrolled, bristly, pale silvery blue leaves, 10–20cm (4–8in) long. In early and midsummer, upright stems bear slender, insignificant flower spikes of blunt, 3- to 8-flowered spikelets. ↑ to 75cm (30in), ↔ 40cm (16in). Temperate Eurasia. \*\*\*

*E. magellanicus*. Densely tufted, mound-forming, perennial grass with linear, flat or folded, intense blue leaves, to 5cm (2in) long. Lax, almost prostrate flower spikes, 19cm (7in) long, comprising 2- to 7-flowered spikelets, are borne throughout summer. ↑ 15cm (6in), ↔ 30cm (12in). Temperate S. Chile and S. Argentina. \*\*\*

*E. racemosus* see *Leymus racemosus*.

## EMBOTHRIUM

Chilean fire bush

PROTEACEAE

Genus of 8 species of evergreen trees and shrubs occurring in forest in the C. and S. Andes of South America. They are cultivated for their showy, tubular, waxy flowers, which split into 4 recurved and coiling, narrow, twisted lobes, and are borne in terminal and axillary racemes. The alternate, simple leaves are lance-shaped to elliptic or oblong, entire, and leathery. Grow in a woodland garden or in a sheltered site. In areas where frosts are light and infrequent, they will tolerate more open sites and are good specimen trees.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained, neutral to acid soil in full sun or partial shade. Shelter from cold, drying winds. Pruning group 1.

*Embothrium coccineum*



- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Root greenwood cuttings in early summer, or semi-ripe cuttings in mid- or late summer, with bottom heat. Insert root cuttings or remove suckers in late winter.
- **PESTS AND DISEASES** Red spider mites may infest plants under glass.

*E. coccineum* [Q] (Chilean fire bush, Flame flower). Upright, freely branching, suckering tree or shrub with oblong to narrowly lance-shaped, mid- to deep green leaves, to 12cm (5in) long. Scarlet, rarely yellow flowers, 3–4.5cm (1¼–1¾in) long, are produced in dense racemes, to 10cm (4in) long, in late spring and early summer. † 10m (30ft) or more, ↔ 5m (15ft) or more. S. Chile. \*\* var. *lanceolatum* 'Norquingo' ♀ syn. var. *lanceolatum* 'Norquingo Form', var. *lanceolatum* 'Norquingo Valley', has narrowly lance-shaped leaves; \*\*\* (borderline)

- ▷ **Emerald creeper** see *Strongylodon macrobotrys*
- ▷ **Emerald feather** see *Asparagus densiflorus* 'Sprengerii'

## EMILIA syn. CACALIA

Tassel flower

ASTERACEAE/COMPOSITAE

Genus of about 24 species of rosette-forming annuals from disturbed ground or stony slopes, to 3,500m (11,500ft) high, in tropical Africa, India, and Polynesia. The lower leaves are lance-shaped-oblong or pinnatifid, stalkless or with winged stalks; the upper leaves are oblong to ovate, and clasp the stems. In summer, stiff, slender, leafy stems bear upright, tassel-like, red, yellow, purple-red, or orange flowerheads, singly or in corymbs. Grow in an annual border in hot and dry, or coastal areas. The flowers are good for cutting and drying.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in well-drained soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in mid-spring, or *in situ* in late spring.
- **PESTS AND DISEASES** Trouble free.

*E. coccinea*, syn. *Cacalia coccinea*, *C. sagittata*, *E. flammea*, *E. javanica* (Flora's paintbrush). Smooth to slightly hairy, rosette-forming annual with mid-green leaves, to 14cm (5½in) long; the lower leaves are stalkless and entire to toothed. In summer, fluffy, orange-red or scarlet flowerheads, to 1.5cm (½in) across, are produced singly or in loosely clustered corymbs. † 45–60cm (18–24in), ↔ 30–60cm (12–24in). Tropical Africa. \*

*E. flammea* see *E. coccinea*.

*E. javanica* see *E. coccinea*.

*E. sonchifolia*, syn. *Cacalia sonchifolia*. Smooth to slightly hairy, rosette-forming annual with toothed, mid- to grey-green leaves, to 10cm (4in) long; the lower leaves have winged stalks, the upper leaves are smaller and almost arrow-shaped. In summer, bears loosely clustered corymbs of fluffy, purple-red flowerheads, to 1.5cm (½in) across. Tropical Africa and Asia. † 45–60cm (18–24in), ↔ 30–60cm (12–24in). \* 'Lutea' has yellow flowerheads.



*Emmenopterys henryi*

## EMMENOPTERYS

RUBIACEAE

Genus of 2 species of deciduous trees from forest in E. Asia. They are valued for their spreading habit and opposite, large, ovate to broadly elliptic, leathery leaves. Terminal panicles of funnel- or bell-shaped white flowers, also a notable feature, are produced on mature trees during prolonged periods of over 24°C (75°F). Grow in woodland or as specimen plants.

- **HARDINESS** Fully hardy when mature.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun. Shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Insert greenwood cuttings in early or midsummer.
- **PESTS AND DISEASES** Trouble free.

*E. henryi* [Q] ☐ Spreading tree with elliptic-oblong to elliptic-ovate leaves, to 20cm (8in) long, dark green above, paler and softly hairy beneath, bronze-purple when young. In summer, bears funnel-shaped white flowers, 2.5cm (1in) across, with 5 spreading lobes, some bearing a large white bract, in panicles to 18cm (7in) long by 25cm (10in) wide. † 12m (40ft). W. and C. China, S.E. Asia. \*\*\*

▷ **Empress tree** see *Paulownia tomentosa*

▷ **Emu bush** see *Eremophila*

Common see *E. glabra*

Spotted see *E. maculata*

## ENCEPHALARTOS

ZAMIACEAE

Genus of about 25 species of slow-growing, dioecious cycads, some palm-like, others with a short or buried stem, from open, dry forest and scrub and open, rocky slopes in C. and southern Africa. The pinnate leaves, whorled in terminal crowns, have spiny stalks and hard, leathery, often spiny-toothed leaflets. Cone-like male and female inflorescences ("cones") are borne within the leaf rosettes: male cones are more or less cylindrical; female cones are usually oblong to ovoid. In frost-prone areas, grow in a temperate or warm greenhouse; in warmer areas, they are striking plants for a garden or courtyard.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in deep containers in equal parts loam,

coarse sand, and granulated bark, with added slow-release fertilizer, in bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pot on or top-dress in spring. Grow *E. horridus* in full light and water sparingly in winter. Outdoors, grow in fertile, humus-rich, well-drained, neutral to slightly acid soil in partial or light dappled shade. *E. horridus* needs full sun.

- **PROPAGATION** Sow seed at 24–30°C (75–86°F) in spring, in a very sandy mix. Remove offsets in spring.

• **PESTS AND DISEASES** Cycad weevils may be a problem. Scale insects may infest greenhouse plants.

*E. altensteinii* [Q] ♀ (Prickly cycad).

Palm-like cycad with an erect stem and straight to arching leaves, 2–3.5m (6–11ft) long, composed of numerous, narrowly oblong, bright green leaflets, sparsely toothed at the margins.

Produces yellow-green flowering cones, usually in summer. † 4–7m (12–22ft). South Africa (Eastern Cape). ♀ (min. 16°C/61°F)

*E. caffer* \* (Kaffir bread). Cycad with a buried stem, to 40cm (16in) long, only the growing point at or above soil level. Upright then arching leaves, to 1m (3ft) long, are composed of linear-lance-shaped, sometimes sparsely toothed, bright green leaflets. Bears greenish yellow flowering cones, mainly in summer. † to 1m (3ft), ↔ 2m (6ft). South Africa. ♀ (min. 16°C/61°F)

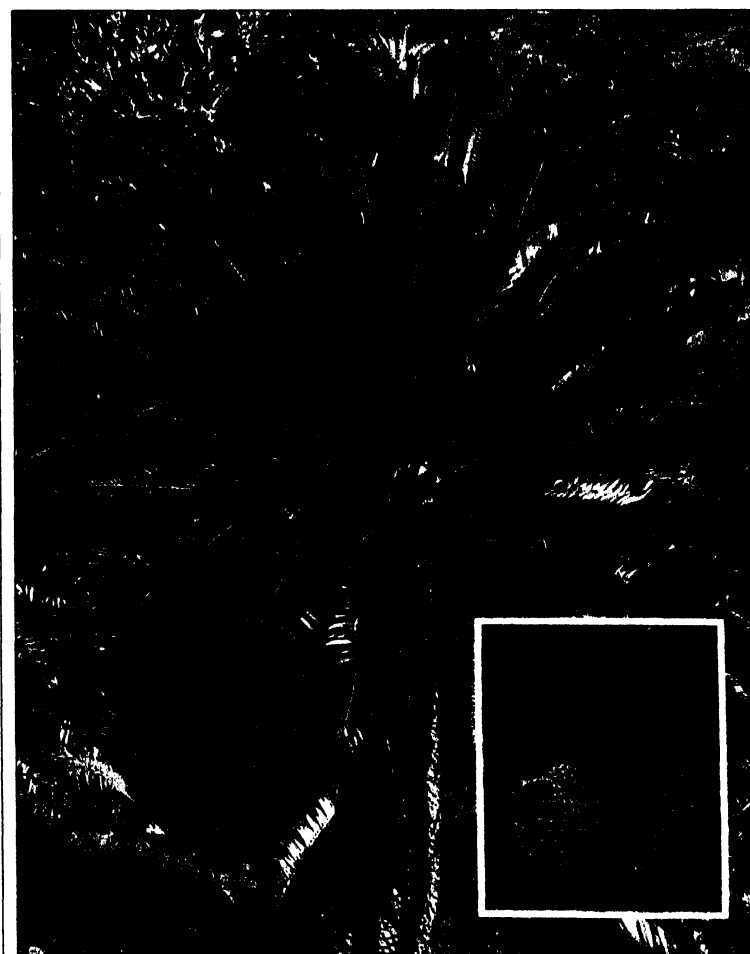
*E. ferox* \* Palm-like cycad with a short trunk and spreading leaves, 1–1.8m



*Encephalartos horridus*

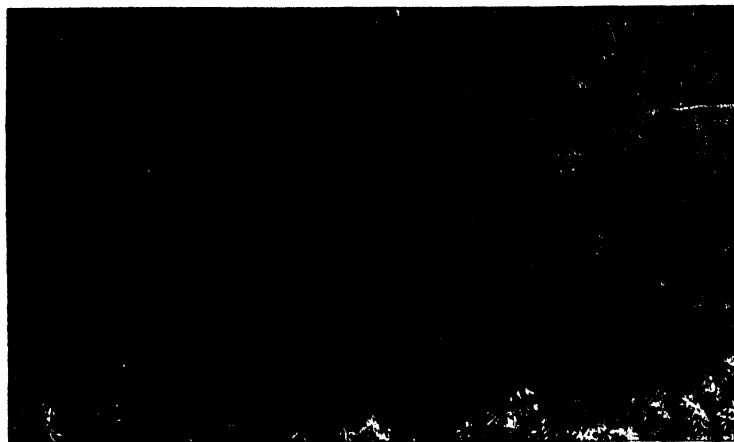
(3–6ft) long, composed of narrowly oblong to oblong-ovate, lustrous, deep green leaflets, with spiny teeth. Mature specimens bear flowering cones in summer: male cones are red; females range from pink to bright red. † to 1m (3ft), ↔ 1.8–3m (6–10ft). South Africa. ♀ (min. 13°C/55°F)

*E. horridus* [Q] \* (Feroocious blue cycad). Cycad with a stem that is buried at first, then gradually elongates to about 60cm (24in) tall. Erect, ascending then arching leaves, to 1m (3ft) long, with recurved tips, are composed of numerous lance-shaped, spine-tipped and lobed, rich blue-green leaflets. Produces red-brown flowering cones, usually in summer. † 1–1.4m (3–4½ft), ↔ 2m (6ft). South Africa. ♀ (min. 16°C/61°F)



*Encephalartos altensteinii* (inset: cone detail)

E



*Encephalartos longifolius*

***E. humilis***. Cycad with a buried stem, usually with only the growing tip above ground, or occasionally elongating to 30cm (12in) tall. Strongly arching, twisted leaves, 30–50cm (12–20in) long, with recurved tips, are divided into numerous linear to lance-shaped leaflets, softly hairy at first, then smooth, deep green. Brownish grey flowering cones are produced mainly in summer. ‡ 10–40cm (4–16in), ↔ 60–100cm (24–39in). South Africa (Eastern Transvaal). ☿ (min. 16°C/61°F)

***E. lebomboensis*** ♀ (Lebombo cycad). Palm-like cycad with an erect stem and bright green leaves, 1–3m (3–10ft) long, composed of many overlapping, lance-shaped leaflets, each with a few well-spaced teeth. Produces pink to apricot-yellow flowering cones, usually in summer. ‡ 3–6m (10–20ft), ↔ 2–6m (6–20ft). South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal), Swaziland, Mozambique. ☿ (min. 16°C/61°F)

***E. longifolius*** ♂ ♀ (Suurberg cycad). Palm-like cycad with a robust, erect trunk and arching, glossy, deep green, occasionally bluish green leaves, 1–2m (3–6ft) long, composed of overlapping,

lance-shaped, sometimes sparsely toothed leaflets. Mature specimens bear red-hairy, greenish brown flowering cones in summer. ‡ 2–4m (6–12ft), ↔ 3.5m (11ft). South Africa (Eastern Cape). ☿ (min. 13°C/55°F)

***E. natalensis*** ♀ (Natal cycad). Palm-like cycad with a usually erect stem and deep green leaves, 2.5–3.5m (8–11ft) long, with broadly lance-shaped, entire or sparsely spiny-toothed leaflets. Brown flowering cones, woolly at first, mature to deep yellow, and are borne in summer. ‡ to 4m (12ft), occasionally 6m (20ft), ↔ 2–3m (6–10ft). South Africa (Eastern Transvaal, KwaZulu/Natal). ☿ (min. 16°C/61°F)

***E. transvenosus*** ♀ (Modjadji cycad). Palm-like cycad with an erect stem and arching, lustrous, deep green leaves, 1.5–2.5m (5–8ft) long, composed of broadly lance-shaped leaflets, each with a few small teeth. Produces golden brown flowering cones, woolly when young, usually in summer. ‡ 5–8m (15–25ft), ↔ 3–5m (10–15ft). South Africa (Northern Transvaal, Eastern Transvaal). ☿ (min. 16°C/61°F)

***E. villosus*** ♂ Cycad with a buried stem, only the growing point at or above



*Encephalartos villosus*

ground level. Arching, deep green leaves, to 3m (10ft) long, are composed of numerous, narrowly lance-shaped, entire or sparsely toothed leaflets, more or less hairy beneath, the lowest leaflets reduced to spines. Bears yellow flowering cones in summer. ‡ 1.5–3m (5–10ft), ↔ 3–6m (10–20ft). South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal, Eastern Cape), Swaziland. ☿ (min. 16°C/61°F)

## ENCYCLIA

ORCHIDACEAE

Genus of approximately 150 species of mainly evergreen, epiphytic orchids found in the USA and from Mexico and the West Indies south to tropical N. South America, occurring in forest from sea level to 3,000m (10,000ft). They have fleshy pseudobulbs, which may be rounded or elongated, and usually 2 narrowly oblong to strap-shaped or linear to elliptic, fleshy or leathery leaves. Attractive, variable, often fragrant flowers are produced from the apexes of the pseudobulbs, mainly in late spring or summer but often intermittently throughout the year.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in a slatted basket, in bright filtered light, or full light with shade from hot sun. In active growth, water freely and apply fertilizer at every third watering. Keep dry in winter. See also p.46.

• **PROPAGATION** Divide when plants overflow their containers, or remove backbulbs and pot up separately.

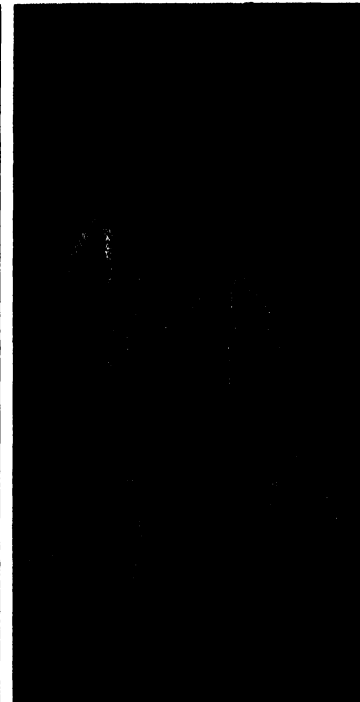
• **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

***E. alata***. Evergreen orchid with conical to ovoid pseudobulbs and strap-shaped to narrowly elliptic, mid-green leaves, 15cm (6in) long, often flushed red-purple. Fragrant, pale green or yellow-green flowers, 5cm (2in) across, marked purple or red-brown with the lips veined with dark red, are borne in racemes to 1.5m (5ft) long, mostly in summer. ‡ 1.5m (5ft), ↔ 45cm (18in). S. Mexico to Costa Rica. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. brassavolae***. Evergreen orchid with elongated, ovoid to spindle-shaped or pear-shaped pseudobulbs and narrowly oblong leaves, 14–28cm (5½–11in) long. Yellow-green to brown flowers, 8cm (3in) across, with purple-tipped white lips, are produced in racemes 15–100cm (6–39in) long, from summer to autumn. ‡ 60cm (24in), ↔ 45cm (18in). S. Mexico to W. Panama. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. citrina***. Semi-evergreen orchid with ovoid, conical, or spindle-shaped pseudobulbs and narrowly elliptic to elliptic, pendent, glaucous, grey-green leaves, 18–26cm (7–10in) long. Solitary, occasionally 2, pendent, fleshy, fragrant, bright lemon-yellow flowers, to 8cm (3in) across, are borne from spring to early summer. Requires drier conditions than other species. ‡ 30cm (12in), ↔ 23cm (9in). Mexico. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. cochleata*** ♂ Evergreen orchid with flattened pear-shaped to ellipsoid pseudobulbs and elliptic to lance-shaped



*Encyclia cochleata*

leaves, 20–35cm (8–14in) long. Ribbon-like flowers, 10cm (4in) long, with twisted, pale green sepals and petals, dark purple lips flushed yellowish green, and white bases with deep purple veins, are produced in racemes to 50cm (20in) long, intermittently throughout the year. ‡ 45cm (18in). USA (Florida) to Mexico, Colombia, Venezuela. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. cordigera***. Evergreen orchid with conical to ovoid pseudobulbs and semi-rigid, narrowly elliptic leaves, to 45cm (18in) long. Fragrant, brown, purple-brown, or purple-green flowers, to 5cm (2in) across, with cream lips streaked pink or magenta, are borne in racemes to 75cm (30in) long, from spring to summer. ‡ 45cm (18in), ↔ 30cm (12in). S. Mexico, Central America, Colombia, Venezuela. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. fragrans***. Evergreen orchid with elongated, narrowly ovoid to ellipsoid pseudobulbs, each bearing a single oblong-strap-shaped to elliptic leaf, 35cm (14in) long. Fragrant, cream to greenish white flowers, to 3.5cm (1½in) across, with red-striped lips held uppermost, are borne in racemes to 20cm (8in) long, from spring to summer. ‡ 23cm (9in), ↔ 15cm (6in). S. Mexico, Central America to Brazil, Greater Antilles. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. mariae***. Evergreen orchid with conical pseudobulbs and narrowly oblong leaves, 13cm (5in) long. In summer, bears racemes, 5–27cm (2–11in) long, of 2–4 pendent, yellow to olive-green flowers, to 6cm (2½in) long, with large, papery white lips, and green veins in the throats. ‡ 18cm (7in), ↔ 15cm (6in). E. Mexico. ☿ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. radiata***. Evergreen orchid with ellipsoid to ovoid pseudobulbs and elliptic to lance-shaped leaves, to 35cm (14in) long. Fragrant, cream or greenish white flowers, 3.5cm (1½in) across, with violet-lined lips held uppermost,

are produced in racemes to 20cm (8in) long, from autumn to winter. ‡25cm (10in), ↔30cm (12in). C. and S. Mexico, Guatemala, Honduras, Costa Rica. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

***E. visellina***. Evergreen orchid with ovoid to conical pseudobulbs and lance-shaped to elliptic, grey-green leaves, to 22cm (9in) long. Brilliant orange or vermillion flowers, 4cm (1½in) across, with orange- to red-tipped yellow lips, develop in racemes 12–30cm (5–12in) long, from spring to summer. ‡23cm (9in), ↔15cm (6in). S. Mexico, Guatemala. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

▷ **Endive** see *Cichorium*

▷ **Endymion** see *Hyacinthoides*

***E. non-scriptus*** see *H. non-scripta*

***E. hispanicus*** see *H. hispanica*

## ENKIANTHUS

ERICACEAE

Genus of about 10 species of mainly deciduous shrubs, occasionally trees, occurring in scrub and woodland from the Himalayas to Japan. They are grown for their terminal umbels or corymb-like racemes of bell- or urn-shaped flowers, usually 5–9mm (¼–¾in) long, borne from mid-spring to early summer, and for their simple, lance-shaped to elliptic-ovate, usually toothed, alternate leaves, which turn various shades of red in autumn. Best grown in an open site in a woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist but well-drained, acid to neutral soil in full sun or partial shade. Pruning group 1.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in late winter or early spring. Insert semi-ripe cuttings in summer. Layer in autumn.

• **PESTS AND DISEASES** Trouble free.

***E. campanulatus*** ☼♂ Spreading, tree-like, deciduous shrub with whorled branches and obovate-elliptic, toothed, dull green leaves, to 6cm (2½in) long, clustered at the tips of the shoots and turning orange-yellow to red in autumn. Bears pendent, corymb-like racemes of 5–15 bell-shaped, creamy yellow flowers, veined pink to red, in late spring and early summer. ‡→4–5m (12–15ft). Japan. \*\*\*. **f. albiflorus** has white flowers. '**Hiraethlyn**' bears



*Enkianthus campanulatus*



*Enkianthus cernuus* var. *rubens*

cream flowers with dark red veins.

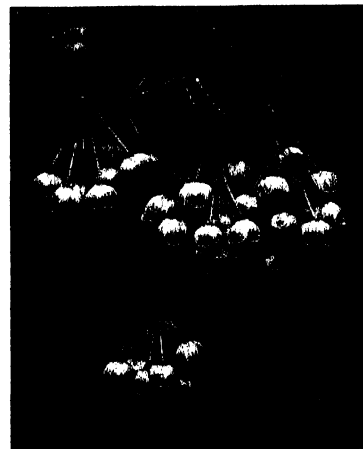
**var. palibinii** has dark red flowers.

***E. cernuus* var. *rubens*** ☼♂ Bushy, deciduous shrub with dense clusters of obovate, toothed, bright green leaves, to 5cm (2in) long, tinged purple in summer and turning dark red-purple in autumn. In late spring and early summer, produces slender, pendent racemes of 5–12 broadly bell-shaped, rich red flowers, with finely toothed mouths. ‡→2.5m (8ft). Japan. \*\*\*

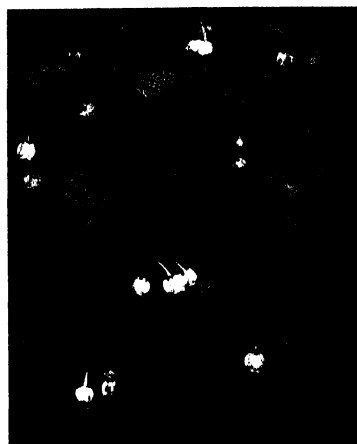
***E. chinensis***. Upright, deciduous shrub with elliptic to elliptic-oblong, toothed, bright green leaves, to 7cm (3in) long, softly hairy along the midribs above, glaucous and hairless beneath, turning orange and red in autumn. Pendent, corymb-like racemes of 12–24 bell-shaped, creamy yellow flowers, with pink veins, are produced in late spring. ‡to 3.5m (11ft), ↔2m (6ft). China, N. Burma. \*\*\*

***E. deflexus*** ☼♀ Vigorous, upright, deciduous shrub or small tree with red shoots and oval to obovate, bright green leaves, to 7cm (3in) long, downy beneath, turning orange and red in autumn. Umbels of 8–20 relatively large, broadly bell-shaped, pink-veined cream flowers, 1.5cm (½in) across, are produced in late spring and early summer. ‡2.5–4m (8–12ft) (sometimes more), ↔3m (10ft). Himalayas, W. China. \*\*\*

***E. perulatus*** ☼♀ Compact, deciduous shrub with red-tinted young branches. Elliptic to obovate, toothed, mid-green leaves, to 5cm (2in) long, clustered at the ends of the shoots, are downy on the midribs beneath and turn brilliant red in



*Enkianthus deflexus*



*Enkianthus perulatus*

autumn. Produces pendent umbels of up to 10 urn-shaped white flowers in mid-spring. ‡→2m (6ft). Japan. \*\*\*

## ENSETE

MUSACEAE

Genus of 7 species of banana-like, monocarpic, evergreen perennials from lower mountain slopes in tropical Africa and Asia. They have large, paddle-shaped leaves growing from trunk-like pseudostems, which are formed by the bases of the old leaf-stalks. Cup-shaped flowers are produced in pendent, terminal inflorescences among large bracts. Fruits are banana-like but dry and unpalatable. In frost-prone areas, grow in a temperate greenhouse, or

plunge outdoors during summer to provide subtropical effects in summer bedding. In frost-free climates, grow as specimen plants or in a courtyard.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. Keep well-ventilated. When in growth, water freely and apply a balanced liquid fertilizer monthly. Outdoors, grow in humus-rich soil in full sun or partial shade. Lift plunged plants before first frosts, cut back long roots, and reduce top-growth to the newest 2 or 3 leaves. Cut the dead leaves no lower than the base of each leaf-blade.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring, after soaking in tepid water for 24 hours. Germination is erratic.

• **PESTS AND DISEASES** Red spider mites and aphids may be a problem, especially under glass.

***E. ventricosum*** ☼ syn. *Musa arnoldiana*, *M. ensete* (Abyssinian banana, Ethiopian banana). Fast-growing, banana-like perennial with huge, paddle-shaped, bright olive-green leaves, to 6m (20ft) long, produced from the centre of the plant, with thick midribs that are bright red beneath. White flowers, concealed within arching cylinders of bronze-red bracts, are borne in inflorescences 1–1.2m (3–4ft) long, in summer. ‡6m (20ft) or more, ↔to 5m (15ft). Ethiopia to Angola. ☼ (min. 7°C/45°F). '**Maurelii**' has leaves tinged red above, especially along the margins, and dark red leaf-stalks.



*Ensete ventricosum*

E

*Eomecon chionantha*

## EOMECON

Snow poppy

PAPAVERACEAE

Genus of one species of rhizomatous perennial occurring on riverbanks in E. China. It has slightly fleshy leaves and nodding, poppy-like flowers. Grow as ground cover on a moist, shady bank, in a shrub border, or in a rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist but well-drained soil in light shade, or in full sun where the soil does not dry out in summer. May spread rapidly in fertile soil.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide, or separate rooted runners, both in spring.

• **PESTS AND DISEASES** Sometimes damaged by slugs and snails.

*E. chionantha* ■ Vigorous, spreading perennial with heart- to kidney- or arrow-shaped, leathery, dull grey-green leaves, to 10cm (4in) across. Upright, branching stems bear loose panicles of poppy-like, glistening white flowers, to 5cm (2in) across, from late spring to midsummer. ‡ to 40cm (16in), ↔ indefinite. E. China. \*\*\*

## EPACRIS

EPACRIDACEAE

Genus of 35 species of evergreen, heather-like shrubs occurring on heaths, open slopes, and scrub in Australia, New Zealand, and New Caledonia. They are cultivated for their often showy, tubular, cylindrical to bell-shaped, 5-lobed flowers, which are freely produced, usually in leafy, terminal racemes. The linear-lance-shaped to broadly ovate, mid- or dark green leaves are alternate or spiralling, and usually crowded on the stems. In frost-prone areas, grow in a cool greenhouse. In warmer areas, grow in a border or a large rock garden.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light with shade from hot sun. From spring to autumn, water freely and apply a half-strength, balanced liquid fertilizer monthly. Water moderately in winter. Outdoors, grow in poor to moderately fertile, humus-rich, moist but well-drained, neutral to acid soil in full sun with some midday shade. Pruning group 10, after flowering.

*Epacris longiflora*

• **PROPAGATION** Surface-sow seed at 13–16°C (55–61°F) in spring; germination is slow and usually erratic, taking between 3 and 6 months. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Scale insects may infest greenhouse plants.

*E. impressa* (Common Australian heath). Erect to spreading, often slender, evergreen shrub with narrowly ovate, deep green leaves, to 1.5cm (½in) long, tapering to prickly-like tips. Pendent, cylindrical, red, pink, or white flowers, 2cm (¾in) long, are borne in slender, erect, terminal racemes, 10cm (4in) or more long, from spring to summer. ‡ 30–120cm (12–48in), occasionally to 1.8m (6ft), ↔ 30–90cm (12–36in). Australia (New South Wales to Tasmania). \*

*E. longiflora* ■ Erect or spreading, evergreen shrub, often irregular in habit, with broadly to narrowly ovate, broadly pointed, deep green leaves, to 1cm (½in) long. Pendent, cylindrical, white-tipped red flowers, 1–4cm (½–1½in) long, are produced singly from the leaf axils and in raceme-like, terminal spikes, to 4cm (1½in) long, mainly from spring to summer. ‡ 0.5–1.5m (20–60in), ↔ 1–2m (3–6ft). S.W. Australia. \*  
‘White Sport’ produces white flowers.

▷ **Epaulette tree** see *Pterostyrax hispida*

## EPHEDRA

EPHEDRACEAE

Genus of about 40 species of usually dioecious, evergreen shrubs, occasionally climbers, occurring in dry, rocky sites from the Mediterranean to China, and in North and South America. They have green shoots and tiny, scale-like leaves, and are valued for their spherical fruits, which, on female plants, follow the tiny flowers. Grow as ground cover in a shrub border or rock garden. In frost-prone areas, grow tender species in a cold greenhouse or alpine house.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in poor to moderately fertile, sharply drained soil in full sun.

• **PROPAGATION** Sow seed of hardy species in containers in an open frame in autumn; sow seed of tender species at 13–16°C (55–61°F) in spring. Divide in autumn or spring.

• **PESTS AND DISEASES** Trouble free.

*E. gerardiana*. Dense, thicket-forming shrub with upright, jointed, deep green shoots. Bears insignificant, yellowish green flowers in summer. Spherical red fruit, 1cm (½in) across, ripen in autumn. ‡ 60cm (24in), ↔ 3m (10ft) or more. Himalayas, China. \*\*\*

## EPIDENDRUM

ORCHIDACEAE

Genus of about 750 species of highly varied, evergreen orchids, including epiphytes, lithophytes, and terrestrials. They are widespread in tropical North, Central, and South America, some thriving in montane forests to an altitude of 1,000m (3,250ft). Most produce cylindrical, leafy stems that may be either tall and reed-like or short and fleshy; others have pseudobulbs. The leaves vary greatly. The flowers are produced in usually terminal, umbel-like racemes or panicles, which are a continuation of the leafy stems, or they are occasionally borne from the bases.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in containers of epiphytic or terrestrial orchid compost; provide support for long, scrambling stems. In summer, provide bright filtered light and high humidity; water freely, applying fertilizer at every third watering, and mist once or twice daily. Provide full light and water sparingly in winter. Keep species with pseudobulbs dry in winter. See also p.46.

• **PROPAGATION** Divide when the plants overflow their containers. Root plantlets of *E. ibaguense* as soon as they have developed vigorous roots.

• **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*E. ciliare*. Epiphytic orchid with leafy, pseudobulb-like stems, and 1 or 2 oblong-elliptic, leathery, mid-green leaves, to 15cm (6in) long. Fragrant, white-lipped, pale yellow-green or pale yellow flowers, 9cm (3½in) across, sometimes with fringed lobes, are produced in terminal racemes, to 30cm (12in) long, mostly in winter. ‡ 50cm (20in), ↔ 30cm (12in). Mexico to N. South America, West Indies. ♀ (min. 13°C/55°F; max. 30°C/86°F)

*E. conopseum*. Epiphytic orchid with slender, leafy stems and 1–3 narrowly oblong to linear-lance-shaped, rigid, leathery, often purple-flushed, mid-green leaves, 9cm (3½in) long. In

summer, bears fragrant, often purple-tinged, light grey-green flowers, 2cm (¾in) across, in terminal sub-umbels, to 16cm (6in) long. ‡ 20cm (8in), ↔ 15cm (6in). USA (Florida) to Mexico. ♀ (min. 13°C/55°F; max. 30°C/86°F)

*E. difforme* ■ Epiphytic orchid with flattened, fleshy, leafy stems and oblong to elliptic-lance-shaped, fleshy to leathery, glossy, yellowish green leaves, to 11cm (4½in) long. Fragrant, pale green, green-yellow, or white, almost translucent flowers, to 3cm (1¼in) across, are produced in clustered racemes, to 15cm (6in) across, in summer. ‡ 35cm (14in), ↔ 30cm (12in). USA (Florida), West Indies, Mexico, Central America, Ecuador, Peru, Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

*E. ibaguense*, syn. *E. radicans*.

Terrestrial orchid with tall, rambling, leafy stems and ovate-oblong to oblong, leathery, yellowish green leaves, 15cm (6in) long. Bright red, occasionally orange or yellow flowers, 4cm (1½in) across, are produced year-round in dense, terminal racemes, to 70cm (28in) long. ‡ 2m (6ft), ↔ 1m (3ft). West Indies, Mexico, Central America, Colombia, Venezuela, Guyana, Peru. ♀ (min. 13°C/55°F; max. 30°C/86°F)

*E. nocturnum*. Epiphytic orchid with leafy stems and 1 or 2 oblong-lance-shaped to elliptic, leathery, glossy, mid-green leaves, to 15cm (6in) long. Night-scented, white-lipped, pale yellow-green flowers, 6cm (2½in) across, sometimes with fringed lobes, are produced singly or in pairs in succession from summer to autumn. ‡ 60cm (24in), ↔ 30cm (12in). West Indies, USA (Florida), Central

*Epidendrum x o'brienianum**Epidendrum difforme*

America, N. South America. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***E. x o'brienianum*** ■ (*E. evectum* x *E. ibaguense*). Epiphytic orchid with tall, rambling, leafy stems and semi-rigid, ovate-oblong to oblong, leathery, yellowish green leaves, 15cm (6in) long. Terminal racemes, 80–90cm (32–36in) long, of long-lasting, bright orange-red or orange flowers, 4cm (1½in) across, are borne more or less continuously. ⚡→ 1m (3ft). Garden origin. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***E. pseudepidendrum***. Epiphytic orchid with leafy stems and inversely lance-shaped, leathery, glossy, mid-green leaves, to 20cm (8in) long. Distinctive, fleshy green flowers, 5cm (2in) long, with protruding, bright orange lips with finely fringed lobes, are produced in few-flowered, pendent racemes, to 15cm (6in) long, from summer to autumn. ⚡ 1m (3ft), ⚡→ 60cm (24in). Costa Rica, Panama. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***E. radicans*** see *E. ibaguense*.

***E. secundum***. Epiphytic orchid with leafy stems and ovate-lance-shaped, leathery, mid-green leaves, to 14cm (5½in) long. Rose-pink flowers, 2.5cm (1in) across, with deeply 3-lobed lips marked white and yellowish white, are produced in racemes to 75cm (30in) long throughout summer and autumn. ⚡ 60cm (24in), ⚡→ 30cm (12in). West Indies, tropical South America. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***E. stamfordianum***. Epiphytic orchid with spindle-shaped, leafy stems and 4–6 linear- to elliptic-oblong, leathery, mid-green leaves, to 18cm (7in) long. In summer, fragrant, white-lipped, yellow-green to pale bronze flowers, 5cm (2in) across, mottled red-brown or purple, are produced in racemes or panicles, to 60cm (24in) long, from the bases of the leafy stems. ⚡ 30cm (12in), ⚡→ 60cm (24in). Guatemala. ☼ (min. 13°C/55°F; max. 30°C/86°F)

## EPIGAEA syn. ORPHANIDESIA

ERICACEAE

Genus of 3 species of prostrate, evergreen shrubs and subshrubs from woodland in Turkey, Japan, and North America. They are grown for their short, axillary or terminal clusters or racemes of small, urn-shaped, funnel-shaped, or tubular-bell-shaped flowers, borne in spring, and for their ovate to oblong, entire, tough, prominently veined, dark green leaves, produced from rusty-hairy branches. Grow in a shaded niche in a rock garden, peat bed, or woodland garden. In areas that are prone to early frosts, grow in an alpine house.

• **HARDINESS** Mainly fully hardy. *E. gaultherioides* is hardy to -10°C (14°F).

• **CULTIVATION** Grow in humus-rich, moist, acid soil in deep or partial shade. In an alpine house, *E. gaultherioides* requires lime-free (ericaceous) potting compost and indirect light.

• **PROPAGATION** Surface-sow seed at 10–13°C (50–55°F) as soon as ripe; keep warm and moist until germination. Water seedlings from below with soft water. Separate rooted layers or take greenwood cuttings in early summer.

• **PESTS AND DISEASES** May be infested with whiteflies and red spider mites under glass.



*Epigaea asiatica*

***E. asiatica*** ■ Creeping, stem-rooting shrub with oblong to elliptic, leathery, dark green leaves, 3.5–10cm (1½–4in) long, heart-shaped at the bases and with finely bristly margins. Stems and leaves are clothed in fine brown hairs. In late spring, bears short, pendent, axillary or terminal racemes of slightly fragrant, tubular-bell-shaped, light to mid-pink flowers, 1cm (½in) long, often with white tubes. ⚡ to 10cm (4in), ⚡→ 20cm (8in). Japan. \*\*\*

***E. gaultherioides***, syn. *Orphanidesia gaultherioides*. Prostrate subshrub with ovate to oblong, leathery, dark green leaves, 8–12cm (3–5in) long, with bristly veins and margins. Bears widely funnel-shaped, shell-pink flowers, to 5cm (2in) across, in axillary clusters in spring. Needs shade. ⚡ to 10cm (4in), ⚡→ 30cm (12in). N.E. Turkey. \*\*

***E. repens*** (Mayflower, Trailing arbutus). Creeping subshrub with ovate-oblong, sparsely bristly-hairy, glossy, dark green leaves, to 8cm (3in) long, heart-shaped at the bases, borne on hairy, rooting stems. In spring, produces fragrant, urn-shaped white flowers, to 1.5cm (½in) long, occasionally pink-flushed, in dense, raceme-like, terminal clusters. ⚡ to 8cm (3in), ⚡→ 30cm (12in). North America. \*\*\*

## EPILOBIUM

syn. CHAMAENERION  
Willow herb

ONAGRACEAE

Genus of about 200 species of annuals, biennials, herbaceous and semi-evergreen perennials (some of which are stoloniferous), and semi-evergreen subshrubs. They are widely distributed in temperate regions on waste and disturbed ground, stony slopes, river gravels, and subalpine screes and meadows. They are grown for their 4-petalled, pink or white flowers, produced singly or in leafy racemes from the leaf axils, usually over long periods from summer to autumn. The leaves are linear to broadly ovate. Wind-borne seeds and spreading rhizomes make many species invasive, but those described here are garden worthy. Grow in a rock garden or herbaceous border. *E. glabellum* is good as ground cover.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist but well-drained soil in full sun or partial shade. Alpine species may need some midday shade. Dead-head for



*Epilobium angustifolium* f. *album*

repeat flowering and to prevent seeding.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide in autumn or spring. Take softwood cuttings from sideshoots in spring.

• **PESTS AND DISEASES** Vulnerable to slugs and snails, rust, and powdery mildew.

***E. angustifolium* f. *album*** ■ syn. *Chamaenerion angustifolium* f. *album*, *E. angustifolium* var. *leucanthum*.

Strongly spreading, rhizomatous perennial with linear-lance-shaped, sometimes wavy, willow-like, pale to mid-green leaves, 2.5–20cm (1–8in) long. From midsummer to early autumn, bears racemes of open saucer-shaped white flowers, to 1.5cm (½in) across, with green sepals. Self-seeds freely. ⚡ to 1.5m (5ft), ⚡→ 1m (3ft) or more. N. hemisphere. \*\*\*

***E. angustifolium* var. *leucanthum*** see *E. angustifolium* f. *album*.

***E. californicum*** see *Zauschneria californica*.

***E. canum*** see *Zauschneria californica* subsp. *cana*.

***E. chlorifolium* var. *kaikourense***.

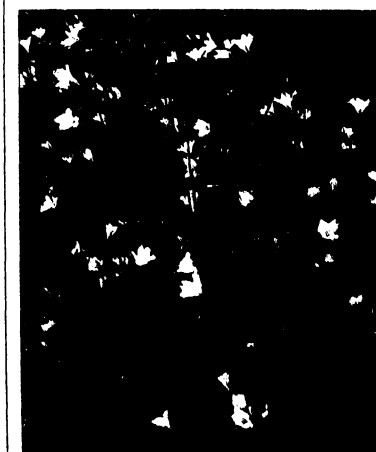
Clump-forming, woody-based perennial with ovate to broadly ovate, finely toothed, bronze-green leaves, 1–3cm (½–1¼in) long. In summer, upright, branching stems bear racemes of long-tubed, white or pale pink flowers, 1.5cm (½in) across, with spreading lobes. ⚡ to 30cm (12in), ⚡→ 15cm (6in). New Zealand. \*\*\*

***E. crassum***. Prostrate, creeping perennial with narrowly obovate, finely

toothed, slightly fleshy, glossy, mid-green leaves, 1–4cm (½–1½in) long, pink-flushed beneath. In summer, bears solitary, open cup-shaped, pink-veined white flowers, 1.5cm (½in) across. Grow in partial shade. ⚡ to 10cm (4in), ⚡→ 20cm (8in). New Zealand. \*\*\*

***E. dodonaei***. Spreading perennial with a woody rootstock and upright stems bearing linear, toothed, bristly-hairy, mid-green leaves, to 2.5cm (1in) long. Throughout summer, bears cup-shaped, deep pinkish purple flowers, to 3.5cm (1½in) across, in loose, terminal racemes. ⚡ 30–90cm (12–36in), ⚡→ 20cm (8in). C. and S. Europe to W. Asia. \*\*\*

***E. glabellum* of gardens** ■ Mat- or clump-forming, semi-evergreen perennial with elliptic to ovate, finely



*Epilobium glabellum* of gardens

toothed, bronzed, deep green leaves, to 2cm (¾in) long, on bristly-hairy, often red-tinted stems, 5–40cm (2–16in) long. Outward-facing, cup-shaped, creamy white or pink flowers, 2.5cm (1in) across, are borne singly on slender, branching stems in summer. Prefers cool, damp shade. †↔ to 20cm (8in). New Zealand. \*\*\*

***E. lasifolium***. Spreading, rhizomatous perennial with ovate-elliptic, glaucous, mid-green leaves, 1–7cm (½–3in) long. Funnel-shaped, pink or white to pink-purple flowers, to 3cm (1¼in) across, with crimson sepals, are produced in short, leafy racemes from midsummer to early autumn. †↔ 45cm (18in). N. Eurasia, North America. \*\*\*

***E. septentrionale*** see *Zauschneria septentrionalis*.

## EPIMEDIUM

Barrenwort, Bishop's Mitre

### BERBERIDACEAE

Genus of 30–40 species of evergreen and deciduous, rhizomatous perennials from the Mediterranean to temperate E. Asia, occurring in woodland, scrub, and shady, rocky places. They have mainly basal, 2- or 3-ternate, sometimes pinnate, leathery leaves, unequally heart-shaped at the bases and pointed at the tips, with more or less spiny margins. The leaves are sometimes bronze-tinted in spring, and often colour well in autumn. Some species are deciduous in autumn, others retain old leaves until the new leaves are produced. Small, mainly saucer- to cup-shaped, yellow, beige, white, pink, red, or purple flowers, often with spurs, are borne in lax racemes, or sometimes in panicles, from spring to early summer. Grow as ground cover under trees or shrubs, or in a border; the smaller species are suitable for a rock garden.

• **HARDINESS** Fully hardy, although frost may damage young flowers and foliage.

• **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in partial shade, with shelter from cold, dry winds. *E. perralderianum* tolerates part-day sun where soils remain moist; *E. x versicolor* tolerates full sun and slightly drier soils. Except for *E. perralderianum*, most provide the best display of foliage and flowers if the old leaves are clipped back in late winter or early spring, before flower spikes form. Provide a deep winter mulch where frosts are prolonged or severe.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in autumn or after flowering. Root rhizome cuttings under glass in winter; plant out after all danger of frost has passed.

• **PESTS AND DISEASES** Vine weevil and mosaic virus may be a problem.

***E. acuminatum*** ■ Clump-forming, evergreen, rhizomatous perennial with leaves divided into 3 obliquely lance-shaped to narrowly ovate leaflets, 3–18cm (1¼–7in) long, with spiny, marginal teeth, the lower 2 leaflets with very unequally lobed bases. Young leaves are mid-green, marked reddish brown and mauve, becoming glaucous beneath. Long-spurred, usually pale purple to purple-pink flowers, 3–4cm (1¼–1½in) across, are produced from mid-spring to



*Epimedium acuminatum*

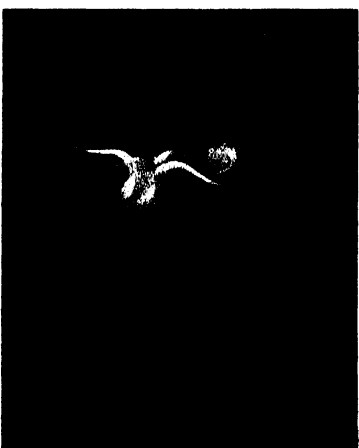
early summer. †30cm (12in), ↔ 45cm (18in). W. and C. China. \*\*\*

***E. alpinum***. Clump-forming, deciduous, rhizomatous perennial with leaves divided into 5–9 ovate, spiny-margined, bright green leaflets, 5–9cm (2–3½in) long, often colouring crimson in winter. Produces almost spurless flowers, 0.9–1.5cm (¾–½in) across, with brownish red sepals and yellow petals, in mid- and late spring. †15–30cm (6–12in), ↔ 30cm (12in). S. Europe. \*\*\*

***E. x cantabrigiense*** (*E. alpinum* x *E. pubigerum*). Clump-forming, evergreen, rhizomatous perennial with long-stalked, mid-green leaves, each divided into 7–17 ovate, few-spined leaflets, 5–10cm (2–4in) long, persistently softly hairy beneath and variably coloured in autumn. Numerous spurless, pinkish beige and yellow flowers, to 1cm (½in) across, are produced well above the foliage in mid- and late spring. †30–60cm (12–24in), ↔ 60cm (24in). Garden origin. \*\*\*

***E. davidii*** ■ Clump-forming, evergreen, rhizomatous perennial with leaves divided into 3, occasionally 5, ovate to ovate-lance-shaped leaflets, 3–7cm (1¼–3in) long, copper when young, becoming fresh green later. Pale to deep yellow flowers, 2–3cm (¾–1¼in) across, with curved yellow spurs, are produced from mid-spring to early summer. †30cm (12in), ↔ 45cm (18in). W. China. \*\*\*

***E. diphyllum***. Clump-forming, evergreen or semi-evergreen, rhizomatous perennial bearing leaves divided into 2



*Epimedium davidii*



*Epimedium grandiflorum* 'Crimson Beauty'

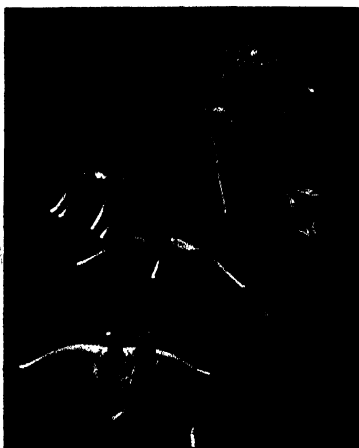
broadly ovate to heart-shaped, light green leaflets, 2–5cm (¾–2in) long, with a few marginal spines. Bears spurless, pendent, bell-shaped, pure white flowers, 1cm (½in) across, in mid- and late spring. † to 25cm (10in), ↔ 30cm (12in). Japan. \*\*\*

***E. grandiflorum*** ♀ syn. *E. macranthum*. Clump-forming, deciduous, rhizomatous perennial bearing leaves 30cm (12in) long, with usually 9 ovate-heart-shaped, spiny-margined, light green leaflets, 3–6cm (1¼–2½in) long, flushed bronze when young. Pendent, white, yellow, pink, or purple flowers, 2.5–4.5cm (1–1½in) across, with spurs 2.5cm (1in) long, are produced in mid- and late spring. †20–30cm (8–12in), ↔ 30cm (12in). China (S. Manchuria), N. Korea, Japan. \*\*\*. 'Crimson Beauty' ■ has copper markings on young leaves and copper-crimson flowers. **f. *flavescens***, syn. *E. koreanum*, bears pale yellow flowers; Korea. 'Lilac Fairy' see 'Lilafee'. 'Lilafee' ■ syn. 'Lilac Fairy', has purple-tinted young leaves and violet-purple flowers; †20–25cm (8–10in). 'Nanum' ♀ has white flowers; †7cm (3in). 'Rose Queen' ♀ has dark bronze-purple young leaves and deep rose-pink flowers with long, white-tipped spurs. **f. *violaceum***, syn. 'Violaceum', bears purple-and-white flowers. 'White Queen' ♀ produces large, pure white flowers, 4.5cm (1¾in) across.

***E. koreanum*** see *E. grandiflorum*

**f. *flavescens***.

***E. leptorrhizum***. Slowly spreading, evergreen, rhizomatous perennial

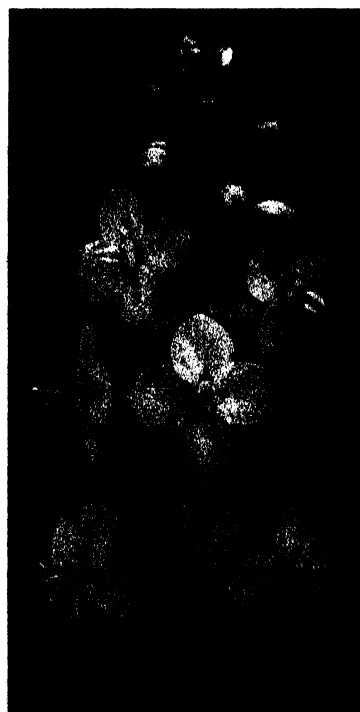


*Epimedium grandiflorum* 'Lilafee'



*Epimedium* x *perralchicum*

bearing 3-ternate, rarely simple, spiny-margined, red-stalked leaves with ovate-lance-shaped, conspicuously veined leaflets, 7–11cm (3–4½in) long, heart-shaped at the bases and with long, pointed tips. Young leaves are bronze-brown with red hairs beneath, especially along the veins, maturing to mid-green and remaining hairy only on the veins beneath. From mid-spring to early summer, produces white flowers, to 4cm (1½in) across, suffused lilac-pink, with spurs 2cm (¾in) long. †12–30cm (5–12in), ↔ 45cm (18in). China. \*\*\* ***E. macranthum*** see *E. grandiflorum*. ***E. x perralchicum*** ■ ♀ (*E. perralderianum* x *E. pinnatum* subsp. *colchicum*). Robust, clump-forming, evergreen, rhizomatous perennial with glossy, deep green leaves, bronze when young; each leaf is divided into 9, occasionally only 3, ovate, spiny-margined leaflets, 8cm (3in) long, often with overlapping lobes at the base. Pendent, bright yellow flowers, to 2cm (¾in) across, with very short brown spurs, are produced in mid- and late spring. †40cm (16in), ↔ 60cm (24in). Garden origin. \*\*\*. 'Fröhnleiten'



*Epimedium pinnatum* subsp. *colchicum*



produces elongated leaflets with more dense marginal spines, and flowers to 2.5cm (1in) across. **'Wialey'** has flowers to 2.5cm (1in) across; ‡ 60cm (24in).

***E. perralderianum***. Gently spreading, evergreen, rhizomatous perennial forming a bold, dense clump of leaves, each leaf divided into usually 3 ovate, conspicuously toothed leaflets, 5–8cm (2–3in) long, bronze when young, maturing to glossy, dark green. Bright yellow flowers, to 2cm (¾in) across, with short brown spurs, are produced in mid- and late spring. ‡ 30cm (12in), ↔ 60cm (24in). Algeria. \*\*\*

***E. pinnaum***. Slowly spreading, evergreen, rhizomatous perennial bearing 2-ternate or sometimes pinnate leaves with ovate, spiny-margined, white- or red-hairy, later hairless, dark green leaflets, 5–10cm (2–4in) long. Produces bright yellow flowers, to 2cm (¾in) across, with brownish purple spurs, in late spring and early summer. ‡ 20–30cm (8–12in). N. Iran. \*\*\*  
**subsp. *colchicum*** [♀] syn. subsp. *elegans*, is slow-growing, its shorter rhizomes making a denser clump. The leaves are divided into 5, more rounded, less spiny leaflets, 6–13cm (2½–5in) long. Flowers with brown or yellow spurs are borne in spring. ‡ 30–40cm (12–16in), ↔ 25cm (10in). Caucasus to N.E. Turkey.

***E. pubigerum*** [♂] Clump-forming, evergreen, rhizomatous perennial producing leaves with up to 9 ovate to rounded, spiny, glossy, mid-green leaflets, 4–8cm (1½–3in) long, heart-shaped at the bases, hairy beneath. Creamy white, sometimes yellowish white flowers, to 1cm (½in) across, are borne well above the foliage in mid- and late spring. ‡ 45cm (18in). Bulgaria, Turkey to W. Georgia. \*\*\*

***E. x rubrum*** ♀ (*E. alpinum* x *E. grandiflorum*). Slowly spreading, clump-forming, deciduous, rhizomatous perennial. Bears 2-ternate leaves with ovate, pointed, thin, spiny-toothed leaflets, 6–10cm (2½–4in) long, flushed red when young, turning red and reddish brown in autumn, and remaining through winter. Crimson and pale yellow flowers, to 2cm (¾in) across, with short spurs, are produced in mid- and late spring. ‡ 30cm (12in). Garden origin. \*\*\*

***E. stellulatum*** **'Wudang Star'**. Clump-forming, evergreen perennial with a short, creeping rhizome and 2-ternate leaves with ovate, spine-toothed, glossy, mid-green leaflets, 6–10cm (2½–4in) long. In spring, bears panicles of star-shaped white flowers, 1.5cm (½in) across, with prominent yellow stamens. ‡ 25–35cm (10–14in). \*\*\*

***E. rutchuenense***. Clump-forming, evergreen, rhizomatous perennial with 3-ternate leaves comprised of narrowly ovate, mid-green leaflets, 5–8cm (2–3in) long, heart-shaped at the bases, pointed at the tips, and sparsely grey-hairy above. Long-spurred, rose-pink flowers, 2cm (¾in) across, sometimes purple-tinted, are borne in mid- and late spring. ‡ 30cm (12in). China. \*\*\*

***E. x versicolor*** (*E. grandiflorum* x *E. pinnaum* subsp. *colchicum*). Clump-forming, evergreen, rhizomatous perennial with leaves usually divided into 5–15 ovate-heart-shaped, spine-toothed leaflets, 5–9cm (2–3½in) long,



*Epimedium pubigerum*

copper-red and brown when young, turning mid-green. Bears pink and yellow flowers, 0.6–2cm (¼–¾in) across, with red-tinted spurs, in mid- and late spring. ‡ 30cm (12in). Garden origin. \*\*\*. **'Cupreum'** has copper-red flowers. **'Neosulphureum'** has pale yellow flowers and 3–9 leaflets per leaf. **'Sulphureum'** ♀ has 5–11 leaflets per leaf, and bears slightly darker yellow flowers and longer spurs than **'Neosulphureum'**; ↔ 1m (3ft).

**var. *versicolor*** [♂] has small flowers, 6–10mm (¼–½in) across, with deep reddish pink sepals and yellow petals.

***E. x warleyense*** [♂] (*E. alpinum* x *E. pinnaum* subsp. *colchicum*). Spreading, clump-forming, evergreen, rhizomatous perennial with leaves divided into 5–9 ovate, sparsely spiny,

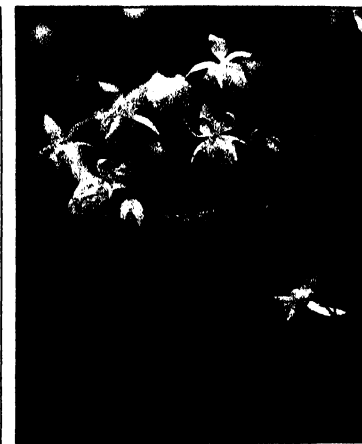


*Epimedium x warleyense*

mid-green leaflets, 7–12cm (3–5in) long, hairy beneath, and tinted red in spring and autumn. Produces yellow flowers, 1.5cm (½in) across, with reddish orange sepals, in mid- and late spring. ‡ to 50cm (20in), ↔ 75cm (30in). Garden origin. \*\*\*.

**'Orangekönigin'** makes a denser clump and has slightly paler orange sepals.

***E. x youngianum*** (*E. diphyllum* x *E. grandiflorum*). Clump-forming, deciduous, rhizomatous perennial with leaves divided into 2–9 leaflets, 2–8cm (¾–3in) long, on red-tinted leaf-stalks; leaflets are narrowly ovate, mid-green, thin, wavy-margined, almost spineless, hairy, becoming hairless beneath, with one leaflet distinctly larger. In mid- and late spring, produces greenish white or pale rose-pink flowers, 1.5–2cm



*Epimedium x youngianum* **'Niveum'**

(½–¾in) long, sometimes with spurs. ‡ 20–30cm (8–12in), ↔ 30cm (12in). Garden origin. \*\*\*. **'Lilacinum'** see **'Roseum'**. **'Merlin'** has purple-flushed young leaves, and bears spurred, dusky mauve flowers, 2cm (¾in) across. **'Niveum'** [♂] ♀ bears pure white flowers, to 1cm (½in) across, sometimes spurred, and often produces very colourful young foliage. **'Roseum'**, syn. **'Lilacinum'**, has variable foliage and dusky pink to purple flowers.

## EPIPACTIS

Helleborine

ORCHIDACEAE

Genus of 24 species of rhizomatous, terrestrial, herbaceous orchids, mainly found in temperate areas of the N. hemisphere, often occurring in marshes, alpine meadows, rich woodland, or on dunes; a few are tropical species from Africa, Thailand, and Mexico. They usually have ribbed, lance-shaped to ovate leaves, arranged spirally or in 2 ranks. The spurless flowers are borne in loose or dense spikes on twisted stalks. The upper segments of each flower spread or curve inwards to form a "helmet", and the 2-parted lower lip unites at the base to form a "cup", with a heart-shaped or triangular lobe beneath. Grow in a damp, shady border, or in a wild or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in partial or deep shade. May spread freely in ideal conditions. See also p.46.

• **PROPAGATION** Divide in early spring, ensuring that each piece of rhizome has at least one growing point.

• **PESTS AND DISEASES** Vulnerable to slugs and snails.

***E. gigantea*** (Giant helleborine).

Rhizomatous orchid with upright stems bearing lance-shaped to ovate leaves, to 20cm (8in) long. From spring to early summer, produces loose, terminal spikes of up to 15 nodding, bright greenish yellow flowers, to 2cm (¾in) across, each with a leafy bract beneath; the lips and upper lobes are veined maroon, the widely spreading, yellow lateral lobes are veined brownish purple. ‡ 30–40cm (12–16in), ↔ to 1.5m (5ft). S.W. USA. \*\*\*

▷ ***Epiphyllanthus obovatus*** see *Schlumbergera opuntioides*



*Epimedium x versicolor* var. *versicolor*

## EPIPHYLLUM

Orchid cactus

CACTACEAE

Genus of about 20 species of mostly epiphytic, perennial cacti occurring mainly in rainforest from S. Mexico to Argentina, and also in the West Indies. The strap-shaped, cylindrical, flattened, often deeply toothed, fleshy green stems and branches become 2-ribbed when mature, and bear small, usually spineless areoles. The mainly funnel-shaped flowers, 8–30cm (3–12in) long, are often sweetly scented and last for 2 or more days; many are nocturnal. In areas where temperatures drop below 10°C (50°F), grow as houseplants or in a warm greenhouse. In warmer climates, plant in a shaded courtyard.

• **HARDINESS** Frost tender. They require a minimum temperature of 10°C (50°F) for most of the year but, for successful cultivation, the temperature should be increased to 15°C (59°F) in early spring.

• **CULTIVATION** Under glass, grow in epiphytic cactus compost in bright filtered light, with moderate to high humidity. From mid-spring to late summer, water freely and apply a high-potash fertilizer every 2 weeks as flower buds form; keep just moist in winter. Outdoors, grow in fertile, sharply drained soil in light dappled or partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring or early summer. Take stem cuttings in early summer.

• **PESTS AND DISEASES** Vulnerable to mealybugs and aphids.

*E. ackermannii* see *Nopalxochia ackermannii*.

*E. anguliger*. Erect, bushy, many-branched, epiphytic cactus with partly cylindrical, partly flattened, deeply toothed, mid-green stems, 4–8cm (1½–3in) wide. From late spring to summer, produces diurnal, funnel-shaped, scented flowers, 15cm (6in) long, with narrow, wide-spreading, golden or lemon-yellow outer tepals and white inner tepals. ‡ to 75cm (30in). ↔ 45cm (18in). S. Mexico.

☉ (min. 10–15°C/50–59°F)

*E. chrysocardium*, syn. *Marniera*

*chrysocardium*, *Selenicereus*

*chrysocardium*. Erect then semi-pendent, or scandent, epiphytic cactus with very deeply toothed, flattened, mid-green stems, to 30cm (12in) wide, forming lobes 3–4cm (1¼–1½in) wide, the areoles sometimes with 2 or 3 bristles each. In late winter or spring, produces nocturnal, funnel-shaped flowers, 30cm (12in) or more long, that have dull purple outer tepals, white inner tepals, tubes that are pale green below, dull purple above, and golden yellow stamens. ‡ to 2m (6ft), ↔ 75cm (30in). S. Mexico. ☉ (min. 10–15°C/50–59°F)

*E. crenatum* ■ Erect, bushy, semi-epiphytic cactus with a cylindrical main stem and leaf-like, greyish green branches, 12cm (5in) wide, the margins wavy and toothed. Diurnal, funnel-shaped, fragrant, creamy white flowers, 20cm (8in) long, with green, pink, or pale yellow outer segments, are produced in summer. ‡↔ to 3m (10ft). S. Mexico to Honduras. ☉ (min. 10–15°C/50–59°F)



*Epiphyllum crenatum*



*Epiphyllum laui*

*E. hookeri*, syn. *E. strictum*. Erect, bushy, scandent, epiphytic cactus with flattened, coarsely toothed, bluish green stems, 8cm (3in) wide. Nocturnal, star-shaped, creamy or yellowish white flowers, to 25cm (10in) long, with red-tinged, pale green outer segments, are produced in midsummer. Resembles *E. phyllanthus* but has broader flowers. ‡ 2m (6ft), ↔ 50cm (20in). S. Mexico to Costa Rica, Trinidad. ☉ (min. 10–15°C/50–59°F)

*E. laui* ■ Erect, bushy, epiphytic cactus with flattened, often red-tinged, glossy, mid-green stems, 10cm (4in) wide, sometimes 4-angled or cylindrical, with slightly toothed margins. Bears diurnal or nocturnal, funnel-shaped, scented white flowers, 18cm (7in) long, with brown outer segments, in early summer. ‡ 30cm (12in), ↔ to 50cm (20in). S. Mexico. ☉ (min. 10–15°C/50–59°F)

*E. macdougallii* see *Nopalxochia macdougallii*.

*E. oxypetalum*. Erect or semi-erect, many-branched, epiphytic cactus with cylindrical, mid-green stems and thin, leaf-like, elliptic, sharp-pointed, scalloped branches, 12cm (5in) wide. Nocturnal, funnel-shaped white flowers, 25–30cm (10–12in) long, with long, curved, arching tubes and very pale purplish white outer segments, are produced from late spring to summer. ‡ 3m (10ft), ↔ 1m (3ft). Mexico, Guatemala, Venezuela, Brazil. ☉ (min. 10–15°C/50–59°F)

*E. phyllanthus*. Semi-erect, bushy, semi-epiphytic cactus with cylindrical stems and leaf-like, linear, blunt or pointed, stiff, scalloped, mid-green branches, 7cm (3in) wide, with prominent midribs and purple-shaded margins. In summer, bears nocturnal, funnel-shaped, glistening white or pale yellowish white flowers, 25–30cm (10–12in) long, with green- or red-tinged outer tepals and slender green tubes. ‡ 2m (6ft), ↔ 60cm (24in). Panama, Colombia, Ecuador, Peru, Brazil. ☉ (min. 10–15°C/50–59°F)

*E. pumilum*. Semi-erect or pendent, epiphytic cactus with long, leaf-like, mid-green stems, 3–8cm (1¼–3in) wide, often tapering to a point. In summer, produces nocturnal, funnel-shaped, scented, creamy white flowers, 8–12cm (3–5in) long, with red outer tepals, white inner tepals, and green tubes. ‡↔ 50cm (20in) or more. Guatemala. ☉ (min. 10–15°C/50–59°F)

*E. strictum* see *E. hookeri*.

## EPIPREMNUM

ARACEAE

Genus of 8 species of evergreen, root-clinging climbers, with juvenile and adult phases, found in forest from S.E. Asia to the W. Pacific. They are grown for their attractive, alternate leaves, which may be entire to pinnate, sometimes on the same plant. Spikes of tiny, petalless flowers are enclosed in spathes. In frost-prone areas, grow in a temperate or warm greenhouse, or as houseplants. In warmer areas, grow against a wall, over a pergola, or through trees. All parts may cause severe discomfort if ingested, and contact with the sap of *E. aureum* may irritate skin.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full or bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer every month; water moderately in winter. Provide the support of a moss pole. Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade. Pruning group 11, in early spring. Tip-prune in spring to promote branching.

• **PROPAGATION** Root leaf-bud or stem-tip cuttings with bottom heat in summer. Layer in spring or summer.

• **PESTS AND DISEASES** Scale insects and red spider mites may be troublesome under glass.

*E. aureum*, syn. *Scindapsus aureus* (Devil's ivy, Golden pothos). Strong-growing climber that, when young, has ovate, entire, glossy, bright green leaves, 10–30cm (4–12in) long, heart-shaped at the bases, and dashed or striped white, cream, or yellow. Mature plants have deeply lobed leaves, to 80cm (32in) long, and bear green flowering spathes, 15cm (6in) long, in summer. ‡ 8–12m (25–40ft). Solomon Islands. ☉ (min. 15°C/59°F). 'Exotica' has lance-shaped, matt, dark green leaves, to 20cm (8in) long, slanted at the bases, and mottled with silver. 'Marble Queen' ■ has mainly white leaves, heavily flecked and splashed with yellow, cream, and green; ‡ 1–3m (3–10ft).

*E. pictum* 'Argyraeum' ■ syn. *Scindapsus pictus* 'Argyraeus'. Slow-growing climber cultivated in its juvenile phase, when it has ovate, entire leaves, 7–10cm (3–4in) long, heart-



*Epipremnum aureum* 'Marble Queen'

*Epipremnum pictum* 'Argyraeum'

shaped at the bases, satin-textured and deep green above, with irregular silver spots, paler and unspotted beneath. †45–90cm (18–36in) if trained on a support, 1–2m (3–6ft) or more if grown against a wall or through a tree. ♀ (min. 15°C/59°F)

## EPISCIA syn. ALSOBIA

Carpet plant, Flame violet

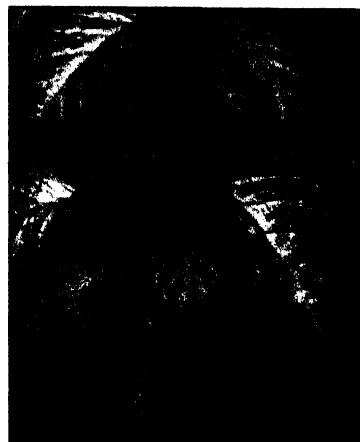
GESNERIACEAE

Genus of 6 species of creeping, stoloniferous, mat-forming, epiphytic or terrestrial, evergreen perennials found in tropical forest and rocky habitats from Mexico to South America. They are grown for their soft, colourful foliage and salverform, 5-lobed flowers, which are borne singly or in small racemes from the leaf axils, from spring to autumn. Opposite, oblong to oblong-elliptic, hairy, often puckered leaves are produced in rosettes or whorls. In frost-prone areas, grow as houseplants, in a conservatory or terrarium, or in hanging baskets; elsewhere, use as ground cover.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost with added perlite or vermiculite, in bright filtered light, with high humidity. In growth, water moderately, applying a quarter-strength, balanced liquid fertilizer at each watering. Keep just moist in winter. Outdoors, grow in fertile, humus-rich, moist but sharply drained soil in partial shade.

• **PROPAGATION** Surface-sow seed at about 20–25°C (68–77°F) as soon as ripe or in early spring. Divide, separate

*Episcia cupreata*

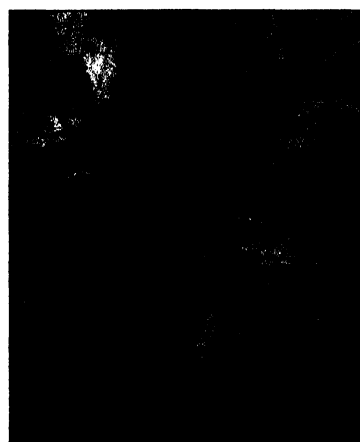
plantlets, or root stem cuttings with bottom heat, in early or midsummer.

• **PESTS AND DISEASES** Aphids may infest young growing tips.

**E. 'Cleopatra'** ♀ Mat-forming, terrestrial perennial with reddish green stolons and ovate, light green leaves, to 10cm (4in) long, suffused and marked creamy white, and with down-turned, broad pink margins. Axillary racemes of 3–5 orange-red flowers, to 5cm (2in) long, are produced from spring to autumn. †18cm (7in), ↔ 40cm (16in). ♀ (min. 15°C/59°F)

**E. cupreata** ♀ Variable, mat-forming, terrestrial perennial with elliptic, toothed, deep copper-green leaves, to 9cm (3½in) long, purple beneath. Red and yellow flowers, to 6cm (2½in) long, sometimes spotted purple in the throats, are borne in axillary racemes of 3 or 4 from spring to autumn. †15cm (6in), ↔ indefinite. Colombia, Venezuela, Brazil. ♀ (min. 15°C/59°F). **'Acajou'** has dark tan leaves netted with silvery green, and freely produces orange-red flowers. **'Metallica'** has copper leaves, each with a central silver band and metallic-pink margins, and produces flame-red flowers. **'Tropical Topaz'** produces pale green leaves and bright yellow flowers.

**E. 'Cygnet'**, syn. *Alsobia* 'Cygnet'. Vigorous, trailing, terrestrial perennial with elliptic to ovate, velvety, light green leaves, 10cm (4in) long. Purple-spotted white flowers, 2cm (¾in) across, are produced in twos in the leaf axils from spring to summer. †15cm (6in), ↔ 30cm (12in). ♀ (min. 13°C/55°F)

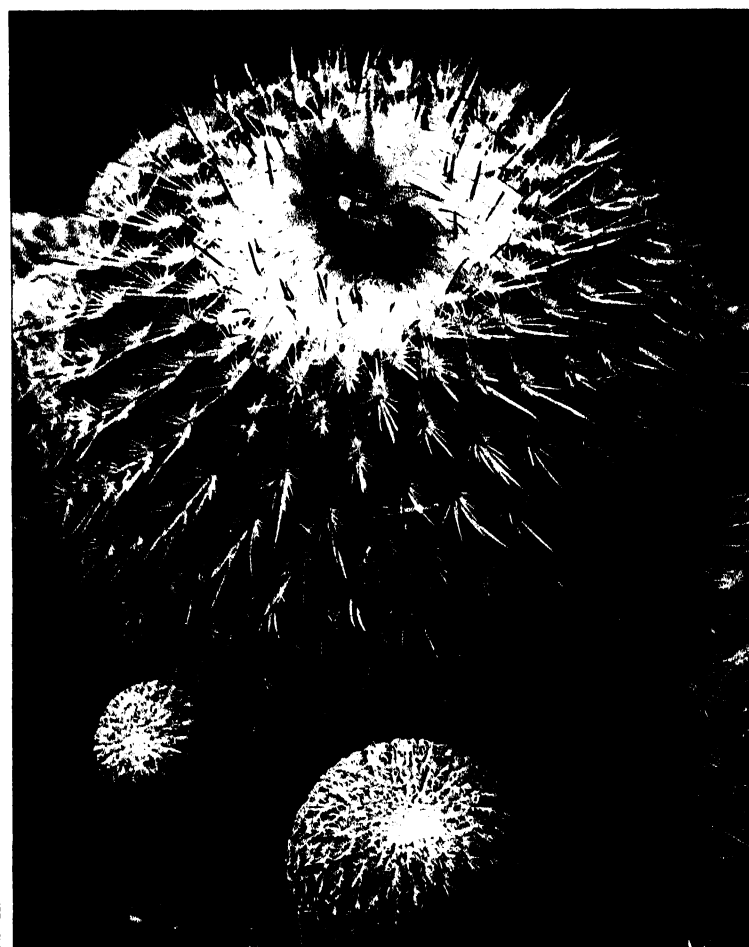
*Episcia* 'Cleopatra'*Episcia dianthiflora*

**E. dianthiflora** ♀ syn. *Alsobia dianthiflora*. Creeping, terrestrial perennial bearing elliptic to ovate, toothed, dark green leaves, to 4cm (1½in) long, often veined purple-red. Solitary white flowers, to 3cm (1¼in) across, with purple spots at the bases and very deeply and finely fringed lobes, are produced from spring to summer. †15cm (6in), ↔ 30cm (12in). Mexico, Costa Rica. ♀ (min. 13°C/55°F)

**E. lilacina**. Variable, mat-forming, epiphytic or terrestrial perennial bearing ovate, scalloped, copper-green leaves, 5cm (2in) long, with fresh green midribs and veins, and purple undersides. White flowers, to 4.5cm (1¾in) long, with lavender-blue throats, are produced in axillary racemes of up to 4 from spring to autumn. †15cm (6in), ↔ 40cm (16in). Costa Rica. ♀ (min. 15°C/59°F). **'Cuprea'** has deep copper leaves, with narrow silver markings around the midribs, and white-centred, lavender-blue flowers.

**E. 'Pink Panther'**. Mat-forming, terrestrial perennial with ovate, lime-green leaves, to 12cm (5in) long. Axillary racemes of 3–5 rose-pink flowers, to 6cm (2½in) long, are produced from spring to autumn. †18cm (7in), ↔ 45cm (18in). ♀ (min. 15°C/59°F)

**E. 'Silver Skies'**. Mat-forming, terrestrial perennial bearing ovate leaves, to 3cm (1¼in) long, with silvery green centres and broad, mid-green margins. Axillary racemes of 3–5 red flowers, 5cm (2in) long, are produced from spring to autumn. †18cm (7in), ↔ 35cm (14in). ♀ (min. 15°C/59°F)

*Epithelantha micromeris*

## EPITHELANTHA

CACTACEAE

Genus of one very variable species of perennial cactus occurring in S. USA and Mexico, mainly on calcareous soils. The stems are thickly covered with rows of small tubercles, usually spirally arranged. Small, tufted areoles bear numerous white spines; the areoles at the apex elongate slightly when producing the small, funnel-shaped, white or pale orange to pink flowers. In frost-prone areas, grow in a warm greenhouse; in warm, dry climates, grow in a desert garden or on a raised bed.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost, with added limestone chippings, in full light. From spring to autumn, water moderately and apply low-nitrogen fertilizer every 4–5 weeks; keep completely dry at other times. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring, or graft on to species of *Cereus*.

• **PESTS AND DISEASES** Vulnerable to root mealybugs under glass.

**E. micromeris** ♀ Solitary or clump-forming, spherical to obovoid, greyish green cactus with diurnal, funnel-shaped, white or pale orange to pink flowers, 1cm (½in) across, borne in groups of 2 or 3 or more in summer. †4cm (1½in), ↔ 4–8cm (1½–3in). S. USA, Mexico. ♀ (min. 10°C/50°F)

E

## ERAGROSTIS

Love grass

GRAMINEAE/POACEAE

Genus of approximately 250 species of clump-forming, annual and perennial grasses widely distributed throughout tropical and temperate regions of the world. They occur on cultivated or disturbed ground, often on sandy soils. The narrowly linear leaves are flat or rolled. Dense or open, sparsely to many-branched panicles of small, flattened, closely overlapping spikelets are borne on slender, upright stems from summer to autumn. Grow as specimen plants, in a mixed or herbaceous border, or in a rock garden. In frost-prone climates, grow half-hardy species in a cool greenhouse. The inflorescences are useful for cut flower arrangements.

- **HARDINESS** Fully hardy to half hardy. *E. curvula* is frost hardy but will tolerate brief spells down to -10°C (14°F).
- **CULTIVATION** Grow in medium to light, poor to moderately fertile, well-drained soil in a warm, sunny site. In late winter or early spring, before new growth begins, cut back any stems and foliage left for winter interest.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide between mid-spring and early summer.
- **PESTS AND DISEASES** Trouble free.

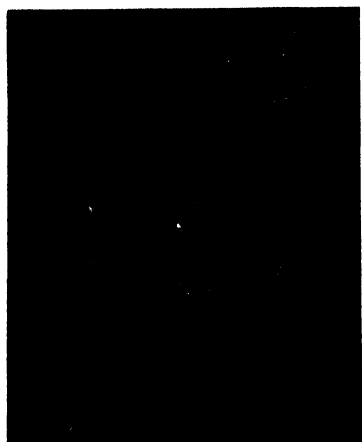
*E. curvula*. Densely tufted, mound-forming, perennial grass with arching, narrowly linear, rolled or slightly open, rough-textured, dark green leaves, to 30cm (12in) long. In late summer and early autumn, bears erect or nodding, open panicles, to 30cm (12in) long, consisting of closely overlapping, 3- to 18-flowered, dark olive-grey spikelets, to 1.5cm (½in) long, which persist through winter. †→ 1.2m (4ft). Southern Africa, India. \*\*

## ERANTHEMUM

ACANTHACEAE

Genus of approximately 30 species of woody-based perennials and evergreen shrubs occurring in forest and scrub in tropical Asia. They are cultivated for their tubular, 5-lobed flowers, which are produced in terminal or axillary spikes or panicles in winter. The leaves are opposite, lance-shaped to broadly ovate, simple, entire or toothed, and often prominently veined. In frost-prone regions, grow in a warm greenhouse or conservatory, or as houseplants. In humid, subtropical climates, they may be grown outdoors and are particularly useful in a lightly shaded border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. From spring to autumn, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 8; may need restrictive pruning under glass.
- **PROPAGATION** Root softwood cuttings with bottom heat in late spring or early summer.
- **PESTS AND DISEASES** Whiteflies may be troublesome under glass.

*Eranthemum pulchellum*

- E. atropurpureum* see *Pseuderanthemum atropurpureum*.
- E. nervosum* see *E. pulchellum*.
- E. pulchellum* ■ syn. *E. nervosum* (Blue sage). Open shrub with elliptic, slender-pointed, occasionally toothed, boldly veined, lustrous, deep green leaves, 10–20cm (4–8in) long. In winter, rich blue flowers, 3cm (1¼in) long, are produced in spikes to 8cm (3in) long, or sometimes clustered into panicles. †90–120cm (3–4ft), ↔ 60–90cm (24–36in). India. ☉ (min. 13°C/55°F)

## ERANTHIS

Winter aconite

RANUNCULACEAE

Genus of about 7 species of small, clump-forming perennials with knobby tubers, occurring in damp woodland and shady places in Eurasia. They are grown for their cup-shaped flowers, borne in late winter and early spring. Stem leaves 0.5–1.5cm (¼–½in) or more long, often finely dissected, form ruffs immediately below the flowers; basal leaves, 1.5–3cm (½–1¼in) or more long, are palmately lobed or pinnate. Most species are best grown around deciduous shrubs or trees where they will form carpets of flowers and may naturalize in grass; *E. pinnatifida* is best grown in an alpine house or sheltered peat bed. All parts may cause mild stomach upset if ingested, and contact with the sap may irritate skin.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, humus-rich soil that does not dry out in summer, in full sun or light dappled shade. Plant tubers 5cm (2in) deep in autumn. Overdried tubers may be difficult to establish.
- **PROPAGATION** Sow seed in containers in a cold frame in late spring. Separate tubers in spring after flowering.
- **PESTS AND DISEASES** Prone to smuts. Slugs may eat the foliage.

*E. cilicica*. Clump-forming, tuberous perennial with bright yellow flowers, 2–4cm (¾–1½in) across, produced above ruffs of finely dissected, glossy, bronze-tinged, mid-green leaves in early spring. Similar to *E. hyemalis* but with more numerous leaf lobes and slightly larger flowers. †5–8cm (2–3in), ↔ 5cm (2in). Turkey to Afghanistan. \*\*\*

*E. hyemalis* ■ ♀ (Winter aconite). Clump-forming, tuberous perennial producing bright yellow flowers, 2–3cm

*Eranthis hyemalis*

(¾–1¼in) across, each above a ruff of dissected, bright green leaves, in late winter and early spring. Quickly forms large colonies, particularly in alkaline soils. †5–8cm (2–3in), ↔ 5cm (2in). S. France to Bulgaria. \*\*\*

- E. keiskei* see *E. pinnatifida*.
- E. pinnatifida*, syn. *E. keiskei*. Clump-forming, tuberous perennial bearing white flowers, 2cm (¾in) across, above ruffs of pinnate leaves, in early spring. †→ 5cm (2in). Japan. \*\*\*
- E. x tubergenii* 'Guinea Gold' ♀ (*E. cilicica* x *E. hyemalis*). Vigorous, clump-forming, sterile, tuberous perennial with golden flowers, 2–3cm (¾–1¼in) across, each above a ruff of dissected, bronze-green leaves, in late winter. †8–10cm (3–4in), ↔ 5cm (2in). \*\*\*

## ERCILLA

PHYTOLACCACEAE

Genus of 2 species of root-clinging, climbing, evergreen perennials from temperate North and South America, growing wild in open woodland and forest margins. The alternate leaves are simple, ovate-heart-shaped to oblong, and leathery. Small, petalless flowers are produced in short, axillary spikes. *Ercilla* species provide excellent ground cover if allowed to spread; otherwise grow on a shady wall, or through trees.

- **HARDINESS** Frost hardy; *E. volubilis* may tolerate temperatures to -10°C (14°F) if wood is well-ripened.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade, with protection from cold,

drying winds. Pruning group 11, after flowering. Tie in to a support until the adhesive roots become established and can support the mature plant.

- **PROPAGATION** Root semi-ripe cuttings in summer, with bottom heat. Layer in early spring.
- **PESTS AND DISEASES** Scale insects may be troublesome under glass.

*E. spicata* see *E. volubilis*.

*E. volubilis*, syn. *Bridgesia spicata*, *E. spicata*. Vigorous, freely branching climber with ovate-heart-shaped to oblong, lustrous, deep green leaves, 4–5cm (1½–2in) long, with a pattern of pale veins. Mature plants produce an abundance of green or purple flower spikes, to 4.5cm (1¾in) long, mainly in spring, sometimes followed by deep purple berries. †6–10m (20–30ft). Peru, Chile. \*\*

▷ *Erdisia* see *Corryocactus**E. erecta* see *C. erectus**E. squarrosa* see *C. squarrosus*

## EREMOPHILA

Emu bush

MYOPORACEAE

Genus of about 180 species of evergreen perennials, shrubs, and trees occurring on open slopes and in scrub and light woodland in Australia. They are grown for their tubular-based, 2-lipped flowers, produced singly from the uppermost leaf axils, giving the appearance of leafy racemes in some species. Leaves are simple, entire, and linear to rounded, and may be alternate or opposite, or

occasionally whorled. In frost-prone areas, grow in a temperate or cool greenhouse. In warmer, drier areas, plant in a courtyard garden, in a border, or at the base of a warm, sunny wall.

• **HARDINESS** Half hardy to frost tender. *E. glabra* and *E. maculata* may survive short periods at about 0°C (32°F) if they are kept fairly dry.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly. At other times, water sparingly. Top-dress or pot on in spring. Outdoors, grow in moderately fertile, sharply drained soil in full sun. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring, first soaking for several days; germination may take 2 weeks to 2 years or more. Root semi-ripe cuttings in a shaded cold frame in summer.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

*E. alternifolia*. Rounded shrub with alternate, very narrow, cylindrical, recurved, mid-green leaves, to 3.5cm (1½in) long. Solitary pink flowers, 3–4cm (1¼–1½in) long, with darker spots, are produced on slender stalks from spring to summer. ↗ 3m (10ft). Australia (except Tasmania). \*

*E. glabra* (Common emu bush, Fuchsia bush). Prostrate, or erect to spreading shrub with alternate, elliptic to narrowly lance-shaped, densely hairy or hairless, mid-green leaves, 2–5cm (¾–2in) long. Solitary, red, orange, yellow, or green flowers, 3cm (1¼in) long, are borne mainly from early spring to autumn. ↑ to 1.5m (5ft), ↔ 1–3m (3–10ft). Australia (except Tasmania). \* (borderline).

'Murchison River' has silvery foliage and bright red flowers.

*E. maculata* (Spotted emu bush). Dense shrub with alternate, linear-lance-shaped to ovate-lance-shaped, mid- to grey-green leaves, to 5cm (2in) long, which are hairless when mature. Solitary, red to purple, pink, or almost white flowers, 2–3.5cm (¾–1½in) long, often spotted with cream or yellow, are produced from winter to late spring or early summer. ↑ 0.5–2.5m (1¾–8ft), ↔ 1–2m (3–6ft). Australia (except Tasmania). \* (borderline). 'Aurea' ■ has light to mid-green leaves, and produces yellow flowers.



*Eremophila maculata* 'Aurea'

## EREMURUS

Desert candle, Foxtail lily

ASPHODELACEAE/LILIACEAE

Genus of about 40–50 species of clump-forming, fleshy-rooted perennials found in dry grassland and semi-desert in W. and C. Asia. Leafless flowering stems, usually one per crown, each produce a dense raceme of star-shaped, usually pink, white, or yellow flowers, with conspicuous stamens. Tufted rosettes of folded, linear to lance-shaped, basal leaves die back to the conical crown after flowering. Grow in a border; need winter cold to induce flowering.

• **HARDINESS** Fully hardy, although young growth is frost tender.

• **CULTIVATION** Grow in fertile, sandy, well-drained loam in full sun, with shelter from wind. Mulch with garden compost in autumn, avoiding the crown. Protect young growth with a dry mulch. Provide support in exposed sites.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or at 15°C (59°F) in late winter. Divide after flowering.

• **PESTS AND DISEASES** Susceptible to slug damage.

*E. aitchisonii*. Tufted perennial with narrowly lance-shaped, rough-margined, glossy, grass-green leaves, 30–60cm (12–24in) long. Pale pink flowers, to 3cm (1¼in) across, are borne in racemes 30cm (12in) long in early summer.

↑ 1–2m (3–6ft), ↔ 1m (3ft). Tajikistan, Afghanistan. \*\*\*

*E. aurantiacus* see *E. stenophyllus* subsp. *aurantiacus*.

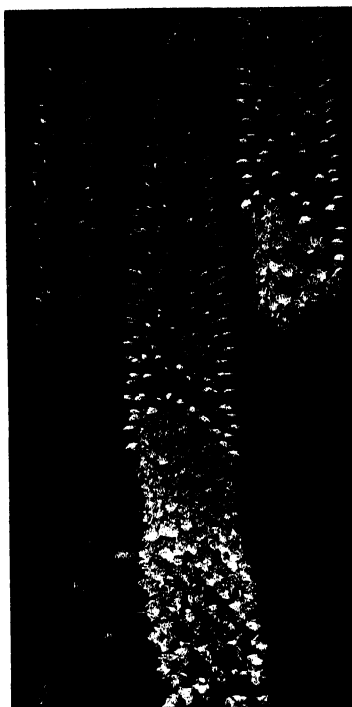
*E. bungei* see *E. stenophyllus* subsp. *stenophyllus*.

*E. himalaicus* ■ Tufted perennial with strap-shaped, bright green leaves, 30cm (12in) long. Bears white flowers, 2.5cm (1in) across, in racemes to 90cm (36in) long in late spring and early summer.

↑ 1.2–2m (4–6ft), ↔ 60cm (24in). Kashmir, N.W. Himalayas. \*\*\*



*Eremurus himalaicus*



*Eremurus robustus*

*E. 'Himrob'*. Tufted perennial with lance-shaped, blue-green leaves, 60–100cm (24–39in) long. In early and midsummer, bears very pale pink flowers, 2–3cm (¾–1¼in) across, in racemes to 60cm (24in) long. ↑ to 1.2m (4ft), ↔ 90cm (36in). \*\*\*

*E. x isabellinus* cultivars (*E. olgae* x *E. stenophyllus*). Robust, tufted perennials with lance-shaped, mid-green leaves, 15–30cm (6–12in) long. In early summer, variously coloured flowers, 2–4cm (¾–1½in) across, are borne in racemes 20–50cm (8–20in) long. ↑ to 1.5m (5ft), ↔ 90cm (36in). \*\*\*

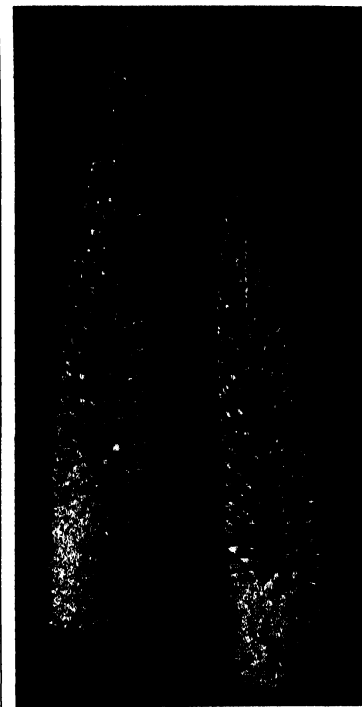
'Cleopatra' has orange flowers

'Feuerfackel', syn. 'Fire Torch', has orange-red flowers. 'Fire Torch' see 'Feuerfackel'. 'Isobel' bears rose-pink flowers tinged with orange. 'Rosalind' bears bright pink flowers. 'Sahara' has sandy-copper flowers. 'Schneelanze', syn. 'Snow Lance', has greenish white flowers. 'Snow Lance' see 'Schneelanze'.

*E. robustus* ■ Tufted perennial with strap-shaped, rough-margined, bluish green leaves, to 1.2m (4ft) long. In early and midsummer, pale pink flowers, to 4cm (1½in) across, with brown-marked bases and yellow stamens, are borne in racemes 75–120cm (2½–4ft) long. ↑ to 3m (10ft), ↔ 1.2m (4ft). C. Asia (Tien Shan and Pamir Mountains). \*\*\*

*E. spectabilis*. Tufted perennial with strap-shaped, often rough-margined, greyish green leaves, 30–40cm (12–16in) long. In midsummer, bears racemes, to 1m (3ft) long, of sulphur-yellow flowers, 2cm (¾in) across, with orange-red stamens. ↑ 1.2–2m (4–6ft), ↔ 60cm (24in). Turkey, Lebanon, Iraq, Iran, W. Pakistan. \*\*\*

*E. stenophyllus* ■ Tufted perennial with narrowly linear, rough-margined, sometimes softly hairy, greyish green leaves, 24cm (10in) long. In early and midsummer, bears racemes, 15–30cm (6–12in) long, of dark yellow flowers, to 2cm (¾in) across, fading to orange-brown. ↑ 1m (3ft), ↔ 60cm (24in). C. Asia, Iran, W. Pakistan. \*\*\*



*Eremurus stenophyllus*

subsp. *aurantiacus*, syn. *E. aurantiacus*, has hairy flower stems; Tajikistan, Afghanistan, Pakistan. subsp.

*stenophyllus*, syn. *E. bungei*, has leaves to 35cm (14in) long, and brighter yellow flowers; ↑ to 1.5m (5ft), ↔ 75cm (30in); C. Asia, Iran.

## ERIA

ORCHIDACEAE

Genus of over 500 species of evergreen, epiphytic, sometimes terrestrial orchids from tropical Asia, Malaysia to Papua New Guinea, Australia, Polynesia, and adjacent islands. They occur in varied habitats, including montane forest. Most have ellipsoid to narrowly cylindrical, pseudobulb-like stems producing 2 or more linear to narrowly elliptic, mid- to dark green leaves. Small, *Dendrobium*-like flowers are borne in terminal or axillary racemes.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Under glass, grow in containers of epiphytic orchid compost. In summer, provide humid, well-ventilated, shady conditions and water freely, applying fertilizer at every third watering. At other times, provide full light and water sparingly. Do not mist at the start of the growing season. See also p.46.

• **PROPAGATION** Divide when plants overflow their containers.

• **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*E. coronaria*, syn. *Trichosma suavis*. Terrestrial or epiphytic orchid with slender, pseudobulb-like stems and 2 broadly lance-shaped, thinly fleshy leaves, to 15cm (6in) long. Fragrant, waxy cream flowers, 2.5–4cm (1–1½in) wide, with yellow and red markings on the lips, are borne in terminal racemes, 20cm (8in) long, in summer. ↗ 23cm (9in). India. ☼ (min. 10°C/50°F; max. 30°C/86°F)

▷ *Erianthus* see *Saccharum*

## ERICA

Heath

ERICACEAE

Genus of over 700 species of prostrate to tree-like, evergreen shrubs occurring in a variety of habitats from wet moorland to dry heathland in Europe, temperate Africa (mainly confined to S. of the Limpopo River in South Africa), and temperate W. and C. Asia. The whorled, rarely opposite, mainly linear leaves are tightly curled back, and usually 3–10mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) long, although in some of the larger species they may be 2cm ( $\frac{3}{8}$ in) long. The usually bell- to urn-shaped flowers, 0.2–4cm ( $\frac{1}{16}$ –1 $\frac{1}{2}$ in) long, develop in terminal racemes (sometimes leafy, and often spike-like), umbels, or panicle-like heads, or in 2- to 5-flowered, axillary clusters or whorls, on short lateral branches produced on the previous year's growth. The flowers may be distinguished from those of heathers (*Calluna*) by the prominent corollas and usually green calyces.

Hardy species are widely grown as ground cover, either on their own or with other ericaceous plants or dwarf conifers, and provide colour throughout the year. Tree-like species are excellent specimen plants. In frost-prone areas, grow the tender species in a cool greenhouse; in warmer climates, grow in a heather garden or among other shrubs.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in well-drained, acid soil in an open site in full sun; most winter- and spring-flowering European species, and the summer-flowering

*E. manipuliflora*, *E. terminalis*, *E. vagans*, and *E. x williamsii* will tolerate alkaline soil. Under glass, grow in lime-free (ericaceous) potting compost with added sharp sand, in full light and with good ventilation at all times. In the growing season, water freely and apply a half-strength balanced liquid fertilizer every 4 weeks; water moderately when not in flower. Pruning group 10, after flowering; group 8 for tree-like species.

• **PROPAGATION** Root semi-ripe cuttings in mid- or late summer. Mound-layer in spring.

• **PESTS AND DISEASES** Susceptible to fungal attack, chiefly from *Phytophthora* root rot, *Pythium*, and *Rhizoctonia*, in warm, wet conditions.

*E. arborea* (Tree heath). Upright shrub with needle-like, dark green leaves, grooved beneath. In spring, bears bell-shaped, honey-scented, greyish white flowers, 4mm ( $\frac{1}{8}$ in) long, in pyramidal, leafy racemes, 20–40cm (8–16in) long.  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  3m (10ft). S.W. Europe, Mediterranean, N. Africa, mountains of central E. Africa. \*\*\* (borderline). 'Albert's Gold' ♀ syn. *E. x veitchii* 'Albert's Gold', has golden foliage but seldom bears flowers;  $\uparrow$  2m (6ft),  $\leftrightarrow$  80cm (32in). **var. alpina** ♀ produces white flowers in dense, cylindrical racemes;  $\uparrow$  2m (6ft),  $\leftrightarrow$  85cm (34in). \*\*\*. 'Estrella Gold' ♀ bears white flowers above compact, lime-green foliage tipped bright yellow;  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  75cm (30in).

*E. australis* ♀ (Spanish heath). Erect, open shrub with linear, dark green leaves, channelled beneath. From mid-spring to early summer, bears tubular to



*Erica arborea* var. *alpina*

bell-shaped, purplish pink flowers, to 9mm ( $\frac{3}{8}$ in) long, in umbel-like racemes, 20cm (8in) long. Prone to damage by wind or snow.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  to 1m (3ft). Portugal, W. Spain, Tangier. \*\*\*. 'Mr. Robert' ♀ produces white flowers.

'Riverslea' ♀ bears lilac-pink flowers.

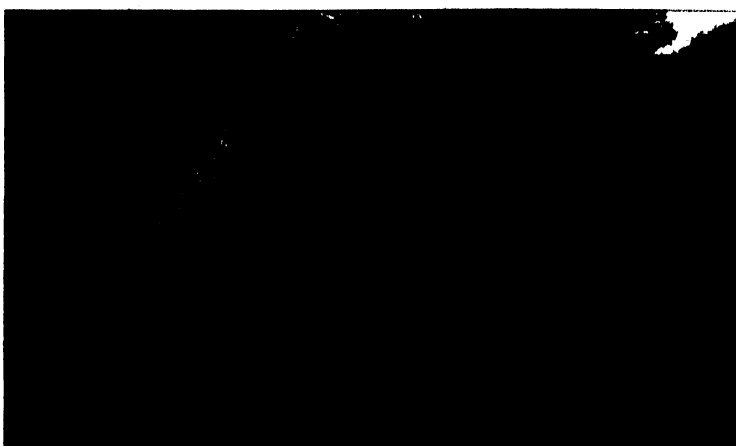
*E. baccans*. Robust, erect, many-branched shrub with linear, sea-green leaves. From winter to spring, bears axillary whorls, 2.5cm (1in) long, each with 4 almost spherical, deep pink flowers, 6mm ( $\frac{1}{4}$ in) across, with constricted throats and keeled, dark pink sepals.  $\uparrow$  to 2.5m (8ft),  $\leftrightarrow$  to 1m (3ft). South Africa (Western Cape). \*

*E. blenna*. Stout, upright shrub with linear-lance-shaped, mid-green leaves, grooved beneath. Urn-shaped to ovoid-conical, sticky, bright orange flowers,

0.9–1.5cm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) long, constricted at the mouths, with green throats and lobes, are borne on axillary shoots, to 3cm (1 $\frac{1}{4}$ in) long, mainly from winter to spring.  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  to 80cm (32in). South Africa (Western Cape). \*

*E. canaliculata* ♀ (Channelled heath). Erect shrub with linear leaves, mid-green above, paler with fine hairs beneath. From winter to early spring, produces panicle-like whorls, to 30cm (12in) long, of cup-shaped, pale pink to near-white flowers, 4mm ( $\frac{1}{8}$ in) across, with white sepals and very dark brown anthers.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  to 1.2m (4ft). South Africa (Western Cape, Eastern Cape). \*

*E. carnea*, syn. *E. herbacea* (Alpine heath, Winter heath). Low, spreading shrub with linear, dark green leaves.



*Erica australis*

Bears one-sided racemes, 7cm (3in) long, of narrowly urn-shaped, purple-pink flowers, 6–9mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) long, in late winter and early spring. Tolerates mildly alkaline soil and some shade.

$\uparrow$  20–25cm (8–10in),  $\leftrightarrow$  to 55cm (22in). C. Alps, N.W. Italy, N.W. Balkans, E. Europe. \*\*\*. Unless otherwise

stated, the following cultivars have mid- to dark green foliage, and bear purplish pink flowers from winter to mid-spring;  $\uparrow$  15cm (6in),  $\leftrightarrow$  45cm (18in).

'Adrienne Duncan' ♀ has bronze-hued foliage, and flowers from midwinter to mid-spring;  $\leftrightarrow$  35cm (14in). 'Altadena' has yellow foliage tipped pink and bronze, and bears lilac-pink flowers, deepening to purplish pink;  $\leftrightarrow$  35cm (14in). 'Ann Sparkes' ♀ has dark golden foliage with bright bronze tips in spring, and rose-pink flowers, darkening to purplish pink;  $\leftrightarrow$  25cm (10in). 'Barry Sellers' has yellow foliage, turning orange in cold weather, and produces deep pink flowers, ageing to magenta;  $\leftrightarrow$  30cm (12in). 'Challenger' ♀ produces bold magenta flowers.

'December Red' ♀ bears flowers that open pink and deepen to purplish pink.

'Eileen Porter' ♀ bears magenta flowers with cream sepals;  $\uparrow$  to 20cm (8in).

'Foxhollow' ♀ has bronze-tipped yellow foliage, deepening to orange-red in very cold weather;  $\leftrightarrow$  40cm (16in).

'Golden Starlet' ♀ bears white flowers, and lime-green foliage that turns

glowing yellow in summer;  $\leftrightarrow$  40cm (16in). 'King George' produces deep pink flowers, and is one of the first to bloom in early winter;  $\leftrightarrow$  25cm (10in).

'Lesley Sparkes' ♀ has mid-green foliage tipped with salmon-pink and gold, particularly in spring;  $\leftrightarrow$  25cm (10in). 'March Seedling' flowers until late spring;  $\leftrightarrow$  50cm (20in). 'Mr. Reeves' see *E. x darleyensis* 'Darley Dale'.

'Myretoun Ruby' ♀ syn. 'Myretoun Ruby', has pink flowers that deepen to crimson with age. 'R.B. Cooke' ♀ bears masses of pink flowers, ageing to mauve. 'Springwood Pink' is trailing, and bears pink flowers that turn deeper pink with age;  $\leftrightarrow$  40cm (16in).

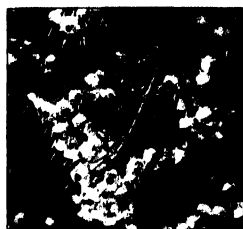
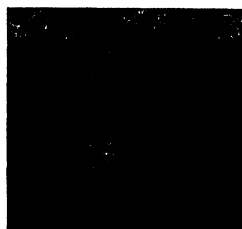
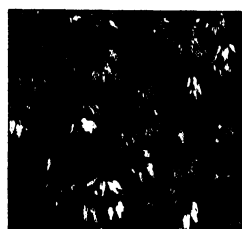
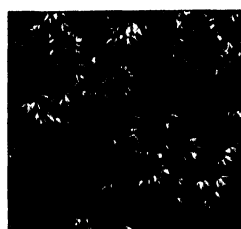
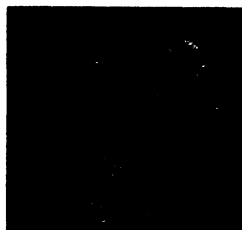
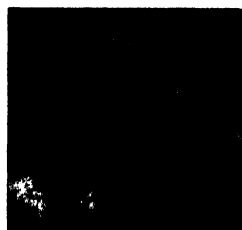
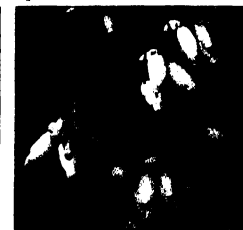
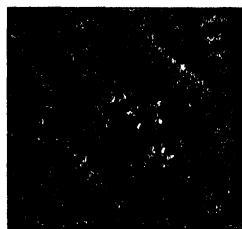
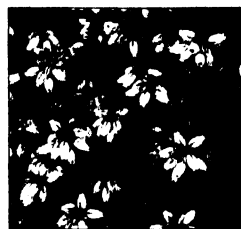
'Springwood White' ♀ is vigorous and trailing, with masses of white flowers above bright green foliage. 'Urville' see 'Vivellii'. 'Vivellii' ♀ syn. 'Urville', has bronze leaves and purplish pink flowers that darken to magenta;  $\leftrightarrow$  35cm (14in). 'Westwood Yellow' ♀ is more upright than other yellow-foliaged cultivars, and bears shell-pink flowers;  $\leftrightarrow$  30cm (12in). 'White Glow' see *E. x darleyensis* 'White Glow'.

'White Perfection' see *E. x darleyensis* 'White Perfection'.

*E. cerinthoides* ♀ (Erica heath, Fire heath). Erect shrub with linear, grey-green leaves, which are variably softly hairy and usually glandular. Tubular, bright red, sometimes pale pink or white flowers, 2–3.5cm ( $\frac{3}{4}$ –1 $\frac{1}{2}$ in) long, with slightly constricted throats and inflated bases, are borne in umbels 2–3.5cm ( $\frac{3}{4}$ –1 $\frac{1}{2}$ in) across from winter to spring, and occasionally throughout the year.  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  to 1m (3ft). South Africa, Swaziland. \*

*E. ciliaris* (Dorset heath). Spreading shrub with ovate to lance-shaped, usually glandular leaves, grey-green or dark green above, white beneath. From midsummer to mid-autumn, produces



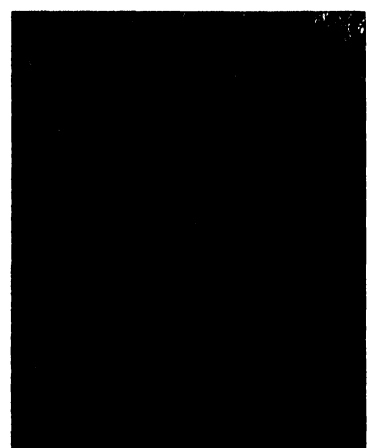
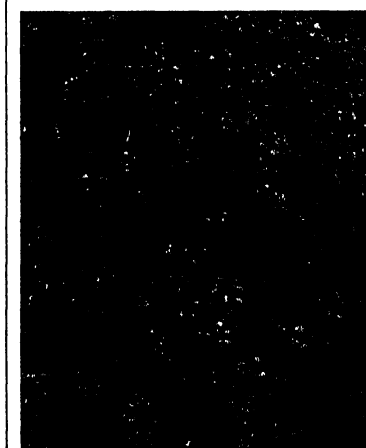
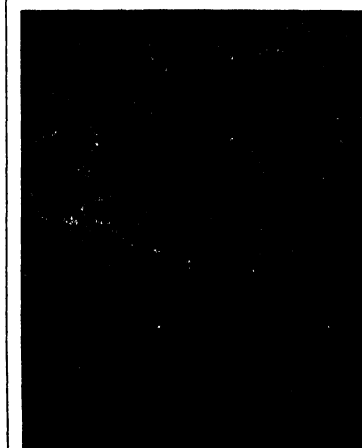
*Erica canaliculata**Erica carnea* 'Ann Sparkes'*Erica carnea* 'December Red'*Erica carnea* 'Eileen Porter'*Erica carnea* 'Foxhollow'*Erica carnea* 'Lesley Sparkes'*Erica carnea* 'Springwood White'*Erica carnea* 'Vivellii'*Erica cerinthoides**Erica ciliaris* 'Corfe Castle'*Erica ciliaris* 'David McClintock'*Erica ciliaris* 'White Wings'*Erica cinerea* 'C.D. Eason'*Erica cinerea* 'Eden Valley'*Erica cinerea* 'Fiddler's Gold'*Erica cinerea* 'Hookstone White'*Erica cinerea* 'Purple Beauty'*Erica cinerea* 'Yvonne'

racemes, 7cm (3in) long, of urn-shaped, usually lilac-pink flowers, to 1cm (1/2in) long, sharply constricted at the mouths. May be damaged in very severe winters. ‡ 35–60cm (14–24in), ↔ 50cm (20in). Europe. \*\*\*. 'Aurea' has straw-yellow foliage in summer, deepening in winter; ‡ 25cm (10in). 'Corfe Castle' ■ ♀ bears distinctive, rose-pink flowers, and mid-green foliage that turns bronze-green in winter; ‡ 22cm (9in), ↔ 35cm (14in). 'David McClintock' ■ ♀ bears flowers with white bases and purplish pink mouths; ‡ to 40cm (16in), ↔ 45cm (18in). 'White Wings' ■ ♀ bears white flowers; ‡ 15cm (6in), ↔ 45cm (18in). *E. cinerea* (Bell heather). Compact shrub with usually linear, strongly rolled-back, dark bottle-green leaves. Urn-shaped, white, pink, or purple flowers, to 7mm (1/4in) long, are borne in racemes 5cm (2in) long from early summer to early autumn. ‡ 60cm (24in), ↔ 80cm (32in). Europe. \*\*\*. 'Alba Major' bears white flowers and mid-green foliage; ‡ 30cm (12in), ↔ 55cm (22in). 'C.D. Eason' ■ ♀ has bright magenta flowers, and is good ground cover; ‡ 25cm (10in), ↔ 50cm (20in). 'Contrast' bears beetroot-red flowers; ‡ 25cm (10in), ↔ 45cm (18in). 'Eden Valley' ■ ♀ has lavender-pink flowers, shading to white at the bases, and mid-green foliage; ‡ 20cm (8in), ↔ 50cm (20in). 'Fiddler's Gold' ■ ♀ has lilac-pink flowers, and golden yellow foliage that deepens to red; ‡ 25cm (10in), ↔ 45cm (18in). 'Foxhollow Mahogany' bears ruby-red flowers, and is good for ground cover; ‡ 20cm (8in), ↔ 50cm (20in). 'Glencairn' ■ bears magenta flowers, and has dark green foliage with red tips, which are especially pronounced in spring; ‡ 30cm (12in), ↔ 50cm (20in). 'Golden Hue' ♀

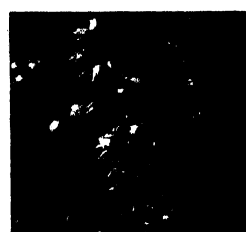
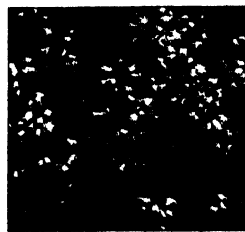
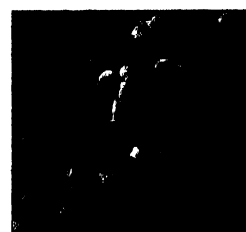
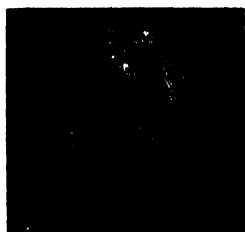
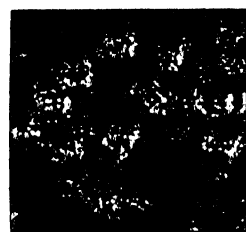
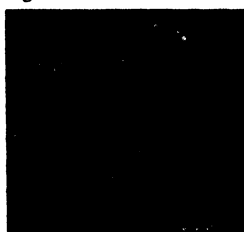
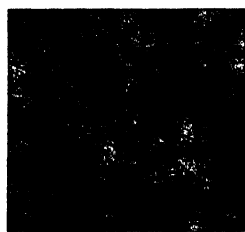
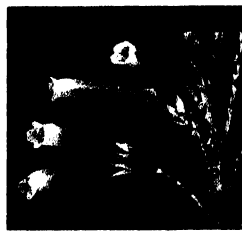
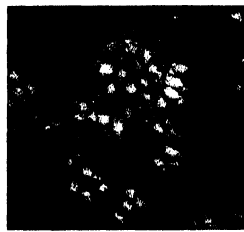
produces amethyst flowers, and pale yellow foliage tipped orange in winter; ‡ 35cm (14in), ↔ 70cm (28in). 'Hookstone White' ■ ♀ produces white flowers in racemes 7–12cm (3–5in) long, above mid-green foliage; ‡ 35cm (14in), ↔ 65cm (26in). 'Janet' bears shell-pink flowers above compact, light green foliage; ‡ 20cm (8in), ↔ 30cm (12in). 'Lime Soda' bears a profusion of soft lavender-pink flowers above lime-green foliage; ‡ 35cm (14in), ↔ 55cm (22in). 'Peñaz' bears masses of bright ruby-red flowers; ‡ 25cm (10in), ↔ 40cm (16in). 'Pentreath' ♀ produces a neat carpet of beetroot-red flowers; ‡ 30cm (12in), ↔ 55cm (22in). 'Pink Ice' ♀ syn. 'Pink Lace', is dwarf and twiggy, with clear rose-pink flowers, and deep green foliage that is bronze when young and in winter; ‡ 20cm (8in), ↔ 35cm (14in). 'Pink Lace' see 'Pink Ice'. 'Purple Beauty' ■ bears bright, deep pinkish purple flowers; ‡ 30cm (12in), ↔ 55cm (22in). 'Rock Pool' has

golden yellow foliage turning orange-red in winter, and produces a few short racemes, 3cm (1 1/4in) long, of mauve flowers; ‡ 15cm (6in), ↔ 30cm (12in). 'Romiley' ■ bears magenta flowers, and provides neat ground cover; ‡ 25cm (10in), ↔ 55cm (22in). 'Rosabella' bears magenta flowers in racemes 7–10cm (3–4in) long, and is good ground cover; ‡ 30cm (12in), ↔ 60cm (24in). 'Windlebrooke' ■ ♀ bears golden yellow foliage turning orange-red in winter; ‡ 15cm (6in), ↔ 45cm (18in). 'Yvonne' ■ produces salmon-pink flowers with deeply cut corollas; ‡ 35cm (14in), ↔ 45cm (18in). *E. codonodes* see *E. lusitanica*. *E. corsica* see *E. terminalis*. *E. crawfordii* see *E. mackaiana*. *E. cruenta* (Blood-red heath). Upright, loosely branched shrub with linear, dark green leaves. Terminal, whorled, leafy racemes, 10cm (4in) long, of tubular, blood-red flowers, 2–2.5cm (3/4–1in) long, are produced from spring to early

autumn. ‡ 1m (3ft), ↔ 70cm (28in). South Africa (Western Cape). \* \* *E. curviflora* (Water heath). Erect shrub with linear to linear-lance-shaped, mid-green leaves. Tubular, usually hairy, red, orange, yellow, or pink flowers, 2–4cm (3/4–1 1/2in) long, are flared at the mouths. They are usually borne singly, occasionally in terminal clusters of 3 or 4, at any time of year, but most often from winter to spring. Prefers wet soil. ‡ to 1.5m (5ft), ↔ to 1m (3ft). South Africa (Western Cape, Eastern Cape). \* *E. x darleyensis* (*E. carnea* x *E. erigena*) (Darley Dale heath). Bushy shrub with lance-shaped, mid-green leaves. In late winter and early spring, bears racemes, 10cm (4in) long, of urn-shaped to cylindrical, white to rose-pink flowers, 5mm (1/4in) long. Suitable for any well-drained soil. Particularly good ground cover. ‡ to 60cm (24in), ↔ to 75cm (30in). Garden origin. \* \* \*. The following cultivars are ‡ 30cm (12in), ↔ 60cm (24in), unless otherwise stated.

*Erica cinerea* 'Glencairn'*Erica cinerea* 'Romiley'*Erica cinerea* 'Windlebrooke'

E

*Erica x darleyensis* 'Archie Graham'*Erica x darleyensis* 'Darley Dale'*Erica x darleyensis* 'Jenny Porter'*Erica x darleyensis* 'White Glow'*Erica erigena* 'Brightness'*Erica erigena* 'Golden Lady'*Erica mackaiana* 'Plena'*Erica mackaiana* 'Shining Light'*Erica mammosa**Erica x stuartii* 'Irish Lemon'*Erica tetralix* 'Alba Mollis'*Erica tetralix* 'Pink Star'*Erica vagans* 'Lyonesse'*Erica vagans* 'Mrs. D.F. Maxwell'*Erica vagans* 'Valerie Proudley'*Erica versicolor**Erica x watsonii* 'Dawn'*Erica x williamsii* 'P.D. Williams'

'**Archie Graham**' ■ has pink flowers, ageing to purplish pink; † 50cm (20in). '**Darley Dale**' ■ syn. 'Darleyensis', 'Pink Perfection', *E. carnea* 'Mr. Reeves', has foliage tipped cream in spring, and shell-pink flowers that darken with age; ↔ 55cm (22in). '**Darleyensis**' see 'Darley Dale'. '**Ghost Hills**' ♀ has light green foliage, tipped cream in spring; ↔ 80cm (32in). '**Jack H. Brummage**', syn. 'J.H. Brummage', *E. erigena* 'Jack H. Brummage', produces yellow-orange leaves and purplish pink flowers. '**Jenny Porter**' ■ ♀ has foliage with pale cream tips in spring, and pinkish white flowers. '**J.W. Porter**' ♀ has dark green foliage, tipped red and cream in spring, and purplish pink flowers; † 25cm (10in), ↔ 40cm (16in). '**Kramer's Rote**' ♀ syn. 'Kramer's Red', has bronze-green foliage and magenta flowers. '**Molten Silver**' see 'Silberschmelze'. '**Pink Perfection**' see 'Darley Dale'. '**Silberschmelze**', syn. 'Molten Silver', 'Silver Beads', has white flowers, and foliage that is faintly cream-tipped in spring, later deep green, and tinged red in winter; † 35cm (14in), ↔ 80cm (32in). '**Silver Beads**' see 'Silberschmelze'. '**White Glow**' ■ syn. 'White Gown', *E. carnea* 'White Glow', is compact, and bears masses of white flowers; † 25cm (10in), ↔ 50cm (20in). '**White Gown**' see 'White Glow'. '**White Perfection**' ♀ syn. *E. carnea* 'White Perfection', produces pure white flowers and bright green foliage; † 40cm (16in), ↔ 70cm (28in). *E. erigena*, syn. *E. hibernica*, *E. mediterranea* (Irish heath, Mediterranean heath). Upright shrub with brittle stems and linear, dark green leaves. From winter to spring, produces urn-shaped to cylindrical, honey-scented, deep lilac-pink flowers, 5mm (¼in) long, in racemes 4cm (1½in) long. Good for low hedges in areas free from heavy snowfall.

† to 2.5m (8ft), ↔ to 1m (3ft). Ireland, S.W. France, Spain, Portugal, Tangier. \*\*\*. '**Brightness**' ■ has purple-green foliage in winter, becoming glaucous green in summer, and bears lilac-pink flowers in spring; † ↔ 50cm (20in); \*\*'. '**Golden Lady**' ■ ♀ has bright golden yellow foliage, which may be burnt by cold wind; † 30cm (12in), ↔ 40cm (16in). '**Irish Dusk**' ♀ has dark grey-green leaves, and produces rose-pink flowers from late autumn to late spring; † 60cm (24in), ↔ 45cm (18in). '**Irish Lemon**' see *E. x stuartii* 'Irish Lemon'. '**Jack H. Brummage**' see *E. x darleyensis* 'Jack H. Brummage'. '**Mediterranea Superba**' see 'Superba'. '**Superba**', syn. 'Mediterranea Superba', bears strongly scented, shell-pink flowers, deepening with age, in mid- and late spring. Suitable as a hedge; † 1.8m (6ft), ↔ 50cm (20in). '**W.T. Rackliff**' ♀ is compact, with rich green foliage, and produces masses of white flowers in spring; † 75cm (30in), ↔ 55cm (22in). *E. glandulosa*. Untidy shrub with overlapping, linear, light green leaves. Gland-tipped hairs on leaves and stems make the plant sticky to touch. Axillary clusters, 1.5cm (½in) across, of 2–5 tubular flowers, 4–10mm (¼–½in) long, in shades of pink, are borne mainly from autumn to spring. † to 60cm (24in), ↔ to 90cm (36in). South Africa (Western Cape, Eastern Cape). \* *E. gracilis*. Compact shrub with linear, deep green leaves. From autumn to spring, bears whorls, 1cm (½in) long, of 4 urn-shaped, pale pink to cerise flowers, 4mm (¼in) long. † ↔ 50cm (20in). South Africa (Western Cape, Eastern Cape). \* *E. herbacea* see *E. carnea*. *E. hibernica* see *E. erigena*. *E. x hiemalis*. Usually upright shrub with linear, light green leaves. From late

autumn to winter, bears tubular, pink-suffused white flowers, 1.5cm (½in) long, in dense racemes, 10cm (4in) long. † ↔ 60cm (24in). Garden origin. \* *E. hybrida* 'Irish Lemon' see *E. x stuartii* 'Irish Lemon'. *E. lusitanica* ♀ syn. *E. codonodes* (Portuguese heath). Erect shrub with feathery, linear, mid-green leaves. From winter to spring, tubular to bell-shaped white flowers, 5mm (¼in) long, opening from pink buds, are borne in branched racemes, 25cm (10in) long. Prefers acid soil. † to 3m (10ft), ↔ to 1m (3ft). S.W. France, Portugal, W. Spain. \* \*. '**George Hunt**' has bright yellow leaves; it requires a sheltered site. *E. mackaiana*, syn. *E. crawfordii*, *E. mackaii*, *E. mackayana* (Mackay's heath). Decumbent to erect shrub with oblong-lance-shaped, hairy-tipped leaves, which are dark green and sometimes slightly hairy above, white beneath. From summer to early autumn, produces umbels, 1cm (½in) across, of urn-shaped, bright pink flowers, to 7mm (¼in) long, with constricted mouths. Needs damp soil. † to 50cm (20in), ↔ to 75cm (30in). Ireland, Spain. \* \*. '**Dr. Ronald Gray**', syn. *E. tetralix* 'Dr. Ronald Gray', has hairless, bright green leaves and pure white flowers; † 15cm (6in), ↔ 35cm (14in). '**Plena**' ■ syn. *E. tetralix* 'Plena', produces double magenta flowers. Good ground cover; † 15cm (6in), ↔ 40cm (16in). '**Shining Light**' ■ ♀ has grey-green foliage, and bears masses of white flowers, 8mm (⅜in) long; † 25cm (10in), ↔ 55cm (22in). *E. mackaii* see *E. mackaiana*. *E. mackayana* see *E. mackaiana*. *E. mammosa* ■ Erect shrub with linear to lance-shaped, dark green leaves. From spring to summer, bears tubular, dark red, orange-red, pink, green, or white

flowers, 1.5–2.5cm (½–1in) long, in clustered, terminal racemes, 7cm (3in) long. † to 1.5m (5ft), ↔ to 2m (6ft). South Africa (Western Cape). \* *E. manipulatora*, syn. *E. verticillata* of gardens (Whorled heath). Erect to spreading shrub with linear, sharply pointed, mid-green leaves. From late summer to autumn, bears irregular racemes, 10cm (4in) long, of cylindrical to bell-shaped, rose-pink flowers, 4mm (¼in) long. † to 1m (3ft), ↔ to 1.1m (3½ft). E. Mediterranean. \* \*. *subsp. anthura* 'Heaven Scent' ♀ bears sprays of strongly scented, lilac-pink flowers; ↔ 60cm (24in); \* \*. *E. mediterranea* see *E. erigena*. *E. nana*. Dwarf, prostrate, sometimes erect shrub with linear, mid-green leaves. In autumn, bears whorls, to 2cm (¾in) long, of 3 tubular yellow flowers, to 2cm (¾in) long, with spreading, green-tipped lobes. Good in containers. † usually 20–25cm (8–10in), sometimes to 50cm (20in), ↔ to 1m (3ft). South Africa (Western Cape). \* *E. pageana*. Erect shrub with linear, mid-green leaves. In late winter and early spring, short branches bear groups of 3 or 4 bell-shaped, rich yellow flowers, 8–10mm (⅜–½in) long, in dense, spike-like racemes, 10cm (4in) long. † to 60cm (24in), ↔ to 30cm (12in). South Africa (Western Cape). \* *E. patersonia* (Mealie heath). Erect shrub with linear, mid-green leaves. In late winter and early spring, bears dense, spike-like racemes, 8cm (3in) long, of tubular yellow flowers, 1.5–2cm (½–¾in) long, in groups of 4. † to 90cm (36in), ↔ to 60cm (24in). South Africa (Western Cape). \* *E. perspicua* ■ (Prince of Wales heath). Variable shrub with overlapping, linear, grey-green leaves. Translucent, tubular flowers, 1–2cm (½–¾in) long, in white,

pink and white, red and white, purple and white, or red, are borne in loose, spike-like racemes, 8cm (3in) long, mainly from early autumn to winter. Needs damp soil. † to 2m (6ft), ↔ to 1m (3ft). South Africa (Western Cape). \*

*E. pesizae* (Kapokkie heath). Upright, many-branched shrub with linear, mid-green leaves. In spring, bears racemes, 5cm (2in) long, of cup-shaped white flowers, 5mm (¼in) across, covered with woolly hairs. † to 60cm (24in). South Africa (Western Cape). \*

*E. x praegeri* see *E. x stuartii*.

*E. quadrangularis*. Compact, well-rounded shrub with linear, mid-green leaves. From late winter to summer, bears whorls, 2cm (¾in) long, of 4 cup-shaped flowers, 2–3mm (¼–½in) long, ranging from white through pink to red. † 60cm (24in), ↔ 45cm (18in). South Africa (Western Cape). \*

*E. scoparia* (Besom heath). Untidy, erect shrub with linear, dark green leaves. In summer, tiny, bell-shaped, greenish brown flowers, to 3mm (¼in) long, are borne in spike-like racemes, 6cm (2½in) long. † to 2m (6ft), ↔ to 1m (3ft). S.W. France, Spain, N. Africa, Canary Islands. \*\*\*. *'Minima'* is compact, and bears a few brownish green flowers in late spring and early summer; † 25cm (10in), ↔ 80cm (32in).

*E. sessiliflora*. Upright shrub with erect to spreading, linear, mid-green leaves. Bears congested, spike-like racemes, to 6cm (2½in) long, of tubular, greenish white flowers, 1.5–3cm (½–1¼in) long, from late winter to spring. Sepals eventually turn red, producing tight fruiting heads that remain on the plant for several years. † to 2m (6ft), ↔ to 1m (3ft). South Africa (Western Cape, Eastern Cape). \*

*E. speciosa*. Sturdy, erect, many-branched shrub with linear, mid-green leaves. Spike-like racemes, 9cm (3½in) long, of tubular, pink- or red-based flowers, 2–3cm (¾–1¼in) long, with white, green, or yellow lobes, are borne in whorls of 3, or occasionally singly, from early spring to early autumn. † to 1.2m (4ft), ↔ to 1m (3ft). South Africa (Western Cape, Eastern Cape). \*

*E. stricta* see *E. terminalis*.

*E. x stuartii* (*E. mackaiana* x *E. tetralix*), syn. *E. x praegeri*. Erect shrub with oblong, glandular, grey-green leaves. Throughout summer and autumn, produces umbels of urn-shaped pink flowers, 8mm (⅜in) long, which are contracted at the mouths. Needs moist soil. † 25cm (10in), ↔ 50cm (20in). Ireland (Donegal, Connemara). \*\*\*. *'Irish Lemon'* ♀ syn. *E. erigena* 'Irish Lemon', *E. hybrida* 'Irish Lemon', has brilliant lemon-yellow spring growth, and bears mauve flowers from late spring to summer.

*E. subdivaricata*. Spreading shrub with linear, usually hairy, mid-green leaves. Whorls of 4 cup-shaped, honey-scented, occasionally pink-flushed, white flowers, 4mm (⅜in) long, are produced in the leaf axils from early summer to late autumn. Requires damp soil. † 50–80cm (20–32in), ↔ to 1m (3ft). South Africa (Western Cape). \*

*E. terminalis* ♀ syn. *E. corsica*, *E. stricta* (Corsican heath). Erect shrub with linear, glossy, dark green leaves. Bears umbels of urn-shaped, lilac-pink flowers, 7mm (¼in) long, from mid-

summer to early autumn. The faded flowers have a russet hue all winter. Good as a hedge, or as a specimen plant if pruned hard when young. † to 1m (3ft). Europe, S.W. Mediterranean.

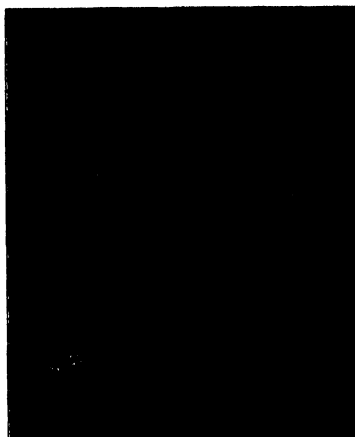
\*\*\*

*E. tetralix* (Cross-leaved heath). Dwarf, spreading shrub with lance-shaped to linear-oblong, often glandular, usually grey-green leaves, white beneath, arranged in whorls of 4 to form crosses. From midsummer to mid-autumn, bears umbels of urn-shaped, pale pink flowers, 9mm (⅜in) long, with constricted mouths. Prefers moist soil. † to 30cm (12in), ↔ 50cm (20in). W. Europe.

\*\*\*. *'Alba Mollis'* ♀ has silvery grey leaves and pure white flowers; † 20cm (8in), ↔ 30cm (12in). *'Con Underwood'* ♀ bears magenta flowers; † 25cm (10in). *'Dr. Ronald Gray'* see *E. mackaiana* 'Dr. Ronald Gray'. *'Pink Star'* ♀ bears lilac-pink flowers in star-like patterns; † 20cm (8in), ↔ 35cm (14in). *'Plena'* see *E. mackaiana* 'Plena'.

*E. umbellata* (Dwarf Spanish heath). Compact shrub with linear, grey-green leaves. In late spring and early summer, bears umbels of bell-shaped to ovoid mauve flowers, 6mm (¼in) long, with conspicuous, dark brown anthers. Grows in any soil. † 35–80cm (18–32in), ↔ 55cm (22in). Portugal, W. Spain, Tangier. \*\*

*E. vagans* (Cornish heath, Wandering heath). Vigorous, spreading shrub with decumbent to ascending stems and linear, dark green leaves. Cylindrical to bell-shaped, pink, mauve, or white flowers, to 4mm (⅜in) long, are borne in racemes 14cm (5½in) long, from mid-

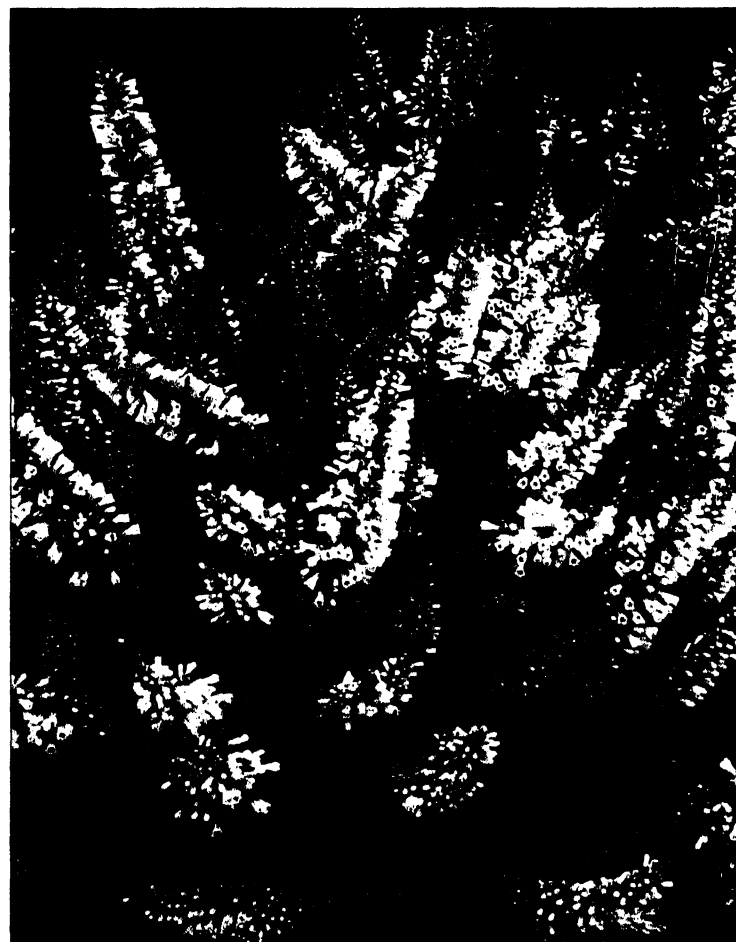


*Erica vagans* 'Birch Glow'

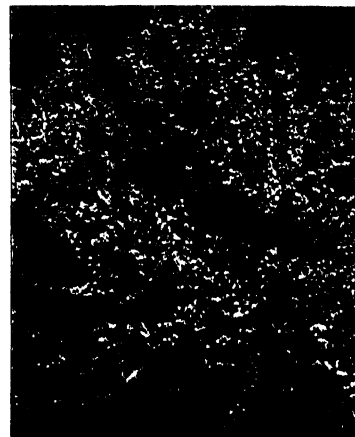
summer to mid-autumn. Grows in any well-drained soil. † 40–80cm (16–32in), ↔ to 80cm (32in). Ireland, UK (Cornwall), W. France, Spain. \*\*\*.

*'Birch Glow'* ♀ has deep rose-pink flowers; † 30cm (12in), ↔ 50cm (20in). *'French White'* bears masses of off-white flowers; † 40cm (16in), ↔ 60cm (24in). *'Lyonesse'* ♀ has bright green leaves and pure white flowers; † 25cm (10in), ↔ 50cm (20in). *'Mrs. D.F. Maxwell'* ♀ bears deep rose-pink flowers; † 30cm (12in), ↔ 45cm (18in). *'St. Keverne'* has clear pink flowers; † 40cm (16in), ↔ 45cm (18in). *'Valerie Proudley'* ♀ bears bright yellow foliage and white flowers; † 15cm (6in), ↔ 30cm (12in).

*E. 'Valerie Griffiths'*. Spreading shrub with linear, yellow leaves, deepening to



*Erica perspicua*



*Erica x veitchii* 'Exeter'

golden yellow in winter. Bears racemes, 5–10cm (2–4in) long, of bell-shaped, pale pink flowers, to 4mm (⅜in) long, from summer to early autumn. Tolerates mildly alkaline soil. † 40cm (16in), ↔ 55cm (22in). \*\*\*

*E. x veitchii* (*E. arborea* x *E. lusitanica*) (Veitch's heath). Erect, open shrub with linear, mid-green leaves. From late winter to spring, bears leafy racemes, 30cm (12in) long, of cylindrical-spherical white flowers, to 4mm (⅜in) long. Tolerates mildly alkaline soil. † to 2.2m (7ft), ↔ 65cm (26in). Garden origin. \*\*\*. *'Albert's Gold'* see *E. arborea* 'Albert's Gold'. *'Exeter'* ♀ bears masses of scented flowers in spring; † 1.9m (6ft).

*E. versicolor* ♀ Erect shrub with linear, mid-green leaves. Bears dense, spike-like racemes, 3cm (1¼in) long, of tubular flowers, 2–3cm (¾–1¼in) long, in whorls of 3, usually with red tubes and green to white tips; flowers mainly from autumn to early winter. † to 3m (10ft), ↔ 1m (3ft). South Africa (Western Cape). \*

*E. verticillata* of gardens see *E. manipuliiflora*.

*E. vestita*. Erect shrub with densely packed, linear, mid-green leaves. Bears spike-like racemes, 3cm (1¼in) long, of arching, tubular, red to dark pink, or white flowers, 1.5–2.5cm (½–1in) long, from spring to late summer. † to 90cm (36in). South Africa (Western Cape). \*

*E. vulgaris* see *Calluna vulgaris*.

*E. x watsonii* (*E. ciliaris* x *E. tetralix*) (Watson's heath). Compact, spreading shrub with linear, greyish green leaves. In summer, produces dense racemes, 1cm (½in) long, of urn-shaped pink flowers, to 1cm (½in) long, with constricted mouths. † to 40cm (16in), ↔ to 85cm (34in). UK (Cornwall).

\*\*\*. *'Dawn'* ♀ has red spring growth that turns golden, and bears deep pink flowers from midsummer to mid-autumn; † 20cm (8in).

*E. x williamsiana* see *E. x williamsii*.

*E. x williamsii* (*E. tetralix* x *E. vagans*), syn. *E. x williamsiana* (Williams' heath). Decumbent to ascending shrub with linear, mid-green leaves, tipped bright yellow in spring. Bears dense racemes, 4cm (1½in) long, of bell-shaped, lilac-pink flowers, to 3mm (⅜in) long, from midsummer to late autumn. † to 75cm (30in), ↔ 45cm (18in). UK (Cornwall).

\*\*\*. *'P.D. Williams'* ♀ has yellow-tipped spring growth that lasts well into summer; † to 30cm (12in).

## ERIGERON

Fleabane

ASTERACEAE/COMPOSITAE

Genus of about 200 species of annuals, biennials, and perennials found in dry grassland and mountainous areas, with a very wide distribution, but occurring especially in North America. They range from low-growing alpine species to taller, bushy, clump-forming plants. All have simple, rarely lobed or dissected, usually oblong to lance-shaped or spoon-shaped, mainly basal leaves; the leaves on the stems are usually shorter and narrower. Leaf descriptions below are of basal leaves unless otherwise stated. Fleabanes are grown for their daisy-like, single to semi-double, mainly yellow-centred, white, pink, blue, or purple, sometimes yellow or orange flowerheads, which are borne singly or in corymbs over long periods, mainly in summer. Herbaceous hybrids have leaves 6–15cm (2½–6in) long, and flowerheads that are mostly 4–6cm (1½–2½in) across. Grow in a mixed or herbaceous border, especially in a coastal or rock garden. The flowerheads last well as cut flowers if they are picked when fully open.

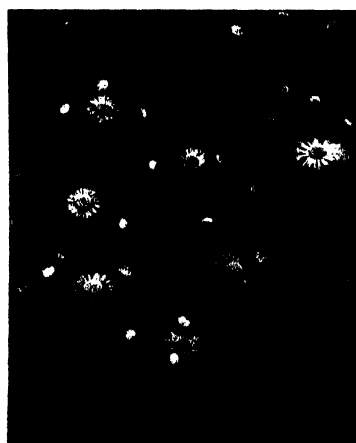
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil that does not dry out in summer, in full sun with some midday shade. The smaller alpine species need sharp drainage and protection from excessive winter wet. Most taller species and hybrids need staking. Dead-head to encourage further flowering. Cut back to ground level in autumn to retain neat growth. Divide every 2 or 3 years (*E. 'Dimity'* every other year) in late spring, and discard the woody crowns.

• **PROPAGATION** Sow seed in containers in a cold frame in mid- or late spring. Divide, or root basal cuttings, in spring.

• **PESTS AND DISEASES** Powdery mildew affects some hybrids in dry conditions. *E. aurantiacus* is susceptible to slugs.

*E. alpinus* ■ Clump-forming perennial with narrowly elliptic to spoon-shaped, hairy leaves, to 8cm (3in) long. In summer, slender stems, to 20cm (8in) long, produce solitary, or groups of 2 or 3, lilac-blue to red-purple flowerheads, to 3.5cm (1½in) across, with yellow disc-florets. ↑ to 25cm (10in), ↔ to 20cm (8in). Mountains of C. and S. Europe. \*\*\*

*Erigeron alpinus**Erigeron aureus* 'Canary Bird'

*E. aurantiacus*. Mat- to clump-forming perennial with elliptic to spoon-shaped, velvety leaves, to 10cm (4in) long. Over long periods in summer, stout, leafy stems produce solitary, brilliant orange flowerheads, to 5cm (2in) across, with yellow disc-florets. ↑↔ to 30cm (12in). Mountains of Turkistan. \*\*\*

*E. aureus*. Short-lived, mound-forming perennial with tufts of broadly elliptic to spoon-shaped, hairy, grey-green leaves, to 8cm (3in) long. In summer, solitary, deep golden yellow flowerheads, 2cm (¾in) or more across, are produced on stems 5cm (2in) long. ↑ 5–10cm (2–4in), rarely to 20cm (8in), ↔ to 15cm (6in). Mountains of W. North America. \*\*\*. 'Canary Bird' ■ is a longer-lived perennial, and produces bright canary-yellow flowerheads; ↑ to 10cm (4in).

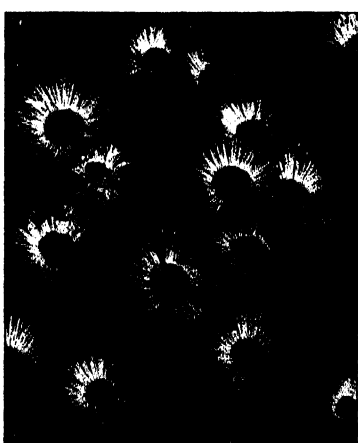
*E. 'Azure Fairy'* see *E. 'Azurfee'*.

*E. 'Azurfee'*, syn. 'Azure Fairy'. Clump-forming perennial with inversely lance-shaped leaves. Produces corymbs of semi-double, yellow-centred, lavender-blue flowerheads in early and mid-summer. ↑↔ 45cm (18in). \*\*\*

*E. 'Black Sea'* see *E. 'Schwarzes Meer'*.

*E. 'Charity'* ■ Clump-forming perennial with lance-shaped leaves. In early and midsummer, semi-double, yellow-centred, light lilac-pink flowerheads are produced singly or in groups of 2 or 3. ↑ 60cm (24in), ↔ 45cm (18in). \*\*\*

*E. chrysopridis* 'Grand Ridge' ♀ Dense, mat- to hummock-forming perennial with linear, grey-green leaves, 2–8cm (¾–3in) long. Masses of short-stemmed, deep yellow flowerheads,

*Erigeron* 'Charity'*Erigeron* 'Dignity'

3–5cm (1¼–2in) across, are borne, usually singly, over very long periods in summer. ↑ to 5cm (2in), ↔ to 20cm (8in). \*\*\*

*E. compositus*. Tufted, loose cushion-forming perennial with fan-shaped, 3- or 4-ternate, lobed or dissected, hairy, grey-green leaves, 2–6cm (¾–2½in) long. In summer, bears solitary, yellow-centred, white, pink, or very pale blue flowerheads, to 2cm (¾in) across. May self-seed excessively. ↑ to 15cm (6in), ↔ to 10cm (4in). Greenland, Canada, W. North America. \*\*\*

*E. 'Darkest of All'* see *E. 'Dunkelste Aller'*.

*E. 'Dignity'* ■ Clump-forming perennial with lance-shaped to spoon-shaped leaves. Solitary, yellow-centred, violet-mauve flowerheads are produced in early and midsummer. ↑ 50cm (20in), ↔ 45cm (18in). \*\*\*

*E. 'Dimity'*. Clump-forming perennial making a low mound of lance-shaped leaves. In early and midsummer, bears solitary, semi-double, orange-centred, bright pink flowerheads, with fine ray-florets, tinted orange in bud. ↑ 25cm (10in), ↔ 30cm (12in). \*\*\*

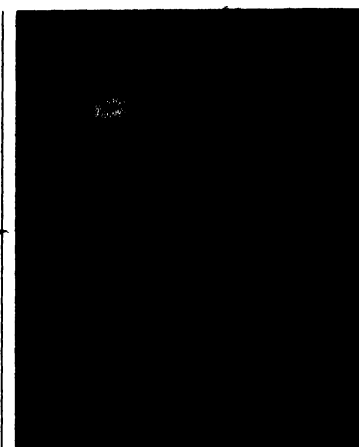
*E. 'Dunkelste Aller'* ■ ♀ syn. *E. 'Darkest of All'*. Clump-forming perennial with lance-shaped, greyish green leaves. In early and midsummer, produces corymbs of semi-double, yellow-centred, dark violet flowerheads, with long ray-florets. ↑ 60cm (24in), ↔ 45cm (18in). \*\*\*

*E. 'Felicity'*. Clump-forming perennial with lance-shaped leaves. Produces corymbs of large, single, yellow-centred pink flowerheads in early and mid-summer. ↑ 60cm (24in), ↔ 50cm (20in). \*\*\*

*E. 'Foersterns Liebling'* ♀ Clump-forming perennial with lance-shaped, greyish green leaves. Corymbs of semi-double, yellow-centred, deep reddish pink flowerheads, with numerous closely packed ray-florets, are produced in early and midsummer. ↑ 60cm (24in), ↔ 45cm (18in). \*\*\*

*E. 'Gaiety'* ■ Clump-forming perennial with lance-shaped leaves. Corymbs of semi-double, yellow-centred, bright pink flowerheads are produced very freely in early and midsummer. ↑ 60cm (24in), ↔ 45cm (18in). \*\*\*

*E. glaucus* (Beach aster). Tufted perennial with succulent-looking stems and inversely lance-shaped, obovate, or broadly spoon-shaped, more or less glaucous leaves, 12–15cm (5–6in) long,

*Erigeron* 'Dunkelste Aller'

with blunt points. Semi-double flowerheads, 3.5–6cm (1½–2½in) across, with thin, pale mauve ray-florets and yellow, later brown disc-florets, are solitary or produced on sparsely branched stems, from late spring to midsummer. ↑ 30cm (12in), ↔ 45cm (18in). USA (Oregon, California). \*\*\*. 'Elstead Pink' ■ produces lilac-pink flowerheads.

*E. karvinskianus* ♀ syn. *E. mucronatus*. Carpeting, rhizomatous, woody-based, vigorously spreading perennial with lax, branching stems and elliptic-lance-shaped, hairy, grey-green leaves, to 4cm (1½in) long. In summer, produces abundant yellow-centred flowerheads, 2cm (¾in) across, either singly or in loose corymbs of 2–5, opening white and fading through pink to purple. Suitable for a wall or paving crevices. ↑ 15–30cm (6–12in), ↔ 1m (3ft) or more. Mexico to Panama. \*\*\*

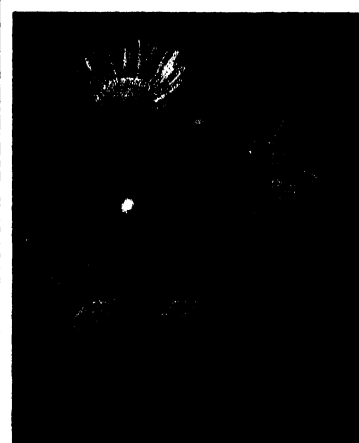
'Profusion' ■ is very floriferous, and bears flowerheads with pink or white ray-florets. Excellent for a hanging basket, window-box, or container. ↑ 20–30cm (8–12in), ↔ to 50cm (20in).

*E. mucronatus* see *E. karvinskianus*.

*E. 'Pink Jewel'* see *E. 'Rosa Juwel'*.

*E. pinnatisectus*. Tufted perennial with linear, pinnatisect, hairy leaves, to 2cm (¾in) long. In summer, produces solitary, blue to purple flowerheads, 2.5cm (1in) or more across, with bright yellow to orange disc-florets. Suitable for a rock garden. ↑ to 20cm (8in), ↔ to 15cm (6in). C. USA. \*\*\*

*E. 'Prosperity'*. Erect, clump-forming perennial with lance-shaped leaves. Corymbs of almost double, yellow-centred, mauve-blue flowerheads are

*Erigeron* 'Gaiety'

*Erigeron glaucus* 'Elstead Pink'

produced in early and midsummer.  $\uparrow$  45cm (18in). \*\*\*

**E. 'Quakeress'** ■ Strong-growing, clump-forming perennial with lance-shaped, greyish green leaves. Produces corymbs of single, yellow-centred, pink-flushed white flowerheads in early and midsummer.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). \*\*\*

**E. 'Red Sea'** see *E. 'Rotes Meer'*.

**E. 'Rosa Juwel'**, syn. *E. 'Pink Jewel'*. Clump-forming perennial with lance-shaped leaves. Corymbs of semi-double, yellow-centred, pale but bright pink flowerheads are produced in early and midsummer.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). \*\*\*

**E. 'Rotes Meer'**, syn. *E. 'Red Sea'*. Upright, clump-forming perennial with spoon-shaped leaves. Corymbs of semi-double, deep dark red flowerheads are produced in midsummer.  $\uparrow$  60cm (24in). \*\*\*

**E. 'Schwarzes Meer'**, syn. *E. 'Black Sea'*. Clump-forming perennial with lance-shaped leaves. Bears corymbs of semi-double, yellow-centred, deep violet flowerheads in early and midsummer.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). \*\*\*

**E. 'Serenity'** ■ Somewhat lax, clump-forming perennial with lance-shaped leaves. Produces corymbs of semi-double, yellow-centred, violet-mauve flowerheads in early and midsummer.  $\uparrow$  75cm (30in),  $\leftrightarrow$  45cm (18in). \*\*\*

**E. 'speciosus'**. Clump-forming perennial with mostly hairless leaves, to 15cm (6in) long, with fringed, hairy margins; the basal leaves are inversely lance-shaped to inversely spoon-shaped, the stem leaves are lance-shaped to ovate. In

*Erigeron* 'Quakeress'

early and midsummer, produces yellow-centred, lavender-blue to lilac flowerheads, 4cm (1½in) across, in corymbs to 10cm (4in) across.  $\uparrow$  60cm (24in). Canada to N.W. USA. \*\*\*

**E. uniflorus**. Clump-forming perennial with spoon-shaped, initially sparsely hairy leaves, to 5cm (2in) long. From summer to early autumn, produces solitary, white to pale lilac flowerheads, 1.5cm (½in) across. Suitable for a rock garden.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 10cm (4in). Mountains of N. Europe, N. Asia, North America. \*\*\*

**E. 'Wuppertal'**. Clump-forming perennial with lance-shaped leaves. Produces corymbs of semi-double, yellow-centred, dark lilac flowerheads in early and midsummer.  $\uparrow$  60cm (24in),  $\leftrightarrow$  45cm (18in). \*\*\*

*Erigeron karvinskianus* 'Profusion'*Erigeron* 'Serenity'*Erinacea anthyllis*

## ERINACEA

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of dense, compact, evergreen subshrub from exposed, stony habitats in calcareous mountains in S.W. Europe and Morocco. It has stiff, sharp spines, simple or 3-palmate leaves, and axillary, pea-like, 2-lipped flowers. Long-lived and slow-growing, it flowers in profusion once established. Grow in a rock garden, scree bed, or raised bed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, gritty, sharply drained soil in full sun.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Root greenwood cuttings in late spring or early summer.
- **PESTS AND DISEASES** May be infested by red spider mites under glass.

**E. anthyllis** ■ ♀ syn. *E. pungens* (Hedgehog broom). Mound-forming subshrub with spine-tipped, intricately branching stems and simple or 3-palmate, dark grey-green leaves, to 1cm (½in) long, with inversely lance-shaped leaflets. In late spring and early summer, bears clusters of 2-4 violet-blue flowers, to 2cm (¾in) long, with white-marked standard petals.  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  to 1m (3ft). E. Pyrenees to W. Mediterranean, Morocco. \*\*\*

**E. pungens** see *E. anthyllis*.

## ERINUS

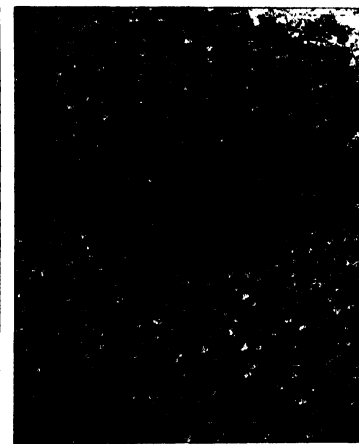
Fairy foxglove

SCROPHULARIACEAE

Genus of 2 species of semi-evergreen perennials with rosettes of inversely lance-shaped to wedge-shaped, toothed leaves and terminal racemes of tubular flowers with 5 spreading lobes. Growing wild in rocky mountains in North Africa and C. and S. Europe, they are ideal for a rock garden, a wall, or paving crevices.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light to moderately fertile, well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed *in situ* or in containers in an open frame in autumn. Frequently self-seeds. Root rosettes as cuttings in spring.
- **PESTS AND DISEASES** Trouble free.

**E. alpinus** ■ ♀ Short-lived, tufted perennial with inversely lance-shaped to wedge-shaped, sticky leaves, 0.5-2cm

*Erinus alpinus*

(¼-¾in) long. Bears short racemes of 2-lipped, pink, purple, or white flowers, to 1cm (½in) across, from late spring to summer.  $\uparrow$  8cm (3in),  $\leftrightarrow$  10cm (4in).

C. and S. Europe. \*\*\*. 'Dr. Hähnle' has deep crimson flowers.

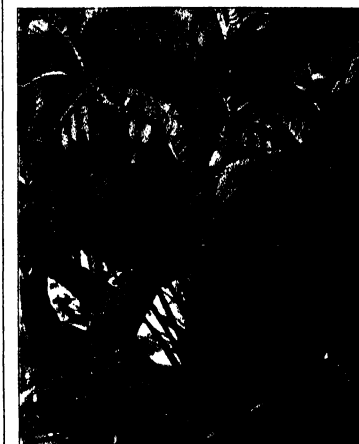
## ERIOBOTRYA

ROSACEAE

Genus of about 30 species of evergreen shrubs and trees from woodland in the Himalayas and E. Asia. They have alternate, simple, lance-shaped to broadly elliptic, often toothed, leathery leaves and small, 5-petalled flowers in broad, pyramidal panicles. In frost-prone areas, grow in a cool greenhouse; frost-hardy species may also be grown against a sunny wall. In warmer areas, grow as specimens. *E. japonica* is also grown commercially for its fruit.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with good ventilation. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in a sheltered site in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 13-16°C (55-61°F) in spring. Insert semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Susceptible to mealybugs and leaf blight under glass.

**E. japonica** ■ ♀ (Loquat). Vigorous, spreading shrub or tree with stout shoots and bold, inversely lance-shaped to

*Eriobotrya japonica*

narrowly obovate, sharp-pointed, strongly veined, dark green leaves, to 30cm (12in) long, glossy above. Bears large panicles of fragrant white flowers from autumn to winter, followed in spring by spherical to pear-shaped, edible, orange-yellow fruit, 4cm (1½in) across.  $\pm$  8m (25ft). China, Japan. \* \*

▷ *Eriocactus* see *Parodia*

*E. apricus* see *P. concinna*

*E. leninghausii* see *P. leninghausii*

▷ *Eriocereus jusberrtii* see *Harrisia jusberrtii*

▷ *Eriocereus martianus* see *Aporocactus martianus*

▷ *Eriocereus pomanensis* see *Harrisia bonplandii*

## ERIOGONUM

St. Catherine's lace, Wild buckwheat

POLYGONACEAE

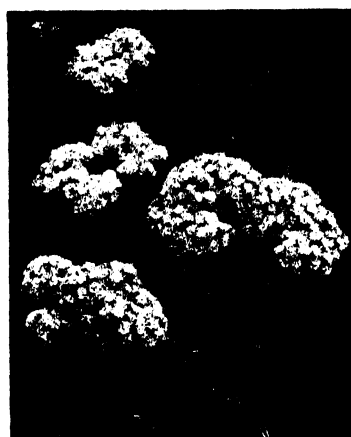
Genus of approximately 150 species of annuals, perennials, and evergreen shrubs and subshrubs, occurring mostly in desert and mountains in W. USA. They are cultivated for their beautiful, often white-woolly foliage and their dense heads, umbels, or cymes of small, long-lasting flowers, cupped in involucre of toothed or lobed bracts. They range from compact, cushion-forming plants with linear to ovate or rounded leaves in basal rosettes, to large shrubs with opposite, alternate, or whorled leaves. Grow the smaller, rosette-forming species in a rock garden or alpine house, the larger ones in a shrub border. In frost-prone areas, grow tender species in a cool greenhouse or conservatory.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.1) and grit, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly at other times. Outdoors, grow in poor to gritty, moderately fertile, sharply drained soil in full sun; protect from winter wet. Dead-head unless seed is required. In an alpine house, grow in 1 part leaf mould and 2 parts each loam and grit or sharp sand. Pruning group 1. • **PROPAGATION** Sow seed of hardy species in containers in an open frame in autumn. Sow seed of tender species in spring at 13–16°C (55–61°F). Root individual rosettes of cushion-forming species as cuttings in spring or early summer. Water only from below. Root semi-ripe cuttings of shrubs in summer. • **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

*E. arborescens* ■ Domed, loose or open shrub with oblong or linear leaves, 2–3cm (¾–1½in) long, borne in tufts at the ends of the branches; leaves are smooth and mid- to deep green above, densely white-woolly beneath, with margins rolled under. From early summer to autumn, produces dense, terminal cymes, 5–15cm (2–6in) across, of white to pale pink flowers.  $\pm$  0.6–1.5m (2–5ft). USA (California). ☼ (min. 5°C/41°F)

*E. crocatum* (Saffron buckwheat). Branching subshrub or woody-based perennial with broadly ovate to elliptic, white-felted, mid-green leaves, to 3.5cm (1½in) long. In late spring and early



*Eriogonum arborescens*

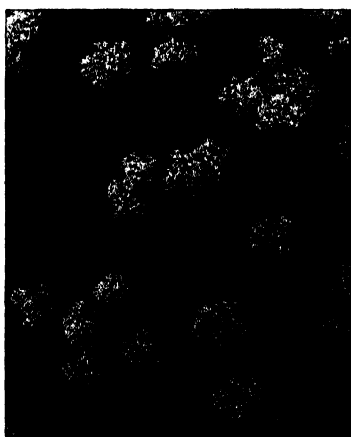
summer, bears tiny, bright yellowish green flowers in dense cymes, to 8cm (3in) across. Best in an alpine house.  $\pm$  30–40cm (12–16in),  $\leftrightarrow$  to 40cm (16in). USA (California). \* \*

*E. fasciculatum*. Rounded shrub with spreading branches that bear tufts of narrowly oblong to linear-lance-shaped leaves, 0.5–1.5cm (¼–½in) long, deep green above, white-woolly beneath, with inrolled margins. White, sometimes pink-tinted flowers are produced in loose, terminal heads, 3–10cm (1¼–4in) across, in summer.  $\pm$  30–60cm (12–24in),  $\leftrightarrow$  90cm (36in). USA (California, Nevada, Utah). \* \*

*E. giganteum* (St. Catherine's lace). Freely branching, rounded shrub with oblong to oblong-ovate, leathery leaves, 3–10cm (1¼–4in) long, densely white-downy beneath, smoother and grey above, mainly grouped towards the stem tips. In summer, produces heads of small white flowers in dense cymes, 20–30cm (8–12in) across.  $\pm$  1–2m (3–6ft). S.W. USA (Santa Catalina and adjacent islands). ☼ (min. 5°C/41°F)

*E. gracilipes*, syn. *E. kennedyi* subsp. *gracilipes* (Sulphur flower). Woody-based, mat-forming perennial with oval to oval-lance-shaped, white-woolly, greenish grey leaves, to 8mm (¾in) long, with margins rolled under. In early and midsummer, umbels, to 1cm (½in) across, of pink-tinted white flowers that darken with age are borne on stems to 10cm (4in) long. Best in a scree bed or alpine house.  $\pm$  to 8cm (3in),  $\leftrightarrow$  to 12cm (5in). USA (Sierra Nevada). \* \* \*

*E. kennedyi* subsp. *gracilipes* see *E. gracilipes*.



*Eriogonum umbellatum*



*Eriogonum umbellatum* var. *torreyanum*

*E. ovalifolium*. Cushion- or mat-forming, woody-based perennial with long-stalked, spoon-shaped, silver-hairy leaves, 0.5–1.5cm (¼–½in) long. In summer, stems, to 20cm (8in) long, bear dense, spherical heads, to 2cm (¾in) across, of cream or yellow flowers, sometimes maturing to pink-purple. Suitable for an alpine house.  $\pm$  to 5cm (2in),  $\leftrightarrow$  to 20cm (8in). USA (Oregon to Nevada). \* \* \*

*E. torreyanum* see *E. umbellatum* var. *torreyanum*.

*E. umbellatum* ■ (Sulphur flower). Spreading, mat-forming perennial or subshrub with rosettes of spoon-shaped or ovate leaves, to 2cm (¾in) long, mid-green above, white-woolly beneath. In mid- and late summer, produces umbels, 3–6cm (1¼–2½in) across, of cream to sulphur-yellow flowers that become tinted copper-red with age, on stems to 25cm (10in) long. Not always free-flowering.  $\pm$  to 30cm (12in),  $\leftrightarrow$  to 1m (3ft). S.W. Canada to USA (E. Rocky Mountains). \* \* \*. var. *torreyanum* ■ syn. *E. torreyanum*, is a long-lived, upright, domed shrub with hairless, dark green leaves. In mid-summer, produces abundant, noticeably bracted, bright yellow flowerheads on stems 5–10cm (2–4in) long. USA (S. Oregon to N. California).

## ERIOPHORUM

Cotton grass

CYPERACEAE

Genus of 20 species of rapidly spreading, evergreen, rhizomatous, bog, marsh, or marginal aquatic perennials found in Europe, southern Africa, and North America. They have slender, needle-like, tough leaves, and produce tufted umbels of many-flowered spikelets in summer. Effective beside a wildlife pool or in a bog garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in acid soil alongside shallow water, or in an aquatic planting basket of peaty soil in a small pool, in full sun and with ample room. Capable of surviving in water to 5cm (2in) deep.

• **PROPAGATION** Divide established clumps in spring.

• **PESTS AND DISEASES** Trouble free.

*E. angustifolium* ■ (Common cotton grass). Marginal aquatic perennial with a long rootstock, short, distinctly angled stems, and linear, grooved, mainly basal



*Eriophorum angustifolium*

leaves, 15–30cm (6–12in) long, with long, sharp-pointed tips. In summer, produces umbels of 3–7 pendent, downy, tufted white spikelets, 3–5cm (1¼–2in) across.  $\pm$  30–45cm (12–18in), sometimes to 75cm (30in),  $\leftrightarrow$  indefinite. N. Europe (including Arctic), Russia (Siberia), North America. \* \* \*

*E. latifolium* (Broad-leaved cotton grass). Marginal aquatic perennial with tufted rhizomes, 3-angled stems, and linear, flat, grooved, mainly basal leaves, 20–40cm (8–16in) long, with long, sharp-pointed tips. In summer, produces umbels of 3–7 pendent, tufted, downy white spikelets, 3–5cm (1¼–2in) across, with purplish green scales. Similar to *E. angustifolium*, but has broader leaves.  $\pm$  30–45cm (12–18in),  $\leftrightarrow$  indefinite. Europe, Turkey, Russia (Siberia), North America. \* \* \*

## ERIOPHYLLUM

Golden yarrow, Woolly sunflower

ASTERACEAE/COMPOSITAE

Genus of about 12 species of annuals, perennials, and subshrubs occurring mostly in open, sandy scrub, often in mountainous areas, in W. North America. They have alternate, deeply toothed or pinnatifid, white-hairy leaves, and bear cymes or corymbs of daisy-like flowerheads on upright stems, mainly in summer. Grow in a rock garden, at the front of a border, on a dry wall, or in paving crevices. *E. lanatum* may overwhelm smaller alpenes and should be sited with care.

• **HARDINESS** Fully hardy to frost hardy.

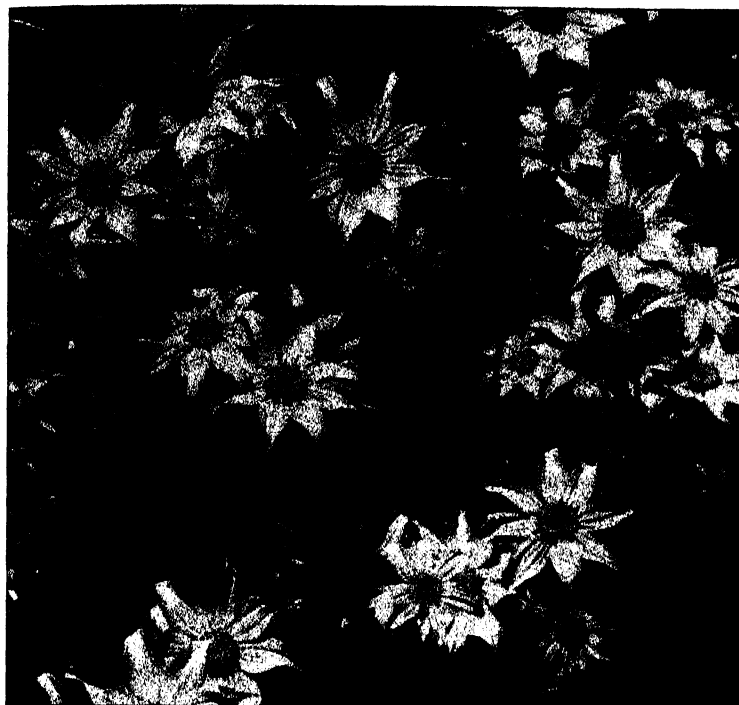
• **CULTIVATION** Grow in light, poor to moderately fertile, sharply drained soil in full sun. Cut back after flowering to keep compact.

• **PROPAGATION** Sow seed in containers in an open frame in autumn, or divide in spring.

• **PESTS AND DISEASES** Susceptible to slugs and snails; birds use the foliage as nesting material.

*E. lanatum* ■ Variable, vigorous, clump-forming perennial with erect or decumbent stems and white-woolly, silvery grey leaves. The basal leaves, to 8cm (3in) long, are spoon-shaped to inversely lance-shaped, and entire or lobed; the smaller stem leaves are pinnatifid, or narrow and entire. Bears a succession of daisy-like, bright yellow flowerheads, 2–4cm (¾–1½in) across, singly or in loose corymbs, over long





*Eriophyllum lanatum*

periods from late spring to summer. Drought-tolerant.  $\pm$  20–60cm (8–24in), rarely to 90cm (36in). North America (British Columbia to N. California and W. Montana). \*\*\*  
**var. *monoense***, syn. *E. lutescens*, is almost cushion-forming, with spoon-shaped, entire or 3-toothed leaves, to 2cm (3/4in) long. Best variant for a rock garden;  $\pm$  to 25cm (10in),  $\pm$  to 1m (3ft). USA (California, Nevada, Wyoming).  
*E. lutescens* see *E. lanatum* var. *monoense*.

## ERIOSTEMON

Waxflower

RUTACEAE

Genus of 33 species of evergreen shrubs or small trees from open, rocky slopes, scrub, and open forest in Australia. They are grown mainly for their star-shaped, usually 5-petalled, waxy, white, pink to red, blue, or mauve flowers, which are solitary or borne in terminal or axillary racemes or cymes. The leaves are alternate, flat to cylindrical, linear to rounded, often warty, and strongly aromatic. In frost-prone areas, grow in a cool greenhouse; elsewhere, plant in a shrub border or against a house wall.

• **HARDINESS** Half hardy to frost tender; *E. australasius* and *E. myoporoides* may survive short periods of light frost, if growth is well ripened in summer.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light. During the growing season, water freely and apply a low-phosphate liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in fertile, moist soil in full sun. Pruning group 1; may need restrictive pruning under glass.

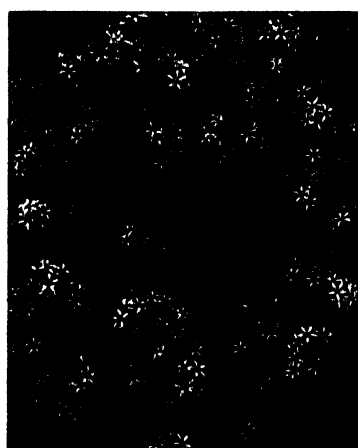
• **PROPAGATION** Sow pre-soaked seed at 10–13°C (50–55°F) in spring. Root semi-ripe cuttings in summer with bottom heat. Germination is often erratic and rooting of cuttings slow.

• **PESTS AND DISEASES** Scale insects may be a problem.

***E. australasius*** (Pink wax flower). Erect, freely branching shrub with angular, minutely hairy stems and narrowly elliptic or oblong to obovate, nearly hairless, glandular, leathery leaves, to 7cm (3in) long. From spring to autumn, bears solitary, pink to mauve-pink, sometimes white flowers, 4cm (1 1/2in) wide, usually in profusion, at the shoot tips.  $\pm$  1–2m (3–6ft),  $\pm$  0.6–1.5m (2–5ft). Australia (Queensland to New South Wales). \* (borderline)

***E. myoporoides*** (Long-leaf wax flower). Erect, bushy shrub with usually cylindrical, warty stems and elliptic or oblong to broadly obovate, warty leaves, 5–12cm (2–5in) long, deep green above, paler beneath. From autumn to spring or summer, pink buds open to white flowers, to 2.5cm (1in) across, borne in axillary cymes, to 10cm (4in) long.  $\pm$  1.5–5m (5–15ft),  $\pm$  1–2.5ft (3–8ft). Australia (Queensland to Victoria). \* (borderline). 'Clearview Pink' has red flowerbuds and pink-tinted petals.

***E. trachyphyllum*** [Q] Bushy tree or shrub with cylindrical, hairless, warty stems. Elliptic to obovate-oblong leaves, to 5cm (2in) long, are thin, papery, hairless, and finely wrinkled. In winter



*Eriostemon trachyphyllum*

or early spring, bears solitary white to pink flowers, 1.5cm (1 1/2in) across, with fleshy, fringed sepals and long stamens, from the leaf axils.  $\pm$  to 7m (22ft),  $\pm$  2.5m (8ft). Australia (New South Wales, Victoria). \* (min. 5°C/41°F)

## ERITRICHIMUM

Alpine forget-me-not

BORAGINACEAE

Genus of approximately 30 species of low-growing, tufted or cushion-forming perennials found mostly in high-altitude scree and rock crevices in Europe, the Himalayas, and North America. They are grown mainly for their short, axillary or terminal, raceme-like cymes of blue, occasionally white flowers, similar to forget-me-nots (*Myosotis*), which are produced from spring to early summer. The leaves are alternate, usually elliptic to linear, softly hairy, and grey-green. *E. nanum* and the American cushion-forming species are very challenging container plants for an alpine house; other species may be grown in a scree bed or trough, or in tufa.

• **HARDINESS** Fully hardy.

• **CULTIVATION** In an alpine house, grow in a mix of 3 parts grit, 1 part loam, and 1 part leaf mould, with a deep collar of grit or pieces of rock wedged around the neck of the plants. Provide full light and good ventilation. Water freely during the growing season by immersing the containers to their rims in water; avoid wetting the foliage. Keep just moist in winter. Outdoors, grow in poor, sharply drained soil in full sun, with protection from winter wet.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Water seedlings very carefully from below.

Root basal stem cuttings in summer.

• **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

***E. canum***, syn. *E. rupestre*, *E. sericeum*, *E. strictum*. Tufted perennial covered in silky hairs, with upright stems sparsely clothed in stalkless, lance-shaped to linear, grey-green leaves, 3–4cm (1 1/4–1 1/2in) long. Broad, raceme-like cymes of short-tubed, salverform, pure soft blue flowers, to 7mm (1/4in) across, are produced in summer. Self-seeds freely in scree.  $\pm$  15cm (6in),  $\pm$  to 10cm (4in). W. Himalayas. \*\*\*

***E. nanum*** [Q] Cushion-forming perennial with rosettes of elliptic or inversely lance-shaped to linear, densely



*Eritrichium nanum*

silky-hairy, silvery grey-green leaves, to 1cm (1/2in) long. In late spring and early summer, short-tubed, salverform, yellow-eyed, azure-blue flowers, 5–8mm (1/4–3/8in) across, are borne in raceme-like cymes.  $\pm$  5cm (2in),  $\pm$  7cm (3in). Alps, USA (Rocky Mountains). \*\*\*

*E. rupestre* see *E. canum*.

*E. sericeum* see *E. canum*.

*E. strictum* see *E. canum*.

## ERODIUM

Heron's bill, Stork's bill

GERANIACEAE

Genus of approximately 60 species of annuals, perennials, and evergreen and deciduous subshrubs occurring in rocky habitats, mainly in the calcareous mountains of Europe and C. Asia, but also in N. Africa, North and South America, and temperate Australia. They are valued for their attractive foliage and long flowering period. The leaves are opposite or alternate, and lobed, pinnate, or pinnatisect. In summer, the 5-petalled flowers are produced singly from the leaf axils or in terminal umbels; they range from pink to purple, occasionally yellow or white, and resemble *Geranium* flowers (except they have 5, not 10, stamens). Grow in a rock garden, trough, or alpine house; plant the taller and more robust species at the front of a herbaceous border.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in gritty, humus-rich, sharply drained, neutral to alkaline soil in full sun. Protect the smallest species from excessive winter wet. In an alpine house, grow in equal parts loam, leaf mould, and grit.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide in spring. Root basal stem cuttings in late spring or early summer.

• **PESTS AND DISEASES** Trouble free.

***E. chamaedryoides*** see *E. reichardii*.

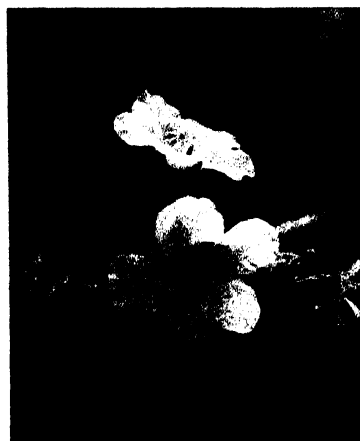
***E. chamaedryoides*** 'Roseum' see *E. x variabile* 'Roseum'.

***E. cheilanthesifolium*** [Q] syn. *E. petracum* subsp. *crispum*. Compact, mound-forming perennial with ovate-oblong, 2-pinnatifid, crinkled, greyish green leaves, 2–5cm (3/4–2in) long. In summer, bears umbels of up to 5 flat-faced, red-veined, pale pink or white flowers, to 2.5cm (1in) across, stained reddish purple at the bases of the 2 upper petals.  $\pm$  to 20cm (8in),  $\pm$  to 30cm (12in). S. Spain, North Africa. \*\*\*



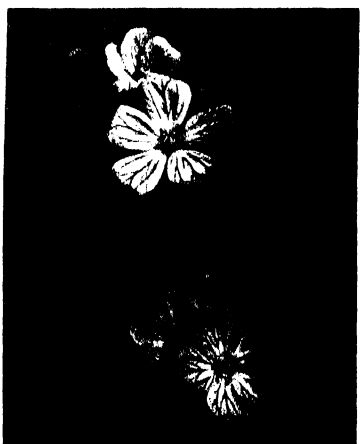
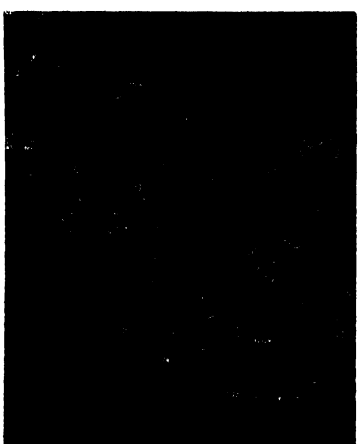
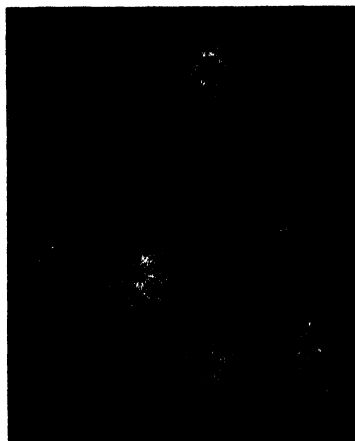
*Erodium cheilanthesifolium*

E

*Erodium chrysanthum*

***E. chrysanthum*** ■ Dense, tufted, mound-forming perennial with ovate, 2-pinnate, finely dissected, silvery green leaves, to 3.5cm (1½in) long, each with oblong to lance-shaped leaflets. In summer, branching stems bear umbels of 2–7 saucer-shaped, sulphur-yellow, dioecious flowers, to 2cm (¾in) across. † to 15cm (6in), ↔ to 40cm (16in). Greece. \*\*\*

***E. corsicum*** ■ Mat-forming perennial with ovate, crumpled, silver-downy, grey-green leaves, 1.5cm (½in) long, with scalloped margins. From late spring to summer, short, branched stems bear umbels of 1–3 saucer-shaped, rose-pink flowers, to 2cm (¾in) across, with darker veins. † 8cm (3in), ↔ to 20cm (8in). Sea cliffs of Corsica and Sardinia. \*\*\* (borderline)

*Erodium corsicum**Erodium glandulosum**Erodium manescanui*

***E. glandulosum*** ■ ♀ syn. *E. macradenum*, *E. petraeum* subsp. *glandulosum*. Compact, tufted perennial bearing ovate-oblong, 2-pinnatifid, silvery, basal leaves, 4–10cm (1½–4in) long, with oblong to lance-shaped divisions. In summer, produces umbels of up to 5 saucer-shaped, lilac-pink flowers, to 2.5cm (1in) across, usually marked dark purple on the 2 upper petals. † 10–20cm (4–8in), ↔ to 20cm (8in). Pyrenees, N. Spain. \*\*\*

***E. macradenum*** see *E. glandulosum*.

***E. manescanui*** ■ syn. *E. manescavii*.

Clump-forming perennial with pinnate, lance-shaped to ovate-lance-shaped, toothed, hairy, mid-green, basal leaves, to 30cm (12in) long, with ovate leaflets. Long-stalked umbels of 5–20 saucer-shaped, magenta-purple flowers, to 3cm (1¼in) across, with darker spots on the upper 2 petals, are profusely borne from early summer to early autumn. Self-seeds freely. † 20–45cm (8–18in), ↔ 20cm (8in). Pyrenees. \*\*\*

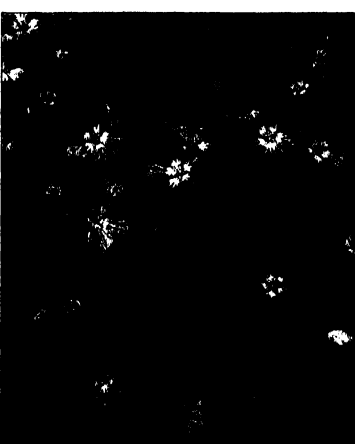
***E. manescavii*** see *E. manescanui*.

***E. petraeum*** subsp. *crispum* see *E. cheilanthifolium*.

***E. petraeum*** subsp. *glandulosum* see *E. glandulosum*.

***E. reichardii***, syn. *E. chamaedryoides*. Mound-forming perennial with heart-shaped, scalloped, slightly downy, dark green leaves, to 1.5cm (½in) long. Bears solitary, saucer-shaped, red-veined white flowers, 8mm (⅜in) wide, on very short stems in summer. † 5–7cm (2–3in), ↔ to 15cm (6in). Majorca, Corsica. \*\*\* (borderline)

***E. x variabile*** (*E. corsicum* x *E. reichardii*). Spreading or cushion-

*Erodium x variabile* 'Ken Aslet'

forming perennial with ovate, scalloped or lobed, mid-green leaves, to 2cm (¾in) long, heart-shaped at the bases. In summer, bears solitary, single or double, deep red flowers, to 1cm (½in) across, veined maroon. † to 12cm (5in), ↔ to 30cm (12in). Garden origin. \*\*\*

**'Flore Pleno'** has narrowly ovate, scalloped, dark to grey-green leaves, and rounded, double, deep pink flowers, with darker veining, from spring to autumn. **'Ken Aslet'** ■ has prostrate stems and single, deep pink flowers. **'Roseum'** ♀ syn. *E. chamaedryoides* 'Roseum', has deep pink flowers with darker veining; † to 8cm (3in).

▷ *Erpetion* see *Viola*

***E. hederaceum*** see *V. hederacea*

***E. reniforme*** see *V. hederacea*

▷ *Ervatamia coronaria* see

*Tabernaemontana divaricata*

## ERYNGIUM

Eryngo, Sea holly

APIACEAE/UMBELLIFERAE

Genus of 230 species of hairless annuals, biennials, and deciduous and evergreen perennials. Those that are native to dry, rocky places and coastal areas in Europe, N. Africa, Turkey, C. Asia, China, and Korea usually have tap roots, ovate to heart-shaped, often divided leaves, and congested heads of blue or white flowers, with conspicuous bracts. Those that are from often wet and marshy grassland in Mexico, Brazil, Argentina, and warm-temperate regions of North, Central, and South America, usually have fibrous roots, sword-shaped, evergreen foliage, less showy, greenish white (occasionally purplish brown) flowers, and small bracts. Most eryngiums form basal rosettes, the leaves often spiny and with silvery white veins, and bear crowded, hemispherical to cylindrical, thistle-like umbels of stalkless flowers on branched stems.

Eryngiums are striking plants for naturalizing; some also provide long-lasting displays for a border. They may be dried for arrangements; cut the stems before the flowers are fully open.

• **HARDINESS** Fully hardy to frost hardy; frost-hardy American species tolerate temperatures down to -10°C (14°F), although leaves may be damaged if temperatures drop below -7°C (19°F).

• **CULTIVATION** Eryngiums have varying cultivation requirements. For ease of reference, these have been grouped as follows:

1. Grow in dry, well-drained, poor to moderately fertile soil in full sun, with protection from winter wet.

2. Grow in moist, well-drained, fertile soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring, although they are slow to re-establish. Insert root cuttings of perennials in late winter.

• **PESTS AND DISEASES** Prone to root rot, slugs, snails, and powdery mildew.

***E. agavifolium***, syn. *E. bromeliifolium* of gardens. Rosette-forming, evergreen perennial with broadly sword-shaped, prominently and sharply toothed, glossy, deep green basal leaves, 40–75cm (16–30in) long. In late summer, lightly branched stems bear cylindrical umbels,

*Eryngium alpinum*

5cm (2in) long, of greenish white flowers, with entire to spiny-toothed bracts, 6mm (¼in) long. Cultivation group 2. † 1–1.5m (3–5ft), ↔ 60cm (24in). Argentina. \*\*\*

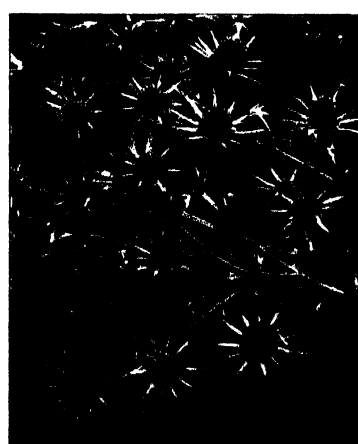
***E. alpinum*** ■ ♀ Rosette-forming, tap-rooted herbaceous perennial with ovate to heart-shaped, spiny-toothed, mid-green basal leaves, 8–15cm (3–6in) long, and palmately 3-lobed stem leaves.

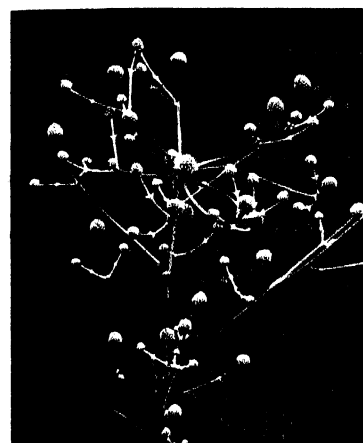
From midsummer to early autumn, branched stems, steel-blue near the apex, bear cylindrical umbels, to 4cm (1½in) long, of steel-blue or white flowers, with pinnatifid, softly spiny bracts, to 6cm (2½in) long. Cultivation group 1, but soil not too dry. † 70cm (28in), ↔ 45cm (18in). Europe (Jura, Alps, mountains of W. and C. Balkans). \*\*\*

**'Amethyst'** has smaller, violet-blue flowerheads, 2.5cm (1in) long.

***E. amethystinum***. Clump-forming, tap-rooted herbaceous perennial with obovate, pinnate, spiny, leathery, mid-green basal leaves, 10–15cm (4–6in) long, with oblong leaflets, and palmately 3-lobed upper leaves. In mid- and late summer, branching, silvery blue stems bear cylindrical umbels, 2–3cm (¾–1¼in) long, of steel-blue to amethyst flowers, with lance-shaped, spiny, silvery green bracts, to 5cm (2in) long. Cultivation group 1. † 70cm (28in). Italy, Sicily, Balkans. \*\*\*

***E. bourgatii*** ■ Clump-forming, tap-rooted herbaceous perennial with rounded, pinnatifid or 2-pinnatifid, spiny, conspicuously silver-veined, dark green basal leaves, to 7cm (3in) long. In mid- and late summer, branching blue stems bear blue, or often grey-green

*Eryngium bourgatii*



*Eryngium eburneum*

flowers in cylindrical umbels, 1–3cm (½–1¼in) long, with lance-shaped, blue-tinged, silver bracts, to 6cm (2½in) long. Cultivation group 1. † 15–45cm (6–18in), ↔ 30cm (12in). Spain (Pyrenees). \*\*\*. ‘Oxford Blue’ ♀ has darker, silvery blue flowerheads.

*E. bromeliifolium* of gardens see *E. agavifolium*.

*E. decaisneanum* see *E. pandanifolium*.

*E. delaroux* see *E. proteiflorum*.

*E. eburneum* □ syn. *E. paniculatum*. Clump-forming, evergreen perennial with narrowly linear, spiny-toothed, mid-green leaves, to 1m (3ft) long. In late summer, arching, branched, pale green stems bear groups of spherical-cylindrical umbels, 1–2cm (½–¾in) long, composed of whitish green flowers, with linear-lance-shaped, spine-tipped bracts, to 2cm (¾in) long. Cultivation group 2. † to 1.5m (5ft), ↔ 60cm (24in). Temperate South America. \*\*

*E. giganteum* □ ♀ (Miss Willmott’s ghost). Rosette-forming, tap-rooted, short-lived herbaceous perennial with heart-shaped, mid-green basal leaves, 7–16cm (3–6in) long, and ovate, sometimes lobed, scalloped to toothed, spiny stem leaves. In summer, branched



*Eryngium x oliverianum*

inflorescences comprise cylindrical umbels, to 6cm (2½in) long, of initially pale green, then steel-blue flowers, with ovate, toothed, silvery grey bracts, to 6cm (2½in) long, both prickly.

Cultivation group 1. † 90cm (36in), ↔ 30cm (12in). Caucasus, Iran. \*\*\*. ‘Silver Ghost’ has narrower, very silvery white bracts; † to 60cm (24in).

*E. x oliverianum* □ ♀ (*E. alpinum* x *E. giganteum*). Clump-forming, tap-rooted herbaceous perennial with ovate, slightly 3-lobed, spiny-toothed, dark green basal leaves, 8–16cm (3–6in) long, with conspicuous veins and heart-shaped bases, and palmately 4- or 5-lobed stem leaves. From midsummer to early autumn, branched blue stems bear cylindrical umbels, 4cm (1½in) long, of flowers, with linear, spiny bracts, to 6cm (2½in) long, both bright silver-blue, sometimes tinted purple with age.

Cultivation group 1. † 90cm (36in), ↔ 45cm (18in). Garden origin. \*\*\*

*E. pandanifolium*, syn. *E. decaisneanum*. Tufted, clump-forming, evergreen perennial with linear to sword-shaped, silvery green leaves, 1–2m (3–6ft) long, with slender marginal spines. Bears cylindrical umbels, 1cm

(½in) long, of purplish brown flowers, with shorter, ovate bracts, 1.5cm (½in) long, from late summer to mid-autumn. Cultivation group 2. † to 4m (12ft), ↔ to 2m (6ft). Brazil to Argentina. \*\*

*E. paniculatum* see *E. eburneum*.

*E. planum*. Clump-forming, tap-rooted, evergreen perennial with oblong to ovate-oblong, toothed, dark green basal leaves, 5–10cm (2–4in) long, with heart-shaped bases, spiny, palmately lobed, blue-tinted stem leaves; both are somewhat leathery. From midsummer to early autumn, strong, branching stems bear numerous spherical-cylindrical umbels, 1–2cm (½–¾in) long, of light blue flowers, with linear, spiky, blue-green bracts, 2.5cm (1in) long. Cultivation group 1. † 90cm (36in), ↔ 45cm (18in). C. and S.E. Europe to C. Asia. \*\*\*. ‘Blauer Zwerg’, syn. ‘Blue Dwarf’, has intense blue flowers; † to 50cm (20in).

*E. proteiflorum* □ syn. *E. delaroux*.

Rosette-forming, tap-rooted, evergreen perennial with narrowly linear, spiny-margined, silvery green basal leaves, 10–30cm (4–12in) long, with white midribs. In early and mid-autumn, branching stems bear cylindrical umbels, 2.5–7cm (1–3in) long, of greyish blue flowers, with linear to lance-shaped, spiny-margined, silvery white bracts, to 10cm (4in) long. Cultivation group 1, or grow in a container. † 90cm (36in), ↔ 60cm (24in). Mexico. \*\*

*E. x tripartitum* □ ♀ Clump-forming, tap-rooted herbaceous perennial with narrowly ovate, 3-lobed, toothed, dark green leaves, 6–12cm (2½–5in) long, with a few marginal spines. From midsummer to early autumn, many-branched stems bear spherical-cylindrical umbels, 1–2cm (½–¾in) long, of violet-blue flowers, with narrowly lance-shaped, grey-blue bracts, to 3.5cm (1½in) long. Cultivation group 1. † 60–90cm (24–36in), ↔ 50cm (20in). Probably Mediterranean origin. \*\*\*

*E. variifolium* □ Clump-forming, tap-rooted, evergreen perennial with rosettes



*Eryngium x tripartitum*

of ovate, toothed, spiny, slightly fleshy, dark green leaves, 5cm (2in) long, heart-shaped at the bases and marbled with white veins that are broadest in the leaf centre. In mid- and late summer, stiff, branching stems bear cylindrical umbels, 3cm (1¼in) long, of grey-blue to pale blue flowers, with longer, sharply pointed, silvery white bracts, to 4cm (1½in) long. Suitable for a rock garden. Cultivation group 1, but soil not too dry. † 30–40cm (12–16in), ↔ 25cm (10in). Morocco. \*\*\* (borderline)

*E. yuccifolium*. Rosetted, tap-rooted, evergreen perennial with sword-shaped, spiny-margined, blue-grey leaves, 20–100cm (8–39in) long. From midsummer to early autumn, strong, lightly branched stems bear cylindrical umbels, 2–4cm (¾–1½in) long, of whitish green to pale blue flowers, with shorter, ovate, grey-green bracts, 9mm (¾in) long. Cultivation group 1. † 1.2m (4ft), ↔ 60cm (24in). S. and E. USA. \*\*

*E. x zabelii* (*E. alpinum* x *E. bourgatii*). Clump-forming, tap-rooted, semi-evergreen perennial with heart-shaped, spiny-toothed, dark green basal leaves, 8–12cm (3–5in) long. Blue stems bear deeply 3-lobed leaves. In mid- and late summer, bears spherical-cylindrical umbels, 2–4cm (¾–1½in) across, of long-lasting, intense blue or violet flowers, with rigid, spiny-toothed, green-tipped blue bracts, 6cm (2½in) long. † 60–75cm (24–30in), ↔ 45cm (18in). Garden origin. \*\*\*. ‘Violetta’ has umbels, to 5cm (2in) long, of violet-blue flowers and silvery blue bracts.

▷ *Eryngo* sec *Eryngium*



*Eryngium giganteum*



*Eryngium proteiflorum*



*Eryngium variifolium*

# ERYSIMUM syn. CHEIRANTHUS

Wallflower

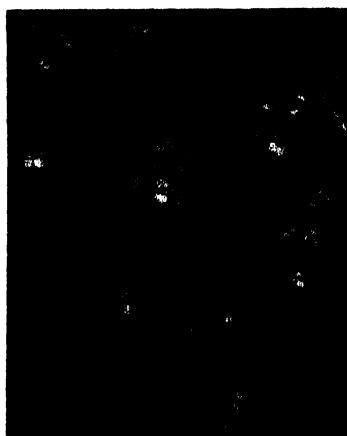
BRASSICACEAE/CRUCIFERAE

Genus, now including *Cheiranthus*, of about 80 species of annuals, biennials, and mainly evergreen perennials, often woody based, found mostly on well-drained, calcareous soil from Europe to N. Africa, W. and C. Asia, and N. America. They are cultivated for their often yellow flowers, to 2.5cm (1in) across, each with 4 petals arranged in a cross, borne in dense, usually elongating, corymb-like racemes. Most wallflowers produce inversely lance-shaped, toothed, softly hairy leaves, 3–12cm (1¼–5in) long. Many are ideal for a rock garden or wall, the front of a sunny border, or a raised bed. The biennials are popular as spring bedding plants or in a border.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in poor to moderately fertile, well-drained, neutral or, ideally, alkaline soil in full sun. Trim perennials lightly after flowering to prevent plants becoming leggy.
- **PROPAGATION** Sow seed of perennials in containers in a cold frame in spring. Take nodal or heeled softwood cuttings from shrubby perennials in spring or summer. Sow seed of biennials in a seedbed from late spring to early summer, grow on in a nursery bed, and transplant to flowering positions in mid-autumn. Provide cloche protection where frosts are severe or prolonged.
- **PESTS AND DISEASES** Susceptible to fungal and bacterial diseases including clubroot, mildew, leaf spot, root rot, and mosaic virus. May suffer damage from slugs, snails, and flea beetles.

*E. x allionii* [♀] *syn. Cheiranthus x allionii* (Siberian wallflower). Tufted, short-lived, evergreen perennial, grown as a biennial, with lance-shaped, coarsely toothed leaves, to 8cm (3in) long. In spring, produces spice-scented, brilliant orange flowers, to 1cm (½in) across, in short racemes. ‡ 50–60cm (20–24in), ↔ 30cm (12in). Garden origin.

\*\*\*  
*E. asperum* (Western wallflower). Erect, rarely branched, short-lived, evergreen perennial or biennial with linear to lance-shaped, usually entire leaves, to 12cm (5in) long. From spring to early summer, bears short racemes of open, copper-yellow flowers, to 2.5cm (1in)



*Erysimum* 'Bowles' Mauve

across. ‡ to 30cm (12in), ↔ to 25cm (10in). North America (British Columbia to Washington, Minnesota, Kansas). \*\*\*

*E. 'Bowles' Mauve* [♀] *syn. E. 'E.A. Bowles'*. Vigorous, subshrubby, evergreen perennial with narrowly lance-shaped, grey-green leaves. Bears mauve flowers, to 1.5cm (½in) across, in long racemes from late winter to summer. ‡ to 75cm (30in), ↔ 60cm (24in).

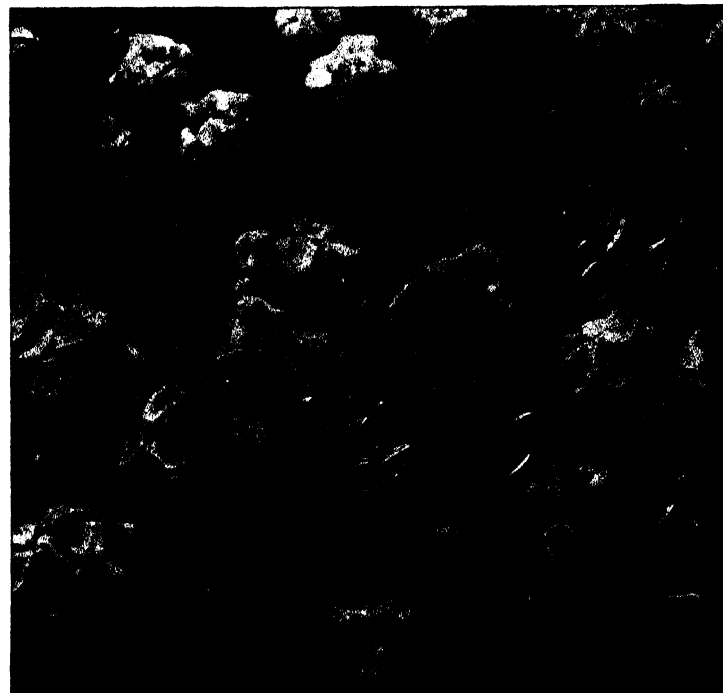
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*E. 'Bredon'* [♀] *Sturdy*, mound-forming, evergreen perennial with inversely lance-shaped, bluish green leaves. Reddish brown buds open to rich yellow flowers, to 2cm (¾in) across, in long racemes from mid-spring to early summer. ‡ 30cm (12in), ↔ 45cm (18in).

\*\*\*

*E. 'Butterscotch'*. Mounded, subshrubby, evergreen perennial with inversely lance-shaped leaves. Produces orange-yellow flowers, to 1.5cm (½in) across, in long racemes from late spring to midsummer. ‡ 30cm (12in), ↔ 60cm (24in). \*\*\*

*E. cheiri*, *syn. Cheiranthus cheiri* (Wallflower). Subshrubby, short-lived, evergreen perennial, grown as a biennial, forming mounds of lance-shaped to obovate-lance-shaped, dark green leaves, to 23cm (9in) long, the margins entire or with well-spaced teeth. Open, sweet-scented, bright yellow-orange flowers, to 2.5cm (1in) across, are produced in short racemes in spring. ‡ 25–80cm (10–32in), ↔ 30–40cm (12–16in). S. Europe. \*\*\*. Cultivars of **Bedder Series** [♀] are dwarf and compact, with flowers in golden yellow, primrose-



*Erysimum cheiri* Bedder Series

yellow, orange, or scarlet-red; ‡ to 30cm (12in). **Bedder Series 'Orange Bedder'** freely bears orange flowers; ‡ 23–30cm (9–12in), ↔ 25–30cm (10–12in).

**'Blood Red'** [♀] bears deep red flowers. Cultivars of **Fair Lady Series** produce flowers in pale pink, yellow, and creamy white, with some reds. **'Fire King'** bears orange-red flowers. **'Harlequin'** is compact and uniform, and bears flowers in golden yellow, orange, cream, scarlet, crimson, intermediate pastel shades, and bicolours; ‡ to 25cm (10in). **'Harpur Crewe'** see *E. x kewense* 'Harpur Crewe'. **'Ivory White'** produces creamy white flowers.

*E. 'Constant Cheer'* ♀ Bushy, evergreen perennial with inversely lance-shaped, dark green leaves. Dusky orange-red flowers, to 1.5cm (½in) across, becoming purple, are produced in short racemes from mid-spring to early summer. ‡ to 30cm (12in), ↔ 60cm (24in). \*\*\*

*E. 'E.A. Bowles'* see *E. 'Bowles' Mauve'*.

*E. 'Golden Jubilee'*. Robust, clump-forming, semi-evergreen perennial with narrowly lance-shaped, dark green leaves. From late spring into summer,

bears short racemes of soft golden yellow flowers, to 1.5cm (½in) across. ‡ 25cm (10in), ↔ 40cm (16in). \*\*\*

*E. 'Jacob's Jacket'*. Bushy, evergreen perennial with inversely lance-shaped, dark green leaves. From early to late spring, bears short racemes of flowers, to 1.5cm (½in) across, that open bronzetinted, become more orange, and finally turn lilac, with blooms in all shades present at the same time. ‡ 30cm (12in), ↔ 45cm (18in). \*\*\*

*E. 'John Codrington'* [♀] Bushy, evergreen perennial with inversely lance-shaped leaves. Short racemes of pale yellow flowers, to 1.5cm (½in) across, shaded brown and purple, are produced in mid- and late spring. ‡ 25cm (10in), ↔ 30cm (12in). \*\*\*

*E. 'Jubilee Gold'*. Bushy, evergreen perennial with inversely lance-shaped leaves. Golden yellow flowers, to 1.5cm (½in) across, are produced in short racemes in mid- and late spring. ‡ to 40cm (16in), ↔ 45cm (18in). \*\*\*

*E. x kewense* (*E. bicolor* x *E. cheiri*). Bushy, upright, woody-based, evergreen perennial with branched stems and narrowly lance-shaped or inversely lance-shaped, entire, grey-green leaves,



416 *Erysimum x allionii*



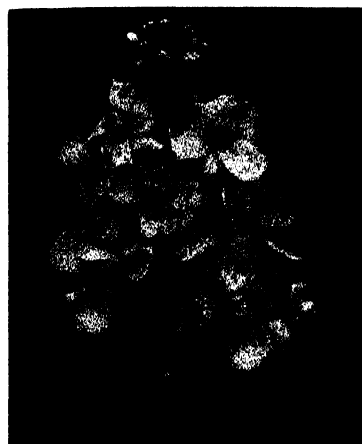
*Erysimum* 'Bredon'



*Erysimum cheiri* 'Blood Red'



*Erysimum* 'John Codrington'



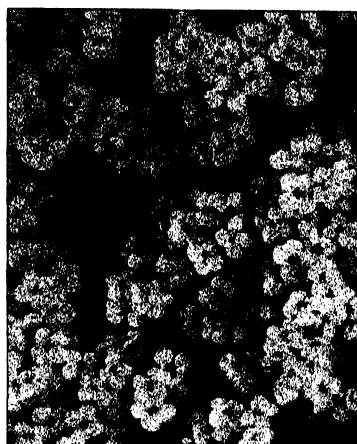
*Erysimum x kewense* 'Harpur Crewe'

5–8cm (2–3in) long. From late winter to early summer, bears short racemes of fragrant flowers, 2.5cm (1in) across, initially yellowish orange to bronze, turning light purple. † to 40cm (16in), ↔ 30cm (12in). Garden origin. \*\*\*. 'Harpur Crewe' ■ ♀ syn. *Cheiranthus cheiri* 'Harpur Crewe', *E. cheiri* 'Harpur Crewe', produces double yellow flowers; † 30cm (12in), ↔ 60cm (24in). 'Variegatum' bears cream-variegated leaves.

*E. kotschyianum*. Densely tufted, evergreen perennial with crowded clusters of linear, usually toothed, pale green leaves, 1cm (½in) long. In summer, produces compact racemes of open, yellow to golden orange flowers, 1cm (½in) across. † 10cm (4in), ↔ to 20cm (8in). Turkey. \*\*\*

*E. linifolium*. Mat-forming, woody-based, evergreen perennial with narrowly linear-lance-shaped, entire, wavy, greyish green leaves, 2–9cm (¾–3½in) long. From mid-spring to early autumn, numerous slender, unbranched stems bear long racemes of open, lilac or lavender-blue flowers, 1–2cm (½–¾in) across. Prone to frost damage. † 12–70cm (5–28in), ↔ 25cm (10in). N. Portugal, C. Spain. \*\*\*. 'Bicolor' produces both pinkish violet and white flowers. 'Variegatum' ■ syn. *E. 'Sissinghurst Variegated'*, is more tufted, with mauve flowers and white-variegated leaves; †↔ 45cm (18in).

*E. 'Moonlight'* ■ Mat-forming, evergreen perennial with inversely lance-shaped leaves. Short racemes of pale sulphur-yellow flowers, to 1.5cm (½in) across, are produced from early spring to



*Erysimum* 'Moonlight'

early summer. † 25cm (10in), ↔ 45cm (18in). \*\*\*

*E. perofskianum*. Rosette-forming biennial or short-lived, evergreen perennial, grown as an annual, with lance-shaped, sometimes finely toothed, greyish green leaves, 5–10cm (2–4in) long. Open, golden orange or red-orange flowers, to 2cm (¾in) across, are borne in long racemes in summer. † 15–40cm (6–16in), ↔ to 25cm (10in). Afghanistan, Pakistan. \*\*\*

*E. 'Rufus'*. Bushy, not robust, evergreen perennial with inversely lance-shaped leaves. Rich orange-brown flowers, 1.5–2cm (½–¾in) across, are borne in long racemes from early to late spring. † 15cm (6in), ↔ 30cm (12in). \*\*\*

*E. 'Sissinghurst Variegated'* see *E. linifolium* 'Variegatum'.

*E. 'Sprite'*. Mat-forming, evergreen perennial with inversely lance-shaped leaves. Pale yellow flowers, to 1cm (½in) across, are borne in short racemes from early to late spring. † 20cm (8in), ↔ 45cm (18in). \*\*\*

*E. 'Wenlock Beauty'* ♀ Bushy, evergreen perennial with inversely lance-shaped leaves. From early to late spring, bears bronze-shaded, mauve and buff-yellow flowers, to 1.5cm (½in) across, in long racemes. †↔ 45cm (18in). \*\*\*

▷ *Erythraea* see *Centaureum*

## ERYTHRINA

Coral tree

LEGUMINOSAE/PAPILIONACEAE

Genus of over 100 species of deciduous, semi-evergreen, or evergreen, usually spiny, trees, shrubs, subshrubs, and woody-based perennials found in woodland and thickets, and on open slopes, in tropical regions worldwide. They are grown for their pea-like, 5-petalled flowers with long standard petals, borne singly or in clusters in the leaf axils, or in axillary or terminal racemes, on often leafless stems. Leaves are alternate and 3-pinnate, with the terminal leaflet larger than the others and sometimes differently shaped. Grow as specimen plants. In cool-temperate areas, grow half-hardy and frost-tender species in a cool or temperate greenhouse.

• **HARDINESS** Frost hardy to frost tender. *E. crista-galli* and *E. herbacea* may survive down to -10°C (14°F) if protected with a thick mulch.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3)

in full light. From spring to autumn, water freely and apply a balanced liquid fertilizer monthly. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring. Root softwood cuttings in early summer, or semi-ripe cuttings in late summer, both with bottom heat.

• **PESTS AND DISEASES** Prone to red spider mites and mealybugs under glass.

*E. x bidwillii* ■ (*E. crista-galli* × *E. herbacea*). Large, deciduous subshrub or shrub in warm regions, woody-based herbaceous perennial in cool ones.

Robust, sparsely branched, spiny stems bear light to mid-green leaves, divided into 3 ovate-oblong leaflets, 20cm (8in) long. In summer, bears dark red flowers, to 5cm (2in) long, in small, axillary clusters of 3, or in terminal racemes, 30–60cm (12–24in) long. † 2–4m (6–12ft), ↔ 1.5–3m (5–10ft). Garden origin. \*

*E. caffra* ♀ (Cape kaffirboom, Lucky bean tree). Wide-spreading, semi-evergreen tree with sometimes prickly branches, and prickly-stalked leaves divided into 3 broadly ovate leaflets, the longest to 9cm (3½in) long. In spring, bears dense, terminal racemes, to 15cm (6in) long, of orange-scarlet flowers, 5cm (2in) long, with broad, strongly arching standard petals. † 12–18m (40–60ft), ↔ 10–15m (30–50ft). E. South Africa. ☼ (min. 5°C/41°F)

*E. crista-galli* ■ ♀ (Cock's comb, Common coral tree). Open, deciduous tree in warm regions, woody-based perennial in cool ones. Branches bear stout spines. Leathery leaves, including the prickly stalks, are 30cm (12in) or more long, with 3 triangular leaflets to 10cm (4in) long; the largest leaflet is ovate-oblong. Deep red flowers, 5–6cm (2–2½in) long, are borne in terminal racemes, 30–60cm (12–24in) or more long, from summer to autumn. † 6–9m (20–28ft), ↔ 3–4m (10–12ft) as a tree; † 1.5–2.5m (5–8ft), ↔ 1–1.5m (3–5ft) as a woody perennial. E. Bolivia to Argentina. \*\*

*E. herbacea* (Coral bean). Semi-herbaceous, woody-based perennial with a thick, woody rootstock. Leaves are divided into 3 ovate to lance-shaped or arrow-shaped leaflets, 5–10cm (2–4in) long. From midsummer to early autumn, bears deep scarlet flowers, to



*Erythrina crista-galli*

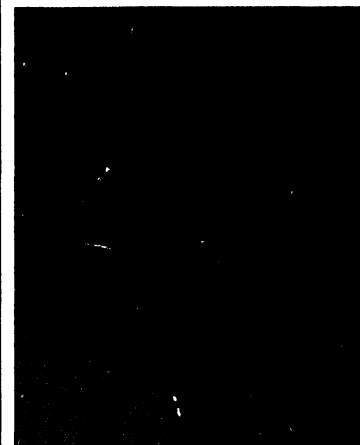
5cm (2in) long, with narrow standard petals, in terminal racemes, to 60cm (24in) long. † to 1m (3ft), ↔ 60cm (24in). S.E. USA, Mexico. \*\*

*E. lysistemon* ♀ (Lucky bean tree, Transvaal kaffirboom). Open, semi-evergreen tree. Leaves, including the long, sometimes prickly stalks, are to 22cm (9in) long, with 3 ovate, tapering leaflets to 7cm (3in) long. In summer, bears compact, terminal racemes, to 20cm (8in) long, of bright scarlet flowers, 6cm (2½in) long. † 7–10m (22–30ft), ↔ 3–5m (10–15ft). South Africa. ☼ (min. 5°C/41°F)

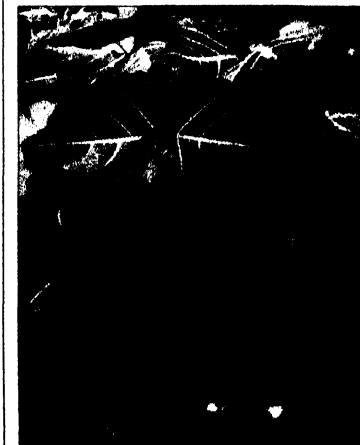
*E. variegata* ■ ♀ Spreading, deciduous tree with many robust branches scattered with prickles. Leaves, including the long stalks, are 25–40cm (10–16in) long, with 3 ovate to broadly diamond-shaped leaflets, 15–20cm (6–8in) long, usually rich green, and often variegated light green and yellow along the main veins. Scarlet or crimson flowers, 5–6cm (2–2½in) long, are borne in dense, terminal racemes, to 20cm (8in) long, in summer. † 18–25m (60–80ft), ↔ 8–15m (25–50ft). E. Africa to India, China, Taiwan, Malaysia, and parts of Polynesia. ☼ (min. 7°C/45°F)



*Erysimum linifolium* 'Variegatum'



*Erythrina x bidwillii*



*Erythrina variegata*

## ERYTHRONIUM

Dog's-tooth violet, Trout lily

LILIACEAE

Genus of about 22 species of clump-forming perennials, with long-pointed, tooth-like bulbs. They occur in habitats ranging from deciduous woodland to open mountain meadows in Europe, Asia, and North America. From spring to early summer, slender, upright stems produce 1–10 pendent flowers, usually 3–6cm (1¼–2½in) across, in shades of purple, violet, pink, yellow, or white, each with conspicuous stamens and 6 pointed, recurved tepals. Broadly elliptic to ovate-elliptic, paired, usually semi-erect, basal leaves, 3–35cm (1¼–14in) long, are glossy to glaucous, mid- to dark green, in some species heavily marbled bronze. Grow in clumps under deciduous trees and shrubs, or in a rock garden. *E. dens-canis* may be naturalized in thin grass.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Plant bulbs at least 10cm (4in) deep in autumn, in fertile, humus-rich, well-drained soil that does not dry out, in light dappled or partial shade. Bulbs must be kept slightly damp during storage and before planting.
- **PROPAGATION** Divide established clumps after flowering.
- **PESTS AND DISEASES** May be damaged by slugs.

*E. americanum* ■ (Yellow adder's tongue). Stoloniferous, bulbous perennial bearing horizontal, narrowly elliptic, mid- to deep green leaves, to

*Erythronium americanum**Erythronium californicum**Erythronium californicum* 'White Beauty'

15cm (6in) long, with purple-brown marbling. Solitary, sulphur-yellow flowers, 3–5cm (1¼–2in) across, with reddish yellow or purple outsides and purple, yellow, or brown anthers, are produced in spring. Often shy to flower. †8–15cm (3–6in), ↔ 10cm (4in). E. North America. \*\*\*

*E. californicum* ■ ♀ Bulbous perennial with elliptic, dark green leaves, 3–7cm (1¼–3in) long, lightly mottled brownish green. In spring, each stem produces 1–3 creamy white flowers, 5–7cm (2–3in) across, with brownish orange central markings, white anthers, and stamens with rounded filaments.

†15–35cm (6–14in), ↔ 10cm (4in). USA (California). \*\*\*. 'White Beauty' ■ ♀ syn. *E. 'White Beauty'*, is vigorous, with a rusty red basal ring in each flower; it increases well by offsets.

*E. 'Citronella'*. Vigorous, bulbous perennial with elliptic, bronze-mottled, slightly glossy, mid-green leaves. In spring, each stem bears up to 10 clear yellow flowers with dark yellow anthers. Similar to *E. 'Pagoda'*, but flowers slightly later. †20–35cm (8–14in), ↔ 10cm (4in). \*\*\*

*E. dens-canis* ■ ♀ (European dog's-tooth violet). Bulbous perennial with elliptic-oblong, mid-green leaves, 10–15cm (4–6in) long, marbled purplish brown. In spring, bears solitary, white, pink, or lilac flowers, to 3–4cm (1¼–1½in) across, with purple or blue-purple anthers. †10–15cm (4–6in), ↔ 10cm (4in). Europe, Asia. \*\*\*.

'Lilac Wonder' has rich purple flowers, with a brown basal spot on each petal forming a conspicuous central ring.

*Erythronium dens-canis**Erythronium hendersonii*

'Pink Perfection' produces clear pink flowers, 3–5cm (1¼–2in) across, in early spring. 'Purple King' bears rich plum-coloured flowers, striped white and brown in the centres. 'Snowflake' bears pure white flowers. 'White Splendour' produces white flowers with brown centres, in early spring.

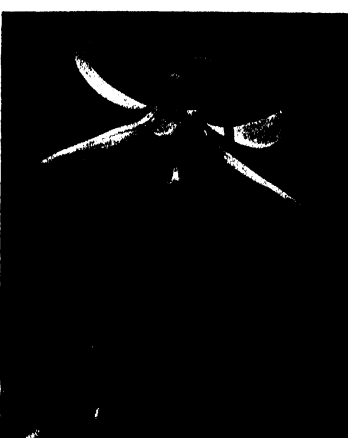
*E. grandiflorum*. Bulbous perennial with elliptic, bright mid-green leaves, 10–20cm (4–8in) long. In spring, each stem bears 1–3 golden yellow flowers, 5cm (2in) across, with distinctive, 3-lobed stigmas and white, yellow, or red-black anthers. †15–30cm (6–12in), ↔ 10cm (4in). W. USA. \*\*\*

*E. hartwegii* sec *E. multiscapoideum*.

*E. hendersonii* ■ Bulbous perennial with elliptic, wavy-margined, lightly brown-banded, dark green leaves, 10–20cm (4–8in) long. In spring, each stem bears up to 10 pale lilac flowers, 5cm (2in) across, with purple anthers and deep purple, sometimes yellow centres. Best in partial shade in soil that dries out in summer. †15–35cm (6–14in), ↔ 8cm (3in). USA (S.W. Oregon, N.W. California). \*\*\*

*E. japonicum* ■ Bulbous perennial with elliptic, mid- to deep green leaves, 10–15cm (4–6in) long, lightly marbled purplish brown. In spring, bears solitary, pale to rich violet flowers, 3–5cm (1¼–2in) across, with darker centres and purple anthers. †10–15cm (4–6in), ↔ 8cm (3in). Japan. \*\*\*

*E. 'Joanna'*. Bulbous perennial bearing elliptic, slightly glossy, mid-green leaves, with brown marbling. In spring, each stem produces up to 8 pink-flushed, creamy yellow flowers with pale yellow

*Erythronium japonicum**Erythronium oregonum*

anthers. †25–30cm (10–12in), ↔ 8cm (3in). \*\*\*

*E. 'Kondo'*. Vigorous, bulbous perennial with elliptic, bronze-mottled, mid-green leaves; the mottling fades after flowering. In spring, each stem bears 2–5, sometimes up to 10, scented, green-suffused, lemon-yellow flowers, with red-brown centres and deep yellow anthers. †15–35cm (6–14in), ↔ 10cm (4in). \*\*\*

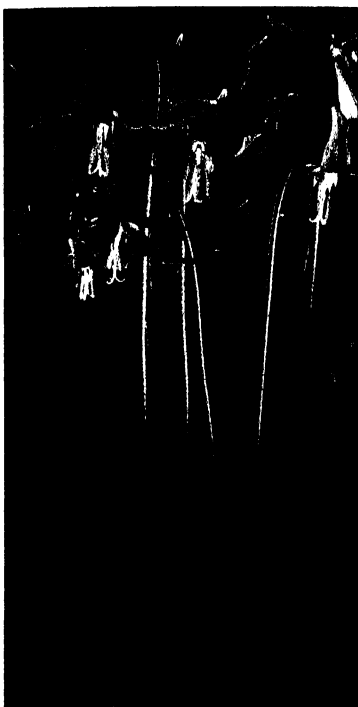
*E. multiscapoideum*, syn. *E. hartwegii*, *E. purdyi*. Bulbous perennial with elliptic, lightly brown-mottled, dark green leaves, 3.5–10cm (1½–4in) long. In spring, each branched flower stem produces solitary, red-flushed buds that open into creamy white flowers, 4–6cm (1½–2½in) across, with white anthers and yellow or yellowish green centres. Similar to *E. californicum*, but the flower stem branches at or just below ground. †15–35 (6–14in), ↔ 10cm (4in). USA (Sierra Nevada). \*\*\*

*E. oregonum* ■ Vigorous, bulbous perennial with elliptic, shiny, brown-mottled, mid- to deep green leaves, 12–15cm (5–6in) long. In spring, each stem bears up to 6 creamy white flowers, 4–7cm (1½–3in) across, with yellow centres sometimes surrounded by orange-brown marks, and bright yellow anthers. Similar to *E. californicum*, but stamens have wide, flattened, thread-like filaments. †15–35cm (6–14in), ↔ 10cm (4in). North America (British Columbia to Oregon). \*\*\*

*E. 'Pagoda'* ■ ♀ Very vigorous, bulbous perennial with elliptic, strongly bronze-mottled, glossy, deep green leaves. In spring, the stems each bear

*Erythronium 'Pagoda'*





*Erythronium revolutum*

2–5, sometimes up to 10, sulphur-yellow flowers, with brown central rings and deep yellow anthers. ‡ 15–35cm (6–14in), ↔ 10cm (4in). \*\*\*  
***E. purdyi*** see *E. multiscapoideum*.  
***E. revolutum*** ☐ ♀ (American trout lily). Bulbous perennial with elliptic, wavy-margined, deep green leaves, 15–20cm (6–8in) long, strongly mottled dark brown. In mid-spring, each stem bears up to 4 lilac-pink flowers, 4–7cm (1½–3in) across, with yellow central rings and yellow anthers. Sometimes slow to establish, but may self-seed freely once it has. ‡ 20–30cm (8–12in), ↔ 10cm (4in). USA (N. California, Vancouver Island). \*\*\*. **'Pink Beauty'** has deep lavender-pink flowers.  
***E. tuolumnense*** ☐ ♀ Vigorous, bulbous perennial with elliptic, often slightly wavy-margined, pale to mid-green leaves, 20–30cm (8–12in) long. In spring, bears up to 4, occasionally up to 7, green-veined, bright yellow flowers, 3–5cm (1¼–2in) across, with yellow anthers, in a cluster towards the top of each stem. ‡ 20–35cm (8–14in), ↔ 8cm (3in). USA (C. California). \*\*\*  
***E. 'White Beauty'*** see *E. californicum* 'White Beauty'.



*Erythronium tuolumnense*

## ESCALLONIA

ESCALLONIACEAE/GROSSULARIACEAE

Genus of about 50–60 species of mostly evergreen shrubs or, more rarely, small trees, found in woodland and scrub, and often on mountains, in South America. They are grown for their usually alternate, occasionally whorled, bold, often narrowly to broadly oval, glossy leaves, and for their mainly terminal racemes or panicles of tubular, salverform, chalice-shaped, or saucer-shaped, 5-petalled, white to pink or red flowers, with spreading or erect lobes. They flower freely over a long period, mainly in summer. Grow in a shrub border, against a wall, or as a hedge, screen, or windbreak – particularly near coasts.

• **HARDINESS** Fully hardy to half hardy; many half-hardy and frost-hardy species and cultivars may survive temperatures below -5°C (23°F) if planted against a sunny wall.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun, and shelter from cold, drying winds. Pruning group 9.

• **PROPAGATION** Take softwood cuttings in early summer, semi-ripe cuttings in late summer, and hardwood cuttings from late autumn to winter.

• **PESTS AND DISEASES** Trouble free.

***E. 'Apple Blossom'*** ☐ ♀ Compact, bushy, evergreen shrub with elliptic, glossy, dark green leaves, to 5cm (2in) long. In early and midsummer, bears short racemes of chalice-shaped, apple-blossom-pink flowers, 2–2.5cm (¾–1in) across, with white centres. ‡↔ 2.5m (8ft). \*\*\*

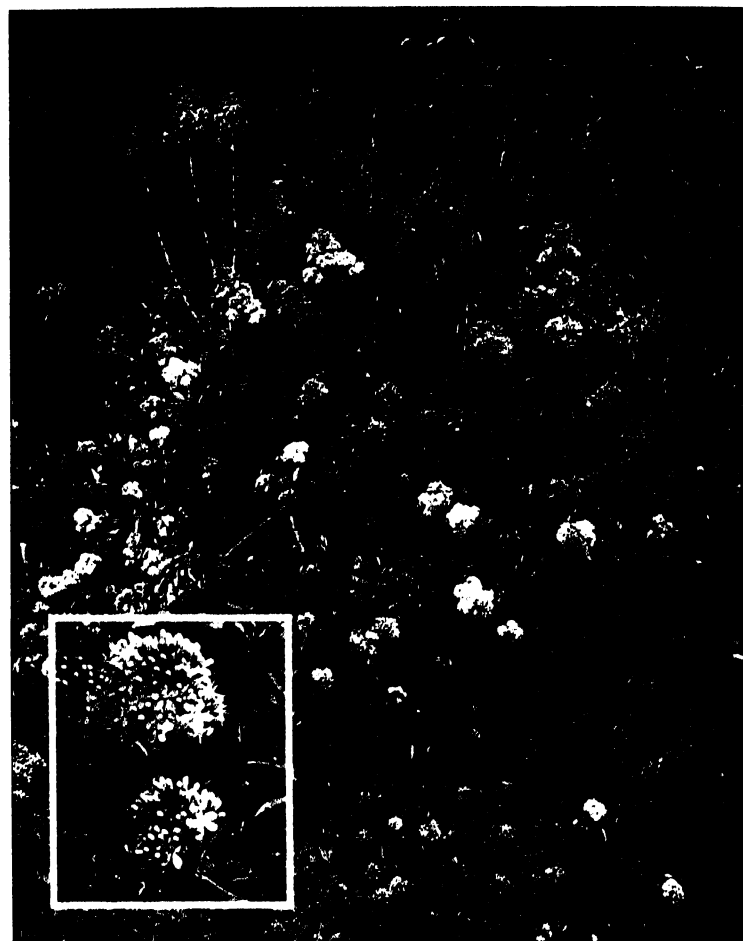
***E. bifida*** ☐ syn. *E. montevidensis*. Vigorous, upright, evergreen shrub with narrowly oval to obovate or spoon-shaped, finely toothed, glossy, dark green leaves, to 7cm (3in) long. Bears pure white flowers, to 2cm (¾in) across, with tubular then spreading petals, in panicles to 15cm (6in) long from late summer to autumn. Grow against a wall in cold areas. Brazil, Uruguay. ‡ 3m (10ft), ↔ 2.5m (8ft). \*\*\*

***E. 'C.F. Ball'***. Vigorous, erect, open, evergreen shrub with broadly oval to obovate, deeply toothed, glossy, dark green leaves, to 6cm (2½in) long. Bears tubular, bright rich red flowers, to 2cm (¾in) long, in short racemes throughout summer. ‡↔ 2.5m (8ft). \*\*\*

***E. 'Donard Radiance'*** ♀ Vigorous, compact, evergreen shrub with obovate,



*Escallonia* 'Apple Blossom'

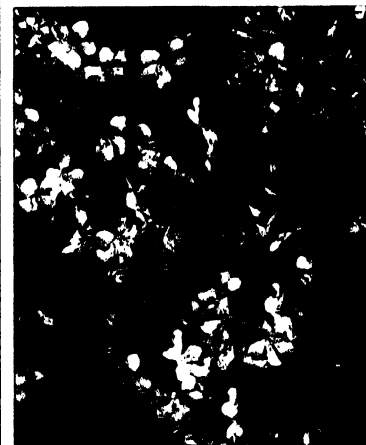


*Escallonia bifida* (inset: flower detail)

coarsely toothed, glossy, dark green leaves, to 4cm (1½in) long. Chalice-shaped, rich pink flowers, to 2cm (¾in) across, are produced in short racemes in early and midsummer. ‡↔ 2.5m (8ft). \*\*\*

***E. 'Donard Seedling'*** ☐ Vigorous, evergreen shrub with arching shoots and obovate to narrowly oval, glossy, dark green leaves, to 2.5cm (1in) long. Produces masses of saucer-shaped, pink-tinted white flowers, 1cm (½in) across, opening from pink buds, in short racemes in early and midsummer. ‡↔ 2.5m (8ft). \*\*\*

***E. 'Edinensis'*** ♀ Evergreen shrub with arching shoots and oblong, glossy, dark green leaves, to 2cm (¾in) long. Short racemes of saucer-shaped, pinkish red flowers, to 1cm (½in) across, red in bud,

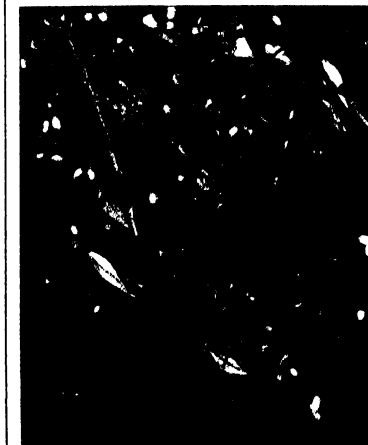


*Escallonia* 'Donard Seedling'

are borne in early and midsummer. ‡ 2m (6ft), ↔ 3m (10ft). \*\*\*

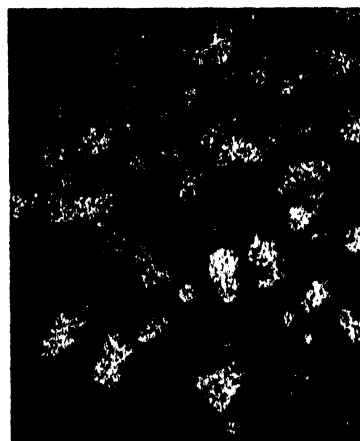
***E. 'Iveyi'*** ♀ Upright, evergreen shrub with oval to elliptic, glossy, dark green leaves, to 7cm (3in) long, often bronzed-tinted in cold weather. From mid- to late summer, bears chalice-shaped, fragrant, pure white flowers, to 1cm (½in) across, in conical panicles, 13–16cm (5–6in) long, and 10cm (4in) wide at the bases. ‡↔ 3m (10ft). \*\*

***E. 'Langleyensis'*** ☐ ♀ Evergreen or semi-evergreen shrub with slender, arching shoots and obovate to narrowly oval, glossy, dark green leaves, to 2.5cm (1in) long. Bears a profusion of saucer-shaped, bright rose-red flowers, to 1cm (½in) across, in short racemes in early and midsummer. ‡ 2m (6ft), ↔ 3m (10ft). \*\*\*



*Escallonia* 'Langleyensis'

E



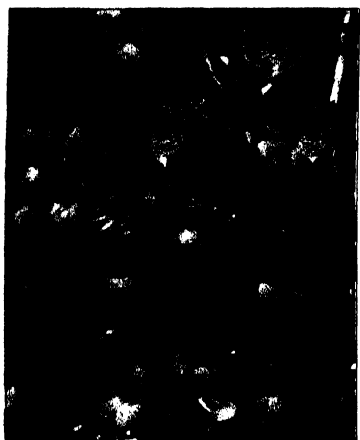
*Escallonia leucantha*

***E. leucantha*** ■ Upright, tree-like, evergreen shrub with narrowly obovate to inversely lance-shaped, toothed, glossy, dark green leaves, to 2.5cm (1in) long. In midsummer, tubular, creamy white flowers, to 1cm (½in) long, are borne in panicle-like inflorescences, to 30cm (12in) long, and 8–18cm (3–7in) wide at the bases. ‡ 3m (10ft), ↔ 2.5m (8ft). Chile, Argentina. \*\*

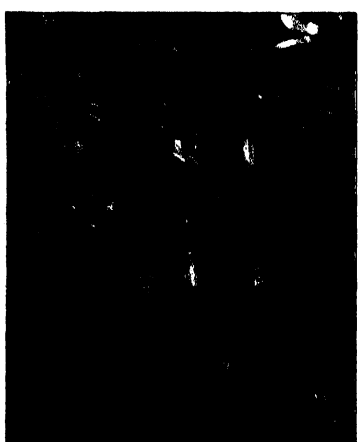
***E. montevidensis*** see *E. bifida*.

***E. 'Peach Blossom'*** ♀ Vigorous, bushy, evergreen shrub with arching shoots and elliptic, glossy, dark green leaves, to 4cm (1½in) long. In early and midsummer, bears short racemes of chalice-shaped, white-centred, peach-pink flowers, to 2.5cm (1in) across. ‡ 2.5m (8ft). \*\*

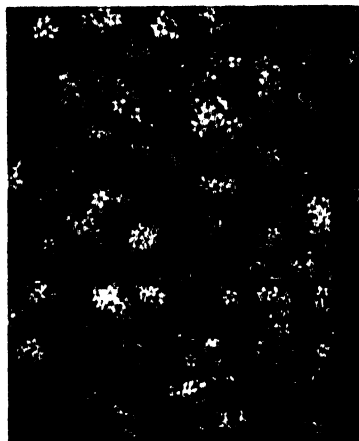
***E. 'Pride of Donard'*** ■ Erect, compact, evergreen shrub with ovate,



*Escallonia 'Pride of Donard'*



*Escallonia rubra 'Woodside'*



*Escallonia virgata*

glossy, dark green leaves, to 2.5cm (1in) long. Bears chalice-shaped, rich, light red flowers, to 2.5cm (1in) across, in short racemes in early and midsummer. ‡ 1.5m (5ft), ↔ 2.5m (8ft). \*\*

***E. 'Red Elf'*** ■ Compact, evergreen shrub of spreading habit with broadly oval to obovate, glossy, dark green leaves, to 2.5cm (1in) long. Bears tubular, dark crimson flowers, to 1cm (½in) long, in short racemes in early and midsummer. ‡ 2.5m (8ft), ↔ 4m (12ft). \*\*

***E. rubra*** ■ Vigorous, variable, evergreen shrub with peeling brown bark and elliptic to broadly ovate or obovate, toothed, glossy, dark green leaves, to 6cm (2½in) long. Bears loose panicles, to 10cm (4in) long, of tubular, dark crimson to pink flowers, 1cm (½in) long, in abundance from summer to early autumn. ‡ to 5m (15ft). Chile, Argentina. \*\*\*. **'Crimson Spire'** ♀ is erect, with deep crimson flowers, to 2cm (¾in) long; excellent for a coastal garden or as a hedge. **var. *macrantha*** is similar to 'Crimson Spire' but less erect, with broadly oval or obovate leaves, to 8cm (3in) long, and tubular, bright rose-red flowers, to 1.5cm (½in) long; ‡ 3m (10ft). **'Pygmaea'** see 'Woodside'. **'Woodside'** ■ syn. 'Pygmaea', is dwarf, compact, and rounded, with crimson flowers. Tends to revert to *E. rubra*, of which it is a sport. Cut out vigorous shoots when seen; ‡ 75cm (30in), ↔ 1.5m (5ft).

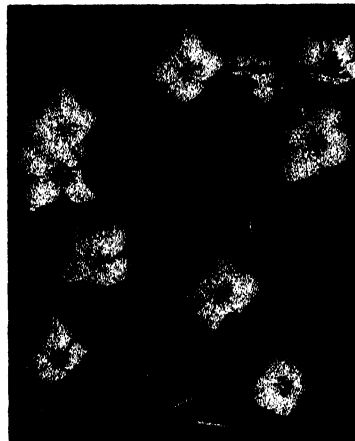
***E. virgata*** ■ Deciduous shrub with arching branches and obovate, finely toothed, glossy, dark green leaves, to 2cm (¾in) long. Axillary racemes, to 5cm (2in) long, of salverform white flowers, to 1cm (½in) long, are borne close to the tips of the branches in early and midsummer. ‡ 2m (6ft), ↔ 2.5m (8ft). Chile, Argentina. \*\*

## ESCHSCHOLZIA

*California poppy*

PAPAVERACEAE

Genus of 8–10 species of slender, erect, basally branching annuals and perennials from grassy, open areas in W. North America. They have finely divided, fern-like, light to blue-green foliage. Solitary, shallowly cupped, paper-thin, 4-petalled (rarely 5- to 8-petalled), poppy-like flowers, in red, orange, or yellow, are borne in spring or summer; they close in dull weather. Grow in an annual border, or in a gravel or rock garden. Good for cut flowers.



*Eschscholzia caespitosa*

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor, well-drained soil in full sun.

• **PROPAGATION** Sow seed *in situ* in mid-spring or early autumn. Sow in succession for a continuous display.

• **PESTS AND DISEASES** Trouble free.

***E. caespitosa*** ■ Tufted annual with finely divided, almost thread-like leaves, 10–12cm (4–5in) long. In summer, produces numerous, scented, single, bright yellow flowers, 3–5cm (1¼–2in) across. ‡ to 15cm (6in). USA (C. California). \*\*\*. **'Sundew'** bears lemon-yellow flowers.

***E. californica*** ■ (California poppy). Variable, mat-forming, frequently hairy annual with lance-shaped, finely cut leaves, 15–20cm (6–8in) long. In summer, bears numerous single, predominantly orange, sometimes also red, yellow, or white flowers, to 7cm (3in) across, followed by long, curved seed pods. ‡ to 30cm (12in), ↔ to 15cm (6in). USA (Oregon to coastal California). \*\*\*. **'Ballerina'** bears fluted, semi-double or double, red, pink, yellow, or orange flowers. **'Dali'** ♀ is compact, with scarlet flowers; ‡ 25cm



*Eschscholzia californica*



*Eschscholzia californica* Thai Silk Series

(10in). **'Monarch Art Shades'** bears semi-double or double, orange, yellow, apricot-yellow, creamy yellow, or red flowers, with frilled petals. Cultivars of **Thai Silk Series** ■ are compact, with single or semi-double, fluted, bronzed flowers in red, pink, or orange; ‡ 20–25cm (8–10in).

## ESCOBARIA

CACTACEAE

Genus of about 17 species of small, mainly spherical to cylindrical, solitary or clustering, perennial cacti from low-lying areas, semi-desert, and arid, uncultivated land in S. Canada, USA, N. Mexico, and Cuba. The stems are studded with tubercles (each with a furrow immediately above it) and very spiny, generally white areoles. In summer, diurnal, mostly bell-shaped flowers are produced from the areoles of young tubercles at or around the crowns. In frost-prone areas, grow in an indoor or bowl garden, or in a temperate greenhouse; in warm, dry areas, grow in a raised bed or desert garden.

• **HARDINESS** Frost tender.

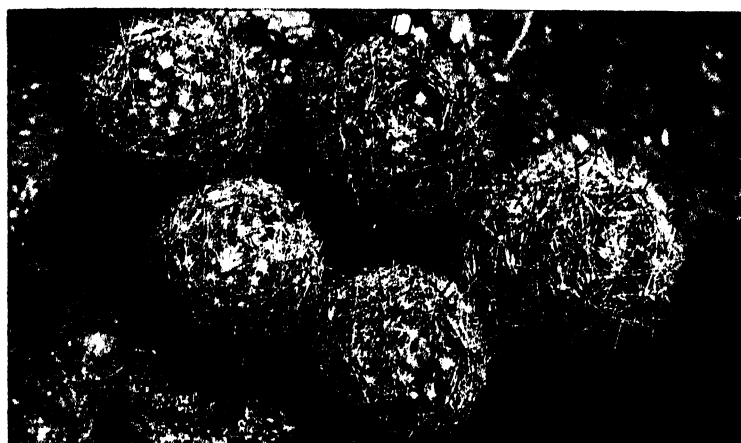
• **CULTIVATION** Under glass, grow in standard cactus compost in full light. In the growing season, water moderately and apply a low-nitrogen fertilizer every 4–5 weeks; keep dry at other times. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or divide offsets in summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

***E. asperispina***, syn. *Neobesseyia asperispina*. Solitary cactus with a spherical, dull, bluish green stem, 6cm (2½in) thick, and conical tubercles. Areoles bear 9 or 10 greyish white radial spines. Bell-shaped flowers, 3cm (1¼in) long, with wide-spreading, whitish yellow petals, each with a pale brown or olive-green mid-stripe, are produced in summer. ‡ 6cm (2½in). N. Mexico. ☿ (min. 7°C/45°F)

***E. moodii***. Clustering cactus with cylindrical stems, 2–8cm (¾–3in) thick, studded with minute, conical tubercles. Areoles bear 30–60 red radial spines, which turn white. In summer, produces pale pink, pinkish brown, or magenta flowers, to 2cm (¾in) long, with a pink mid-stripe on each petal. ‡ 6cm (2½in),



*Escobaria vivipara*

↔ indefinite. S.W. USA. ♀ (min. 7°C/45°F)

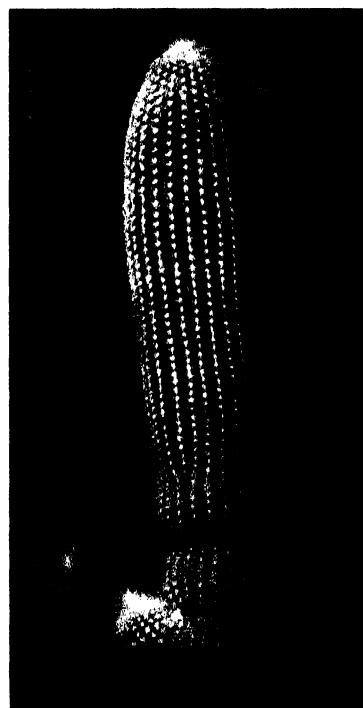
**E. vivipara** ■ syn. *Coryphantha vivipara*. Solitary or clustering cactus with depressed-spherical to short-cylindrical, white-woolly grey stems, 2.5–5cm (1–2in) thick, with cylindrical tubercles. Areoles bear brown spines (12–40 radials and 2–12 centrals). Wide-spreading, almost daisy-like, pink, magenta, purple, or occasionally white flowers, 3.5cm (1½in) long, are borne in summer. ‡ to 13cm (5in), ↔ indefinite. S. Canada to N. Mexico. ♀ (min. 7°C/45°F)

▷ **Esmeralda sanderiana** see *Euanthe sanderiana*

## ESPOSTOA

CACTACEAE

Genus of 10 species of columnar, often tree-like, slow-growing, perennial cacti, some of which branch from near their bases to form clumps. They occur in hilly regions of S. Ecuador, Peru, and Bolivia. The straight-ribbed, dark to greyish green stems and branches are covered with areoles bearing numerous



*Espostoa lanata*

spines. As they mature, most species produce a long pseudocephalium that bears cup-shaped to tubular, usually nocturnal flowers in summer. In frost-prone areas, grow as houseplants or in a temperate greenhouse. In warm, dry areas, plant outdoors in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water moderately and apply a low-nitrogen fertilizer every 4–5 weeks; keep dry at other times. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring.

• **PESTS AND DISEASES** Trouble free.

**E. lanata** ■ Tree-like or shrubby cactus with a columnar, 20- to 30-ribbed, mid-green stem, 10–15cm (4–6in) thick. The stem is densely covered with white areoles that bear short, usually yellowish white, occasionally red, yellow, brown, or purple spines and long, silky white hairs. Produces cup-shaped, white to purple flowers, 4–8cm (1½–3in) long, in summer. ‡ 1.5m (5ft), ↔ 60cm (24in). S. Ecuador, Peru. ♀ (min. 5–10°C/41–50°F)

**E. melanostele**. Shrubby, erect cactus with a columnar, 20- to 30-ribbed, greyish green stem, 10cm (4in) thick, with close-set brown areoles and initially yellow, later black spines. In summer, bears tubular white, sometimes yellow or brown flowers, 5cm (2in) long. ‡ 2m (6ft), ↔ 10cm (4in). C. Peru. ♀ (min. 5–10°C/41–50°F)

**E. senilis**. Shrubby or tree-like cactus with simple, or occasionally branched, 18- to 25-ribbed, dark green stems, 5–7cm (2–3in) thick. White areoles bear white spines. Solitary, tubular purple flowers, 3–4cm (1¼–1½in) long, are produced in summer. ‡ 2–3m (6–10ft), ↔ 60cm (24in). Peru. ♀ (min. 5–10°C/41–50°F)

## ETLINGERA

ZINGIBERACEAE

Genus of 57 species of rhizomatous, evergreen or semi-evergreen perennials occurring in forest margins from Sri Lanka to New Guinea. They have cane-like stems, linear to inversely lance-shaped leaves, and produce torch-like inflorescences at the top of leafless stalks. The inflorescences are composed

of overlapping, thick, waxy, usually colourful bracts, with relatively insignificant flowers often concealed in the lower bracts. *E. elatior* is the only widely cultivated species. In frost-prone areas, grow in a warm greenhouse; in warmer areas, grow in a bed or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added bark and leaf mould, preferably in a border, in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly. Outdoors, grow in fertile, humus-rich, well-drained soil in full sun or light dappled shade.

• **PROPAGATION** Sow seed at 20°C (68°F) as soon as ripe. Divide in spring or summer.

• **PESTS AND DISEASES** Trouble free.

**E. elatior**, syn. *Nicolaia elatior* (Philippine waxflower, Torch ginger). Upright, rhizomatous, evergreen perennial with linear-lance-shaped leaves, to 85cm (34in) long, dark green above, purplish green beneath. In summer, stems 1.5m (5ft) tall bear cone-shaped inflorescences, to 30cm (12in) long, composed of deep pink, sterile bracts, to 12cm (5in) long, and crimson, 3-petalled flowers with white or yellow margins, produced from the smaller, paler, lower bracts. ‡ 6m (20ft), ↔ 3m (10ft). Indonesia (Java, Sulawesi); widely naturalized in the tropics. ♀ (min. 16°C/61°F)

## EUANTHE

ORCHIDACEAE

Genus of one species of monopodial, evergreen, epiphytic orchid, closely allied to the genus *Vanda*. It occurs mainly at sea level in the Philippines. Its upright stem is clothed in leaf bases and has 2 rows of strap-shaped leaves. Long aerial roots appear near the bases where the leaves have been shed, and racemes of flowers are produced from the leaf axils in autumn. *E. sanderiana* hybridizes readily with *Vanda* species.

• **HARDINESS** Frost tender.

• **CULTIVATION** Warm-growing orchid. Grow in epiphytic orchid compost, made with coarse bark, in a slatted basket. In summer, provide high humidity and bright filtered light, water freely, adding fertilizer at every third watering, and mist once or twice a day. In winter, admit full light and water more sparingly. See also p.46.

• **PROPAGATION** When they have their own roots, remove the growths that are occasionally produced from the bases and pot them up separately.

• **PESTS AND DISEASES** Red spider mites, aphids, and mealybugs may be troublesome.

**E. sanderiana**, syn. *Esmeralda sanderiana*, *Vanda sanderiana*. Epiphytic orchid with semi-rigid, strap-shaped, recurved, leathery leaves, 30cm (12in) long, with central grooves. Racemes, 25–35cm (10–14in) long, of 6–10 delicately coloured, white-flushed pink flowers, 10cm (4in) or more across, with red veining, are produced well above the leaves in autumn. ‡ 45cm (18in). Philippines. ♀ (min. 16°C/61°F; max. 32°C/90°F)

## EUCALYPTUS

Gum, Ironbark

MYRTACEAE

Genus of over 500 species of evergreen trees and shrubs found in all but the driest habitats, mainly in Australia, but also in the Philippines, Malaysia, Indonesia, Papua New Guinea, and Melanesia. They are valued for their often aromatic foliage and their attractive bark. Young plants (and sucker shoots) generally have opposite leaves, developing alternate ones as they mature. The petalless flowers, composed of many showy, usually white or creamy yellow, sometimes red stamens, are usually borne in umbels. Most gum trees are best planted as specimens. In frost-prone areas, grow half-hardy and tender species in a cool greenhouse and stand them outside in summer.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Outdoors, grow in fertile, neutral to slightly acid soil that does not dry out, in full sun; shelter from cold, drying winds. Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light with good ventilation. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pruning group 1 or, for the best display of juvenile foliage, group 7; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring or summer.

• **PESTS AND DISEASES** Prone to silver leaf, oedema, and suckers (psyllids).

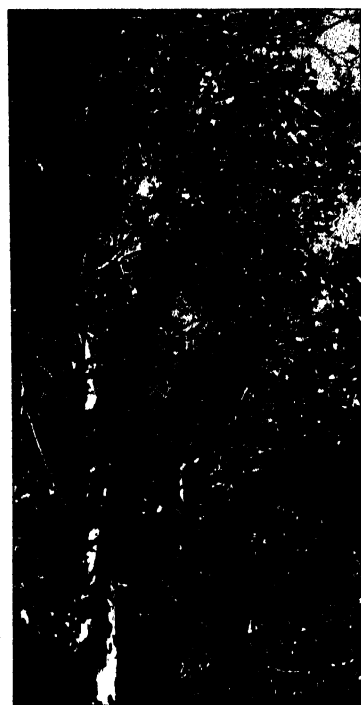
**E. camaldulensis** ♀ (Red river gum). Spreading, usually dense tree with a smooth, grey or whitish blue trunk, sometimes streaked or tinted reddish pink. Juvenile leaves are ovate to broadly lance-shaped, and grey-green; adult leaves, to 30cm (12in) long, are lance-shaped to narrowly lance-shaped, and usually mid-green, sometimes grey-green. Produces umbels of 7–11 white flowers, mainly in summer. ‡ 15–50m (50–160ft), ↔ 15–35m (50–120ft). Australia (except Tasmania). \*

**E. coccifera** ■ ♀ ♀ (Mount Wellington peppermint, Tasmanian snow gum). Spreading tree with peeling, white or white-grey bark, which is sometimes yellow or pink when young. Rounded, mid-green juvenile leaves are followed by peppermint-scented, elliptic, grey-



*Eucalyptus coccifera*

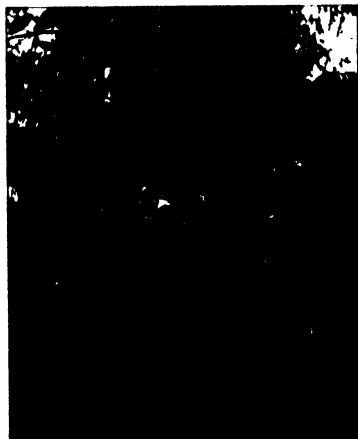
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*Eucalyptus dalrympleana*

green adult leaves, to 10cm (4in) long. Bears umbels of 3, sometimes up to 9, white or creamy white flowers in summer. ‡ 18m (60ft), ↔ 7m (22ft). Australia (Tasmania). \*\*\*

*E. dalrympleana* ◻ ◻ ◻ (Broad-leaved kindling bark, Mountain gum). Vigorous, broadly columnar tree with smooth, creamy white bark. Ovate, light green to blue-green juvenile leaves are followed by narrowly lance-shaped, bright green adult leaves, to 20cm (8in) long. Bears umbels of 3, sometimes up to 7, white flowers from late summer to autumn. Will tolerate chalk soil. ‡ 20m (70ft), ↔ 8m (25ft). S.E. Australia. \*\*\* (borderline)

*E. delegatensis* ◻ Broadly conical tree with peeling bark, rough and grey to brown on the lower half of the trunk, smooth and white above. Juvenile leaves are elliptic to ovate or broadly lance-shaped, and blue-green; adult leaves are lance-shaped, curved, dull, mid-green, and to 20cm (8in) long. Bears umbels of 7–15 white flowers in summer. ‡ 25m (80ft), ↔ 10m (30ft). S.E. Australia. \*  
*E. divaricata* see *E. gunnii*.  
*E. ficifolia* ◻ ◻ (Red-flowering gum). Dense, spreading tree with rough, dark

*Eucalyptus ficifolia**Eucalyptus gunnii*

greyish brown bark. Juvenile leaves are ovate to broadly lance-shaped, mid- to deep green above, and paler beneath; adult leaves, 7–15cm (3–6in) long, are similar to the juvenile leaves. From summer to autumn, bears umbels of 3–7 red, occasionally pink or white flowers. Pendent, woody seed capsules, to 3.5cm (1½in) long, are urn-shaped. ‡ 6–15m (20–50ft), ↔ 5–20m (15–70ft). Australia (Western Australia). \*

*E. glaucescens* ◻ (Tingiringi gum). Broadly conical tree or shrub with smooth white bark that sheds in red flakes to leave a white surface. Rounded, blue-white juvenile leaves are followed by slender, lance-shaped, blue-grey adult leaves, to 12cm (5in) long. Bears umbels of 3 white flowers in autumn. ‡ 12m (40ft), ↔ 8m (25ft). S.E. Australia. \*\*

*E. globulus* ◻ ◻ (Tasmanian blue gum). Spreading, moderately dense tree with smooth, white to cream, yellow, or grey bark that sheds in ribbons to reveal the light green and light brown inner bark. Juvenile plants have square-sectioned or winged stems, and ovate, blue-white, stem-clasping leaves, to 15cm (6in) long. Adult trees have pendent, narrowly lance- to sickle-shaped, mid- to deep green leaves, 10–30cm (4–12in) long, and produce usually solitary, white to cream flowers from spring to summer. Juvenile plants are often used in summer bedding schemes. ‡ 15–50m (50–160ft), ↔ 10–25m (30–80ft). Australia (Victoria, Tasmania). \*\*

*E. greggiana*, syn. *E. pauciflora* var. *nana* (Wolgan snow gum). Spreading shrub with shoots that are glossy red on the exposed side. Elliptic, bluish green to grey-green juvenile leaves are followed by slender, lance-shaped, curved, red-margined, grey-green adult leaves, to 11cm (4½in) long. In late spring and early summer, produces umbels of 5–12 white flowers. ‡ 2–4m (6–12ft), ↔ 5m (15ft). Australia (New South Wales). \*\*

*E. gunnii* ◻ ◻ ◻ syn. *E. divaricata* (Cider gum). Dense, erect then spreading tree with smooth, whitish green bark that is shed annually in late summer to reveal yellowish to greyish green new bark, sometimes flushed pink or orange. Juvenile leaves are ovate to rounded, mid-green, and often glaucous. Adult leaves, 5–8cm (2–3in) long, are elliptic or ovate to broadly lance-shaped, and grey-green. Freely produces umbels of 3 white to cream flowers in summer

or autumn. ‡ 10–25m (30–80ft), ↔ 6–15m (20–50ft). Australia

(Tasmania). \*\*\* (borderline)

*E. johnstonii* ◻ ◻ (Tasmanian yellow gum). Vigorous, broadly columnar tree with peeling, reddish brown and creamy white bark. Rounded juvenile leaves are followed by lance-shaped or ovate adult leaves, to 12cm (5in) long; all leaves are glossy and dark green. Umbels of 3 white flowers are produced in summer. ‡ 25m (80ft), ↔ 10m (30ft). Australia (Tasmania). \*\*

*E. leucosylon* ◻ (Blue gum, White ironbark, Yellow gum). Erect to spreading, loose to dense tree with rough, fibrous, grey bark, darker at the base, shedding in late summer to reveal paler, smooth, cream, brown, or bluish grey bark. Broadly lance-shaped to ovate or rounded-heart-shaped, dull, dark green or glaucous juvenile leaves are followed by lance-shaped, matt, mid-green or grey-green adult leaves, to 13cm (5in) long. Umbels of 3 white, pink, or red flowers are produced in summer, and sometimes through to autumn or winter. ‡ 15m (50ft), ↔ 6–20m (20–70ft). S.E. Australia. \*

*E. macrocarpa* (Mottlecrah). Wide-spreading, open shrub with white young stems and smooth grey bark that sheds to reveal pinkish red bark beneath. Juvenile and adult leaves, to 13cm (5in) long, are broadly ovate to elliptic, and silvery grey. Solitary flowers open from white buds as a dense brush of bright red stamens with yellow anthers, mainly from spring to summer. Woody, disc-shaped seed pods are 5cm (2in) across. ‡ 2–4m (6–12ft), ↔ 3–12m (10–40ft).

Australia (Western Australia). ♂ (min. 3–5°C/37–41°F)

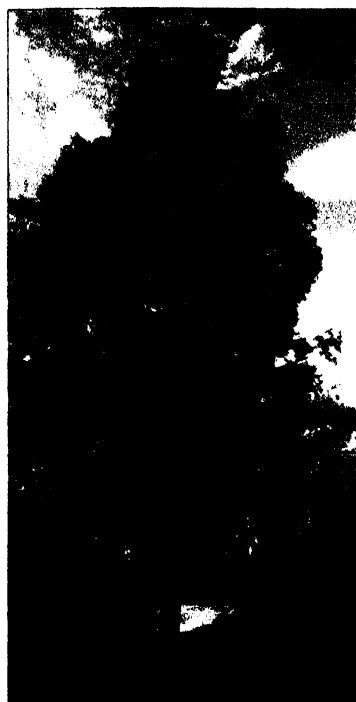
*E. mannifera* subsp. *maculosa* ◻ (Brittle gum). Rounded to spreading, moderately dense tree with smooth white bark covered by a powdery bloom. The bark turns pink then red in summer, and flakes from late summer to autumn to reveal a creamy new surface. Juvenile leaves are elliptic to narrowly lance-shaped, and blue-white to blue-green; adult leaves, to 15cm (6in) long, are lance-shaped and grey-green. Bears umbels of up to 7 white flowers from spring to summer. ‡ 10–20m (30–70ft), ↔ 8–15m (25–50ft). Australia (New South Wales). \*

*E. nicholii* ◻ ◻ (Narrow-leaved black peppermint). Wide-spreading, dense tree with a rounded crown and fibrous, grey to reddish brown bark. Narrowly lance-shaped, peppermint-scented leaves, 7–13cm (3–5in) long, are grey- to blue-green on juvenile trees, matt bluish green or light green on adult trees. Bears umbels of 7 white flowers in autumn. ‡ 12–16m (40–52ft), ↔ 5–12m (15–40ft). Australia (Queensland, New South Wales). \*\*

*E. niphophila* see *E. pauciflora* subsp. *niphophila*.

*E. parvifolia* ◻ ◻ (Kybean gum, Small-leaved gum). Spreading tree with peeling, smooth, grey and white bark. Elliptic, mid-green juvenile leaves are followed by lance-shaped, grey-green adult leaves, to 7cm (3in) long. Bears umbels of 7 white flowers in summer. Tolerates chalk soil. ‡ 15m (50ft), ↔ 10m (30ft). Australia (New South Wales). \*\*

*Eucalyptus johnstonii* (inset: bark detail)

*Eucalyptus nicholii*

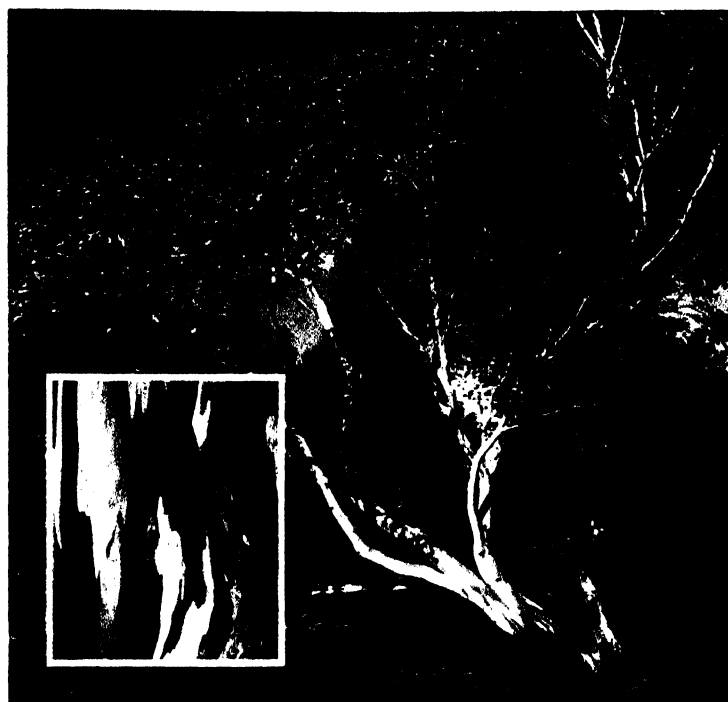
***E. pauciflora*** ♂ (Cabbage gum, Weeping gum, White sallee). Usually dense, spreading tree with smooth, whitish grey or pale brown bark that sheds from late summer to autumn to reveal yellow, bronze, or greenish patches; twigs are often yellow or red. Juvenile leaves are ovate to elliptic, and grey-green; adult leaves, to 16cm (6in) long, are lance-shaped to narrowly ovate, pendent, and lustrous, mid- to blue-green. Bears umbels of 7–15 white to cream flowers from late spring to summer. † 8–20m (25–70ft), ↔ 6–15m (20–50ft). Australia (South Australia, New South Wales, Victoria, Tasmania).

\*\*\*. **var. *nana*** see *E. gregsoniana*. **subsp. *niphophila*** ♀ syn. *E. niphophila* (Alpine snow gum, Snow gum), is very hardy, with twigs covered in a waxy white bloom, glaucous shoots, narrowly lance-shaped leaves, and 3- to 7-flowered umbels; † to 6m (20ft).

***E. perriniana*** ♀ (Round-leaved snow gum, Spinning gum). Open to moderately dense, small tree or large shrub, branching from the base, with smooth, flaking, off-white, grey, or green bark. Rounded, bluish green juvenile leaves are joined at the bases around the stem; adult leaves, to 12cm (5in) long, are pendent, lance-shaped, and glaucous. Umbels of 3 white or cream flowers are produced in summer. † 4–10m (12–30ft), ↔ 3–8m (10–25ft). Australia (New South Wales, Victoria, Tasmania) \*\*

***E. piperita*** ♂ (Sydney peppermint). Open to dense tree with bark that is fibrous and grey at the base, and smooth and grey to white above. Ovate, bluish green juvenile leaves are followed by lance- to sickle-shaped, bluish green adult leaves, 8–14cm (3–5½in) long. Leaves are peppermint-scented. Produces umbels of 7–15 white flowers in summer. † 12–30m (40–100ft), ↔ 8–20m (25–70ft). Australia (New South Wales). \*

***E. polyanthemos*** ♂ (Red box, Silver dollar gum). Broadly conical tree with

*Eucalyptus pauciflora* subsp. *niphophila* (inset: bark detail)

sometimes fibrous, red-brown bark. Juvenile leaves are rounded, notched, and silvery green; adult leaves, to 9cm (3½in) long, are ovate to broadly lance-shaped, and grey-green. Umbels of up to 7 white flowers are borne in summer. † to 25m (80ft), ↔ 12m (40ft). Australia (New South Wales, Victoria). \*

***E. pulverulenta*** ♂ (Powdered gum, Silver-leaved mountain gum). Spreading tree with grey to white bark that peels to reveal smooth, grey to bronze or brown bark beneath; twigs are green or white, covered by an intense waxy-white bloom. Heart-shaped, silvery-bloomed juvenile leaves, to 5cm (2in) long, usually persist on mature plants. Umbels of 3 white flowers are produced during winter. † 25m (80ft), ↔ 15m (50ft). Australia (New South Wales). \*\*

***E. sideroxylon*** ♂ (Mugga, Red ironbark). Tree with a rounded to spreading, open crown and thick, fissured, blackish to reddish brown bark. Linear to lance-shaped, bluish green juvenile leaves are followed by lance-shaped, grey-green adult leaves, to 14cm (5½in) long. Bears umbels of 3–7 red, pink, white, or pale yellow flowers from winter to summer. † 10–30m

*Eucalyptus perriniana*

(30–100ft), ↔ 8–15m (25–50ft).

Australia (Queensland to Victoria). \* ***E. urnigera*** ♂ (Urn-fruited gum, Urn gum). Conical tree with peeling, grey and creamy white bark. Rounded, shiny, mid-green juvenile leaves are followed by ovate to lance-shaped, often slightly glaucous, mid-green adult leaves, to 12cm (5in) long. Bears umbels of 3 white flowers in spring. † 12m (40ft), ↔ 6m (20ft). Australia (Tasmania). \*\* ***E. viminalis*** ♂ (Manna gum, Ribbon gum, White gum). Erect to spreading, usually open tree with rough grey bark below, and smooth, grey or whitish yellow bark above, which shreds into ribbons during summer. Juvenile leaves, 3.5–6cm (1½–2½in) long, are lance-shaped to narrowly ovate; adult leaves, to 20cm (8in) long, are lance-shaped or narrowly lance-shaped; all are light green. Produces umbels of 3–7 white flowers from summer to autumn. † 10–50m (30–160ft), ↔ 8–15m (25–50ft). Australia (Queensland to Tasmania, South Australia). \*\*

▷ ***Eucharidium*** see *Clarkia*  
***E. breweri*** 'Pink Ribbons' see *C. breweri* 'Pink Ribbons'

*Eucharis amazonica*

## EUCHARIS

## AMARYLLIDACEAE

Genus of 17 species of evergreen, summer-flowering, bulbous perennials occurring in moist open forest or forest margins in Central and South America. They are cultivated for their umbels of fragrant, daffodil-like white flowers. Each flower has 6 spreading tepals, arranged in two rows (the outer longer and narrower than the inner), and 6 stamens that fuse to form a cup. The long-stalked, ovate or elliptic to lance-shaped, glossy, basal leaves are often wavy and sometimes folded. In frost-prone climates, grow in a temperate or warm greenhouse or in a conservatory. In warmer areas, grow outdoors in a bed or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand and leaf mould, in bright filtered light. When in active growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on every 3 or 4 years in spring. Outdoors, grow in moderately fertile, humus-rich, well-drained soil in light dappled shade.

• **PROPAGATION** Remove offsets after flowering and grow on at 15°C (59°F) until established.

• **PESTS AND DISEASES** Trouble free.

***E. amazonica*** ♀ Bulbous perennial with long-elliptic, wavy, dark green leaves, 40cm (16in) long, that taper to stalks 30cm (12in) long. In late summer, a leafless stem, 70cm (28in) long, produces an umbel of up to 8 fragrant, pure white flowers, 9cm (3½in) across, with the stamens protruding 1.5cm (½in). † 70cm (28in), ↔ 15cm (6in). Colombia, N.E. Peru. ♀ (min. 10°C/50°F)

***E. amazonica* of gardens** see *E. x grandiflora*.

***E. x grandiflora***, syn. *E. amazonica* of gardens (Amazon lily). Bulbous perennial with semi-erect, elliptic to ovate, wavy, deep green leaves, 30cm (12in) long, on stalks to 3.5cm (1½in) long. In early summer, a leafless stem, to 50cm (20in) long, produces an umbel of up to 6 fragrant, slightly pendent white flowers, 7cm (3in) across, with long, protruding stamens. † 40–60cm (16–24in), ↔ 30cm (12in). Colombia. ♀ (min. 10°C/50°F)

E

## EUCOMIS

Pineapple flower, Pineapple lily

HYACINTHACEAE/LILIACEAE

Genus of about 15 species of bulbous perennials found in habitats ranging from rocky screes to seasonally damp meadows in South Africa and tropical southern Africa. They are cultivated for their unusual racemes of flowers borne in late summer and early autumn. Large bulbs each produce a basal rosette of lance-shaped to strap-shaped, glossy, light green leaves and a stout stem that bears a tight raceme of star-shaped flowers, to 2.5cm (1in) across, topped by a small tuft of leafy bracts, similar to those of a pineapple. Grow in a sunny, sheltered border or at the base of a warm wall. In frost-prone areas, grow less hardy species in a cool greenhouse.

- **HARDINESS** Fully hardy (borderline) to frost tender.
- **CULTIVATION** Plant bulbs 15cm (6in) deep. Grow in fertile, well-drained soil in full sun. Mulch in severe winters. Under glass, grow in loam-based potting compost (J1 No.3) with added sharp sand or grit, in full light. Water freely in active growth, sparingly in winter.
- **PROPAGATION** Sow seed at 16°C (61°C) in autumn or spring, or remove offsets in spring.
- **PESTS AND DISEASES** Trouble free.

*E. autumnalis*, syn. *E. undulata*.

Bulbous perennial bearing semi-erect, broadly strap-shaped, light green leaves, 45cm (18in) long, with wavy margins. In late summer and early autumn, bears racemes, 5–15cm (2–6in) long, of pale greenish white flowers that age to darker green. †20–30cm (8–12in), ↔20cm (8in). South Africa. \*\*\* (borderline)

*E. bicolor* ■ Bulbous perennial that produces semi-erect, strap-shaped, wavy-margined, light green leaves, 30–50cm (12–20in) long. In late summer, maroon-flecked stems bear racemes, 15cm (6in) long, of pale green flowers

*Eucomis bicolor**Eucomis comosa*

with purple-margined tepals. †30–60cm (12–24in), ↔20cm (8in). South Africa. \*\*\* (borderline)

*E. comosa* ■ syn. *E. punctata*. Bulbous perennial with semi-erect, lance-shaped, wavy-margined, light green leaves, to 70cm (28in) long, with heavy purple spotting beneath. In late summer, purple-striped stems bear racemes, to 30cm (12in) long, of white flowers with conspicuous purple tepal margins and ovaries. †75cm (30in), ↔20cm (8in). South Africa. \*\*\* (borderline)

*E. pallidiflora* (Giant pineapple flower). Robust, bulbous perennial with semi-erect, strap-shaped, light green leaves, to 70cm (28in) long, with crinkled margins. In late summer, bears greenish white flowers in racemes 24–45cm (10–18in) long. †45–75cm (18–30in), ↔20cm (8in). South Africa. \*\*

*E. punctata* see *E. comosa*.

*E. undulata* see *E. autumnalis*.

*E. zambesiaca*. Compact, bulbous perennial with semi-erect, strap-shaped, light green leaves, to 15cm (6in) long. In late summer, produces white flowers in racemes 10–20cm (4–8in) long. †15–25cm (6–10in), ↔15cm (6in). Malawi. \*\*

## EUCOMMIA

EUCOMMIACEAE

Genus of one species of dioecious, deciduous tree originally from woodland in C. China. It is cultivated for its habit and foliage, and also for a certain curiosity value: the alternate, ovate to elliptic, prominently veined leaves, if torn across, will be held together by rubbery fibres. Grow as a specimen tree.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun or partial shade, sheltered from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Insert greenwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*E. ulmoides* ♀ (Gutta-percha tree). Spreading, broadly domed tree with ovate to elliptic, finely toothed, tapered, glossy, dark green leaves, 7–20cm (3–8in) long. Inconspicuous, axillary, petalless green flowers are usually borne singly, sometimes in clusters, before or with the leaves in spring. Female plants bear groups of winged green fruit. †12m (40ft), ↔8m (25ft). C. China. \*\*\*

## EUCRYPHIA

EUCRYPHIACEAE

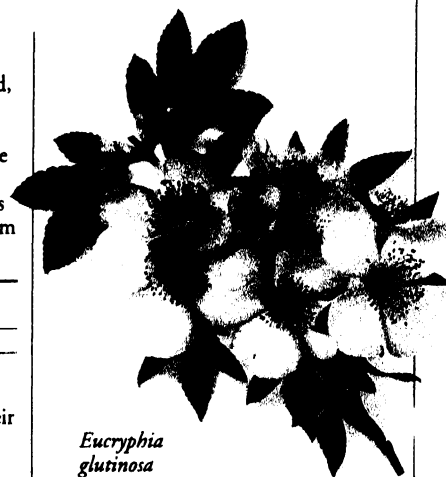
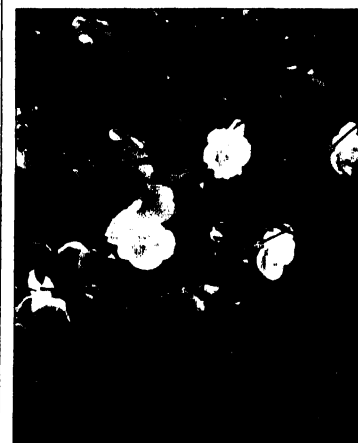
Genus of 5 or 6 mainly evergreen trees and shrubs from moist woodland in Chile and S.E. Australia, grown for their habit, foliage, and flowers. They have opposite, simple or pinnate, leathery leaves and produce solitary, occasionally paired, cup-shaped to saucer-shaped, fragrant white flowers from the leaf axils. Effective as specimen plants.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral to acid soil (*E. cordifolia* and *E. x nymanensis* tolerate alkaline soil). Site so that the roots are shaded and the crown is in full sun. Shelter from cold, drying winds in all but mild, moist areas. Pruning group 1 or 9 for most; group 8 for *E. lucida*.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in late winter. Insert semi-ripe cuttings in summer. Overwinter young plants in a cool greenhouse.
- **PESTS AND DISEASES** Trouble free.

*E. cordifolia* ■♀ (Ulmo). Columnar, evergreen tree with simple, oblong, wavy-margined leaves, to 8cm (3in) long, dark green above, grey-downy beneath. Saucer-shaped white flowers, 5cm (2in) across, are borne from late summer to autumn. †15m (50ft), ↔8m (25ft). Chile. \*\*

*E. glutinosa* ■♀♀ Upright, deciduous or semi-evergreen tree or shrub with pinnate leaves, to 6cm (2½in) long, composed of 3–5 elliptic-oblong, toothed, glossy, dark green leaflets that turn orange-red in autumn. Produces cup-shaped, sometimes double white flowers, 6cm (2½in) across, in mid- and late summer. The hardest eucryphia and the most tolerant of exposure. †10m (30ft), ↔6m (20ft). Chile. \*\*\*

*E. x intermedia* 'Rostrevor' ■♀♀ Upright, evergreen tree with oblong leaves, to 6cm (2½in) long, either simple or with up to 3 oblong leaflets,

*Eucriphia cordifolia**Eucriphia glutinosa**Eucriphia x intermedia* 'Rostrevor'

glossy, dark green above, pale green and sometimes slightly glaucous beneath, with red shoots. Produces shallowly cup-shaped white flowers, 5cm (2in) across, from late summer to autumn. †10m (30ft), ↔6m (20ft). \*\*\* (borderline)

*E. lucida* ■♀♀ Columnar, evergreen tree with simple, narrowly oblong to oblong-lance-shaped, glossy, dark green leaves, to 5cm (2in) long, glaucous beneath. Bears saucer-shaped white flowers, to 5cm (2in) across, in early and mid-summer. †8m (25ft), ↔4m (12ft). Australia (Tasmania). \*\*\* 'Pink Cloud' produces pink flowers with crimson centres.

*E. milliganii* ■ Slender, upright, evergreen shrub with simple, oblong, glossy, dark green leaves, 1.5–2cm (½–¾in) long, glaucous beneath. Bears shallowly cup-shaped white flowers, 2cm (¾in)

*Eucriphia lucida*



*Eucryphia milliganii**Eucryphia x nymansensis* 'Nymansay'

across, in midsummer. †6m (20ft), ↔ 1.5m (5ft). Australia (Tasmania). \* \*  
***E. x nymansensis* 'Nymansay'** ♀♂  
 Columnar, dense, evergreen tree with elliptic to elliptic-oblong, toothed leaves, to 6cm (2½in) long, dark green above, paler beneath, and simple or composed of 3 oblong leaflets. Bears cup-shaped white flowers, 7cm (3in) or more across, from late summer to autumn. †15m (50ft), ↔ 5m (15ft). \* \* \* (borderline)  
***E. 'Penwith'*** ♀ Columnar, evergreen tree with oblong, wavy-margined, dark green leaves, to 7cm (3in) long, glaucous beneath, sometimes with 3 oblong leaflets, and borne on reddish green shoots. From late summer to autumn, bears saucer-shaped white flowers, 5cm (2in) across. †15m (50ft), ↔ 5m (15ft). \* \*

- ▷ *Eugenia aromatica* see *Syzygium aromaticum*
- ▷ *Eugenia australis* of gardens see *Syzygium paniculatum*
- ▷ *Eugenia paniculata* see *Syzygium paniculatum*
- ▷ *Eugenia smithii* see *Acmena smithii*
- ▷ *Eugenia ugni* see *Ugni molinae*

## EULOPHIA

### ORCHIDACEAE

Genus of approximately 300 species of deciduous, mainly terrestrial orchids found in grassland and forest from sea level to almost 2,000m (6,000ft) throughout the tropics, especially in Africa. They have pseudobulbs, tuber-like corms, or fleshy roots, and produce usually 2, sometimes several, lance-shaped to linear, folded or leathery

leaves. Flowers are borne in upright racemes from the bases of the plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Intermediate- or warm-growing orchids. Grow in containers of terrestrial orchid compost. In summer, water freely, applying fertilizer at every third watering, and provide high humidity and bright filtered light. Admit full light and keep dry during winter. See also p.46.
- **PROPAGATION** Divide when the plants fill and overflow their containers.
- **PESTS AND DISEASES** Red spider mites, aphids, whiteflies, and mealybugs may be troublesome.

***E. guineensis***. Terrestrial orchid with clustered pseudobulbs and narrowly elliptic leaves, 25cm (10in) long. Purplish green or reddish brown flowers, 6cm (2½in) across, with large, pinkish purple lips streaked and spotted with darker purple, are borne in racemes to 35cm (14in) long, in autumn. †↔ 30cm (12in). Gambia to Angola, Uganda. ☞ (min. 16°C/61°F; max. 32°C/90°F)

- ▷ *Eunomia* see *Aethionema*
- E. oppositifolia*** see *A. oppositifolium*
- ▷ *Euodia* see *Tetradium*
- E. daniellii*** see *T. daniellii*
- E. hupehensis*** see *T. daniellii*

## EUONYMUS

### Spindle tree

#### CELASTRACEAE

Genus of approximately 175 species of deciduous, semi-evergreen, and evergreen shrubs, trees, and climbers found mostly in woodland and thickets, mainly in Asia. They are cultivated for their foliage, autumn colour, and ornamental, often ribbed, winged, or lobed, spherical or almost spherical fruits, borne from autumn to winter, which split to reveal seeds with often colourful arils. Leaves are opposite (rarely alternate), simple, very variable in shape, and toothed or scalloped. Cymes of 3, sometimes 7–15, small, green or white, sometimes purple-red or red-brown flowers are borne in late spring or summer. Uses range from a shrub border to specimen plantings, and from hedging to ground cover. All parts may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun or light shade. If grown in full sun, they need moister soil, although deciduous species and cultivars are more tolerant of dry soil. Shelter evergreens from cold, drying winds. Variegated cultivars need sun to enhance leaf variegation. Pruning group 1 (deciduous) or group 8 (evergreen).
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root greenwood cuttings of deciduous species and cultivars, and semi-ripe cuttings of evergreens, in summer.

- **PESTS AND DISEASES** Caterpillars, vine weevil, powdery mildew, and leaf spot may be troublesome. Scale insects may infest evergreen species.

***E. alatus*** ♀♂ (Winged spindle). Dense, bushy, deciduous shrub with obovate to ovate-elliptic, toothed, dark green leaves, to 7cm (3in) long, that turn brilliant dark red in autumn. Shoots are 4-

*Euonymus alatus*

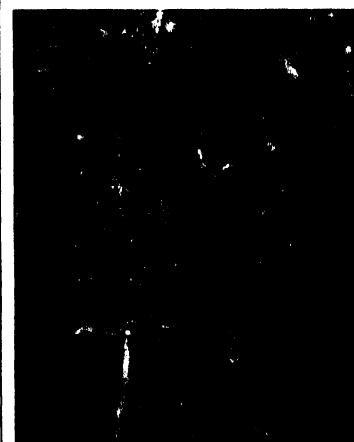
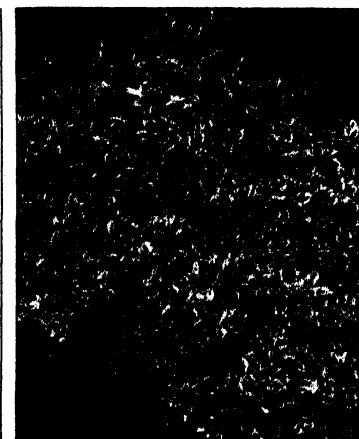
angled, with broad, corky wings. Almost spherical, reddish purple fruit, 8mm (⅜in) across, are 1–4 lobed; seeds have orange arils. †2m (6ft), ↔ 3m (10ft). China, Japan. \* \* \*. '**Compactus**' ♀ syn. '**Ciliodontatus**', is dwarf and very dense; †1m (3ft).

***E. bungeanus*** ♀ Graceful, deciduous or semi-evergreen shrub or small tree with arching shoots. Produces oval to ovate, finely toothed, sharp-pointed, pale green leaves, to 10cm (4in) long, that turn yellow and pink in autumn. Spherical, 4-lobed, pink-tinged, yellow-white fruit are 1cm (½in) across; seeds have orange arils. †6m (20ft), ↔ 5m (15ft). China, Korea. \* \*

***E. cornutus* var. *quinquecornutus***. Open, evergreen or deciduous shrub with slender, willow-like, narrowly lance-shaped, sharp-pointed, toothed, leathery, mid- to dark green leaves, to 10cm (4in) long. Spherical, strongly 5-winged pink fruit, to 1.5cm (½in) across, have 5 or 6 horns; seeds have orange arils. †2m (6ft), ↔ 3m (10ft). W. China. \* \*

***E. europaeus* 'Red Cascade'** ♀♂ Broadly conical, deciduous shrub or small tree with spreading, somewhat pendent shoots. Bears oval, scalloped, dark green leaves, to 7cm (3in) long, that turn red in autumn. Spherical, 4-lobed, clustered red fruit are 2cm (¾in) across; seeds have orange arils. †3m (10ft), ↔ 2.5m (8ft). \* \* \*

***E. fortunei* cultivars**. Prostrate to mound-forming, evergreen shrubs with oval, toothed, thinly leathery, dark green leaves, usually to 5cm (2in) long, and often variegated gold or white. Spherical

*Euonymus europaeus* 'Red Cascade'*Euonymus fortunei* 'Emerald 'n' Gold'

white fruit, 6mm (¼in) across, contain seeds with orange arils. The cultivars described below are best grown in poor soil and full sun; all climb vigorously if supported, and are useful for training against a shady wall or through a tree. †60cm (24in), or to 5m (15ft) as climbers, ↔ indefinite. \* \* \*. '**Coloratus**' has dark green leaves that turn purple-red from late autumn to winter in cold weather. '**Dart's Blanket**' has dark green leaves that turn bronzed in autumn. '**Emerald Cushion**' is compact and mound-forming, with rich green foliage; †30cm (12in), ↔ 45cm (18in). '**Emerald Gaiety**' ♀ is compact and bushy, bearing bright green leaves with white margins that are tinged pink in winter; †1m (3ft), ↔ 1.5m (5ft). '**Emerald 'n' Gold**' ♀ is bushy, and bears bright green leaves with broad, bright yellow margins that are tinged pink in winter; ↔ 90cm (36in). '**Golden Prince**', syn. '**Gold Tip**', is small and compact, with deep green leaves that are tipped bright gold when young. '**Gold Tip**' see '**Golden Prince**'. '**Kewensis**' forms a dense mat, and bears dark green leaves, to 1cm (½in) long, with pale green veins, on slender shoots; †10cm (4in). '**Minimus**' is similar to '**Kewensis**' but has elliptic to rounded leaves, to 6mm (¼in) long. **var. *radicans*** has trailing stems and dark green leaves. '**Sarcoxie**' is vigorous and bushy, with glossy, dark green leaves; †↔ 1.2m (4ft). '**Silver Queen**' ♀ is bushy and upright, with white-margined, dark green leaves, the margins later tinted pink; †2.5m (8ft), or 6m (20ft) as a climber, ↔ 1.5m (5ft).

*Euonymus fortunei* 'Silver Queen'

E

*Euonymus hamiltonianus* subsp. *sieboldianus* 'Red Elf'

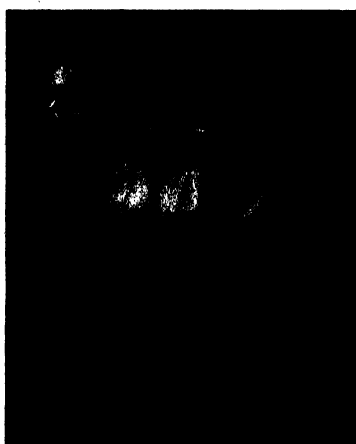
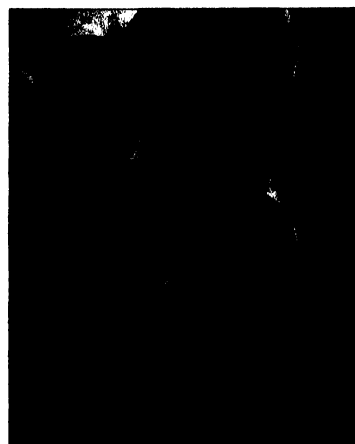
***E. hamiltonianus* subsp. *sieboldianus***, syn. *E. yedoensis*. Tree-like, deciduous shrub bearing oblong-ovate to elliptic, scalloped, mid-green leaves, to 12cm (5in) long, sometimes with long, sharp points; they turn yellow, pink, or red in autumn. Almost spherical, 4-lobed pink fruit, 0.7–1.5cm (¼–½in) across, contain blood-red seeds with orange arils.  $\pm$  6m (20ft). Korea, Japan. \*\*\*. 'Red Elf'  $\blacksquare$  is upright, with profusely borne, dark pink fruit, and seeds with red arils;  $\pm$  3m (10ft).

***E. japonicus***  $\odot$  (Japanese spindle). Dense, bushy, evergreen shrub or small, erect tree with obovate to narrowly oval, toothed, leathery, glossy, dark green leaves, to 6cm (2½in) long. Spherical fruit, to 8mm (⅓in) long, are pink-tinged white, but are rarely produced; seeds have orange arils. Useful for hedging. Mildew may be a problem.  $\pm$  4m (12ft),  $\leftrightarrow$  2m (6ft). China, Japan, Korea. \*\*. 'Albomarginatus' has oval, dark green leaves, 3–5cm (1¼–2in) long, narrowly margined with white. 'Aureopictus' see 'Aureus'. 'Aureovariegatus' see 'Ovatus Aureus'. 'Aureus', syn. 'Aureopictus', 'Luna', has dark green leaves, each with a central

golden mark, often reverting to all-green or all-yellow;  $\pm$  1.5m (5ft),  $\leftrightarrow$  1m (3ft). 'Luna' see 'Aureus'. 'Macrophyllus' is vigorous, with leaves to 9cm (3½in) long. 'Microphyllus Aureovariegatus' has dark green leaves, to 2cm (¾in) long, with narrow yellow margins;  $\pm$  1m (3ft). 'Ovatus Aureus'  $\varphi$  syn. 'Aureovariegatus', has oval, dark green leaves with broad, golden yellow margins.

***E. kiautschovicus***. Open, spreading, evergreen or semi-evergreen shrub with oval to obovate, scalloped, bright green leaves, to 7cm (3in) long, that often turn orange-red and pink in autumn. Spherical pink fruit, 1cm (½in) across, containing seeds with orange-red arils, ripen in late autumn.  $\pm$  3m (10ft),  $\leftrightarrow$  5m (15ft). China. \*\*\*

***E. latifolius***  $\odot$  Open, upright, deciduous shrub or small tree with elliptic to oblong-elliptic, finely scalloped, dark green leaves, to 12cm (5in) long, that turn brilliant red in late autumn. Pendent red fruit, 2.5cm (1in) across, are spherical with 4 or 5 prominent, flattened wings; seeds have orange arils.  $\pm$  3m (10ft). Europe, Turkey. \*\*\*

*Euonymus latifolius**Euonymus myrianthus**Euonymus oxyphyllus*

***E. lucidus***  $\odot$  syn. *E. pendulus*.

Spreading, evergreen tree or shrub with narrowly ovate to lance-shaped, deeply toothed, glossy, deep green leaves, to 12cm (5in) long, bright red when young. Spherical yellow fruit, 1cm (½in) across, are deeply 4-lobed; seeds have orange arils.  $\pm$  10m (30ft),  $\leftrightarrow$  8m (25ft). Himalayas. \*\*

***E. myrianthus***  $\blacksquare$  Bushy, upright, evergreen shrub with oval-lance-shaped to oblong-ovate, tapered, sparsely toothed, leathery, dull green leaves, to 10cm (4in) long. Almost spherical, 4-ribbed, bright orange-yellow fruit are 1.5cm (½in) across; seeds have orange-red arils.  $\pm$  3m (10ft),  $\leftrightarrow$  4m (12ft). W. China. \*\*

***E. nanus* var. *turkestanicus***. Open, upright, deciduous shrub with alternate or opposite, linear to broadly linear, sparsely toothed, dark green leaves, to 5cm (2in) long, that turn bright red to red-bronze in autumn. Red-brown flowers are followed by spherical, 4-lobed pink fruit, 5–10mm (¼–½in) across; seeds have orange arils.  $\pm$  1m (3ft). C. Asia to China. \*\*\*

***E. oxyphyllus***  $\odot$  Upright, deciduous shrub or tree with ovate to ovate-oblong, tapered, finely toothed, dull green leaves, to 9cm (3½in) long, that turn purple-red in autumn. Spherical, dark red fruit, 1cm (½in) across, each have 4 or 5 short ribs; seeds have orange-red arils.  $\pm$  2.5m (8ft) or more,  $\leftrightarrow$  2.5m (8ft). Korea, Japan. \*\*\*

***E. pendulus*** see *E. lucidus*.

***E. planipes***  $\varphi$  syn. *E. sachalinensis* of gardens. Upright, deciduous shrub with long, pointed leaf-buds opening to elliptic, coarsely toothed, mid-green leaves, to 12cm (5in) long, that turn brilliant red in autumn. Produces 4- or 5-lobed, almost spherical red fruit, 2cm (¾in) across; seeds have bright orange arils.  $\pm$  3m (10ft). N.E. China, Korea, Japan. \*\*\*

***E. sachalinensis* of gardens** see *E. planipes*.

***E. verrucosus***. Dense, bushy, rounded, deciduous shrub with rough, warty, dark shoots. Bears ovate to ovate-lance-shaped, tapered, scalloped, mid-green leaves, to 6cm (2½in) long, that turn yellow or red in autumn. Spherical, deeply 4-lobed fruit, 6mm (¼in) across, are red, often tinged with yellow; black seeds have red arils.  $\pm$  2.5m (8ft),  $\leftrightarrow$  3m (10ft). E. Europe, W. Asia. \*\*\*

***E. yedoensis*** see *E. hamiltonianus* subsp. *sieboldianus*.

## EUPATORIUM

*Hemp agrimony*

ASTERACEAE/COMPOSITAE

Genus of 40 species of annuals, herbaceous perennials, subshrubs, and evergreen shrubs. Originally a genus of over 1,000 species, most have now been transferred by botanists to other genera, including *Ageratina* and *Barlettina*. They occur in temperate, subtropical, and tropical regions in Europe, Africa, Asia, and North to South America, in habitats ranging from dry, sandy sites in woodland and thickets, to pastureland and swamps. They produce opposite, whorled, or alternate leaves, which are usually toothed and dissected, but sometimes entire. Tubular, bisexual, white, pink, violet, or purple flowerheads are borne in terminal or axillary corymbs or panicles, or occasionally singly. Most eupatoriums have nectar-rich flowerheads that are attractive to bees and butterflies. Many of the hardy species are coarse perennials, useful for a border or a wild or woodland garden. The shrubs and subshrubs are suitable for a mixed or shrub border, but need a warm, sunny site in cool climates. In frost-prone areas, grow tender species in a cool or temperate greenhouse or conservatory.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added grit and humus, in full light. Provide good ventilation. When in full growth, water freely and apply a half-strength balanced liquid fertilizer when the flowerheads appear. After flowering, reduce watering and keep just moist in winter. Outdoors, grow in any moist soil in full sun or partial shade. Pruning group 8; may require restrictive pruning under glass.

• **PROPAGATION** Sow seed of hardy species in containers in a cold frame, and seed of tender species at 13–16°C (55–61°F), both in spring. Divide hardy species, and root softwood cuttings of tender species, in spring.

• **PESTS AND DISEASES** Whiteflies and red spider mites may be a problem under glass. Outdoors, slugs and aphids may be troublesome.

***E. ageratoides*** see *E. rugosum*.

***E. cannabinum*** (Hemp agrimony). Robust, clump-forming perennial with erect, red-tinted stems and opposite,

*Eupatorium purpureum*

palmately lobed, mid- to dark green leaves, 12cm (5in) across, with oblong-lance-shaped, coarsely toothed lobes. From summer to early autumn, bears pink, purple, or white flowerheads in terminal, dense, flat-topped, corymb-like panicles, to 10cm (4in) across. ‡ to 1.5m (5ft), ↔ to 1.2m (4ft). Europe. \*\*\*

*E. ligustrinum*, syn. *Ageratina ligustrina*, *E. micranthum*, *E. weinmannianum*. Densely branched, domed shrub with opposite, elliptic to lance-shaped, toothed, long-pointed, light green leaves, to 10cm (4in) long, dotted with glands beneath. Fragrant, creamy white or pink-tinted flowerheads are produced in clustered, terminal corymbs, to 20cm (8in) across, in autumn. ‡ 2–5m (6–15ft). Mexico to Costa Rica. ☉ (min. 5°C/41°F)

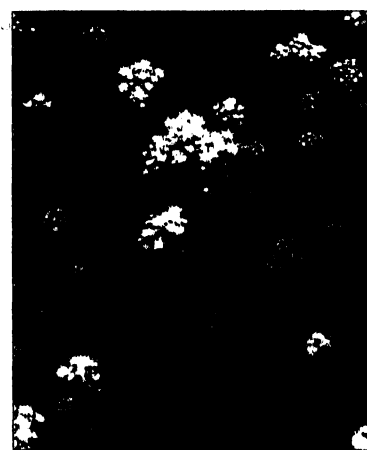
*E. micranthum* see *E. ligustrinum*. *E. purpureum* ☐ (Joe Pye weed). Clump-forming perennial with whorls of lance-shaped-elliptic to ovate, finely toothed, sharp-pointed, coarse, purple-tinged, mid-green leaves, to 25cm (10in) long, borne on stiff, upright stems that are variably suffused purple. Bears terminal, domed, corymb-like panicles, 10–15cm (4–6in) across, of pink, pinkish purple, or creamy white flowerheads from midsummer to early autumn. Prefers alkaline soil. ‡ to 2.2m (7ft), ↔ 1m (3ft). E. USA. \*\*\*

*E. rugosum* ☐ syn. *Ageratina altissima*, *E. ageratoides*, *E. urticifolium* (White snakeroot). Clump-forming perennial with stiff brown stems bearing opposite, lance-shaped to ovate, nettle-like, grey-green leaves, 4–12cm (1½–5in) long. Long-lasting, pure white flowerheads are produced in terminal corymbs, 6cm (2½in) across, from midsummer to early autumn. Frost may damage new shoots. Prefers alkaline soil in partial shade. ‡ 1.5–1.8m (5–6ft), ↔ 60cm (24in). E. North America. \*\*\*. 'Braunlaub' bears brown-flushed young leaves and brown-tinged flowers.

*E. sordidum*, syn. *Bartlettina sordida*. Bushy, rounded shrub with young stems covered in red woolly hairs. Opposite, broadly ovate, toothed, deep green leaves, 10cm (4in) long, are red-hairy below. Terminal corymbs, to 12cm (5in) across, of fragrant violet flowerheads, are produced mainly in winter. ‡ 2–3m (6–10ft), ↔ 1.5–2.5m (5–8ft). Mexico. \*

*E. urticifolium* see *E. rugosum*.

*E. weinmannianum* see *E. ligustrinum*.



*Eupatorium rugosum*

## EUPHORBIA

Milkweed, Spurge

EUPHORBACEAE

Very varied genus of about 2,000 species of annuals, biennials, evergreen, semi-evergreen, or herbaceous perennials, deciduous or evergreen subshrubs, shrubs, and trees, and succulents, widely distributed in a range of habitats in temperate, subtropical, and tropical regions. Most have much-reduced, usually male and female floral parts, grouped together into a cyathium; these may be solitary or borne in rounded or pyramidal, terminal or axillary cymes, umbels, or clusters, and are cupped by involucre of long-lasting, yellow, red, purple, brown, or green, fused bracts. Leaves are very variable, and often short-lived. Many euphorbias are suitable for a rock garden, a mixed or shrub border, or a woodland garden. In frost-prone areas, grow tender species in a cool or temperate greenhouse. Succulent species are suitable for a dry, tropical garden, or a warm or temperate greenhouse in frost-prone areas. All parts may cause severe discomfort if ingested; contact with their milky sap may irritate skin.

• **HARDINESS** Fully hardy to frost tender. • **CULTIVATION** Cultivation requirements have been grouped as below. For pruning, apply group 1 to trees, group 6 to non-succulent shrubs.

1. Well-drained, light soil in full sun.
2. Moist, humus-rich soil in light dappled shade.
3. Permanently moist soil in full sun.
4. Under glass, grow in a mix of 3 parts loam-based potting compost (J1 No.2)



*Euphorbia balsamifera*

and 1 part grit, in full light. Ventilate well. When in growth, water sparingly and apply a low-nitrogen liquid fertilizer monthly. Keep dry in winter. Outdoors, apply cultivation group 1. Grow *E. fulgens* and *E. pulcherrima* in loam-based potting compost (J1 No.3) with added bark and leaf mould, in full light or bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer every 10–14 days. Keep dry after flowering; resume watering as new growth begins. Re-pot in early summer. *E. pulcherrima* needs 12–14 hours of complete darkness daily for 2 months to initiate flowering. Outdoors, apply cultivation group 2. See also pp.48–49.

• **PROPAGATION** Sow seed of annuals *in situ* in spring. Sow seed of hardy perennials in containers in a cold frame as soon as ripe or in spring. Divide

perennials in early spring, or take basal cuttings in spring or early summer; dip cut surfaces in charcoal or lukewarm water to prevent bleeding. Sow seed of frost-tender succulents as soon as ripe at 15–20°C (59–68°F), or root complete stems, or sections of stems, in spring. Root stem-tip cuttings of shrubby and tree species with bottom heat in spring or early summer.

• **PESTS AND DISEASES** Grey mould (*Botrytis*) may be a problem. Aphids may also be troublesome on herbaceous euphorbias, and mealybugs on succulent ones. *E. cyparissias* is susceptible to rust, and *E. pulcherrima* to whiteflies.

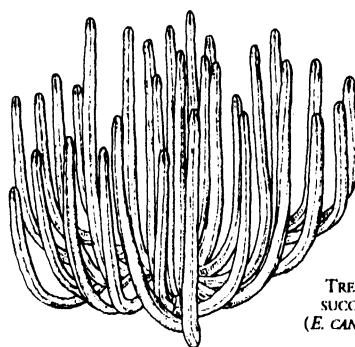
*E. amygdaloides* (Wood spurge).

Bushy, softly hairy, evergreen perennial with reddish green stems and spoon-shaped to obovate, matt, dark green leaves, 2.5–8cm (1–3in) long, red beneath and becoming darker in winter. From mid-spring to early summer, bears terminal cymes, 20cm (8in) tall, of greenish yellow cyathia and involucre. Cultivation group 2. Remove stems immediately after flowering, to encourage new basal growth. ‡ 75–80cm (30–32in), ↔ 30cm (12in). Europe, Turkey, Caucasus. \*\*\*. 'Purpurea' has dark reddish purple leaves and acid-yellow cymes. var. *robbiae* ♀ syn. *E. robbiae* (Mrs. Robb's bonnet), spreads widely by rhizomes and may become invasive. Leaves are broader, leathery, shiny, darker green, and more closely set. Cymes are to 18cm (7in) tall and less showy. Cultivation group 2 or 3. N.W. Turkey. ‡ 60cm (24in).

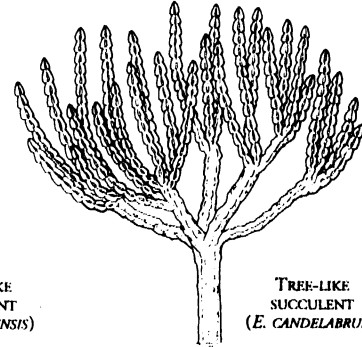
*E. balsamifera* ☐ Shrubby, evergreen succulent with gnarled, spineless, grey

### EUPHORBIA HABITS

Euphorbias are adapted to a wide range of habitats, leading to a great deal of variation in both size and growth habit. They range from impressive, upright, tree-like succulents, up to 20m (70ft) high, to relatively low-growing, spreading plants, which may be as small as 10cm (4in) tall. The 7 types of growth habit shown here are some examples of this diversity.



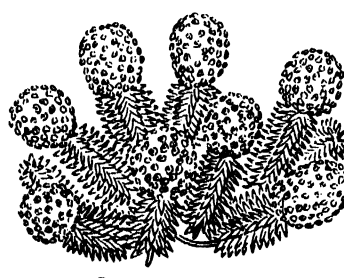
TREE-LIKE  
SUCCULENT  
(*E. CANARIENSIS*)



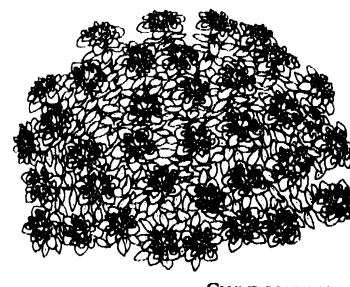
TREE-LIKE  
SUCCULENT  
(*E. CANDELABRUM*)



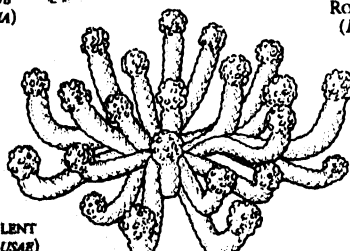
UPRIGHT SHRUB  
(*E. PULCHERRIMA*)



ROUNDED SHRUB  
(*E. CHARACIAS*)



CLUMP-FORMING  
HERBACEOUS PERENNIAL  
(*E. POLYCHROMA*)



DWARF SUCCULENT  
(*E. CAPUT-MEDUSAE*)



PROSTRATE SEMI-SUCCULENT  
(*E. MYRSINITES*)

stems, each crowned by a rosette of linear-lance-shaped or oblong-spoon-shaped, slightly fleshy, pale green or bluish green leaves, to 2.5cm (1in) long. Solitary, bell-shaped, pale yellowish white cyathia, cupped by pale yellowish white involucre, are borne on short stalks in late spring. Cultivation group 4.  $\uparrow$  2m (6ft),  $\leftrightarrow$  1m (3ft). Canary Islands.  $\odot$  (min. 10°C/50°F)

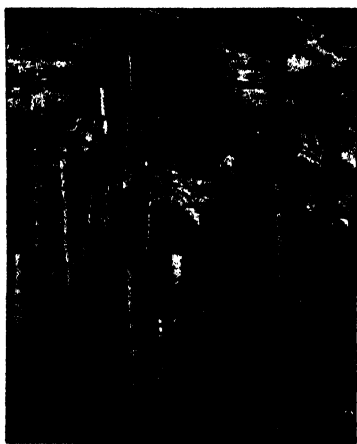
*E. biglandulosa* see *E. rigida*.

*E. bupleurifolia*. Dwarf, evergreen succulent with a spherical or ovoid, few-branched, scaly caudex with spirally arranged tubercles. Pale green leaves, to 15cm (6in) long, are lance-shaped, tapering, and fleshy. Solitary, pale green cyathia, cupped by green involucre that become red, are borne in late spring and early summer. Cultivation group 4.  $\uparrow$  to 20cm (8in)  $\leftrightarrow$  8cm (3in). South Africa (Eastern Cape, KwaZulu/Natal).  $\odot$  (min. 10°C/50°F)

*E. canariensis*. Tree-like succulent, branching freely to form large clumps of 4- to 6-angled, fleshy, sharply ridged, toothed, bright green stems. Curved thorns develop in pairs along the angles. Rudimentary leaves soon fall. Solitary, short-stalked, reddish green cyathia, cupped by reddish green involucre, are borne in summer. Cultivation group 4.  $\uparrow$  8-12m (25-40ft) or more,  $\leftrightarrow$  2m (6ft). Canary Islands.  $\odot$  (min. 12°C/54°F)

*E. candelabrum*. Freely branching, tree-like succulent with cracked grey bark and 4- or 5-angled, candelabra-like, fleshy, mid- to deep green stems forming a broad, rounded or angular crown. Stems are constricted into oblong segments, to 15cm (6in) long, and have deeply toothed ridges, paired thorns, and short-lived, spear-shaped leaves, 2-4cm (3/4-1 1/2in) long. In spring, bears terminal cymes, 2-6cm (3/4-2 1/2in) across, of reddish purple cyathia cupped by yellow involucre. Cultivation group 4.  $\uparrow$  20m (60ft),  $\leftrightarrow$  3m (10ft). Somalia to South Africa.  $\odot$  (min. 12°C/54°F)

*E. caput-medusae* (Medusa's head). Freely branching succulent with a caudex-like base, partly subterranean and thickened above. Warty, fleshy, grey-green branches are crowned by linear, fleshy, mid-green leaves, to 2.5cm (1in) long. In spring or early summer, bears solitary, fringed cream cyathia cupped by cream involucre. Cultivation group 4.  $\uparrow$  30cm (12in),  $\leftrightarrow$  1m (3ft). South Africa (Northern Cape, Western Cape, Eastern Cape).  $\odot$  (min. 15°C/59°F)



*Euphorbia canariensis*



*Euphorbia candelabrum*

*E. characias*. Upright, evergreen shrub with biennial shoots and clumps of erect, densely woolly, purple-tinged stems bearing linear to obovate, grey-green leaves, to 13cm (5in) long. Yellow-green cyathia, with purple-black or purple-brown nectar glands, are cupped by green involucre and borne in dense, cylindrical to spherical, terminal cymes, 10-30cm (4-12in) long, from early spring to early summer. Cut out flowered shoots if seed is not required. Cultivation group 1.  $\uparrow$  1-1.2m (4ft). Portugal, W. Mediterranean.  $\ast\ast$

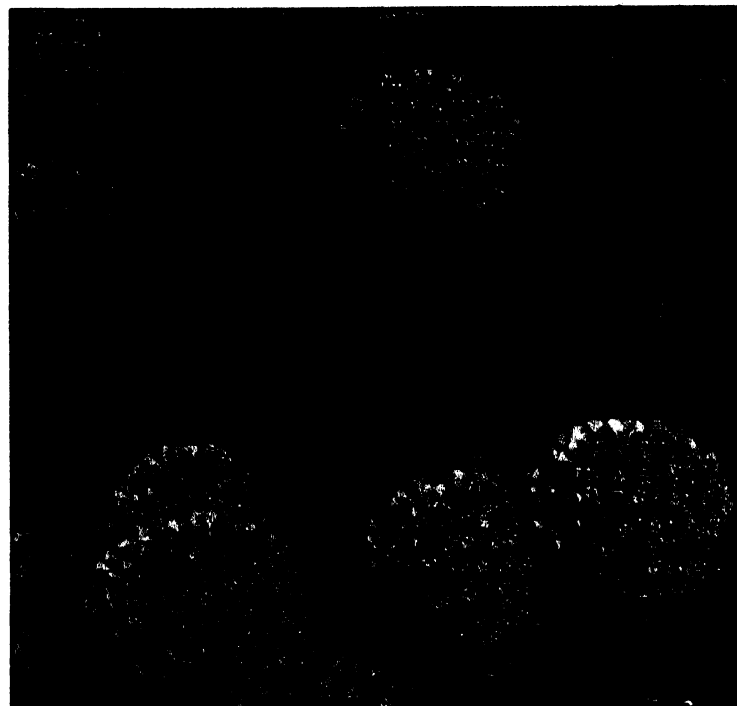
*subsp. wulfenii*  $\varnothing$  syn. *E. veneta*, *E. wulfenii*, has yellow-green cyathia with yellow-green nectar glands; S.E. Europe. *subsp. wulfenii* 'John Tomlinson'  $\square$   $\varnothing$  has large, nearly spherical cymes, 40cm (16in) long, of bright yellow-green cyathia. *subsp. wulfenii* 'Lambrook Gold'  $\varnothing$  has cylindrical cymes of bright golden green cyathia.

*E. clavaroides*. Dwarf, freely branching succulent with a partly underground caudex and a dense cushion of cylindrical, fleshy stems with thick tips and 4- or 5-sided tubercles. Ovate to lance-shaped, fleshy, mid-green leaves, 2mm (1/8in) long, are short-lived. In summer, bears solitary green cyathia cupped by green involucre. Cultivation group 4.  $\uparrow$  30cm (12in) or more. South Africa (except North West province), Lesotho.  $\odot$  (min. 10°C/50°F)

*E. cyathophora*, syn. *E. heterophylla* of gardens (Annual poinsettia, Fire-on-the-mountain, Painted leaf). Erect, shrubby annual with whorls of linear to ovate or fiddle-shaped, sinuously lobed, dark green leaves, 5-15cm (2-6in) long,



*Euphorbia characias*



*Euphorbia characias* subsp. *wulfenii* 'John Tomlinson'

becoming red towards the tops of the stems, slightly downy below. In summer, produces terminal, umbel-like cymes, to 10cm (4in) across, of small, crimson-orange cyathia cupped by leafy, scarlet and green involucre. Cultivation group 1.  $\uparrow$  70cm (28in) or more,  $\leftrightarrow$  to 30cm (12in). USA, E. Mexico.  $\ast$  *E. cyparissias* (Cypress spurge). Spreading, rhizomatous herbaceous perennial with slender stems, branching above. Crowded, linear, feathery, bluish green leaves, to 4cm (1 1/2in) long, turn yellow in autumn. From late spring to midsummer, bears yellow-green cyathia and involucre, often turning orange in poor soil, in terminal cymes, 2-5cm (3/4-2in) across. Invasive. Cultivation group 1.  $\uparrow$  20-40cm (8-16in),  $\leftrightarrow$  indefinite. W., C., and S. Europe.  $\ast\ast\ast$ . 'Orange Man' has cyathia and involucre that are more orange-shaded, and orange-tinted autumn leaves.

*E. dulcis*. Rhizomatous herbaceous perennial with erect stems and oblong to inversely lance-shaped, dark or bronze-green leaves, to 7cm (3in) long. In early summer, produces terminal cymes, 5-12cm (2-5in) across, of greenish yellow cyathia and involucre. In autumn, stems turn red, and leaves turn red, gold, and orange. Cultivation group 2, but tolerates dry soil. Self-seeds freely.  $\uparrow$  30cm (12in). W., C., S., and S.E. Europe.  $\ast\ast\ast$ . 'Chameleon'  $\square$  has rich purple leaves and purple-tinted, yellow-green cyathia and involucre.

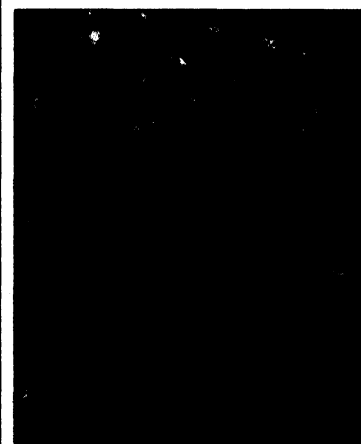
*E. epithymoides* see *E. polychroma*. *E. ferox*. Clump-forming succulent with 9- to 12-angled, fleshy, partly subterranean, pale green branches armed with stout thorns. Rudimentary leaves soon fall. In spring, bears solitary, pale yellow cyathia, with brown nectar glands, cupped within white-dotted purple involucre. Cultivation group 4.  $\uparrow$  15cm (6in),  $\leftrightarrow$  50cm (20in). South Africa (Northern Cape, Western Cape, Eastern Cape).  $\odot$  (min. 10°C/50°F)

*E. francoisii*. Dwarf, many-branched, thorny, evergreen succulent that spreads

by means of stolons. Oblong-linear to ovate, distinctly veined, wavy-margined, fleshy, mid-green leaves, to 6cm (2 1/2in) long, are variegated silvery grey, pink, or white, and often have red midribs. Leaves are arranged in rosettes around the terminal cymes, 2-6cm (3/4-2 1/2in) across, of greenish yellow cyathia and involucre borne in summer. Cultivation group 4.  $\uparrow$  10cm (4in),  $\leftrightarrow$  to 30cm (12in). S.E. Madagascar.  $\odot$  (min. 16°C/61°F)

*E. fulgens* (Scarlet plume). Erect, open, deciduous shrub with slender stems that arch at the tips, and elliptic to lance-shaped, dark green leaves, 5-10cm (2-4in) long. Cyathia contain 5 wide-spreading, petal-like scarlet nectar glands and are produced in cymes, 15-30cm (6-12in) across, from the upper leaf axils in winter. Cultivation group 4.  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  45-75cm (18-30in). Mexico.  $\odot$  (min. 13-15°C/55-59°F)

*E. gorgonis*. Spherical to inversely conical succulent with a mostly underground caudex and radiating, fleshy, spiralled, dark green, sometimes red branches. Rudimentary leaves soon fall. In late spring, the central stem bears a solitary, dark red or brown cyathium,



*Euphorbia dulcis* 'Chameleon'

cupped by a yellow to dull purple involucre. Cultivation group 4.  $\uparrow$  3cm (1¼in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 12°C/54°F)

***E. grandicornis***. Shrub-like succulent with a short, fleshy main stem and prominent, 3-angled, erect or projecting, often tiered branches, the angles curved, with horny margins and prominent, paired, light brown thorns. Rudimentary leaves soon fall. In spring or early summer, bears terminal cymes, to 4cm (1½in) across, of yellow-tinged green cyathia within pale yellow involucre, followed by pale red fruit. Cultivation group 4.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  1m (3ft) or more. Kenya to South Africa (KwaZulu/Natal). ☼ (min. 16°C/61°F)

***E. griffithii***. Rhizomatous, sometimes invasive herbaceous perennial with vigorous, erect stems, reddish green when young. Lance-shaped to linear-oblong, dark green leaves, 9–15cm (3½–6in) long, with red midribs, turn red and yellow in autumn. In early summer, bears terminal cymes, 7–12cm (3–5in) across, of yellow cyathia cupped within orange-red to red involucre. Cultivation group 2.  $\uparrow$  90cm (36in),  $\leftrightarrow$  60cm (24in). Bhutan, Tibet, S.W. China (Yunnan). \*\*\*. **'Dixter'** ♀ has copper-tinted, very dark green foliage and dusky orange involucre;  $\uparrow$  75cm (30in),  $\leftrightarrow$  1m (3ft). **'Fireglow'** ♂ has orange-red involucre;  $\uparrow$  75cm (30in),  $\leftrightarrow$  1m (3ft).

***E. heterophylla* of gardens** see *E. cyathophora*.

***E. lathyris*** (Caper spurge, Mole plant). Erect, unbranched biennial with sparse, strap-shaped, leathery, waxy, grey- to blue-green leaves, to 15cm (6in) long. In summer, produces terminal umbels, to 5cm (2in) across, of yellow cyathia cupped by involucre of triangular to lance-shaped, bright green bracts, followed by caper-like fruit. Cultivation group 1.  $\uparrow$  0.3–1.2m (1–4ft),  $\leftrightarrow$  to 30cm (12in). Europe, N.W. Africa. \*\*\*. ***E. longifolia* of gardens**. Rhizomatous herbaceous perennial with vigorous, erect stems and oblong to linear-lance-shaped, fresh green leaves, 6–11cm (2½–4½in) long, with white midribs. In early summer, produces flat, terminal cymes, 7–12cm (3–5in) across, of yellow cyathia cupped by yellow involucre. Cultivation group 2.  $\uparrow$  1m (3ft),  $\leftrightarrow$  60cm (24in). Bhutan. \*\*\*.

***E. marginata***, syn. *E. variegata* (Ghost weed, Snow on the mountain). Erect,



*Euphorbia griffithii* 'Fireglow'

initially single-stemmed, later branching annual with ovate to obovate, mid-green leaves, to 8cm (3in) long; the margins of the upper leaves are marked and veined white. From late summer to autumn, bears terminal umbels, to 5cm (2in) across, of greenish white cyathia and involucre, both variegated, margined, or spotted white. Cultivation group 1. Good for cutting.  $\uparrow$  30–90cm (12–36in),  $\leftrightarrow$  30cm (12in). N. America. \*\*\*.

***E. x martinii*** ♂♀ (*E. amygdaloides* x *E. characias*). Upright, clump-forming, evergreen subshrub. Narrow, inversely lance-shaped, mid-green leaves, to 7cm (3in) long, often tinged purple when young, are borne on red-tinged shoots. From spring to midsummer, produces terminal cymes, 10–12cm (4–5in) across, of yellow-green cyathia with dark red nectar glands; some cyathia are solitary. Cultivation group 1.  $\uparrow$  1m (3ft). S. France. \*\*\*.

***E. mellifera*** ♂ (Honey spurge). Rounded, evergreen shrub with stout shoots and oblong to narrowly lance-shaped, dark green leaves, to 20cm (8in) long. In late spring, honey-scented brown cyathia are produced in terminal cymes, 8–10cm (3–4in) across, followed by pea-like, warty fruit from late summer to autumn. Cultivation group 1.  $\uparrow$  2m (6ft) or more,  $\leftrightarrow$  2.5m (8ft). Madeira. \*\*\*.

***E. meloformis***. Dwarf, almost spherical succulent with a thick tap root. The usually solitary, furrowed, very fleshy, green to greyish green stem, often cross-banded darker green or red, occasionally banded pale green or purple-brown, has 8–12 usually vertical, sometimes spirally



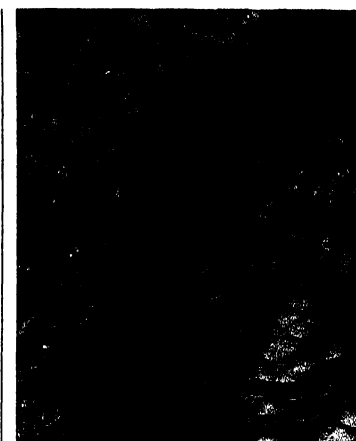
*Euphorbia mellifera*

arranged ribs. Rudimentary leaves soon fall. In summer, bears terminal clusters, to 4cm (1½in) across, of green or purple cyathia and involucre. Cultivation group 4.  $\uparrow$  10cm (4in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 10°C/50°F)

***E. milii*** ♀ (Crown of thorns). Bushy, slow-growing, mainly evergreen, semi-succulent shrub with slender, fleshy, thorny stems and branches; the well-spaced thorns are wider at the bases. Bright green leaves, 3.5cm (1½in) long, are obovate, pointed, and tough. Yellow cyathia, enclosed by very intense red involucre, are borne in axillary cymes in spring or summer. Cultivation group 4.  $\uparrow$  1m (3ft) or more,  $\leftrightarrow$  45cm (18in). Madagascar. ☼ (min. 12°C/54°F). **var. *splendens***, syn. *E. splendens* (Christ's thorn), is semi-prostrate to scrambling;  $\uparrow$  30–90cm (12–36in),  $\leftrightarrow$  60–100cm (24–39in); ☼ (min. 7–10°C/45–50°F). **var. *tulearensis*** ♂ has pink cyathia.

***E. myrsinites*** ♂♀ Evergreen perennial with semi-prostrate stems clothed in spirally arranged, obovate to rounded, pointed, succulent, blue-grey leaves, 5–10cm (2–4in) long. In spring, bears terminal umbels, 5–8cm (2–3in) across, of bright greenish yellow cyathia and involucre. Cultivation group 1.  $\uparrow$  10cm (4in),  $\leftrightarrow$  to 30cm (12in). S. and E. Europe to Turkey, C. Asia. \*\*\*.

***E. nicaeensis***. Bushy, evergreen or semi-evergreen perennial with lance-shaped to oblong, leathery, glaucous, grey-green leaves, 7cm (3in) long, borne on upright or procumbent, reddish green stems, arising from a woody rootstock. From late spring to midsummer, produces

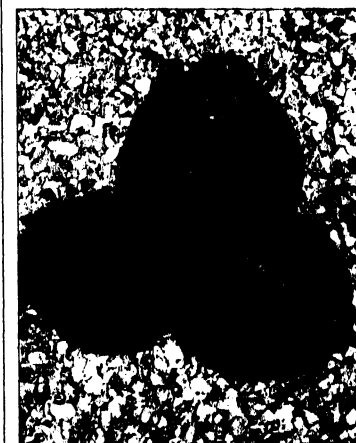


*Euphorbia myrsinites*

terminal cymes, to 12cm (5in) across, of long-lasting, greenish yellow cyathia and involucre. Cultivation group 1.  $\uparrow$  80cm (32in),  $\leftrightarrow$  45cm (18in). C. and E. Europe, Turkey, Caucasus. \*\*\*.

***E. obesa*** ♂ (Living baseball). Succulent with a spherical to squat-cylindrical, 8-ribbed, blunt-toothed, light greyish green stem, chequered reddish brown or faintly banded purple. In summer, bears rounded, terminal cymes, 4–6cm (1½–2½in) across, of yellow cyathia from the crown. Cultivation group 4.  $\uparrow$  15cm (6in),  $\leftrightarrow$  12cm (5in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 10°C/50°F)

***E. palustris*** ♂♀ Robust, clump-forming herbaceous perennial with erect, pale green stems and elliptic to oblong-lance-shaped, bright green



*Euphorbia obesa*



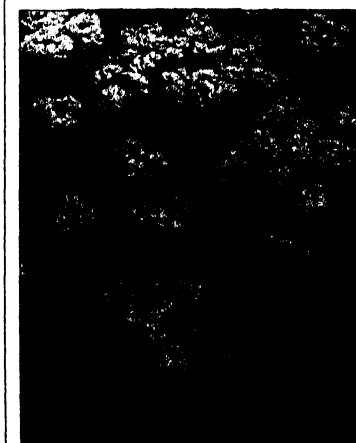
*Euphorbia ferox*



*Euphorbia x martinii*

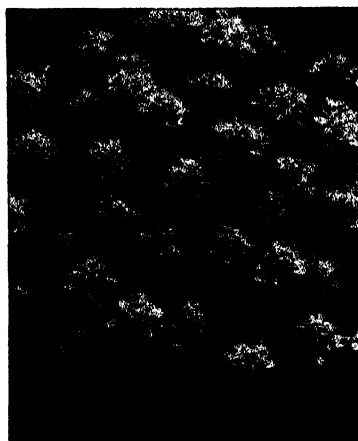


*Euphorbia milii* var. *tulearensis*



*Euphorbia palustris*

## E

*Euphorbia polychroma*

leaves, 6cm (2½in) long, turning yellow and orange in autumn. In late spring, produces terminal cymes, to 15cm (6in) across, of large, long-lasting, deep yellow cyathia and involucre. Cultivation group 3. ↗↔ 90cm (36in). S. Scandinavia to Spain to W. Caucasus, W. Asia, Russia (W. Siberia). \*\*\*

***E. pilosa*** (Hairy spurge). Bushy, rhizomatous herbaceous perennial with numerous erect, branching stems, and linear to oblong, softly hairy, mid-green leaves, 4–10cm (1½–4in) long, sometimes less hairy above. From mid-spring to midsummer, bears terminal cymes, 8–14cm (3–5½in) across, of yellow cyathia and greenish yellow involucre, both becoming greener. Cultivation group 2. ↗↔ 60–90cm (24–36in), ↔ 30cm (12in). C. Asia, W. Himalayas. \*\*\*

***E. polychroma*** [♀] syn. *E. epithymoides*. Clump-forming herbaceous perennial with robust, softly hairy stems and obovate to elliptic-oblong, dark green leaves, 3.5–5cm (1½–2in) long, sometimes tinged with purple. Long-lasting yellow cyathia, cupped by showy, bright greenish yellow involucre, are borne in terminal cymes, 4–8cm (1½–3in) across, from mid-spring to midsummer. Cultivation group 1 or 2. ↗↔ 40cm (16in), ↔ 60cm (24in). C. and S. Europe, Turkey. \*\*\*. 'Candy', syn.

'Purpurea', has dark purple-green stems and leaves, and paler yellow cyathia and involucre. 'Emerald Jade' has very bright green cyathia and involucre that colour well in autumn; ↗↔ 35cm (14in), ↔ 45cm (18in). 'Purpurea' see 'Candy'.

***E. portlandica*** (Portland spurge). Bushy, short-lived, evergreen perennial

*Euphorbia pulcherrima* 'Menorca'

with several stems bearing numerous inversely lance-shaped, slightly leathery, grey-tinged, bright green leaves, to 2.5cm (1in) long, with prominent mid-ribs beneath. Throughout summer, bears terminal cymes, 4–7cm (1½–3in) across, of yellow cyathia and involucre. Cultivation group 1. ↗↔ 40cm (16in), ↔ 15cm (6in). Coastal W. and S. Europe. \*\*\*

***E. pulcherrima*** (Mexican flame leaf, Poinsettia). Open, erect to spreading, partially deciduous shrub, usually sparsely branched, with ovate to lance-shaped, sometimes lobed or toothed, mid- to deep green leaves, to 15cm (6in) long. In winter, bears dense, terminal cymes, to 30cm (12in) across, of green cyathia ringed by large, leaf-like, bright red involucral bracts. Cultivation group 4. ↗↔ 2–4m (6–12ft), ↔ 1–2.5m (3–8ft). Mexico. ☼ (min. 13–15°C/55–59°F).

'Ecke's White' bears ovate, bright green leaves and cream involucre on slender stems. 'Lilo White' [♀] branches freely and bears olive-green leaves and upright white involucre and cyathia; ↗↔ 22cm (9in), ↔ 35cm (14in). 'Menorca' [♀] is vigorous, with dark olive-green leaves, vivid red involucre, and red-and-white cyathia; ↗↔ 30cm (12in), ↔ 40cm (16in). 'Paul Mikkelsen' is freely branching; ↗↔ 1m (3ft), ↔ 60cm (24in) or more. 'Plenissima' bears inflorescences formed from a profusion of very narrow involucral bracts, some of them angled upwards or erect.

***E. reflexa*** see *E. seguieriana* subsp. *niciciana*.

***E. rigida*** [♀] syn. *E. biglandulosa*. Erect then spreading, evergreen perennial with

*Euphorbia schillingii*

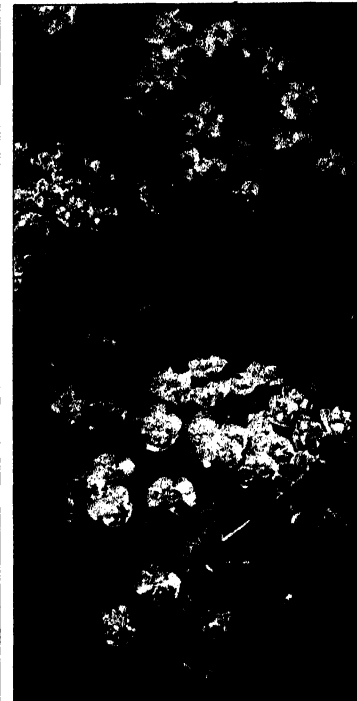
lance-shaped, stiff, fleshy, grey-green leaves, 2–7cm (¾–3in) long. From early spring to early summer, bears terminal umbels, 5cm (2in) across, of yellow cyathia cupped by yellow involucre that reddens with age. Cultivation group 1. ↗↔ 30–60cm (12–24in), ↔ to 60cm (24in). Morocco, Mediterranean (Portugal to Turkey), Iran. \*\*\*

***E. robbiae*** see *E. amygdaloides* var. *robbiae*.

***E. schillingii*** [♀] Robust, clump-forming herbaceous perennial with erect stems and elliptic-oblong to inversely lance-shaped, stalkless, dark green leaves, 12cm (5in) long, with pale green or white veins. Each stem branches near its apex, the branches each producing terminal cymes, 8–15cm (3–6in) across, of long-lasting yellow cyathia and rounded, greenish yellow involucral bracts, from midsummer to mid-autumn. Cultivation group 2. ↗↔ 1m (3ft), ↔ 30cm (12in). E. Nepal. \*\*\*

***E. seguieriana*** [♀] Clump-forming, woody-based, semi-evergreen perennial with linear to oblong-linear, glaucous, bluish green leaves, 1–4cm (½–1½in) long. In late summer and early autumn, thin stems bear terminal cymes, 8–15cm (3–6in) across, of lime-green cyathia and involucre. Cultivation group 1. ↗↔ 50cm (20in), ↔ 45cm (18in). W. Europe to Russia (Siberia), Caucasus. \*\*\*. subsp. *niciciana*, syn. *E. reflexa*, bears more spreading, narrower, lance-shaped leaves on branched stems, and cyathia with many more yellow-green involucre; Balkans to Pakistan.

***E. sikkimensis*** [♀] Spreading, upright herbaceous perennial with bright pink

*Euphorbia seguieriana*

young shoots. Lance-shaped to linear-oblong, red-marked, deep green leaves, 10–12cm (4–5in) long, become soft green, with red margins and ruby-red veins. In mid- and late summer, bears terminal cymes, 6–8cm (2½–3in) across, of yellow cyathia cupped by pale to greenish yellow involucre.

Cultivation group 2. ↗↔ 1.2m (4ft), ↔ 45cm (18in). E. Himalayas. \*\*\*

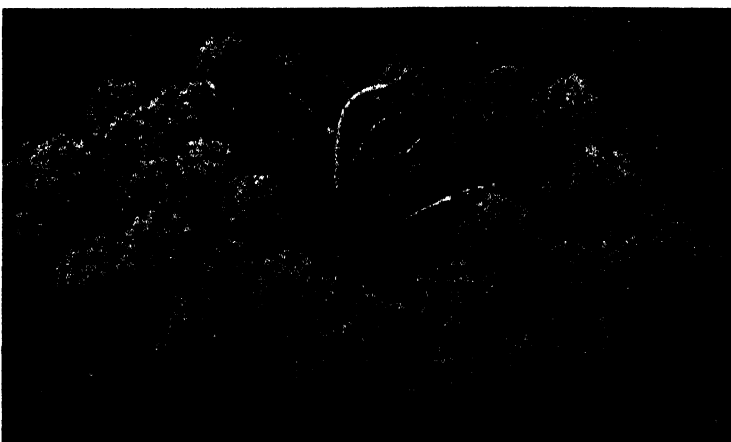
***E. splendens*** see *E. milii* var. *splendens*.

***E. tirucallii*** [♀] Bushy, tree-like succulent with fleshy, segmented, bright green stems, with paler vertical lines, and linear to linear-lance-shaped, short-lived leaves, 1.5cm (½in) long. In spring, produces terminal cymes, to 1cm (½in) across, of green cyathia cupped by paler involucre. Cultivation group 4. ↗↔ 9m (28ft), ↔ 2m (6ft). Tropical E. and S. Africa. ☼ (min. 10°C/50°F)

***E. variegata*** see *E. marginata*.

***E. veneta*** see *E. characias* subsp. *wulfenii*.

***E. villosa***. Rhizomatous, semi-evergreen or herbaceous perennial producing numerous pale yellowish green stems with terminal branches, and thin, oblong-lance-shaped to elliptic-oblong, hairless or softly hairy, mid-green leaves,

*Euphorbia pulcherrima* 'Lilo White'*Euphorbia rigida**Euphorbia sikkimensis*



*Euphorbia tirucalli*

6cm (2½in) long, which turn yellow in autumn. From mid-spring to early summer, bears terminal cymes, 6cm (2½in) across, of greenish yellow cyathia cupped within yellow involucre that mature to greenish yellow. Cultivation group 2. ‡ to 1.2m (4ft), ↔ 45cm (18in). Europe (except S.W.) to C. Russia, Caucasus, W. Siberia. \*\*\*  
***E. wallichii***. Clump-forming herbaceous perennial with erect stems and linear to elliptic-oblong, dark green leaves, 6–11cm (2½–4½in) long, with white veins and purple-tinted margins. In early summer, produces cymes, eventually 8–15cm (3–6in) across, of umbel-like, orange-yellow cyathia and bright greenish yellow involucre. Cultivation group 2. ‡ 50cm (20in), ↔ 30cm (12in). W. and C. Himalayas. \*\*\*  
***E. wulfenii*** see *E. characias* subsp. *wulfenii*.

## EUPTELEA

### EUPTELEACEAE

Genus of 2 or 3 species of deciduous trees and shrubs occurring in woodland from the Himalayas to Japan. They are grown mainly for their attractive leaves, which are alternate, simple, rounded to ovate, and often colourful in autumn.  
 • **HARDINESS** Fully hardy, but late frosts may damage young growth.  
 • **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Pruning group 1.  
 • **PROPAGATION** Sow seed in a seedbed as soon as ripe.  
 • **PESTS AND DISEASES** Trouble free.

***E. polyantra*** ♂ Spreading, suckering shrub or small tree with broadly ovate to rounded, tapered, deeply toothed, glossy, bright green leaves, to 15cm (6in) long, tinged red when young,

turning yellow and red in autumn. Bears clusters, 2.5–4cm (1–1½in) across, of inconspicuous, reddish green flowers in spring, before the leaves emerge. ‡ 8m (25ft), ↔ 6m (20ft). Japan. \*\*\*

## EURYA

### THEACEAE

Genus of about 70 species of mostly evergreen trees and shrubs from woodland in E. and S.E. Asia and the Pacific islands. They are cultivated for their large, alternate, simple, usually ovate to obovate or elliptic, mid- to dark green leaves with scalloped to toothed margins. The inconspicuous, dioecious flowers are borne singly or in few-flowered clusters from the leaf axils, in spring. Grow in a shrub border, or a peat or woodland garden. In regions that experience long periods below 5°C (41°F), grow half-hardy species in a cool greenhouse.

• **HARDINESS** Frost hardy to half hardy.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in full growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, humus-rich soil in full sun or partial shade, sheltered from cold, drying winds. Pruning group 1.  
 • **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings in summer with bottom heat.  
 • **PESTS AND DISEASES** Trouble free.

***E. emarginata*** ♂ Dense, evergreen shrub or small tree with obovate to oblong-obovate, scalloped, leathery, glossy, dark green leaves, to 3.5cm (1½in) long, tinged red in winter. Bears yellow-green flowers in spring. Female plants bear almost spherical, purple-black berries, 5mm (¼in) across, in autumn. ‡→ 1.5m (5ft). S. Japan. \*  
***E. japonica*** ♂ Dense, evergreen shrub or small tree with elliptic to obovate, toothed, leathery, glossy, dark green leaves, to 8cm (3in) long. In spring, bears greenish white flowers with green or purple-brown sepals. Female plants bear almost spherical black berries, to 5mm (¼in) across, in autumn. ‡→ 10m (30ft). Korea, Japan, and adjacent islands. \*\*

## EURYALE

*Fox nuts, Gorgon plant*

### NYMPHAEACEAE

Genus of one species of deep-water aquatic perennial, often treated as an annual, that occurs in still and slow-moving water in Asia. One of the world's largest aquatic plants, it has large, floating, rounded, thorny leaves, and shuttlecock-like flowers, each stem and calyx covered with stiff prickles. In all but tropical areas, grow *E. ferox* in a large pool in a warm greenhouse.  
 • **HARDINESS** Frost tender.

• **CULTIVATION** Grow in a large basket of fertile, loamy soil at a depth of 1m (3ft) in full light (full sun if outdoors). When in growth, insert a proprietary sachet of water-plant food into the soil or compost every 6 weeks. To stimulate the flowers to open, maintain at 20°C (68°F). See also pp.52–53.

• **PROPAGATION** Sow seed singly in 8cm (3in) containers in spring. Submerge in water at 21–23°C (70–73°F), so that the tops of the containers are just under the surface.

• **PESTS AND DISEASES** Trouble free.

***E. ferox***. Deep-water aquatic perennial with floating, rounded leaves, 0.6–1.5m (2–5ft) across, that are puckered, sparsely spiny, olive-green above and purple underneath, with prominent, prickly veins. Produces shuttlecock-like, red, purple, or lilac flowers, to 6cm (2½in) across, in summer, followed by many-seeded, prickly berries, 5–7cm (2–3in) across. ↔ 1.5m (5ft). N. India, Bangladesh, China, Taiwan, Japan. ♂ (min. 5°C/41°F)

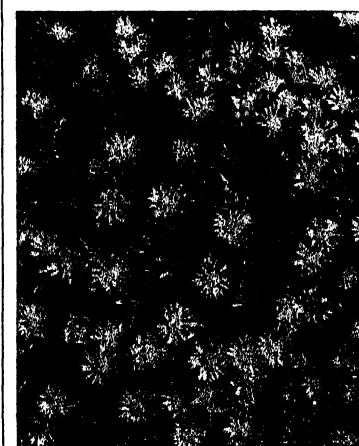
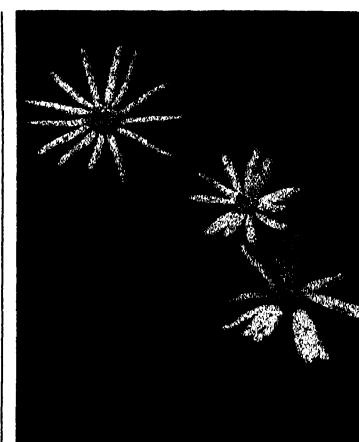
## EURYOPS

### ASTERACEAE/COMPOSITAE

Genus of approximately 100 species of evergreen shrubs, subshrubs, herbaceous perennials, and annuals found in rocky areas mainly in southern Africa, with one species in the Arabian Peninsula and Socotra, Yemen. They produce attractive, alternate, simple to pinnatisect, linear, or lance-shaped to broadly ovate leaves and showy, daisy-like flowerheads. Grow in a sheltered shrub border, rock garden, or raised bed, or in tufa. In frost-prone areas, grow half-hardy species in a cool greenhouse, conservatory, or alpine house.

• **HARDINESS** Fully hardy to half hardy.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full light. Water freely when in full growth, sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Trim lightly after flowering to restrict growth.  
 • **PROPAGATION** Sow seed in spring at 10–13°C (50–55°F). Insert softwood cuttings in late spring, or semi-ripe cuttings in summer.  
 • **PESTS AND DISEASES** Trouble free.

***E. acraeus*** ♂♀ syn. *E. evansii* of gardens. Dense, dome-shaped shrub with branching stems clothed in linear, flattened, leathery, silvery grey leaves, to 3cm (1¼in) long, toothed at the tips. In late spring and early summer, bears deep yellow flowerheads, 2.5cm (1in) across, either singly or in groups of 2 or 3, on strong stems to 4cm (1½in) long. Requires sharp drainage. ‡→ to 30cm

*Euryops acraeus**Euryops pectinatus*

(12in). South Africa (Drakensberg Mountains, KwaZulu/Natal). \*\*\* (borderline)

***E. evansii* of gardens** see *E. acraeus*.

***E. pectinatus*** ♂♀ Vigorous shrub with upright shoots and pinnatifid to pinnatisect, grey-hairy leaves, to 7cm (3in) long, with linear lobes. Bears long-stalked, bright yellow flowerheads, 5cm (2in) across, singly or in small clusters, from early summer to mid-autumn and, under glass, on through winter. ‡→ 1m (3ft). South Africa. \*

## EUSTOMA

syn. LISIANTHIUS

### GENTIANACEAE

Genus of 3 species of erect, tap-rooted annuals, biennials, and short-lived perennials found in moist prairies and fields from C. and S. USA to N. South America. Leaves are opposite, ovate to oblong-lance-shaped, stalkless, and sometimes stem-clasping. In summer, leafy flowering stems produce showy, deeply cup-shaped or bell-shaped, pastel-coloured flowers, either singly or in clusters, which gradually open from slender, furled buds. In frost-prone areas, grow as flowering container plants in a temperate greenhouse. In warmer areas, grow as annuals in a bed or border. Good for cut flowers.

• **HARDINESS** Frost tender.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with bright filtered light when in bloom. Ventilate well. In full growth, water freely and apply a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Outdoors, grow in well-drained, neutral to alkaline soil in full sun. Support stems.  
 • **PROPAGATION** Sow seed at 13–16°C (55–61°F) in autumn or late winter.  
 • **PESTS AND DISEASES** Seedlings are very prone to damping off.

***E. grandiflorum***, syn. *E. russellianum*, *Lisianthus russellianus* (Texan bluebell). Single-stemmed or branching annual or biennial with slightly fleshy, ovate to oblong, prominently 3- to 5-veined, glaucous, grey-green leaves, to 8cm (3in) long. In summer, broadly bell-shaped, satin-textured, dark-centred, pale purple flowers, to 5cm (2in) across, are produced on long stalks, either singly or in clusters, from the upper leaf axils. ‡ 60–90cm (24–36in), ↔ 30cm (12in). USA (Nebraska, Colorado, Kansas, Texas). ♂ (min. 5–7°C/41–45°F).



*Eustoma grandiflorum* Heidi Series

**Heidi Series** ☐ cultivars bear flowers in shades of blue, rose-pink, white, and bicolours. **Mermaid Series** cultivars have pink, white, or black-centred blue flowers; † to 15cm (6in). **Yodel Series** cultivars are compact, with flowers in white, salmon-pink, or purple-blue with dark centres; † 40–45cm (16–18in). *E. russellianum* see *E. grandiflorum*.

## EUSTREPHUS

Wombat berry

LILIACEAE/SMILACACEAE

Genus of one species of climbing, evergreen perennial from woodland and forest in New Guinea, E. Australia, and New Caledonia. It is grown for its 6-repelled, bell-shaped flowers, and glossy orange berries. Leaves are alternate and simple. In frost-prone areas, grow in a cool or temperate greenhouse; elsewhere, train over a support outdoors.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. Water freely in full growth, sparingly in winter. Outdoors, grow in fertile, humus-rich soil in partial shade. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Divide after fruiting.

• **PESTS AND DISEASES** Red spider mites may infest greenhouse plants.

*E. latifolius*. Tuberous, twining perennial with slender, wiry stems and linear to lance-shaped, sometimes wavy-margined, glossy, bright green leaves, 6–10cm (2½–4in) long. From spring to early summer, bears axillary clusters of usually 2 or 3 pink flowers, 1.5cm (½in) across, with fringed tepals. Glossy, orange berries split to reveal shiny black seeds. † 1.5–4m (5–12ft), ↔ 60–100cm (24–39in). New Guinea, E. Australia, New Caledonia. ☐ (min. 5°C/41°F)

▷ **Evening primrose** see *Oenothera*, *O. biennis*

**Desert** see *O. deltoidea*

▷ **Evening trumpet** see *Gelsemium sempervirens*

▷ **Everlasting**,

**Golden** see *Bracteantha bracteata*

**Pearl** see *Anaphalis*

**Winged** see *Ammobium*, *A. alatum*

▷ **Everlasting pea** see *Lathyrus*, *L. grandiflorus*, *L. latifolius*

▷ **Evodia** see *Tetradium*

## EVOLVULUS

CONVOLVULACEAE

Genus of about 100 species of prostrate to upright annuals, perennials, and evergreen subshrubs found mostly on plains and prairies from N. USA to S. Argentina. Leaves are usually simple, mainly narrowly lance-shaped to broadly ovate, and silky-hairy. Bell- to funnel-shaped, blue, pink, or white flowers are borne singly or in few-flowered, axillary or terminal cymes, usually from spring to autumn. In frost-prone areas, grow in a warm greenhouse. In dry, frost-free areas, grow in a border or for bedding.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter, and maintain a dry atmosphere when temperatures are low. Outdoors, grow in poor to moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring, or take softwood cuttings in late spring.

• **PESTS AND DISEASES** Trouble free.

*E. glomeratus* of gardens see *E. pilosus*. *E. pilosus*, syn. *E. glomeratus* of gardens.

Slender, trailing, evergreen subshrub or woody-based perennial with spoon-shaped or inversely lance-shaped to ovate-oblong, densely silky-hairy, silvery grey leaves, to 1.5cm (½in) long. In summer, bears solitary, short-tubed, funnel- to bell-shaped, lavender-pink or blue flowers, 1.5–2cm (½–¾in) across. † to 50cm (20in). USA (Montana and South Dakota to Arizona and Texas). ☐ (min. 10°C/50°F). 'Blue Daze' bears elliptic-ovate, white-hairy leaves and powder-blue flowers with white eyes.

## EXACUM

GENTIANACEAE

Genus of about 25 species of annuals, biennials, and evergreen perennials occurring near streams from Yemen to India. They have erect, often 4-angled, branched stems and stalkless to short-stalked, lance-shaped to elliptic, simple, entire leaves. They are grown for their saucer-shaped, fragrant, violet to blue, occasionally pink or white flowers, with yellow stamens, borne singly or in leafy cymes. In frost-prone areas, grow in a



*Exacum affine*

temperate greenhouse, in a conservatory, or as houseplants. In warmer areas, grow outdoors in a bed or border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. In full growth, water freely and apply a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 18°C (64°F) in early spring.

• **PESTS AND DISEASES** Trouble free.

*E. affine* ☐ (Persian violet). Bushy annual, or short-lived evergreen perennial usually grown as an annual, with 4-angled stems and ovate to elliptic, shiny leaves, to 3cm (1¼) long. In summer, bears scented, lavender-blue, rose-pink, or white flowers, to 2cm (¾in) across, with conspicuous yellow stamens. † to 23–30cm (9–12in). Yemen (Socotra). ☐ (min. 7–10°C/45–50°F). 'Blue Gem' is compact, with lavender-blue flowers; † 20cm (8in). 'Blue Midget' has lavender-blue flowers; † to 12cm (5in). 'White Midget' has pure white flowers; † to 12cm (5in).

## EXOCHORDA

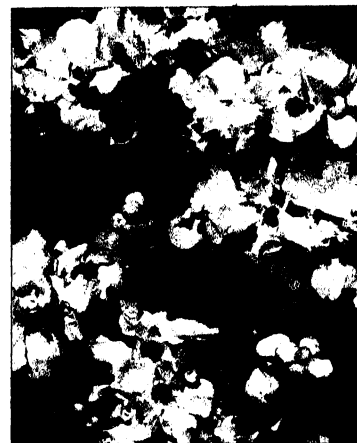
Pearl bush

ROSACEAE

Genus of 4 species of deciduous shrubs occurring in woodland from C. Asia to China and Korea. They are grown for their habit and abundant, showy, cup- or saucer-shaped white flowers, borne in terminal racemes in spring or summer. Leaves are alternate, simple, oblong or obovate, and entire or toothed. Ideal for a shrub border or as isolated specimens.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil (most will tolerate all but shallow, chalky soil) in full sun or light dappled shade. *E. racemosa* prefers lime-free soil. Pruning group 2.



*Exochorda x macrantha* 'The Bride'

• **PROPAGATION** Sow seed in a seedbed in autumn. Insert softwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

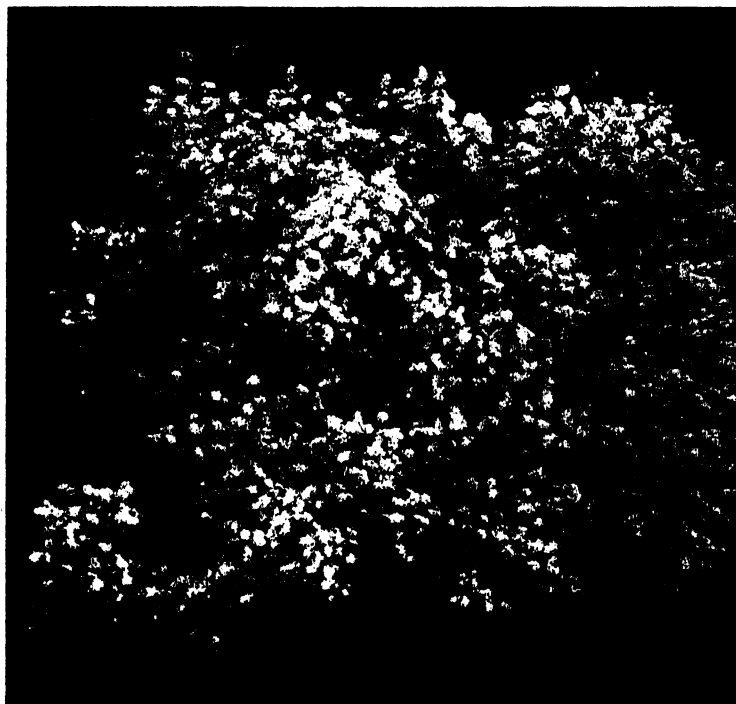
*E. giraldii*. Arching shrub with obovate leaves, to 8cm (3in) long, pinkish green when young, later pale green with red-tinged veins and red stalks. Upright racemes of 6–8 white flowers, to 2.5cm (1in) across, are produced in late spring. † to 3m (10ft). N.W. China. \*\*\*.

**var. wilsonii** ☐ is more upright, with green-stalked leaves, to 10cm (4in) long, and flowers to 5cm (2in) across.

*E. x macrantha* 'The Bride' ☐ ♀

Compact, arching, mound-forming shrub with obovate, light to mid-green leaves, to 7cm (3in) long. Bears racemes of 6–10 white flowers, to 3cm (1¼in) across, in late spring and early summer. † 2m (6ft), ↔ 3m (10ft). \*\*\*.

*E. racemosa*. Dense, rounded shrub with arching branches and narrowly obovate leaves, to 7cm (3in) long, light green above, darker beneath. Bears upright racemes of 6–10 pure white flowers, to 4cm (1½in) across, in late spring. † to 3–4m (10–12ft). N. China. \*\*\*.



*Exochorda giraldii* var. *wilsonii*

## F

## FABIANA

## SOLANACEAE

Genus of about 25 species of heath-like, evergreen shrubs from dry, upland slopes in temperate regions of South America. They are cultivated for their small, alternate, overlapping, densely arranged, needle-like leaves and solitary, tubular or bell-shaped flowers, borne terminally or opposite the leaves. Grow in a sheltered, mixed or shrub border, in a rock garden, or against a sunny wall.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in well-drained, poor to moderately fertile, neutral to slightly acid soil in full sun, sheltered from cold, drying winds. They are lime-tolerant, but may become chlorotic on shallow, chalk soils. Pruning group 9.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. In early summer, take greenwood cuttings. Take semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*F. imbricata*. Dense, mound-forming shrub with plume-like branches densely covered with tiny, needle-like, deep green leaves, to 5mm (¼in) long. In early summer, solitary, tubular, white to pale mauve flowers, 1.5cm (½in) long, are borne opposite the leaves.  $\pm$  2.5m (8ft). Chile. \*\* 'Prostrata' is low-growing, with white flowers;  $\pm$  1m (3ft),  $\pm$  2m (6ft). *f. violacea*  $\square$   $\Delta$  is upright, with branches spreading horizontally, and with lavender-mauve flowers.



*Fabiana imbricata* f. *violacea*



*Fagus sylvatica* (inset: leaf detail)

## FAGUS

## Beech

## FAGACEAE

Genus of 10 species of deciduous forest trees, widely distributed in temperate regions of the N. hemisphere, valued for their foliage and autumn colour. They have alternate, usually ovate to elliptic-oblong, coarsely to finely toothed, mid- or dark green leaves, and usually smooth grey bark. The monoecious flowers appear with the leaves, the males in spherical heads, the females in pairs within 4-lobed bracts, which develop into smooth or spiny, 4-segmented cupules containing the nuts. Grow in a woodland garden or as specimen trees. Use *F. sylvatica* for hedging or pleaching.

- **HARDINESS** Fully hardy but, except for *F. sylvatica*, they require long, warm summers to thrive.
- **CULTIVATION** Very tolerant of a wide range of well-drained soils, including chalk; grow in full sun or partial shade. For best colour, position purple-leaved beeches in full sun and yellow-leaved ones in partial shade. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn, or, after winter stratification, in spring. Graft cultivars in midwinter.
- **PESTS AND DISEASES** Prone to beech bark disease, fungi (particularly bracket fungi), aphids, bark scales, and powdery mildew.

*F. americana* see *F. grandifolia*.

*F. crenata*  $\square$  (Japanese beech).

Spreading tree with ovate, glossy, mid-green leaves, 7–13cm (3–5in) long, silky

when young, turning yellow in autumn.  $\pm$  10m (30ft),  $\pm$  8m (25ft). Japan. \*\*\*

*F. grandifolia*  $\square$   $\Delta$  syn. *F. americana* (American beech). Spreading, often shrubby tree. Oval, dark green leaves, 6–15cm (2½–6in) long, with distinctly toothed margins, silky-haired at first, turn golden brown in autumn.  $\pm$  10m (30ft). E. North America. \*\*\*

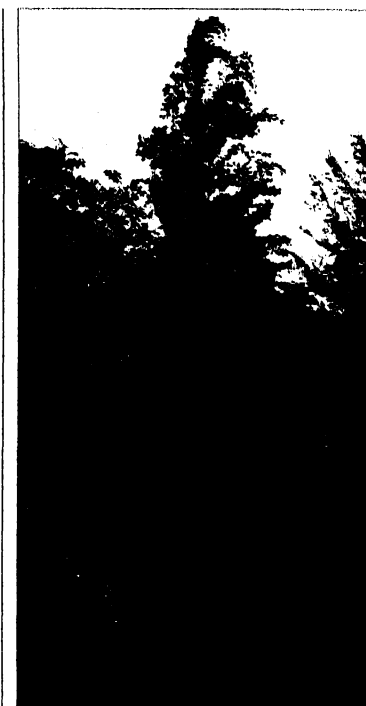
*F. japonica*  $\square$  Spreading tree with elliptic-ovate to ovate, tapered, blue-green leaves, 5–13cm (2–5in) long, silky-margined, slightly glaucous beneath, turning yellow in autumn.  $\pm$  10m (30ft),  $\pm$  8m (25ft). Japan. \*\*\*

*F. orientalis*  $\square$  (Oriental beech). Spreading tree with elliptic to obovate, wavy-margined, toothed, dark green leaves, 8–17cm (3–7in) long, turning yellow-brown in autumn.  $\pm$  20m (70ft),



*Fagus sylvatica* 'Aspleniifolia'

## F



*Fagus sylvatica* 'Dawyc Purple'

$\pm$  15m (50ft). S.E. Europe, N. Iran, Caucasus, S.W. Asia. \*\*\*

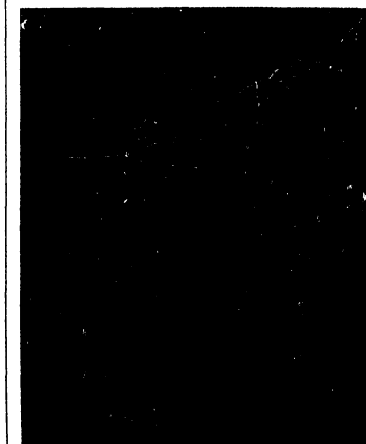
*F. sylvatica*  $\square$   $\Delta$   $\square$  (Common beech). Spreading tree with elliptic-ovate, wavy-margined leaves, to 10cm (4in) long, silky-haired and pale green at first, turning glossy dark green, then yellow to orange-brown in autumn.  $\pm$  25m (80ft),  $\pm$  15m (50ft). C. Europe to Caucasus. \*\*\*

'Aspleniifolia'  $\square$   $\Delta$  (Fern-leaved beech) has slender leaves deeply cut into narrow lobes. 'Aurea Pendula'  $\square$  is narrow, with pendulous branches and bright yellow young foliage, maturing to green;  $\pm$  10m (30ft),  $\pm$  1.5m (5ft). 'Dawyc'  $\Delta$   $\square$  is flame-shaped;  $\pm$  7m (22ft). 'Dawyc Gold'  $\Delta$   $\square$  is compact and columnar, with bright yellow young foliage turning green;  $\pm$  18m (60ft),  $\pm$  7m (22ft). 'Dawyc Purple'  $\square$   $\Delta$  is narrowly upright, with deep purple foliage;  $\pm$  20m (70ft),  $\pm$  5m (15ft).

*f. laciniata* has deeply cut leaves.

*f. pendula*  $\square$   $\Delta$   $\square$  (Weeping beech) has pendulous branches that may reach the ground. *f. purpurea* (Copper beech) has purple leaves, coppery in autumn.

'Purpurea Pendula'  $\square$  is mushroom-headed, with weeping branches and deep blackish purple foliage;  $\pm$  3m



*Fagus sylvatica* f. *pendula*

## F

*Fagus sylvatica* 'Riversii'

(10ft). 'Purpurea Tricolor' ♀ syn. 'Roseomarginata', 'Tricolor' of gardens, has purple leaves edged and striped pink and pinkish white. 'Riversii' ♂ has very deep purple leaves. 'Rohanii' has deeply cut purple leaves. 'Roseomarginata' see 'Purpurea Tricolor'. 'Rotundifolia' ♀ is upright when young, later spreading, bearing small, rounded leaves, to 5cm (2in) long. 'Tricolor' of gardens see 'Purpurea Tricolor'. 'Zlatia' has yellow young foliage, maturing to green.

- ▷ **Fairies' thimbles** see *Campanula cochleariifolia*
- ▷ **Fair maids of France** see *Ranunculus acutifolius* 'Flore Pleno'. *Saxifraga granulata*
- ▷ **Fair maids of Kent** see *Ranunculus acutifolius* 'Flore Pleno'
- ▷ **Fairy bells** see *Disporum*
- ▷ **Fairy fan-flower** see *Scaevola aemula*
- ▷ **Fairy lantern** see *Calochortus*
- ▷ **Falling stars** see *Campanula isophylla*

## FALLOPIA

syn. *BILDERDYKIA*,  
REYNOUTRIA  
POLYGONACEAE

Genus of 7 species of rhizomatous, climbing or scrambling, woody-based perennials found in moist habitats in temperate regions in the N. hemisphere. They have simple, entire, alternate, triangular or narrowly to broadly ovate leaves. In late summer, they produce large panicles of small, funnel-shaped, white, greenish white, or pinkish white flowers. Climbing species are ideal for training on pergolas and deciduous trees, and for covering unsightly structures. *F. aubertii* and *F. baldschuanica* are frequently rampant, and may be difficult to control; the two species are often confused and may be represented in gardens by hybrids between them.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any poor to moderately fertile, moist but well-drained soil in full sun or partial shade. Provide strong, durable supports. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or as soon as ripe. Take heeled, semi-ripe cuttings in summer, hardwood cuttings in autumn.
- **PESTS AND DISEASES** Leaf miners can be a problem.

*F. aubertii*, syn. *Bilderdykia aubertii*, *Polygonum aubertii* (Mile-a-minute plant). Vigorous, woody, twining,

*Fallopia baldschuanica*

deciduous climber with heart-shaped, mid-green leaves, to 10cm (4in) long, bronze when young. Upright, narrow, minutely hairy, terminal or axillary panicles of tiny, funnel-shaped, white to greenish white flowers, 4–6mm (1/8–1/4in) across, are borne laterally on leafy stems in late summer and autumn, followed by small, angled, pinkish white fruit. ‡ 12m (40ft). China (Gansu, Sichuan, Shaanxi), Tibet. \*\*\*  
*F. baldschuanica* ♂ syn. *Bilderdykia baldschuanica*, *Polygonum baldschuanicum* (Mile-a-minute plant, Russian vine). Vigorous, woody, twining, deciduous climber with heart-shaped, dark green leaves, to 10cm (4in) long. In late summer and autumn, broad, almost hairless, terminal or axillary panicles of tiny, funnel-shaped, pink-tinged white flowers, 6–8mm (1/4–1/2in) across, are produced towards the ends of the shoots, followed by small, angled, pinkish white fruit. ‡ 12m (40ft). Tajikistan, Afghanistan, W. Pakistan. \*\*\*

- ▷ **False acacia** see *Robinia pseudoacacia*
- ▷ **Fameflower** see *Talinum*

## FARFUGIUM

ASTERACEAE/COMPOSITAE

Genus of 2 species of rhizomatous, evergreen perennials found near streams and seashores in E. Asia, grown mainly for their attractive foliage. The large, leathery leaves are borne on long stalks in basal tufts, and the yellow flower-heads are borne in loose corymbs. Variegated cultivars are excellent foliage

*Farfugium japonicum* 'Argenteum'

and ground-cover plants near water, in a border, or in containers.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in partial shade. Shelter from cold, drying winds. Mulch in winter in heavily frost-prone areas.
- **PROPAGATION** Sow seed of species in containers in a cold frame in winter or spring. Divide variegated cultivars and species in spring.
- **PESTS AND DISEASES** Prone to slugs.

*F. japonicum*, syn. *F. tussilagineum*, *Ligularia tussilaginea*. Loosely clump-forming perennial with kidney-shaped, long-stalked, shiny leaves, 15–30cm (6–12in) across, with entire or short-toothed margins. Bears yellow flower-heads, 4–6cm (1 1/2–2 1/2in) across, in autumn and winter. ‡ 60cm (24in). Japan (Honshu, Shikoku, Kyushu). \*\*  
'Albovariegatum' see 'Argenteum'.  
'Argenteum' ♂ syn. 'Albovariegatum', 'Variegatum', has variegated leaves with irregular, creamy white margins.  
'Aureomaculatum' ♀ has conspicuous, irregular yellow markings on its leaves.  
'Variegatum' see 'Argenteum'.  
*F. tussilagineum* see *F. japonicum*.

## FARGESIA

GRAMINEAE/POACEAE

Genus of about 4 species of clump-forming, evergreen bamboos from damp woodland in C. China and the N.E. Himalayas. Some species of *Fargesia* were formerly included in *Arundinaria*, *Sinarundinaria*, or *Thamnocalamus*. These often vigorous bamboos are grown for their attractive, linear to lance-shaped, slightly tessellated, bright, mid- or dark green leaves, and erect canes, 2–5m (6–15ft) tall, with yellow, brown, or dark purple-green nodes. The inflorescences are terminal panicles or racemes. Grow as specimen plants. *F. murielae* is suitable for a hedge or screen. Grow *F. nitida* in a wild garden or in a large container.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in fertile, moisture-retentive soil. *F. murielae* tolerates full sun and wind. *F. nitida* needs partial or light dappled shade with shelter from cold, dry winds.
- **PROPAGATION** Divide established clumps, or take cuttings of sections of young rhizomes, in spring.
- **PESTS AND DISEASES** Slugs may attack young shoots.

*F. murielae* ♀ syn. *Arundinaria murielae*, *F. spathacea* of gardens, *Sinarundinaria murielae*, *Thamnocalamus spathaceus* of gardens (Umbrella bamboo). Clump-forming bamboo, similar to *F. nitida*, but with white-powdery, yellow-green, then yellow stems, which usually branch in the first year and eventually arch under the weight of lance-shaped, bright green leaves, 6–15cm (2 1/2–6in) long, with long, drawn-out tips. The deciduous leaf sheaths are downy, greenish purple when young, later becoming hairless and pale brown. ‡ to 4m (12ft), ↔ 1.5m (5ft) or more. C. China. \*\*\*  
*F. nitida* ♀ syn. *Arundinaria nitida*, *Sinarundinaria nitida* (Fountain bamboo). Slow-growing bamboo forming a dense clump of erect, dark

purple-green canes, 4–8mm (1/8–3/16in) thick, lined purple-brown, and white-powdery beneath the nodes; canes remain unbranched in their first year. The deciduous leaf sheaths are pale or purple-brown. The upper portions of the canes produce abundant purple-tinted branchlets bearing cascades of alternate, narrow, lance-shaped, finely tapering, dark green leaves, 4–11cm (1 1/2–4 1/2in) long. ‡ to 5m (15ft), ↔ 1.5m (5ft) or more. C. China. \*\*\*  
*F. spathacea* of gardens see *F. murielae*.

## FASCICULARIA

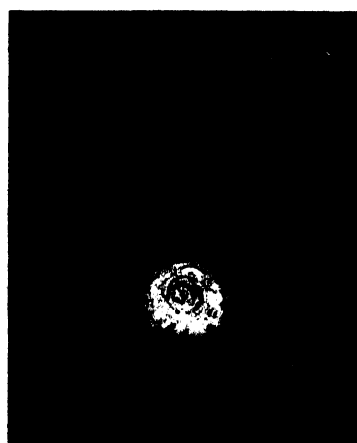
BROMELIACEAE

Genus of 5 species of stemless or short-stemmed, evergreen, xerophytic, terrestrial or epiphytic perennials (bromeliads) from coastal and central areas, to 400m (1,300ft) high, in Chile. They bear linear, widely spreading leaves in dense rosettes, forming distinct central cups. An inflorescence appears in the centre of each rosette, in summer; it has a very short scape and a spherical, corymb-like flowerhead of tubular blue flowers, and is followed by ovoid, scaly fruits. They are attractive plants for a desert garden, rock garden, or raised bed, by a sunny wall, or in containers. Where temperatures drop below 2–7°C (36–45°F), grow in a cool greenhouse.

- **HARDINESS** Frost tender; frost hardy or half hardy if protected from excessive winter wet.
- **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light with good ventilation. During growth, water moderately and apply a nitrogen-based fertilizer monthly. Water sparingly in winter. Outdoors, grow in poor, sharply drained soil in full sun. Protect from winter wet. See also p.47.
- **PROPAGATION** Sow seed at 27°C (81°F) in winter or spring. Divide offsets in spring or summer.
- **PESTS AND DISEASES** Susceptible to greenfly while flowering.

*F. andina* see *F. bicolor*.

*F. bicolor*, syn. *F. andina*. Rosetted, terrestrial bromeliad with slender, spiny-toothed, rigid, mid- to deep green leaves, 50cm (20in) long, brown-scaly beneath, the innermost leaves bright crimson at flowering. In summer, each mature rosette bears an inflorescence with dense corymbs of pale blue flowers, 4cm (1 1/2in) long, surrounded by ivory-

*Fascicularia pitcairniifolia*

white bracts. ↑ to 45cm (18in), ↔ 60cm (24in). Chile. ♀ (min. 2°C/36°F)  
***F. pitcairniifolia*** ■ Rosetted, terrestrial bromeliad with glaucous mid-green leaves, to 1m (3ft) long, edged with short, brown, spreading spines. Leaves become hairless as the plant matures, with undersides white-scaly, and conspicuous sheaths greyish white above, sometimes brown-scaly beneath. In summer at flowering time, the inner rosette leaves turn bright red, forming a "collar" around the inflorescence of blue or bright violet flowers, 4–6cm (1½–2½in) long. ♀↔ to 1m (3ft). Chile. ♀ (min. 7°C/45°F)

## X FATSHEDERA

### ARALIACEAE

Bigeneric hybrid genus of one loose, spreading, evergreen shrub, derived from *Fatsia* and *Hedera*, grown mainly for its foliage. The leaves are palmately 5- or 7-lobed, dark, lustrous green, 10–24cm (4–10in) long. Umbel-like panicles of small, green-white flowers are borne in autumn. Tolerant of coastal exposure, atmospheric pollution, shade, and a wide range of soils, x *F. lizei* is suitable for a shrub border, a cool conservatory, or as a houseplant. It can also be trained against a wall or pillar.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade. Under glass, grow in loam-based potting compost (J1 No.3); most light conditions are acceptable, but variegated cultivars need protection from very strong sunlight. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Support container-grown specimens. Pinch young shoots to promote bushiness. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Root greenwood cuttings in early summer with bottom heat, or heel cuttings at any time of year.



x *Fatshedera lizei*

- **PESTS AND DISEASES** Mealybugs and scale insects may be troublesome under glass.

x ***F. lizei*** ■ ♀ (Tree-ivy). Spreading, loosely branched, evergreen shrub with rusty-hairy young growth. The palmate, leathery, dark green leaves are divided into 5, sometimes 7 lobes, deeply cut a third to halfway to the base. In autumn, produces umbel-like panicles of sterile, greenish white flowers, to 1cm (½in) across. ↑ 1.2–2m (4–6ft) or more, ↔ 3m (10ft). Garden origin. \* \*.  
 'Anna Mikkels' ♀ syn. 'Lemon and Lime', bears yellow-variegated leaves; \*.  
 'Lemon and Lime' see 'Anna Mikkels'.  
 'Pia' has very wavy leaves; \*.  
 'Variegata' ♀ has leaves that are narrowly margined creamy white; \*

## FATSIA

### ARALIACEAE

Genus of 2 or 3 species of evergreen shrubs or small trees from E. Asia. They have large, leathery, palmately 7- to 11-lobed leaves, produced mainly at the branch tips, and compound umbels, to 30cm (12in) or more across, of small, creamy white flowers borne in autumn, followed by clusters of usually spherical black fruits. *F. japonica*, the most widely grown species, occurs wild in coastal woodland in Japan and South Korea. It is tolerant of coastal exposure and atmospheric pollution. Valued for its foliage and architectural habit, and late display of flowers in mid-autumn, *F. japonica* is ideal in a shaded, sheltered courtyard, in a shrub border, or as a container plant in a cool conservatory or greenhouse.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Outdoors, grow in fertile, moist but well-drained soil in full sun or light dappled shade, with shelter from cold, drying winds. Variegated cultivars need partial shade. Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Pruning group 9.
- **PROPAGATION** Sow seed at 15–21°C (59–70°F) in autumn or spring. Take greenwood cuttings in early or mid-summer. Air layer in spring or late summer.
- **PESTS AND DISEASES** Mealybugs and scale insects may be troublesome under glass. Outdoors, cold winds may cause die-back and blackening of the shoots and leaves.

***F. japonica*** ■ ♀ syn. *Aralia japonica*, *A. sieboldii* (Japanese aralia, Japanese fatsia). Spreading, suckering, rounded, evergreen shrub with thick stems bearing hairless, 7- to 11-lobed, usually toothed, dark green leaves, 15–40cm (6–16in) long. In autumn, produces 5-petalled, creamy white flowers, 6mm (¼in) across, in branching, long-stalked umbels, 2.5–4cm (1–1½in) across, forming large compound umbels, followed by small, spherical black fruit. ♀↔ 1.5–4m (5–12ft). South Korea, Japan. \* \*.  
 'Aurea' is slow-growing, with gold-variegated leaves; \*.  
 'Marginata' has deeply lobed, white-margined, grey-green leaves; \*.



*Fatsia japonica*

'Moseri' has a compact habit, but with slightly larger leaves. 'Variegata' ♀ bears leaves that are broadly margined with cream at the tips of the lobes; \*  
*F. papyrifera* see *Tetrapanax papyrifer*.

▷ **Fatsia, Japanese** see *Fatsia japonica*

## FAUCARIA

### Tiger jaws

### AIZOACEAE

Genus of over 30 species of clump-forming, sometimes fleshy-rooted, almost stemless perennial succulents from semi-desert areas in South Africa. The fleshy, spotted leaves are borne 4–8 on each shoot. They usually have stout, soft, marginal teeth, which can resemble gaping jaws. The large, daisy-like, pink, yellow, or white flowers open after mid-day from late summer to mid-autumn. Where temperatures drop below 7°C (45°F), grow in a temperate greenhouse, as houseplants, or with other plants in a bowl garden. In warmer areas, grow in a raised or scree bed, or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light.



*Faucaria tigrina*

During growth, water moderately and apply a low-nitrogen fertilizer monthly. Water sparingly in winter. Outdoors, grow in poor soil, with added grit and leaf mould, in full sun. Protect from excessive rain. See also pp.48–49.

- **PROPAGATION** Sow seed at 10–20°C (50–68°F) in autumn or spring. Root stem cuttings in summer in sharply drained compost.

- **PESTS AND DISEASES** Susceptible to greenfly and root mealybugs while flowering.

***F. felina***. Clump-forming succulent with elongated diamond-shaped or 3-angled, long-pointed, white-spotted leaves, 4–5cm (1½–2in) long, which later turn red. Leaves have slender white keels and 3–5 pointed, recurved, fleshy, marginal teeth. Golden yellow flowers, to 5cm (2in) across, open in autumn. ↑ 7cm (3in), ↔ 21cm (8in). South Africa (Eastern Cape, Western Cape). ♀ (min. 7°C/45°F)

***F. tigrina*** ■ Clump-forming succulent with diamond-shaped-ovate, pointed, greyish green leaves, 3–5cm (1¼–2in) long, with very rounded, white-spotted undersides and up to 10 recurved, hairy-tipped, marginal teeth. Golden yellow, sometimes red-budded flowers, 5cm (2in) across, are borne in autumn. ↑ 10cm (4in), ↔ 20cm (8in). South Africa (Eastern Cape). ♀ (min. 7°C/45°F)

▷ **Feather,**

**Emerald** see *Asparagus densiflorus* 'Sprengeri'

**Painted** see *Vriesea carinata*

**Prince's** see *Persicaria orientale*

**Princess** see *Persicaria orientale*

▷ **Featherflower** see *Verticordia plumosa*

**Scarlet** see *V. grandis*

▷ **Featherfoil, American** see *Hottonia inflata*

▷ **Feather grass** see *Stipa*

**Giant** see *S. gigantea*

▷ **Feathertop** see *Pennisetum villosum*

▷ **Feijoa** see *Acca*

**FELICIA** syn. AGATHAEA

Blue daisy

ASTERACEAE/COMPOSITAE

Genus of about 80 species of annuals, perennials, and evergreen subshrubs and (rarely) shrubs found in open, sunny habitats in the Arabian Peninsula, and tropical and southern Africa. They have alternate or opposite, linear to ovate or obovate leaves, occasionally in basal rosettes. They are grown for their mass of daisy-like, mainly blue flowerheads with yellow disc-florets, often borne over long periods in summer. The annuals, and those treated as annuals, are suitable for bedding and containers; the wind-resistant *F. bergeriana* is especially good for a window-box or balcony. Grow low-growing perennials in a rock garden or raised bed, or at the base of a warm, sunny wall. Blue daisies are attractive container plants for a conservatory or temperate greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with low humidity and good ventilation. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in poor to moderately fertile, well-drained soil in full sun. Intolerant of damp. Pinch back young shoots to encourage bushiness.
- **PROPAGATION** Sow seed of annuals at 10–18°C (50–64°F) in spring. Root stem tip cuttings of tender species in late summer and overwinter under glass.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*F. amelloides*, syn. *Aster amelloides*, *A. capensis*, *A. coelestis* (Blue daisy). Rounded, bushy subshrub, often grown as an annual, with ovate to obovate, deep green leaves, to 3cm (1¼in) long. Bears light to deep blue flowerheads, 2–5cm (¾–2in) across, from summer to autumn. ±→ 30–60cm (12–24in). South Africa. ☉ (min. 3–5°C/37–41°F). 'Read's Blue' is compact, with blue flowerheads. 'Read's White' ☐ is a compact cultivar, with white flowerheads. 'Santa Anita' ☐ ♀ bears large, rich blue flowerheads. 'Santa Anita Variegated' ♀ has white-marked leaves. *F. amoena*, syn. *Aster pappi*, *F. pappi*. Bushy annual or short-lived perennial with linear to elliptic, downy leaves, 3cm (1¼in) long. Bears solitary, bright

*Felicia amelloides* 'Read's White'*Felicia amelloides* 'Santa Anita'

blue flowerheads, 3.5cm (1½in) across, from summer to early autumn.

±→ 30–50cm (12–20in). South Africa.

☉ (min. 3–5°C/37–41°F). 'Variegata' ☐ has cream-splashed leaves.

*F. bergeriana* ☐ (Kingfisher daisy).

Mat-forming annual with lance-shaped, sometimes toothed, softly hairy, grey-green leaves, to 4cm (1½in) long. In summer, bears abundant solitary, brilliant clear blue flowerheads, to 3cm (1¼in) across, with yellow centres.

±→ to 25cm (10in). South Africa. \*

*F. heterophylla*. Mat-forming annual with inversely lance-shaped, sometimes toothed, grey-green leaves, to 5cm (2in) long. Solitary blue flowerheads, to 2cm (¾in) across, are borne in summer. ±→ 50cm (20in). South Africa. \*

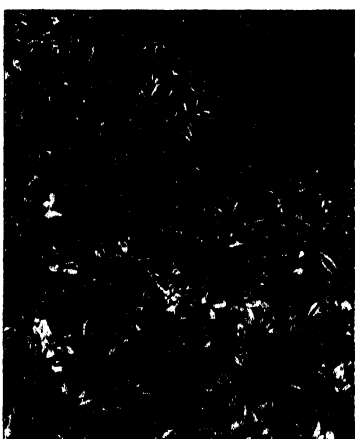
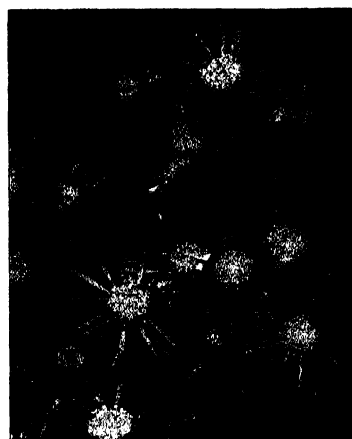
'Snowmass' bears white flowerheads.

'The Blues' has pale blue flowerheads; ± to 20cm (8in). 'The Rose' has pink flowerheads.

*F. natalensis* see *F. rosulata*.

*F. pappi* see *F. amoena*.

*F. rosulata*, syn. *Aster natalensis*, *F. natalensis*. Rhizomatous, rosette-forming perennial with elliptic to obovate, hairy, dark green basal leaves, 7–10cm (3–4in) long, and smaller,

*Felicia amoena* 'Variegata'*Felicia bergeriana*

lance-shaped stem leaves. Solitary, mid-blue flowerheads, to 3cm (1¼in) across, with golden yellow disc-florets, are produced in summer. ± 20cm (8in), ±→ 30cm (12in). South Africa. \*\*

**FENDLERA**

HYDRANGEACEAE

Genus of 3 or 4 species of deciduous shrubs found on cliffs and rocky ledges in canyons and woodland in S.W. USA and Mexico. They have opposite, entire, lance-shaped to elliptic or ovate, mid-green leaves, to 5cm (2in) long, and are grown for their fragrant, 4-petalled, cup-shaped white flowers, 2½–5cm (1–2in) across, borne singly or in pairs or threes on side branches. Grow in a shrub border or against a warm, sunny wall.

• **HARDINESS** Hardy to -20°C (4°F).

• **CULTIVATION** Grow in moderately fertile, sharply drained soil in full sun.

Pruning group 2.

• **PROPAGATION** Sow seed in autumn in a cold frame, or in spring at 13–16°C (55–61°F). Root softwood cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Trouble free.

*F. rupicola*. Spreading shrub with arching branches and lance-shaped leaves, to 3cm (1¼in) long, white-hairy beneath. In late spring and early summer, fragrant, white, sometimes pink-tinged flowers, to 3cm (1¼in) across, are produced singly or in small clusters. ± 1.5m (5ft), ±→ 3m (10ft). S.W. USA, N. Mexico. \*\*\*

**FENESTRARIA**

AIZOACEAE

Genus of 1 or 2 species of variable, very dwarf, stemless, cushion-forming, perennial succulents from semi-desert areas of Namibia, grown for their daisy-like, bright yellowish orange or white flowers. Leaves are club-shaped, erect, opposite, hairless, and fleshy, with transparent "windows" in the flattened tips. Where temperatures drop below 7°C (45°F), grow in an indoor garden or temperate greenhouse. In warmer areas, grow in a raised bed or desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity; ventilate well. During growth, water moderately and apply a low-nitrogen liquid fertilizer monthly. Keep dry in winter. Outdoors,

*Fenestraria aurantiaca*

grow in poor, dry, sharply drained soil, with added grit and leaf mould, in full sun, with shelter from excessive rain. They resent root disturbance. See also pp.48–49.

• **PROPAGATION** Sow seed at 15–21°C (59–70°F) in autumn or spring.

Separate offsets in spring or summer.

• **PESTS AND DISEASES** Trouble free.

*F. aurantiaca* ☐ Succulent that forms dense cushions of club-shaped, erect leaves, 2–3cm (¾–1¼in) long, with "windows" in their slightly flattened tips. From late summer to autumn, golden yellow flowers, 3–7cm (1¼–3in) across, are produced on stalks 4–5cm (1½–2in) long. ± 5cm (2in), ±→ 30cm (12in). Namibia. ☉ (min. 7°C/45°F). *f. rhopalophylla*, syn. *F. rhopalophylla*, forms less dense cushions and has pure white flowers, to 3cm (1¼in) across; ±→ to 20cm (8in).

*F. rhopalophylla* see *F. aurantiaca* f. *rhopalophylla*.

▷ **Fennel** see *Foeniculum*

**Florence** see *Foeniculum vulgare* var. *azoricum*

**Giant** see *Ferula*

▷ **Fern,**

**Asparagus** see *Asparagus densiflorus*, *A. setaceus*

**Bamboo** see *Coniogramme japonica*

**Barbados maidenhair** see *Adiantum tenerum* 'Farleyense'

**Bear's paw** see *Aglaomorpha meyeniana*

**Beech** see *Phegopteris*, *P. connectilis*

**Bird's nest** see *Asplenium australasicum*, *A. nidus*

**Black tree** see *Cyathea medullaris*

**Bladder** see *Cystopteris*

**Blue** see *Phlebodium aureum*

'Mandaianum'

**Boston** see *Nephrolepis exaltata*

'Bostoniensis'

**Brittle bladder** see *Cystopteris fragilis*

**Broad beech** see *Phegopteris hexagonoptera*

**Broad buckler** see *Dryopteris dilatata*

**Buckler** see *Dryopteris*

**Button** see *Pellaea rotundifolia*

**Byfield** see *Bowenia spectabilis*

**Cabbage** see *Platynerium elephantotis*

**Chain** see *Woodwardia*

**Cinnamon** see *Osmunda cinnamomea*

**Climbing** see *Lygodium*

**Common rasp** see *Doodia media*

**Crown** see *Blechnum discolor*



▷ Fern cont.

**Dickie's** see *Cystopteris dickieana*  
**Elephant's ear** see *Platycerium elephantotis*  
**Emerald** see *Asparagus densiflorus* 'Sprengeri'  
**Felt** see *Pyrrosia*  
**Flowering** see *Osmunda regalis*  
**Fork** see *Psilotum*  
**Foxtail** see *Asparagus densiflorus* 'Myersii'  
**Glory** see *Adiantum tenerum* 'Farleyense'  
**Goldback** see *Pityrogramma triangularis*  
**Golden male** see *Dryopteris affinis*  
**Goldie's** see *Dryopteris goldieana*  
**Hairy lip** see *Cheilanthes tomentosa*  
**Hard** see *Blechnum*, *B. spicant*  
**Hard shield** see *Polystichum aculeatum*  
**Hare's foot** see *Davallia canariensis*, *Phlebodium aureum*  
**Hart's tongue** see *Asplenium scolopendrium*  
**Hawaiian tree** see *Cibotium glaucum*  
**Hen-and-chicken** see *Asplenium bulbiferum*  
**Holly** see *Polystichum*  
**Interrupted** see *Osmunda claytoniana*  
**Japanese climbing** see *Lygodium japonicum*  
**Japanese felt** see *Pyrrosia lingua*  
**Japanese holly** see *Cytomium falcatum*  
**Japanese painted** see *Athyrium niponicum*  
**Japanese tassel** see *Polystichum polyblepharum*  
**Korean rock** see *Polystichum tsussimense*  
**Lady** see *Athyrium*, *A. filix-femina*  
**Large-leaved holly** see *Cytomium macrophyllum*  
**Leather** see *Rumohra adiantiformis*  
**Licorice** see *Polypodium glycyrrhiza*  
**Lip** see *Cheilanthes*  
**Maidenhair** see *Adiantum*  
**Male** see *Dryopteris filix-mas*  
**Man** see *Dicksonia antarctica*  
**Marsh** see *Thelypteris palustris*  
**Mrs. Frizell's lady** see *Athyrium filix-femina* 'Frizelliae'  
**Narrow buckler** see *Dryopteris carthusiana*  
**North American hay-scented** see *Dennstaedtia punctiloba*  
**Oak** see *Gymnocarpium dryopteris*  
**Ostrich** see *Matteuccia struthiopteris*  
**Prickly shield** see *Polystichum aculeatum*  
**Queen Victoria's lady** see *Athyrium filix-femina* Cruciatum Group 'Victoriae'  
**Rabbit's foot** see *Davallia fejeensis*, *Phlebodium aureum*  
**Resurrection** see *Polypodium polypodioides*  
**Rockcap** see *Polypodium virginianum*  
**Royal** see *Osmunda regalis*  
**Rusty-back** see *Asplenium ceterach*  
**Sago** see *Cyathea medullaris*  
**Sensitive** see *Onoclea sensibilis*  
**Shield** see *Polystichum*  
**Shuttlecock** see *Matteuccia struthiopteris*  
**Soft shield** see *Polystichum seriferum*  
**Soft tree** see *Dicksonia antarctica*  
**Squirrel's foot** see *Davallia mariesii*  
**Staghorn** see *Platycerium*  
**Sword** see *Nephrolepis*, *Polystichum munitum*

▷ Fern cont.

**Tatting** see *Athyrium filix-femina* 'Frizelliae'  
**Tongue** see *Pyrrosia lingua*  
**Tree** see *Cyathea*  
**Walking** see *Asplenium rhizophyllum*  
**Wallich's wood** see *Dryopteris wallichiana*  
**Woolly tree** see *Dicksonia antarctica*  
▷ Fern palm see *Cycas*, *C. circinalis*  
**Mexican** see *Dioon edule*  
▷ Ferns see p.51

## FEROCACTUS

### CACTACEAE

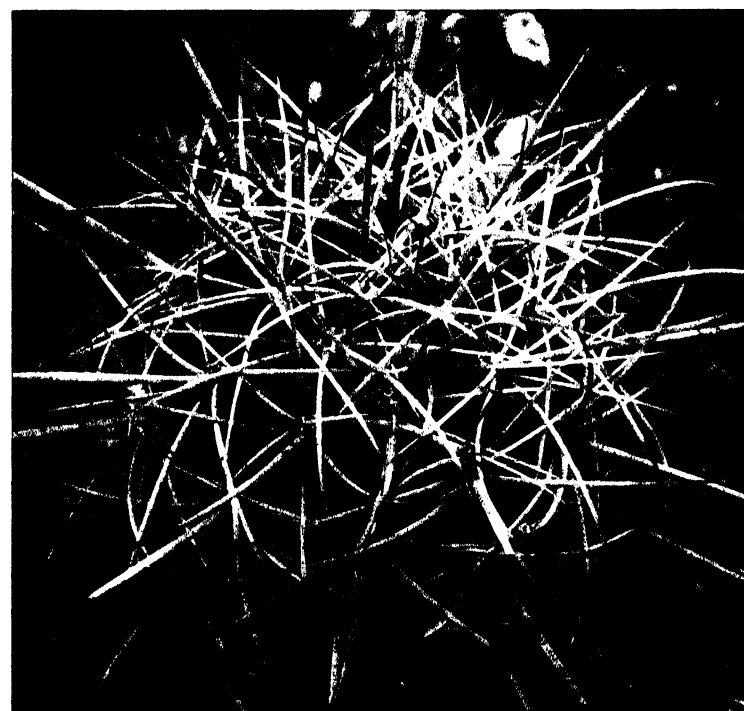
Genus of about 30 species of flattened, spherical to columnar, perennial cacti from lowlands and mountainous areas of S. and S.W. USA, Mexico, and Guatemala. They are usually solitary but some species form thick clumps. The large, prominent ribs have spiny areoles, some hooked. Large, funnel- or bell-shaped flowers are borne from near the crown in summer, followed by ovoid, fleshy fruits. Grow in a desert garden. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse.  
• **HARDINESS** Frost tender.  
• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. During growth, water freely and apply a balanced liquid fertilizer monthly. Keep dry in winter. Mist on warm days in midwinter; keep root zone dry. Outdoors, grow in poor, sharply drained soil in full sun. Protect from excessive rain. See also pp.48-49.  
• **PROPAGATION** Sow seed at 10-20°C (50-68°F) in spring.  
• **PESTS AND DISEASES** Vulnerable to mealybugs.

**F. acanthodes** of gardens see *F. cylindraceus*.  
**F. bicolor** see *Thelocactus bicolor*.  
**F. chrysacanthus**. Solitary cactus with a spherical to cylindrical, dark green stem, and 13-22 warty ribs and areoles (4-6 or more white radials and 4-10



*Ferocactus hamatacanthus*

flattened and twisted, yellow or reddish yellow centrals). Bell-shaped, yellow or reddish yellow to orange flowers, 4.5cm (1 3/4in) long, with outer segments striped red-brown or brownish pink, are borne in summer. ↑ to 1m (3ft), ↔ 40cm (16in). Mexico (Baja California). ☉ (min. 7°C/45°F)  
**F. crassihamatus** see *Sclerocactus uncinatus* var. *crassihamatus*.  
**F. cylindraceus** ☐ syn. *F. acanthodes* of gardens. Solitary, sometimes offsetting cactus with an ovoid then cylindrical, glaucous green stem with 13-27 warty ribs and red, orange, or buff-yellow spines (9-13 or more radials and 4-7 longer, flat, sometimes hooked, often recurved centrals). Bears bell-shaped, yellow or orange flowers, 3-6cm (1 1/4-2 1/2in) long, in summer. ↑ 3m (10ft), ↔ 80cm (32in). S.W. USA, N.W. Mexico. ☉ (min. 7°C/45°F)  
**F. fordii** ♀ Solitary cactus with a slightly depressed-spherical, greyish green stem and about 21 warty ribs and white spines (about 15 spreading, paler radials and 4-7 flattened, hooked or twisted, red or grey centrals). Funnel-shaped, deep pink to purple flowers, to 4cm (1 1/2in) long, are produced in



*Ferocactus cylindraceus*

summer. ↑↔ 40cm (16in). Mexico (Baja California). ☉ (min. 7°C/45°F)  
**F. hamatacanthus** ☐ syn. *Hamatocactus hamatacanthus*. Solitary or clustering cactus with a spherical to cylindrical, deep green stem, 13-18 prominent, warty ribs, and brownish red spines (6-20 radials and 4-8 centrals). Funnel-shaped yellow flowers, 6-10cm (2 1/2-4in) long, with red throats, are borne in summer. ↑ 60cm (24in), ↔ to 40cm (16in). USA (Texas), N. and N.E. Mexico. ☉ (min. 7°C/45°F)  
**F. latispinus**. Often solitary, depressed-spherical cactus with 15-23 acute, sometimes spiralled, greyish green ribs, notched with large areoles (6-15 yellow radial spines and 4 red centrals, the lowest flattened and hooked). Bears bell-shaped, white, red, purple, or yellow flowers, 4cm (1 1/2in) long, in summer. ↑ 10-40cm (4-16in), ↔ to 40cm (16in). Central S. Mexico. ☉ (min. 7°C/45°F)  
**F. setispinus** see *Thelocactus setispinus*.  
**F. wislizenii**. Solitary cactus with a spherical then cylindrical, dark green to greyish green stem, with 15-25 ribs and areoles (12-30 greyish yellow radial spines and up to 8 longer, flattened, hooked, yellow, brown, or grey centrals with curved, reddish brown tips). Bell-shaped, yellow, orange, or red flowers, 5-8cm (2-3in) long, with green outer segments, are borne in summer. ↑ 1.5m (5ft), ↔ to 80cm (32in). S.W. USA, N.W. Mexico. ☉ (min. 7°C/45°F)

## FERRARIA

### IRIDACEAE

Genus of 10 species of cormous perennials from dry, sandy soils, sometimes near the coast, in tropical Africa and South Africa. They are grown for their few-flowered cymes of curious, malodorous, patterned, short-lived flowers, 4-6cm (1 1/2-2 1/2in) across, pollinated by flies. The flowers are iris-shaped with crisped petals, borne in succession on branched stems in late winter and early spring. The basal leaves are lance-shaped; the 2-ranked stem leaves are ovate-lance-shaped. In frost-prone areas, grow in a temperate greenhouse. Elsewhere, use in a rock garden or raised bed, or against a sunny wall.  
• **HARDINESS** Half hardy to frost tender.  
• **CULTIVATION** Under glass, plant directly into a greenhouse border or in deep containers of loam-based potting compost (J1 No.2), with added grit, in full light. In growth (in winter), water moderately and apply a balanced liquid fertilizer monthly. Keep dry in summer. Outdoors, plant 15cm (6in) deep in fertile, well-drained soil in autumn.  
• **PROPAGATION** Sow seed in summer or autumn at 6-12°C (43-54°F). Separate offsets from dormant parent corms.  
• **PESTS AND DISEASES** Trouble free.

**F. crispa**, syn. *F. undulata*. Cormous perennial with linear-lance-shaped, stem-clasping leaves, 15-30cm (6-12in) long, forming progressively smaller sheaths around the stem. In spring, bears wavy-petalled, brown or yellowish brown, upward-facing flowers, 2.5cm (1in) across, with 3 outer petals and 3 smaller inner petals, lined and spotted yellow and brown. ↑ 20-40cm (8-16in), ↔ 15cm (6in). South Africa. \*  
**F. undulata** see *F. crispa*.

F



*Ferula communis*

## FERULA

Giant fennel

APIACEAE/UMBELLIFERAE

Genus of 170 species of robust, tap-rooted, usually hairless, aromatic, herbaceous perennials found in rough, grassy places, dry slopes, and gravelly roadsides from the Mediterranean to C. Asia. They bear branching or simple stems, with 2- to 5-pinnate, usually basal, light green leaves, to 80cm (32in) long, the ultimate segments linear to obovate. Usually forming a mound of finely divided leaves, they are effective foliage plants when mature. Giant fennels (which should not be confused with the edible fennels, *Foeniculum*) bear white, greenish white, yellow, or purple flowers in terminal, lateral, compound umbels, to 15cm (6in) across, although they may take several years to flower and often die after seeding. Grow at the back of a border, or as a specimen plant in a sunny, open site in a wild garden.

- **HARDINESS** Hardy to -10°C (14°F).
- **CULTIVATION** Grow in fertile, well-drained soil in full sun. To enhance foliage, remove flowering stems as soon as they show, or immediately after blooming if seed is not required. Protect with a dry, bracken mulch in winter.
- **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Prick out seedlings into deep containers to allow tap-root development.
- **PESTS AND DISEASES** Susceptible to aphids, slugs, and mildew.

***F. communis*** [R] Robust perennial bearing 3- or 4-pinnate leaves, 25-45cm (10-18in) long, subdivided into narrow, linear segments. After several years, stout, ridged, branching stems produce clusters of hemispherical, many-branched umbels, 8cm (3in) across, composed of small, 5-petalled yellow flowers, in early and midsummer. May die after seeding. ‡ to 5m (15ft), usually 2-3m (6-10ft), ↔ 60cm (24in). Mediterranean. \*\*

***F. 'Giant Bronze'*** see *Foeniculum vulgare* 'Giant Bronze'.

▷ **Fescue** see *Festuca*

Blue see *F. glauca*

Grey see *F. glauca*

Ice see *F. glacialis*

Large blue see *F. amethystina*

Tufted see *F. amethystina*

## FESTUCA

Fescue

GRAMINEAE/POACEAE

Genus of 300-400 species of deciduous or evergreen, rhizomatous, often tufted, perennial grasses widely distributed in grassland, woodland edges, and stream margins throughout temperate zones. A few have attractive inflorescences, but most are grown for their usually blue-green or blue-grey foliage. Many are grown as turf or pasture grasses. The 5- to 9-veined, lance-shaped leaves are flat, folded, or rolled. Dense or loose, branched panicles of flattened, brownish green, sometimes glaucous spikelets are borne from spring to summer. Grow fescues in a border or rock garden to provide foliage contrast with alpines.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, dry, well-drained soil in full sun. *F. eskia* will not tolerate alkaline soils. Divide and replant every 2 or 3 years to maintain foliage colour.
- **PROPAGATION** Sow seed from autumn to spring in containers in a cold frame. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

***F. amethystina*** (Large blue fescue, Tufted fescue). Densely tufted, tussock-forming, evergreen, perennial grass with soft, narrowly linear, grey-green leaves, to 25cm (10in) long, the lower halves inrolled and furrowed. In late spring and early summer, bears lax, flexuous, zigzag panicles, 10-20cm (4-8in) long, with paired branches bearing spikelets of 3-7 violet-tinted, greenish to purple or violet flowers. ‡ to 45cm (18in), ↔ 25cm (10in). C. and E. Europe. \*\*\*

***'Aprilgrün'*** has olive-green leaves and purple-tinted flowers. ***'Bronzeglanz'*** has bronze-tinted leaves.

***F. eskia***, syn. *F. scoparia*. Compact, rhizomatous, mound- or cushion-forming, evergreen, perennial grass with stiff, narrowly linear, inrolled, rich green leaves, to 20cm (8in) long. In early and midsummer, bears open, pendent, ovoid panicles, to 10cm (4in) long, with spikelets tinted green, orange, or yellow. ‡ to 15cm (6in), ↔ 25cm (10in). Pyrenees. \*\*\*

***F. glacialis*** (Ice fescue). Densely tufted, hummock-forming, evergreen, perennial grass with erect, narrowly linear, inrolled, grey- to blue-green leaves, to 12cm (5in) long. In mid- and late



*Festuca glauca* 'Blaufuchs'

summer, bears dense, narrow, ovoid, branched panicles, to 2.5cm (1in) long, with spikelets of 3-5 violet flowers. ‡ to 10cm (4in). France, Spain, Pyrenees, Alps. \*\*\*

***F. glauca*** (Blue fescue, Grey fescue). Densely tufted, evergreen, perennial grass with erect or arching, narrowly linear, inrolled, 9-ribbed, smooth, blue-green leaves, 7-20cm (3-8in) long. In early and midsummer, bears dense, obovate, shortly branched panicles, to 10cm (4in) long, with spikelets of 4-7 violet-flushed, blue-green flowers. ‡ to 30cm (12in), ↔ 25cm (10in). N. and S. temperate regions. \*\*\*

***'Blaufuchs'*** [R] syn. 'Blue Fox', has bright blue leaves. ***'Harz'*** has purple-tipped, blue-green or dark olive-green leaves. ***'Seeigel'***, syn. 'Sea Urchin', has lax, hair-fine, spiky, blue-green leaves in a tight bun, to 15cm (6in) across. ***F. scoparia*** see *F. eskia*. ***F. valesiaca***. Variable, densely tufted, evergreen, sometimes semi-evergreen, perennial grass with narrowly linear, hair-like, flattened, bluish green leaves, 25cm (10in) or more long. In mid- and late summer, bears dense, oblong or ovate-oblong panicles, 5-10cm (2-4in) long, with spikelets of 3-8 white-frosted, pale green flowers, or purple, violet-tinted flowers. ‡ 50cm (20in), ↔ 45cm (18in). C. Europe. \*\*\*

***'Silbersee'***, syn. 'Silver Sea', is much more compact, with pale silvery blue leaves; ‡ to 20cm (8in) ↔ 15cm (6in).

▷ **Fetter bush** see *Leucothoe racemosa*

▷ **Feverfew** see *Tanacetum parthenium*

## FICUS

Fig

MORACEAE

Genus of about 800 species of mainly evergreen trees, shrubs, and woody climbers, usually found in moist forests in tropical and subtropical regions worldwide. Some behave as stranglers, outgrowing the host tree and eventually killing it, often becoming massive, free-standing trees themselves. They are grown for their foliage, or for their edible fruits (rarely borne on container-grown plants). The alternate leaves are simple, or shallowly to deeply lobed. Minute, petalless flowers are contained in a hollowed-out, inflated stem tip (receptacle) borne in the leaf axils, which enlarges to form the fig fruit, borne sporadically throughout the year. In frost-prone climates, grow in a warm or temperate greenhouse or as houseplants. In warmer areas, use as specimen or shade trees; train climbers against a wall or tree. The foliage may cause mild stomach upset if ingested; the sap may irritate skin or aggravate allergies. The foliage of *F. carica* can cause photo-dermatitis; its sap may irritate the eyes.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added fine bark chippings, in full or filtered light. During growth, water moderately and apply a high-nitrogen fertilizer every 4 weeks. Keep moist in winter. Outdoors, grow in humus-rich, leafy, moist but well-drained soil in full sun or partial shade, with shelter from cold, drying winds. Support figs that have long, lax stems. Mulch annually.

Pruning group 1 for shrubs and trees; group 11 for climbers, in late winter.

- **PROPAGATION** Sow seed at 15-21°C (59-70°F) in spring. Root semi-ripe cuttings or leaf-bud cuttings with bottom heat in spring or summer. Air layer *F. elastica* in spring or late summer.
- **PESTS AND DISEASES** Red spider mites, thrips, mealybugs, and scale insects may be troublesome under glass.

***F. benghalensis*** [C] (Banyan, Indian fig). Evergreen tree with spreading, often horizontal branches supported by prop roots. Bears elliptic to broadly ovate, leathery, deep green leaves, 13-25cm (5-10in) long, flushed bronze when young and with a distinct pattern of pale veins when mature. Spherical red figs, to 2cm (¾in) across, are borne in pairs. ‡ 20-30m (70-100ft), ↔ to 200m (700ft). S. Asia. ☉ (min. 15°C/59°F)

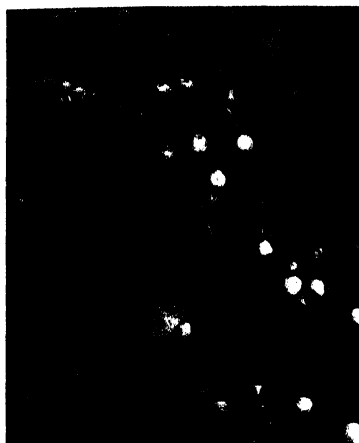
***F. benjamina*** [C] (Weeping fig). Evergreen tree or large shrub, sometimes a strangler, with slender, arching to pendent stems and ovate-elliptic, thinly leathery, glossy leaves, dark green above, lighter beneath, 5-13cm (2-5in) long, each tapering to a slender, twisted point. Spherical to oblong figs, 1cm (½in) long, produced in pairs, mature from green through pink or orange-red to black. ‡ to 30m (100ft) or more, ↔ to 15m (50ft) or more. S. and S.E. Asia, N. Australia, S.W. Pacific. ☉ (min. 15°C/59°F). ***'Variegata'*** [R] has white-splashed leaves.

***F. carica*** [C] (Common fig). Deciduous tree or large shrub with a spreading head and rounded, 3- or 5-lobed leaves, 10-24cm (4-10in) long, heart-shaped at the bases. Pear-shaped receptacles develop into single fruit, to 10cm (4in) long, green when young, maturing to dark green, purple, or dark brown. ‡ 3m (10ft), ↔ 4m (12ft). W. Asia, E. Mediterranean. \*\*\*

***F. deltoidea*** [R] [C] (Mistletoe fig). Evergreen shrub or small tree, usually bushy, sometimes epiphytic in the wild, with broadly spoon-shaped to obovate,



*Ficus benjamina* 'Variegata'

*Ficus deltoidea*

leathery leaves, 4–8cm (1½–3in) long, bright green above and rust-red to olive-brown beneath. Spherical to ellipsoid figs, to 1cm (½in) across, ripening from dull yellow to orange and red, are freely produced in pairs. † 5–7m (15–22ft), ↔ 1–3m (3–10ft). S.E. Asia to Borneo, Philippines (Palawan). ☉ (min. 15°C/59°F). **var. diversifolia**, syn. *F. diversifolia*, has rounded or shallowly notched leaves; † to 2m (6ft).

***F. diversifolia*** see *F. deltoidea* var. *diversifolia*.

***F. elastica*** ♀ (India rubber fig, India rubber tree, Rubber plant). Evergreen, many-branched tree with oblong to elliptic, leathery, glossy, dark green, often red-flushed leaves, 30–45cm (12–18in) long. Oblong yellow figs, to 1cm (½in) long, are produced in pairs or clusters on mature trees in the open. † 30–60m (100–200ft), ↔ 20–60m (70–200ft). E. Himalayas, India (Assam), Burma, Malaya, Java. ☉ (min. 15°C/59°F). **'Decora'** ♀ has broadly elliptic leaves, red flushed beneath, with creamy white midribs when mature. **'Doescheri'** ♀ has leaves mottled grey-green, creamy yellow, and white, with pink stalks and midribs.

***F. lyrata*** ♀ (Banjo fig, Fiddle-leaf fig). Open, evergreen tree with leathery, glossy, fiddle-shaped, dark green leaves, 25–45cm (10–18in) long, irregularly corrugated above. Almost spherical figs, to 3cm (1¼in) or more across, ripening green with white dots, are produced singly or in pairs only on mature trees in the open. † 20–30m (70–100ft) or more, ↔ 10–20m (30–70ft). Tropical W. and C. Africa. ☉ (min. 15°C/59°F)

*Ficus elastica* 'Doescheri'*Ficus lyrata*

***F. macrophylla*** ♂ (Australian banyan, Moreton Bay fig). Wide-spreading, evergreen tree with aerial roots (some becoming props). Oblong to elliptic or ovate, leathery leaves, mid-green and hairless above, to 25cm (10in) long, are paler beneath, often with rust-red scales. Ovoid figs, to 2cm (¾in) long, ripening from green to purple with yellow-green flecks, are produced only on mature trees in the open, usually in pairs. † 30–55m (100–180ft), ↔ 20–40m (70–130ft). Australia (Queensland, New South Wales). ☉ (min. 7–10°C/45–50°F)

***F. microcarpa*** ♀ syn. *F. retusa* of gardens (Curtain fig, Indian laurel, Malay banyan). Wide-spreading, evergreen tree with curtains of aerial roots (some root on touching the soil). Bears narrowly to broadly elliptic to obovate, leathery, dark green leaves, 6–12cm (2½–5in) long. Spherical purple figs, 1cm (½in) long, are produced in pairs on mature trees, ripening black. † to 25m (80ft), ↔ to 30m (100ft). Japan (Ryukyu Islands), S. China, S. Malaysia, Australia (Queensland), New Caledonia. ☉ (min. 13°C/55°F). **'Hawaii'** has shiny grey-green and white-splashed leaves.

*Ficus macrophylla*

***F. pumila***, syn. *F. repens* (Climbing fig, Creeping fig). Root-clinging, evergreen, perennial climber. The leaves of the climbing shoots are asymmetrically ovate, thinly leathery, dark green, to 5cm (2in) long. At the end of its support, leaves on non-climbing stems are oblong to elliptic or ovate, leathery, dark green and very glossy, to 10cm (4in) long. Pear-shaped, mostly solitary, oblong to cylindrical, densely hairy figs, to 6cm (2½in) long, are green with white dots, ripening purple. † 3–5m (10–15ft) or more. China, Vietnam, Japan. ☉ (min. 5–7°C/41–45°F). **'Minima'** has slender stems and juvenile leaves, 1cm (½in) long; † 1–2m (3–6ft). ***F. religiosa*** ♀ (Bo tree, Peepul, Sacred fig). Small tree, or taller strangling climber, with wide-spreading branches, semi- or fully deciduous in monsoon climates, and broadly ovate, glossy, leathery, dark green leaves, 12–18cm (5–7in) long, with unusual tail-like tips. Bears pairs of rounded, flat-topped green figs, to 1.5cm (½in) across, ripening to purple with red dots. † ↔ 8m (25ft). Himalayas, S.W. China, N. Thailand, Vietnam. ☉ (min. 15°C/59°F)

***F. repens*** see *F. pumila*.

***F. retusa* of gardens** see *F. microcarpa*. ***F. rubiginosa*** ♀ (Port Jackson fig). Wide-spreading, evergreen tree, sometimes with aerial roots, a few of which become props. Leaves are oblong to elliptic or ovate, 8–17cm (3–7in) long, rusty-hairy when young, then smooth, leathery, dark green above, paler beneath. Bears pairs of spherical figs, to 1.5cm (½in) across, ripening to greenish brown with soft, rusty brown hairs. † ↔ 15m (50ft). Australia (New South Wales). ☉ (min. 10–13°C/50–55°F)

▷ **Fiddleleaf** see *Philodendron bipennifolium*

▷ **Fiery costus** see *Costus igneus*

▷ **Fig** see *Ficus*

**Banjo** see *Ficus lyrata*

**Climbing** see *Ficus pumila*

**Common** see *Ficus carica*

**Creeping** see *Ficus pumila*

**Curtain** see *Ficus microcarpa*

**Devil's** see *Argemone mexicana*

**Fiddle-leaf** see *Ficus lyrata*

**Hottentot** see *Carpobrotus edulis*

**Indian** see *Ficus benghalensis*, *Opuntia ficus-indica*

**India rubber** see *Ficus elastica*

**Kaffir** see *Carpobrotus edulis*

**Mistletoe** see *Ficus deltoidea*

**Moreton Bay** see *Ficus macrophylla*

▷ **Fig cont.**

**Port Jackson** see *Ficus rubiginosa*

**Sacred** see *Ficus religiosa*

**Weeping** see *Ficus benjamina*

▷ **Figwort** see *Scrophularia*

**Cape** see *Phygelius capensis*

**Water** see *Scrophularia auriculata*

▷ **Filbert** see *Corylus maxima*

## FILIPENDULA

ROSACEAE

Genus of 10 or more species of rhizomatous perennials from damp habitats, such as streamsides and wet ditches, in N. temperate regions, except *F. vulgaris*, which thrives on dry, chalky grassland. The pinnate, alternate leaves have shallowly or palmately lobed terminal leaflets and smaller lateral leaflets, hairless or softly hairy beneath. Plumes of tiny, fluffy, red, pink, or white flowers are borne from late spring to late summer, mainly in dense, cyme-like corymbs, on single or branched stems well above the foliage. Most are suitable for naturalizing in a woodland garden, or for moist sites. Grow *F. vulgaris* in a sunny site in a border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow all but *F. vulgaris* in moderately fertile, leafy, moist but well-drained soil in full sun or partial shade. *F. rubra* and *F. ulmaria* will also thrive in boggy conditions. Gold-leaved forms colour best in shade. Grow *F. vulgaris* in drier, alkaline soil in full sun. Mulch in spring.

• **PROPAGATION** Sow seed in autumn in containers in a cold frame, or in spring at 10–13°C (50–55°C). Divide in autumn or spring. Take root cuttings and place horizontally in seed trays, from late winter to early spring.

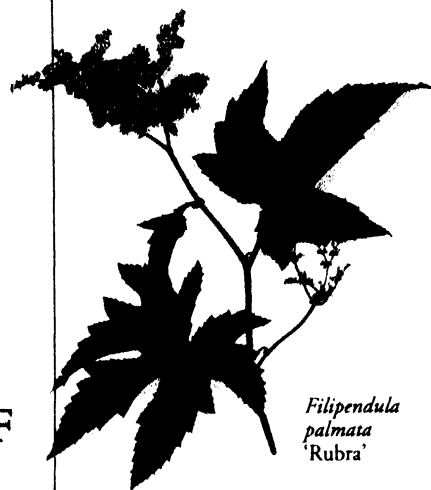
• **PESTS AND DISEASES** Prone to fungal leaf spot. May be affected by mildew if malnourished or dry, particularly *F. ulmaria* 'Flore Pleno'.

***F. hexapetala*** see *F. vulgaris*.

***F. kamtschatica***. Clump-forming perennial with pinnate, toothed leaves, 15–45cm (6–18in) long, softly hairy beneath. The 3- to 5-lobed terminal leaflets, 15–25cm (6–10in) across, are rounded to obovate, the lateral ones smaller or absent. From midsummer to early autumn, bears corymbs, to 25cm (10in) across, of fragrant, white or pale pink flowers, 6–8mm (¼–⅜in) across, on branched stems. † 2–3m (6–10ft), ↔ 1.2m (4ft). Russia (Kamchatka), China (Manchuria), Japan. \*\*\*

***F. palmata***, syn. *Spiraea palmata*. Clump-forming perennial with pinnate, sometimes palmate leaves, to 30cm (12in) long, densely white-woolly beneath. The small, toothed lateral leaflets are 2- to 5-lobed, the terminal ones rounded to obovate, 7- to 9-lobed, and 5–10cm (2–4in) across. In midsummer, produces pale to deep pink flowers in feathery corymbs, to 20cm (8in) across, on simple or branching stems. † 1.2m (4ft), ↔ 60cm (24in). Russia (Kamchatka, Siberia), Mongolia, China, Japan. \*\*\*. **f. alba** has white flowers. **'Digitata Nana'**, see 'Nana'. **'Elegantissima'**, syn. 'Elegans', has deep rose-pink flowers and very small, erect, lance-shaped, bronze-red seed heads; † 1m (3ft). **'Nana'**, syn. 'Digitata Nana', has fern-like leaves; deep rose-pink

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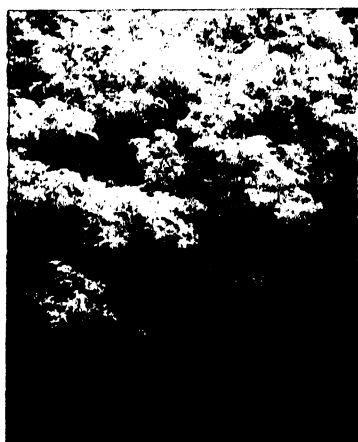


*Filipendula palmata*  
'Rubra'

flowers become paler as they age; †60cm (24in). 'Rubra' ■ has red-pink flowers. **F. purpurea** ■ ♀ Clump-forming perennial bearing pinnate, toothed leaves, with irregularly 5- to 7-lobed, rounded to obovate terminal leaflets, to 25cm (10in) across, and few, if any, small lateral leaflets. In mid- and late summer, branching, crimson-purple stems bear dense corymbs, 5cm (2in) across, of carmine-red flowers, becoming paler as they age. †1.2m (4ft), ↔ 60cm (24in). Japan. \*\*\*. **f. albiflora** ■ syn. **f. alba**, has white flowers. 'Purpurascens' has purple-tinted leaves. **F. rubra** (Queen of the prairies). Spreading perennial forming large clumps in moist soil. Produces pinnate, vine-like, irregularly cut leaves, with toothed, 3-lobed, terminal leaflets, to 20cm (8in) across. In early and midsummer, branching red stems bear crowded corymbs, to 15cm (6in) across, of fragrant, deep peach-pink flowers. †1.8–2.5m (6–8ft), ↔ 1.2m (4ft). E. USA. \*\*\*. 'Magnifica' see 'Venusta'. 'Venusta' ■ ♀ syn. 'Magnifica', 'Venusta Magnifica', has deep rose-pink flowers, becoming paler pink as they age.



*Filipendula purpurea*

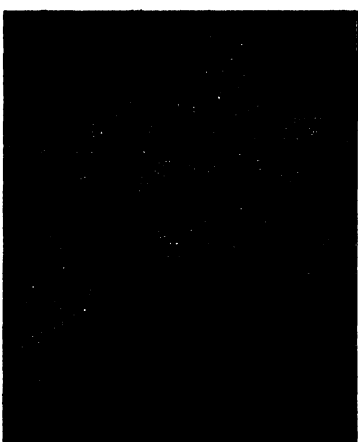


*Filipendula purpurea* f. *albiflora*

**F. ulmaria**, syn. *Spiraea ulmaria* (Meadowsweet, Queen of the meadows). Clump-forming perennial with leafy stems bearing irregularly pinnate, strongly veined, inversely lance-shaped leaves, white-downy beneath. The terminal leaflets are 5–10cm (2–4in) across. In summer, branching stems bear dense corymbs, to 25cm (10in) across, of creamy white flowers. †60–90cm (24–36in), ↔ 60cm (24in). Europe, W. Asia. \*\*\*. 'Aurea' has warm yellow, then creamy yellow leaves in spring, later becoming pale green. 'Flore Pleno' has double flowers. 'Variegata' has leaves striped and marked yellow. **F. vulgaris**, syn. *F. hexapetala* (Dropwort). Rosette-forming perennial producing swollen rhizomes and pinnate, fern-like, finely divided, toothed, hairless, dark green leaves, each leaflet 2cm (¾in) long. In early and midsummer, slender, branching stems bear loose corymbs, to 15cm (6in) across, of white, often red-tinged flowers. †60cm (24in), ↔ 45cm (18in). Europe, N. and C. Asia. \*\*\*. 'Flore Pleno' see 'Multiplex'. 'Multiplex', syn. 'Flore Pleno', 'Plena', has bronze buds and double, sometimes pendent, creamy white flowers. 'Plena' see 'Multiplex'. 'Rosea' has pink flowers.

▷ **Fingernail plant** see *Neoregelia spectabilis*

▷ **Fir**,  
Balsam see *Abies balsamea*  
Beautiful see *Abies amabilis*  
Blue Douglas see *Pseudotsuga menziesii* var. *glauca*



*Filipendula rubra* 'Venusta'

▷ **Fir cont.**

Bristlecone see *Abies bracteata*  
California red see *Abies magnifica*  
Caucasian see *Abies nordmanniana*  
China see *Cunninghamia*,  
*C. lanceolata*  
Cilician see *Abies cilicica*  
Corkbark see *Abies lasiocarpa* var. *arizonica*  
Douglas see *Pseudotsuga menziesii*  
European silver see *Abies alba*  
Farges see *Abies fargesii*  
Forrest see *Abies forrestii*  
Giant see *Abies grandis*  
Grand see *Abies grandis*  
Greek see *Abies cephalonica*  
Hedgehog see *Abies pinsapo*  
Korean see *Abies koreana*  
Nikko see *Abies homolepis*  
Noble see *Abies procera*  
Nordmann see *Abies nordmanniana*  
Pacific see *Abies amabilis*  
Santa Lucia see *Abies bracteata*  
Silver see *Abies*, *A. alba*  
Spanish see *Abies pinsapo*  
Veitch see *Abies veitchii*  
Vejar see *Abies vejarii*  
White see *Abies concolor*

▷ **Fire bush, Chilean** see *Embothrium*,  
*E. coccineum*

▷ **Firecracker**,  
Brazilian see *Manettia luteorubra*  
Californian see *Dichelostemma ida-*  
*maia*

Eaton's see *Penstemon eatonii*  
Mexican see *Echeveria setosa*

▷ **Firecracker flower** see *Crossandra*  
*infundibuliformis*

▷ **Firecracker plant** see *Russelia*  
*equisetiformis*

▷ **Fire-on-the-mountain** see *Euphorbia*  
*cyathophora*

▷ **Fire plant, Norse** see *Columnea*  
'Stavanger'

▷ **Firethorn** see *Pyracantha*

▷ **Firewheel tree** see *Stenocarpus sinuatus*

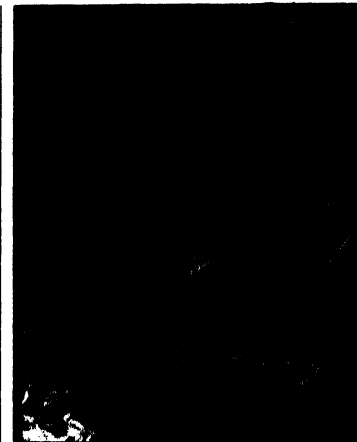
## FIRMIANA

### STERCULIACEAE

Genus of 9 species of deciduous trees and shrubs found in woodland in E. Africa, and E. and S.E. Asia, grown for their handsome foliage. The leaves are alternate, entire, or palmately lobed, and the petalless flowers are unisexual, with bell-shaped, yellow or yellow-green calyces, borne in terminal panicles or racemes. Grow in a woodland garden. In frost-prone areas, grow in containers and overwinter in a cool greenhouse.

- **HARDINESS** Half hardy; may be harder with prolonged exposure to temperatures over 24°C (75°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from the hottest sun, or in bright filtered light. During growth, water freely and apply a balanced liquid fertilizer monthly. Keep just moist in winter. Outdoors, grow in moist but well-drained, moderately fertile soil in full sun or partial shade, sheltered from cold, drying winds. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) as soon as ripe.
- **PESTS AND DISEASES** Trouble free.

*F. platanifolia* see *F. simplex*.  
*F. simplex* ■ ♀ syn. *F. platanifolia*,  
*Sterculia platanifolia* (Chinese parasol



*Firmiana simplex*

tree). Rounded tree with smooth green bark and alternate, deeply 3- to 7-lobed, dark green leaves, 25–45cm (10–18in) long, turning yellow in autumn. Bears terminal panicles, 20–30cm (8–12in) long, of small, yellow-green flowers, in summer. In autumn, bears unusual papery fruit, which split open when ripe revealing the seeds. †15m (50ft), ↔ 10m (30ft). Vietnam to Japan (Ryukyu Islands). \*

▷ **Fish-tail palm** see *Caryota*  
Burmese see *Caryota mitis*  
Clustered see *Caryota mitis*  
Miniature see *Chamaedorea*  
*metallica*

## FITTONIA

Nerve plant, Painted net leaf

### ACANTHACEAE

Genus of 2 species of evergreen perennials, with freely rooting, mat-forming stems, from tropical rainforest in South America, mainly Peru. The leaves are opposite, with short stems and colourful veins. Thin spikes of insignificant white to reddish white flowers are borne rarely and irregularly. Where temperatures drop below 15°C (59°F), grow in a terrarium or hanging basket indoors or in a warm greenhouse. In tropical or subtropical areas, grow as ground cover in semi-shaded sites.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in shallow containers, in indirect light with high humidity. Water moderately, keeping the compost just moist; if kept too wet,



*Fittonia verschaffeltii*



*Fittonia verschaffeltii* var. *argyryneura*

stem rotting occurs. During growth, apply a balanced liquid fertilizer every 3–4 weeks. Outdoors, grow in humus-rich to leafy, moist but well-drained soil in partial shade.

- **PROPAGATION** Take tip cuttings with 3 or 4 pairs of leaves in spring, or layer stems in spring or summer.
- **PESTS AND DISEASES** Trouble free.

*F. argyryneura* see *F. verschaffeltii* var. *argyryneura*.

*F. verschaffeltii* Creeping perennial bearing oval to elliptic, olive-green leaves, 6–10cm (2–4in) long, with slightly sunken, carmine-red veins.  $\uparrow$  15cm (6in),  $\leftrightarrow$  indefinite. Peru.  $\odot$  (min. 15°C/59°F, best at a constant temperature of about 18°C/64°F). var. *argyryneura* syn. *F. argyryneura* (Silver net leaf) has paler leaves with narrower, silvery white veins. 'Nana' is compact, with leaves 2–3.5cm ( $\frac{3}{4}$ –1½in) long;  $\uparrow$  to 10cm (4in).

## FITZROYA

CUPRESSACEAE

Genus of one species of evergreen, monoecious or dioecious, coniferous tree or shrub found only in limited areas of forest in Chile and Argentina, where it is now rare because of overfelling and habitat loss. Although similar to junipers in general appearance, and in having whorls of 3 short, blunt leaves, the cones of *F. cupressoides* differ in having 3 whorls on each of 3 scales, and the seeds are winged. Grow as a specimen tree or shrub in open woodland.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, with shelter from cold, dry winds.
- **PROPAGATION** Sow seed *in situ*, or in containers in a cold frame, in spring. Root semi-ripe cuttings in late summer or autumn, under mist or with gentle bottom heat.
- **PESTS AND DISEASES** Trouble free.

*F. cupressoides* syn. *F. patagonica*. Coniferous, conical tree or spreading shrub with red-brown bark that peels in strips, and oblong, dark green leaves, to 5mm ( $\frac{1}{4}$ in) long. Produces cylindrical male cones and solitary, spherical, terminal, pale brown female cones, 1cm ( $\frac{1}{2}$ in) across, which ripen in autumn.  $\uparrow$  to 15m (50ft),  $\leftrightarrow$  to 6m (20ft). Chile, S. Argentina. \*\*\*

*F. patagonica* see *F. cupressoides*.

- ▷ **Fivecorner, Pink** see *Styphelia triflora*
- ▷ **Five finger** see *Pseudopanax arboreus*
- ▷ **Five fingers** see *Syngonium auritum*
- ▷ **Five-spot** see *Nemophila maculata*
- ▷ **Flag,**
  - Blue see *Iris versicolor*
  - Soft see *Typha angustifolia*
  - Southern blue see *Iris virginica*
  - Spanish see *Ipomoea lobata*
  - Yellow see *Iris pseudacorus*
- ▷ **Flamboyant tree** see *Delonix regia*
- ▷ **Flame bush** see *Templetonia retusa*
- ▷ **Flame creeper** see *Tropaeolum speciosum*
- ▷ **Flame flower** see *Embothrium coccineum*
- ▷ **Flame leaf, Mexican** see *Euphorbia pulcherrima*
- ▷ **Flame of the forest** see *Butea monosperma*
- ▷ **Flame of the woods** see *Ixora coccinea*
- ▷ **Flame pea,**
  - Heart-leaved see *Chorizema cordatum*
  - Holly see *Chorizema ilicifolium*
- ▷ **Flame tree** see *Brachychiton acerifolius*, *Delonix regia*, *Peltophorum pterocarpum*



*Fitzroya cupressoides*

- ▷ **Flamingo flower** see *Anthurium, A. andraeanum*
- ▷ **Flamingo plant** see *Justicia carnea*
- ▷ **Flaming sword** see *Vriesea splendens*
- ▷ **Flannel bush** see *Fremontodendron*
- ▷ **Flax** see *Linum*
  - Flowering see *Linum grandiflorum*
  - Golden see *Linum flavum*
  - Mountain see *Phormium cookianum*
  - New Zealand see *Phormium tenax*
  - Perennial see *Linum perenne*
  - Yellow see *Linum flavum*, *Reinwardtia indica*
- ▷ **Fleabane** see *Erigeron*
- ▷ **Floating heart** see *Nymphoides*
  - Yellow see *N. peltata*
- ▷ **Floradora** see *Stephanotis floribunda*
- ▷ **Flora's paintbrush** see *Emilia coccinea*
- ▷ **Floss flower** see *Ageratum*
- ▷ **Floss silk tree** see *Chorisia speciosa*
- ▷ **Flowering currant** see *Ribes, R. sanguineum*
- ▷ **Flower-of-an-hour** see *Hibiscus trionum*
- ▷ **Flower of Jove** see *Lychnis flos-jovis*
- ▷ **Flower of Jupiter** see *Lychnis flos-jovis*
- ▷ **Foam flower** see *Tiarella, T. cordifolia*
- ▷ **Japanese** see *Tanakaea*
- ▷ **Foam of May** see *Spiraea 'Arguta'*

## FOCKEA

ASCLEPIADACEAE

Genus of about 10 species of dioecious, caudex-forming, mainly deciduous, perennial succulents from open grassland and arid regions of Angola to South Africa (Northern Cape, Eastern Cape, Western Cape), and Zimbabwe. They have thick, fleshy stems, sometimes up to 3m (10ft) thick. The branches are twining or semi-erect, usually with white, milky sap. The leaves are opposite, oblong to oval, sharp-pointed, flat or wavy-edged. In late summer or autumn, starfish-shaped flowers are borne singly, or several in dense clusters, in the leaf axils. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse. In warmer climates, grow in a desert garden or rock garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full or bright filtered light with low humidity, in a deep container to accommodate the caudex. When in full leaf, water moderately, allowing soil to dry between waterings, and apply a low-nitrogen liquid fertilizer monthly. Keep dry when dormant. Outdoors, grow in dry, sharply drained, moderately fertile soil, with added leaf mould, in full sun or light dappled shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe.
- **PESTS AND DISEASES** Vulnerable to greenfly while flowering.

*F. capensis* see *F. crispa*.  
*F. crispa*, syn. *F. capensis*. Twining or prostrate, deciduous, minutely hairy succulent with a partly subterranean, rough-surfaced, spherical-obovoid caudex bearing many slender branches. Oval, glossy, dark green leaves, 2–3cm ( $\frac{3}{4}$ –1½in) long, have wavy margins. Starfish-shaped, greenish grey flowers, 4cm (1½in) across, with small brown marks, are borne in groups of 3–5 in the leaf axils, in autumn.  $\uparrow$  to 1m (3ft),  $\leftrightarrow$  to 60cm (24in). South Africa (Western Cape).  $\odot$  (min. 10–12°C/50–54°F)

## FOENICULUM

Fennel

APIACEAE/UMBELLIFERAE

Genus of one species of aromatic perennial or biennial, native to rich, well-drained soils in sunny, coastal areas in Europe, especially the Mediterranean. The perennial *F. vulgare* is used to flavour foods; the biennial *F. vulgare* var. *azoricum* is grown for its edible, swollen stem base. Both forms have slender stems and finely cut, aniseed-flavoured leaves. They bear flat umbels of yellow flowers, followed by aromatic seeds. Grow as foliage plants in a herb or wild garden; darker-leaved cultivars provide contrast in a perennial border.

- **HARDINESS** Fully hardy, although young growth may be damaged by frost.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. Detach flowered stems before they shed seeds.
- **PROPAGATION** In spring, sow seed at 13–18°C (55–64°F), or *in situ*, and thin to space 45–60cm (18–24in) apart.
- **PESTS AND DISEASES** Susceptible to aphids, slugs, and mildew.

*F. vulgare*. Deep-rooting perennial with airy clumps of triangular, very finely cut, 3- or 4-pinnate, hair-like, aniseed-flavoured, mid-green, sometimes glaucous leaves, to 30cm (12in) long. Slender, smooth, branching stems bear flat, compound umbels, to 10cm (4in) across, of tiny yellow flowers, in mid- and late summer, followed by aromatic seeds. The leaves and seeds are used in cooking and medicinally.  $\uparrow$  1.8m (6ft),  $\leftrightarrow$  45cm (18in). S. Europe. \*\*\*  
var. *azoricum* (Florence fennel) is biennial, and has swollen, bulb-like stem bases that are eaten as a vegetable. 'Bronze' see 'Purpureum'. 'Giant Bronze', syn. *Ferula* 'Giant Bronze', has copper foliage, becoming dark brownish bronze. 'Purpureum' syn. 'Bronze', has bronze-purple foliage when young, becoming glaucous with age.

- ▷ **Footed adder's tongue** see *Scoliopis bigelovii*
- ▷ **Forget-me-not** see *Myosotis*
  - Alpine see *Eritrichium, Myosotis alpestris*
  - Chatham Island see *Myosotidium hortensia*
  - Chinese see *Cynoglossum amabile*
  - Creeping see *Omphalodes verna*
  - Water see *Myosotis scorpioides*



*Foeniculum vulgare* 'Purpureum'

## FORSYTHIA

OLEACEAE

Genus of about 7 species of mainly deciduous, sometimes semi-evergreen shrubs found in open woodland in E. Asia, with a single species from S.E. Europe. They bear opposite, simple, toothed or entire, sometimes 3-palmate leaves. The 4-petalled yellow flowers are salverform with narrow tubes, and produce long or short styles on different plants. They are borne before the leaves in early and mid-spring, often profusely. Grow in a shrub border, on a bank, against a wall, or as a specimen plant; they are also useful for hedging.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or light dappled shade. Pruning group 2.
- **PROPAGATION** Root greenwood cuttings in late spring or early summer, or semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Honey fungus and forsythia gall may be a problem; birds may eat the flower buds.

**F. 'Beatrix Farrand'**. Vigorous, bushy, deciduous shrub with arching shoots bearing oblong, sharply toothed leaves, to 10cm (4in) long. Usually solitary, deep yellow flowers, to 3cm (1¼in) across, are profusely borne in early and mid-spring.  $\pm$  2m (6ft). \*\*\*

**F. giraldiana**. Open, deciduous shrub with slender, arching shoots, purple when young, and narrowly ovate leaves, 5–12cm (2–5in) long, grey-green to mid-green above, slightly downy beneath. Produces solitary, pale yellow flowers, 2.5–3cm (1–1¼in) across, in late winter and early spring.  $\pm$  4m (12ft). China (Gansu, Shaanxi, Hubei). \*\*\*

**F. 'Golden Nugget'**. Bushy, deciduous shrub with oval to lance-shaped, sharply toothed leaves, to 10cm (4in) long. Bears golden yellow flowers, 2–3.5cm (¾–1½in) across, in early and mid-spring.  $\pm$  1.5m (5ft). \*\*\*

**F. x intermedia** (*F. suspensa* x *F. viridissima*). Bushy, deciduous shrub bearing ovate to lance-shaped, simple, occasionally 3-lobed leaves, to 10cm (4in) long, with sharp teeth. Deep, bright yellow flowers, 2.5–3.5cm (1¼–1½in) across, are borne in groups of 2 or 3 in early and mid-spring.  $\pm$  1.5m (5ft). Garden origin. \*\*\*



Forsythia giraldiana



Forsythia x intermedia 'Arnold Giant'

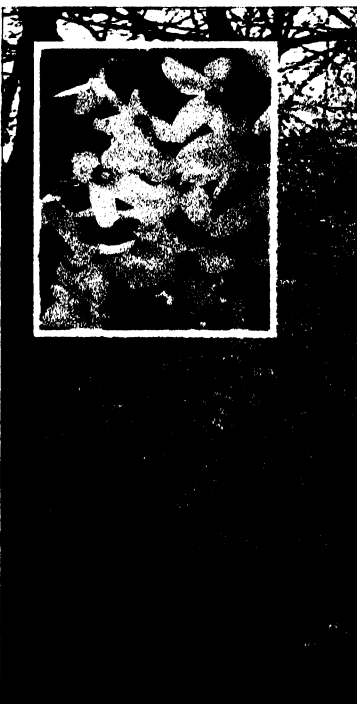
**'Arnold Giant'** has sparsely borne, deep yellow flowers. **'Karl Sax'** is dense, with deep yellow flowers. Some leaves turn red or purple in autumn;  $\pm$  2.5m (8ft). **'Lynwood'** has rich yellow flowers;  $\pm$  3m (10ft). **'Spectabilis'** is vigorous, and bears deep yellow flowers, 2–3cm (¾–1¼in) across;  $\pm$  3m (10ft).  $\pm$  2m (6ft).

**F. 'Northern Gold'**. Upright, deciduous shrub bearing grey-yellow branches and oval, dark green leaves, 4.5–5cm (1¾–2in) across. Golden yellow flowers, to 3.5cm (1½in) across, are borne at the tips of the branches in spring.  $\pm$  2–2.5m (6–8ft),  $\pm$  1.5–2.2m (5–7ft). \*\*\*

**F. ovata** (Korean forsythia). Bushy, compact, deciduous shrub with broadly ovate, toothed, dark green leaves, to 9cm (3½in) long. Bears bright yellow flowers, 2cm (¾in) across, singly in the leaf axils, in early spring.  $\pm$  1.5m (5ft)  $\pm$  3m (10ft). Korea. \*\*\*

**'Tetragold'** bears flowers 2–3cm (¾–1¼in) across, in early spring.

**F. 'Spring Glory'**. Upright shrub with ovate to lance-shaped leaves, to 12cm (5in) long, and pale yellow flowers, 3cm (1¼in) across;  $\pm$  2m (6ft). \*\*\*



Forsythia x intermedia 'Lynwood' (inset: flower detail)



Forsythia 'Northern Gold'

**F. suspensa** (Golden bell). Upright or arching, deciduous shrub with ovate, sometimes 3-palmate, mid- to dark green leaves, to 10cm (4in) long. In early and mid-spring, bears clusters of up to 6 yellow flowers, 2–3cm (1–1¼in) across, in the leaf axils.  $\pm$  3m (10ft). China. \*\*\*

**f. atrocaulis** has purple young shoots and leaves, and pale lemon-yellow flowers, 3.5cm (1½in) across. **'Nymans'** has bronze-purple young shoots and soft yellow flowers.

**var. sieboldii** has slender, pendent shoots and nodding flowers.

**F. 'Vermont Sun'**. Upright, deciduous shrub with oval, deep green leaves, 8–12cm (3–5in) long. Deep yellow flowers, to 3.5cm (1½in) across, are produced in early spring. Extremely hardy; useful in areas with prolonged periods of below -32°C (-26°F).  $\pm$  2.5m (8ft),  $\pm$  2m (6ft). \*\*\*

**F. viridissima**. Erect, deciduous or semi-evergreen shrub with upright shoots, which remain green in the second year, and lance-shaped leaves, to 15cm (6in) long. Bright yellow flowers, 3cm (1¼in) across, are produced singly, or occasionally in pairs or threes, in early and mid-spring.  $\pm$  2m (6ft),  $\pm$  1.5m



Forsythia suspensa

(5ft). China. \*\*\*

**'Bronxensis'** is spreading, with leaves to 4.5cm (1¼in) long, and primrose-yellow flowers, 2.5cm (1in) across;  $\pm$  30cm (12in),  $\pm$  90cm (36in).

▷ **Forsythia**,

**Korean** see *Forsythia ovata*  
**White** see *Abeliophyllum*

## FORTUNELLA

Kumquat

RUTACEAE

Genus of about 5 species of sometimes spiny, evergreen shrubs and small trees found in moist woodland from S. China to Malaysia. The simple, leathery, glandular leaves are alternate. Waxy, fragrant, 5-petalled white flowers are borne singly or in few-flowered, axillary clusters, followed by edible, ovoid to spherical, orange-yellow fruits, which resemble miniature oranges. In frost-prone areas, grow in a conservatory, or cool or temperate greenhouse. In warmer regions, use in a mixed or shrub border or courtyard, at the base of a sunny wall, or as a specimen plant.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. During growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Top-dress or pot on in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 15–24°C (59–75°F) in spring. Root semi-ripe cuttings in summer with bottom heat.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and scale insects may be troublesome under glass.

**F. japonica** (Round kumquat). Large shrub or small tree, usually many-branched, with spines in the leaf axils. Bears lance-shaped, glossy, mid- to light green leaves, to 10cm (4in) long, with distinctive vein patterns. Axillary clusters of fragrant flowers, each 1cm (½in) across, are borne from spring to summer, followed by spherical to ovoid, edible, golden yellow fruit, 3–4cm (1¼–1½in) long.  $\pm$  3–4m (10–12ft),  $\pm$  1.5–2.5m (5–8ft). S. China, Hong Kong. (min. 7°C/45°F). **'Sun Stripe'** has variegated, creamy yellow leaves and green-striped yellow fruit.



## FOTHERGILLA

## HAMAMELIDACEAE

Genus of 2 species of deciduous, low-growing shrubs found in woodland and swamps in S.E. USA. They are grown for their bottlebrush-like flowers, borne before the leaves, and attractive autumn colour. The leaves are alternate, with coarsely toothed margins. The fragrant, petalless flowers have conspicuously long white stamens and are produced in terminal heads or spikes. Grow in a woodland garden or shrub border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich or leafy, moist but well-drained acid soil in full sun or partial shade (full sun encourages more flowers and richer autumn colour). Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame, or in a seedbed, in autumn or winter. Seed germinates in the second spring after sowing. Root softwood cuttings in summer under mist. Air layer in summer.

• **PESTS AND DISEASES** Trouble free.

**F. gardenii** ■ (Witch alder). Dense, bushy shrub with alternate, oval to obovate, dark green leaves, to 6cm (2½in) long, with toothed margins, turning bright red, orange, and yellow in autumn. Cylindrical, terminal, fragrant spikes, to 4cm (1½in) long, of small white flowers, with filaments 2.5cm (1in) long, are borne in spring before the leaves. ± 1m (3ft). S.E. USA. \*\*\*. 'Blue Mist' has blue-green foliage.

**F. major** ■ ♀ syn. *F. monticola*.

Upright shrub with obovate to nearly rounded, alternate, glossy, dark green leaves, 7–12cm (3–5in) long, with toothed margins, turning brilliant red, orange, and yellow in autumn. Erect, terminal spikes, 2.5–5cm (1–2in) long, of fragrant, white, occasionally pink-tinged flowers are borne in late spring and early summer, before or as the leaves



*Fothergilla major*

unfold. † 2.5m (8ft), ↔ 2m (6ft). USA (Allegheny Mountains, Virginia to South Carolina). \*\*\*

**F. monticola** see *F. major*.

▷ **Fountain flower** see *Ceropegia sandersonii*

▷ **Fountain grass** see *Pennisetum alopecuroides*, *P. setaceum*

## FOUQUIERIA

## FOUQUIERIACEAE

Genus of about 10 species of mainly bushy or tree-like, small, deciduous, columnar-stemmed succulents and spiny shrubs or trees occurring in low, arid hillsides in S.W. USA and Mexico. They have grooved, swollen, spiny stems and branches, and alternately arranged, simple leaves. The showy, bell-shaped or tubular, red, pale purple, creamy yellow, or white flowers are borne in racemes or panicles. Capsule-like fruits contain winged seeds. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse. In warmer climates, grow in a desert garden or as an informal, spiny hedge.

• **HARDINESS** Frost tender.



*Fouquieria splendens*

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. From late spring to autumn, water moderately and apply a balanced liquid fertilizer monthly. Keep dry in winter. Outdoors, grow in sharply drained, moderately fertile soil in full sun. See also pp.48–49. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root softwood cuttings in spring or summer.

• **PESTS AND DISEASES** Susceptible to scale insects.

**F. columnaris**, syn. *Idria columnaris* (Boojum tree). Spiny tree with a white-barked, caudex-like stem, to 60cm (24in) thick, and simple branches at right angles to the main stem. Bears axillary groups of 2 or 3 elliptic to oval or spoon-shaped leaves, to 1.5–4cm (½–1½in) long. In summer and autumn, bears short racemes of diurnal, narrowly bell-shaped, honey-scented, creamy yellow flowers, to 7mm (¼in) long. † 20m (70ft), ↔ 2.5m (8ft). N.W. Mexico, USA (S.W. California). ☼ (min. 15°C/59°F)

**F. splendens** ■ (Ocotillo). Spiny, free-branching shrub with erect, cylindrical, white-striped, dark green stems, 4–5cm (1½–2in) thick, and branches covered with leaf scars and spines. Bears elliptic to inversely lance-shaped leaves, 1.5–5cm (½–2in) long, and shorter, narrowly spoon-shaped leaves, to 3.5cm (1½in) long. Narrowly bell-shaped, diurnal, bright red flowers, 10–28cm (4–11in) long, are borne from early spring to summer. Source of medicinal ocotilla wax. † 10m (30ft), ↔ 2m (6ft). USA (S. California, New Mexico, Texas), N. Mexico (including Baja California). ☼ (min. 15°C/59°F)

▷ **Four corners** see *Grewia occidentalis*

▷ **Four o'clock flower** see *Mirabilis jalapa*

▷ **Fox and cubs** see *Pilosella aurantiaca*

▷ **Foxglove** see *Digitalis*

Chinese see *Rehmannia elata*

Common see *Digitalis purpurea*

Fairy see *Erinus*

Mexican see *Tetranema roseum*

Rusty see *Digitalis ferruginea*

Yellow see *Digitalis grandiflora*

▷ **Foxglove tree** see *Paulownia tomentosa*

▷ **Fox nuts** see *Euryale*

▷ **Foxtail grass** see *Alopecurus*

Woolly see *A. lanatus*

## FRAGARIA

## Strawberry

## ROSACEAE

Genus of 12 species of stoloniferous perennials from open woodland, hedgerows, and grassy places in Europe, Asia (as far as S. India), North America, and temperate areas of Chile. *F. vesca* is usually found in limy soils. The leaves are 3-palmate and radical, with toothed leaflets. The white, sometimes pink flowers have numerous stamens and carpels, usually 5 rounded petals, and are borne in 2- to 10-flowered cymes, followed by succulent strawberries.

Grown mainly for their edible, fleshy fruit, some species and cultivars are useful ground cover, remaining in leaf in all but the severest winters. Grow in a herb garden, as border edging, or in a window-box, container, hanging basket, or specially made 'strawberry tower'.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained, neutral to alkaline soil in full sun or light dappled shade. Strawberries tolerate acid soils, but will thrive in alkaline soils, particularly *F. vesca*. Protect the fruit of *F. vesca* 'Variegata' with a straw mulch underneath. *F.* 'Pink Panda' may become invasive.

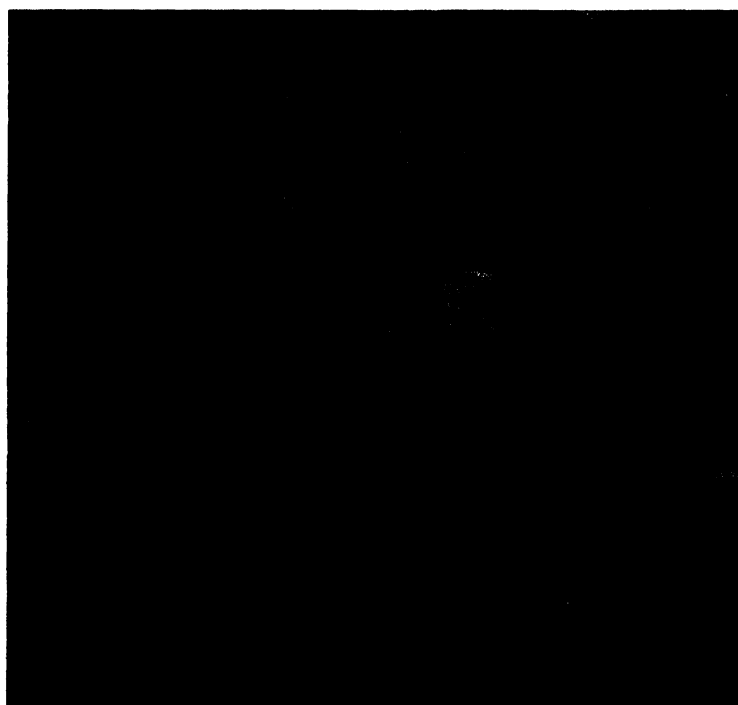
• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Remove and transplant plantlets.

• **PESTS AND DISEASES** Susceptible to leaf spot, powdery mildew, honey fungus and various fungal wilts, red spider mites, and vine weevil grubs.

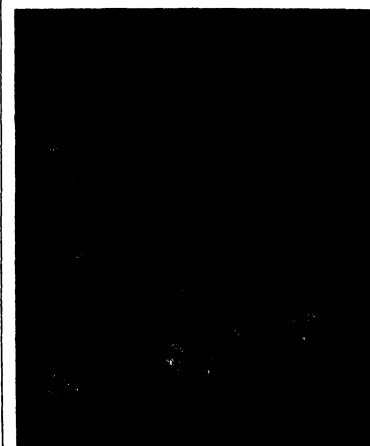
**F. indica** see *Duchesnea indica*.

**F. 'Pink Panda'** ■ Stoloniferous perennial bearing 3-palmate leaves, with broad, ovate, toothed leaflets, 2.5–4cm (1–1½in) long, and reddish green leaf-stalks. Cymes of bright pink flowers, to 2.5cm (1in) across, with 5–7 rounded petals, appear from late spring to mid-autumn. Rarely bears fruit. † 10–15cm (4–6in), ↔ indefinite. \*\*\*

**F. vesca**. Stoloniferous perennial forming rosettes of 3-palmate, bright green leaves with ovate, toothed leaflets, 5–7cm (2–3in) long. In late spring, bears cymes of white flowers, to 2cm (¾in) across, with 5 rounded petals, followed by red fruit, 1cm (½in) long. † to 30cm (12in), ↔ indefinite. Europe. \*\*\*. 'Variegata' produces variegated, grey-green and cream leaves.



*Fothergilla gardenii*



*Fragaria* 'Pink Panda'

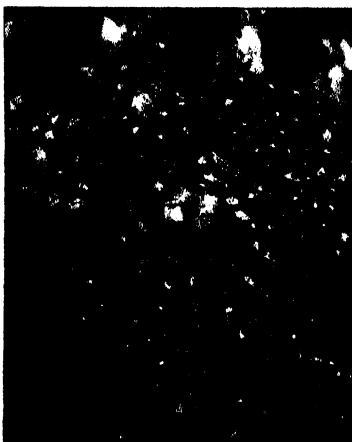
## FRAILEA

CACTACEAE

Genus of about 10–15 species of dwarf, flattened spherical or columnar, usually offsetting, perennial cacti found in scrub and grassland in E. Bolivia, S. Brazil, Paraguay, Uruguay, and N. Argentina. The ribs are divided into tubercles with finely spined areoles. The diurnal, funnel-shaped yellow flowers develop on or close to the crown in summer, and are followed by thin-walled black fruits with numerous small, glossy, black or brown seeds. In areas where temperatures drop below 7°C (45°F), grow as houseplants or in a temperate greenhouse. In warmer climates, grow in a desert garden, at the base of a sunny wall, or in a container on a patio.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost (acid mix) in low humidity with good ventilation, and in full light to ensure that flower buds open. During growth, water moderately and apply a balanced liquid fertilizer monthly. Keep just moist in spring and autumn. Keep dry in winter, watering occasionally to prevent shrivelling. Outdoors, grow in sharply drained, moderately fertile, neutral to acid soil, with added grit and leaf mould, in dappled shade. Provide protection from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 15–21°C (59–70°F) in spring.
- **PESTS AND DISEASES** Trouble free.

*F. asterioides* see *F. castanea*.  
*F. castanea*, syn. *F. asterioides*. Solitary cactus with a flattened spherical, dark reddish brown or chocolate-brown, occasionally bluish green stem with 10–15 shallow, flat to slightly convex ribs. Conspicuous brown or almost white areoles bear about 8 minute brown spines. Pale to golden yellow flowers, 3–5cm (1¼–2in) across, are borne in small groups from the areoles, in summer. ↑ 1–2cm (½–¾in), ↔ to 5cm (2in). N.E. Argentina, S. Brazil, N. Uruguay. ☼ (min. 7°C/45°F)  
*F. grabliana* ☐ Freely offsetting cactus with grey-green or brownish green stems, 3–4cm (1¼–1½in) thick, with up to 13 straight ribs. Oval areoles bear short yellow spines (usually no centrals and 7–11 radials) that later become



Frailea grabliana

white. Pale yellow flowers, 4cm (1½in) across, are produced in summer. ↑ to 7cm (3in), ↔ 7cm (3in). Paraguay. ☼ (min. 7°C/45°F)

## FRANCOA

Bridal wreath

SAXIFRAGACEAE

Genus of 5 species (or 1 very variable species) of evergreen perennials from semi-shady, rocky crevices in Chile. The wavy-margined, softly hairy leaves are produced in basal rosettes. They are obovate to broadly lance-shaped and usually pinnatisect, with several small, often rounded lobes and one large terminal lobe, 6–13cm (2½–5in) long. Cross-shaped, 4-, occasionally 5-petalled, delicate-looking, white or pink flowers, with darker markings, are produced in long-stalked, terminal, spike-like racemes, some with basal branches. Cultivated for use in floral arrangements, bridal wreaths can be grown as edging for a border, or in a woodland or courtyard garden. In frost-prone areas, grow in a cool greenhouse or as houseplants.

- **HARDINESS** Frost hardy; may survive temperatures down to -10°C (14°F).
- **CULTIVATION** Outdoors, grow in humus-rich, moist but well-drained soil in full sun or partial shade. Protect from winter wet. Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light, with shade from the hottest sun. During growth, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter.
- **PROPAGATION** Sow seed at 15–24°C (59–75°F) in spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

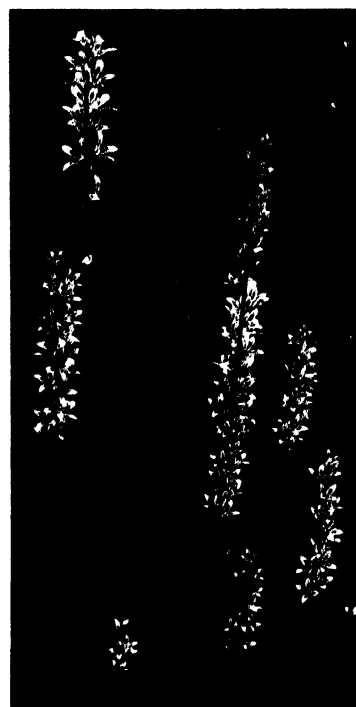
*F. appendiculata* ☐ Rosette-forming perennial with broadly lance-shaped, variably lobed, basal leaves. In mid-summer, sparsely branched stems bear wand-like racemes of pale pink flowers, 2cm (¾in) across, with darker pink markings within. ↑ 60–90cm (24–36in), ↔ 30cm (12in). Chile. \* \*

*F. glabrata* see *F. ramosa*.

*F. ramosa*, syn. *F. glabrata*. Rosette-forming perennial with stalked, broadly lance-shaped, variably lobed, basal leaves. In summer, branched flowering stems bear spike-like racemes of white flowers, 2cm (¾in) across, with dark pink markings. ↑ 60–90cm (24–36in), ↔ 30cm (12in). Chile. \* \*



Francoa appendiculata



Francoa sonchifolia

*F. sonchifolia* ☐ Rosette-forming perennial with broadly lance-shaped, variably and deeply lobed, basal leaves. In midsummer, unbranched stems bear compact racemes of pink flowers, 2cm (¾in) across, with darker pink markings, opening from deep pink buds. May survive below -10°C (14°F) for short periods. ↑ 60–90cm (24–36in), ↔ 45cm (18in). Chile. \* \*

▷ **Frangipani** see *Plumeria*  
**Australian** see *Hymenosporum*,  
*H. flavum*  
**Common** see *Plumeria rubra*

## FRANKLINIA

THEACEAE

Genus of one species of deciduous tree or shrub from woodland in Georgia, USA, now thought to be extinct in the wild. Grown for its showy, solitary, axillary, fragrant, camellia-like white flowers and colourful autumn foliage. *F. alataamaha* is suitable for open glades in a woodland garden.

- **HARDINESS** Fully hardy, but flowers more freely with prolonged exposure to temperatures over 24°C (75°F).
- **CULTIVATION** Grow in humus-rich, moist but well-drained, acid to neutral soil in full sun. Shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed as soon as ripe at 10–18°C (50–64°F). Root hardwood cuttings in early winter, or softwood cuttings in summer with bottom heat.
- **PESTS AND DISEASES** Trouble free.

*F. alataamaha* ☐ Upright tree bearing alternate, obovate-oblong, sparsely toothed, glossy, dark green leaves, to 15cm (6in) long, turning red in autumn. Shallowly cup-shaped, fragrant white flowers, to 8cm (3in) across, with yellow stamens, are produced from late summer to early autumn. The fruit are woody, spherical capsules, to 2cm (¾in) across. ↑ 5m (15ft) or more, ↔ 5m (15ft). USA (Georgia). \* \* \*

## FRAXINUS

Ash

OLEACEAE

Genus of about 65 species of deciduous, rarely evergreen trees usually found in woodland, mainly in Europe, Asia, and North America. The leaves are opposite and pinnate, light to dark green, and 5–50cm (2–20in) long. The flowers are borne in terminal or axillary panicles or racemes, from spring to early summer. Ashes are grown for their habit and foliage. Most have inconspicuous, petalless flowers, although some species, including *F. ornus* and *F. sieboldiana*, are grown for their ornamental flowers. *F. americana*, *F. pennsylvanica* and *F. uhdei* usually produce male and female flowers on separate plants; both are needed to produce the single-seeded, winged fruits. Ashes are excellent specimen trees for woodland or coastal gardens. Grow non-fruiting cultivars in areas with long periods of over 24°C (75°F), where self-sown seedlings can cause problems. Contact with lichens on the bark may aggravate skin allergies.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral to alkaline soil in full sun. *F. angustifolia*, *F. ornus*, and *F. texensis* tolerate reasonably dry, acid to alkaline soils. *F. nigra* 'Fallgold' prefers moist soil. Pruning group 1.
- **PROPAGATION** Stratify seed over winter, or chill for 2–3 months in a refrigerator before sowing. Sow seed in autumn or spring in containers in an open frame. Graft cultivars in spring on to seedling stock of the same species.
- **PESTS AND DISEASES** Generally trouble free, although susceptible to a range of pests and diseases in the USA.

*F. americana* ☐ (White ash). Fast-growing, broadly columnar, deciduous tree bearing pinnate, dark green leaves, to 35cm (14in) long, with 5–9 oblong-lance-shaped to ovate, tapered leaflets, turning yellow or purple in autumn. ↑ 25m (80ft), ↔ 15m (50ft). E. North America. \* \* \*. 'Autumn Blaze' ☐ has an oval crown and purple autumn foliage; ↑ 18m (60ft), ↔ 10m (30ft). 'Autumn Purple' ☐ is broadly conical, with glossy leaves turning red to red-purple in autumn; ↑ 18m (60ft), ↔ 12m (40ft). 'Champaign County' is very dense, with glossy leaves and little autumn colour; ↑ 14m (46ft), ↔ 10m (30ft). 'Rose Hill' has dark green leaves turning bronze-red in autumn; ↑ 15m (50ft), ↔ 10m (30ft). 'Skyline' ☐ is oval-headed, with glossy leaves turning orange-red in autumn; ↑ 15m (50ft), ↔ 12m (40ft).

*F. angustifolia* ☐ syn. *F. oxycarpa* (Narrow-leaved ash). Spreading, deciduous tree bearing pinnate, glossy leaves, to 25cm (10in) long, dark green above, paler beneath, often in whorls of 3, each with up to 13 slender, lance-shaped, tapered leaflets, turning yellow-gold in autumn. ↑ 25m (80ft), ↔ 12m (40ft). S.W. Europe, N. Africa. \* \* \*. 'Raywood' ☐ (Claret ash) is very vigorous, with dark green leaves turning reddish purple in autumn; ↑ 20m (70ft). *F. excelsior* ☐ (Common ash). Vigorous, spreading, deciduous tree with conspicuous black buds in winter.



*Fraxinus angustifolia* (inset: autumn leaf detail)

Pinnate, dark green leaves, to 30cm (12in) long, with 9–11 or 13 oval leaflets, turn yellow in autumn. ‡ 30m (100ft), ↔ 20m (70ft). Europe. \*\*\*.

***F. diversifolia*** (One-leaved ash) has leaves with 1, rarely 3 leaflets.

**'Jaspidea'** ♀ has yellow winter shoots and yellow leaves in spring and autumn.

**'Pendula'** ♀ (Weeping ash) has branches that weep, often to the ground; ‡ 15m (50ft), ↔ 8–10m (25–30ft).

**'Westhof's Glorie'** ♀ is narrow, later spreading. Leaves emerge late in spring, bronze at first, then dark green.

***F. holotricha*** ♂ Rounded, deciduous tree bearing velvety shoots and pinnate, grey-green leaves, to 25cm (10in) long, maturing to glossy, dark green, each with 5–13, usually 11, elliptic to lance-

shaped leaflets. ‡ 12m (40ft), ↔ 12m (40ft). \*\*\*. **'Moraine'** has an even, rounded crown and is fast-growing.

***F. latifolia*** ♂ syn. *F. oregona* (Oregon ash). Spreading, deciduous tree bearing pinnate, dark green leaves, 15–30cm (6–12in) long, with 7–9 oval, tapered leaflets, turning yellow in autumn.

‡ 25m (80ft), ↔ 15m (50ft). W. North America. \*\*\*

***F. mariesii*** see *F. sieboldiana*.

***F. nigra*** ♂ Upright, deciduous tree bearing pinnate, dark green leaves, to 12cm (5in) long, with up to 11 oblong, tapered leaflets, turning golden yellow in autumn. ‡ 15m (50ft), ↔ 8m (25ft).

\*\*\*. **'Fallgold'** is vigorous, produces no fruit, and has long-lasting, golden yellow colour in autumn.

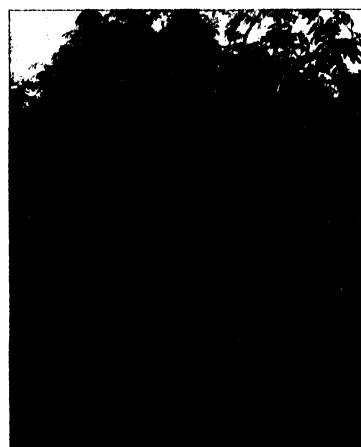
***F. oregona*** see *F. latifolia*.

***F. ornus*** ♀ (Manna ash). Bushy-headed, rounded, deciduous tree bearing pinnate, dark green leaves, to 20cm (8in) long, with 5–9 oval leaflets, turning purple-red in autumn. In late spring and early summer, produces large terminal and axillary panicles of fragrant, creamy white flowers. ‡ 15m (50ft). S. Europe, S.W. Asia. \*\*\*

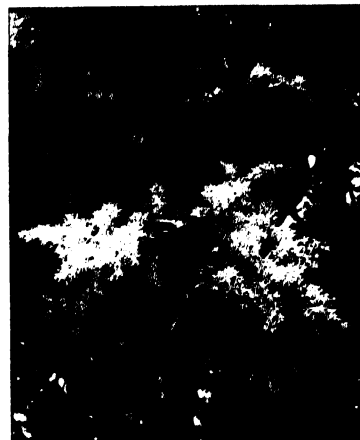
***F. oxycarpa*** see *F. angustifolia*.



*Fraxinus excelsior* 'Jaspidea'



*Fraxinus excelsior* 'Pendula'



*Fraxinus ornus*

***F. pennsylvanica*** ♂ (Green ash, Red ash). Vigorous, spreading, deciduous tree producing pinnate, olive-green leaves, to 30cm (12in) long, composed of 7–9, sometimes 5, ovate to lance-shaped, tapered leaflets, turning yellow in autumn. ‡ 20m (70ft). North America. \*\*\*.

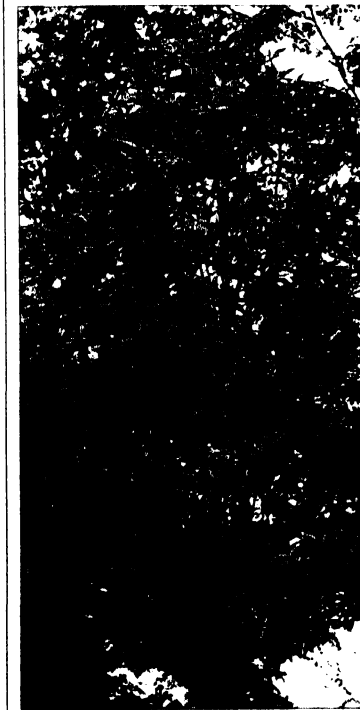
**'Emerald'** has a rounded crown and glossy, dark green leaves, and does not bear fruit; ‡ 15m (50ft), ↔ 12m (40ft). **'Marshall's Seedless'** ♂ is vigorous, broadly oval,

with glossy, dark green leaves. Does not bear fruit; ‡ 15m (50ft), ↔ 12m (40ft).

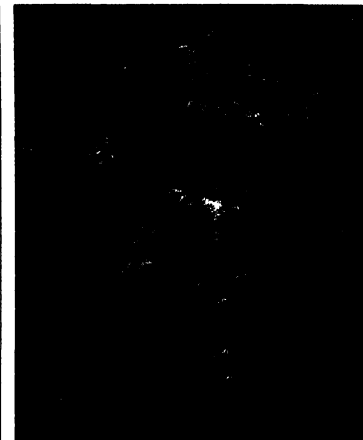
**'Patmore'** ♂ has an oval crown and glossy leaves. Disease-resistant; does not bear fruit; ‡ 14m (46ft), ↔ 11m (35ft).

**'Summit'** ♂ is upright with glossy leaves turning yellow in autumn; ‡ 14m (46ft), ↔ 8m (25ft).

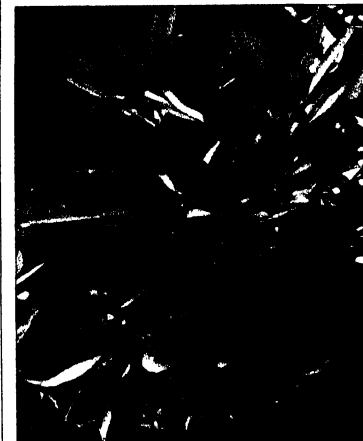
***F. sieboldiana*** ♂ syn. *F. mariesii*. Slow-growing, compact, deciduous tree or shrub bearing pinnate, dark green leaves, to 20cm (8in) long, with up to 7 ovate, tapered leaflets. In late spring and early summer, bears axillary, terminal panicles of small, fragrant, creamy white flowers, followed by winged, purple-tinged fruit. ‡ 6m (20ft), ↔ 5m (15ft). C. China. \*\*\*



*Fraxinus pennsylvanica* 'Summit'



*Fraxinus sieboldiana*



*Fraxinus velutina*

***F. texensis*** ♂ Spreading, deciduous tree bearing pinnate, leathery, dark green leaves, to 20cm (8in) long, with 5, sometimes 7 ovate leaflets, 3–8cm (1¼–3in) long. ‡ 15m (50ft). USA (Texas). \*\*\*

***F. uhdei*** ♂ Upright to rounded, semi-evergreen or evergreen tree with pinnate, glossy, dark green leaves, to 15cm (6in) long, with up to 7 oval, tapered leaflets. ‡ 8m (25ft), ↔ 5m (15ft). Central America. \*\* (borderline). **'Tomlinson'** is smaller, with upright branches and leathery leaves. ‡ 3–4m (10–12ft).

***F. velutina*** ♂ (Arizona ash, Velvet ash). Spreading, deciduous tree bearing pinnate, leathery, velvety, grey-green leaves, to 15cm (6in) long, with 3–5, sometimes 7, lance-shaped, tapered leaflets, turning yellow in autumn. ‡ 10m (30ft). S.W. USA. \*\*\*.

**'Fan Tex'** is very heat-tolerant, vigorous, and non-fruiting, with dark green leaves.

▷ **Freckle face** see *Hypoestes phyllostachya*

## FREESIA

IRIDACEAE

Genus of 6 or more species of cormous perennials from sandy, lowland soils to rocky upland slopes in South Africa. Over 300 cultivars have been developed for use as cut flowers. The large, funnel-shaped, usually scented, brightly coloured flowers, held erect in dense racemes at the end of arching, frequently branched stems, are produced in late winter and early spring. Narrowly sword-shaped to linear-lance-shaped leaves, 5–40cm (2–16in) long, develop

F



Freesia 'Blue Heaven'

in basal fans. In frost-prone areas, grow freesias in a cool greenhouse. Specially prepared corms may be used outdoors for summer flowering. In warmer areas, grow in groups in a mixed border.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added grit. Shade from sun and keep moist until established, then grow in full light with good ventilation, and water freely. Keep temperature below 13°C (55°F). After flower buds appear, apply a balanced liquid fertilizer weekly. After flowering, gradually reduce water until dry, then store corms for re-planting in containers in late summer or autumn. Outdoors, plant 8cm (3in) deep, in moderately fertile, moist but well-drained soil in full sun. Plant in spring for summer flowering; in frost-free areas, plant in autumn for spring flowers.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or winter. Remove small offsets in autumn.

• **PESTS AND DISEASES** Susceptible to red spider mites, aphids, dry rot, and *Fusarium* wilt.

*F. alba* of gardens see *F. lactea*.

*F. armstrongii* see *F. corymbosa*.

*F. 'Ballerina'*. Cormous perennial with white flowers, 5cm (2in) long, borne on robust stems. ‡ to 40cm (16in). \*

*F. 'Blue Heaven'* ■ Cormous perennial bearing bluish mauve flowers with yellow throats, to 5cm (2in) long. ‡ to 40cm (16in). \*

*F. corymbosa*, syn. *F. armstrongii*.

Cormous perennial with linear, acute

leaves, 10–20cm (4–8in) long. Bears scented or unscented flowers, 2.5–3.5cm (1–1½in) long, that are creamy white, or pale yellow with bright yellow lower tepals, or pale pink with yellow throats. ‡ to 50cm (20in). South Africa (Eastern Cape, Western Cape). \*

*F. 'Elan'*. Cormous perennial with semi-double, lilac-purple flowers, 5cm (2in) long, with white throats. ‡ to 40cm (16in). \*

*F. 'Golden Melody'*. Vigorous, cormous perennial with yellow flowers, 5cm (2in) long. ‡ to 40cm (16in). \*

*F. lactea*, syn. *F. alba* of gardens, *F. refracta* var. *alba*. Cormous perennial with linear leaves, 12–40cm (5–16in) long. Bears white flowers, 2.5–6cm (1–2½in) long, strongly scented, occasionally flushed purple outside. ‡ 20–40cm (8–16in). South Africa (Western Cape). \*

*F. 'Oberon'* ■ Cormous perennial with yellow flowers, 4–5cm (1½–2in) long, light blood-red inside; the throats are lemon-yellow with small red veins. ‡ to 40cm (16in). \*

*F. 'Red Lion'*. Cormous perennial with yellow-centred, orange-red flowers, 5cm (2in) long. ‡ to 40cm (16in). \*

*F. refracta* var. *alba* see *F. lactea*.

*F. 'Rosalinde'*. Cormous perennial with semi-double, dark rose-pink flowers, to 5cm (2in) long, with yellow throats. ‡ to 40cm (16in). \*

*F. 'Uchida'*. Cormous perennial with semi-double, lilac-blue flowers, 4–5cm (1½–2in) long. ‡ to 40cm (16in). \*

▷ *Fremontia* see *Fremontodendron*

## FREMONTODENDRON

syn. FREMONTIA

Flannel bush

STERCULIACEAE

Genus of 2 species of evergreen or semi-evergreen shrubs or trees from dry woodland, canyons, and mountain slopes in the USA and N. Mexico. They have alternate, rounded, 3-, 5-, or 7-lobed, dark green leaves, and densely hairy young shoots covered in scales. Large and very showy yellow flowers are produced over a long period, usually in spring and autumn. Grow flannel bushes against a warm, sunny wall, or as specimen plants at the back of a shrub or mixed border. Contact with the foliage and shoots may irritate the skin.

• **HARDINESS** Frost hardy; may tolerate occasional low temperatures to -15°C



Fremontodendron 'Pacific Sunset'

(5°F) when trained against a warm, sunny wall.

• **CULTIVATION** Grow in poor to moderately fertile, dry to moist but well-drained, neutral to alkaline soil in full sun, with shelter from cold, drying winds. Pruning group 1, or group 13 if wall-trained.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root greenwood cuttings in early summer, or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** *Phytophthora* root rot may be a problem.

*F. 'California Glory'* ■ ♀ Vigorous, upright then spreading, evergreen shrub with rounded, 5-lobed, dark green leaves, to 7cm (3in) long. From late spring to mid-autumn, angled buds open to shallowly saucer-shaped, deep yellow flowers, 4–6cm (1½–2½in) across. ‡ 6m (20ft), ↔ 4m (12ft). \*\* *F. californicum*. Vigorous, upright, evergreen or semi-evergreen shrub with rounded, 3-, 5-, or 7-lobed, dark green leaves, 5–10cm (2–4in) long. Shallowly saucer-shaped yellow flowers, to 6cm (2½in) across, are borne from late spring to mid-autumn. ‡ 6m (20ft), ↔ 4m (12ft). USA (California, Arizona). \*\* *F. 'Ken Taylor'*. Spreading, evergreen shrub with rounded, 3- or 5-lobed, dark green leaves, to 7cm (3in) long. Shallowly saucer-shaped, orange-yellow flowers, 4–6cm (1½–2½in) across, are borne from spring to autumn. ‡ 2m (6ft), ↔ 3m (10ft). \*\*

*F. mexicanum*. Upright, vigorous, evergreen or semi-evergreen shrub with rounded, 5- or 7-lobed, dark green leaves, to 7cm (3in) long. From late spring to mid-autumn, bears shallowly saucer-shaped, deep golden yellow flowers, 6–9cm (2½–3½in) across, tinged red on the exterior. ‡ 6m (20ft), ↔ 4m (12ft). USA (S. California), N. Mexico. \*\*

*F. 'Pacific Sunset'* ■ Upright, evergreen shrub with rounded, dark green leaves, 5–8cm (2–3in) long, with 3 or 5 angular lobes. In summer, produces saucer-shaped, bright yellow flowers, to 6cm (2½in) across, with long, slender-pointed lobes. \*\*

▷ *Frerea* see *Caralluma*

*F. indica* see *C. frerei*

▷ *Friendship plant* see *Bilbergia nutans*, *Pilea involucrata*

▷ *Fringe cups* see *Tellima*

▷ *Fringe tree* see *Chionanthus*,

*C. virginicus*

Chinese see *C. retusus*

## FRITILLARIA

*Fritillary*

LILIACEAE

Genus of about 100 species of bulbous perennials found in a range of habitats from woodland to open meadows and high screes, distributed throughout the temperate regions of the N. hemisphere, particularly the Mediterranean, S.W. Asia, and W. North America. Each bulb has 2 or more scales, and sometimes abundant basal bulblets ("rice-grains"). The leaves are usually lance-shaped or linear, with 1, rarely 2, wider basal leaves, and several alternate, opposite, or whorled stem leaves. In some species, there is an involucre of 2 or 3 leaf-like bracts above the flowers. The flowers, borne in spring or early summer, are usually pendulous and solitary, or in terminal racemes or umbels, and have 6 tepals. They are bell-shaped, tubular, or saucer-shaped, frequently tessellated, and have conspicuous nectaries at the base of the tepals. The fruits are capsules, often angular or winged.

Grow in a rock garden, in a raised bed or border, or in a woodland garden, depending on the cultivation needs (see below). Smaller species, 5–15cm (2–6in) high, often need the protection of a bulb frame or alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Handle the fragile bulbs carefully and plant at 4 times their own depth. Large, hollow-crowned bulbs, such as *F. imperialis*, are very prone to rot in poorly drained conditions.

Under glass, grow in loam-based potting compost (J1 No.2), with added grit and leaf mould, in full light. Water moderately during growth and keep almost dry when dormant. During the second year, apply a half-strength balanced liquid fertilizer monthly or repot into fresh compost.

For ease of reference, the varying cultivation requirements of the different groups have been classified as follows. All except group 3 need a continental climate: ideally a dry winter and summer, and a damp spring.

1. Toughest, most tolerant species, suitable for a sunny border or rock garden. Need fertile, well-drained soil and full sun.

2. Fairly robust species but intolerant of rainfall while dormant. Need sharply drained, moderately fertile soil and full sun. Suitable for a rock garden or raised bed; can be grown in a bulb frame or alpine house.

3. Damp meadow or woodland species, needing humus-rich, moisture-retentive soil with added leaf mould, and full sun to light shade. Grow best in areas with cool, damp summers.

4. Wet-intolerant species, usually small, needing fertile, well-drained soil and full sun, with shelter from rain. Grow in a bulb frame or cold greenhouse, to keep bulbs almost dry when dormant.

• **PROPAGATION** Sow seed in autumn in a cold frame. Expose to winter cold until germination in spring, then transfer to a cold greenhouse. Small species should be grown on for 2 years in containers. Divide offsets, or collect and sow "rice-grain" bulbils, in late summer.

• **PESTS AND DISEASES** Prone to attack by slugs and lily beetles.



Freesia 'Oberon'



Fremontodendron 'California Glory'

*Fritillaria imperialis*

***F. acmopetala*** ■ ♀ Bulbous perennial bearing alternate, linear, bluish green leaves, to 20cm (8in) long. In late spring, usually solitary flowers are produced in the uppermost leaf axils, or sometimes in pairs or threes in the lower leaf axils. Flowers are bell-shaped, pendent, pale green, to 4cm (1½in) long, with reflexed tepals; the inner tepals are stained reddish brown. Cultivation group 1. ↓ to 40cm (16in), ↔ 5–8cm (2–3in). Cyprus, S.W. Turkey, Syria, Lebanon. \*\*\*

***F. affinis***, syn. *F. lanceolata* (Rice-grain fritillary). Bulbous perennial bearing whorls of broadly lance-shaped to linear, blue-green leaves, 4–16cm (1½–6in) long. From early spring to early summer, bears racemes of 3 or 4, occasionally up to 12, cup-shaped, pendent, greenish white flowers, to 4cm (1½in) long, with reddish purple stains or speckles. Cultivation group 2 or 3. ↑ to 60cm (24in), ↔ 12cm (5in). N.W. North America. \*\*\*

***F. armena***. Bulbous perennial with alternate, stem-clasping, lance-shaped, mid-green lower leaves, 2.5–10cm (1–4in) long, and linear upper leaves. Solitary, narrowly bell-shaped, pendent, tessellated, dark purple-brown flowers, to 2cm (¾in) long, with slightly incurved, fringed tepals, are borne in spring. Cultivation group 4. ↑ 8–15cm (3–6in), ↔ 5–8cm (2–3in). N.E. Turkey. \*\*\*

***F. assyriaca* of gardens** see *F. uva-vulpis*.

***F. biflora*** (Black fritillary, Mission bells). Bulbous perennial with ovate-lance-shaped, very glossy, mid-green

leaves, 5–12cm (2–5in) long, usually produced in basal clusters. In early and mid-spring, bears up to 6, occasionally up to 12, bell-shaped, pendent brown flowers, to 3.5cm (1½in) long, tinged black to purple, flushed green, and with ridges on the inner tepals. Cultivation group 4. ↑ 15–30cm (6–12in), ↔ 5–8cm (2–3in). W. USA (California). \*\*\*

**'Martha Roderick'** ■ syn. *F. roderickii*, produces deep red-purple flowers; the outer two-thirds of the tepals are white.

***F. bucharica***. Bulbous perennial with broadly lance-shaped, or lance-shaped to ovate, grey-green leaves, to 8cm (3in) long, the lower ones opposite, the upper ones alternate. Racemes of up to 10 widely cup-shaped, nodding flowers, to 2cm (¾in) long, with pointed, green-based, green-veined white tepals and indented green nectaries, are borne in spring. Cultivation group 4. ↑ to 30cm (12in), ↔ 5cm (2in). Uzbekistan, Turkmenistan, N. Afghanistan, Tajikistan. \*\*\*

***F. camtschatsensis*** ■ (Black sarana). Variable, bulbous perennial with lance-shaped, glossy, light green leaves, to 12cm (5in) long, the lower ones in whorls, the upper ones alternate. Up to 8 broadly bell- to cup-shaped, pendent, dark black-purple, sometimes green or yellow flowers, to 3cm (1¼in) long, are borne in early summer. Cultivation group 3. ↑ to 45cm (18in), ↔ 8–10cm (3–4in). N.E. Asia, Alaska to N.W. USA. \*\*\*

***F. chitralensis*** ■ Upright, bulbous perennial producing loose whorls of ovate, mid- to light green leaves, to 15cm (6in) long. Open umbels of 4 or 5

conical, pendent, bright yellow flowers, 3–4cm (1¼–1½in) long, are borne in early and mid-spring. Similar to *F. imperialis* and often included under it. Cultivation group 1. ↑ 50–80cm (20–32in), ↔ 10cm (4in). N.E. Afghanistan, Pakistan (Chitral). \*\*\*

***F. cirrhosa*** ■ Bulbous perennial with whorls of linear, greyish green leaves, to 8cm (3in) long, the uppermost leaves with tendril-like tips. In late spring, produces usually solitary, occasionally 2 or 3 broadly bell-shaped, pendent, pale green, sometimes purple-tinged flowers, to 5cm (2in) long, with brownish purple tessellations. Cultivation group 3. ↑ to 45cm (18in), ↔ 5–8cm (2–3in).

E. Himalayas, S.W. China. \*\*\*

***F. crassifolia***. Variable, bulbous perennial with alternate, lance-shaped, grey-green leaves, 2.5–7cm (1–3in) long. In spring, bears 1–3 broadly bell-shaped, pendent, pale green flowers, to 2.5cm (1in) long, usually with faint brown chequering. Cultivation group 2 or 4. ↑ 7–20cm (3–8in) or more, ↔ 5cm (2in). Turkey (Anatolia), Lebanon, Iran. \*\*\*

***F. davisii***. Bulbous perennial with opposite, broadly lance-shaped, grey-green, mainly basal leaves, 3.5–11cm (1½–4½in) long. In spring, bears 1–3 broadly bell-shaped, pendent green flowers, to 2.5cm (1in) long, often with yellow-margined tepals and brown or black tessellation. Cultivation group 4. ↑ to 15cm (6in), ↔ 5cm (2in). S. Greece. \*\*\*

***F. delphinensis*** see *F. tubiformis*.

***F. eduardii***. Bulbous perennial with whorls of narrowly lance-shaped, glossy, bright mid-green leaves, to 18cm (7in) long. Crowded umbels of broadly bell-shaped, bright orange-red flowers, to 5cm (2in) long, with a tuft of upright, leaf-like bracts above the flowers, are produced in spring. Very similar to *F. imperialis*, but without the unpleasant smell. Cultivation group 1. ↑ to 1.2m (4ft), ↔ to 30cm (12in). Tajikistan. \*\*\*

***F. graeca*** ■ Variable, bulbous perennial with usually alternate, broadly lance-shaped, glaucous, grey-green leaves, to 11cm (4½in) long, with narrower upper leaves. In late spring and early summer, bears solitary, rarely 2 or 3, broadly bell-shaped, deep green flowers, strongly chequered brownish purple, to 2.5cm

(1in) long; each tepal usually has a green central stripe. Cultivation group 2 or 4. ↑ 5–20cm (2–8in), ↔ 5cm (2in). S. Greece (Peloponnese, Crete). \*\*\*

**subsp. *thessala***, syn. *F. ionica*, is more robust and easier to grow, with broader, mid-green, not glaucous leaves, and pale greenish brown, lightly chequered flowers, to 3–4cm (1¼–1½in) long. Cultivation group 1. Croatia, Bosnia, Macedonia, S. Albania, N.W. Greece, Corfu.

***F. hermonis* subsp. *amana***. Very variable, bulbous perennial, usually with alternate, lance-shaped or oblong, very glaucous, sometimes glossy, grey- to mid-green leaves, 4–9cm (1½–3½in) long. In spring, produces broadly bell-shaped, light green, faintly brown- or purple-tessellated flowers, to 3.5cm (1½in) long, with inner tepals margined dark brown-purple, borne singly or in pairs. Cultivation group 2 or 4. ↑ 15–30cm (6–12in), ↔ 7cm (3in). S. Turkey to Lebanon. \*\*\*

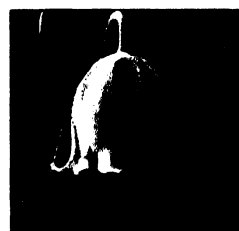
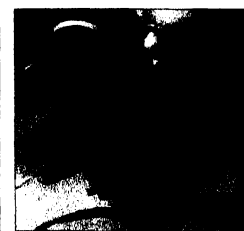
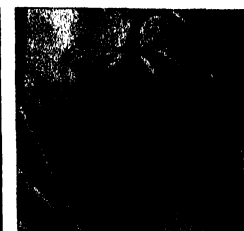
***F. imperialis*** ■ (Crown imperial). Bulbous perennial bearing whorls of lance-shaped, light green leaves, 7–18cm (3–7in) long. Umbels of 3–6, sometimes up to 8, bell-shaped, pendent, orange, yellow, or red flowers, to 6cm (2½in) long, crowned by a cluster of upright, leaf-like bracts, are produced in early summer. The bulbs have an unpleasant foxy odour. Cultivation group 1. ↑ to 1.5m (5ft), ↔ 25–30cm (10–12in). S. Turkey to Kashmir. \*\*\*

**'Aureomarginata'** has variegated leaves with deep yellow margins, and orange flowers. **'Crown upon Crown'** see 'Prolifera'. **'Lutea'** has bright yellow flowers. **'Prolifera'**, syn. 'Crown upon Crown', produces orange-red flowers in 2 whorls, one above the other. **'The Premier'** bears yellow-tinted, orange flowers, with purple veins.

***F. involucrata***. Bulbous perennial bearing opposite, linear-lance-shaped, mid-green leaves, 5–11cm (2–4½in) long. Solitary, broadly bell-shaped, pale green flowers, to 4cm (1½in) long, sometimes faintly chequered purple, topped with an involucre of 3 leaf-like bracts, are produced in spring. Cultivation group 1 or 2. ↑ to 30cm (12in), ↔ 5–8cm (2–3in). S.E. France, N.W. Italy. \*\*\*

***F. ionica*** see *F. graeca* subsp. *thessala*.

***F. lanceolata*** see *F. affinis*.

*Fritillaria acmopetala**Fritillaria biflora*  
'Martha Roderick'*Fritillaria camtschatsensis**Fritillaria chitralensis**Fritillaria cirrhosa**Fritillaria graeca*

F

***F. latifolia*** ■ Bulbous perennial with alternate, ovate to lance-shaped, glossy, grey-green leaves, 3.5–8cm (1½–3in) long. In early summer, bears solitary, broadly bell-shaped, dark maroon to purple flowers, to 5cm (2in) long, broad at the shoulders, chequered with yellow tessellations within, and slightly glaucous without. (A colour variant from S. Caucasus, with greenish cream flowers, has been called *F. lagodechiana*.) Cultivation group 2 or 4. † 10–20cm (4–8in), ↔ 5cm (2in). N.E. Turkey, Caucasus, Iran. \*\*\*. **var. nobilis** is a Turkish variant with shorter stems and red-purple flowers, chequered olive-yellow. Cultivation group 4. † to 10cm (4in). Turkish Armenia, Caucasus.

***F. meleagris*** ■ ♀ (Snake's head fritillary). Bulbous perennial bearing alternate, linear, grey-green leaves, 6–13cm (2½–5in) long. In spring, produces solitary, sometimes paired, broadly bell-shaped, pendent, purple, pinkish purple, and white flowers, to 4.5cm (1¾in) long, with strong, purple-pink tessellations. Cultivation group 1 or 3; good for naturalizing in grass. † to 30cm (12in), ↔ 5–8cm (2–3in). S. England to N. Balkans, W. Russia. \*\*\*. ***F. alba*** ♀ has white flowers.

***F. messanensis***, syn. *F. oranensis*. Bulbous perennial producing usually opposite, linear, mid-green leaves, 4–9cm (1½–3½in) long. In early spring, bears 1–3 broadly bell-shaped green flowers, to 4cm (1½in) long, chequered brown-purple towards the margins and with a whorl of 3 narrow leaves beneath. Cultivation group 1. † to 30cm (12in), ↔ 5cm (2in). C. Mediterranean. \*\*\*. **subsp. gracilis**, syn. *F. neglecta*, has purple-brown and obscurely chequered flowers with the tepals incurved at the tips, and without the whorl of 3 leaves below. Croatia, Macedonia, Albania.

***F. michailovskyi*** ♀ Bulbous perennial with mostly alternate, lance-shaped, mid-green leaves, 5–9cm (2–3½in) long. In early summer, bears umbels of 1–4, or up to 7, broadly bell-shaped, pendent flowers, deep brown-purple, tinged green without, with distinctive yellow tepal tips, to 3cm (1¼in) long. Cultivation group 2 or 4. † 10–20cm (4–8in), ↔ 5cm (2in). N.E. Turkey. \*\*\*.

***F. neglecta*** see *F. messanensis* subsp. *gracilis*.

***F. nigra*** of gardens see *F. pyrenaica*. ***F. oranensis*** see *F. messanensis*.

***F. pallidiflora*** ■ ♀ Robust, bulbous perennial with opposite or alternate, broadly lance-shaped, glaucous, grey-green leaves, to 15cm (6in) long. In late spring and early summer, bears up to 6, rarely 9 or 10, very broadly bell-shaped, nodding, faintly malodorous, green-based, pale creamy yellow flowers, to 4.5cm (1¾in) long, often with faint red-brown tessellations. Cultivation group 1 or 3. † to 40cm (16in), ↔ 5–8cm (2–3in). N.W. China, E. Siberia. \*\*\*.

***F. persica***. Robust, bulbous perennial with sturdy, upright stems bearing alternate, lance-shaped, glaucous, grey-green leaves, 10–25cm (4–10in) long. Racemes of up to 30 conical, narrowly bell-shaped, pendent, greenish brown to deep purple flowers, to 2cm (¾in) long, are produced in spring. Cultivation group 1, in a hot site. † to 1m (3ft) ↔ 10cm (4in). S. Turkey. \*\*\*. **'Adiyaman'** is taller and more free-flowering, with brown-purple flowers. † to 1.5m (5ft).

***F. pontica***. Bulbous perennial with opposite or subopposite, lance-shaped to ovate-lance-shaped, glaucous, grey-green leaves, 5–10cm (2–4in) long. The topmost leaves are in a whorl of 3 above the solitary, sometimes paired, broadly bell-shaped, pendent, pale green flowers, to 4.5cm (1¾in) long, stained maroon at the base, borne in spring. Cultivation group 1 or 2. † 15–20cm (6–8in), ↔ 5cm (2in). N. Greece to N.W. Turkey. \*\*\*.

***F. pudica*** ■ (Yellow fritillary). Bulbous perennial with linear to narrowly lance-shaped, mid-green, sometimes slightly glaucous leaves, 6–20cm (2½–8in) long, the lower ones opposite, the upper ones alternate. In early spring, bears narrowly bell-shaped, pendent, golden to orange-yellow flowers, sometimes tinted red, to 2.5cm (1in) long, singly or in pairs. Cultivation group 4. † to 15cm (6in), ↔ 5cm (2in). W. North America. \*\*\*.

***F. pyrenaica*** ♀ syn. *F. nigra* of gardens. Bulbous perennial with alternate, lance-shaped, glaucous, grey-green leaves, 4.5–11cm (1¾–4½in) long. In late spring, bears solitary, rarely 2, broadly bell-shaped, deep brownish purple, occasionally yellow flowers, strongly tessellated, to 3.5cm (1½in) long, with recurved tepal tips, yellow-green within.



*Fritillaria sewerzowii*

Cultivation group 1. † to 45cm (18in), ↔ 5–8cm (2–3in). Pyrenees. \*\*\*.

***F. raddeana*** ■ Robust, bulbous perennial with alternate or whorled, lance-shaped, lustrous, pale green leaves, to 15cm (6in) long. In early spring, bears umbels of 5 or 6, occasionally to 20, broadly bell-shaped, nodding, greenish cream or pale yellow flowers, to 6cm (2½in) long; each umbel is crowned by a tuft of 10–20 leaf-like bracts. Cultivation group 1 or 3. † 60cm (24in), ↔ 8–20cm (3–8in). N.E. Iran, Turkmenistan. \*\*\*.

***F. recurva*** (Scarlet fritillary). Bulbous perennial with whorls of linear-lance-shaped, grey-green, often glaucous leaves, 3–10cm (1¼–4in) long. In spring, bears spike-like racemes of 3–12 narrowly bell-shaped, pendent, faintly yellow-chequered, bright orange-red to scarlet flowers, to 3.5cm (1½in) long, recurved at the mouth. Cultivation group 4. Produces numerous "rice-grain" bulblets that take several years to reach flowering size. † to 60cm (24in), ↔ 8–10cm (3–4in). USA (S. Oregon, California). \*\*\*.

***F. roderickii*** see *F. biflora* 'Martha Roderick'.

***F. sewerzowii*** ■ syn. *Korolkowia sewerzowii*. Variable, stout-stemmed, bulbous perennial with mostly alternate, broadly lance-shaped, grey-green leaves, to 15cm (6in) long, the lowest opposite. In spring, produces elongated racemes of up to 12, rarely solitary, narrowly bell-shaped, nodding, often glaucous, greenish yellow to vivid purple flowers; each flower is yellow to brick-red at the base and within, to 3.5cm (1½in) long, flared at the mouth and stained purple at the throat. Cultivation group 2 or 4. † to 30cm (12in), ↔ 8–10cm (3–4in). Uzbekistan, Tajikistan (Pamirs), N.W. China (Tien Shan Mountains). \*\*\*. ***F. stenanthera***. Bulbous perennial with a pair of opposite, ovate, mid-green basal leaves, and alternate, lance-shaped to linear stem leaves, to 16cm (6in) long. In early spring, bears racemes of

4–8 narrowly bell-shaped, nodding pink flowers, to 2cm (¾in) long, flared at the mouths, with dark purple centres. Cultivation group 4. † to 20cm (8in), ↔ 5cm (2in). Uzbekistan. \*\*\*.

***F. thunbergii*** ■ syn. *F. verticillata* var. *thunbergii*. Bulbous perennial with opposite, alternate or whorled, linear, glossy, mid-green leaves, to 15cm (6in) long. In spring, bears loose racemes of 2–6 broadly bell-shaped or cup-shaped, nodding, creamy white flowers, to 3.5cm (1½in) long, faintly tessellated or veined green. Cultivation group 1. † to 60cm (24in), ↔ 10–12cm (4–5in). C. China. \*\*\*.

***F. tubiformis***, syn. *F. delphinensis*. Bulbous perennial with alternate, linear-lance-shaped, glaucous, grey-green leaves, to 5–9cm (2–3½in) long. In late spring, bears solitary, broadly bell-shaped flowers, to 5cm (2in) long, grey-purple externally and white within, with purplish brown tessellations. Cultivation group 2 or 4. † to 15cm (6in), ↔ 5cm (2in). French and Italian Alps. \*\*\*.

**subsp. moggridgei** has bright yellow flowers with black chequering. ***F. uva-vulpis***, syn. *F. assyriaca* of gardens. Bulbous perennial with alternate, lance-shaped, glossy, mid-green leaves, 5–12cm (2–5in) long. In spring, produces solitary, occasionally 2, narrowly bell-shaped, pendent, glaucous, dark brownish purple flowers, tinged yellow within, to 2.5cm (1in) long, with deep yellow, recurving tepal tips. Cultivation group 2 or 4. † to 20cm (8in), ↔ 5cm (2in). S.E. Turkey, N. Iraq, W. Iran. \*\*\*.

***F. verticillata*** var. *thunbergii* see *F. thunbergii*.

▷ **Fritillary** see *Fritillaria*

**Black** see *F. biflora*

**Rice-grain** see *F. affinis*

**Scarlet** see *F. recurva*

**Snake's head** see *F. meleagris*

**Yellow** see *F. pudica*

▷ **Frogbit** see *Hydrocharis*, *H. morsusranae*



*Fritillaria latifolia*



*Fritillaria meleagris*



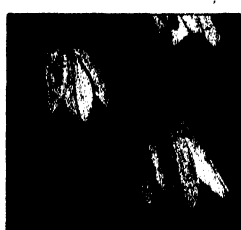
*Fritillaria pallidiflora*



*Fritillaria pudica*



*Fritillaria raddeana*



*Fritillaria thunbergii*



## FUCHSIA

ONAGRACEAE

Genus of approximately 100 species of deciduous or evergreen trees and shrubs, and a few perennials, from mountainous areas of Central and South America and New Zealand. There are more than 8,000 hybrids and cultivars, which have been developed for their attractive and distinctive flowers, usually borne more or less continuously from summer to autumn. *F. magellanica* is the hardiest species and has been used extensively to produce the modern hardy fuchsias; hybrids of *F. triphylla* have produced the Triphylla Group fuchsias (see panel).

Fuchsia flowers are axillary and usually pendulous, in terminal clusters, with short to long perianth tubes, each topped by far-spreading, coloured sepals and 4 erect, broad petals forming a cup or bell. In some species, the petals are very small or absent. In the following entries, flowers described as "very small" are 0.5–2cm (¼–¾in) across the sepals; "small" are 2–4cm (¾–1½in) across; "medium" are 4–6cm (1½–2½in) across; and "large" are 6cm (2½in) or more across. Fuchsia leaves are opposite or whorled, rarely alternate, simple, lance-shaped to very broadly ovate, mid-green, 0.5–25cm (¼–10in) long, occasionally to 40cm (16in). They are frequently toothed, grow in pairs (sometimes in whorls of 3), and are deciduous unless stated otherwise below. The fruits are berries, usually with many seeds.

In frost-prone areas, treat most fuchsias as half-hardy perennials and



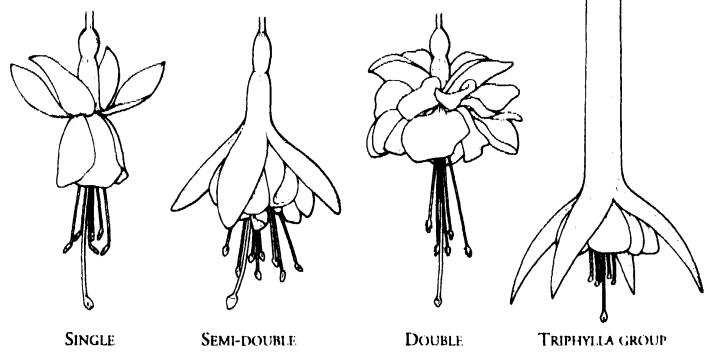
Fuchsia 'Andrew Hadfield'



Fuchsia arborescens

## FUCHSIA FLOWERS

Fuchsia flowers are usually tubular and pendent, often bicoloured, with a corolla of one hue, and a tube and 4 sepals of another. Single flowers have 4 petals; semi-double flowers 5–7 petals; double flowers 8 or more petals; fully double flowers have more than 8 petals. Triphylla Group fuchsias have long-tubed, single flowers and usually purple-backed foliage. Flowers of *F. procumbens* are erect.



grow or overwinter them in a cool or temperate greenhouse. Frost-hardy fuchsias can be left in the open garden throughout winter if correctly planted and mulched (see below). In warmer climates, plant fuchsias in the open garden in a border: grow those with strong, erect stems as bushes, standards, pillars, espaliers, or fans, while those with a trailing habit may be used as weeping standards or grown in a hanging basket, window-box, or trough. *F. procumbens* can be grown in a rock garden in frost-free or mild climates.

• **HARDINESS** Fully hardy to frost tender, but even fully hardy plants may lose some of their upper growth after severe frosts. If temperatures remain above 4°C (39°F), many fuchsias are more or less evergreen.

• **CULTIVATION** Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade. For all but the hardiest fuchsias, plant the base of the stem 5cm (2in) below the soil surface and provide a deep, winter mulch. Shelter from cold, drying winds. Under glass, grow in loam-based potting compost (J1 No.3) or loamless potting compost, in bright filtered light with moderate to high humidity; ventilate well. During growth, water freely and apply a balanced liquid fertilizer monthly, or every 2 weeks in loamless composts. Keep just moist in winter. Pruning group 6; cut back to base in frost-prone areas.

• **PROPAGATION** Sow seed at 15–24°C (59–75°F) in spring. Root softwood cuttings in spring, or semi-ripe cuttings in late summer with bottom heat.

• **PESTS AND DISEASES** Susceptible to whiteflies, vine weevil, capsid bugs, aphids, red spider mites, grey mould (*Botrytis*), and rust.

**F. 'Alice Hoffman'** Free-flowering, upright shrub with densely clustered, purple-tinged, bronze-green foliage. Small, semi-double flowers have rose-pink tubes and sepals, and white corollas veined rose-pink. 3–45–60cm (18–24in). \*\* (borderline)

**F. 'Andrew Hadfield'** Very free-flowering, upright shrub bearing

medium, single flowers with carmine-red tubes and sepals, and white-based, pink-veined, bright lilac-blue corollas. 20–45cm (8–18in), 20–30cm (8–12in). ☼ (min. 5°C/41°F)

**F. 'Annabel'** Very free-flowering, upright bush with mid- to light green foliage. Medium, fully double flowers have pink-striped white tubes, white sepals with a slight pink flush, and pink-veined white corollas. Flowers bruise readily. 3–30–60cm (12–24in). \*

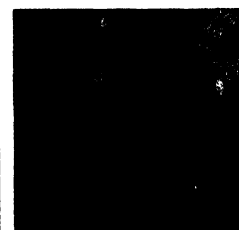
**F. arborea** see *F. arborescens*.

**F. arborescens** syn. *F. arborea* (Lilac fuchsia). Erect, evergreen shrub or small tree with opposite or whorled, elliptic to inversely lance-shaped, thin, dark green leaves, 10–20cm (4–8in) long. Erect, corymb-like panicles of very small flowers, with rose to magenta or purple-pink tubes, rose-purple sepals, and pale mauve corollas, to 1.5cm (½in) across, appear in one flush in summer. The purple fruit are almost spherical, to 1.5cm (½in) long. 2 to 2m (6ft), 2 to 1.7m (5½ft). Mexico, Central America. ☼ (min. 5°C/41°F)

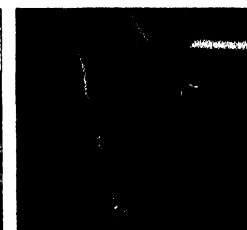
**F. 'Auntie Jinks'** Very free-flowering, trailing shrub bearing small, single flowers with pink-red tubes, cerise-margined white sepals, and white-



Fuchsia 'Annabel'



Fuchsia 'Autumnale'



Fuchsia x bacillaris



Fuchsia 'Ballet Girl'



Fuchsia 'Bicentennial'



Fuchsia 'Billy Green'



Fuchsia 'Auntie Jinks'

shaded purple corollas. 15–20cm (6–8in), 20–40cm (8–16in). \*

**F. 'Autumnale'** syn. *F. 'Burning Bush'*. Prostrate shrub with green and yellow foliage that matures to dark red and salmon with splashes of yellow. Medium, single flowers, with scarlet-rose tubes and sepals, and purple corollas, are produced in late summer. 15–30cm (6–12in), 30–60cm (12–24in). \*

**F. x bacillaris** (*F. microphylla* x *F. thymifolia*) syn. *F. parviflora* of gardens. Erect or spreading shrub with thin, wiry stems and lance-shaped to ovate, hairy-margined leaves, 0.5–2.5cm (¼–1in) long. Bears very small pink to deep red flowers, 5–8mm (¼–¾in) across, and almost spherical, glossy, purple-brown fruit. 2–60–120cm (2–4ft). Natural hybrid from Mexico. \*

**F. 'Ballet Girl'** Very free-flowering, upright shrub bearing large, double flowers, each with bright cerise tubes and sepals, and white corollas with cerise veins at the bases. 30–45cm (12–18in), 45–75cm (18–30in). \*

**F. 'Bicentennial'** Free-flowering, lax shrub producing medium, double flowers with thin white tubes, orange sepals, and double corollas with magenta centres surrounded by orange petals. 30–45cm (12–18in), 45–60cm (18–24in). \*

**F. 'Billy Green'** Extremely free-flowering, upright Triphylla Group shrub with light olive-green foliage. Small flowers, with long, tapering tubes,

F

## F

*Fuchsia* 'Celia Smedley'

salmon-pink sepals, and finely pointed, salmon-pink corollas, are borne at each leaf axil on strong stems. †45–60cm (18–24in), ↔ 30–45cm (12–18in). \*

***F. boliviana***. Shrub or small tree with lax, arching shoots, and opposite or 3-whorled, narrowly elliptic to broadly ovate, finely glandular-toothed, hairless to softly hairy leaves, 20cm (8in) long, sometimes with reddish veins. Bears large, pendent, terminal racemes or panicles, 5cm (2in) long, of small flowers with pale pink to vermillion tubes, reflexed pale pink to red sepals, and scarlet petals. † to 4m (12ft), ↔ 1–1.2m (3–4ft). S. Peru to N. Argentina. ☼ (min. 5°C/41°F). \*

***alba*** ☼ syn. var. *luxurians*, has white tubes, and white sepals with light red marks at the bases.

***F. 'Bon Accord'***. Free-flowering, upright shrub with strong stems. Bears small, erect, single flowers with waxy, ivory-white tubes and sepals, and pale purple corollas suffused white. †45–60cm (18–24in), ↔ 30–45cm (12–18in). \*

***F. 'Brookwood Belle'*** ♀ Lax, bushy shrub with strong, short-jointed stems. Medium, double flowers have deep cerise tubes and sepals, and white corollas flushed pink and veined deep rose-pink. †↔ 45–60cm (18–24in). \*\*

***F. 'Burning Bush'*** see *F. 'Autumnale'*.

***F. 'Cascade'***. Free-flowering, trailing shrub bearing medium, single flowers with long, thin white tubes and sepals, heavily flushed carmine-red, and

deep carmine-red corollas. †15–30cm (6–12in), ↔ 30–45cm (12–18in). \*

***F. 'Celia Smedley'*** ☼ ♀ Very free-flowering, upright shrub bearing large, single flowers with dark pink tubes and sepals, and vivid currant-red corollas. †↔ 45–75cm (18–30in). \*

***F. 'Charming'***. Free-flowering, upright shrub with strong stems and light yellowish green foliage. Medium, single flowers have carmine-red tubes, strongly reflexed, reddish cerise sepals, and cerise-based, rose-purple corollas. †45–75cm (18–30in), ↔ 60–75cm (24–30in). \*\* (borderline)

***F. 'Checkerboard'*** ☼ ♀ Very free-flowering, vigorous, upright shrub with strong stems. Produces medium, single flowers with slightly recurved, long red tubes, red sepals turning white, and white-based, dark red corollas. †75–90cm (30–36in), ↔ 45–75cm (18–30in). \*

***F. 'Coralie'*** ☼ syn. *F. 'Koralie'*. Upright Triphylla Group shrub with strong stems and velvety, olive-green leaves. Bears terminal clusters of very small flowers with tapering, orange-red tubes, pointed, salmon-pink sepals, and orange-red or salmon-pink corollas. †45–90cm (18–36in), ↔ 45–60cm (18–24in). ☼ (min. 5°C/41°F)

***F. 'Dark Eyes'*** ♀ Bushy, upright shrub bearing medium, double flowers that hold their shape for a long period. The tubes and upturned sepals are deep red, and the corollas deep violet-blue. †45–60cm (18–24in), ↔ 60–75cm (24–30in). \*

***F. 'Display'*** ♀ Upright, vigorous, freely branching shrub with strong stems and medium, single flowers with carmine-red sepals and rose-pink corollas. †60–75cm (24–30in), ↔ 45–60cm (18–24in). \*\* (borderline)

***F. 'Dollar Princess'*** ♀ syn. *F. 'Princess Dollar'*. Vigorous, early-flowering, upright shrub producing abundant small to medium, double flowers with cerise tubes and sepals, and rich purple corollas turning deep pink at the base. †30–45cm (12–18in), ↔ 45–60cm (18–24in). \*\* (borderline)

***F. 'Elfriede Ott'***. Lax Triphylla Group shrub with dark green leaves. Very small flowers have long, salmon-pink tubes, pointed, salmon-pink sepals, and deeper salmon-pink corollas with curly, rose-red petal margins. †45–60cm

(18–24in), ↔ 30–45cm (12–18in).

☼ (min. 5°C/41°F)

***F. 'Estelle Marie'***. Upright shrub with ovate, dark green leaves. Small to medium, semi-erect, single flowers have greenish white tubes, green-tipped white sepals, and blue-violet corollas that mature to violet with white at the bases. †↔ 30–45cm (12–18in). \*

***F. 'Flirtation Waltz'***. Vigorous, upright, bushy, freely branching shrub with pale, toothed leaves. Medium, double flowers have pink-flushed, creamy white tubes, wide-spreading, creamy white sepals, and pale pink corollas. †45–60cm (18–24in), ↔ 30–45cm (12–18in). \*

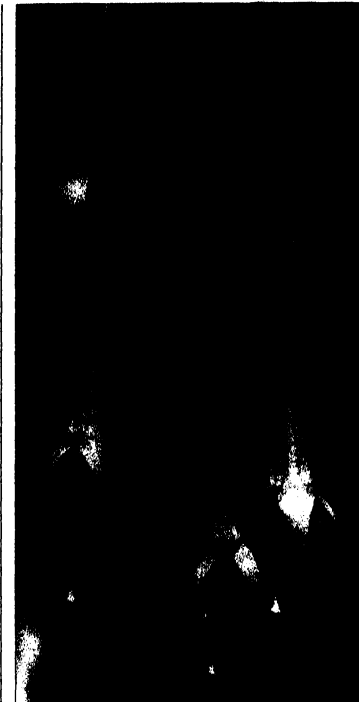
***F. fulgens*** ☼ ♀ Upright shrub with spreading branches and ovate to heart-shaped, pale green leaves, 9–23cm (3½–9in) long, with fine, gland-tipped red teeth, flushed red beneath. Pendent terminal racemes of very small flowers, 4–5cm (1½–2in) long, have pink to dull red tubes, pale red sepals tinged yellow-green towards the margins, and bright red corollas. The fruit are oblong-ellipsoid and deep purple. †1.5m (5ft) or more, ↔ to 80cm (32in). Mexico. ☼ (min. 5°C/41°F)

***F. 'Garden News'*** ☼ ♀ Upright shrub with strong stems producing multiple blooms in each leaf axil. Medium, double flowers have short, thick pink tubes, frost-pink sepals, and magenta-rose corollas becoming rose-pink at the petal bases. †↔ 45–60cm (18–24in). \*\* (borderline)

***F. 'Gartenmeister Bonstedt'*** ♀ Vigorous, very free-flowering, upright Triphylla Group shrub, similar to *F. 'Thalia'*, bearing dark bronze-red leaves with purple undersides and very small, very long-tubed, brick-red flowers. †60–75cm (24–30in), ↔ 45–60cm (18–24in). ☼ (min. 5°C/41°F)

***F. 'Genii'*** ☼ ♀ Upright, free-flowering shrub with red shoots and lime-yellow foliage. Small, single flowers have cerise tubes and sepals, and violet corollas turning purple-red. †↔ 75–90cm (30–36in). \*\* (borderline)

***F. 'Golden Marinka'*** ☼ ♀ Trailing shrub with variegated leaves of green and yellow. Produces an abundance of medium, single, rich red flowers with slightly darker red corollas. †15–30cm (6–12in), ↔ 30–45cm (12–18in). \*

*Fuchsia fulgens*

***F. 'Gruss aus dem Bodethal'*** ☼ (Black fuchsia). Freely branching shrub bearing medium, single flowers with crimson tubes and sepals, and very dark purple corollas. †30–45cm (12–18in), ↔ 45–60cm (18–24in). \*

***F. 'Heidi Weiss'*** see *F. 'White Ann'*.

***F. 'Herald'*** ♀ Vigorous, free-flowering, upright shrub. Medium, single flowers have scarlet tubes and sepals, and deep purple corollas. †↔ 60–90cm (24–36in). \*\* (borderline)

***F. 'Hermiena'***. Trailing shrub bearing small to medium, single blooms with white tubes, narrow white sepals, and violet-purple corollas. †15–30cm (6–12in), ↔ 30–45cm (12–18in). \*

***F. 'Hidcote'*** ☼ Free-flowering, upright shrub with light green foliage. Medium, single flowers have waxy cream tubes and sepals, and pale salmon-pink corollas shaded with light rose-pink. †45–60cm (18–24in), ↔ 30–60cm (12–24in). \*

***F. 'Jack Shahan'*** ☼ ♀ Free-flowering, trailing shrub bearing large, single flowers with pale rose-pink tubes

*Fuchsia boliviana* var. *alba**Fuchsia* 'Checkerboard'*Fuchsia* 'Coralie'*Fuchsia* 'Garden News'*Fuchsia* 'Golden Marinka'*Fuchsia* 'Gruss aus dem Bodethal'*Fuchsia* 'Hidcote'*Fuchsia* 'Jack Shahan'*Fuchsia* 'Joy Patmore'*Fuchsia* 'La Campanella'*Fuchsia* 'Lady Thumb'*Fuchsia* 'Lena'

*Fuchsia 'Genii'*

and sepals, and rose-pink corollas.  $\uparrow$  30–45cm (12–18in),  $\leftrightarrow$  45–60cm (18–24in). \*

**F. 'Joy Patmore'**  $\square$  Vigorous, upright shrub bearing medium, single flowers with white tubes, and rich carmine-red corollas; the waxy white sepals are tinged pink on the undersides.  $\uparrow$  30–45cm (12–18in),  $\leftrightarrow$  45–60cm (18–24in). \*

**F. 'Koralle'** see *F. 'Coralie'*.

**F. 'La Campanella'**  $\square$  Very free-flowering, lax shrub, with sparse growth initially, then rapidly filling out. Small, semi-double flowers have white tubes, white sepals with a slight pink flush, and purple corollas.  $\uparrow$  15–30cm (6–12in),  $\leftrightarrow$  30–45cm (12–18in). \*

**F. 'Lady Thumb'**  $\square$  Free-flowering, upright shrub bearing small, semi-double flowers with light carmine-red tubes and sepals, and white corollas with slight carmine-red veining. A sport of *F. 'Tom Thumb'*.  $\uparrow$  15–30cm (6–12in),  $\leftrightarrow$  30–45cm (12–18in). \*\* (borderline)

**F. 'Lena'**  $\square$  Vigorous, free-flowering, very hardy, lax shrub bearing toothed, pale to mid-green leaves and medium, single to semi-double flowers with flesh-pink, almost white tubes and sepals, the tubes half-reflexed; the rose-magenta corollas are paler pink at the bases.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  60–75cm (24–30in). \*\* (borderline)

**F. 'Leonora'**  $\square$  Vigorous, upright, freely branching shrub with medium, bell-shaped, single, soft pink flowers.

$\uparrow$  60–75cm (24–30in),  $\leftrightarrow$  30–60cm (12–24in). \*

**F. 'Little Jewel'**. Upright shrub bearing medium, single flowers with carmine-red tubes, star-shaped, carmine-red sepals, and light purple corollas with faint carmine-red markings at the bases.  $\uparrow$  45–60cm (18–24in),  $\leftrightarrow$  30–45cm (12–18in). \*

**F. 'Love's Reward'**  $\square$  Upright, short-jointed shrub bearing small to medium, single flowers with white to pale pink tubes and sepals, and violet-blue corollas.  $\uparrow$  30–45cm (12–18in). \*

**F. 'Lye's Unique'**  $\square$  Free-flowering, upright shrub with strong stems. Medium, single flowers have waxy white tubes and sepals, and salmon-orange corollas.  $\uparrow$  45–60cm (18–24in),  $\leftrightarrow$  30–45cm (12–18in). \*

**F. 'Machu Picchu'**  $\square$  Very free-flowering, lax, trailing shrub. Small, single flowers have pale salmon-pink tubes and sepals (with pink undersides to the sepals), and salmon-pink corollas.  $\uparrow$  30–60cm (12–24in). \*

**F. magellanica**  $\square$  Erect shrub with ovate-elliptic, scalloped to toothed, hairless leaves, 1.5–6cm (½–2½in) long, occasionally with minute stiff hairs, sometimes tinted red beneath. Throughout summer, freely produces small flowers with red tubes, deep red, rarely white or pale pink, wide-spreading sepals, and purple corollas. The fruit are oblong and red-purple. Suitable for hedging in frost-free areas.  $\uparrow$  to 3m (10ft),  $\leftrightarrow$  2–3m (6–10ft). Chile, Argentina. \*\* (borderline).

**'Riccantonii'** see *F. 'Riccantonii'*.

**F. 'Margaret'**  $\square$  Very vigorous, upright shrub bearing abundant small, double flowers with carmine-scarlet tubes and sepals, and violet-purple corollas. Suitable for hedging in frost-free areas.  $\uparrow$  to 1.2m (4ft). \*\* (borderline)

**F. 'Margaret Brown'**  $\square$  Free-flowering, upright shrub with strong stems and light green foliage. Bears small, single, 2-tone pink flowers in summer.  $\uparrow$  60–90cm (24–36in). \*\* (borderline)

**F. 'Marinka'**  $\square$  Extremely free-flowering, trailing shrub with dark green leaves veined red beneath. Medium, single flowers have red tubes and sepals, and slightly darker red corollas.  $\uparrow$  15–30cm (6–12in),  $\leftrightarrow$  45–60cm (18–24in). \*

*Fuchsia 'Mrs. Lovell Swisher'*

**F. 'Mary'**  $\square$  Upright Triphylla Group shrub bearing elliptic, dark green leaves, veined red-purple. Very small, vivid crimson flowers have long tubes and reflexed sepals.  $\uparrow$  30–60cm (12–24in).  $\odot$  (min 5°C/41°F)

**F. 'Micky Gault'**  $\square$  Free-flowering, upright shrub with light green foliage. Small, semi-erect, single flowers have white tubes flushed pink, white sepals with very pale pink undersides, and pink-purple corollas.  $\uparrow$  30–45cm (12–18in),  $\leftrightarrow$  45–60cm (18–24in). \*

**F. 'Mieke Meursing'**. Upright, bushy, freely branching shrub bearing medium, single or semi-double flowers with red tubes and sepals, and pale pink corollas veined deeper pink.  $\uparrow$  30–60cm (12–24in). \*

**F. 'Mrs. Lovell Swisher'**  $\square$  Very vigorous, upright shrub bearing masses of small, single flowers with flesh-pink tubes, pinkish white sepals, and deep rose corollas.  $\uparrow$  45–60cm (18–24in),  $\leftrightarrow$  30–60cm (12–24in). \*

**F. 'Mrs. Popple'**  $\square$  Upright, bushy, vigorous shrub with deep green leaves. Medium, single flowers have scarlet tubes and sepals, and cerise-centred, purple-violet corollas.  $\uparrow$  1–1.1m (3–3½ft). \*\*\* (borderline)

**F. 'Nellie Nuttall'**  $\square$  Vigorous, very free-flowering, early-blooming, upright shrub bearing small, upward-looking, single flowers with bright red tubes and sepals, and red-veined white corollas.  $\uparrow$  15–45cm (6–18in),  $\leftrightarrow$  30–45cm (12–18in). \*

**F. 'Neopolitan'**. Upright shrub with wiry stems bearing separate, very small, single flowers of red, pink, or white on the same plant. The sepals of each flower reflex back to the tube, and each corolla opens flat.  $\uparrow$  45–60cm (18–24in),  $\leftrightarrow$  60–90cm (24–36in). \*

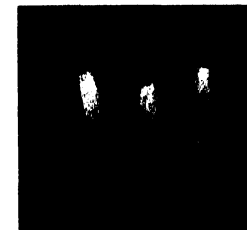
**F. 'Other Fellow'**  $\square$  Very free-flowering, upright shrub bearing small, single flowers with waxy white tubes, green-tipped white sepals, and white-based, coral-pink corollas.  $\uparrow$  30–45cm (12–18in). \*

**F. 'Pacquesa'**  $\square$  Upright shrub with foliage borne on freely branching, short-jointed stems. Large, single flowers have deep red tubes, reflexed, glowing, deep red sepals, and pure white corollas veined deep red.  $\uparrow$  45–60cm (18–24in),  $\leftrightarrow$  30–45cm (12–18in). \*

**F. parviflora of gardens** see *F. x bacillaris*.

**F. 'Peppermint Stick'**. Upright shrub bearing medium to large, double flowers with carmine-red tubes and upturned, carmine-red sepals, each with a distinct white stripe down the middle. The corollas have rich, royal-purple petals in the centre, and light carmine-rose petals with purple outer margins.  $\uparrow$  45–75cm (18–30in). \*

**F. 'Phyllis'**  $\square$  Very hardy, vigorous, upright shrub bearing masses of small to medium, semi-double flowers with cerise-flushed, waxy, rose-red tubes and sepals, and rose-cerise corollas. Use for hedging.  $\uparrow$  1–1.5m (3–5ft),  $\leftrightarrow$  75–90cm (30–36in). \*\* (borderline)

*Fuchsia 'Leonora'**Fuchsia 'Love's Reward'**Fuchsia 'Lye's Unique'**Fuchsia 'Machu Picchu'**Fuchsia magellanica**Fuchsia 'Margaret Brown'**Fuchsia 'Marinka'**Fuchsia 'Mary'**Fuchsia 'Micky Gault'**Fuchsia 'Mrs. Popple'**Fuchsia 'Nellie Nuttall'**Fuchsia 'Other Fellow'*

F

*Fuchsia* 'Tom Thumb'

**F. 'Postiljon'**. Trailing shrub bearing small, single flowers. The tubes are creamy white flushed pale pink, the sepals are creamy white flushed rose-pink beneath, and the magenta corollas turn dark mauve-purple when mature.  $\pm 30-45\text{cm}$  (12-18in). \*

**F. 'President Margaret Slater'**. Free-flowering, trailing shrub bearing medium, single flowers with long, thin white tubes and slightly twisted white sepals, flushed salmon-pink on the insides and deep salmon-pink beneath, and mauve-pink corollas.  $\pm 30-45\text{cm}$  (12-18in),  $\leftrightarrow 45-75\text{cm}$  (18-30in). \*

**F. 'Princess Dollar'** see *F. 'Dollar Princess'*.  
**F. procumbens**  $\blacksquare$  (Trailing fuchsia). Prostrate shrub with rounded, heart-shaped leaves, 6-20mm ( $\frac{1}{4}$ - $\frac{3}{4}$ in) long. In summer, produces small, upward-facing flowers, with greenish yellow to pale orange tubes (red-based when mature), and purple-tipped green sepals. There are no corollas, and the stamens bear bright blue pollen. The spherical, glaucous, bright red fruit, to 1.5cm

( $\frac{1}{2}$ in) long, resemble miniature plums.  $\pm 10-15\text{cm}$  (4-6in),  $\leftrightarrow 1-1.2\text{m}$  (3-4ft). New Zealand. \*\* (borderline)

**F. 'Red Spider'**. Vigorous, trailing shrub bearing medium, single flowers with deep crimson tubes, narrow, recurved crimson sepals, and deep rose-red corollas.  $\pm 15-30\text{cm}$  (6-12in),  $\leftrightarrow 30-60\text{cm}$  (12-24in). \*

**F. 'Riccantonii'**  $\blacksquare$   $\nabla$  syn. *F. magellanica* 'Riccantonii'. Extremely hardy, upright shrub bearing dark green leaves with a slight bronze sheen. Small, single flowers have scarlet tubes and sepals, and dark purple corollas. Suitable for hedging in frost-free areas.  $\pm 2-3\text{m}$  (6-10ft),  $\leftrightarrow 1-2\text{m}$  (3-6ft). \*\*\* (borderline)

**F. 'Rough Silk'**. Trailing shrub with light green foliage. Large, single flowers have pale carmine-pink tubes, upward-sweeping, pale carmine-pink sepals, and crimson-red corollas becoming paler at the bases.  $\pm 15-30\text{cm}$  (6-12in),  $\leftrightarrow 30-60\text{cm}$  (12-24in). \*

**F. 'Royal Velvet'**  $\nabla$  Vigorous, very free-flowering, upright shrub. Medium, double flowers have crimson-red tubes,

upturned, crimson-red sepals, and deep purple corollas.  $\pm 45-75\text{cm}$  (18-30in),  $\leftrightarrow 30-60\text{cm}$  (12-24in). \*

**F. 'Rufus'**  $\blacksquare$  syn. *F. 'Rufus the Red'*. Vigorous, early-flowering, upright shrub producing medium, single flowers with bright red tubes, sepals, and corollas.

$\pm 45-75\text{cm}$  (18-30in),  $\leftrightarrow 30-60\text{cm}$  (12-24in). \*\* (borderline)

**F. 'Rufus the Red'** see *F. 'Rufus'*.

**F. 'Swingtime'**  $\blacksquare$   $\nabla$  Vigorous, free-flowering, lax, upright shrub bearing red-veined, dark green leaves with finely toothed edges. Large, double blooms have shiny, rich red tubes and sepals, and bright white corollas.  $\pm 30-60\text{cm}$  (12-24in),  $\leftrightarrow 45-75\text{cm}$  (18-30in). \*

**F. 'Thalia'**  $\blacksquare$   $\nabla$  Vigorous, upright Triphylla Group shrub bearing dark olive-green leaves with purple-tinged undersides, and abundant, very small, rich orange-scarlet flowers with very long tubes.  $\pm 45-90\text{cm}$  (18-36in).  $\blacklozenge$  (min.  $5^{\circ}\text{C}/41^{\circ}\text{F}$ )

**F. 'Tom Thumb'**  $\blacksquare$   $\nabla$  Extremely free-flowering, early-flowering, upright shrub bearing small, single flowers with carmine-red tubes and sepals, and mauve corollas veined carmine-red.  $\pm 15-30\text{cm}$  (6-12in). \*\* (borderline)

**F. 'Tom West'**  $\blacksquare$  Upright, lax shrub with green-and-cream-variegated, cerise-veined foliage. Small, single flowers have red tubes and sepals, and purple corollas.  $\pm 30-60\text{cm}$  (12-24in). \*

**F. 'Walsingham'**. Lax, upright shrub with toothed, emerald-green leaves. Medium, semi-double flowers have pale pink tubes, upward-sweeping, pale pink sepals, pale lavender-lilac corollas, and very distinctive, crimped petal margins.  $\pm 30-45\text{cm}$  (12-18in),  $\leftrightarrow 45-60\text{cm}$  (18-24in). \*

**F. 'White Ann'**, syn. *F. 'Heidi Weiss'*. Vigorous, free-flowering, upright shrub bearing dark green leaves with crimson midribs. Medium, double flowers have crimson-cerise tubes and sepals, and white corollas with scarlet veins.  $\pm 30-60\text{cm}$  (12-24in). \*\*

**F. 'Winston Churchill'**  $\nabla$  Extremely free-flowering, bushy, upright shrub bearing medium, fully double flowers with green-tipped pink tubes, broad, reflexed, green-tipped pink sepals, and lavender-blue corollas, maturing to pale purple.  $\pm 45-75\text{cm}$  (18-30in). \*

#### ▷ *Fuchsia*,

Australian see *Correa*

Black see *Fuchsia* 'Gruss aus dem Bodethal'

Californian see *Zauschneria*

Lilac see *Fuchsia arborescens*

Trailing see *Fuchsia procumbens*

Tree see *Schotia brachypetala*

▷ *Fuchsia* bush see *Eremophila glabra*

▷ *Fukanoki* see *Schefflera heptaphylla*

▷ *Fumewort* see *Corydalis solida*

▷ *Fumitory*, Climbing see *Adlumia fungosa*

## FURCRAEA

### AGAVACEAE

Genus of 12 or more species of perennial succulents from desert-like areas of the West Indies, Central America, and N. South America. Dense clusters of long, fleshy leaves are borne in terminal or basal rosettes. In summer, each rosette produces a large, terminal, pyramidal panicle bearing broadly bell-

shaped, pendulous, diurnal flowers. Small, adventitious plantlets often form between the flowers. Where temperatures drop below  $7^{\circ}\text{C}$  ( $45^{\circ}\text{F}$ ), grow in a temperate greenhouse; in warmer climates, use in a desert garden or as specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. During growth, water moderately and apply a low-nitrogen fertilizer monthly. Keep just moist in autumn and winter. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. Protect from winter wet. See also pp.48-49.

• **PROPAGATION** Sow seed at  $15-24^{\circ}\text{C}$  ( $59-75^{\circ}\text{F}$ ) in spring. Divide offsets or pot up plantlets in summer.

• **PESTS AND DISEASES** Susceptible to scale insects.

**F. foetida** 'Mediopicta'  $\blacksquare$  syn.

*F. foetida* 'Variegata', *F. gigantea* 'Mediopicta'. Succulent, sometimes clump-forming, with a stem 80-90cm (32-36in) long, and terminal rosettes of broadly inversely lance-shaped to lance-shaped, bright, glossy, mid-green leaves, to 2.5m (8ft) long, with creamy white longitudinal lines; the margins are smooth or bear a few hooked spines. In summer, bears inflorescences, 6-12m (20-40ft) high, of strongly scented white flowers, 5-6cm (2-2 $\frac{1}{2}$ in) long, with green outer petals. Produces plantlets freely.  $\pm 1-1.2\text{m}$  (3-4ft),  $\leftrightarrow 2.5\text{m}$  (8ft). Probably West Indies, possibly S. Brazil.  $\blacklozenge$  (min.  $7^{\circ}\text{C}/45^{\circ}\text{F}$ )

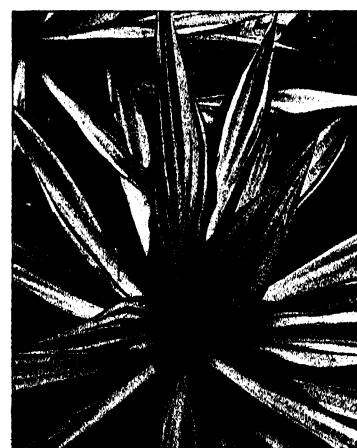
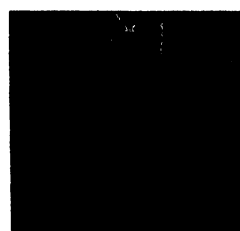
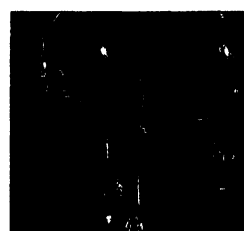
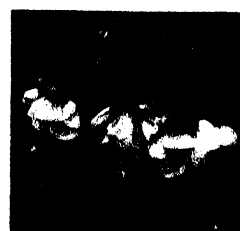
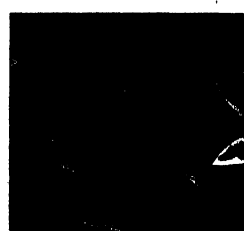
**F. foetida** 'Variegata' see *F. foetida* 'Mediopicta'.

**F. gigantea** 'Mediopicta' see *F. foetida* 'Mediopicta'.

**F. sellon**. Variable succulent, sometimes clump-forming, with stems to 1.5m (5ft) long. Bears spreading terminal rosettes of narrowly lance-shaped to sword-shaped, rough, glossy, mid-green leaves, 1.2m (4ft) or more long, with large, brown, marginal, hooked spines. Lax-branched inflorescences, to 5m (15ft) high, of faintly scented white flowers, 6-7cm (2 $\frac{1}{2}$ -3in) long, with green outer petals, develop in summer. Produces plantlets freely.  $\pm 1.5\text{m}$  (5ft),  $\leftrightarrow 2\text{m}$  (6ft). Mexico, Guatemala, Colombia.  $\blacklozenge$  (min.  $7^{\circ}\text{C}/45^{\circ}\text{F}$ ).

'Marginata' has pale, green-white leaf margins.

▷ *Furze* see *Ulex*, *U. europaeus*

*Furcraea foetida* 'Mediopicta'*Fuchsia procumbens**Fuchsia* 'Riccantonii'*Fuchsia* 'Rufus'*Fuchsia* 'Swingtime'*Fuchsia* 'Thalia'*Fuchsia* 'Tom West'

# G

## GAGEA

### LILIACEAE

Genus of about 50 species of small, bulbous perennials from Europe, N. Africa, and W. and C. Asia. They are grown for their star-shaped to cup- or funnel-shaped, yellow or white flowers, borne in umbels or racemes, with prominent leaf-like bracts, from spring to early summer. The leaves are basal, long, and linear or linear-lance-shaped. Some species produce bulbils in the axils of basal leaves and in the inflorescences. Most are suitable for a rock garden; in wet climates, *G. graeca* is best grown in an alpine house or bulb frame.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Plant bulbs 3.5cm (1½in) deep. Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.2) and grit in full light. Water freely in growth; keep just moist when dormant. Outdoors, grow in well-drained, humus-rich soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Separate bulbils when dormant and pot up bulbils after flowering.
- **PESTS AND DISEASES** Trouble free.

*G. arvensis* see *G. villosa*.

*G. graeca*, syn. *Lloydia graeca*. Delicate, bulbous perennial with very narrow, linear leaves, 4–12cm (1½–5in) long. In spring, bears umbels of up to 5 pendent, funnel-shaped, purple-veined white flowers, to 1.5cm (½in) long. Keep dry when dormant. ‡ 5–10cm (2–4in), ↔ 5cm (2in). Greece (including Crete), S. Turkey. \*\*

*G. peduncularis*. Bulbous perennial with narrow, linear leaves, 6–30cm (2½–12in) long, taller than the flower stems. Loose racemes of up to 7 funnel-shaped yellow flowers, 1.5–3cm (½–1¼in) across, with central green stripes on the outsides, are produced in spring. ‡ 5–15cm (2–6in), ↔ 5cm (2in). Balkans, N. Africa. \*\*\* (borderline).

*G. villosa*, syn. *G. arvensis*. Bulbous perennial with linear leaves, 16cm (6in) long. In spring, bears loose umbels of up to 15 star-shaped yellow flowers, 2cm (¾in) across. Increases rapidly by bulbils borne from the basal leaf axils. ‡ 5–10cm (2–4in), ↔ 5cm (2in). Europe, N. Africa, Turkey, Iran. \*\*\*

## GAILLARDIA

Blanket flower

### ASTERACEAE/COMPOSITAE

Genus of 30 species of annuals, perennials, and biennials found in open, sunny habitats on prairies and hillsides in W., C., and S. North America and South America. They bear entire, toothed, lobed, or pinnatifid, hairy leaves, produced in basal rosettes and

alternately on the stems. Red, orange, or yellow, daisy-like flowerheads, with dark purple, brown, red, or yellow disc-florets, are borne on long stems. The numerous cultivars are bushy, leafy plants with brightly coloured flowerheads and a long flowering period. They are effective in a sunny border and are also good for cutting.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun; poor soil is tolerated. Dead-head regularly. In cool climates, cut perennials back to about 15cm (6in) in late summer, before frosts, to encourage new basal growth, which usually overwinters well.
- **PROPAGATION** Sow seed of annual and perennial species at 13–18°C (55–64°F) in early spring; annual seed may also be sown *in situ* in late spring or early summer. Most perennials flower in their first year from seed. Divide perennials in spring or take root cuttings in winter.
- **PESTS AND DISEASES** Susceptible to downy mildew and to slug damage on young growth.

*G. aristata* ■ Erect but often spreading perennial with inversely lance-shaped to lance-shaped, entire or toothed, shallowly lobed or pinnatifid, greyish green leaves, to 20cm (8in) long. From summer to autumn, produces flowerheads, to 10cm (4in) across, with yellow ray-florets, sometimes tinged red at the base, and reddish orange disc-florets. Requires staking. ‡ 75cm (30in), ↔ 60cm (24in). W. Canada (British Columbia, Saskatchewan) to W. USA (Arizona, New Mexico). \*\*\*



*Gaillardia x grandiflora* 'Dazzler'

*G. x grandiflora* (*G. aristata* x *G. pulchella*). Bushy, often short-lived perennial with inversely lance-shaped, entire or lobed, sometimes pinnatifid, grey to mid-green leaves, to 30cm (12in) long. Flowerheads, 7–14cm (3–5½in) across, with yellow ray-florets, touched red at the bases, and yellow-brown disc-florets, are produced from early summer to early autumn. ‡ to 90cm (36in), ↔ 45cm (18in). Garden origin. \*\*\*. 'Burgunder', syn. 'Burgundy', has deep wine-red flowerheads; ‡ 50–60cm (20–24in). 'Dazzler' ■ ♀ is short-lived and has bright orange-red, yellow-tipped ray-florets and maroon disc-florets; ‡ 60–85cm (24–34in). 'Goblin' see 'Kobold'. 'Golden Goblin' see 'Goldkobold'. 'Goldkobold', syn. 'Golden Goblin', has deep golden



*Gaillardia aristata*



*Gaillardia x grandiflora* 'Kobold'

yellow ray-florets and darker yellow disc-florets; ‡ 25cm (10in). 'Kobold' ■ syn. 'Goblin', has rich red, yellow-tipped ray-florets and red disc-florets; ‡ 30cm (12in). 'Wirral Flame' has yellow-tipped, deep orange-red flowerheads; ‡ to 75cm (30in).

*G. pulchella* (Blanket flower, Indian blanket). Upright, bushy annual with spoon-shaped to inversely lance-shaped, entire or coarsely toothed, grey-green leaves, to 8cm (3in) long. From summer to autumn, produces red-tipped yellow, or entirely red or yellow flowerheads, to 5cm (2in) across, with purple disc-florets. ‡ 45cm (18in), ↔ 30cm (12in). C. and S. USA, Mexico. \*\*\*. **Plume Series** cultivars have double, red or yellow flowerheads; ‡ 30cm (12in). 'Portola Giants' have bronzed scarlet, gold-tipped flowerheads, to 6cm (2½in) across.

## GALANTHUS

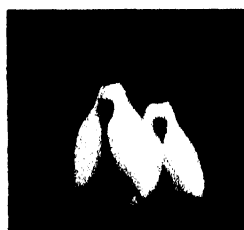
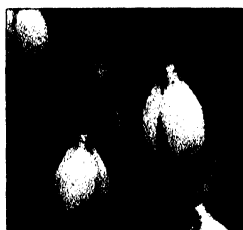
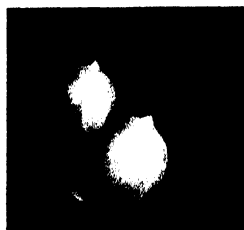
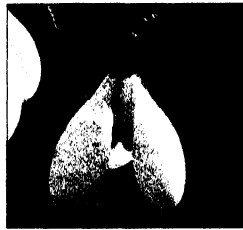
Snowdrop

### AMARYLLIDACEAE

Genus of about 19 species of bulbous perennials found from Europe to W. Asia, mostly in upland woodland but also in rocky sites. They bloom mainly from late winter to mid-spring, each bulb usually producing a single, pendent bloom with an arching flower-stalk on a slender stem, above 2, rarely 3, semi-erect, strap-shaped to inversely lance-shaped, basal leaves. The pear-shaped flowers are white, with 3 small inner tepals variably marked green, and 3 larger, spreading outer tepals. They are sometimes scented. Most snowdrops are vigorous and easily grown; some are suitable for naturalizing in grass or light woodland, and grow well in borders and rock gardens. All parts may cause mild stomach upset if ingested; contact with the bulbs may irritate skin.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil that does not dry out in summer, in partial shade.
- **PROPAGATION** Sow seed of species as soon as ripe in containers in an open frame; keep shaded in summer. *Galanthus* species hybridize readily in gardens and seed may not come true. Lift and divide clumps of bulbs as soon as the leaves begin to die down after flowering.
- **PESTS AND DISEASES** Prone to narcissus bulb fly and grey mould (*Botrytis galanthina*).

G

*Galanthus* 'Atkinsii'*Galanthus caucasicus*  
of gardens*Galanthus elwesii**Galanthus gracilis**Galanthus ikariae**Galanthus* 'John Gray'*Galanthus* 'Magnet'*Galanthus nivalis*  
'Pusey Green Tip'*Galanthus nivalis*  
'Sandersii'*Galanthus plicatus*  
subsp. *byzantinus**Galanthus rizehensis**Galanthus* 'S. Arnott'

**G. allenii.** Bulbous perennial with broad, dull, somewhat glaucous leaves, 6cm (2½in) long. In late winter and early spring, bears rounded, almond-scented flowers, 2cm (¾in) long, with a large green mark at the tip of each inner tepal. May be difficult to establish. † 12cm (5in), ↔ 8cm (3in). Unknown origin; probably hybrid from the Caucasus. \*\*\*

**G. 'Arnott's Seedling'** see *G. 'S. Arnott'*.

**G. 'Atkinsii'** ☐ ♀ Vigorous, bulbous perennial with narrow, glaucous leaves, to 10cm (4in) long. In late winter, bears slender, elongated flowers, 3cm (1¼in) long, with a heart-shaped green mark at the tip of each inner tepal. May produce malformed tepals. † 20cm (8in), ↔ 8cm (3in). \*\*\*

**G. 'Augustus'.** Robust, bulbous perennial producing broad, pale green leaves, 8–10cm (3–4in) long, each with a glaucous central channel and recurved or folded margins. In late winter and early spring, bears flowers, 1.5–2cm (½–¾in) long, with an H-shaped green mark on each inner tepal. † 15cm (6in), ↔ 8cm (3in). \*\*\*

**G. 'Brenda Troyle'.** Vigorous, bulbous perennial with narrow, glaucous, grey-green leaves, 8–15cm (3–6in) long. In late winter, produces flowers 2–3cm (¾–1¼in) long, with an inverted V-shaped green mark at the tip of each inner tepal. † 20cm (8in), ↔ 8cm (3in). \*\*\*

*Galanthus nivalis* 'Flore Pleno'

**G. caucasicus of gardens** ☐ ♀ Variable, bulbous perennial with broad, glaucous leaves, to 12cm (5in) long, recurving with age. From late autumn to early spring, produces flowers to 3cm (1¼in) long, with a green mark at the tip of each inner tepal. Now considered a variant of *G. elwesii*. † 10–15cm (4–6in), ↔ 8cm (3in). Probably Turkey. \*\*\*

**'Double'** see *G. 'Lady Beatrix Stanley'*.

**G. corymbosus** see *G. reginae-olgae*.

**G. elwesii** ☐ ♀ Robust, bulbous perennial with broad, sometimes twisted, glaucous leaves, 10–15cm (4–6in) long. In late winter, bears slender, honey-scented flowers, 2–3cm (¾–1¼in) long, with 2 green markings, which sometimes merge, on each inner tepal. † 12–22cm (5–9in), ↔ 8cm (3in). Balkans, W. Turkey. \*\*\*

**var. minor** see *G. gracilis*.

**G. fosteri.** Slender, bulbous perennial with narrow, bright, deep green leaves, 8–14cm (3–5½in) long. In late winter, bears flowers 1.5–2.5cm (½–1in) long, with inner tepals marked green at the

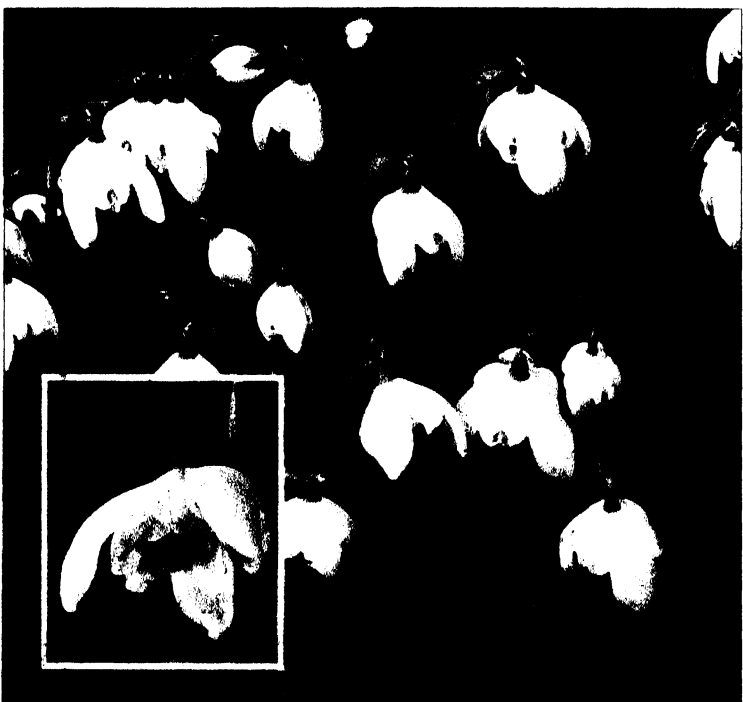
bases and apices. Needs a dry site. Plant bulbs 10cm (4in) deep to minimize development of non-flowering bulbs. † to 8–20cm (3–8in), ↔ 5cm (2in).

**S. Turkey, Lebanon. \*\*\* (borderline)**

**G. gracilis** ☐ syn. *G. elwesii* var. *minor*, *G. graecus* of gardens. Slender, bulbous perennial with linear, twisted, glaucous leaves, 5–15cm (2–6in) long. In late winter and early spring, produces scented flowers, to 1.5–2.5cm (½–1in) long, each with 2 green markings on the flared inner tepals, and with long, pale green ovaries. † 10cm (4in), ↔ 5cm (2in). Bulgaria, Greece, Turkey. \*\*\*

**G. graecus of gardens** see *G. gracilis*.

**G. ikariae** ☐ syn. *G. latifolius* of gardens. Bulbous perennial with broad, glossy, bright green leaves, 6–16cm (2½–6in) long. In late winter and early spring, bears flowers, 1–3cm (½–1¼in) long, with a large green mark at the tip of each inner tepal. Much confused with *G. woronowii*. † 10–15cm (4–6in), ↔ 5cm (2in). Aegean Islands, Turkey. \*\*\*

*Galanthus nivalis* 'Lady Elphinstone' (inset: flower detail)

**G. 'Jacquenetta'.** Robust, bulbous perennial producing narrow leaves, 10cm (4in) long, each with a somewhat glaucous central stripe and slightly folded margins. In late winter, bears large, double flowers to 2.5cm (1in) across, occasionally with a few irregular tepals; the inner tepals are strongly marked green at the tips, the outer tepals sometimes each have a faint green mark. † 20cm (8in), ↔ 8cm (3in). \*

**G. 'John Gray'** ☐ Robust, bulbous perennial with narrow, grey-green leaves, 8–18cm (3–7in) long. Very large flowers, 3–3.5cm (1¼–1½in) long, are borne on arching stems in early winter, the inner tepals each with an X-shaped, dark green mark. † 15cm (6in), ↔ 8cm (3in). \*\*\*

**G. 'Ketton'.** Robust, bulbous perennial with narrow, glaucous leaves, 7–15cm (3–6in) long. In late winter, produces large flowers, 3cm (1¼in) or more long, with a pair of green marks, sometimes joined, at the tip of each inner tepal. † 18cm (7in), ↔ 8cm (3in). \*\*\*

**G. 'Lady Beatrix Stanley'**, syn. *G. caucasicus* 'Double'. Bulbous perennial with narrow, glaucous leaves, 8–15cm (3–6in) long, erect then recurved. Bears double flowers, to 2.5cm (1in) across, with a tiny green mark at the tip of each inner tepal, in late winter and early spring. † 12cm (5in), ↔ 5cm (2in). \*\*\*

**G. latifolius of gardens** see *G. ikariae*.

**G. 'Magnet'** ☐ ♀ Vigorous, bulbous perennial producing narrow, grey-green leaves, 8–16cm (3–6in) long, with slightly folded margins. In late winter and early spring, bears large flowers, 2–2.5cm (¾–1in) long, on very long flower-stalks; the inner tepals each have an inverted V-shaped green mark at the tip. † 20cm (8in), ↔ 8cm (3in). \*\*\*

**G. 'Merlin'.** Robust, bulbous perennial with narrow, grey-green leaves, 8–15cm (3–6in) or more long. In late winter and early spring, produces large flowers, 2–3cm (¾–1¼in) long, the inner tepals mostly covered with deep green marks. † 18cm (7in), ↔ 8cm (3in). \*\*\*

**G. 'Mighty Atom'.** Bulbous perennial producing narrow, glaucous leaves, 5–12cm (2–5in) long. In late winter, bears large flowers, 3–3.5cm (1¼–1½in) long, with an inverted V-shaped, deep green mark at the tip of each inner tepal. † 12cm (5in), ↔ 8cm (3in). \*\*\*



**G. nivalis** ♀ (Common snowdrop). Bulbous perennial with narrow, glaucous leaves, 5–16cm (2–6in) long. Small flowers, 1.5–2cm (½–¾in) long, with an inverted V-shaped green mark at the tip of each inner tepal, are honey-scented and produced in winter. ↑ 10cm (4in). Pyrenees to Ukraine. \*\*\*. **'Flore Pleno'** ♂ ♀ is robust, with irregular, double flowers. It is sterile, but increases rapidly from offsets. **'Howick Yellow'** see 'Sandersii'. **'Lady Elphinstone'** ♂ has grey-green leaves and double flowers in late winter and early spring. The inner tepal markings are yellow on established plants; ↑ 12cm (5in), ↔ 8cm (3in). **'Lutescens'** see 'Sandersii'. **'Pusey Green Tip'** ♂ has irregularly double flowers with pale green markings on the outer tepals. **'Sandersii'** ♂ syn. 'Howick Yellow', 'Lutescens', is slender with yellow markings on the inner tepals and ovary. **'Scharlokii'**, syn. 'Scharlockii', has slender flowers, with green markings on the outer tepals, overtopped by spathe split in 2. **'Viridapicis'** has a very long spathe, sometimes split in 2, and green marks on the outer tepal tips.

**G. 'Ophelia'**. Vigorous, bulbous perennial with narrow, glaucous leaves, 10–14cm (4–5½in) long. In late winter, neat, double flowers, to 2cm (¾in) across, the outer tepals marked green, are borne on tall stems. ↑ 20cm (8in), ↔ 8cm (3in). \*\*\*.

**G. plicatus** ♀ Bulbous perennial producing broad, dull green leaves, 8–18cm (3–7in) long, with glaucous central bands and recurved margins. In late winter and early spring, bears flowers 2–3cm (¾–1¼in) long, with a single green mark at the tip of each inner tepal. ↑ to 20cm (8in), ↔ 8cm (3in). Ukraine (Crimea), Romania, N. Turkey. \*\*\*. **subsp. byzantinus** ♂ ♀ has green markings at the base and apex of each inner tepal. Turkey (N.W. Anatolia).

**G. reginae-olgae**, syn. *G. corcyrensis*. Slender, bulbous perennial with narrow, recurving, grey-green leaves, to 6cm (2½in) long, each with a narrow, glaucous central stripe. In autumn, bears faintly scented flowers, to 2.5cm (1in) long, the inner tepal tips marked green. Needs a dry site. ↑ 10cm (4in), ↔ 5cm (2in). Italy (Sicily), Greece, former Yugoslavia. \*\*\*. **subsp. vernalis** blooms in late winter and early spring.

**G. rizehensis** ♂ Slender, bulbous perennial with linear, recurved, deep green leaves, 6–12cm (2½–5in) long. In late winter and early spring, bears small flowers, 1.5–2cm (½–¾in) long, marked with green at the tips of the inner tepals. ↑ 12cm (5in), ↔ 5cm (2in). N.E. Turkey. \*\*\*.

**G. 'Robin Hood'**. Bulbous perennial with narrow, glaucous leaves, 8–14cm (3–5½in) long. In late winter and early spring, bears slender flowers, 2.5–3cm (1–1¼in) long, with an X-shaped green mark on each inner tepal. ↑ 15cm (6in), ↔ 8cm (3in). \*\*\*.

**G. 'Sam Arnott'** see *G. 'S. Arnott'*.

**G. 'S. Arnott'** ♂ ♀ syn. *G. 'Arnott's Seedling'*, *G. 'Sam Arnott'*. Vigorous, bulbous perennial with grey-green leaves, 7–16cm (3–6in) long. In late winter and early spring, bears large, strongly honey-scented, well-rounded flowers, 2.5–3.5cm (1–1½in) long, with

an inverted V-shaped green mark at the tip of each inner tepal. ↑ 20cm (8in), ↔ 8cm (3in). \*\*\*.

**G. 'Straffan'**. Vigorous, bulbous perennial producing narrow, glaucous leaves, 8–16cm (3–6in) long. In mid-spring, bears flowers, 2.5cm (1in) long, with a small, inverted V-shaped green mark on each inner tepal. Each bulb may produce 2 flower stems. ↑ 12cm (5in), ↔ 8cm (3in). \*\*\*.

## GALAX

Wandflower

DIAPENSIACEAE

Genus of one species of tufted, evergreen perennial from open woodland in the mountains of S.E. USA. It has a creeping rootstock, rounded leaves, and spike-like racemes of small white flowers. Grown for its flowers and autumn foliage colour. *G. urceolata* is suitable for underplanting in a shaded shrub border, for a large rock garden, or as ground cover in a woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, acid, humus-rich soil in partial shade; ensure that the roots do not dry out. Mulch annually in spring with pine needles or other acidic organic matter.

• **PROPAGATION** Sow seed in containers of lime-free (ericaceous) seed compost in an open frame outdoors in autumn. Separate rooted runners in early spring.

• **PESTS AND DISEASES** May be damaged by slugs and snails.

**G. aphylla** see *G. urceolata*.

**G. urceolata** ♂ syn. *G. aphylla*. Tufted, evergreen perennial with rounded, toothed, glossy, dark green leaves, to 8cm (3in) across, which are heart-shaped at the bases. The leaves turn red-bronze in autumn. In late spring and early summer, produces narrow, upright, spike-like racemes, to 25cm (10in) long, of tiny, 5-lobed white flowers. ↑ to 30cm (12in), ↔ to 1m (3ft). S.E. USA. \*\*\*.



*Galax urceolata*

## GALEGA

Goat's rue

LEGUMINOSAE/PAPILIONACEAE

Genus of about 6 species of tall, bushy perennials from sunny but damp meadows, slopes, and banks in C. and S. Europe, W. Asia, and the mountains of tropical E. Africa. They have alternate, pinnate, soft green or blue-tinged leaves, 8–20cm (3–8in) long, and produce erect, axillary racemes of pea-like, white, blue, mauve, or bicoloured flowers. *Galega* species and cultivars naturalize well, and are effective in a border from midsummer onwards; some are also good for cutting.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any, preferably moist soil in full sun or partial shade. They need staking, and may spread rapidly in rich soil. Cut back flowered stems to prevent self-seeding.
- **PROPAGATION** Sow seed of species, soaked overnight, in containers in a cold frame in spring. Divide cultivars between late autumn and spring.
- **PESTS AND DISEASES** Pea and bean weevils may be a problem.

**G. 'Candida'**, syn. *G. x hartlandii* 'Candida'. Erect, clump-forming perennial producing pinnate, soft green leaves, with oval leaflets, 5cm (2in) long. Pure white flowers, the standard petals 1.5–2cm (½–¾in) across, are borne in racemes to 15cm (6in) long, from early summer to early autumn. ↑ to 1.5m (5ft), ↔ 90cm (36in). \*\*\*.

**G. x hartlandii 'Candida'** see *G. 'Candida'*.

**G. 'Her Majesty'** see *G. 'His Majesty'*.

**G. 'His Majesty'** ♂ syn. *G. 'Her Majesty'*. Erect, clump-forming perennial with pinnate, soft green leaves comprised of oval leaflets, 5cm (2in) long. Bicoloured mauve-pink and white flowers, the standard petals 1.5–2cm (½–¾in) across, are borne in racemes to 15cm (6in) long, from early summer to early autumn. ↑ to 1.5m (5ft), ↔ 90cm (36in). \*\*\*.

**G. 'Lady Wilson'**. Erect, clump-forming perennial with pinnate, soft green leaves comprised of oval leaflets, 5cm (2in) long. From early summer to early autumn, produces racemes, to 15cm (6in) long, of bicoloured mauve-blue and white flowers, the standard petals 2cm (¾in) across. ↑ to 1.5m (5ft), ↔ 90cm (36in). \*\*\*.



*Galega 'His Majesty'*



*Galega orientalis*

**G. officinalis**. Vigorous, clump-forming perennial with lax, sometimes spreading stems and pinnate, soft green leaves, each with 9–17 oblong, elliptic, or lance-shaped, pointed leaflets, 1.5–5cm (½–2in) long. 30–50 white or mauve, sometimes bicoloured flowers, 1.5cm (½in) long, are produced in racemes to 18cm (7in) long, from early summer to early autumn. ↑ 0.3–1.5m (1–5ft), ↔ 90cm (36in). C. and S. Europe, Turkey to Pakistan. \*\*\*.

**G. orientalis** ♂ Rhizomatous, upright to somewhat lax perennial with pinnate, soft green leaves comprised of 13–25 ovate-lance-shaped leaflets, 6cm (2½in) long, with long, sharp-pointed tips. In late spring and early summer, produces racemes, to 15cm (6in) long, of blue-violet flowers, to 2cm (¾in) long. Spreads rapidly. ↑ 1.2m (4ft), ↔ 60cm (24in). Caucasus. \*\*\*.

- ▷ **Gale, Sweet** see *Myrica gale*
- ▷ **Galeobdolon** see *Lamium*
- G. luteum** see *L. galeobdolon*
- ▷ **Galingale** see *Cyperus longus*
- American** see *C. eragrostis*

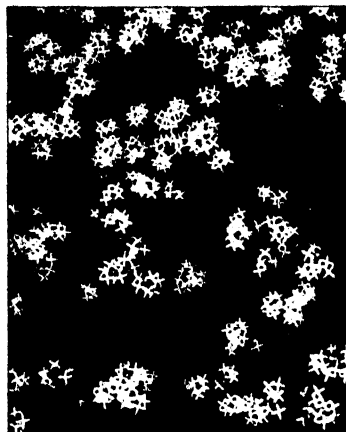
## GALIUM

Bedstraw

RUBIACEAE

Genus of about 400 species of annuals and perennials, widely distributed in woodland, hedgerows, meadows, and wasteland, mainly in temperate regions. Most have whorls of linear leaves, produced on weak stems that may be scrambling and rough, with recurved bristles, or shorter and smooth. The flowers are white, pinkish white, or yellow, and are borne singly or in terminal or axillary panicles or cymes; they are tubular, with usually 4 or 5 corolla-lobes, which are often recurved. Many *Galium* species are invasive, but a few are good garden plants, including *G. odoratum*, which is useful as ground cover in woodland and is attractive to bees. Alpine species from dry regions are best grown in a scree bed or alpine house.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in almost any, preferably moist, humus-rich soil in sun or partial shade.
- **PROPAGATION** Sow seed in containers in a shaded cold frame as soon as ripe. Separate rhizomes in autumn or early spring.
- **PEST AND DISEASES** Trouble free.

*Galium odoratum*

**G. odoratum** ■ syn. *Asperula odorata* (Sweet woodruff). Rhizomatous perennial with erect, square, almost hairless stems, and whorls of 6–9 lance-shaped to elliptic, emerald-green leaves, 2.5–5cm (1–2in) long, with tiny, marginal prickles. Bears star-shaped, scented white flowers, 4–6mm (¼–¼in) across, in umbel-like cymes, 8cm (3in) across, from late spring to midsummer. Leaves may scorch in strong sun. Hay-scented when dried. †45cm (18in), ↔ indefinite. Europe, N. Africa, Russia (Siberia). \*\*\*

▷ **Gallberry** see *Ilex glabra*

## GALTONIA

HYACINTHACEAE/LILIACEAE

Genus of 4 species of bulbous perennials from moist grassland in South Africa, grown for their cylindrical to conical racemes of pendent or nodding, tubular to trumpet-shaped, green or white flowers. Leaves are basal, semi-erect, broadly lance-shaped to linear-lance-shaped, and fleshy. Good for a sunny border. *Galtonia* species are particularly useful as they flower late in summer.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil that is reliably moist from spring to summer, in full sun. In areas with severe winters, lift and pot up in late autumn and overwinter in a cool greenhouse, or protect *in situ* with a deep winter mulch.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, keeping the seedlings frost-free for the first 2 years. Offsets can be removed in early spring.

• **PESTS AND DISEASES** Trouble free.

**G. candicans** ■ Bulbous perennial with linear-lance-shaped, grey-green leaves, 50–100cm (20–39in) long. Slender racemes of up to 30 pendent, tubular, slightly fragrant white flowers, to 5cm (2in) long, faintly tinged green at the bases, are produced on long, leafless stems in late summer. †1–1.2m (3–4ft), ↔ 10cm (4in). South Africa (Northern Transvaal, Eastern Transvaal, Orange Free State, KwaZulu/Natal, Eastern Cape), Lesotho. \*\*\*

**G. viridiflora** ♀ Bulbous perennial producing broad, lance-shaped, grey-green leaves, to 60cm (24in) long. In late summer, arching stems bear compact racemes of 15–30 nodding,

*Galtonia candicans*

trumpet-shaped, pale green flowers, 2–5cm (¾–2in) long. † to 1m (3ft), ↔ 10cm (4in). South Africa (Orange Free State, Eastern Cape), Lesotho. \*\*

▷ **Gardeners' garters** see *Phalaris arundinacea* var. *picta*

## GARDENIA

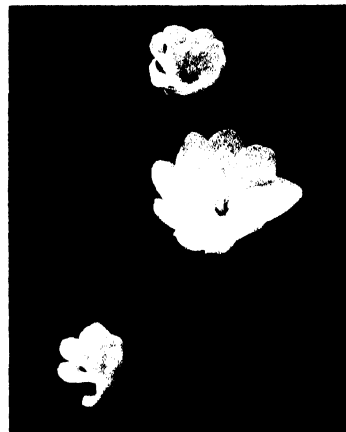
RUBIACEAE

Genus of about 200 species of evergreen trees and shrubs from open woodland or savannah in tropical regions of Africa and Asia. They are grown for their attractive foliage and fragrant, showy flowers. The opposite or whorled leaves are simple and leathery. The terminal or axillary, tubular to funnel-shaped flowers each have 5–12 spreading petal lobes, and are solitary or borne in few-flowered cymes. In cold climates, grow in a temperate or warm greenhouse. In warmer areas, grow in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light, with moderate humidity. Top-dress or pot on in spring. In growth, water freely with soft water and apply a balanced liquid fertilizer every 4 weeks. Keep barely moist in winter. Outdoors, grow in neutral to acid, fertile, humus-rich, moist but well-drained soil in partial or light dappled shade. Pruning group 1 for trees; group 8 for early-flowering shrubs; group 9 for late-flowering shrubs. May need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take greenwood

*Gardenia augusta* 'Veitchii'*Gardenia thunbergia*

cuttings in late spring or early summer, or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Whiteflies, stem and root mealybugs, and grey mould (*Botrytis*) may be a problem under glass.

**G. augusta** □ syn. *G. florida*, *G. grandiflora*, *G. jasminoides* (Cape jasmine, Common gardenia). Medium to large shrub, or sometimes small tree, frequently bushy, with ovate, elliptic, or lance-shaped, glossy, deep green leaves, 10cm (4in) or more long, usually borne in whorls of 3. From summer to autumn, produces 5- to 12-lobed, salverform, strongly fragrant, white to ivory flowers, to 8cm (3in) across, either singly or in few-flowered cymes. Usually grown in its double-flowered variants. †2–12m (6–40ft), ↔ 1–3m (3–10ft). China, Taiwan, Japan. ♀ (min. 10°C/50°F). 'Belmont', syn. 'Hadley', is a vigorous, freely branching clone with large leaves, to 15cm (6in) long, and double flowers that age from creamy white to yellow. 'Hadley' see 'Belmont'. 'Mystery' is compact, with very deep green leaves, and semi-double flowers; † to 1m (3ft). 'Veitchii' ■ syn. 'Veitchiana', is upright, with small green leaves, to 7cm (3in) long, and fully double, pure white flowers.

**G. capensis** see *Rothmannia capensis*.

**G. florida** see *G. augusta*.

**G. globosa** see *Rothmannia globosa*.

**G. grandiflora** see *G. augusta*.

**G. jasminoides** see *G. augusta*.

**G. rothmannia** see *Rothmannia capensis*.

**G. thunbergia** ■□ (White gardenia). Open, erect shrub or small tree with rigid branches and opposite pairs of elliptic, glossy, dark green leaves, 8–14cm (3–5½in) long, with wavy margins. From winter to spring, bears solitary, tubular, fragrant, white or cream flowers, to 6cm (2½in) across, with 8 spreading petal lobes. †2–5m (6–15ft), ↔ 1.5–2.5m (5–8ft). South Africa. ♀ (min. 7°C/45°F)

▷ **Gardenia**,

Common see *Gardenia augusta*

Paper see *Tabernaemontana divaricata*

White see *Gardenia thunbergia*

▷ **Garland flower** see *Daphne cneorum*,

*Hedychium coronarium*

▷ **Garlic** see *Allium sativum*

False see *Nothoscordum*

Golden see *Allium moly*

Rosy see *Allium roseum*

## GARRYA

GARRYACEAE

Genus of about 13 species of evergreen shrubs or small trees, occurring in woodland and scrub from W. USA to Central America and the West Indies. They are cultivated for their opposite pairs of narrowly ovate to broadly elliptic, leathery leaves, and for their pendent catkins, comprised of dioecious, petalless flowers. Male and female catkins are borne on separate plants: the males are generally more attractive; females produce spherical, purple-brown berries. Grow in a shrub border, against a wall, or as a windbreak in coastal areas.

• **HARDINESS** Frost hardy to half hardy; frost-hardy species may tolerate temperatures to -10°C (14°F).

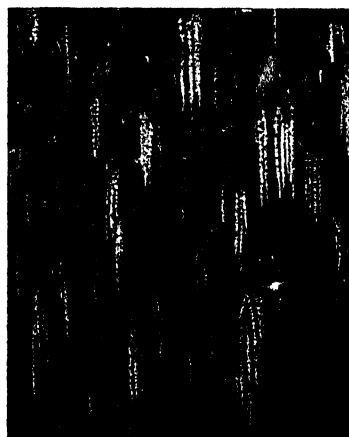
• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun or partial shade. Shelter from cold winds in frost-prone areas. Pruning group 8.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring, or take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Susceptible to fungal leaf spot.

**G. elliptica** ■□ (Silk-tassel bush).

Dense, upright, evergreen shrub or small tree with ovate to oblong-elliptic, wavy-margined leaves, to 8cm (3in) long, varying from glossy, grey-green to matt, dark green. Pendent, grey-green catkins, the males 15–20cm (6–8in) long, with yellow anthers, are produced from mid-winter to early spring. † to 4m (12ft).

*Garrya elliptica**Garrya x issaquahensis* 'Pat Ballard'

W. USA. \*\*'. 'Evie' is male, with strongly wavy-margined leaves and very long catkins, to 30cm (12in). 'James Roof' ♀ is male, with dark sea-green leaves and dense clusters of silver-grey catkins, to 20cm (8in) or more long. *G. x issaquahensis* 'Pat Ballard' ♂ Bushy, upright, evergreen shrub with red-purple shoots and ovate, slightly wavy-margined, glossy, mid-green leaves, to 7cm (3in) long. In midwinter, bears pendent, purple-tinged male catkins, to 20cm (8in) long. †4m (12ft), ↔ 3m (10ft). Garden origin. \*\*

## GASTERIA

ALOEACEAE/LILIACEAE

Genus of 50–80 species of stemless or very short-stemmed, perennial succulents, usually offsetting freely to form clumps, found in the lowlands, and sometimes hillsides, of Namibia and South Africa. They are grown for their flowers and foliage: the firm, dark or greyish green leaves, occasionally slightly suffused red, have white tubercles, and are frequently arranged in 2 ranks, later often forming rosettes and elongating; the usually pendulous, tubular flowers, swollen at the bases and sometimes green-tipped, are borne in lax racemes or few-branched panicles. Where temperatures drop below 7°C (45°F), grow in a temperate greenhouse, or as houseplants. In warm, dry climates, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in bright filtered light. During growth, water



*Gasteria bicolor* var. *liliputana*

moderately and apply a low-nitrogen liquid fertilizer every 4 or 5 weeks. Keep dry when dormant. Outdoors, grow in sharply drained, loamy soil, with added leaf mould, in full sun or dappled shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or summer.

Separate offsets, or take leaf cuttings, during the growing season.

• **PESTS AND DISEASES** Trouble free.

*G. bicolor* var. *liliputana* ♂ syn. *G. liliputana*. Clump-forming succulent with rosettes of lance-shaped to linear, toothed, conspicuously white-spotted, glossy, dark green leaves, to 6cm (2½in) long, rounded and keeled below, with tubercles towards the bases. Racemes of narrow, tubular, orange-green flowers, 1.5cm (½in) long, are produced from late spring to summer. †7cm (3in), ↔ 10cm (4in). South Africa (Western Cape, Eastern Cape). ♂ (min. 7°C/45°F)

*G. carinata* var. *verrucosa* ♂ syn. *G. verrucosa*. Clump-forming succulent with 2 ranks of 3-angled, linear-lance-shaped, greyish green leaves, 10–15cm (4–6in) long, grooved above, convex below; they are tapering and flat towards the blunt tips, and have thickened margins and white tubercles. Bears racemes of reddish orange flowers, to 1.5cm (½in) long, from late spring to summer. †15cm (6in), ↔ 30cm (12in). South Africa (Western Cape, Eastern Cape). ♂ (min. 7°C/45°F)

*G. liliputana* see *G. bicolor* var. *liliputana*.

*G. obliqua*, syn. *G. pulchra*. Clump-forming succulent with slender, 3-angled, linear, semi-triangular, sometimes sickle-shaped, usually tapering, greyish green leaves, 15–30cm (6–12in) long; they are cross-banded with white marks and have finely toothed, horny white margins. Racemes of red flowers, 2cm (¾in) long, are borne on long, reddish orange stalks from late spring to summer. †30cm (12in), ↔ 45cm (18in). South Africa (Eastern Cape). ♂ (min. 7°C/45°F)

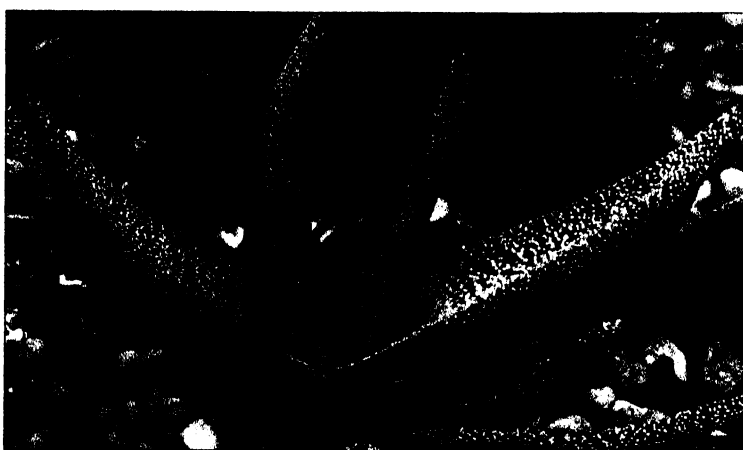
*G. pulchra* see *G. obliqua*.

*G. verrucosa* see *G. carinata* var. *verrucosa*.

▷ *Gaultheria* see *Gaultheria*

× *G. 'Pink Pixie'* see *G. x wisleyensis* 'Pink Pixie'

× *G. 'Wisley Pearl'* see *G. x wisleyensis* 'Wisley Pearl'



*Gasteria carinata* var. *verrucosa*

## GAULTHERIA

syn. × GAULNETTYA, PERNETTYA

ERICACEAE

Genus of approximately 170 species of evergreen shrubs, some rhizomatous, widely distributed in woodland and open, moist, rocky places in the Himalayas, E. Asia, Australasia, and North, Central, and South America. They are grown for their simple, alternate, usually leathery leaves; for their small, bell- or urn-shaped flowers, 4–7mm (¼–¼in) long, borne singly in the leaf axils or in racemes or panicles; and for their fleshy, usually spherical fruits. Suitable for woodland plantings, they can also be grown in a rock garden, a heather garden, or a peat garden or peat bank. All parts may cause mild stomach upset if ingested, except the fruits, which are edible.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in acid to neutral, peaty, moist soil in partial shade; full sun is tolerated where the soil is permanently moist. Pruning group 8; remove suckers to restrict growth.

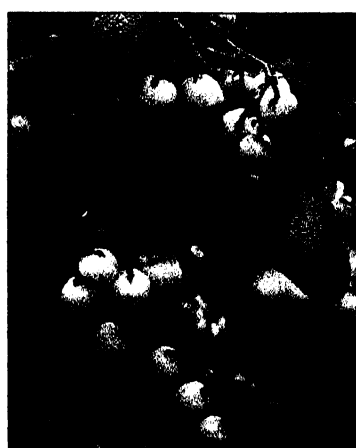
• **PROPAGATION** Sow seed in containers outdoors in a cold frame in autumn. Take semi-ripe cuttings in summer or remove rooted suckers (if produced) in spring.

• **PESTS AND DISEASES** Trouble free.

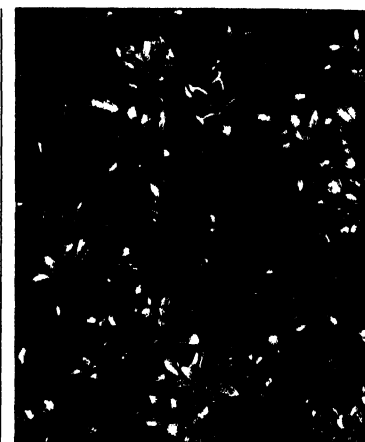
*G. cuneata* ♀ Dwarf, densely branched shrub with pointed, ovate-oblong to obovate, toothed, mid-green leaves, to 3cm (1¼in) long. Produces white flowers in racemes, 2.5–3.5cm (1–1½in) long, in late spring and early summer, followed by white fruit, to 6mm (¼in) across, in autumn. †to 30cm (12in), ↔ to 1m (3ft). W. China. \*\*\*

*G. forrestii*. Spreading, rounded shrub with arching shoots and narrowly ovate to oblong, sharp-pointed, bristly toothed, glossy, dark green leaves, to 9cm (3½in) long. In late spring and early summer, produces broadly urn-shaped, fragrant white flowers in racemes, 2.5–5cm (1–2in) long, followed by black fruit, 6mm (¼in) across. †to 1.5m (5ft). S.W. China. \*\*

*G. miqueliana* ♂ Compact, stiff-stemmed shrub with ovate to obovate, rounded to acute, toothed, dark green leaves, net-veined below, to 4cm (1½in) long. Short racemes, 2.5–5cm (1–2in) long, of urn- to bell-shaped white flowers, are produced in late spring and



*Gaultheria miqueliana*

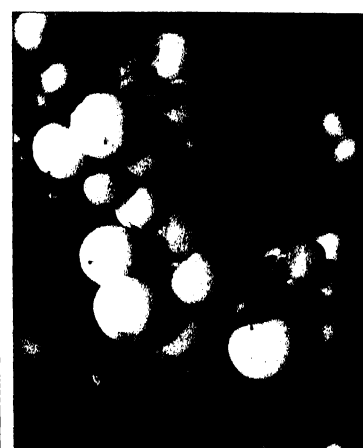


*Gaultheria mucronata* 'Mulberry Wine'

early summer, followed by white, sometimes pink-flushed white fruit, to 1cm (½in) across, in autumn. †to 30cm (12in), ↔ to 1m (3ft) or more. Japan. \*\*\*

*G. mucronata* ♀ syn. *Pernettya mucronata*. Compact, bushy, suckering shrub with oval-elliptic to oblong-elliptic, toothed, spine-tipped, glossy, dark green leaves, to 2cm (¾in) long. Produces nodding, urn-shaped, solitary, white, sometimes pink-flushed flowers, in late spring and early summer; they are followed by fruit to 1.5cm (½in) across, variously coloured from purple-red to white. Grow male and female plants together to ensure fruiting. †to 1.2m (4ft). Chile, Argentina. \*\*\*. 'Cherry Ripe' has bright cerise fruit. 'Edward Balls' is male, with upright red shoots and broadly oval, bright green leaves. 'Lilian' has lilac-pink fruit. 'Mother of Pearl' see 'Parelmoe'. 'Mulberry Wine' ♂ ♀ has magenta fruit, ripening to dark purple. 'Parelmoe', syn. 'Mother of Pearl', has light pink fruit. 'Sneeuw witje', syn. 'Snow White', has white fruit slightly spotted with pink. 'Snow White' see 'Sneeuw witje'.

'Wintertime' ♂ ♀ has pure white fruit. *G. myrsinoides*, syn. *G. prostrata*, *Pernettya prostrata*. Prostrate, creeping, rhizomatous shrub with elliptic to oblong-elliptic, bristly scalloped, sharp-pointed, dark green leaves, to 7mm (¼in) long. Solitary, urn-shaped white flowers are borne in early summer and followed by deep purple fruit, to 1.5cm (½in) across, with persistent, enlarged calyxes. †to 20cm (8in), ↔ to 40cm (16in). Costa Rica to C. Chile. \*\*\*.



*Gaultheria mucronata* 'Wintertime'

G

*Gaultheria shallon*

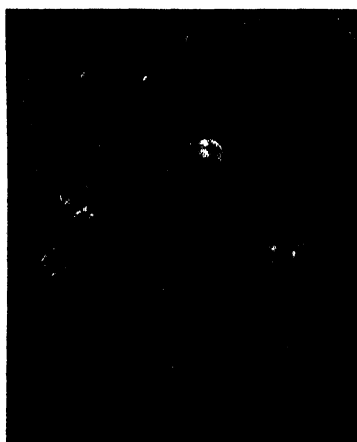
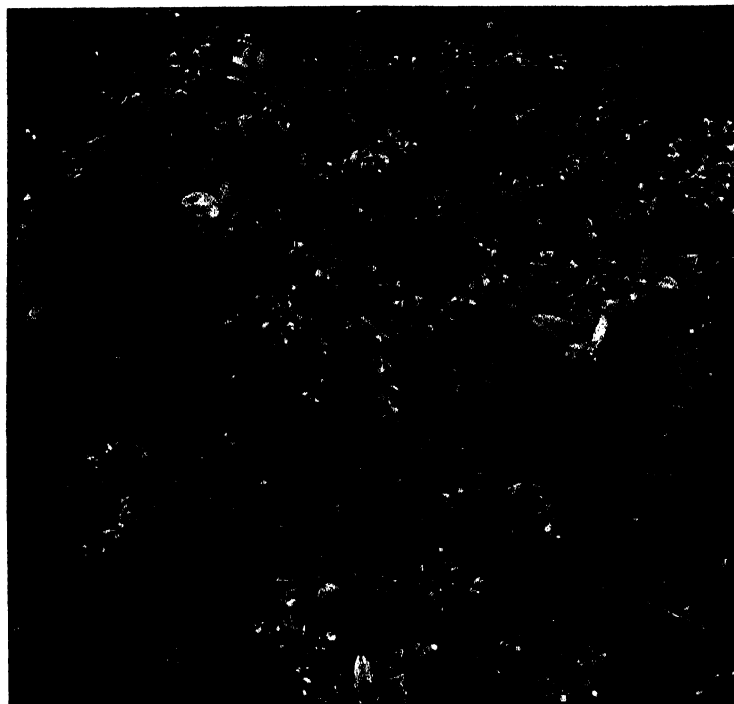
**subsp. *pentlandii***, syn. *Pernettya prostrata* subsp. *pentlandii*, is more upright, with oblong-ovate leaves, to 3cm (1¼in) long, and paler fruit; †↔ to 40cm (16in).

***G. nummularioides***. Dense, hairy-stemmed, prostrate shrub with rounded, ovate-elliptic, gland-tipped, bristly toothed, dull green leaves, to 1.5cm (½in) long, becoming smaller towards the stem tips. In late spring and early summer, bears solitary, urn-shaped, pink-flushed white or white-tinged red-brown flowers; these are followed by ovoid, purple-black fruit, to 8mm (⅜in) long, † 10cm (4in), ↔ 30cm (12in). Himalayas, China. \*\*\*

***G. procumbens*** ♀ (Checkerberry, Wintergreen). Creeping, rhizomatous shrub producing elliptic to elliptic-oblong, pointed or glandular-tipped, scalloped or bristly toothed, glossy, dark green leaves, to 5cm (2in) long. The leaves have a strong fragrance of wintergreen when crushed. In summer, produces urn-shaped, white or pale pink flowers, either singly or in small racemes, 1–2.5cm (½–1in) long; these are followed by aromatic scarlet fruit, 0.8–1.5cm (⅜–½in) across, which frequently persist until spring. Provides good ground cover in shade. † 15cm (6in), ↔ to 1m (3ft) or more. E. North America. \*\*\*

***G. prostrata*** see *G. myrsinoides*.

***G. pyroloides***. Rhizomatous, ground-covering shrublet with obovate to almost rounded, minutely spine-tipped, toothed, dark green leaves, to 3.5cm (1½in) long. In late spring, produces short racemes, to 2.5cm (1in) long, of

*Gaultheria tasmanica**Gaultheria x wisleyensis* 'Pink Pixie'

ovoid-urn-shaped, pink-flushed white flowers, which are followed by ellipsoid, blue-black fruit, to 8mm (⅜in) long. † 15cm (6in), ↔ to 50cm (20in). Himalayas. \*\*\*

***G. shallon*** ♂ (Salal, Shallon). Compact, bushy shrub, spreading vigorously by suckers, with red shoots and broadly ovate, sharp-pointed, bristly toothed, glossy, dark green leaves, to 10cm (4in) long. Bears arching racemes, to 10cm (4in) long, of broadly urn-shaped, pink-suffused white flowers, in late spring and early summer; they are followed by purple fruit, to 1cm (½in) across. † 1.2m (4ft), ↔ 1.5m (5ft). W. North America. \*\*\*

***G. tasmanica*** ♂ syn. *Pernettya tasmanica*. Mat-forming shrublet with narrowly elliptic to oval, scalloped, lustrous, mid-green leaves, to 8mm (⅜in) long, and axillary, solitary, bell-shaped white flowers borne in spring. Produces bright orange-red, occasionally white or yellow fruit, 6–8mm (¼–⅜in) across. Fruits freely, even in shade. † 7cm (3in), ↔ to 25cm (10in). Australia (Tasmania). \*\*\*

***G. trichophylla***. Prostrate, mat-forming, slender-stemmed, suckering shrub with elliptic, bristly toothed, glossy, dark green leaves, to 1cm (½in) long. In late spring, bears axillary, solitary, bell-shaped, white or pink flowers, the white sometimes pink-flushed, followed by pale greenish blue fruit, to 1cm (½in) across. Ideal for a rock garden or peat bank. † to 10cm (4in), ↔ to 30cm (12in). Himalayas, W. China. \*\*\*

***G. x wisleyensis*** (*G. mucronata* x *G. shallon*). Upright, suckering shrub with elliptic to elliptic-oblong, dark green leaves, to 4cm (1½in) long. Urn-shaped white flowers are produced in racemes, to 5cm (2in) long, in late spring and early summer, followed by purple-red fruit, 6mm (¼in) across. †↔ 1m (3ft). Garden origin. \*\*\*. '**Pink Pixie**' ♂ syn. x *Gaultheria* 'Pink Pixie', is dwarf but vigorous, spreading by suckers, and

has pink-tinged white flowers, followed by purple-red fruit; † to 30cm (12in), ↔ 45cm (18in). '**Wisley Pearl**', syn. x *Gaultheria* 'Wisley Pearl', has white flowers and dark purple-red fruit.

## GAURA

### ONAGRACEAE

Genus of about 20 species of annuals, biennials, perennials, and subshrubs from moist places and prairies in North America. They have alternate, simple, rosetted, lance-shaped to elliptic or spoon-shaped, pinnatifid, mainly basal leaves, and airy racemes or panicles of short-lived, flat, irregularly star-shaped, pink or white flowers, usually 4-petalled. They are graceful plants for a border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun, but drought and partial shade are tolerated.

• **PROPAGATION** Sow seed of annuals *in situ* in spring, and seed of perennials in containers in a cold frame from spring to early summer. Perennials may also be divided in spring, or increased by basal or softwood cuttings in spring or semi-ripe heel cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***G. biennis***. Subshrubby, hairy annual or biennial with stem leaves to 12cm (5in) long and basal leaves to 40cm (16in) long; both are narrowly elliptic with irregular margins. Racemes, 10–50cm (4–20in) long, of white flowers, to 3.5cm (1½in) across, fading to reddish pink, open at dusk in summer. Stems and foliage are flushed coral-red in late summer. † 1.8m (6ft) or more, ↔ to 1.2m (4ft). USA (Texas, Louisiana). \*\*\*

***G. lindheimeri*** ♂♀ Bushy, clump-forming perennial with slender stems bearing spoon-shaped to lance-shaped, toothed leaves, 2.5–8cm (1–3in) long. From late spring to early autumn, produces loose panicles, 20–60cm (8–24in) long, of pinkish white buds,

*Gaura lindheimeri*

opening at dawn to white flowers, 2.5cm (1in) across, fading to pink. † to 1.5m (5ft), ↔ 90cm (36in). USA (Texas, Louisiana). \*\*\*. '**Corrie's Gold**' has gold-margined leaves. '**Whirling Butterflies**' has grey-green leaves, and is very free-flowering, with red sepals; † 60–75cm (24–30in).

▷ **Gayfeather** see *Liatris*, *L. spicata*

## GAYLUSSACIA

### Huckleberry

### ERICACEAE

Genus of about 40 species of deciduous and evergreen shrubs from woodland and thickets in North and South America, cultivated mainly for their flowers and edible fruits. They have alternate, simple, entire or toothed leaves, and axillary racemes of urn- or bell-shaped flowers in spring. Excellent for a shrub border or open woodland.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in acid, peaty, moist but well-drained soil in full sun or partial shade. Pruning group 1 if deciduous; group 8 if evergreen.

• **PROPAGATION** Sow seed in containers in an open frame in autumn, or take softwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***G. baccata*** (Black huckleberry).

Upright, deciduous shrub with elliptic-oblong, mid- to dark green leaves, to 5cm (2in) long, sticky when young, turning red in autumn. Small, urn-shaped, dull red flowers, to 5mm (¼in) long, are produced in pendent racemes, to 4cm (1½in) long, in late spring; they are followed by edible, spherical, glossy black fruit, to 8mm (⅜in) across. †↔ 1m (3ft). E. North America. \*\*\*

## GAZANIA

### ASTERACEAE/COMPOSITAE

Genus of about 16 species of low-growing annuals or evergreen perennials from low altitude sands to alpine meadows in tropical Africa. They have mostly lance-shaped, basal leaves, often covered with grey, felted hairs on one or both surfaces, and varying from deeply lobed to pinnatifid, and from entire to toothed. Large, daisy-like, very brightly coloured, dark-centred flowerheads, which close in dull or cool weather, are produced over a long period in summer. Hybrid selections are the most



Gazania Chansonette Series

commonly cultivated, and are grown as annuals or half-hardy perennials, with leafy stems bearing spoon-shaped to oblong, often lobed leaves and variously coloured flowerheads. They are useful as summer bedding or in patio containers, and tolerate coastal conditions.

- **HARDINESS** Half hardy to frost tender; most can survive short periods at or below 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1), with added sharp sand, in full light. Water freely when in growth; keep just moist in winter. Outdoors, grow in light, sandy, well-drained soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed at 18–20°C (64–68°F) in late winter or early spring. Take basal cuttings in late summer or early autumn, to overwinter under glass.
- **PESTS AND DISEASES** Plants overwintered under glass may suffer from grey mould (*Botrytis*) and aphids.

**G. Chansonette Series** ■ ♀ Vigorous, spreading, evergreen perennials with glossy leaves, to 15cm (6in) long, dark green above, covered with silky white hairs beneath. In summer, bear solitary flowerheads in a mix of bronze, orange, rose-pink, salmon-pink, red-orange, or yellow, zoned in a contrasting colour. † to 20cm (8in), ↔ to 25cm (10in). \*

**G. Daybreak Series.** Spreading, evergreen perennials with glossy leaves, to 15cm (6in) long, dark green above, with silky white hairs below. In early summer, bear solitary flowerheads in bronze, orange, yellow, bright pink, or white, usually zoned in a contrasting



Gazania Talent Series 'Talent Yellow'

colour. † to 20cm (8in), ↔ to 25cm (10in). \*. 'Daybreak Bronze' is a single-colour selection.

**G. Mini-star Series** ♀ Compact, tuft-forming, evergreen perennials with glossy leaves, to 15cm (6in) long, dark green above, white silky-hairy beneath. Produce solitary, orange, white, golden yellow, beige, bronze, or bright pink flowerheads in summer, some zoned in a contrasting colour. † to 20cm (8in), ↔ to 25cm (10in). \*. 'Mini-star Tangerine' and 'Mini-star Yellow' are popular single-colour selections.

**G. Talent Series** ♀ Vigorous, evergreen perennials with highly ornamental, mid-green leaves, to 15cm (6in) long, grey-felted on both surfaces. In summer, produce solitary, yellow, orange, pink, or brown flowerheads on short stems just above the leaves. † to 25cm (10in). \*. 'Talent Yellow' ■ has bright, deep yellow flowers.

▷ **Gean** see *Prunus avium*

## GEISSORHIZA

IRIDACEAE

Genus of 60–70 species of erect, cormous perennials from dry lowland sand to moist upland areas in southern Africa. Leaves are basal, lance-shaped, linear, or thread-like, and often curled. Flowers are usually funnel-shaped, and are borne in 1- or 2-sided spikes, with leaf-like bracts, in spring. In frost-prone areas, grow at the base of a warm wall with winter protection, or in a temperate greenhouse. In warmer climates, grow in a bed or border.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full sun. Water freely during the growing season, but keep dry when dormant. Outdoors, grow in well-drained, sandy loam in full sun. Protect from winter wet.
- **PROPAGATION** Sow seed in containers in a cold frame when ripe; separate offset corms when dormant.
- **PESTS AND DISEASES** Trouble free.

**G. radians**, syn. *G. rochensis* (Winecups). Upright perennial with thread-like, sometimes 4-angled, basal leaves, to 15cm (6in) long. Bears funnel-shaped, red-centred, white-ringed purple flowers, 1–2cm (½–¾in) long, in spring. † 15cm (6in), ↔ 5cm (2in). South Africa (Western Cape). \*\*

**G. rochensis** see *G. radians*.

## GELSEMIUM

LOGANIACEAE

Genus of 3 species of evergreen, twining, perennial climbers from S.E. Asia, S. North America, and Central America, usually found in woodland. They are grown for their funnel-shaped, sweetly fragrant flowers, which have 5 petal lobes, borne singly or in small, terminal and axillary clusters. Leaves are simple, entire, and arranged in opposite pairs. In frost-prone areas, grow in a cool or temperate greenhouse. In warmer climates, train over an arbour, pergola or arch, or against a wall.

- **HARDINESS** Frost tender; but *G. sempervirens* will withstand short periods down to 0°C (32°F).

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full or bright filtered light. Top-dress or pot on in spring. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun or partial shade, with shelter from cold, drying winds. Pruning group 12, after flowering.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or take semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Scale insects and whiteflies may infest greenhouse plants.

**G. sempervirens** ♀ (Carolina jasmine, Evening trumpet, False yellow jasmine). Vigorous, slender, twining perennial with stems that spiral anti-clockwise, and oblong to narrowly ovate, glossy leaves, to 5cm (2in) long. Bears clusters, 5–8cm (2–3in) across, of fragrant, bright, pale to deep yellow flowers, 3cm (1¼in) long, with darker, orange throats, mainly in spring and summer. † 3–6m (10–20ft). S.E. USA, Mexico, Guatemala. \* (borderline)

## GENISTA

syn. CHAMAESPARTIUM,  
ECHINOSPARTUM  
Broom

LEGUMINOSAE/PAPILIONACEAE

Genus, similar to *Cytisus*, of about 90 species of mainly deciduous, sometimes spiny shrubs and occasionally trees, found in habitats ranging from pasture and moorland to cliffs and rocky places in Europe, the Mediterranean, and W. Asia. They have alternate, simple or 3-palmate leaves, usually 3–10mm (¼–½in) long, sometimes more, but may be nearly leafless. They are cultivated for their small, pea-like yellow flowers, borne singly or in terminal racemes or dense heads. Grow as specimen plants, or in a shrub border or rock garden. In frost-prone areas, grow half-hardy species in a cool greenhouse.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in light, poor to moderately fertile, well-drained soil in full sun. Pruning group 1; group 3 for *G. cinerea*. Do not cut into old wood.
- **PROPAGATION** Sow seed in containers outdoors in a cold frame in autumn or spring, or take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Prone to aphids.



Genista hispanica

**G. aetnensis** ■ ♀ ◯–◯ (Mount Etna broom). Upright, deciduous tree or large shrub with weeping branches bearing slender, bright green shoots. Linear leaves are produced on young stems only and soon fall. Fragrant, golden yellow flowers, to 1.5cm (½in) long, are freely borne at the ends of pendent shoots in mid- and late summer. †↔ 8m (25ft). Italy (Sardinia, Sicily). \*\*

**G. cinerea**. Erect, deciduous shrub with arching branches, silky when young, and narrow, lance-shaped to elliptic, grey-green leaves. Pairs of fragrant yellow flowers, to 1.5cm (½in) long, are produced profusely in irregular racemes, to 20cm (8in) long, in early and midsummer. † 3m (10ft), ↔ 4m (12ft). S.W. Europe. \*\*

**G. decumbens** see *Cytisus decumbens*.

**G. delphinensis** ♀ syn.

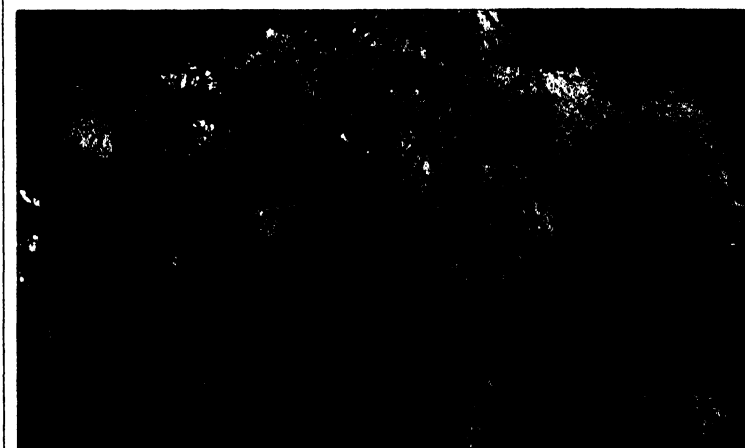
*Chamaespartium sagittale* subsp.

*delphinense*, *G. sagittalis* subsp.

*delphinensis*. Low, prostrate, deciduous subshrub with a few lance-shaped, mid-green leaves, softly hairy beneath, and winged green stems that give the plant a leafy, evergreen appearance. Small, golden yellow flowers, to 1.5cm (½in) long, are borne in spike-like, axillary and terminal racemes, to 4cm (1½in) long, in late spring and early summer. † to 15cm (6in), ↔ to 30cm (12in). Pyrenees. \*\*\*

**G. fragrans** of gardens see *Cytisus* × *spachianus*.

**G. hispanica** ■ (Spanish gorse). Dense, mound-forming, spiny, deciduous shrub with ovate-oblong, mid-green leaves, hairy or silky beneath, only present on flowering branches. Bears almost



Genista aetnensis

G

*Genista lydia*

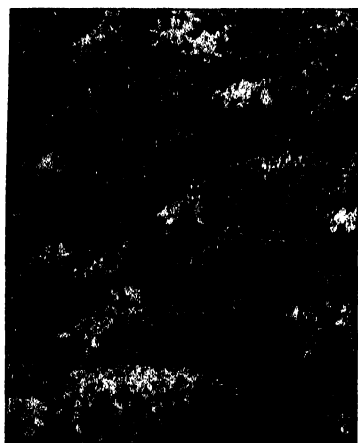
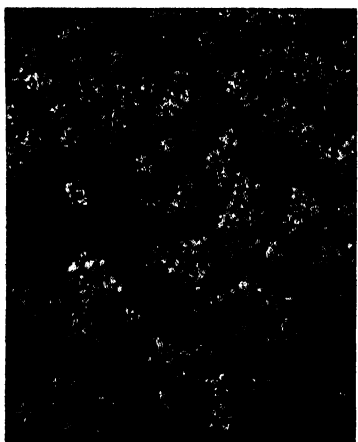
terminal racemes, 2.5cm (1in) across, of 2–12 golden yellow flowers, 1cm (½in) long, in late spring and early summer. †75cm (30in), ↔ 1.5m (5ft). S.W. Europe. \*\*\* (borderline).

'Compacta' is of very dense habit.

**G. lydia** ■ Deciduous, domed shrub bearing slender, arching, prickle-tipped, grey-green branches, with linear-elliptic, blue-green leaves. In early summer, produces a profusion of yellow flowers, to 1.5cm (½in) long, in short racemes, 5cm (2in) long, † to 60cm (24in), ↔ to 1m (3ft). E. Balkans. \*\*\*

**G. monosperma** see *Retama monosperma*.

**G. pilosa**. Deciduous, prostrate or semi-erect shrub, with downy, ascending branches bearing inversely lance-shaped, dark green leaves, to 1.5cm (½in) long,

*Genista pilosa* 'Procumbens'*Genista sagittalis**Genista tinctoria*

silky-hairy beneath. In late spring and early summer, produces bright yellow flowers, to 1cm (½in) long, in racemes to 14cm (5½in) long, † to 40cm (16in), ↔ to 1m (3ft). W. and C. Europe. \*\*\*.

'Lemon Spreader' see 'Yellow Spreader'. 'Procumbens' ■ has prostrate stems; † to 20cm (8in).

'Vancouver Gold' is spreading and mound-forming, with golden yellow flowers; †45cm (18in). 'Yellow Spreader', syn. 'Lemon Spreader', is low-growing and spreading, with lemon-yellow flowers; † to 30cm (12in).

**G. sagittalis** ■ syn. *Chamaespartium sagittale*. Low-growing, deciduous shrub with upright, broadly winged green stems that give the plant an evergreen appearance; they bear a few lance-shaped, mid-green leaves, to 2cm (¾in) long. In early summer, produces dense, spike-like racemes, to 4cm (1½in) long, of deep yellow flowers, 1cm (½in) long, †15cm (6in), ↔ to 1m (3ft). C. and S. Europe. \*\*\*. **subsp. delphinensis** see *G. delphinensis*.

**G. x spachiana** see *Cytisus x spachianus*.

**G. tenera** 'Golden Shower' ♀ Graceful, deciduous shrub with slender, arching shoots and narrowly oblong, grey-green leaves. In early and midsummer, bears dense racemes, to 5cm (2in) long, of fragrant, brilliant yellow flowers, to 1.5cm (½in) long, towards the ends of short, lateral branches. †3m (10ft), ↔ 5m (15ft). \*\*\*

**G. tinctoria** ■ (Dyer's greenweed). Variable, upright, deciduous shrub with narrow, elliptic-lance-shaped or inversely lance-shaped, bright, deep green leaves, to 5cm (2in) long. From spring to early summer, bears golden yellow flowers in upright racemes, 6cm (2½in) long, †60–90cm (24–36in), ↔ 1m (3ft). Europe, Turkey. \*\*\*. 'Flore Pleno' ♀ syn. 'Plena', is dwarf and spreading, with double flowers; †35cm (14in). 'Plena' see 'Flore Pleno'. 'Royal Gold' ♀ is upright, with flowers in long, conical panicles, to 8cm (3in) long; †1m (3ft).

▷ **Gentian** see *Gentiana*

Bottle see *Gentiana andrewsii*

Fringed see *Gentianopsis crinita*

Spotted see *Gentiana punctata*

Spring see *Gentiana verna*

Star see *Gentiana verna*

Trumpet see *Gentiana acaulis*, *G. clusii*

Willow see *Gentiana asclepiadea*

Yellow see *Gentiana lutea*

## GENTIANA

*Gentian*

GENTIANACEAE

Genus of about 400 species of hardy annuals, biennials, and deciduous, semi-evergreen, and evergreen perennials.

They are widely distributed throughout temperate zones, most occurring in alpine habitats, with some, mainly North American and Japanese species, in woodland. They bear large, usually trumpet-shaped, sometimes bell- or almost urn-shaped flowers from spring to autumn, mainly in shades of intense blue, but also in white, yellow, or occasionally red. Leaves are simple and borne along the stems in opposite pairs or whorls, or produced in basal rosettes. Many autumn-flowering species have overwintering rosettes and are classed as semi-evergreen; the flowered stems die back each year to the rosettes.

Small species, to about 15cm (6in) high, are suitable for a rock garden or peat terrace; more robust species are suitable for borders. Woodland natives, like *G. asclepiadea*, thrive in partially shaded sites, associating well with ferns and grasses. *G. sceptrum* is suitable for a bog garden; *G. lutea* is effective beside water. Autumn-flowering gentians associate well with small, late-flowering bulbs.

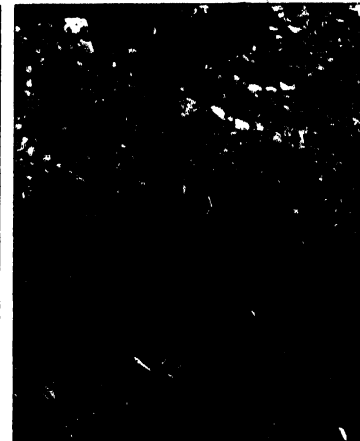
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, humus-rich, reliably moist but well-drained soil. Autumn-flowering species, unless otherwise stated, need neutral to acid soil. Site gentians in full sun only where summers are cool and damp; in areas with warm, dry summers, provide shade from hot sun.

• **PROPAGATION** Sow seed of species in containers in an open frame as soon as ripe. Divide or root offsets in spring.

• **PESTS AND DISEASES** Slugs and snails may cause damage; aphids and red spider mites may be a problem under glass. Susceptible to gentian rust fungus (*Puccinia gentianae*). Various soil fungi may cause stem rots.

**G. acaulis** ■ ♀ syn. *G. excisa*, *G. kochiana* (Trumpet gentian). Evergreen, mat-forming perennial with basal rosettes of elliptic to lance-shaped, pointed, glossy, dark green leaves, to 3.5cm (1½in) long. In late spring and early summer, produces solitary, trumpet-shaped flowers, to 5cm (2in)

*Gentiana acaulis**Gentiana alpina*

long, deep blue and spotted green inside, on short stems. †8cm (3in), ↔ to 30cm (12in). N.E. Spain, Alps, Italy, former Yugoslavia, Carpathians. \*\*\*. 'Alba' has white flowers, spotted green inside.

**G. alpina** ■ Mat-forming, evergreen perennial with basal rosettes of elliptic to rounded, leathery, mid-green leaves, to 2cm (¾in) long. In early summer, bears solitary, often stalkless, trumpet-shaped flowers, to 4.5cm (1½in) long, deep blue and spotted green inside. † to 5cm (2in), ↔ to 20cm (8in). Spain (Sierra Nevada), Pyrenees, Alps. \*\*\*. **G. andrewsii** (Bottle gentian). Erect, tufted, deciduous perennial with pairs of lance-shaped to oblong-ovate, deep green, stem leaves, 5–8cm (2–3in) long. In late summer, bears terminal clusters of 5 or more cylindrical to urn-shaped flowers, to 4cm (1½in) long, white, or dark blue with white on the lobes. †30–60cm (12–24in), ↔ 15cm (6in). E. North America. \*\*\*

**G. angustifolia** ■ Evergreen, clump-forming perennial with basal rosettes of linear-lance-shaped to inversely lance-shaped, dull green leaves, to 5cm (2in) long. In early summer, produces single, short-stalked, trumpet-shaped flowers, to 5cm (2in) long, deep sky-blue outside, paler and spotted green inside. † to 10cm (4in), ↔ to 30cm (12in). Pyrenees, Jura Mountains, S.W. Alps. \*\*\*

**G. asclepiadea** ■ ♀ (Willow gentian). Clump-forming herbaceous perennial with erect, then arching stems bearing opposite pairs, or whorls of 3, willow-like, lance-shaped to narrowly ovate, pointed, mid-green leaves, 5–8cm (2–3in) long. From mid- or late summer to early autumn, bears axillary clusters of 2 or 3 trumpet-shaped, dark to light blue flowers, to 5cm (2in) long, the throats rarely purple-spotted, or sometimes all white. †60–90cm (24–36in), ↔ 45cm (18in). Mountains of C. and S. Europe, Turkey. \*\*\*. **var. alba** has green-tinged white flowers.

'Knights Hayes' has white-throated, deep blue flowers; † to 60cm (24in). **G. cachemirica**, syn. *G. cashmeriana*. Rosette-forming herbaceous perennial with purple-tinged, procumbent stems, narrowly ovate, glaucous, mid-green basal leaves, 2.5–5cm (1–2in) long, and shorter, broader stem leaves. In late summer, bears 1–3 terminal, narrowly trumpet-shaped flowers, to 4cm (1½in) long, bright to pale blue, striped yellow



and darker blue. † to 15cm (6in), ↔ to 25cm (10in). Pakistan to India (Kashmir). \*\*\*

*G. cashmeriana* see *G. cachemirica*.  
*G. clusii* (Trumpet gentian). Evergreen, tufted perennial with basal rosettes of elliptic to oblong-lance-shaped, leathery, bright green leaves, to 2.5cm (1in) long. Solitary, trumpet-shaped, deep azure-blue flowers, to 5cm (2in) long, are paler and spotted olive-green inside; they appear in early summer. Lime-tolerant. † to 8cm (3in), ↔ to 30cm (12in). C. and S. Alps. \*\*\*

*G. crinita* see *Gentianopsis crinita*.  
*G. 'Devonhall'*. Robust, rosette-forming, semi-evergreen perennial, similar to *G. ornata* but more compact and vigorous, with linear, mid-green basal leaves, to 2.5cm (1in) long. Stem leaves are smaller and sharply acute. In autumn, produces prostrate stems with solitary, widely trumpet-shaped, pale blue flowers, about 5cm (2in) long, paler at the throats and spotted green inside. † 5cm (2in), ↔ to 20cm (8in). \*\*\*

*G. excisa* see *G. acaulis*.

*G. farreri*. Slender, trailing, semi-evergreen perennial with basal rosettes of linear-lance-shaped, bright green leaves, to 3.5cm (1½in) long, and paired, recurved stem leaves. In early autumn, bears solitary, narrowly trumpet-shaped, pale blue flowers, to 6cm (2½in) long, the tubes white with greenish blue spots and lines, on prostrate stems. † to 7cm (3in), ↔ to 30cm (12in). N.W. China. \*\*\*

*G. gracilipes*, syn. *G. purdomii*. Semi-evergreen, rosette-forming perennial with narrowly lance-shaped, dark green basal leaves, to 15cm (6in) long, and decumbent, branching stems with shorter leaves. In summer, produces solitary, long-stalked, narrowly trumpet-shaped, deep purplish blue flowers, to 3.5cm (1½in) long, stained green outside. Tolerates shade. † 15cm (6in), ↔ 20cm (8in). N.W. China. \*\*\*

*G. 'Inverleith'* ♀ Vigorous, procumbent, semi-evergreen, rosette-forming perennial, producing linear-lance-shaped, recurved, mid-green, basal leaves, to 2.5cm (1in) long. In autumn, bears solitary, trumpet-shaped flowers, to 6cm (2½in) long, of an intense pale blue with darker stripes on the outside, on prostrate stems. † to 10cm (4in), ↔ to 30cm (12in). \*\*\*

*G. 'Kingfisher'* ■ Rosette-forming, semi-evergreen perennial, similar to



*Gentiana asclepiadea*

*G. sino-ornata* but more compact, with linear-lance-shaped, mid- to dark green, basal leaves, to 2.5cm (1in) long. In autumn, bears solitary, trumpet-shaped, vivid blue flowers, to 4cm (1½in) long, on prostrate stems. † 5cm (2in), ↔ to 30cm (12in). \*\*\*

*G. kochiana* see *G. acaulis*.

*G. lagodechiana* see *G. septemfida* var. *lagodechiana*.

*G. lutea* ■ (Bitterwort, Yellow gentian). Erect, clump-forming herbaceous perennial with fleshy roots and elliptic to ovate, pleated, strongly ribbed, bluish green basal leaves, to 30cm (12in) long. Stem leaves are in pairs, fused at the base. Terminal and upper axillary clusters of 3-10 star-shaped yellow flowers, 2.5cm (1in) across, with very short tubes, are borne in midsummer. † to 1.5m (5ft), ↔ 60cm (24in). Pyrenees, Alps, Apennines, Carpathians. \*\*\*

*G. x macaulayi* 'Wells's Variety' ■ syn. *G. 'Wellsii'*. Semi-evergreen, rosette-forming perennial, with linear-lance-shaped, dark green, basal leaves, to 3.5cm (1½in) long. Solitary, trumpet-shaped, pale blue flowers, to 5cm (2in) long, sometimes mauve-flushed, with



*Gentiana lutea*

pale stripes outside, appear on prostrate stems from late summer to autumn. † 5cm (2in), ↔ to 30cm (12in). \*\*\*

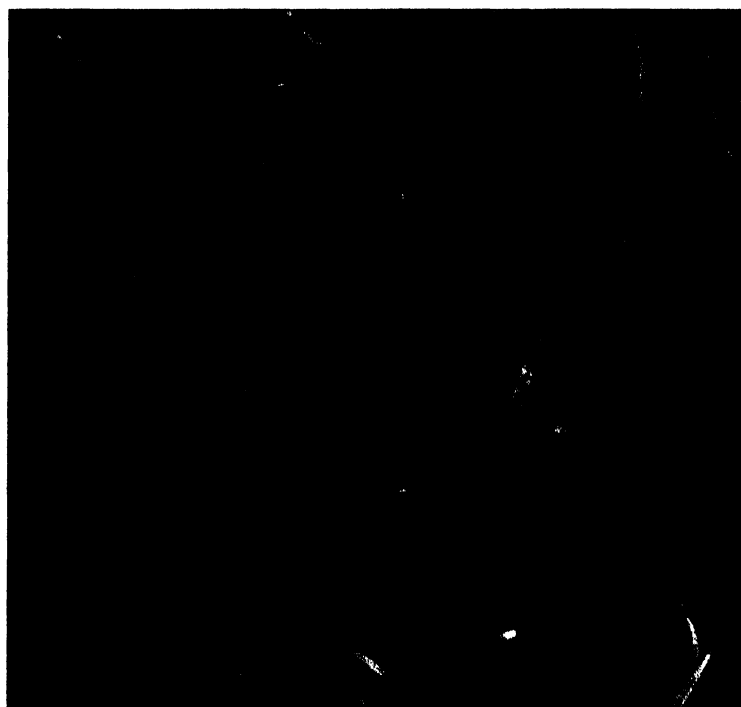
*G. makinoi*. Erect herbaceous perennial with leafy stems bearing pairs of lance-shaped to narrowly ovate, somewhat bluish green leaves, the upper leaf to 5cm (2in) long, the lower 2.5cm (1in). In late summer, bears terminal and axillary clusters of up to 7 tubular-bell-shaped, pale blue flowers, 3-4cm (1¼-1½in) long, heavily spotted dark blue, with unequal sepals. † to 50cm (20in), ↔ 15cm (6in). Japan. \*\*\*

*G. menziesii* see *G. sceptrum*.

*G. ornata*. Semi-evergreen perennial with tufted rosettes of linear, mid-green, basal leaves, to 2.5cm (1in) long. In autumn, prostrate flowering stems bear



*Gentiana angustifolia*



*Gentiana 'Kingfisher'*



*Gentiana x macaulayi* 'Wells's Variety'

solitary, broadly bell-shaped flowers, to 3.5cm (1½in) long, light pale blue, striped purplish blue and cream outside. † 5cm (2in), ↔ to 15cm (6in). Mountains of Nepal. \*\*\*

*G. punctata* (Spotted gentian). Erect, clump-forming herbaceous perennial with broadly lance-shaped to elliptic, glossy, mid-green basal leaves, to 10cm (4in) long. Stem leaves are narrower. All leaves are strongly veined. In late summer, bears terminal and axillary whorls of numerous stalkless, bell-shaped, purple- or maroon-spotted, pale greenish yellow flowers, to 3.5cm (1½in) long. † 30-60cm (12-24in), ↔ 22cm (9in). C. Europe. \*\*\*

*G. purdomii* see *G. gracilipes*.

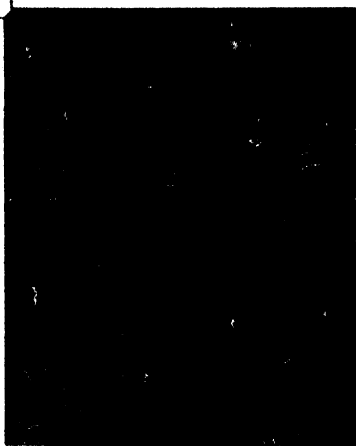
*G. saxosa* ■ Evergreen perennial with basal rosettes of spoon-shaped to linear-spoon-shaped, fleshy, dark green leaves, to 3.5cm (1½in) long, often tinged brown-purple. In summer, short, leafy stems bear 1-5 upright, bell-shaped white flowers, to 2cm (¾in) long, with faint green or purple-brown veining. † to 7cm (3in), ↔ to 10cm (4in). New Zealand. \*\*\*

*G. sceptrum*, syn. *G. menziesii*. Erect, clump-forming herbaceous perennial with paired, ovate to lance-shaped, mid-green basal and stem leaves, 3-8cm (1¼-3in) long. In late summer, broadly trumpet-shaped, green-spotted, bluish purple flowers, 4-5cm (1½-2in) long, with erect corolla lobes, are produced in terminal clusters or in twos or threes from the upper axils. † 45-90cm (18-36in), ↔ 20cm (8in). W. Canada (British Columbia) to W. USA (California). \*\*\*



*Gentiana saxosa*

G

*Gentiana septemfida*

**G. septemfida** [L] Spreading herbaceous perennial with prostrate or ascending stems bearing paired, ovate, pointed, mid-green leaves, to 3.5cm (1½in) long. In late summer, produces terminal clusters of 1–8 narrowly bell-shaped, bright blue or purplish blue flowers, 3.5cm (1½in) long, with white throats and darker stripes. Best in sun. † to 15–20cm (6–8in), ↔ to 30cm (12in). Caucasus, Turkey, Iran to C. Asia. \*\*\*. **var. lagodechiana**, syn. *G. lagodechiana*, has branched, almost prostrate stems and a single flower, rarely 2 or 3, per stem.

**G. sino-ornata** [L] Rosette-forming, semi-evergreen perennial with many prostrate shoots bearing paired, linear-lance-shaped, finely pointed, dark green, basal leaves, to 3.5cm (1½in) long. Solitary, stalkless, terminal, trumpet-shaped flowers, to 6cm (2½in) long, usually deep bright blue, striped deep purple-blue and greenish white outside, are borne in autumn. † 5–7cm (2–3in), ↔ 15–30cm (6–12in). W. China, Tibet. \*\*\*. 'Alba' has white flowers. 'Angel's Wings' has blue flowers splashed with white, occasionally all-blue or all-white.

**G. speciosa**, syn. *Crawfordia speciosa*. Climbing or trailing herbaceous perennial with slender stems bearing elliptic to ovate, pointed, toothed, mid-green leaves, 5–8cm (2–3in) long, in opposite pairs. In late summer, bears axillary clusters of 1–3 narrowly tubular-bell-shaped, deep blue to blue-purple or white flowers, to 5cm (2in) long, green-tinted outside. Prefers acid soil in shade. † to 1m (3ft). Himalayas, China. \*\*\*

*Gentiana sino-ornata**Gentiana ternifolia*

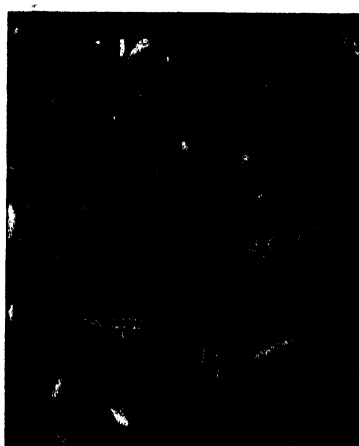
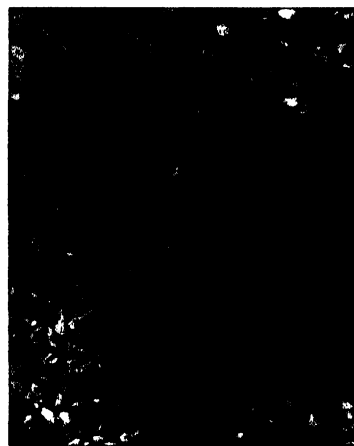
**G. stylophora** see *Megacodon stylophorus*.

**G. 'Susan Jane'**. Procumbent, rosette-forming, semi-evergreen perennial with linear-lance-shaped, dark green, basal leaves, to 3cm (1¼in) long. In autumn, bears solitary, trumpet-shaped, bright azure-blue flowers, to 5cm (2in) long, with white throats and notched petals, on prostrate stems. † to 8cm (3in), ↔ to 30cm (12in). \*\*\*

**G. ternifolia** [L] Vigorous, trailing, semi-evergreen perennial with loose rosettes of linear-lance-shaped, greyish green basal leaves, to 1.5cm (½in) long; stem leaves are similar, in whorls of 2 or 3. In autumn, solitary, trumpet- to bell-shaped, sky-blue flowers, 4cm (1½in) long, striped darker blue and spotted white and green outside, paler inside, are borne on prostrate stems. † to 8cm (3in), ↔ to 30cm (12in). W. China. \*\*\*

**G. triflora** [L] Erect herbaceous perennial with slender, leafy stems bearing paired, narrow, lance-shaped, glossy, mid-green leaves, 5–10cm (2–4in) long. Narrowly bell-shaped, deep blue to purple-blue flowers, 3–5cm (1¼–2in) long, with white bands outside, are borne in small, upright, terminal or upper axillary clusters in late summer and early autumn. † 22–60cm (9–24in), ↔ 25cm (10in). Russia (E. Siberia, Sakhalin), China (Manchuria), Japan, Korea. \*\*\*

**G. veitchiorum**. Trailing, semi-evergreen perennial with many-branched stems, and rosettes of linear-oblong, mid-green basal leaves, to 3.5cm (1½in) long. Stem leaves are borne in pairs, and are usually fused at the bases. In

*Gentiana triflora**Gentiana verna*

autumn, bears solitary, dark blue flowers, narrowly trumpet-shaped and to 5cm (2in) long, with very narrow tubes and striped outside with greenish yellow, on prostrate shoots. † 5cm (2in), ↔ to 20cm (8in). W. China. \*\*\*

**G. verna** [L] (Spring gentian, Star gentian). Often short-lived, mat-forming, evergreen perennial with basal rosettes of elliptic-lance-shaped, dark green leaves, to 3cm (1¼in) long, and 1–3 pairs of stem leaves. In spring or early summer, bears solitary, short-stemmed, narrowly tubular, usually white-throated, pure sky-blue flowers, to 3cm (1¼in) across, with wide-spreading lobes. † 4cm (1½in), ↔ to 10cm (4in). Mountains in Europe, from Ireland to Russia. \*\*\*. **subsp. balcanica** [L] syn. **subsp. pontica**, **subsp. tergestina**, is more vigorous, with usually ovate leaves and larger flowers, to 3.5cm (1½in) across; † to 6cm (2½in).

**G. 'Wellsii'** see *G. x macaulayi* 'Wells's Variety'.

## GENTIANOPSIS

### GENTIANACEAE

Genus of 20–25 species of erect annuals and biennials, sometimes included in the genus *Gentiana*, found in moist grassland throughout North America and Eurasia. They form basal tufts of simple, glossy leaves, and bear tubular-bell-shaped, 4-petalled, fringed blue flowers on long stems from late summer to autumn. They are suitable for a wild garden or a partially shaded border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist but well-drained soil in a site shaded from hot sun.

• **PROPAGATION** Sow *in situ*, or surface-sow in containers outdoors, in autumn.

• **PESTS AND DISEASES** Slugs and snails may damage young seedlings.

**G. crinita**, syn. *Gentiana crinita* (Fringed gentian). Tuft-forming annual or biennial with ovate to lance-shaped, glossy, dark green leaves, 2–3cm (¾–1¼in) long. Produces long, branching, hairy stems that terminate in single or clustered, 4-lobed, tubular-bell-shaped, fringed, bright blue flowers, 5cm (2in) long, from late summer to autumn. † 30–90cm (12–36in), ↔ to 23cm (9in). E. North America. \*\*\*

▷ **Geraldton wax** see *Chamelium uncinatum*

## GERANIUM

### Cranesbill

#### GERANIACEAE

Genus of about 300 species of annuals, biennials, and herbaceous, semi-evergreen, and evergreen, sometimes tuberous perennials, often confused with the genus *Pelargonium* (which is commonly, though incorrectly, known as geranium). Cranesbills are found in all except very wet habitats throughout temperate regions. The leaves, usually rounded or 5-pointed, are palmately lobed, the divisions often further lobed and toothed; they are frequently aromatic or interestingly marked, textured, or coloured, sometimes also colouring well in autumn. The basal leaves are often arranged in loose, sometimes overwintering or semi-evergreen rosettes; the stem leaves are usually smaller, with fewer lobes. Flowers are white, pink, purple, or blue, usually saucer-shaped, sometimes flat or star-shaped, with petals sometimes reflexed and often contrastingly veined or marked; they are mostly borne in diffuse or dense cymes or umbel- or panicle-like inflorescences.

Cranesbills are generally long-lived, versatile, and undemanding plants. Compact perennials, to about 15cm (6in) tall, are good for a rock garden; trailing, spreading, or mat-forming plants are effective as ground cover in a woodland or wild garden. Taller, clump-forming species and hybrids are suitable for a border or among shrubs.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Outdoors, grow larger species and hybrids in any moderately fertile, well-drained soil in full sun or partial shade, but most soils (unless waterlogged), in either sun or shade, are tolerated. Grow small species and hybrids in humus-rich, sharply drained soil in full sun. Under glass, grow half hardy species in loam-based potting compost (J1 No.2), with added sharp sand, in bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. For all cranesbills, remove flowered stems and old leaves to encourage the production of fresh leaves and flowers.

• **PROPAGATION** Sow seed of hardy species in containers outdoors as soon as ripe or in spring. Sow seed of half-hardy species at 13–18°C (55–64°F) in spring. Divide in spring. Increase by basal cuttings, taken in early or mid-spring, and root with bottom heat.

• **PESTS AND DISEASES** May be damaged by vine weevil larvae, sawfly larvae, slugs, and snails. Viruses and downy mildew may also be troublesome. In dry conditions, powdery mildew may be a problem.

**G. anemonifolium** see *G. palmarum*.

**G. 'Ann Folkard'** [L] Spreading herbaceous perennial producing many long, procumbent or scrambling stems and numerous 5-lobed, toothed, yellowish green leaves, 5–20cm (2–8in) long, becoming greener with age. A profusion of saucer-shaped magenta flowers, 4cm (1½in) across, with black centres and veins, are produced continuously from midsummer to mid-

*Geranium* 'Ann Folkard'

autumn. ‡ to 60cm (24in), ↔ 1m (3ft) or more. \*\*\*

*G. argenteum*. Compact, semi-evergreen perennial with silky-hairy, silver, basal leaves, to 5cm (2in) long, deeply 7-lobed, each lobe with 3 segments. In summer, bears short-stalked cymes of pale pink flowers, to 2.5cm (1in) wide, with magenta veins and notched petals. Needs sharp drainage. ‡ to 10cm (4in), ↔ to 15cm (6in). Mountains of C. and E. Europe. \*\*\*

*G. armenum* see *G. psilostemon*.

*G. asphodeloides* □ Variable, evergreen perennial, forming a loose mound of 5- to 7-lobed, mid-green, basal leaves, to 8cm (3in) long. Loose cymes of numerous star-shaped, narrow-petalled, pink or white flowers, 2.5–3.5cm (1–1½in) across, with darker veins, are produced in early summer. ‡ 30–45cm (12–18in), ↔ 30cm (12in). Italy (Sicily) to Turkey, Caucasus, N. Iran. \*\*\*

*G. atlanticum* of gardens see *G. malviflorum*.

*G. 'Buxton's Blue'* see *G. wallichianum* 'Buxton's Variety'.

*G. candicans* of gardens see

*G. lambertii*.

*G. x cantabrigiense* □ (*G. dalmaticum* x *G. macrorrhizum*). Compact, evergreen perennial, spreading slowly by runners, with 7-lobed, toothed, aromatic, glossy, light green, basal leaves, 3–9cm (1¼–3½in) long. In early and midsummer, produces dense cymes of numerous flat, bright purplish pink or white flowers, 2.5cm (1in) across, the petals somewhat reflexed. ‡ 30cm (12in), ↔ 60cm (24in). Garden origin. \*\*\*

'Biokovo' □ is compact, with long runners and pink-tinged white flowers; ↔ 75–90cm (30–36in). 'Cambridge' forms compact mats of foliage and is very free-flowering, bearing pinkish mauve flowers; ‡ 15cm (6in), ↔ 45cm (18in).

*G. cinereum*. Dwarf, rosette-forming, evergreen perennial with grey-green, basal leaves, to 5cm (2in) across, deeply

5- to 7-lobed, with each division itself usually 3-lobed. In late spring and early summer, produces short-stalked cymes of 1–4 upward-facing, cup-shaped, translucent, white or pale pink flowers, to 2.5cm (1in) across, usually veined purple. Needs good drainage. ‡ to 15cm (6in), ↔ to 30cm (12in). Pyrenees.

\*\*\*. The following are excellent rock plants with long flowering seasons:

'Ballerina' □ ♀ has greyer leaves and purplish red flowers, dark red-veined, with dark eyes. 'Lawrence Flatman' resembles 'Ballerina' but is more vigorous, with darker eyes and usually darker petals. *subsp. subcaulescens* □ ♀ syn. *G. subcaulescens*, is more vigorous than the species, with darker green leaves, longer stems, and brilliant magenta flowers with black centres; Balkans, N.E. Turkey.

*G. 'Claridge Druce'* see *G.*

*x oxonianum* 'Claridge Druce'.

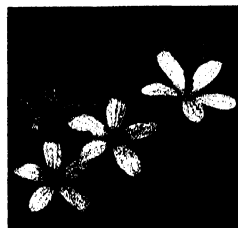
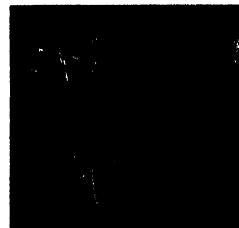
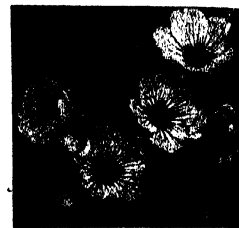
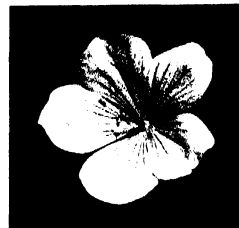
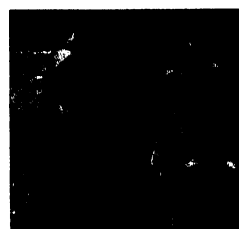
*G. clarkii*. Spreading, rhizomatous herbaceous perennial with 7-lobed, mid-green, basal leaves, 4.5–15cm (1¾–6in) long, each lobe deeply cut into narrow, pointed segments. Saucer- to cup-shaped flowers, 4–5cm (1½–2in) across, purple-violet or white with mauve-pink veins, are produced in loose cymes from early to late summer. ‡ to 50cm (20in), ↔ indefinite. India (Kashmir). \*\*\*

'Kashmir Blue' bears soft pale blue flowers in early and midsummer; ‡ to 60cm (24in). 'Kashmir Pink' has pink flowers. 'Kashmir Purple', syn. *G. pratense* 'Kashmir Purple', has rich lilac-blue flowers with red veins; it spreads rapidly. 'Kashmir White' □ syn. *G. pratense* 'Kashmir White', is less vigorous than 'Kashmir Purple' and bears white flowers, 2.5–4cm (1–1½in) across, with pale lilac-pink veins, appearing greyish pink overall; ‡ to 45cm (18in).

*G. dalmaticum* □ ♀ Dwarf, rhizomatous, woody-stemmed, creeping perennial, evergreen in all but the severest winters, with rosettes of glossy, light green, basal leaves, to 4cm (1½in) long, each deeply divided into 5–7 segments. In summer, bears long-stalked, umbel-like clusters of pale to bright pink flowers, 2.5–3.5cm (1–1½in) across, with red anthers and inflated calyces. ‡ to 15cm (6in), ↔ to 50cm (20in) or more. Yugoslavia (Montenegro), Albania. \*\*\*

*G. delavayi*. Clump-forming herbaceous perennial with 7-lobed, toothed, mid-green, basal leaves, 5–20cm (2–8in) long, similar to those of *G. sinense* but with broader and overlapping lobes. Saucer-shaped, maroon or blackish red to pale pink flowers, to 2cm (¾in) across, with reflexed petals and white bases, are produced in loose cymes in late summer. ‡ to 60cm (24in). S.W. China (Sichuan, Yunnan). \*\*\*

*G. endressii* □ ♀ Rhizomatous, hairy, evergreen perennial forming clumps of 5-lobed, toothed, wrinkled, light green, basal leaves, 5–15cm (2–6in) long, each lobe divided into pointed segments. Erect, trumpet-shaped, bright pink flowers, 3–4cm (1¼–1½in) across, with notched petals and a silvery sheen, becoming darker with age, are borne in dense cymes from early summer to early autumn. ‡ 45cm (18in), ↔ 60cm (24in). Pyrenees (mainly France). \*\*\*

*Geranium asphodeloides**Geranium x cantabrigiense**Geranium cinereum* 'Ballerina'*Geranium cinereum* subsp. *subcaulescens**Geranium clarkei* 'Kashmir White'*Geranium dalmaticum**Geranium endressii**Geranium erianthum**Geranium himalayense*

'Wargrave Pink' see *G. x oxonianum* 'Wargrave Pink'.

*G. erianthum* □ Clump-forming, hairy herbaceous perennial, similar to *G. eriostemon*, with upright stems and 7- to 9-lobed, light green, basal leaves, 5–20cm (2–8in) long, the lobes overlapping and prominently toothed. Bears dense, umbel-like clusters of saucer-shaped to almost flat, violet-blue flowers, 2.5–4cm (1–1½in) across, from late spring to midsummer. Good autumn leaf colour. ‡ 45–60cm (18–24in), ↔ 30cm (12in). Russia (E. Siberia, Sakhalin), Japan, North America (Alaska, Aleutian Islands to N. British Columbia). \*\*\*

*G. eriostemon*, syn. *G. platyanthum*. Clump-forming, hairy herbaceous perennial with upright stems and 5- or 7-lobed, shallowly toothed, basal leaves, 5–20cm (2–8in) long, crinkly above. In late spring and early summer, bears umbel-like clusters of horizontal or nodding, flat, pale violet to violet-pink flowers, 3cm (1¼in) across, shaded darker towards the centres, with small white bases to the petals. Good autumn colour. ‡ 30–50cm (12–20in), ↔ 45cm (18in). Russia (E. Siberia), E. Tibet, W. China, Korea, Japan. \*\*\*

*G. farreri* ♀ Dwarf, tap-rooted, rosette-forming herbaceous perennial with somewhat spreading or erect red stems and kidney-shaped, red-margined, matt, mid-green, basal leaves, to 5cm (2in) across, each deeply cut into 7 sparsely toothed divisions, which are 3-lobed at the tips. In early summer, bears loose cymes of shallowly cup-shaped, very pale pink, wavy-margined flowers, to 3.5cm (1½in) wide, with conspicuous black anthers. Best in a scree bed or alpine house. ‡ to 12cm (5in), ↔ to 15cm (6in). W. China. \*\*\*

*G. fremontii*. Clump-forming herbaceous perennial with 5- to 7-lobed,

light green, basal leaves, 5–10cm (2–4in) long, sticky-hairy beneath, the divisions broadly toothed and lobed at the tips. Bears upward-facing, flat, pale to deep pink flowers, to 4cm (1½in) across, in open, branched cymes from early summer to early autumn. ‡ 30–45cm (12–18in), ↔ 45cm (18in). W. USA (Wyoming to Arizona and New Mexico). \*\*\*

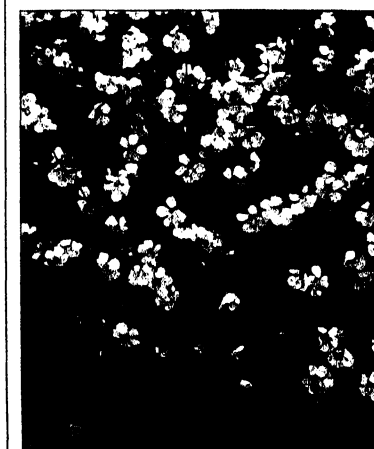
*G. grandiflorum* see *G. himalayense*.

*G. grandiflorum* var. *alpinum* see *G. himalayense* 'Gravetye'.

*G. grevilleanum* see *G. lambertii*.

*G. himalayense* □ syn. *G. grandiflorum*, *G. himalayense* var. *meiboldii*, *G.*

*meiboldii*. Rhizomatous, mat-forming herbaceous perennial bearing 7-lobed, prominently veined, mid-green, basal leaves, 5–20cm (2–8in) long, with broad, blunt-toothed lobes, colouring well in autumn. Loose cymes of saucer-shaped, veined, violet-blue to deep mid-blue flowers, 4–6cm (1½–2½in) across, touched with reddish pink and with white centres, are produced in a main

*Geranium x cantabrigiense* 'Biokovo'

flush in early summer and then spasmodically to early autumn. Good ground cover, even in full shade. ‡ 30–45cm (12–18in), ↔ 60cm (24in). Himalayas. \*\*\*. **var. *alpinum*** see 'Gravetye'. 'Birch Double' see 'Plenum'. 'Gravetye' ☐ ♀ syn. *G. grandiflorum* var. *alpinum*, *G. himalayense* var. *alpinum*, has smaller leaves, 5–12cm (2–5in) long, and larger flowers, to 7cm (3in) across, with more markedly red zones around the white centres; ‡ 30cm (12in). 'Irish Blue' has paler blue flowers, 3.5cm (1½in) across, with larger, purplish red central zones, and is very free-flowering. **var. *moeboldii*** see *G. himalayense*. 'Plenum', syn. 'Birch Double', has smaller leaves, 5–12cm (2–5in) long, and double, purplish pink flowers, 2.5cm (1in) across, shaded blue, with darker veins; ‡ 25cm (10in).

***G. ibericum*** ☐ Clump-forming, hairy herbaceous perennial with 9- to 11-lobed, basal leaves, 10–20cm (4–8in) long, the lobes toothed and overlapping. Upward-facing, shallowly cup-shaped, violet-blue flowers, 4–5cm (1½–2in) across, with feathered, darker veins, and petals notched at the tips, are borne in dense cymes in early summer. ‡ to 50cm (20in), ↔ 60cm (24in). Caucasus, N.E. Turkey, N. Iran. \*\*\*

***G. incanum***. Mounded, bushy, evergreen perennial with branching stems and aromatic, filigree, grey-green, basal leaves, to 8cm (3in) long, each deeply cut into 5 segments, which in turn are lobed and toothed. From summer to autumn, bears loose cymes of deep pink flowers, to about 3.5cm (1½in) across, with dark veins and a V-shaped white mark at the base of each petal. Needs a warm, sunny position. ‡ 40cm (16in), ↔ to 60cm (24in) or more. South Africa. \*\*\*

***G. 'Johnson's Blue'*** ♀ Rhizomatous, spreading herbaceous perennial, forming a dense mat of 7-lobed, mid-green, basal leaves, 5–20cm (2–8in) long, each lobe itself lobed and toothed. Saucer-shaped,

mid- to lavender-blue flowers, 5cm (2in) across, tinged pink at the centres, are produced in loose cymes during summer. ‡ 30–45cm (12–18in), ↔ 60–75cm (24–30in). \*\*\*

***G. 'Kate'***, syn. *G. 'Kate Folkard'*.

Dwarf, carpeting, semi-evergreen perennial with rounded, deeply 5- to 7-lobed, dark bronze-green leaves, 1.5–3.5cm (½–1½in) long, each lobe obovate and further lobed. Bears cymes of funnel-shaped, pale pink flowers, 1.5cm (½in) across, with almost translucent bases and dark veins, from late spring to summer. ‡ 10–15cm (4–6in), ↔ 30cm (12in). \*\*\*

***G. 'Kate Folkard'*** see *G. 'Kate'*.

***G. kishvariense***. Rhizomatous, rounded, bristly-hairy herbaceous perennial with 5-lobed, finely toothed, wrinkled, bright green, basal leaves, 10–23cm (4–9in) long. Loose cymes of upward-facing, shallowly cup-shaped, deep pinkish purple flowers, 4cm (1½in) across, with purple veins and small white centres, and a white V at each base, are produced throughout summer. ‡ 30cm (12in), ↔ 60cm (24in). India (Kashmir). \*\*\*

***G. lambertii***, syn. *G. candicans* of gardens, *G. grevilleanum*. Trailing herbaceous perennial with long, procumbent, non-rooting stems bearing rounded or kidney-shaped, wrinkled, mid-green leaves, 10cm (4in) long, each with 5 lobes and a 3-lobed point. In late summer, bears diffuse cymes of nodding, saucer-shaped, pale pink or white flowers, 3–4cm (1¼–1½in) across, marked purple at the bases, and with crimson centres and veins. ‡ 30–45cm (12–18in), ↔ 90cm (36in). Himalayas. \*\*\*

***G. libani***, syn. *G. libanoticum*. Clump-forming perennial, dormant in summer, but with new foliage in autumn, with rounded, deeply 5- or 7-lobed, glossy, mid-green leaves, 10–20cm (4–8in) long, each ovate lobe toothed and further lobed. In spring, violet or violet-blue flowers, with notched, disc-shaped

petals, 3cm (1¼in) across, are borne in umbel-like clusters. ‡ 40cm (16in), ↔ 45cm (18in). Lebanon, W. Syria, central S. Turkey. \*\*\* (borderline)

***G. libanoticum*** see *G. libani*.

***G. x lindavicum 'Alanah'***, syn. *G. x lindavicum 'Purpureum'*. Dwarf,

rosette-forming, evergreen perennial, similar to *G. cinereum*, with deeply 7-lobed, silky, silvery green, basal leaves, to 7cm (3in) long. In late spring and early summer, bears loose cymes of deep crimson-purple flowers, 3–5cm (1¼–2in) across, with a network of darker veins. ‡ to 15cm (6in), ↔ to 20cm (8in). \*\*\*

***G. x lindavicum 'Purpureum'*** see *G. x lindavicum 'Alanah'*.

***G. macrorrhizum*** ☐ Rhizomatous, semi-evergreen perennial with 7-lobed, toothed, sticky, strongly aromatic, light green, basal leaves, 10–20cm (4–8in) long, colouring well in autumn. Umbel-like clusters of erect, flat, pink to purplish pink or white flowers, 2–2.5cm (¾–1in) across, with inflated red calyces, slightly reflexed petals, and protruding stamens and styles, are produced in early summer. Effective ground cover in shade. ‡ 50cm (20in), ↔ 60cm (24in). S. Europe. \*\*\*. 'Bevan's Variety' has crimson-purple flowers. 'Czakov' has magenta flowers and purple-tinted foliage in autumn; ‡ to 30cm (12in).

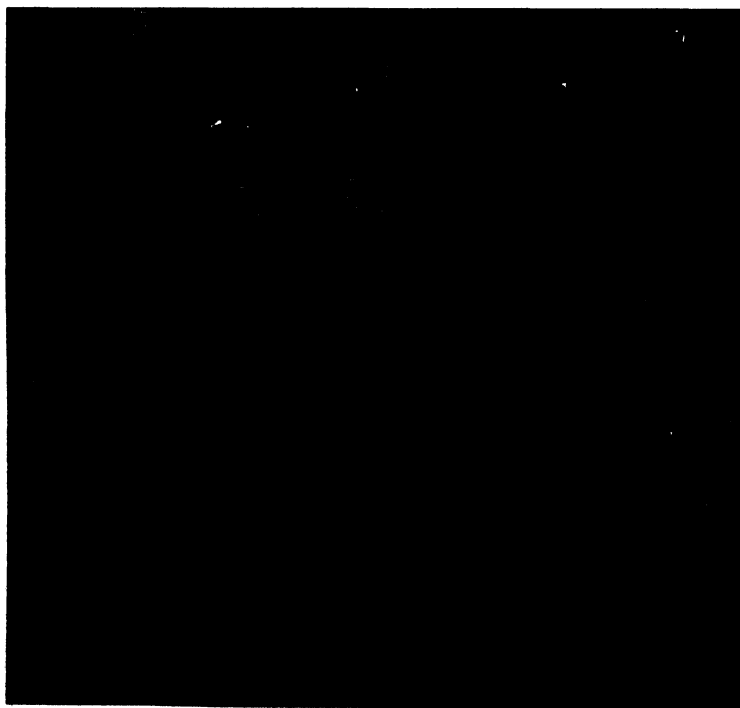
'Ingwersen's Variety' ☐ ♀ has glossy, light green leaves and soft pink flowers.

'Variegatum' has greyish green leaves with cream variegation, and purplish pink flowers. It is less vigorous than the species, requiring richer soil and more sun; ‡ 30cm (12in), ↔ 45cm (18in).

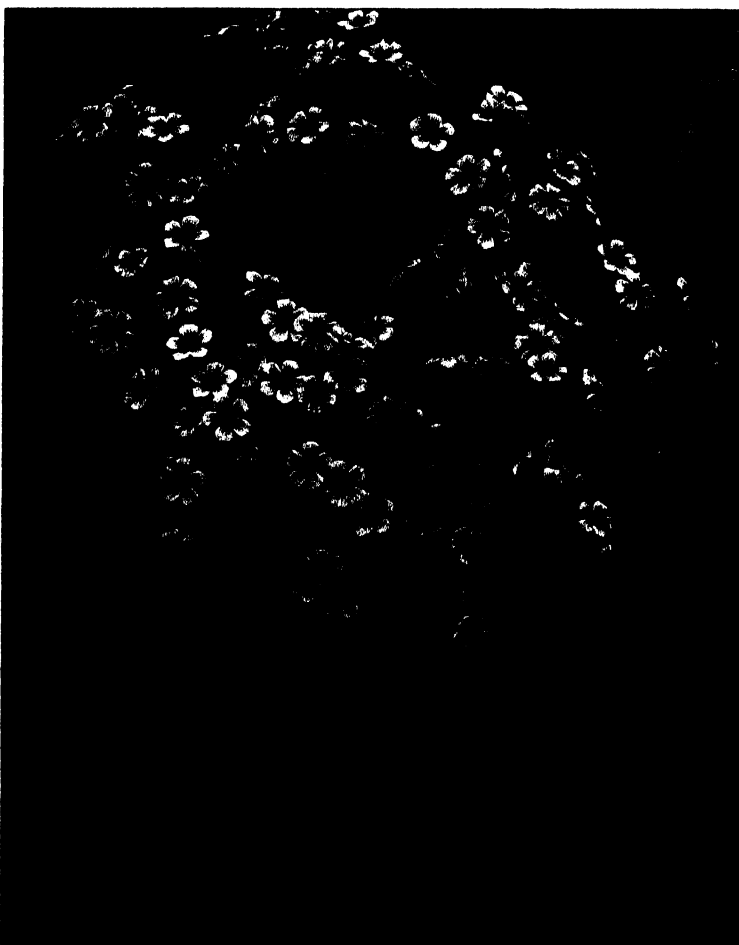
***G. maculatum*** ☐ Erect, clump-forming herbaceous perennial with 5- to 7-lobed, glossy, mid-green, basal leaves, 10–20cm (4–8in) long, with narrow, toothed, widely spaced lobes. Slightly upward-facing, saucer-shaped, lilac-pink to bright pink flowers, 3cm (1¼in) across, usually white near the base of each petal, are produced in loose cymes from late spring to midsummer. Prefers moist soil. ‡ 60–75cm (24–30in), ↔ 45cm (18in). E. North America. \*\*\*. **f. *albiflorum*** has white flowers and is less robust than the species.

***G. maderense*** ☐ ♀ Robust, evergreen perennial, usually short-lived or behaving as a biennial, with short, erect stems bearing rosettes of 5- to 7-lobed, deeply toothed, bright green leaves, to 60cm (24in) long, with brownish red stalks. From late winter to late summer, produces numerous flat, pinkish magenta flowers, 4cm (1½in) across, with paler pink veins, darkening towards dark magenta centres, and with red anthers; they are borne in imposing, panicle-like inflorescences, the upper parts of the flower-stalks thickly covered with purple, glandular hairs. ‡ 1.2–1.5m (4–5ft). Madeira. \*

***G. x magnificum*** ☐ ♀ (*G. ibericum* x *G. platyptalum*). Vigorous, clump-forming herbaceous perennial with mid-green, basal leaves, 10–20cm (4–8in) long, that colour well in autumn. Each leaf is divided into 9–11 broad lobes, the lobes themselves lobed, toothed, and overlapping. Dense cymes of numerous saucer-shaped, rich violet flowers, 5cm (2in) across, heavily veined in a darker shade, are produced in one burst in



*Geranium ibericum*



*Geranium maderense*

midsummer. Prefers a sunny site.

± 60cm (24in). Garden origin. \*\*\*

**G. malviflorum**, syn. *G. atlanticum* of gardens. Tuberous perennial with underground runners, dormant in summer, but with new foliage produced in autumn. Dark green, basal leaves, 6–10cm (2½–4in) long, are deeply cut into 7 pinnatifid divisions. Loose cymes of saucer-shaped, red-veined, pinkish violet-blue flowers, 4cm (1½in) across, with deeply notched, heart-shaped petals, are borne in early and mid-spring. Requires poor soil in full sun. ± 22–30cm (9–12in), ± 45cm (18in). S. Spain, Morocco, Algeria. \*\*\*

**G. meeboldii** see *G. himalayense*.

**G. x monacense** (*G. phacum* x *G. reflexum*) syn. *G. punctatum* of gardens. Clump-forming herbaceous perennial with 5- to 7-lobed, basal leaves, 10–20cm (4–8in) long, usually with brown marks at the lobe bases. In late spring and early summer, bears loose cymes of saucer-shaped, purplish red flowers, 2cm (¾in) across, with white and violet zones at the bases of the reflexed petals. ± 45cm (18in), ± 60cm (24in). Garden origin. \*\*\*

**'Muldoon'** has dark green leaves heavily spotted with purple, and flowers with protruding stamens and styles; ± 60cm (24in).

**G. nodosum** Rhizomatous herbaceous perennial forming a clump of 3- or 5-lobed, shallow-toothed, glossy, bright green, basal leaves, 5–20cm (2–8in) long, the stems swollen above the nodes. From late spring to early or mid-autumn, red-tinted stems bear loose cymes of erect, open funnel-shaped, purplish-pink flowers, 2.5–3cm (1–1¼in) across, with paler pink centres, darker veins, and notched petals. Effective ground cover in dry soil in full shade. ± 30–50cm (12–20in), ± 50cm (20in). Pyrenees, C. Italy, Yugoslavia (Serbia). \*\*\*

**G. orientalitibeticum** syn. *G. stapfianum* var. *roseum* of gardens. Dwarf herbaceous perennial with tuberous, underground runners, and basal leaves, to 10cm (4in) across, cut into narrowly lobed, toothed divisions, marbled dark and pale green. In summer, bears loose cymes of shallowly cup-shaped, deep purplish pink flowers, to 2.5cm (1in) across, the centres white. Spreads rapidly. ± to 30cm (12in), ± to 1m (3ft) or more. S.W. China. \*\*\*

**G. x oxonianum** (*G. endressii* x *G. versicolor*). Vigorous, clump-forming,

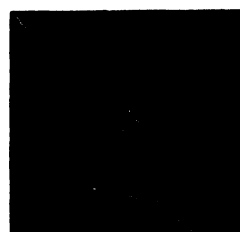
evergreen perennial with 5-lobed, light green, basal leaves, 5–20cm (2–8in) long, each lobe with 5 toothed, wrinkled, conspicuously veined divisions. From late spring to mid-autumn, bears loose cymes of broadly funnel-shaped pink flowers, to 4cm (1½in) across, with darker veins and notched petals. ± to 80cm (32in), ± 60cm (24in). Garden origin. \*\*\*

**'A.T. Johnson'** has silvery pink flowers and is very free-flowering; ± 30cm (12in). **'Claridge Druce'**, syn. *G. 'Claridge Druce'*, is very vigorous, forming strong clumps of greyish green, somewhat glossy leaves, with dark-veined, rose-pink flowers, 4–4.5cm (1½–1¾in) across. Self-seeds freely and usually comes true. Good ground cover; ± 45–75cm (18–30in). **'Hollywood'** has pale pink flowers with almost maroon veins; ± 45cm (18in). **'Rose Clair'** has red-purple flowers with paler veins and is free-flowering; ± 35cm (14in).

**'Southcombe Double'** has usually double, warm pink flowers, 2cm (¾in) across; ± 40cm (16in). **'Southcombe Star'** is more spreading, with star-shaped, deep purplish pink flowers, 2–2.5cm (¾–1in) across. **'Wargrave Pink'** syn. *G. endressii* 'Wargrave Pink', is very vigorous and has bright salmon-pink flowers; ± 60cm (24in), ± 90cm (36in). **'Winscombe'** forms a leafy clump, with very pale pink flowers becoming bright pink with darker veins, several shades present on the plant at one time; ± 45cm (18in).

**G. palmatum** syn. *G. anemonifolium*. Tap-rooted, evergreen, rosetted perennial, sometimes self-seeding as a biennial. Similar to *G. maderense*, it has basal rosettes of 5-lobed, light green leaves, to 35cm (14in) across; each lobe is cut into 6–9 toothed segments, the central segment stalked. Flowering stems with purple glandular hairs bear large, panicle-like inflorescences, to 1.2m (4ft) across, of saucer-shaped, crimson-centred, purple-pink flowers, 3–4cm (1¼–1½in) across, throughout summer. Transplant seedlings while small. ± to 1.2m (4ft). Madeira. \*\*

**G. phaeum** (Dusky cranesbill, Mourning widow). Clump-forming herbaceous perennial bearing 7- or 9-lobed, soft green, basal leaves, 10–20cm (4–8in) long, often with purplish brown marks; each lobe is itself shallowly lobed. In late spring and early summer, bears branched, almost one-sided cymes of pendent, white-centred, deep purple-



*Geranium himalayense*  
'Gravetye'



*Geranium macrorrhizum*



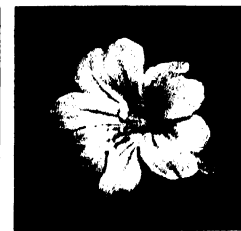
*Geranium macrorrhizum*  
'Ingwersen's Variety'



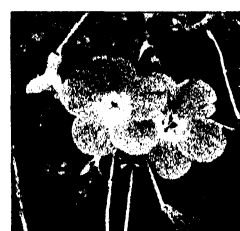
*Geranium maculatum*



*Geranium x magnificum*



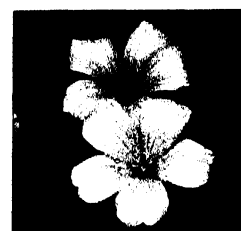
*Geranium nodosum*



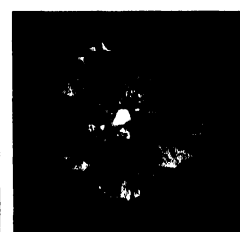
*Geranium orientalitibeticum*



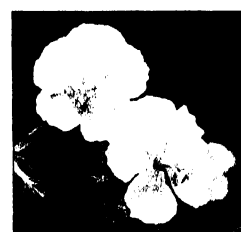
*Geranium x oxonianum*  
'Southcombe Star'



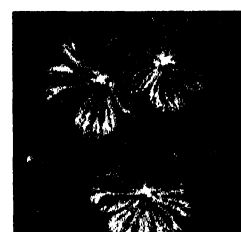
*Geranium x oxonianum*  
'Winscombe'



*Geranium phaeum*



*Geranium phaeum*  
f. *album*



*Geranium pratense*  
'Mrs. Kendall Clark'

black, deep maroon, violet-blue, light mauve, or white flowers, 2–2.5cm (¾–1in) across, with reflexed petals. Good in damp shade. ± 80cm (32in), ± 45cm (18in). Mountainous regions from Pyrenees to Balkans, S.E. Germany, Czech Republic, W. Russia. \*\*\*

f. *album* has white flowers. **'Langthorn's Blue'** has violet-blue flowers; ± 60–90cm (24–36in). **'Lily Lovell'** has large flowers, 3–4cm (1¼–1½in) across, in rich purple-mauve. var. *lividum* has very pale lilac or pink flowers with white bases, and unmarked leaves. **'Variegatum'** has foliage with irregular yellow margins and splashes of reddish pink.

**G. platyanthum** see *G. eriostemon*.

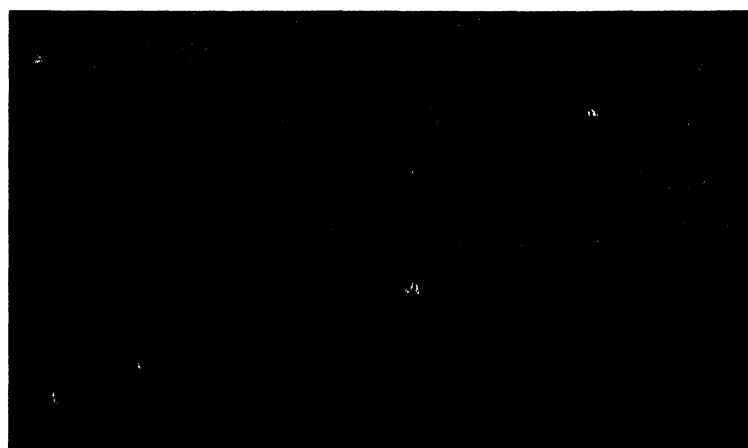
**G. platypetalum**. Clump-forming, hairy herbaceous perennial with wrinkled, mid-green, basal leaves, 10–20cm (4–8in) long, each deeply divided into 7 or 9 broadly toothed lobes. During early and midsummer, bears dense cymes of flat, saucer-shaped, deep violet-blue flowers, 3–4.5cm (1¼–1½in) across, with darker veins. ± 30–45cm (12–18in), ± 45cm (18in). Caucasus, N.E. Turkey, N.W. Iran. \*\*\*

**G. polyanthes**. Clump-forming, often short-lived herbaceous perennial with short stems and kidney-shaped, 7- to 9-lobed, fleshy, mid-green, basal leaves, to

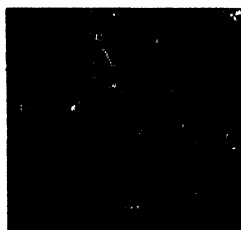
5cm (2in) long. In midsummer, bears clusters of funnel-shaped, shiny, deep pink flowers, 2.5cm (1in) across, with numerous fine veins. ± 30–45cm (12–18in), ± 30cm (12in). Himalayas, S.W. China. \*\*\*

**G. pratense** (Meadow cranesbill). Clump-forming herbaceous perennial with hairy stems and 7- to 9-lobed, basal leaves, 20cm (8in) long, the lobes often deeply divided and toothed. Bears erect, saucer-shaped, variously veined, white, blue, or violet flowers, 3.5–4.5cm (1½–1¾in) across, in dense cymes in early and midsummer. ± 60–90cm (24–36in), ± 60cm (24in). Europe, C. Asia (Altai Mountains), W. China. \*\*\*

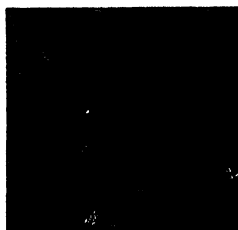
All except double-flowered cultivars self-seed freely, bearing varying offspring. Double-flowered cultivars have longer-lasting flowers, but require rich soil and regular division, and are more prone to mildew in dry conditions. f. *albiflorum* bears white flowers over a long period, sometimes to early autumn; ± 1m (3ft). **'Bicolor'** see *'Striatum'*. **'Flore Pleno'** see *'Plenum Violaceum'*. **'Galactic'** has dark green leaves and milk-white flowers, to 5cm (2in) across; ± 75cm (30in). **'Kashmir Purple'** see *G. clarkei* 'Kashmir Purple'. **'Kashmir White'** see *G. clarkei* 'Kashmir White'. **'Mrs. Kendall Clark'** has pearl-grey flowers flushed with pale rose-pink.



*Geranium x oxonianum*



*Geranium pratense*  
'Plenum Caeruleum'



*Geranium psilostemon*



*Geranium renardii*



*Geranium x riversleaianum*  
'Russell Prichard'



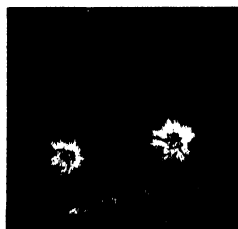
*Geranium robertianum*



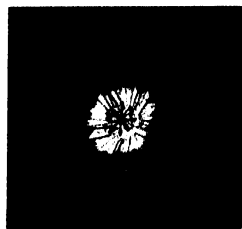
*Geranium* 'Salome'






*Geranium sanguineum*



*Geranium sylvaticum*  
'Mayflower'



*Geranium wallichianum*  
'Buxton's Variety'


although plants offered often have violet-blue flowers with white veining. **'Plenum Album'** produces loosely double, violet-tinged white flowers, 2–3cm (¾–1¼in) across. **'Plenum Caeruleum'**  has loosely double, lavender-blue flowers, sometimes tinged pink. **'Plenum Purpureum'** see **'Plenum Violaceum'**. **'Plenum Violaceum'**  *syn.* **'Flore Pleno'**. **'Plenum Purpureum'**, has double, deep violet-blue flowers, purple-blue in the centres. **'Silver Queen'** has white flowers touched with very pale violet;  $\uparrow$  1.3m (4½ft). **'Striatum'**, *syn.* **'Bicolor'**, has white flowers streaked violet-blue; may come true from seed. ***G. procurrente***. Spreading herbaceous perennial with procumbent red stems that may root at the nodes. Bears 5-lobed, coarsely toothed, mid-green, basal leaves, 5–10cm (2–4in) long, each division 3-lobed at the tip; leaves are wrinkled above. From midsummer to early autumn, bears loose cymes of somewhat star-shaped, dark purple-pink flowers, 2.5–3cm (1–1¼in) across. Each petal has a V-shaped black mark at the base, and black centres and veins. Ideal in dry soil under shrubs.  $\uparrow$  45cm (18in),  $\leftrightarrow$  1m (3ft) or more. Himalayas. \*\*\* ***G. psilostemon***  *syn.* ***G. armenum*** (Armenian cranesbill). Upright, clump-forming herbaceous perennial with 7-lobed, toothed, mid-green, basal leaves, 20cm (8in) long, crimson-tinted in spring and red in autumn. From early to late summer, bears loose, upright cymes of numerous erect, shallowly bowl-shaped, brilliant magenta flowers, 4cm (1½in) across, with black centres and veins.  $\uparrow$  60–120cm (2–4ft),  $\leftrightarrow$  60cm (24in). S.W. Caucasus, N.E. Turkey. \*\*\* **'Bressingham Flair'** has somewhat crumpled, less vivid magenta flowers with a hint of pink.

***G. punctatum*** of gardens see *G. x monacense*.

***G. pylzowianum***. Spreading herbaceous perennial with tuberous, underground runners and dark green, kidney-shaped or semi-circular, basal leaves, to 5cm (2in) across, each deeply cut into 5–7 narrowly lobed, toothed divisions. In early summer, bears cymes of broadly trumpet-shaped, deep rose-pink flowers, 3–4.5cm (1¼–1½in) wide, white at the bases and with darker veins. Similar to *G. orientalisibeticum*, but less invasive.  $\uparrow$  15–25cm (6–10in),  $\leftrightarrow$  25cm (10in) or more. W. China. \*\*\*


***G. pyrenaicum***. Clump-forming, hairy, evergreen perennial. Bears scalloped, mid-green, basal leaves, 5–10cm (2–4in) long, with 7 or 9 ill-defined, sometimes toothed lobes. Somewhat star-shaped, violet-pink flowers, 1–2cm (½–¾in) across, white at the bases, with darker veins and notched petals, are borne in loose cymes from spring to autumn. Self-seeds freely.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  30cm (12in). W. and S. Europe to Caucasus. \*\*\* ***f. albiflorum*** has white flowers. **'Bill Wallis'** has rich purple flowers. Comes true from seed.


***G. reflexum***. Clump-forming herbaceous perennial, similar to *G. phaeum*, with 7-lobed, mid-green, basal leaves, 10–20cm (4–8in) long, with dark blotches. In late spring and early summer, bears branched, one-sided cymes of bright rose-pink flowers, 1.5cm (½in) across; they have narrow, very reflexed petals with white bases and red-shaded sepals showing behind.  $\uparrow$  45–60cm (18–24in),  $\leftrightarrow$  60cm (24in). Italy to N. Greece. \*\*\*


***G. renardii***  *syn.* Clump-forming herbaceous perennial with wrinkled, veined, velvety, grey-green, basal leaves, to 10cm (4in) across, each cut into 5 or 7 broad lobes with scalloped margins.


Dense, umbel-like clusters of saucer-shaped, white to pale lavender flowers, 3cm (1¼in) across, with notched petals and bold violet veins, are borne intermittently in early summer. Often shy-flowering, but an effective foliage plant. Best in poor soil.  $\uparrow$  30cm (12in). Caucasus. \*\*\* **'Whiteknights'** has white flowers, with pale lilac-blue ground colour and darker veins.


***G. richardsonii***. Variable, clump-forming herbaceous perennial with 5- or 7-lobed, broadly toothed, slightly glossy, bright green, basal leaves, 5–10cm (2–4in) long. Bears loose cymes of flat, very lightly veined, pink-tinged white flowers, to 3cm (1¼in) across, from late spring to late summer. Prefers damp soil in sun.  $\uparrow$  30–60cm (12–24in),  $\leftrightarrow$  30cm (12in). W. North America (British Columbia and Saskatchewan to Mexico). \*\*\*



***G. x riversleaianum*** (*G. endressii* *x G. traversii*). Trailing, hairy herbaceous perennial with long, branching stems bearing grey-green leaves, 5–10cm (2–4in) across, each deeply divided into 7 blunt-toothed lobes. In summer, produces loose cymes of erect, broadly funnel-shaped, light pink to dark magenta flowers, to 3.5cm (1½in) wide, with darker veins. Good ground cover.  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  to 1m (3ft). Garden origin. \*\*\* **'Mavis Simpson'** bears clear, light pink flowers with paler centres. **'Russell Prichard'**  *syn.* has more sharply toothed leaves, and produces deep magenta flowers over long periods in summer.

***G. robertianum***  (Herb Robert). Rosette-forming, hairy, strongly aromatic annual or biennial with bright green, basal leaves, to 11cm (4½in) across, cut to the bases into 5 lobes, each in turn very deeply lobed. Produces erect, diffuse, panicle-like clusters of star-shaped pink flowers, to 1cm (½in) across, from summer to autumn.  $\uparrow$  25cm (10in). Europe, Canary Islands, N.W. Africa, W. Asia, Himalayas, S.W. China. \*\*\*

**'Celtic White'** has white flowers;  $\uparrow$  10–40cm (4–16in),  $\leftrightarrow$  to 30cm (12in). ***G. 'Salome'***  Trailing herbaceous perennial with branching stems bearing 5-lobed, toothed, pale green, basal leaves, 5–15cm (2–6in) long. In summer, produces loose cymes of flowers to 3cm (1¼in) wide, with widely spaced, purplish pink petals, veined and basally marked deep violet, with almost black styles and stamens.  $\uparrow$  30cm (12in),  $\leftrightarrow$  to 1.2m (4ft). \*\*\*

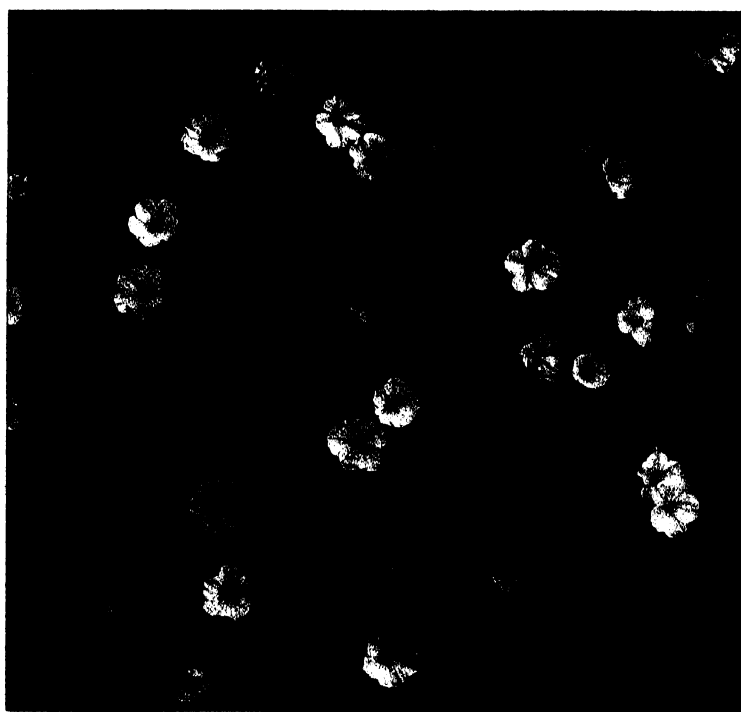
***G. sanguineum***  (Bloody cranesbill). Dense, clump-forming herbaceous perennial with spreading rhizomes. Dark green stem leaves, 5–10cm (2–4in) long, are deeply cut into 5–7 sparsely toothed lobes, each with 3 segments. Has few basal leaves. During summer, bears a profusion of upright, cup-shaped, deep magenta-pink flowers, to 4cm (1½in) wide, with darker veins, white eyes, and usually notched petals, in loose cymes.  $\uparrow$  20cm (8in),  $\leftrightarrow$  to 30cm (12in) or more. Europe, N. Turkey. \*\*\*

**'Album'**  is taller, more lax, with pure white flowers borne over many weeks in summer;  $\uparrow$  30cm (12in),  $\leftrightarrow$  40cm (16in). **var. *lancastrisense*** see *var. striatum*. **var. *prostratum*** see *var. striatum*.

**'Shepherd's Warning'**  is compact, with deep red-pink flowers;  $\uparrow$  15cm (6in). **'Splendens'** see *var. striatum*. **'Splendens'**  *syn.* *var. lancastrisense*, *var. prostratum*, is compact, with pale flesh-pink flowers, veined darker pink;  $\uparrow$  10cm (4in); UK (Walney Island, Cumbria). **var. *striatum*** **'Splendens'**, *syn.* **'Splendens'**, is taller, with larger, dark-veined pink flowers, to 4.5cm (1¾in) across;  $\uparrow$  to 45cm (18in).

***G. sessiliflorum*** subsp. ***novae-zelandiae*** **'Nigrescens'** see *G. sessiliflorum* subsp. ***novae-zelandiae*** **'Nigricans'**.

***G. sessiliflorum*** subsp. ***novae-zelandiae*** **'Nigricans'**, *syn.* *G. sessiliflorum* subsp. ***novae-zelandiae*** **'Nigrescens'**. Rosette-forming herbaceous perennial with tufts of olive-bronze, basal leaves, 1.5–3cm (½–1¼in)



*Geranium sanguineum* var. *striatum*



across, divided into 5–7 shallowly 3-lobed segments. In summer, bears loose cymes of erect, funnel-shaped, greyish white flowers, about 7mm (¼in) across. Self-seeds freely. ‡ to 8cm (3in), ↔ to 15cm (6in). \*\*\*

**G. shikokianum.** Bushy, clump-forming herbaceous perennial with 5- to 7-lobed, light green, basal leaves, 5–10cm (2–4in) long, grey-marbled above and shiny beneath, each lobe itself divided and toothed. Funnel-shaped pink flowers, 2.5cm (1in) across, with large white centres and netted, red-purple veins, are borne in loose cymes from midsummer to early autumn. Good autumn colour. Prefers moist soil in light shade. ‡ 20–45cm (8–18in), ↔ 45cm (18in). Korea, S. Japan. \*\*\*

**G. sinense.** Slow-growing, clump-forming herbaceous perennial, with red-tinted stems bearing 7-lobed, many-toothed, mid-green, basal leaves, 5–16cm (2–6in) long. Loose cymes of velvety, deep maroon flowers, to 2cm (¾in) across, with reflexed petals revealing red bases, protruding stamen filaments with black anthers, and red stigmas, are produced from late summer to mid-autumn. ‡ 60cm (24in), ↔ 45cm (18in). S.W. China. \*\*\*

**G. stapfianum** var. **roseum** of gardens see *G. orientaltibeticum*.

**G. striatum** see *G. versicolor*.

**G. subcaulescens** see *G. cinereum* subsp. *subcaulescens*.

**G. sylvaticum** (Wood cranesbill).

Clump-forming herbaceous perennial with 7-lobed, mid-green, basal leaves, 10–20cm (4–8in) long, the lobes deeply cut and toothed. In late spring and early summer, bears dense cymes of erect or upward-facing, saucer-shaped, white-centred, lightly veined, blue-purple, pinkish purple, pink, or white flowers, 2–3cm (¾–1¼in) across. Best in moist soil. ‡ to 75cm (30in), ↔ 60cm (24in). Europe, N. Turkey. \*\*\*

**'Mayflower'** ■♀ has larger, rich violet-blue flowers, to 3.5cm (1½in) across, with smaller white centres. var. **wanneri** has purplish pink flowers with red veins.

**G. traversii** var. **elegans.** Low-growing, clump-forming, evergreen perennial with branching stems bearing silver-hairy, grey-green, basal leaves, to 10cm (4in) across, each deeply cut into 7 lobes, further divided into 3 lobes and with a few teeth. During summer, bears loose cymes of cup-shaped, pale pink flowers, to 3cm (1¼in) across, with dark veins. Needs shelter and well-drained soil to overwinter; usually self-seeds. ‡ to 10cm (4in), ↔ to 30cm (12in). New Zealand (Chatham Islands). \*

**G. tuberosum.** Upright, gently spreading, tuberous perennial, dormant in summer, but with new foliage produced in autumn. The mid-green, basal leaves, 5–10cm (2–4in) long, are deeply cut into 7 narrow, lobed, toothed divisions. Cymes of shallowly cup-shaped flowers, 2–3cm (¾–1¼in) across, with purple-shaded sepals and deeply notched, bright purple-pink petals with darker veins, are produced in mid-spring. ‡ 20–25cm (8–10in), ↔ 30cm (12in). Mediterranean. \*\*\*

**G. versicolor.** syn. *G. striatum*. Clump-forming, semi-evergreen perennial with mounds of 5-lobed, toothed, usually brown-marked, light green, basal leaves, 5–20cm (2–8in) long. Loose cymes of

funnel-shaped white flowers, 2.5–3cm (1–1¼in) across, with deeply notched petals and netted magenta veins, are produced in late spring, then sporadically into mid-autumn. ‡ to 45cm (18in). Italy (including Sicily), Balkans. \*\*\*

**G. wallichianum.** Tap-rooted herbaceous perennial with long, trailing, branching but non-rooting stems, with distinctive pairs of fused stipules and paired, 3- to 5-lobed, toothed, mid-green leaves, 5–15cm (2–6in) long, wrinkled and marbled above. Loose, leafy cymes of upward-facing, saucer-shaped, lilac or deep pinkish purple flowers, 2.5–3.5cm (1–1½in) across, with darker veins, white centres, and notched petals, are produced from midsummer to mid-autumn. ‡ 30cm (12in), ↔ 1.2m (4ft). N.E. Afghanistan to N. India (Kashmir). \*\*\*

**'Buxton's Variety'** ■♀ syn. *G. 'Buxton's Blue'*, is dense, compact, and spreading; the flowers, to 3cm (1¼in) across, have sky-blue petals, large, strongly veined white centres, and dark stamens and stigmas. Often comes true from seed. **'Syabru'** has magenta-pink flowers with longer, darker veins and a touch of white at the centres.

**G. wlassowianum.** Clump-forming, softly hairy herbaceous perennial with 7-lobed, dark green, basal leaves, 5–15cm (2–6in) long, each lobe usually cut into 3 toothed segments, shaded brown and deepening to red in autumn. From midsummer to early autumn, bears loose cymes of long-lasting, broadly funnel-shaped, purple-pink or pink flowers, 3cm (1¼in) across, with darker veins. Prefers moist soil. ‡ to 60cm (24in). Russia (E. Siberia), Mongolia, N. China. \*\*\*

**G. yesoense.** Bushy herbaceous perennial with thin, spreading stems and deeply 7-lobed, mid-green, basal leaves, 5–10cm (2–4in) long, each lobe sharply toothed. In mid- and late summer, produces loose cymes of saucer-shaped, pink or white flowers, 2.5cm (1in) across, with darker veins, and green sepals showing between the petals. Needs moist soil. ‡ to 30–45cm (12in–18in). N. and C. Japan (including Kurile Islands). \*\*\*

#### ▷ Geranium,

**Jungle** see *Ixora coccinea*

**Peppermint-scented** see

*Pelargonium tomentosum*

**Rose** see *Pelargonium* 'Graveolens' of gardens

**Sweet-scented** see *Pelargonium* 'Graveolens' of gardens

## GERBERA

ASTERACEAE/COMPOSITAE

Genus of about 40 species of hairy perennials from grassland in temperate and mountainous regions of Africa (except N. Africa), Madagascar, Asia, and Indonesia. Most form spreading, basal rosettes of lobed or pinnate, entire or toothed leaves, and bear long-lasting, solitary, single or double, daisy-like flowerheads in red, pink, purple, orange, or yellow, sometimes with yellow or white centres. In frost-prone climates, grow in a temperate greenhouse. Elsewhere, grow in a sunny border. Gerberas are also good for cutting.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer every 4 weeks. Keep moist in winter. Pot on annually in spring. Outdoors, grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or early spring; divide in early spring, or take basal cuttings in summer.

• **PESTS AND DISEASES** Leaf spot, leaf miners, root rot, aphids, whiteflies, and tarsonemid mites may be a problem.

**G. jamesonii** ■ (Barberron daisy, Transvaal daisy). Clump-forming, deep-rooting perennial with inversely lance-shaped, deeply lobed to pinnatifid leaves, 15–45cm (6–18in) long, dark green above, paler and sparsely to densely woolly beneath. Solitary, daisy-like, orange-scarlet flowerheads, 8–12cm (3–5in) across, with yellow centres, appear from late spring to late summer. Resents transplanting. ‡ 30–45cm (12–18in), ↔ 60cm (24in). South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal), Swaziland. ☉ (min. 5°C/41°F). Seed-raised selections are available in mixed colours. **'Californian Giants'** have single flowers in shades of yellow, apricot, orange, red and pink; ‡ to 60cm (24in). **Pandora Series** cultivars are free-flowering, in shades of cream, apricot, crimson-red, scarlet, pink, or lavender, with mid-green leaves; ‡ 25cm (10in). **Parade Series** cultivars have single or double, yellow, orange, red, or pink flowerheads. **Sunburst Series** cultivars have flowerheads to 10cm (4in) across, in shades of yellow, orange, red, or pink. **Tempo Series** cultivars bloom in shades of red, orange, pink, salmon-pink, cream, and yellow.

▷ **Germander,**

**Shrubby** see *Teucrium fruticans*

**Tree** see *Teucrium fruticans*



*Gerbera jamesonii*

## GESNERIA

GESNERIACEAE

Genus of about 50 species of mostly tuberous, usually evergreen perennials, subshrubs, and small trees, often epiphytic or rock-dwelling, found in tropical America and the West Indies. Tubular or bell-shaped flowers, usually 5-lobed, are white, red, orange, yellow, green, or brown, and borne singly or in cymes, with bracts at the bases of the flowering stems. The leaves are ovate, elliptic, or heart- or lance-shaped, and borne alternately or in opposite pairs. In frost-prone areas, grow in a warm greenhouse. Elsewhere, grow in shaded borders or as epiphytes on rocks or trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand and leaf mould, in bright filtered or indirect light. In growth, maintain at 18°C (64°F), with high humidity, and water freely with soft water; keep leaves dry but compost always moist. Apply a quarter-strength balanced liquid fertilizer every 4 weeks. Keep dry in winter. Outdoors, grow in moist, humus-rich soil in deep shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or take stem or leaf cuttings in late spring.

• **PESTS AND DISEASES** Flower thrips and *Fusarium* wilt may be a problem.

**G. cuneifolia.** Erect or decumbent, woody-based perennial with hairless or slightly hairy, inversely lance-shaped or obovate, scalloped or toothed leaves, 2–14cm (¾–5½in) long, clustered at the branch tips. In summer, bears few-flowered, pendent, arching cymes of tubular, pink or deep red flowers, to 2.5cm (1in) long, and yellow or pink inside. ‡ to 15cm (6in). Puerto Rico. ☉ (min. 14°C/57°F)

**G. zebrina** see *Smithiantha zebrina*.

▷ **Gesneriads** see p.40

G

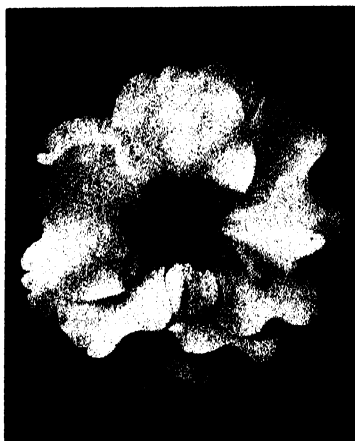
## GEUM

Avers

ROSACEAE

Genus of about 50 species of rhizomatous, occasionally stoloniferous perennials from mountainous habitats, streamsides, moist meadows, and woodland in arctic and temperate regions of Europe, Asia, New Zealand, North and South America, and Africa. They have unequally pinnate to pinnatisect, wrinkled leaves, the leaflets with toothed or scalloped margins; the leaves are mainly borne in basal rosettes. The erect, open, 5-petalled, saucer- to bowl-shaped, usually upright but occasionally pendent flowers, in shades of cream, yellow, orange, pink, or red, are solitary or borne in cymes, and bloom from late spring to summer. The stems of *G. chilense* hybrids tend to be more branched than those of *G. coccineum* hybrids. The smaller geums are suitable for growing in a rock garden; the larger can be grown at the front of a border.

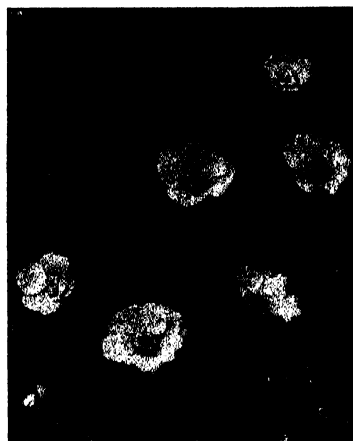
- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun; *G. rivale* and its cultivars prefer humus-rich, moist soil. Avoid soil that is waterlogged in winter.
- **PROPAGATION** Sow seed in containers in a cold frame, or divide, in autumn or spring. *G. 'Lady Stratheden'* and *G. 'Mrs. J. Bradshaw'* come virtually true from seed, but most of the larger geums hybridize readily in gardens.
- **PESTS AND DISEASES** Sawfly larvae may cause damage to leaves.

*Geum* 'Lady Stratheden'

*G. x borisii* of gardens see *G. coccineum*.

*G. chilense*, syn. *G. coccineum* of gardens. Clump-forming, densely woolly perennial. Basal leaves, 10–30cm (4–12in) long, are pinnate; the heart- to kidney-shaped terminal leaflets, 2.5cm (1in) long, are scarcely larger than the lateral leaflets. Stem leaves are deeply 3-lobed and toothed. Branched stems bear cymes of saucer-shaped scarlet flowers, to 4cm (1½in) across, from early to late summer. ‡ 40–60cm (16–24in), ↔ 60cm (24in). Chile. \*\*\*. 'Dolly North' produces glowing, deep orange flowers. 'Fire Opal' ♀ produces semi-double, reddish orange flowers on purple stems; ‡ to 75cm (30in).

*G. coccineum* ♂ syn. *G. x borisii* of gardens. Clump-forming perennial with

*Geum montanum*

upright, pinnate, softly hairy, basal leaves, to 20cm (8in) long, the kidney-shaped terminal leaflets, 5–15cm (2–6in) long, much larger than the lateral leaflets. Stem leaves are deeply toothed but unlobed. From late spring to late summer, bears cymes of 2–4 brick-red flowers, to 4cm (1½in) across, with spreading petals and conspicuous yellow stamens. ‡ 30–50cm (12–20in), ↔ 30cm (12in). Balkans. \*\*\*  
*G. coccineum* of gardens see *G. chilense*.

*G. 'Feuerball'* see *G. 'Mrs. J. Bradshaw'*. *G. 'Georgenberg'*, *G. chilense* hybrid with pinnate, bright green leaves, 10–15cm (4–6in) long. The terminal leaflets are kidney-shaped and to 8cm (3in) long; the other leaflets are much smaller. Branched stems bear saucer-

shaped, orange-yellow flowers, to 4cm (1½in) across, from late spring to midsummer. ‡ 25cm (10in), ↔ 30cm (12in). \*\*\*

*G. 'Goldball'* see *G. 'Lady Stratheden'*.

*G. 'Lady Stratheden'* ♂ ♀ syn. *G. 'Goldball'*. *G. chilense* hybrid bearing pinnate, hairy leaves, to 20cm (8in) long, comprised of kidney-shaped terminal leaflets, the remainder ovate. Semi-double, rich yellow flowers, 4.5cm (1¾in) across, are produced in cymes of 1–5 throughout summer. ‡ 40–60cm (16–24in), ↔ 60cm (24in). \*\*\*

*G. montanum* ♂ ♀ Clump-forming perennial with thick, spreading rhizomes and dense clusters of radical, pinnate, dark green leaves, to 10cm (4in) long, each with a large, rounded or kidney-shaped, terminal lobe. From spring to early summer, bears solitary, cup-shaped, deep golden yellow flowers, to 4cm (1½in) across, on short stems, occasionally in cymes of 2 or 3. ‡ 15cm (6in), ↔ to 30cm (12in). Mountains of C. and S. Europe. \*\*\*

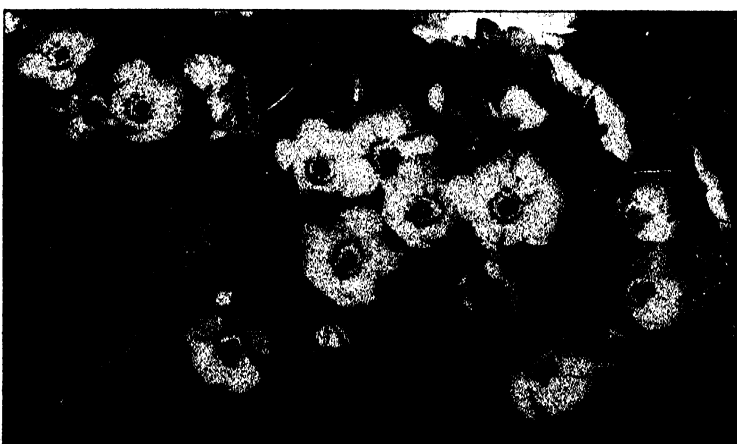
*G. 'Mrs. Bradshaw'* see *G. 'Mrs. J. Bradshaw'*.

*G. 'Mrs. J. Bradshaw'* ♀ syn. *G. 'Feuerball'*, *G. 'Mrs. Bradshaw'*. Hybrid of *G. chilense* bearing pinnate, hairy leaves, 15–20cm (6–8in) long, with kidney-shaped terminal leaflets, the remainder ovate. Semi-double scarlet flowers, 4.5cm (1¾in) across, are produced in cymes of 1–5 from early to late summer. ‡ 40–60cm (16–24in), ↔ 60cm (24in). \*\*\*

*G. 'Prince of Orange'*, *G. coccineum* hybrid producing pinnate, hairy leaves, to 30cm (12in) long, with kidney-shaped terminal leaflets, the remainder ovate. Bears cymes of 1–4 brilliant orange flowers, 4.5cm (1¾in) across, with slightly cupped petals, in early and midsummer. ‡ ↔ to 60cm (24in). \*\*\*  
*G. 'Princess Juliana'* see *G. 'Prinses Juliana'*.

*G. 'Prinses Juliana'*, syn. *G. 'Princess Juliana'*. *G. chilense* hybrid bearing pinnate, hairy leaves, 10–20cm (4–8in) long, with heart- to kidney-shaped terminal leaflets, the remainder smaller and ovate. Semi-double, red-flushed, bright yellow flowers, 4.5cm (1¾in) across, are produced in cymes of 1–5 in early and midsummer. ‡ ↔ 40–60cm (16–24in). \*\*\*

*G. 'Red Wings'* ♂ *G. coccineum* hybrid bearing pinnate, hairy leaves, to 25cm (10in) long, with heart- to kidney-shaped terminal leaflets, the remainder

*Geum* 'Red Wings'*Geum coccineum**Geum reptans*

*Geum* 'Tangerine'

smaller and ovate. Bears semi-double, bright scarlet flowers, 4.5cm (1¾in) across, in cymes of 1–3, in early and midsummer. Very free-flowering. ‡ to 60cm (24in), ↔ to 40cm (16in). \*\*\*  
***G. reptans*** ■ syn. *Sieversia reptans*. Rhizomatous perennial, spreading by stolons, bearing rosettes of radical, pinnate leaves, to 15cm (6in) long, with deeply toothed, rounded leaflets. Produces usually solitary, shallowly cup-shaped, bright yellow flowers, to 4cm (1½in) across, in early summer. Best grown in a scree bed or alpine house. ‡ to 15cm (6in), ↔ to 20cm (8in). Alps, Carpathians, Balkans. \*\*\*  
***G. rivale***. Upright perennial with pinnate, basal leaves, to 15cm (6in) or more long. The terminal and upper pair of leaflets are obovate or wedge-shaped, coarsely scalloped or toothed, and to 5cm (2in) long; the rest are very small. From late spring to midsummer, bears cymes of 2–5 pendent, bell-shaped, dusky pink to dark orange-red flowers, to 2cm (¾in) across, with conspicuous, red-brown sepals that are almost as long as the petals. ‡ to 20–60cm (8–24in). Europe. \*\*\*  
**'Coppertone'**, probably a hybrid of *G. rivale*, has toothed leaves, brown flower stems, and slightly pendent, copper-apricot flowers, to 5cm (2in) across, with wavy petals and reddish brown sepals; ‡ to 30cm (12in). **'Lemon Drops'**, probably a hybrid of *G. rivale*, has slender brown stems bearing long-stalked, open, lemon-yellow flowers, pendent at first, with brownish green sepals; ‡ to 25cm (10in). **'Leonard's Variety'**, syn. **'Leonardii'**, is very free-flowering, with pendent, copper-pink, orange-tinged flowers, to 4cm (1½in) across, on mahogany stems, borne in mid- and late summer; ‡ to 45cm (18in). **'Lionel Cox'**, probably a hybrid of *G. rivale*, forms large clumps of soft green leaves, and produces pendent, open bell-shaped, creamy apricot flowers with wavy petals; ‡ 30cm (12in). **'Sigiswang'**, probably a hybrid of *G. rivale*, is mound-forming, bearing bright green leaves, 13–15cm (5–6in) long, with kidney-shaped terminal leaflets, the rest smaller, and cymes of red-shaded orange flowers, 3cm (1¼in) across.  
***G. 'Tangerine'*** ■ is a hybrid of *G. rivale*, with similar foliage. From late spring to midsummer, produces cymes of 1–3 bright orange, slightly nodding, saucer-shaped flowers, to 2.5cm (1in) across. ‡ to 30cm (12in). \*\*\*

## GEVUINA

PROTEACEAE

Genus of one species of evergreen tree or shrub found in moist forests in the mountains of Chile. Grown for its attractive, alternate, pinnate or 2-pinnate leaves and its white summer flowers, it thrives outdoors only in relatively mild, moist climates, where it is best planted in sheltered woodland. Elsewhere, grow in a cool greenhouse.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) compost in bright filtered light. Outdoors, grow in fertile, acid to neutral, moist but well-drained soil in partial shade; protect from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or root semi-ripe cuttings with bottom heat in late summer.

• **PESTS AND DISEASES** Trouble free.

***G. avellana*** △ (Chilean hazel, Chile nut). Conical, evergreen tree or large shrub with pinnate or 2-pinnate, glossy, dark green leaves, to 40cm (16in) long, each with up to 30 coarsely toothed, ovate-elliptic, leathery leaflets. Slender racemes, to 12cm (5in) long, of spider-like, white, occasionally red- or green-tinged flowers, 2.5cm (1in) long, are produced in late summer, sometimes followed by ovoid red fruit, 1cm (½in) or more long, ripening black. ‡ to 10m (30ft). Chile. \*\*

▷ **Ghost tree** see *Davidia*

▷ **Ghost weed** see *Euphorbia marginata*

▷ **Giant Spaniard** see *Aciphylla scott-thomsonii*

## GIBBAEUM

AIZOACEAE

Genus of about 20 species of fleshy, perennial succulents found in semi-desert areas of South Africa. Pairs of thick, fleshy leaves, often of different sizes, unite to form an almost spherical or elongated body. Solitary, daisy-like flowers are borne from early autumn to early winter. The plants offset freely, producing large colonies. Where temperatures drop below 7°C (45°F), grow as houseplants or in a temperate greenhouse. In warm, dry climates, grow in a desert garden or mixed border with other succulents.

*Gibbaeum petrense**Gibbaeum velutinum*

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From mid-autumn (when new growth appears) to early spring, water sparingly and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Keep dry during the rest of the year. Outdoors, grow in poor, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or divide offsets, in spring or summer.

• **PESTS AND DISEASES** Trouble free.

***G. album***. Clump-forming succulent with whitish to pale grey, paired leaves of different sizes, each pair united to form an obliquely ovoid body, to 2.5cm (1in) long, densely covered with tiny white hairs and with a cleft below the tip. Bears white or pink flowers, 2.5cm (1in) across, from early autumn to early winter. ‡ 2.5cm (1in) or more, ↔ 24cm (10in) or more. South Africa (Northern Cape, Western Cape). ☼ (min. 7°C/45°F)

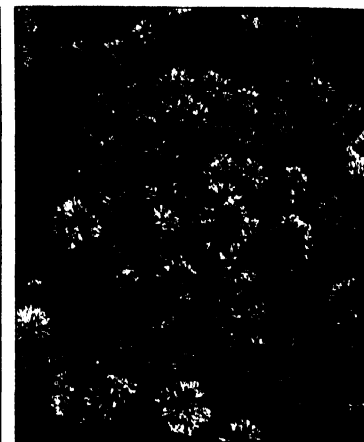
***G. petrense*** ■ Mat-forming succulent with fleshy roots and small stems bearing paired, greyish green leaves, 1cm (½in) long, keeled above, rounded below, each pair united for one-third of their length. Bears terminal to axillary, magenta to red or pink flowers, 1.5cm (½in) across, from early autumn to early winter. ‡ to 3cm (1¼in), ↔ 15cm (6in) or more. South Africa (Western Cape). ☼ (min. 7°C/45°F)

***G. velutinum*** ■ Mat-forming succulent with small stems bearing paired, slender, differently sized, bluish grey-green leaves, 4–6cm (1½–2½in) long, each pair united towards the base, the longer leaf with an incurved, hooked tip. Bears lilac, pink, or white flowers, 4–5cm (1½–2in) across, from early autumn to early winter. ‡ 8cm (3in), ↔ 30cm (12in). South Africa (Western Cape). ☼ (min. 7°C/45°F)

## GILIA

POLEMONIACEAE

Genus of 25–30 species of erect annuals, occasionally perennials, from grassland and chaparral in S.W. North America and W. and S. South America. The leaves are mostly basal, entire to finely divided, pinnate or 2-pinnate, and often with soft, sticky hairs above. The flowers are small, showy, salverform to tubular-funnel-shaped, violet-blue, pink, or red,

*Gilia capitata*

produced singly in the leaf axils, in terminal panicles, or in compact clusters borne terminally and in the upper leaf axils, from late spring to late summer. Grow in an annual or mixed border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, well-drained soil in full sun.

• **PROPAGATION** Sow seed *in situ* in autumn or mid-spring, or at 10–13°C (50–55°F) in early spring.

• **PESTS AND DISEASES** Trouble free.

***G. achilleifolia***. Erect annual with 2-pinnate leaves, 4–10cm (1½–4in) long, and sickle-shaped leaflets. In summer, bears mid-blue to blue-violet flowers, to 2.5cm (1in) long, in dense, fan-shaped, terminal or axillary cymes, 3–8cm (1¼–3in) across. ‡ to 70cm (28in), ↔ 20–23cm (8–9in). USA (California), Mexico (Baja California). \*\*\*

***G. capitata*** ■ (Queen Anne's thimbles). Erect annual with feathery, 2-pinnate leaves, 4–10cm (1½–4in) long, with linear leaflets. In summer, bears terminal and axillary, pincushion-like heads, 1.5–4cm (½–1½in) across, of many lavender-blue flowers, 6–8mm (¼–¾in) long, with protruding stamens. ‡ 45–60cm (18–24in), ↔ 20–23cm (8–9in). E. North America. \*\*\*  
***G. tricolor*** (Bird's eyes). Mound-forming annual with pinnate to 2-pinnate leaves, 1–4cm (½–1½in) long, with very narrow leaflets. From late spring to late summer, saucer-shaped, pale to dark violet-blue flowers, 1.5cm (½in) long, with pale violet-blue spots around the orange or yellow centres, are borne on slender, very leafy stalks, either singly or in clusters of 2–5. ‡ 30–45cm (12–18in), ↔ 23cm (9in). USA (California). \*\*\*

## GILLENIA

ROSACEAE

Genus of 2 species of rhizomatous perennials from open woodland in C., E., and S.E. North America. They have 3-palmate, bronze-green leaves and loose, few-flowered panicles of white or pink flowers, with slightly unequal, inversely lance-shaped to linear-lance-shaped petals, the sepals enlarging when in fruit. Gillenias are graceful plants for light woodland or a shady border, and are good for cutting.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, slightly acid to neutral, moist but well-drained

*Gillenia trifoliata*

soil in partial shade, or full sun with shade during the hottest part of the day.

• **PROPAGATION** Sow seed in containers in a cold frame, or divide, in spring or autumn.

• **PESTS AND DISEASES** Slugs may eat young shoots.

**G. trifoliata** ■ ♀ (Bowman's root, Indian physic). Erect perennial with branched, red-tinted stems and alternate, 3-palmate, coarsely toothed, conspicuously veined, bronze-green leaves, with ovate-oblong leaflets, each 8cm (3in) long. Bears irregularly star-shaped, white to pinkish white flowers, 2.5–4cm (1–1½in) across, with narrow petals and red-tinted calyces, from late spring to late summer. † to 1m (3ft), ↔ 60cm (24in). E. North America (Ontario to Georgia). \*\*\*

▷ **Gillyflower** see *Matthiola*, *M. incana*

▷ **Ginger,**

**Crepe** see *Costus speciosus*

**Indian** see *Alpinia calcarata*

**Kahili** see *Hedychium gardnerianum*

**Red** see *Alpinia purpurata*

**Shell** see *Alpinia zerumbet*

**Spiral** see *Costus malortieanus*

*Ginkgo biloba* (inset: leaf detail)

▷ **Ginger cont.**

**Torch** see *Estlingera elatior*

**Variegated** see *Alpinia vittata*

**Wild** see *Asarum*

▷ **Ginger lily** see *Alpinia*, *Hedychium*

**Dwarf** see *Kaempferia rooseaeana*

**Red** see *Hedychium coccineum*

**Scarlet** see *Hedychium coccineum*

**White** see *Hedychium coronarium*

## GINKGO

Maidenhair tree

GINKGOACEAE

Genus of one species of deciduous, dioecious tree from S. China, extinct in the wild but preserved and still grown in temple gardens and as a specimen tree. Long shoots bear alternate leaves, while woody spur shoots bear densely clustered leaves and flowers. The fan-shaped, divided, mid- to yellow-green leaves turn golden yellow in autumn. The fleshy fruit smell unpleasant as they decay; they contain large, edible nuts. *G. biloba* tolerates atmospheric pollution and is an excellent landscape tree.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any fertile, well-drained soil in full sun. Pruning group 1.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe, or take semi-ripe cuttings in summer. Graft in winter.

• **PESTS AND DISEASES** Trouble free.

**G. biloba** ■ ♀ ♂ (Maidenhair tree).

Upright tree, columnar then wide-spreading, with furrowed, dull grey bark. Flat, fan-shaped, mid- to yellow-green leaves, to 12cm (5in) across, are tapered into the stalks and usually lobed at the tips. Catkin-like, pendulous, cylindrical yellow male flowers, 8cm (3in) long, are borne in clusters. Round, solitary female flowers produce plum-like, yellow-green fruit, 3cm (1¼in) long, in autumn. † to 30m (100ft), ↔ to 8m (25ft). S. China. \*\*\*. 'Princeton Sentry' ♀ is narrow, upright, and male.

## GLADIOLUS

syn. ACIDANTHERA, HOMOGLOSSUM  
IRIDACEAE

Genus of about 180 species of cormous perennials from rocky slopes, seasonally dry grasslands, and marshy areas, mainly in South Africa, but also from the Mediterranean, the Arabian Peninsula, N.W. and E. Africa, Madagascar, and W. Asia. They are grown for their showy spikes of usually open, funnel-shaped flowers, borne mainly from spring to early autumn. The flowers each have 6 tepals: usually 1 central upper tepal, 3 often quite small lower or lip tepals, and 2 side or wing tepals. They open from the bottom of the spikes upwards, older blooms dying off as new ones develop (the number of buds open at any one time is given in brackets in each hybrid and cultivar description below). Erect leaves, borne in basal fans, are narrow, linear or sword-shaped, mid- to dark green, and 24–60cm (10–24in) long.

Plant gladioli in clumps in a mixed border, or in rows for cutting. In frost-prone climates, grow frost-hardy gladioli by a sheltered, sunny wall; winter-flowering South African gladioli require a cool greenhouse. In warmer areas, plant in open, sunny, well-drained sites.

Over 10,000 hybrids and cultivars have been developed for garden cultivation, exhibiting, and cutting. They are classified into three main groups: Grandiflorus, Nanus, and Primulinus (see below). Flowers may be borne either in a formal arrangement, side by side on the stem, so when open there is no daylight visible between them, or less formally, with one bloom above another, like a step-ladder.

### Grandiflorus Group

Hybrids and cultivars in this group flower from early to late summer. Each corm produces one closely packed spike, 50–90cm (20–36in) long, with as many as 28 buds, up to 12 open at a time, usually formally arranged. Tepals may be plain, usually denoting Dutch origin, or ruffled, indicating American origin. The texture of the tepals varies from paper thin to much thicker. Grandiflorus gladioli are classified into 5 sizes, determined by the diameter of the bottom flower on the spike, as follows:

GIANT	14cm (5½in) or more
LARGE	11–14cm (4½–5½in)
MEDIUM	9–11cm (3½–4½in)
SMALL	6–9cm (2½–3½in)
MINIATURE	3.5–6cm (1½–2½in)

### Nanus Group

Nanus hybrids and cultivars flower in early summer, and are ideal for cutting and corsages. Each corm produces 2 or 3 slender spikes, 22–35cm (9–14in) long, with loosely arranged flowers, 4–5cm (1½–2in) across. Each spike bears up to 7 buds, 3–5 open at a time. The tepals are moderately thick.

### Primulinus Group

Hybrids and cultivars in this group flower from early to late summer. Each corm produces one thin, whip-like stem, 30–60cm (12–24in) long, which bears as many as 23 buds, up to 7 open at a time, mainly in a semi-formal, step-ladder arrangement. The triangular

flowers are usually 3.5–7cm (1½–3in) across, with paper thin to moderately thick tepals. The top central tepal is hooded and held at right-angles to the stem, covering the stigma and anthers.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun, planting the corms 10–16cm (4–6in) deep in spring, on a bed of sharp sand to aid drainage. For frost-hardy to half-hardy gladioli, apply a high-potash liquid fertilizer when the flower spikes reach one-third to half their final height; repeat every 10–14 days until 3 weeks after flowering. In frost-prone areas, lift them when the leaves turn yellow-brown; snap the corms from the stems, dip in fungicide, and dry for 14 days. Separate new corms from old, and discard the old. Keep dry and frost-free until planted. Under glass, grow winter-flowering South African gladioli in loam-based potting compost (J1 No.1), with additional sharp sand, in full light. Water moderately in growth.

• **PROPAGATION** Sow seed of hardy species in containers in a cold frame in spring; sow seed of half-hardy to tender species at 15°C (59°F) in spring. Separate cormlets when dormant.

• **PESTS AND DISEASES** Prone to gladioli corm rot, various types of grey mould (*Botrytis*), thrips, aphids, and slugs.

**G. alatus**. Short-lived, cormous perennial with linear leaves, 8–40cm (3–16in) long. Bears up to 10 hooded, funnel-shaped, scented flowers, 4.5cm (1¾in) across, from late winter to spring (late spring to summer in cool climates). Upper tepals are salmon-pink to orange or red; lip tepals are lime-green, tipped with salmon-pink to orange or red. Best grown regularly from seed. † 8–35cm (3–14in), ↔ 5cm (2in). South Africa (Northern Cape, Eastern Cape, Western Cape). \*

**G. 'Amanda Mahy'** ■ Nanus gladiolus bearing salmon-pink flowers, 5cm (2in)

*Gladiolus callianthus*



*Gladiolus* 'Amanda Mahy'



*Gladiolus* 'Amy Beth'



*Gladiolus* 'Anna Leorah'



*Gladiolus* 'Beau Rivage'



*Gladiolus* 'Beauty of Holland'



*Gladiolus* 'Carrara'



*Gladiolus* 'Charmer'

across, with lip tepals flecked violet and white, in early summer. Flower spike is 30cm (12in) long, with 7 buds (3 or 4 open). †80cm (32in), ↔ 8–10cm (3–4in). \*

**G. 'Amsterdam'**. Giant-flowered Grandiflorus gladiolus bearing slightly upward-facing white flowers, with gently ruffled tepals, in late summer. Flower spike is 70–80cm (28–32in) long, with 24–27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Amy Beth'** ■ Small-flowered Grandiflorus gladiolus. In midsummer, bears strongly ruffled, lilac-pink flowers, with cream lip tepals. Flower spike is 55–60cm (22–24in) long, with 22 buds (7 open). †1.2m (4ft), ↔ 8–10cm (3–4in). \*

**G. 'Anitra'**. Primulinus gladiolus producing blood-red flowers, 4–6cm (1½–2½in) across, in midsummer. Flower spike is 45cm (18in) long, with 17 buds (6 or 7 open). †1m (3ft), ↔ 8–10cm (3–4in). \*

**G. 'Anna Leorah'** ■ Large-flowered Grandiflorus gladiolus producing strongly ruffled, mid-pink flowers, with large white throats, in midsummer. Flower spike is 70–80cm (28–32in) long, with 25 buds (10 open). †1.6m (5½ft), ↔ 15cm (6in). \*

**G. 'Antique Rose'**. Medium-flowered Grandiflorus gladiolus. In late summer, produces slightly ruffled, old rose-pink flowers with lavender-blue throats marked with deep rose-pink flashes. Flower spike is 70–80cm (28–32in) long, with 26 buds (10 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Award'**. Large-flowered Grandiflorus gladiolus. In midsummer, bears rose-pink flowers, fading to white in the throats, with slightly ruffled tepals. Flower spike is 75cm (30in) long, with 26 buds (8 or 9 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Babette'**. Large-flowered Grandiflorus gladiolus producing soft salmon-pink flowers, with small cream throats and slightly ruffled tepals, in midsummer. Flower spike is 80cm (32in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Beau Rivage'** ■ Large-flowered Grandiflorus gladiolus producing ruffled, deep coral-pink flowers in summer. Flower spike is 50cm (20in)

long, with 15 buds (5–9 open). † to 1.2m (4ft), ↔ 30cm (12in). \*

**G. 'Beauty of Holland'** ■ Large-flowered Grandiflorus gladiolus bearing ruffled, pink-margined white flowers in midsummer. Flower spike is 70–75cm (28–30in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

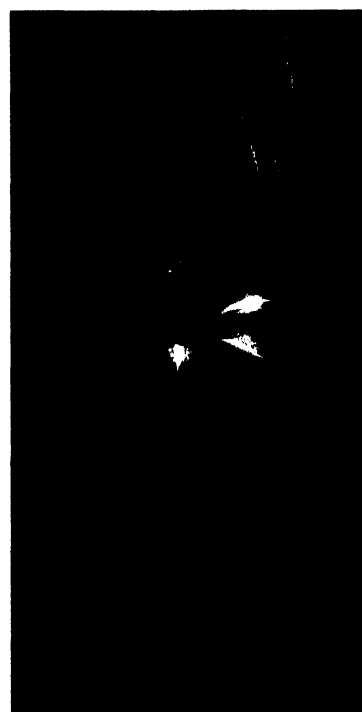
**G. blandus** see *G. carneus*.

**G. blandus** var. *carneus* see *G. carneus*.

**G. 'Blue Delight'**. Large-flowered Grandiflorus gladiolus that produces slightly ruffled, mid-blue flowers, with blue-peppered white throats, in midsummer. Flower spike is 70–80cm (28–32in) long, with 25 buds (9 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Blue Heaven'**. Large-flowered Grandiflorus gladiolus. In midsummer, produces strongly ruffled, mid-blue flowers, with very large, pure white throats. Flower spike is 70–75cm (28–30in) long, with 25 buds (8 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. byzantinus** see *G. communis* subsp. *byzantinus*.



*Gladiolus cardinalis*

**G. callianthus** ■♀ syn. *Adianthera bicolor* var. *murielae*, *A. murielae*.

Cormous perennial with linear leaves 15–45cm (6–18in) long. In late summer and early autumn, bears loose spikes of up to 10 hooded, funnel-shaped, strongly scented, pure white flowers, 5cm (2in) across, each with a prominent purple-red mark in the throat. Blooms curve downwards on very long, thin tubes. †70–100cm (28–39in), ↔ 5cm (2in). Eritrea to Mozambique. \*

**G. 'Caravan'**. Large-flowered Grandiflorus gladiolus. In midsummer, bears strongly ruffled, chocolate-brown flowers with small cream throats marked with maroon flashes. Flower spike is 70cm (28in) long, with 22–24 buds (9 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. cardinalis** ■ Cormous perennial with sword-shaped leaves, 40–90cm (16–36in) long. In summer, arching stems bear up to 12 widely funnel-shaped, bright red flowers, 5cm (2in) across, a white flash on each of the lip tepals. †60–90cm (24–36in), ↔ 8cm (3in). South Africa (Western Cape). \*

**G. carneus**, syn. *G. blandus*, *G. blandus* var. *carneus*. Slender, cormous perennial with linear or sword-shaped leaves, to 60cm (24in) long. Lax, sometimes branched spikes of 3–12 funnel-shaped flowers, 5cm (2in) across, are produced in late spring and early summer. Flowers are usually cream but may be white or pink; they have a well-defined, usually dark red, sometimes yellow mark on the lip tepals. †20–100cm (8–39in), ↔ 5cm (2in). South Africa (Western Cape). \*

**G. 'Carrara'** ■ Large-flowered Grandiflorus gladiolus. In late summer, bears ruffled, creamy white flowers. Flower spike is 75–85cm (30–34in) long, with 24–27 buds (9 or 10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. caryophyllaceus**, syn. *G. hirsutus*. Cormous perennial with linear, hairy leaves, 20–60cm (8–24in) long. From late winter to spring, bears one-sided or 2-ranked spikes of 2–8 bell- or funnel-shaped, hawthorn-scented, pink or mauve flowers, 2–4cm (¾–1½in) across, the lip tepals spotted or streaked red or pink. †50–75cm (20–30in), ↔ 15cm (6in). South Africa (Western Cape). \*

**G. 'Charm'** ■ Nanus gladiolus producing purple-red flowers, 4cm (1½in) across, with ivory throats, in

early summer. Flower spike is 22cm (9in) long, with 7 buds (4 or 5 open). †70cm (28in), ↔ 8–10cm (3–4in). \*

**G. 'Charmer'** ■ Large-flowered Grandiflorus gladiolus with strongly ruffled, almost translucent, light pink flowers, borne in early and midsummer. Flower spike is 85cm (34in) long, with 27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Cherry Pie'**. Large-flowered Grandiflorus gladiolus. Ruffled, cherry-red flowers, with pure white midribs and throats, are borne in late summer. Flower spike is 75–80cm (30–32in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Chinese Wax'**. Medium-flowered Grandiflorus gladiolus producing strongly ruffled, deep cream flowers in early summer. Flower spike is 65–70cm (26–28in) long, with 24 buds (7 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Chiquita'**. Large-flowered Grandiflorus gladiolus bearing strongly ruffled, light yellow flowers in early and



*Gladiolus* 'Charm'

G



*Gladiolus*  
'Chloe'



*Gladiolus* 'Côte  
d'Azur'



*Gladiolus* 'Dutch  
Mountain'



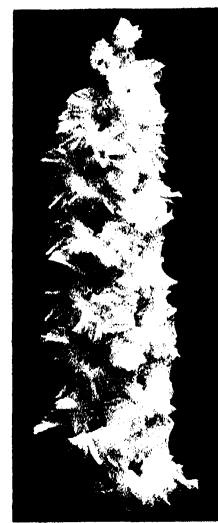
*Gladiolus*  
'Elvira'



*Gladiolus*  
'Esta Bonita'



*Gladiolus*  
'Firestorm'



*Gladiolus* 'Florence C'



*Gladiolus* 'Frank's  
Perfection'

midsummer. Flower spike is 70–75cm (28–30in) long, with 24 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Chloe'** ■ Medium-flowered *Grandiflorus* gladiolus. In early and midsummer, produces slightly ruffled, deep orange flowers with lighter throats. Flower spike is 65–75cm (26–30in) long, with 25 buds (9 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Christabel'**. *G. tristis* hybrid with loose spikes of 6–10 flared, scented, primrose-yellow flowers, 8–10cm (3–4in) across, in spring. Upper tepals are primrose-yellow, marked with purple. †45cm (18in), ↔ 5cm (2in). \*

**G. 'Columbine'**. *Primulinus* gladiolus producing rose-pink flowers, 6cm (2½in) across, with white lip tepals, in midsummer. Flower spike is 50cm (20in) long, with 18 buds (6 or 7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. x colvilei 'The Bride'** see *G. 'The Bride'*.

**G. 'Comet'**. *Nanus* gladiolus bearing cherry-red flowers, 5cm (2in) across, in

early summer. Flower spike is 30cm (12in) long, with 5 buds (3 or 4 open). †75cm (30in), ↔ 8–10cm (3–4in). \*

**G. *communis* subsp. *byzantinus*** ■ ♀ syn. *G. byzantinus*. Vigorous perennial producing linear leaves, 10–70cm (4–28in) long. From late spring to early summer, bears spikes of up to 20 funnel-shaped, deep magenta flowers, 5cm (2in) across, with paler marks on the lip tepals. Spreads freely from cormlets. † to 1m (3ft), ↔ 8cm (3in). Spain, N.W. Africa, Sicily. \*\*\* (borderline)

**G. 'Connie Jean'**. Large-flowered *Grandiflorus* gladiolus producing strongly ruffled, mid-pink flowers, with cream throats, in late summer. Flower spike is 70–75cm (28–30in) long, with 27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Coral Embers'**. Large-flowered *Grandiflorus* gladiolus. Ruffled, soft rose-pink flowers, the throats coloured white, are produced in midsummer. Flower spike is 75–80cm (30–32in)

long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Côte d'Azur'** ■ Giant-flowered *Grandiflorus* gladiolus bearing ruffled, mid-blue flowers, with pale blue throats, in early summer. Flower spike is 75cm (30in) long, with 23 or 24 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Crimson Fire'**. Giant-flowered *Grandiflorus* gladiolus. In midsummer, produces strongly ruffled, deep rose-red flowers, with deeper rose-red "thumb prints" on the lip tepals. Flower spike is 80cm (32in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. *dalenii***, syn. *G. natalensis*, *G. psittacinus*, *G. quartiniatus*. Robust, cormous perennial, spreading freely by underground runners, with linear or sword-shaped leaves, to 60cm (24in) long. In summer, bears one-sided spikes of few to many hooded, funnel-shaped flowers, 5cm (2in) across, which are red, orange, or yellow, sometimes spotted green or brown. †1–1.5m (3–5ft), ↔ 8cm (3in). South Africa (Eastern Cape) and through tropical Africa to Ethiopia and W. Arabian Peninsula. \*

**G. 'Déjà Vu'**. Giant-flowered *Grandiflorus* gladiolus producing ruffled, light pink flowers, with darker margins, in late summer. Flower spike is 80–85cm (32–34in) long, with 25 buds (9 open). †1.8m (6ft), ↔ 15cm (6in). \*

**G. 'Drama'** ■ Large-flowered *Grandiflorus* gladiolus bearing slightly ruffled, deep rose-pink flowers, with red-speckled yellow throats, in late summer. Flower spike is 70–80cm (28–32in) long, with 26 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Dress Parade'**. Large-flowered *Grandiflorus* gladiolus bearing slightly ruffled, deep salmon-pink flowers in late summer. Flower spike is 80–85cm (32–34in) long, with 26 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Dutch Mountain'** ■ Large-flowered *Grandiflorus* gladiolus bearing slightly ruffled white flowers, with small green marks in the throats, in midsummer. Flower spike is 80cm (32in) long, with 25 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Elvira'** ■ *Nanus* gladiolus bearing pale pink flowers, 5cm (2in) across, with red marks on the lip tepals, in early summer. Flower spike is 30cm (12in)

long, with 6 buds (3 or 4 open). †80cm (32in), ↔ 8–10cm (3–4in). \*

**G. 'Ermal'**. Giant-flowered *Grandiflorus* gladiolus. Ruffled, glowing red flowers, with small white throats, are produced in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

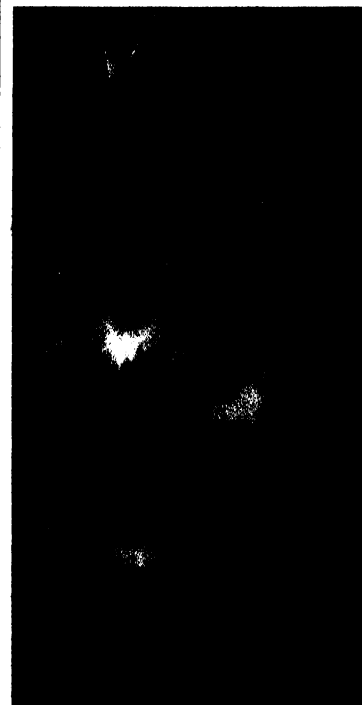
**G. 'Ermine'**. Medium-flowered *Grandiflorus* gladiolus producing strongly ruffled white flowers, with creamy throats, in mid- and late summer. Flower spike is 70–75cm (28–30in) long, with 25 buds (9 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Esta Bonita'** ■ Giant-flowered *Grandiflorus* gladiolus producing pale orange flowers, with light yellow throats, in late summer. Flower spike is 75–80cm (30–32in) long, with 24 buds (8 open). †1.8m (6ft), ↔ 15cm (6in). \*

**G. 'Eternal Beauty'**. Large-flowered *Grandiflorus* gladiolus bearing ruffled, light blue flowers, with chalk-white throats, in midsummer. Flower spike is

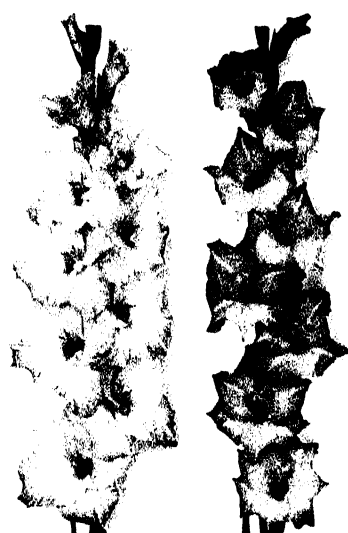


*Gladiolus communis* subsp. *byzantinus*



*Gladiolus* 'Drama'





*Gladiolus*  
'Full House'

*Gladiolus*  
'Georgette'



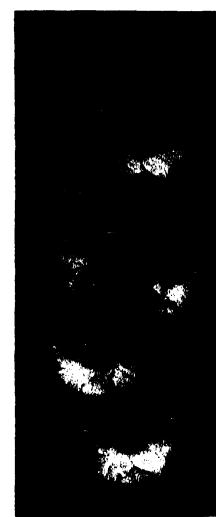
*Gladiolus* 'Green  
Woodpecker'

*Gladiolus*  
'Halley'



*Gladiolus*  
'Happy Time'

*Gladiolus*  
'Jo Ann'



*Gladiolus* 'Little  
Darling'



*Gladiolus*  
'Magistral'

70–75 cm (28–30in) long, with 24 buds (8 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Falling Snow'.** Giant-flowered *Grandiflorus* gladiolus producing ruffled white flowers in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (10 open). †1.8m (6ft), ↔ 15cm (6in). \*

**G. 'Finesse'.** Large-flowered *Grandiflorus* gladiolus producing strongly ruffled, salmon-pink flowers, with yellow throats, in late summer. Flower spike is 80cm (32in) long, with 27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Fire and Ice'.** Large-flowered *Grandiflorus* gladiolus. In late summer, produces strongly ruffled white flowers, flushed pale pink, with rose-red marks on each tepal. Flower spike is 80–85cm (32–34in) long, with 28 buds (11 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Firestorm'.** Miniature-flowered *Grandiflorus* gladiolus producing ruffled, loosely spaced, vivid scarlet flowers, with yellowish white flecks on the outer tepals, in early summer. Flower spike is 60cm (24in) long, with 22 buds (7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Flamenco'.** Large-flowered *Grandiflorus* gladiolus. Ruffled orange flowers, with light yellow throats, are borne in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (9 open). †1.8m (6ft), ↔ 15cm (6in). \*

**G. 'Florence C'.** Large-flowered *Grandiflorus* gladiolus bearing strongly ruffled white flowers in late summer. Flower spike is 75–80cm (30–32in) long, with 26 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Frank's Perfection'.** Primulinus gladiolus producing loosely spaced, bright red flowers, 5cm (2in) across, in early summer. Flower spike is 60cm (24in) long, with 23 buds (7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Frizzled Coral Lace'.** Medium-flowered *Grandiflorus* gladiolus bearing strongly ruffled, coral- to salmon-pink flowers in early summer. Flower spike is 65cm (26in) long, with 18 buds (7 open). †1.2m (4ft), ↔ 12cm (5in). \*

**G. 'Full House'.** Large-flowered *Grandiflorus* gladiolus bearing slightly ruffled, light rose-pink flowers, with white throats, in midsummer. Flower

spike is 80–85cm (32–34in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Georgette'.** Small-flowered *Grandiflorus* gladiolus. In midsummer, bears slightly ruffled, yellow-suffused orange flowers with large, lemon-yellow throats. Flower spike is 60cm (24in) long, with 22 buds (10 open). †1.2m (4ft), ↔ 8–10cm (3–4in). \*

**G. 'Globestar'.** Large-flowered *Grandiflorus* gladiolus. Ruffled, light orange-buff flowers, with cerise-marked throats, are produced in midsummer. Flower spike is 70cm (28in) long, with 24 buds (7 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Golden Melody'.** Medium-flowered *Grandiflorus* gladiolus. Bears ruffled, rich golden yellow flowers in late summer. Flower spike is 75–80cm (30–32in) long, with 26 buds (9 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Golden Princess'.** Small-flowered *Grandiflorus* gladiolus. In midsummer, bears slightly ruffled yellow flowers with golden throats. Flower spike is 50cm (20in) long, with 21 buds (7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Grand Finale'.** Large-flowered *Grandiflorus* gladiolus bearing strongly ruffled, salmon-pink flowers, with white throats, in midsummer. Flower spike is 85cm (34in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Green Jeans'.** Small-flowered *Grandiflorus* gladiolus producing ruffled green flowers, with ivory throats, in late summer. Flower spike is 60cm (24in) long, with 24 buds (7 open). †1.3m (4½ft), ↔ 8–10cm (3–4in). \*

**G. 'Green Woodpecker'.** Medium-flowered *Grandiflorus* gladiolus. In mid- and late summer, bears ruffled, greenish yellow flowers with wine-red marks at the throats. Flower spike is 70–75cm (28–30in) long, with 25 buds (10 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Halley'.** Nanus gladiolus bearing white-flushed, pale yellow flowers, 5cm (2in) across, with bright red marks in the throats, in early summer. Flower spike is 35cm (14in) long, with 7 buds (3 or 4 open). †1m (3ft), ↔ 8–10cm (3–4in). \*

**G. 'Happy Time'.** Small-flowered *Grandiflorus* gladiolus. In midsummer, produces slightly ruffled, mid-red

flowers with ivory throats. Flower spike is 60cm (24in) long, with 21 buds (7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Hastings'.** Primulinus gladiolus producing pale coffee-coloured flowers, pale cream-throated, 5cm (2in) across, in midsummer. Flower spike is 55cm (22in) long, with 21 buds (6 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Heavenly Sunshine'.** Giant-flowered *Grandiflorus* gladiolus. In midsummer, bears strongly ruffled, light yellow flowers. Flower spike is 80–85cm (32–34in) long, with 28 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'High Brow'.** Giant-flowered *Grandiflorus* gladiolus bearing ruffled white flowers, with blush-pink margins, in late summer. Flower spike is 85cm (34in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Hi-Lite'.** Large-flowered *Grandiflorus* gladiolus. Slightly ruffled orange flowers, with small lemon throats, are produced in midsummer. Flower spike is 75–80cm (30–32in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. hirsutus** see *G. caryophyllaceus*.

**G. 'Ice Cap'.** Large-flowered *Grandiflorus* gladiolus bearing ruffled white flowers in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Ice Princess'.** Small-flowered *Grandiflorus* gladiolus bearing ruffled, snow-white flowers in midsummer. Flower spike is 60cm (24in) long, with 24 buds (8 open). †1.2m (4ft), ↔ 8–10cm (3–4in). \*

**G. imbricatus.** Upright, cormous perennial with sword-shaped leaves, 15–35cm (6–14in) long. Loose spikes of 4–12 funnel-shaped, pinkish red to reddish purple flowers, 3cm (1¼in) across, are produced in late spring. †30–80cm (12–32in), ↔ 8–10cm (3–4in). C. and E. Europe, Latvia, Estonia. \*\*\*

**G. 'Impressive'.** Nanus gladiolus producing rose-pink flowers, 5cm (2in) across, with diamond-shaped, deep rose-pink markings on the lip tepals, in early summer. Flower spike is 25cm (10in) long, with 7 buds (4 or 5 open). †70cm (28in), ↔ 8–10cm (3–4in). \*

**G. italicus**, syn. *G. segetum*. Slender, cormous perennial with sword-shaped leaves, 5–50cm (2–20in) long. Bears loose spikes of 5–15 narrowly funnel-shaped, purplish pink to magenta flowers, 4cm (1½in) across, with paler marks on the lip tepals, in early summer. Flowers best with dry, hot summer dormancy. †40–90cm (16–36in), ↔ 8cm (3in). S. Europe. \*\*

**G. 'Jo Ann'.** Large-flowered *Grandiflorus* gladiolus producing slightly ruffled, light salmon-pink flowers, with pale yellow throats, in early summer. Flower spike is 80–85cm (32–34in) long, with 25 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Krakatoa'.** Giant-flowered *Grandiflorus* gladiolus. Bears slightly ruffled, smoky plum-purple flowers, with large white throats, in midsummer. Flower spike is 70–75cm (28–30in) long, with 23 buds (7 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Kristin'.** Large-flowered *Grandiflorus* gladiolus bearing strongly ruffled white flowers in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Legend'.** Giant-flowered *Grandiflorus* gladiolus. In midsummer, bears ruffled, deep pink flowers with small white throats. Flower spike is 80cm (32in) long, with 24 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

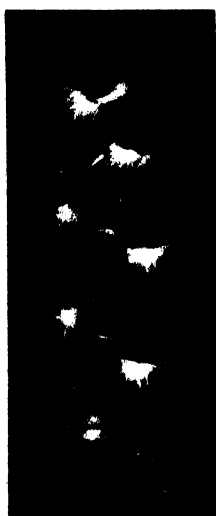
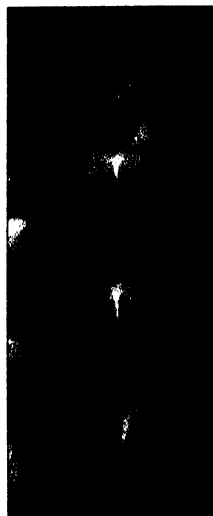
**G. 'Leonore'.** Primulinus gladiolus bearing buttercup-yellow flowers, 6cm (2½in) across, in midsummer. Flower spike is 55cm (22in) long, with 19 buds (5–7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Little Darling'.** Primulinus gladiolus producing loosely spaced, salmon- to rose-pink flowers, 3.5cm (1½in) across, with lemon lip tepals, in midsummer. Flower spike is 40cm (16in) long, with 16 buds (5 or 6 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'Lowland Queen'.** Large-flowered *Grandiflorus* gladiolus. In midsummer, produces slightly ruffled, blush-pink flowers with large, cerise-red blotches on the lip tepals. Flower spike is 80–85cm (32–34in) long, with 28 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Magistral'.** Large-flowered *Grandiflorus* gladiolus bearing ruffled,

G

*Gladiolus* 'Mi Mi'*Gladiolus* 'Mont Blanc'*Gladiolus* 'Nymph'*Gladiolus papilio**Gladiolus* 'Parade'*Gladiolus* 'Peace'*Gladiolus* 'Pink Flare'*Gladiolus* 'Pulchritude'*Gladiolus* 'Queen's Blush'

oyster-white flowers, with magenta lines, in midsummer. Flower spike is 85cm (34in) long, with 24 buds (8 open).

†1.8m (6ft), ↔ 15cm (6in). \*  
**G. 'Magnolia'**. Large-flowered Grandiflorus gladiolus. Ruffled, light lavender-pink to rose-pink flowers, with creamy throats, are produced in midsummer. Flower spike is 75cm (30in) long, with 25 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Major League'**. Large-flowered Grandiflorus gladiolus. Slightly ruffled, deep salmon-pink flowers, with cream throats, are produced in late summer. Flower spike is 80–85cm (32–34in) long, with 26 buds (9 open). †1.8m (6ft), ↔ 15cm (6in). \*

**G. 'Margaret Lyall'**. Large-flowered Grandiflorus gladiolus bearing strongly ruffled pink flowers, with small white throats, in late summer. Flower spike is 80cm (32in) long, with 27 buds (8 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Michael B'**. Large-flowered Grandiflorus gladiolus bearing ruffled, deep purple flowers, with darker throats, in late summer. Flower spike is 80cm (32in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Mileesh'**. Large-flowered Grandiflorus gladiolus. Strongly ruffled, chocolate-tan flowers, with white throats, are borne in midsummer. Flower spike is 75cm (30in) long, with 25 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

*Gladiolus* 'Prins Claus'

**G. 'Mi Mi'** ■ Small-flowered Grandiflorus gladiolus. In midsummer, bears strongly ruffled, deep lavender-pink flowers with white throats. Flower spike is 65cm (26in) long, with 24 buds (7 or 8 open). †1.3m (4½ft), ↔ 8–10cm (3–4in). \*

**G. 'Mondiale'**. Giant-flowered Grandiflorus gladiolus. In midsummer, bears ruffled, light rose-pink flowers with white throats. Flower spike is 80cm (32in) long, with 27 buds (9 or 10 open). †1.8m (6ft), ↔ 15cm (6in). \*

**G. 'Mont Blanc'** ■ Large-flowered Grandiflorus gladiolus bearing slightly ruffled white flowers in midsummer. Flower spike is 80cm (32in) long, with 28 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Moon Mirage'**. Giant-flowered Grandiflorus gladiolus bearing ruffled, canary-yellow flowers, marked deeper yellow on the lip tepals, in late summer. Flower spike is 80–85cm (32–34in) long, with 26 buds (9–11 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Mother's Day'**. Large-flowered Grandiflorus gladiolus bearing ruffled, blue-pink flowers, with white throats, in late summer. Flower spike is 80cm (32in) long, with 25 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. natalensis** see *G. dalenii*.

**G. 'Norma J'**. Medium-flowered Grandiflorus gladiolus producing heavily ruffled, deep pink flowers in late summer. Flower spike is 80cm (32in) long, with 26 buds (9–11 open). †1.5m (5ft), ↔ 30cm (12in). \*

**G. 'Nymph'** ■ Nanus gladiolus bearing white flowers, 5cm (2in) across, in early summer. The lip tepals have creamy white markings edged with cerise-red. Flower spike is 25cm (10in) long, with 6 buds (4 or 5 open). †70cm (28in), ↔ 8–10cm (3–4in). \*

**G. 'Obelisk'**. Primulinus gladiolus producing orange-red flowers, 7cm (3in) across, in midsummer. Flower spike is 40cm (16in) long, with 19 buds (6 or 7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. papilio** ■ syn. *G. purpureoauratus*. Cormous perennial, spreading freely by underground runners, with sword-shaped leaves, 5–45cm (2–18in) long. From summer to autumn, arching stems each bear 5–10 hooded, funnel- or bell-

shaped flowers, to 5cm (2in) long, varying from bright yellow to yellowish green, heavily suffused purple. The plant illustrated above is usually grown as *G. purpureoauratus*. †50–90cm (20–36in), ↔ 8cm (3in). South Africa (Northern Transvaal, Eastern Transvaal). \*\*

**G. 'Parade'** ■ Giant-flowered Grandiflorus gladiolus. In late summer, produces strongly ruffled, deep salmon-pink flowers with cream throats. Flower spike is 80–85cm (32–34in) long, with 27 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Peace'** ■ Giant-flowered Grandiflorus gladiolus producing strongly ruffled cream flowers, with pale lemon throats and pale pink margins, in midsummer. Flower spike is 80cm (32in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Pink Flare'** ■ Small-flowered Grandiflorus gladiolus bearing ruffled, mid-pink flowers, with small white throats, in midsummer. Flower spike is 65cm (26in) long, with 25 buds (7 or 8 open). †1.3m (4½ft), ↔ 8–10cm (3–4in). \*

**G. 'Piquant'**. Primulinus gladiolus bearing black-red flowers, 6cm (2½in) across, in midsummer. Flower spike is 35cm (14in) long, with 16 buds (5 or 6 open). †1m (3ft), ↔ 8–10cm (3–4in). \*

**G. 'Portia'**. Giant-flowered Grandiflorus gladiolus. Slightly ruffled, soft pink flowers, the throats coloured pale yellow, are produced in late summer.

Flower spike is 85cm (34in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Prince Indigo'**. Large-flowered Grandiflorus gladiolus. In midsummer, produces slightly ruffled purple flowers, the white throats marked with wine-red flashes. Flower spike is 85–90cm (34–36in) long, with 26 buds (10 open). †2m (6ft), ↔ 15cm (6in). \*

**G. 'Prins Claus'** ■ Nanus gladiolus bearing pure white flowers, 5cm (2in) across, with cerise markings on the lip tepals, in early summer. Flower spike is 25cm (10in) long, usually curved and with 6 buds (4 or 5 open). †70cm (28in), ↔ 8–10cm (3–4in). \*

**G. psittacinus** see *G. dalenii*.

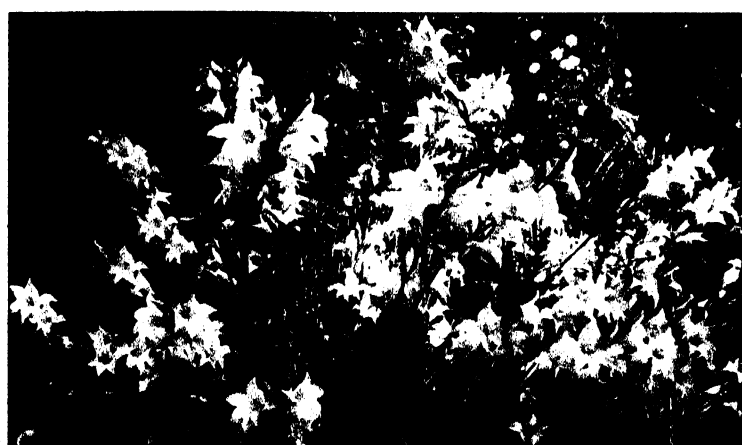
**G. 'Pulchritude'** ■ Medium-flowered Grandiflorus gladiolus. Ruffled, light lavender-pink flowers, deepening at the tepal margins and with a magenta-red mark on each lip tepal, are borne in midsummer. Flower spike is 70–75cm (28–30in) long, with 27 buds (9 open). †1.3m (4½ft), ↔ 12cm (5in). \*

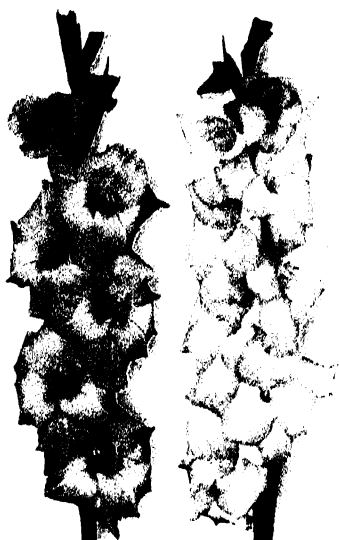
**G. 'Purple Star'**. Small-flowered Grandiflorus gladiolus. Slightly ruffled, mid-purple flowers are borne in early summer, inner tepals whorled in a star-like formation. Flower spike is 60cm (24in) long, with 22 buds (6 or 7 open). †1.3m (4½ft), ↔ 8–10cm (3–4in). \*

**G. purpureoauratus** see *G. papilio*.

**G. quartianus** see *G. dalenii*.

**G. 'Queen's Blush'** ■ Large-flowered Grandiflorus gladiolus. In midsummer,

*Gladiolus* 'The Bride'

*Gladiolus*  
'Rinette Snoek'*Gladiolus*  
'Royal Dutch'*Gladiolus*  
'Stardust'*Gladiolus*  
'Stromboli'*Gladiolus*  
'Sweet Dreams'*Gladiolus* 'Vaucluse'*Gladiolus* 'White Ice'*Gladiolus*  
'Zephyr'

bears slightly ruffled white flowers, blush-pink at the tepal margins. Flower spike is 80cm (32in) long, with 26 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Rajah's Rose'.** Large-flowered Grandiflorus gladiolus producing slightly ruffled, deep rose-red flowers, with small white throats, in midsummer. Flower spike is 80cm (32in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Ravenna'.** Giant-flowered Grandiflorus gladiolus producing slightly ruffled, orange-scarlet flowers, with small buff throats, in early summer. Flower spike is 75cm (30in) long, with 26 buds (10 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Rinette Snoek'.** Large-flowered Grandiflorus gladiolus, produces ruffled, coral-pink flowers with cream throats. Flower spike is 80cm (32in) long, with 28 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Rose Elf'.** Small-flowered Grandiflorus gladiolus producing slightly ruffled, light rose-pink flowers, with large, pale cream throats, in midsummer. Flower spike is 70cm (28in) long, with 24 buds (8 or 9 open). †1.4m (4½ft), ↔ 15cm (6in). \*

**G. 'Royal Dutch'.** Large-flowered Grandiflorus gladiolus bearing very slightly ruffled, pale lavender-blue flowers, with white throats, in midsummer. Flower spike is 80cm (32in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'Sailor's Delight'.** Large-flowered Grandiflorus gladiolus bearing strongly ruffled, white-throated pink flowers in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

**G. 'San Remo'.** Large-flowered Grandiflorus gladiolus. Ruffled, light pink flowers, with small white throats, are borne in midsummer. Flower spike is 75–80cm (30–32in) long, with 25 buds (10 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. sogetum** see *G. italicus*.

**G. 'Shiloh'.** Medium-flowered Grandiflorus gladiolus. In midsummer, produces strongly ruffled yellow flowers, each with a bright red mark spreading from the throat. Flower spike is

70–75cm (28–30in) long, with 25 buds (9 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Spitfire'.** Nanus gladiolus producing blood-red flowers, 5cm (2in) across, with white darts on the lip tepals, in early summer. Flower spike is 22cm (9in) long, with 6 buds (3 or 4 open). †70cm (28in), ↔ 8–10cm (3–4in). \*

**G. 'Stardust'.** Miniature-flowered Grandiflorus gladiolus. Ruffled, pale yellow flowers, with lighter yellow throats, are produced in midsummer. Flower spike is 50cm (20in) long, with 21 buds (6 or 7 open). †1.2m (4ft), ↔ 8–10cm (3–4in). \*

**G. 'Stromboli'.** Large-flowered Grandiflorus gladiolus. In midsummer, bears slightly ruffled, deep red flowers, with paler throats. Flower spike is 75–80cm (30–32in) long, with 25 buds (9 open). †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Sumatra'.** Large-flowered Grandiflorus gladiolus. In midsummer, produces gently ruffled, light brown flowers, slightly reflexed towards the stem. Flower spike is 75cm (30in) long, with 25 buds (8 open) in a slightly informal arrangement. †1.5m (5ft), ↔ 15cm (6in). \*

**G. 'Sweet Dreams'.** Medium-flowered Grandiflorus gladiolus. In midsummer, produces slightly ruffled, creamy white flowers, tinted deep rose-red at the margins and with deep rose-red lip tepals. Flower spike is 75cm (30in) long, with 27 buds (9 open). †1.5m (5ft), ↔ 12cm (5in). \*

*Gladiolus tristis*

**G. 'Tesoro'.** Medium-flowered Grandiflorus gladiolus bearing slightly ruffled yellow flowers in late summer. Flower spike is 70–75cm (28–30in) long, with 26 buds (10 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'The Bride'.** ♀ syn. *G. x colvilei* 'The Bride'. Slender *G. cardinalis* hybrid producing small spikes of 3–6 white flowers, 5cm (2in) across, marked with yellow on the lower tepals, from early spring to early summer. †to 60cm (24in), ↔ 5cm (2in). \*

**G. tristis.** Cormous perennial with very narrow leaves, the lower 40–120cm (16–48in) long and often twisted near the tips. In spring, bears spikes of up to 20 open funnel-shaped, pale yellow or creamy white flowers, 6cm (2½in) long, often green-tinged, usually flushed or dotted mauve, red, brown, or purple, on wiry stems. Strongly scented in the evening. †45–150cm (1½–5ft), ↔ 5cm (2in). South Africa (Western Cape). \*

**G. 'Vaucluse'.** Giant-flowered Grandiflorus gladiolus. Slightly ruffled, vermilion-red flowers, with small, creamy white throats, are produced in late summer. Flower spike is 80–85cm (32–34in) long, with 27 buds (10 open). †1.9m (6ft), ↔ 15cm (6in). \*

**G. 'White City'.** Primulinus gladiolus producing white flowers in late summer. Flower spike is 55cm (22in) long, with 18 buds (6 or 7 open). †1.1m (3½ft), ↔ 8–10cm (3–4in). \*

**G. 'White Ice'.** Medium-flowered Grandiflorus gladiolus bearing ruffled white flowers in late summer. Flower spike is 75–80cm (30–32in) long, with 25 buds (10 open). †1.5m (5ft), ↔ 12cm (5in). \*

**G. 'Zephyr'.** Large-flowered Grandiflorus gladiolus. Ruffled, light lavender-pink flowers, with small ivory throats, are produced in midsummer. Flower spike is 75–80cm (30–32in) long, with 26 buds (9 open). †1.7m (5½ft), ↔ 15cm (6in). \*

▷ *Gladiolus*, Water see *Butomus*

▷ *Gladwyn*, Stinking see *Iris foetidissima*

▷ *Glandularia* see *Verbena*

▷ *Glandulicactus crassihamatus* see *Sclerocactus uncinatus* var. *crassihamatus*

▷ *Glandulicactus uncinatus* see *Sclerocactus uncinatus*

## GLAUCIDIUM

GLAUCIDIACEAE/PAEONIACEAE

Genus of one species of rhizomatous, clump-forming perennial from mountainous woodland in N. Japan. It has palmately lobed leaves and large, peony- or poppy-like flowers. A very effective plant for a woodland garden, peat bed, or border, *G. palmatum* grows best in cool, moist climates.

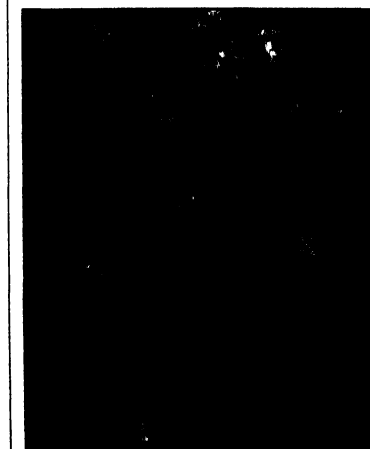
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, leafy, moist soil in partial to deep shade, sheltered from cold, drying winds.

• **PROPAGATION** Sow seed in containers in an open frame in spring, or divide mature clumps with care in early spring.

• **PESTS AND DISEASES** Susceptible to slug damage.

**G. palmatum.** ♀ Slow-growing, rhizomatous perennial, softly hairy when young, with unbranched stems, each bearing 2 or 3 palmately 5- to 11-lobed, many-veined, toothed, light green leaves, 20–30cm (8–12in) long, heart-shaped at the bases, with crinkly leaf surfaces. In late spring and early summer, produces solitary, terminal flowers, 5–8cm (2–3in) across, with 4 soft pinkish lilac or mauve tepals, no petals, and numerous gold stamens. †to 45cm (18in). N. Japan. \*\*\* var. *leucanthum*, syn. 'Album', has white flowers.

*Glaucidium palmatum*

## GLAUCIUM

Horned poppy

PAPAVERACEAE

Genus of 25 species of erect, often rosette-forming annuals, biennials, and short-lived perennials from disturbed or waste ground in Europe, the Middle East, N. Africa, and C. and S.W. Asia. They have pinnatifid, hairless to softly hairy, narrowly ovate to nearly rounded, glaucous leaves with large terminal lobes and orange-yellow sap. Showy, solitary, terminal and axillary, poppy-like, paper-thin flowers, borne mainly in summer, are followed by long, curved, decorative seed heads. Grow in a border or gravel garden. Roots are toxic if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun. Resent root disturbance.

• **PROPAGATION** Sow seed *in situ* in spring or autumn.

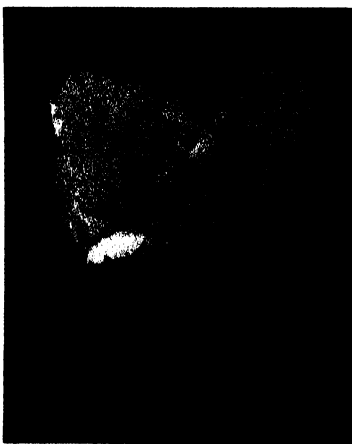
• **PESTS AND DISEASES** Trouble free.

*G. corniculatum*, syn. *G. phoenicium* (Red horned poppy). Rosette-forming, slightly hairy biennial, with pinnatifid, glaucous, silver-grey leaves, 15–30cm (6–12in) long. Crimson-red to orange flowers, to 5cm (2in) across, usually with a black spot at the base of each petal, are produced freely at the tips of the branched stems from summer to early autumn. ± 30–40cm (12–16in). Europe, S.W. Asia. \*\*\*

*G. flavum* ■ (Yellow horned poppy). Rosette-forming, slightly hairy, short-lived perennial, usually grown as a biennial, with pinnatifid, glaucous, hairless, rough, blue-green leaves, 15–30cm (6–12in) long, the lobes incised or toothed. Produces branched grey stems of bright golden yellow or orange flowers, to 5cm (2in) across, in summer. ± 30–90cm (12–36in), ± to 45cm (18in). Europe, Canary Islands, N. Africa, W. Asia. \*\*\*

*G. grandiflorum*. Rosette-forming perennial with alternate, pinnatifid or pinnatisect, glaucous, bluish green leaves, to 20cm (8in) long, consisting of obovate-oblong segments. Poppy-like, bowl-shaped, dark orange to crimson flowers, to 6cm (2½in) across, each with a dark spot at the base, are freely borne in summer. ± 30–50cm (12–20in). Greece, N.E. Egypt (Sinai), Turkey, Syria, Caucasus, Iran. \*\*\*

*G. phoenicium* see *G. corniculatum*.



Glaucium flavum

## GLECHOMA

Ground ivy

LABIATAE/LAMIACEAE

Genus of about 12 species of creeping, rhizomatous and stoloniferous perennials found in woodland and hedgerows throughout Europe. The variable, coarsely toothed leaves are borne in opposite pairs on long, slender, rooting stems and provide good ground cover, but may become invasive. Small, 2-lipped, tubular, usually violet-blue flowers are borne in summer. *G. hederacea* 'Variegata' is most often grown; its handsome foliage is ideal for window-boxes or hanging baskets.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or partial shade.

• **PROPAGATION** Divide in spring or autumn, or take softwood cuttings in late spring.

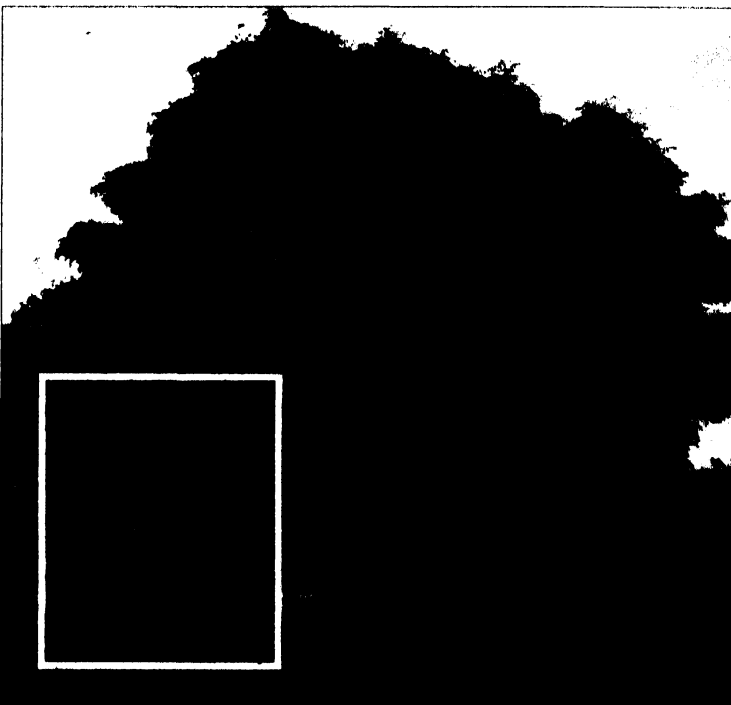
• **PESTS AND DISEASES** May be damaged by slugs and snails.

*G. hederacea* 'Variegata', syn. *Nepeta glechoma* 'Variegata', *N. hederacea* 'Variegata' (Variegated ground ivy). Stoloniferous, evergreen or semi-evergreen perennial with trailing stems bearing kidney-shaped leaves, to 3cm (1¼in) across, heart-shaped at the bases, and soft pale green, marbled pure white, especially around the scalloped margins. Bears whorls of 4–6 lilac-mauve, dead nettle-like flowers in summer. ± to 15cm (6in), ± to 2m (6ft) or more. \*\*\*

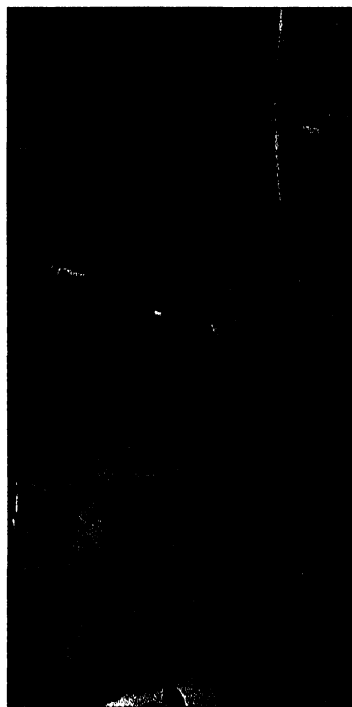
## GLEDITSIA

CAESALPINIACEAE/LEGUMINOSAE

Genus of about 14 species of deciduous, usually spiny trees from woodland in Asia, North and South America, and tropical Africa. They are cultivated for their elegant form and pinnate or 2-pinnate, fern-like leaves, which are borne alternately. The inconspicuous



Gleditsia triacanthos 'Elegantissima' (inset: leaf detail)



Gleditsia triacanthos 'Rubylace'

racemes of small, greenish white flowers often produce unusual, large, pendent seed pods, particularly after a hot summer. The trunks and branches of most species are armed with simple or branched spines. Grow gleditsias as specimen trees.

• **HARDINESS** Fully hardy, although susceptible to frost damage when young.

• **CULTIVATION** Grow in any fertile, well-drained soil in full sun. Pruning group 1.

• **PROPAGATION** Sow scarified seed in containers in an open frame in autumn. Bud cultivars in summer or graft them in late winter.

• **PESTS AND DISEASES** Gall midges on foliage, especially that of *G. triacanthos* 'Sunburst', may be a problem.

*G. caspica* ♀ (Caspian locust).

Spreading, deciduous tree, the trunk armed with branched spines to 15cm (6in) or more long. Glossy, mid-green leaves, to 25cm (10in) long, turning yellow in autumn, are usually pinnate, occasionally 2-pinnate, with 12–20 ovate to oval leaflets. Pendent, curved, twisted seed pods, to 25cm (10in) long, are produced in autumn. ± 12m (40ft), ± 10m (30ft). Caucasus, N. Iran. \*\*\*

*G. japonica* △ Conical, deciduous tree with a spiny trunk and very spiny shoots (purple when young). Glossy, mid-green leaves, to 30cm (12in) long, turn yellow in autumn. They are either pinnate with 14–24 ovate to lance-shaped leaflets, or 2-pinnate with 2–12 leaflets. Bears pendent, curved, twisted seed pods, to 30cm (12in) long, in autumn. ± 20m (70ft), ± 12m (40ft). Japan. \*\*\*

*G. triacanthos* ♀ (Honey locust).

Spreading, deciduous tree with a spiny trunk and shoots, the spines branched and 8–15cm (3–6in) long. Glossy, dark green leaves, to 25cm (10in) long, turn yellow in autumn, and are pinnate with 14–24 leaflets or 2-pinnate with 4–16 pairs of oblong-lance-shaped leaflets. Pendent, sickle-shaped, twisted seed pods, to 45cm (18in) long, are borne in autumn. ± 30m (100ft) or more, ± 20m (70ft). C. and E. North America. \*\*\*

'Elegantissima' ■ □ is dense, shrubby, slow-growing, and thornless; ± 5–8m (15–25ft), ± 5m (15ft). 'Imperial' is a wide-spreading tree with rounded, bright green leaves and few seed pods; ± to 10m (30ft). f. *inermis* is thornless.

'Rubylace' ■ has dark bronze-red young leaves turning dark bronze-green by midsummer. 'Skyline' △ is compact and broadly conical, with ascending upper branches and dark green leaves turning golden yellow in autumn; ± to 15m (50ft). 'Sunburst' ■ ♀ △ is fast-growing and broadly conical, with spreading, thornless branches, and golden yellow young foliage, pale green at maturity, yellow in autumn. Does not fruit; ± 12m (40ft), ± 10m (30ft).



Gleditsia triacanthos 'Sunburst'

*Globba winitii*

## GLOBBA

### ZINGIBERACEAE

Genus of about 70 species of rhizomatous herbaceous perennials from forest in S.E. Asia. Reed-like stems have alternate, 2-ranked, oblong or lance-shaped leaves. They bear 3-petalled, tubular flowers on slender, branched stalks, in terminal, pendent racemes with conspicuous bracts, from autumn to early winter. Among the lower bracts, bulbils may form instead of flowers. Grow as ground cover in warm climates; elsewhere, grow in a warm greenhouse.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered or indirect light. During the growing season, maintain high humidity, water freely, and apply a balanced liquid fertilizer every 2 or 3 weeks. Allow to become dormant in late winter and keep just moist. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade.
- **PROPAGATION** Divide in spring, or plant bulbils in summer.
- **PESTS AND DISEASES** Mealybugs may be troublesome.

**G. winitii** ■ Rhizomatous perennial with lance-shaped leaves, 20cm (8in) long, heart-shaped at the bases, lower leaves sheathing the stems; leaf-stalks are 10cm (4in) long. From autumn to early winter, bears nodding or pendent racemes, 15cm (6in) long, of slender, tubular yellow flowers, to 4cm (1½in) long, with reflexed, pink, mauve, or deep purple bracts. ↓ 1m (3ft), ↔ 60cm (24in). Thailand. ☉ (min. 16°C/61°F)

- ▷ **Globe amaranth** see *Gomphrena globosa*
- ▷ **Globe artichoke** see *Cynara scolymus*
- ▷ **Globe daisy** see *Globularia*
- ▷ **Globeflower** see *Trollius*
- Common European see *T. europaeus*
- ▷ **Globe thistle** see *Echinops*

## GLOBULARIA

Globe daisy

### GLOBULARIACEAE

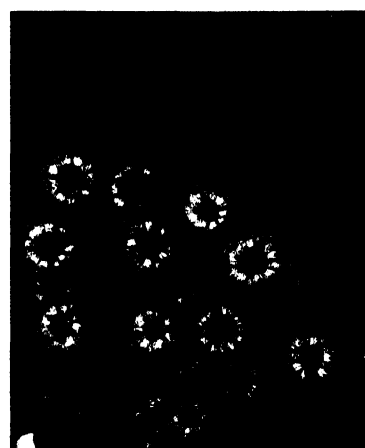
Genus of about 20 species of mat- or hummock-forming, mainly evergreen perennials or subshrubs, mostly found in open, rocky habitats around the Mediterranean, often at high altitudes. They produce leathery, simple, entire or sharply toothed leaves and tiny, 2-lipped flowers in dense, spherical heads. Globe daisies are suitable for a rock garden, trough, or alpine house; the more robust are also useful in wall plantings.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in neutral to alkaline, sharply drained soil in full sun. Protect from winter wet.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Root individual rosettes in spring or early summer.
- **PESTS AND DISEASES** May be damaged by slugs and snails.

**G. bellidifolia** see *G. meridionalis*.  
**G. cordifolia** ♀ Dwarf, evergreen, mat-forming, woody-based perennial with rooting stems bearing rosettes of spoon-shaped, glossy, dark green leaves, to 2.5cm (1in) long, with notched tips. In summer, produces lavender-blue flowers in stemless, spherical heads, to 2cm (¾in) across. ↓ 5cm (2in), ↔ to 20cm (8in). Mountains of C. and S. Europe, W. Turkey. \*\*\*. **subsp. bellidifolia** see *G. meridionalis*. **subsp. meridionalis** see *G. meridionalis*.

**G. meridionalis** ■ syn. *G. bellidifolia*, *G. cordifolia* subsp. *bellidifolia*, *G. cordifolia* subsp. *meridionalis*, *G. pygmaea*. Evergreen, dome-shaped, mat-forming subshrub with lance-shaped to inversely lance-shaped, glossy, dark green leaves, 2–9cm (¾–3½in) long. In summer, produces lavender-purple flowers in spherical heads, to 2cm (¾in) across, just above the foliage. More robust than *G. cordifolia*. ↓ to 10cm (4in), ↔ to 30cm (12in). S.E. Alps, C. and S. Apennines, Balkan Peninsula. \*\*\*

**G. nana** see *G. repens*.  
**G. pygmaea** see *G. meridionalis*.  
**G. repens**, syn. *G. nana*. Very compact, mat-forming, evergreen perennial with folded, spoon-shaped, glossy, dark green leaves, 1–2cm (½–¾in) long. Lavender-blue flowers in stemless or short-stemmed, spherical heads, 1–2cm

*Globularia meridionalis*

(½–¾in) across, are borne immediately above the leaves in summer. Similar to *G. cordifolia*, but smaller. Suitable for a trough. ↓ 2.5cm (1in), ↔ to 15cm (6in). Pyrenees, S.W. Alps. \*\*\*

## GLORIOSA

Glory lily

### COLCHICACEAE/LILIACEAE

Genus of one very variable species of climbing, tuberous perennial from woodland and forest, often by rivers, in tropical Africa and India. It is cultivated for its brightly coloured flowers, and is effective when scrambling through other plants. In frost-prone climates, grow in a temperate greenhouse or conservatory. Highly toxic if ingested; handling tubers may irritate the skin.

- **HARDINESS** Frost tender.
- **CULTIVATION** Plant tubers 7–10cm (3–4in) deep in early spring. Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full light. Water freely when growth begins and apply a balanced liquid fertilizer every 2 weeks. Keep tubers dry in winter. Pot on only when congested, in late winter. Outdoors, grow in fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or separate the finger-like tubers, in spring.
- **PESTS AND DISEASES** Prone to aphids.

**G. carsonii** see *G. superba*.  
**G. minor** see *G. superba*.  
**G. rothschildiana** see *G. superba* 'Rothschildiana'.  
**G. simplex** see *G. superba*.  
**G. superba** ♀ syn. *G. carsonii*, *G. minor*, *G. simplex*. Climbing perennial with ovate-lance-shaped to oblong, glossy, bright green leaves, 5–8cm (2–3in) long, which narrow to form terminal tendrils, 3–5cm (1¼–2in) long. From summer to autumn, nodding flowers, 5–10cm (2–4in) across, are borne from the upper leaf axils. Flowers have 6 reflexed, wavy-margined, red or purple petals, often yellow-margined, sometimes entirely yellow, with long, protruding stamens. ↓ to 2m (6ft), ↔ 30cm (12in). Africa, India. ☉ (min. 8–10°C/46–50°F). 'Citrina' has citrus-yellow flowers, tinted or striped deep purple-red. 'Rothschildiana' ■ syn. *G. rothschildiana*, has flowers 7–10cm (3–4in) across, with bright red or scarlet tepals fading to ruby or garnet, and yellow near the bases and on the margins.

*Gloriosa superba* 'Rothschildiana'

- ▷ **Glorybean, Java** see *Clerodendrum speciosissimum*
- ▷ **Glory bower** see *Clerodendrum philippinum*, *C. speciosissimum*, *C. thomsoniae*
- Blue** see *Clerodendrum ugandense*
- ▷ **Glory bush** see *Tibouchina organensis*, *T. urvilleana*
- ▷ **Glory flower** see *Clerodendrum bungei*
- Chilean** see *Ecchremocarpus*, *E. scaber*
- ▷ **Glory lily** see *Gloriosa*
- ▷ **Glory of the snow** see *Chionodoxa*
- ▷ **Glory of the sun** see *Leucocoryne ictioides*
- ▷ **Glory plant, Purple** see *Sutera grandiflora*

## GLOTTIPHYLLUM

### AIZOACEAE

Genus of about 60 species of low-growing, branching, perennial succulents from semi-desert areas in South Africa. They have semi-cylindrical or strap-shaped, fleshy, glossy, bright green or pale green leaves, arranged in opposite pairs or alternately along the stems, with 4 or more on a single shoot. Daisy-like, bright yellow, rarely white flowerheads are borne singly in the leaf axils, mainly from summer to late winter. Grow in a desert garden. Below 10°C (50°F), grow in a warm greenhouse.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. Water sparingly from midsummer to late winter and apply a half-strength low-nitrogen liquid fertilizer once during the growing season. Keep barely moist when dormant. Outdoors, grow in poor, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or root basal stem cuttings, in late summer.
- **PESTS AND DISEASES** Trouble free.

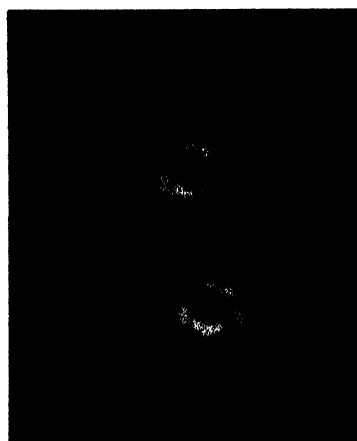
**G. linguiforme**. Succulent, often offsetting, with opposite pairs of strap-shaped, glossy, bright green leaves, 5–6cm (2–2½in) long, which are incurved above and obliquely thickened below, with rounded tips. Bears golden yellow flowerheads, 7cm (3in) across, from autumn to late winter. ↓ 6cm (2½in), ↔ 30cm (12in). South Africa (Northern Cape, Eastern Cape, Western Cape). ☉ (min. 10°C/50°F)

**G. nelii**. Succulent, forming compact clumps, with thick, strap-shaped, pale green leaves, 4–5cm (1½–2in) long, in uneven, opposite pairs. The shorter leaf of each pair is incurved with rounded margins and tip; the longer is incurved like a hook, flat above, keeled below, with a rounded tip. Bears bright yellow flowerheads, 4cm (1½in) across, from autumn to late winter. ↓ 5cm (2in), ↔ 30cm (12in). South Africa (Northern Cape, Eastern Cape, Western Cape). ☉ (min. 10°C/50°F)

## GLOXINIA

### GESNERIACEAE

Genus of 8 species of rhizomatous, soft-stemmed perennials or shrubs from forest in Central and South America. The fleshy, creeping rhizomes give rise to erect stems bearing opposite pairs of ovate to elliptic leaves. Bell- or funnel-shaped, blue or pink flowers, finely hairy

*Gloxinia perennis*

G

on the outside, are borne singly or in pairs from the leaf axils from summer to mid-autumn. In frost-prone areas, grow in a warm greenhouse. Elsewhere, grow in a shady border or woodland setting.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright indirect light and high humidity. During the growing season, water freely and apply a balanced liquid fertilizer every 2 or 3 weeks. Dry off after flowering; resume watering, sparingly at first, in spring. Outdoors, grow in moist, humus-rich soil in dappled shade.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in early spring. Divide rhizomes in spring. Root basal cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Prone to vine weevil, tarsonemid mites, western flower thrips, and powdery mildew.

*G. gymnostoma*, syn. *Seemannia gymnostoma*. Rhizomatous perennial with ovate, softly hairy leaves, 7cm (3in) long, and solitary, funnel-shaped, rose-pink flowers, to 3.5cm (1½in) long, borne in summer. †60cm (24in), ↔ 45cm (18in). Argentina. ♀ (min. 13°C/55°F)

*G. perennis* ■ Bushy, rhizomatous perennial bearing toothed, ovate leaves with heart-shaped bases, to 20cm (8in) long, glossy, mid-green above, paler and suffused red below. Bears solitary, bell-shaped, lavender- to purple-blue flowers, 2.5–3.5cm (1–1½in) long, marked dark violet at the bases, from early summer to mid-autumn. †1.2m (4ft), ↔ 1m (3ft). Panama to Peru. ♀ (min. 10°C/50°F)

*G. speciosa* see *Sinningia speciosa*.

- ▷ **Gloxinia**,  
Creeping see *Lophospermum erubescens*  
Florists' see *Sinningia speciosa*

## GLYCERIA

GRAMINEAE/POACEAE

Genus of 16 species of marsh or marginal, aquatic, perennial grasses, mainly from N. temperate regions, but also found in Australia, New Zealand, and South America. Occurring naturally in water to 75cm (30in) deep, they are vigorous, dense, and spreading plants. Use as cover for a large pool.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in water to 15cm (6in) deep in full sun; grow in a basket

*Glyceria maxima* 'Variegata'

of loamy soil in order to restrict spread. Alternatively, grow in any garden soil that is reliably moist in full sun.

- **PROPAGATION** Divide in spring.
- **PESTS AND DISEASES** Trouble free.

*G. aquatica* see *G. maxima*.

*G. maxima*, syn. *G. aquatica*. Aquatic, rhizomatous, perennial grass, producing narrowly strap-shaped, keeled, deep green leaves, 30–60cm (12–24in) long, flushed pink as they emerge. Panicles of green to purplish green spikelets, to 45cm (18in) long, are borne in mid- and late summer. †80cm (32in), ↔ indefinite. Temperate Eurasia. \*\*\*

'*Variegata*' ■ is more commonly grown, for its attractive cream, green, and white striped foliage.

## GLYCYRRHIZA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of perennials from a range of moist or dry habitats in the Mediterranean, tropical Asia, and North and South America, occurring in diverse habitats from dry scrub to swampland. They have pinnate, rarely 3-palmate, sticky-glandular leaves, and

*Glycyrrhiza glabra*

pea-like flowers borne in axillary racemes or spikes. *G. glabra* is a coarse but interesting plant suitable for a wild garden or informal border; its roots are the source of liquorice.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, fertile, moist soil in full sun. The roots of *G. glabra* are harvested in autumn.
- **PROPAGATION** Sow seed in containers outdoors in spring or autumn. Divide roots, each with one or more growth buds, in early spring.
- **PESTS AND DISEASES** Trouble free.

*G. glabra* ■ syn. *G. glandulifera* (Liquorice, Sweetwood). Tap-rooted perennial bearing pinnate, sticky-glandular leaves, 5–20cm (2–8in) long, each with 9–17 oblong to elliptic or ovate leaflets. Pea-like, blue or pale violet and white flowers, 1cm (½in) long, are borne in loose racemes, usually 5–8cm (2–3in) long, in late summer. †1.2m (4ft), ↔ 90cm (36in). Mediterranean to S.W. Asia. \*\*\*

*G. glandulifera* see *G. glabra*.

▷ **Goatsbeard** see *Aruncus dioicus*

▷ **Goat's rue** see *Galega*

▷ **Godetia** see *Clarkia*

*G. amoena* see *C. amoena*

*G. grandiflora* see *C. amoena*

▷ **Gold dust** see *Aurinia saxatilis*

▷ **Golden bell** see *Forsythia suspensa*

▷ **Golden club** see *Orontium*

▷ **Golden eardrops** see *Dicentra chrysantha*

▷ **Golden everlasting** see *Bracteantha bracteata*

▷ **Golden fleece** see *Thymophylla tenuiloba*

▷ **Golden larch** see *Pseudolarix amabilis*

▷ **Golden pothos** see *Epipremnum aureum*

▷ **Golden rain** see *Laburnum*

▷ **Golden-rain tree** see *Koelreuteria paniculata*

▷ **Golden rod** see *Solidago*

▷ **Golden shower** see *Pyrostegia venusta*

▷ **Golden top** see *Lamarckia aurea*

▷ **Golden trumpet** see *Atlamanda cathartica*

▷ **Goldilocks** see *Aster linosyris*

▷ **Gold thread** see *Coptis*

## GOMPHOCARPUS

ASCLEPIADACEAE

Genus of 50 species of evergreen and deciduous subshrubs and perennials found on dry slopes and in scrub in tropical and southern Africa. They have variable, opposite, alternate, or whorled leaves. Curious, hooded, cup-shaped flowers are produced in terminal or axillary cymes, followed by seed pods that are usually inflated. In frost-prone areas, they are best grown in a cool greenhouse. In warmer climates, plant in a shrub border. Some species exude a milky sap, which may aggravate skin allergies.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added leaf mould, in full light or bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer every 4–6 weeks; keep almost dry in winter. Outdoors, grow in any well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or take softwood cuttings in spring.
- **PESTS AND DISEASES** Trouble free.

*G. fruticosus*, syn. *Asclepias fruticosa* (Milk bush). Upright, deciduous subshrub with linear-lance-shaped, mid-green leaves, 5–10cm (2–4in) long, borne in opposite pairs. Produces axillary clusters, 5cm (2in) across, of cup-shaped, creamy white flowers, 7mm (¼in) long, in early summer, followed by ovoid, inflated, softly spiny, silver-green fruit, to 8cm (3in) long. †1–1.5m (3–5ft), ↔ 1m (3ft). Southern Africa. \*

*G. physocarpus*, syn. *Asclepias physocarpa* (Swan plant). Deciduous subshrub, often grown as an annual, with sticky, hairy stems and opposite, sometimes alternate, narrowly lance-shaped, grey-green leaves, to 10cm (4in) long. In summer, bears many-flowered cymes, 5cm (2in) across, of creamy white or greenish white flowers, to 7mm (¼in) across; they are followed by spherical to ovoid, inflated, softly spiny, pale green fruit, to 6cm (2½in) across. †2m (6ft), ↔ 60cm (24in). South Africa (Eastern Transvaal to Eastern Cape). \*

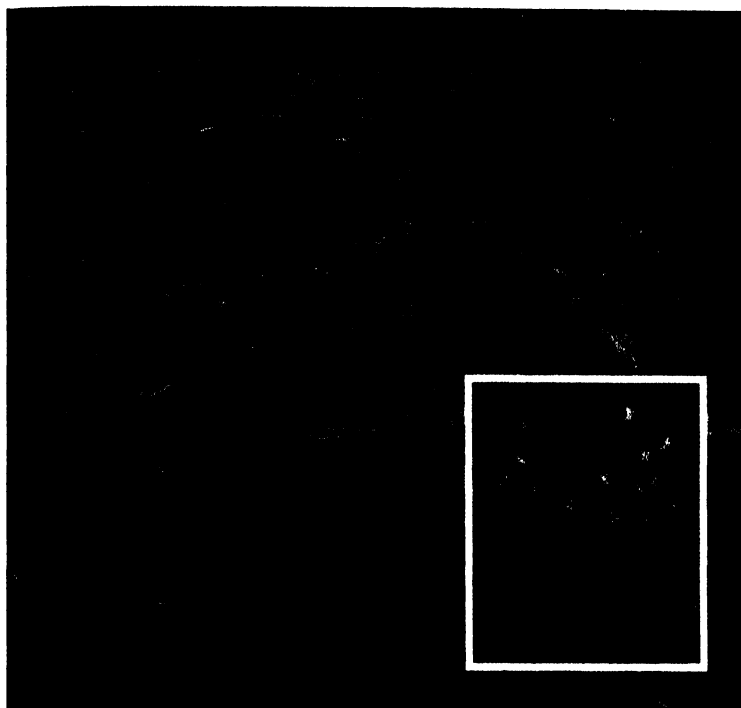
## GOMPHRENA

AMARANTHACEAE

Genus of 90 species of erect or prostrate, often many-branched, softly hairy annuals, occasionally perennials, found in a variety of habitats from open, sandy soils to moist woodland, in Australia and tropical Central and South America. Lance-shaped to ovate leaves are produced in opposite pairs. Upright spikes of clover-like flowerheads, with prominent colourful bracts, are borne from summer to early autumn. In frost-prone areas, use as summer bedding or in an annual border. The flowerheads are good for cutting and drying.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.





*Gomphrena* 'Strawberry Fields' (inset: flowerhead detail)

- **PROPAGATION** Sow seed at 15–18°C (59–64°F) in early spring.
- **PESTS AND DISEASES** Trouble free.

*G. globosa* (Globe amaranth). Upright, bushy annual with ovate to oblong leaves, to 15cm (6in) long, densely white-hairy when young, later sparsely hairy. Bears ovoid-oblong flowerheads, to 3.5cm (1½in) long, of pink, purple, or white flower bracts, from summer to early autumn. ‡ 30–60cm (12–24in), ↔ to 30cm (12in). Guatemala, Panama. \*

• **'Buddy'** has vivid, deep purple flowerheads; ‡ 15cm (6in).

*G. 'Strawberry Fields'* ■ Similar in growth and habit to *G. globosa*, but has brilliant red flowerheads, to 5cm (2in) long. ‡ 75–80cm (30–32in), ↔ to 30cm (12in). \*

## GONIOLIMON

### PLUMBAGINACEAE

Genus of about 20 species of perennials found in hot, dry habitats from S.E. Europe to Mongolia, and in N.W. Africa. They are grown for their panicles of spike-like corymbs of tubular-trumpet-shaped, "everlasting", white, pink, purple, or red flowers, borne on compressed and flanged, branched stems. Large, smooth, leathery or fleshy leaves are arranged in basal rosettes. They flower best in hot, dry summers or in warm areas. Grow in paving.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in sandy, well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in mid-spring. Take root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

*G. tataricum*, syn. *Limonium tataricum* (Tatarian statice). Rosetted perennial with oblong to obovate or inversely lance-shaped, pale green leaves, 2–15cm (¾–6in) long, with white spots. In mid- and late summer, bears wide-spreading panicles, to 12cm (5in) or more long, of

tubular flowers with white sepals and spreading, purple-red to ruby-red petals. Good for cutting and drying. ‡ 30cm (12in). S.E. Europe, Caucasus, steppes of S. Russia. \*\*\*

- ▷ **Good luck plant** see *Oxalis tetraphylla*
- ▷ **Good luck tree** see *Cordyline fruticosa*

## GOODYERA

Jewel orchid

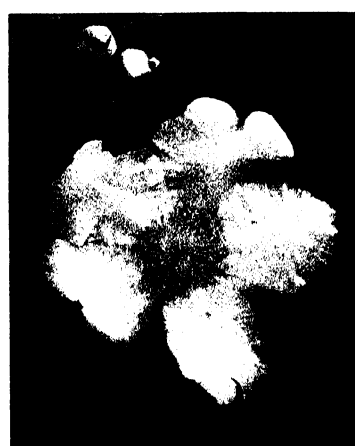
### ORCHIDACEAE

Genus of about 40 species of evergreen, rarely deciduous, terrestrial, rhizomatous orchids, widely distributed in temperate areas except Africa, occurring in forest leaf litter. They produce basal rosettes of ovate to lance-shaped, veined leaves, usually more attractive than the small white flowers that are borne in erect, narrow spikes or racemes on upright stems, mainly in summer. Grow hardy in woodland or on a peat bank. Tender species can be grown in an alpine house or cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow in sandy, humus-rich, well-drained, acid soil in a sheltered site in partial shade. See also p.46.
- **PROPAGATION** Divide rhizomes in spring.
- **PESTS AND DISEASES** Aphids, red spider mites, and mealybugs can be a problem.

*G. pubescens*. Terrestrial, evergreen orchid with rosettes of ovate to broadly lance-shaped, dark bluish green leaves, to 9cm (3½in) long, with conspicuous white veins. Small white flowers, to 5mm (¼in) long, are produced in dense, cylindrical racemes, 20–40cm (8–16in) tall, from late summer to autumn. ‡ to 40cm (16in) (in flower), ↔ 23cm (9in). E. North America. \*\*

- ▷ **Gooseberry**, Barbados see *Pereskia aculeata*
- ▷ **Chinese** see *Actinidia deliciosa*
- ▷ **Goosefoot** see *Synonium podophyllum*



*Gordonia axillaris*

## GORDONIA

### THEACEAE

Genus of about 70 species of evergreen trees and shrubs, occurring in moist forest in S.E. Asia, with one species in S.E. USA. They are cultivated for their simple, elliptic, oblong or inversely lance-shaped, alternate, leathery, hairless leaves, and for their camellia-like flowers, each with 5–7 petals. In frost-prone areas, grow in a cool greenhouse. In milder regions, plant in woodland.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light. Water freely when in growth, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in acid to neutral, moist but well-drained soil in full sun or dappled shade; shelter from cold, drying winds. Pruning group 1: may need restrictive pruning under glass.

• **PROPAGATION** Sow seed in containers as soon as ripe. Take semi-ripe cuttings in summer.

- **PESTS AND DISEASES** Trouble free.

*G. axillaris* ■□ Bushy shrub or tree with elliptic-oblong to inversely lance-shaped, glossy, dark green leaves, to 15cm (6in) long. Large, saucer-shaped white flowers, 8–13cm (3–5in) across, with orange-yellow anthers, are borne from winter to spring. ‡ 7–10m (22–30ft) or more. China, Vietnam, Taiwan. \*

*G. lasianthus* □ (Loblolly bay). Upright tree with narrowly elliptic to inversely lance-shaped, glossy, dark green leaves, to 15cm (6in) long. In summer, produces saucer-shaped, wavy-petalled, fragrant white flowers, 6–8cm (2½–3in) across, with yellow anthers. ‡ 20m (70ft) or more, ↔ 10m (30ft). S.E. USA. \*

- ▷ **Gorgon plant** see *Euryale*
- ▷ **Gorse** see *Ulex*, *U. europaeus*
- ▷ **Dwarf** see *Ulex gallii*
- ▷ **Irish** see *Ulex europaeus* 'Strictus'
- ▷ **Spanish** see *Genista hispanica*
- ▷ **Gourd, Snake** see *Trichosanthes cucumerina* var. *angusta*
- ▷ **Goutweed, Variegated** see *Aegopodium podagraria* 'Variegatum'
- ▷ **Grama, Blue** see *Bouteloua gracilis*
- ▷ **Granadilla** see *Passiflora*
- ▷ **Giant** see *P. quadrangularis*

- ▷ **Granadilla cont.**
- ▷ **Purple** see *P. edulis*
- ▷ **Red** see *P. coccinea*
- ▷ **Granny's bonnet** see *Aquilegia vulgaris*
- ▷ **Grape**, Amur see *Vitis amurensis*
- ▷ **Cape** see *Rhoissus capensis*
- ▷ **Oregon** see *Mahonia aquifolium*
- ▷ **Grape ivy** see *Cissus rhombifolia*
- ▷ **Grape vine** see *Vitis*

## GRAPTOPETALUM

### CRASSULACEAE

Genus of about 12 species of rosette-forming, perennial succulents from rocky grasslands to 2,000m (6,500ft) high, in S. USA and Mexico. Bell- or star-shaped flowers, each with 5–7 outward-spreading petals, are produced in axillary cymes, mainly in spring or summer. Where temperatures drop below 5°C (41°F), grow in a temperate greenhouse or as houseplants; elsewhere, plant in a desert garden.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full light or bright filtered light. Water freely in spring and summer and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Keep barely moist in autumn and winter. Outdoors, grow in moderately fertile, sharply drained soil in full sun or partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or take rosette or leaf cuttings, both in spring or summer.

- **PESTS AND DISEASES** Susceptible to mealybugs and, if in containers, root mealybugs.

*G. bellum* ■ syn. *Tacitus bellus*.

Compact, perennial succulent with basal rosettes, 3–8cm (1¼–3in) across, of triangular to oval, abruptly pointed, fleshy grey leaves, 2–3.5cm (¾–1½in) long. Short-stalked, star-shaped, pink to deep red flowers, 2–3cm (¾–1¼in) across, are produced in cymes from the centre of the rosettes from late spring to summer. ‡ 5–7cm (2–3in), ↔ to 15cm (6in). Mexico. ☼ (min. 5°C/41°F)

*G. filiferum*. Perennial succulent forming clumps of compact, basal rosettes, 5–6cm (2–2½in) across, of wedge- to spoon-shaped, rich green leaves, 1–5cm (½–2in) long. The leaves are white towards the winged margins and have minute papillae near the thin, bristly brown tips. Short-stalked, star-



*Graptopetalum bellum*

*Graptopetalum paraguayense*

shaped, red-spotted white flowers, 2cm (¾in) across, are produced in 2–5 branched cymes from spring to early summer. † 12cm (5in), ↔ indefinite. N.W. Mexico. ☼ (min. 5°C/41°F) *G. paraguayense* ■ syn. *Sedum weinbergii* (Mother of pearl plant). Prostrate, clump-forming, perennial succulent. Forms basal rosettes, to 15cm (6in) across, of spoon-shaped to obovate-lance-shaped, blunt, pink-tinged, grey-green leaves, 2–8cm (¾–3in) long; the young leaves are pale mauve-grey. Large cymes of star-shaped, red-spotted white flowers, 1–2cm (½–¾in) across, are borne in late winter and early spring. † to 20cm (8in), ↔ indefinite. Mexico. ☼ (min. 5°C/41°F)

## GRAPTOPHYLLUM

ACANTHACEAE

Genus of 10 species of evergreen shrubs from Australasia and the S.W. Pacific, often found on rainforest margins, and also on seasonally dry, rocky hillsides or beside rivers. They are cultivated mainly for their foliage: the leaves are simple, usually entire, spotted, mottled, or

*Graptophyllum pictum*

banded with various colours, and borne in opposite pairs. Tubular, 2-lipped flowers are produced in racemes or panicles at the ends of the shoots.

Where temperatures fall below 13°C (55°F), grow in a temperate or warm greenhouse, or as houseplants. In warmer climates, use to brighten shady borders; they are effective with ferns.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full light or bright filtered light. Top-dress or pot on in spring. Water freely from spring to autumn, applying a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in semi-shade. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, root semi-ripe cuttings with bottom heat in summer, or layer in summer.

• **PESTS AND DISEASES** Whiteflies, red spider mites, and scale insects may infest greenhouse plants.

*G. pictum* ■ (Caricature plant). Erect shrub, sparsely branched unless regularly pinched out when young. The elliptic-ovate, glossy, deep green leaves, 10–15cm (4–6in) long, are variously veined and marked yellow, or entirely suffused dark purple. In summer, bears short racemes, to 8cm (3in) long, of crimson to purple flowers with inflated throats. † 1–2m (3–6ft), ↔ 60–90cm (24–36in). Probably New Guinea. ☼ (min. 13°C/55°F). 'Tricolor' has oval, purplish green leaves, mottled yellow and rose-pink, with red stalks and midribs.

## ▷ Grass,

**Alpine meadow** see *Poa alpina*

**Balkan moor** see *Sesleria heufleriana*

**Blue-eyed** see *Sisyrinchium graminoides*

**Blue moor** see *Sesleria albicans*

**Blue oat** see *Helictotrichon sempervirens*

**Bowles' golden** see *Milium effusum* 'Aureum'

**Broad-leaved cotton** see

*Eriophorum latifolium*

**Buffalo** see *Stenotaphrum*

*secundatum*

**Bulbous oat** see *Arrhenatherum*

*elatus* subsp. *bulbosum*

'Variegatum'

**Common cotton** see *Eriophorum*

*angustifolium*

**Common quaking** see *Briza media*

**Cotton** see *Eriophorum*

**Crab** see *Panicum*

**Feather** see *Stipa*

**Feather reed** see *Calamagrostis*

*x acutiflora*

**Fountain** see *Pennisetum*

*alopecuroides*, *P. setaceum*

**Foxtail** see *Alopecurus*

**Giant feather** see *Stipa gigantea*

**Glaucous hair** see *Koeleria glauca*

**Greater quaking** see *Briza maxima*

**Hair** see *Aira*, *A. elegantissima*,

*Deschampsia*

**Indian** see *Sorghastrum nutans*

**Lemon** see *Cymbopogon citratus*

**Lesser quaking** see *Briza minor*

**Love** see *Eragrostis*

## ▷ Grass cont.

**Maiden** see *Miscanthus sinensis*

'Gracillimus'

**Meadow** see *Poa*

**Mosquito** see *Bouteloua gracilis*

**Natal** see *Melinis repens*

**Needle** see *Stipa*

**Nest moor** see *Sesleria nitida*

**Oat** see *Arrhenatherum*

**Pampas** see *Cortaderia*, *C. selloana*

**Pheasant's tail** see *Stipa arundinacea*

**Plume** see *Saccharum*

**Plumed tussock** see *Chionochloa*

*conspicua*

**Quaking** see *Briza*

**Reed** see *Calamagrostis*

**Reed canary** see *Phalaris*

*arundinacea*

**Ribbon** see *Phalaris arundinacea*

**St. Augustine** see *Stenotaphrum*

*secundatum*

**Signal-arm** see *Bouteloua gracilis*

**Silver banner** see *Miscanthus*

*sacchariflorus*

**Silver beard** see *Bothriochloa*

*saccharoides*

**Spangle** see *Chasmanthium*

*latifolium*

**Spear** see *Poa*, *Stipa*

**Squirrel tail** see *Hordeum jubatum*

**Switch** see *Panicum virgatum*

**Toothbrush** see *Lamarckia aurea*

**Trembling** see *Briza media*

**Tufted hair** see *Deschampsia*

*cespitosa*

**Tussock** see *Cortaderia*, *Deschampsia*

*cespitosa*

**Umbrella** see *Cyperus involucratus*

**Wavy hair** see *Deschampsia flexuosa*

**Whitlow** see *Draba*

**Witch** see *Panicum capillare*

**Wood** see *Sorghastrum nutans*

**Woolly foxtail** see *Alopecurus*

*lanatus*

**Yellow whitlow** see *Draba aizoides*

**Zebra** see *Miscanthus sinensis*

'Zebrinus'

## ▷ Grasses see p.54

▷ **Grass of Parnassus** see *Parnassia*, *P.*

*palustris*

▷ **Grass plant, Mexican** see *Dasylirion*

*longissimum*

▷ **Grass widow** see *Olymnia douglasii*

▷ **Grassy bells** see *Edraianthus*

## GREVILLEA

PROTEACEAE

Genus of at least 250 species of evergreen shrubs and trees, most native to Australia, a few native to Indonesia, New Guinea, and New Caledonia, found in woodland, rainforest, and more open habitats. The alternate leaves vary greatly and may be needle-like or broader, pinnatifid, pinnatisect, or pinnate, and boldly toothed. The petalless flowers, 0.5–2cm (¼–¾in) long, each consist of a coloured calyx tube that splits into 4 narrow, rolled-back, petal-like lobes, and long, straight or curved styles. The flowers are produced in simple or branched, terminal racemes or panicles, some one-sided, others cylindrical or feathery. In frost-prone areas, grow in a cool or temperate greenhouse, or conservatory. Elsewhere, use as specimen plants or in a shrub border. All parts may aggravate skin allergies.

• **HARDINESS** Frost hardy to frost tender; some will survive to -7°C (19°F) if wood is well ripened in summer.

*Grevillea* 'Austraflora Canterbury Gold'

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) compost, with added grit, in full light. Top-dress or pot on in spring. During the growing season, water freely and apply a low-phosphate liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in acid to neutral, moderately fertile soil in full sun. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow scarified or pre-soaked seed at 13–18°C (55–64°F) in spring (only *G. robusta* germinates easily). Take semi-ripe cuttings in summer. Graft in winter under glass, or in late summer outdoors.

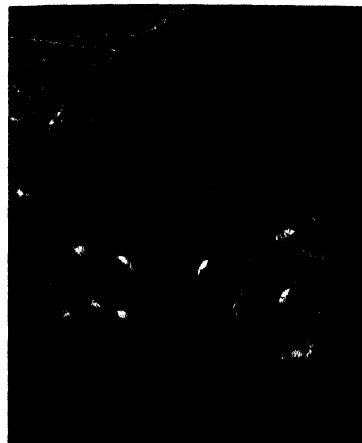
• **PESTS AND DISEASES** Trouble free.

*G. acanthifolia*. Sometimes untidy shrub with wide-spreading, prostrate and ascending branches. The oblong-elliptic, glossy, deep green leaves, to 12cm (5in) long, are pinnatisect, with each segment divided into 3–5 spine-tipped lobes. Purplish pink flowers are borne in one-sided, toothbrush-like racemes, 5–10cm (2–4in) long, mainly from spring to autumn. † 0.3–3m (1–10ft), ↔ 2–5m (6–15ft). Australia (New South Wales). \*

*G. alpestris* see *G. alpina*.

*G. alpina*, syn. *G. alpestris*. Prostrate to erect shrub of open habit with linear to broadly elliptic leaves, 1–3cm (½–1¼in) long, deep green to grey-green, sometimes glossy above, paler and hairy beneath. The flowers, borne in short, dense racemes, to 3cm (1¼in) long, range from pink, red, orange, or yellow to cream or pale green, and are borne

*Grevillea banksii*

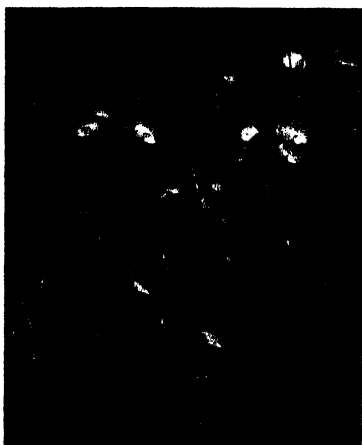
*Grevillea* 'Canberra Gem'

almost all year round. ↑ to 2m (6ft), ↔ 0.6–2m (2–6ft). Australia (mountain slopes and heathland in New South Wales and Victoria). \* \*. 'Olympic Flame' is compact and rounded, with small, sharply pointed, deep green leaves, to 2cm (¾in) long; it produces an abundance of slightly pendulous, dense racemes, 6cm (2½in) long, of bicoloured, red-pink and cream flowers; ↑ 1–2m (3–6ft).

**G. *splendens***. Erect to spreading shrub with reddish green young growth, and linear-lance-shaped, usually entire leaves, 18–30cm (7–12in) long, deep green above and greenish white or sometimes fawn-felted beneath. Deep red and green flowers are produced in one-sided, toothbrush-like racemes, 5cm (2in) long, from the upper leaf axils and shoot tips, mainly from late winter to early summer and again in autumn. ↑ 3–5m (10–15ft), ↔ 6m (20ft).

**G. 'Austraflora Canterbury Gold'** ■ Prostrate to low-arching or more upright shrub with lance-shaped, divided leaves, 4–6cm (1½–2½in) long, light green above, with dense, silky hairs beneath. Pale yellow flowers in pendent, one-sided racemes, to 6cm (2½in) long, are produced mainly from late winter to late summer. ↑ 0.6–2m (2–6ft), ↔ 2–4m (6–12ft). \* \*

**G. *banksii*** ■ Large, open, strongly branched shrub or small tree, sometimes prostrate and mat-forming. Ovate, pinnate, or deeply pinnatifid leaves, 15–25cm (6–10in) long, with long, narrow lobes, are deep green above, silky-hairy or rust-red-hairy beneath.

*Grevillea juniperina**Grevillea juniperina* f. *sulphurea*

Bears red, pink, or creamy white flowers in erect, cylindrical racemes, 8–18cm (3–7in) long, mostly from late winter to spring, but also at other times. ↑ 1–10m (3–30ft), ↔ 2–5m (6–15ft). Australia (Queensland). \*

**G. 'Canberra Gem'** ■ Vigorous, bushy shrub with densely silky-hairy stems, and crowded, linear leaves, 3cm (1¼in) long, each tipped with a hard point, and rich green above, silky-hairy beneath. Produces short, dense racemes, to 5cm (2in) long, of waxy, pinkish red flowers, mainly from late winter to late summer, but also at other times. ↑ 2–4m (6–12ft), ↔ 2–5m (6–15ft). \* \*

**G. 'Clearview David'**. Fast-growing, bushy shrub with densely borne, often clustered, linear leaves, 3cm (1¼in) long, each tipped with a hard point, and deep green above, silky-hairy below. At any time of the year, bears large, spider-like racemes, to 7cm (3in) long, of deep red flowers at the tips of all short lateral shoots. ↑ 2–3m (6–10ft), ↔ 2–4m (6–12ft). \* \*

**G. *juniperina*** ■ Prostrate to upright-branched, dense, rounded shrub with crowded, often clustered, narrowly lance-shaped to narrowly linear, mid-green to grey-green leaves, 1–2cm (½–¾in) long. Greenish yellow to red flowers are borne in pendent racemes, to 6cm (2½in) long, from late spring to midsummer. ↑ 2m (6ft), ↔ 1m (3ft). Australia (New South Wales). \* \*

'Molonglo' has apricot flowers, and is vigorous and low-spreading; ↑ to 1m (3ft). 'Prostrate Yellow' is mat-forming, with very dark foliage and lemon-yellow flowers; ↑ 30–60m (12–24in), ↔ 3–5m (10–15ft). \* f. *sulphurea* ■ syn. *G. sulphurea*, has many-branched, arching stems, and yellow flowers; ↑ 1.5–2m (5–6ft), ↔ 2–3m (6–10ft).

**G. 'Kentlyn'** see *G. 'Mason's Hybrid'*.

**G. *lanigera***. Usually dwarf to medium-sized, many-branched, rounded shrub, sometimes mat-forming. Bears crowded, linear to narrowly oblong, hairy, mid-green to greyish green leaves, 1–3cm (½–1¼in) long, with margins rolled under. Produces umbel-like, semi-erect racemes, to 6cm (2½in) wide, of light red and cream or green and cream flowers from autumn to summer. ↑ prostrate to 3m (10ft), ↔ 1.5–5m (5–15ft). Australia (New South Wales, Victoria). \* \*. 'Clearview John' has lime-green and cream flowers; ↑ 60–90cm (24–36in), ↔ 0.9–1.5m (3–5ft). 'Compacta', syn. 'Mt.

Tamboritha', 'Prostrate', is spreading, dwarf, and bushy, with pinkish red and cream flowers; ↑ 60–100cm (24–39in).

'Mt. Tamboritha' see 'Compacta'.

'Prostrate' see 'Compacta'.

**G. *lavandulacea***. Very variable, sometimes suckering, many-branched, spreading to erect or arching to cascading shrub. Linear to elliptic, sometimes clustered, mid-green to grey-green leaves, to 3.5cm (1½in) long, are prickly-tipped, with recurved margins. Bears many umbel-like racemes, to 6cm (2½in) long, of red to pale pink, red and cream, pink and cream or, more rarely, entirely cream flowers; they appear from late winter to early summer and late summer to autumn. ↑ prostrate to 2m (6ft), ↔ 1–3m (3–10ft). Australia (New South Wales, Victoria). \* \*. 'Adelaide Hills' is dwarf, with elliptic leaves and light red flowers; ↑ to 1.2m (4ft).

'Tanunda' is low and spreading, with greyish green leaves and bright reddish pink flowers; ↑ 60–100cm (24–39in).

**G. 'Mason's Hybrid'**, syn. *G. 'Kentlyn'*, *G. 'Ned Kelly'*. Spreading shrub,

tending to open out from the centre, with 2-pinnate, stiffly arching leaves, 12–18cm (5–7in) long, deep green and semi-lustrous above, paler and matt beneath. Cylindrical to almost one-sided racemes, 12–15cm (5–6in) long, of orange-red flowers, becoming pink-tinged with age, with deep pink styles and yellow stigmas, are produced intermittently through the year. ↑ 1–2m (2–6ft), ↔ 50–150cm (20–60in). \* \*

**G. 'Ned Kelly'** see *G. 'Mason's Hybrid'*.

**G. 'Poorinda Constance'** ■ Erect to spreading, bushy shrub bearing oblong to elliptic, sharp-tipped leaves, 3cm (1¼in) long, deep green above, paler and silky-hairy beneath, the margins rolled under. Short, dense, spider-like racemes, to 8cm (3in) long, of bright orange-red flowers with darker styles, are produced mainly from late autumn to summer. ↑ 2–3m (6–10ft), ↔ 2–5m (6–15ft). \* \*

**G. 'Poorinda Golden Lyre'**. Bushy, slow-growing shrub with silky-hairy shoots. Produces narrowly oblong to elliptic leaves, 3cm (1¼in) long, glossy, deep green above, paler and silky-hairy beneath, with margins rolled under. Red, orange, or yellow flowers are borne in pendent, spider-like racemes, to 4cm (1½in) across, from autumn to summer. ↑ 1–2m (3–6ft). \*

**G. 'Poorinda Queen'**. Freely branching shrub, the stems ascending to spreading. The elliptic leaves, 3–4cm (1¼–1½in) long, with firm, pointed tips, are glossy, deep green above, densely silky-hairy beneath. Bears pendent, congested racemes, 7cm (3in) across, of apricot-pink flowers with deep pink styles, mainly from late summer to late autumn. ↑ 3–4m (10–12ft), ↔ 3–5m (10–15ft). \*

**G. *robusta*** ♀ (Silky oak). Fast-growing, upright to conical tree, usually developing an open, elongated crown, but sometimes becoming more spreading. The fern-like leaves, 15–30cm (6–12in) long, are ovate and deeply pinnate or 2-pinnate, and bronze to deep green above, paler with silky hairs beneath. Erect, bright orange-yellow or golden yellow flowers are produced in horizontal, one-sided racemes, 10–15cm (4–6in) long, from late spring to summer. ↑ 15–35m (50–120ft), ↔ 5–20m (15–70ft). Australia (Queensland, New South Wales). ☼ (min. 5°C/41°F)

**G. 'Robyn Gordon'**. Many-branched, spreading shrub, thinning out from the centre with age. Stiffly arching, 2-pinnate leaves, 15–20cm (6–8in) long, are deep green and semi-lustrous above, paler and matt beneath. Cylindrical to almost one-sided racemes, 10–13cm (4–5in) long, of rich reddish pink flowers, ageing to a lighter pink, with bright red styles and stigmas, are produced intermittently throughout the year. Foliage may cause skin rashes. ↑ 1–1.5m (3–5ft), ↔ 50–150cm (20–60in). \*

*Grevillea* 'Poorinda Constance' (inset: flower detail)

*Grevillea rosmarinifolia*

**G. rosmarinifolia** [M] Many-branched shrub with ascending to spreading, sometimes arching stems, and silky-haired young growth. Crowded or clustered leaves, 1–4cm (½–1½in) long, are linear to narrowly elliptic or lance-shaped, with margins rolled under, often prickly-tipped, and greyish green to deep green above, paler and silky-downy beneath. Bears spider-like racemes, 4–7cm (1½–3in) long, of pink to light red or cream flowers, mainly from late autumn to early summer. Good for hedging. ‡ 0.5–3m (20–120in), ↔ 1–5m (3–15ft). Australia (New South Wales, Victoria). \*\*

**G. 'Sandra Gordon'** [M] Strong-growing, large shrub or small tree, becoming spreading and open unless pruned regularly. The pinnate, ovate leaves, 16–25cm (6–10in) long, with linear leaflets, to 7cm (3in) long, are bronze to silvery when young, maturing to deep green above, and silver-hairy beneath. Bright yellow flowers are produced in one-sided to almost cylindrical racemes, 8–14cm (3–5½in) long, throughout the year, mainly from summer to autumn (winter to spring in Australia). ‡ 3–6m (10–20ft), ↔ 2–3.5m (6–11ft). \*

**G. sulphurea** see *G. juniperina* f. *sulphurea*.

**G. 'White Wings'**. Strong-growing, dense shrub with spreading to ascending, sometimes arching branches. Bears broadly ovate to rounded, pinnate, light green leaves, 4cm (1½in) long, with numerous slender, linear leaflets with recurved margins and prickly points. Produces terminal and axillary, erect, loose racemes, to 2.5cm (1in) long, of fragrant white flowers, intermittently throughout the year. ‡ 2–3.5m (6–11ft), ↔ 3–5m (10–15ft). \*

## GREWIA

TILIACEAE

Genus of approximately 150 species of deciduous and evergreen trees, shrubs, and climbers from Africa, S. and E. Asia, and Australia, found in habitats ranging from tropical woodland to dry, open savannah. The alternate leaves are simple and entire or toothed, with persistent stipules. The small, 5-petalled flowers have central bosses of many stamens, and may be borne singly or in small, terminal or axillary cymes. In frost-prone areas, grow half-hardy and frost-tender species in a temperate greenhouse. In warmer climates, grewias

are suitable for growing as specimens or in shrub plantings.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Top-dress or pot on in spring. Water freely from spring to autumn, applying a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F), or layer, in spring.

• **PESTS AND DISEASES** Whiteflies and red spider mites may infest plants under glass.

**G. occidentalis** [M] (Four corners). Evergreen shrub, scandent climber, or small tree with slender, erect to spreading branches and shoots covered with soft, star-like hairs. The leaves are ovate-diamond-shaped to lance-shaped, 2–8cm (¾–3in) long, with rounded teeth, and hairless or softly hairy. In summer, bears small, stalked, axillary cymes of flowers, 3cm (1¼in) across, with pink sepals and mauve to purple or white petals; they are followed by fleshy, 4-lobed, yellowish orange, then purple fruit, 2.5cm (1in) across. ‡ 2–6m (6–20ft), ↔ 1.5–4m (5–12ft). Southern Africa. (min. 7°C/45°F)

## GREYIA

GREYIACEAE

Genus of 3 species of evergreen shrubs or small trees from South Africa, found in habitats ranging from slopes and rocky places to savannah. They are grown for their showy, 5-petalled flowers, which are borne in terminal racemes. The simple leaves are broadly ovate to rounded, alternate or spiralling, and generally clustered at the stem tips. In frost-prone areas, grow in a cool greenhouse. In warm climates, plant at the base of a house wall or in a shrub border.

• **HARDINESS** Frost tender, although *G. sutherlandii* will withstand very short periods near 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light. Top-dress or pot on in spring. Water freely from spring to autumn, applying a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors,

grow in fertile, moist but well-drained soil in full sun. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F), or air layer, in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

**G. sutherlandii** [M] (Natal bottlebrush). Evergreen, large shrub or small tree of open, stiff habit, with rounded to heart-shaped, irregularly toothed, leathery, mid-green leaves, 5–10cm (2–4in) long. Old leaves often turn bright red before falling. Tubular-bell-shaped, crimson to brick-red flowers, 2cm (¾in) long, with long stamens, are borne in racemes, 10–15cm (4–6in) long, in spring, just before or with the newly expanding leaves. ‡ 2–5m (6–15ft), ↔ 1.5–3m (5–10ft). South Africa (KwaZulu/Natal). \* (borderline)

## GRINDELIA

Gum plant, Rosinweed, Tarweed

ASTERACEAE/COMPOSITAE

Genus of about 60 species of annuals, evergreen, frequently woody-based perennials, and some subshrubs from sunny, dry, often rocky habitats in North, Central, and South America. They are cultivated for their daisy-like, bright yellow flowerheads, borne singly or in corymbs, which often glisten with sticky white resin in bud. The stems and the simple, alternate, entire or toothed, sometimes stalkless leaves are also usually sticky. Suitable for a sunny border, wild garden, or hot, dry bank.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in full sun in poor to moderately fertile, well-drained soil. Remove frost-damaged growth in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**G. chilensis** [M] syn. *G. speciosa*. Bushy, evergreen subshrub with stout, upright shoots and mostly basal, inversely lance-shaped to obovate, entire or toothed, greyish green leaves, to 12cm (5in) long. Bears large, bright yellow flowerheads, 7cm (3in) across, singly on long stalks, throughout summer. ‡ ↔ 1m (3ft). Argentina, Chile. \*\*\* (borderline)

**G. integrifolia**. Erect, woody-based perennial producing several stems with stalkless, lance-shaped to inversely lance-shaped, usually toothed leaves, 35cm

(14in) long. Bright yellow flowerheads, 2.5–4cm (1–1½in) across, are borne singly or in corymbs to 12cm (5in) across, from midsummer to early autumn. ‡ to 80cm (32in), ↔ 60cm (24in). W. North America. \*\*\*

**G. speciosa** see *G. chilensis*.

**G. stricta** (Pacific grindelia). Clump-forming perennial with both decumbent and upright stems, producing oblong to inversely lance-shaped, entire to minutely toothed leaves, to 25cm (10in) long. Bears solitary, bright yellow flowerheads, to 5cm (2in) across, from midsummer to early autumn. ‡ to 90cm (36in), ↔ 60cm (24in). W. North America. \*\*\*

## GRISELINIA

CORNACEAE/GRISELINIACEAE

Genus of 6 species of dioecious, evergreen shrubs and trees from the forests and coasts of New Zealand and South America. Grown for their handsome, simple, alternate, leathery leaves, they also bear inconspicuous, yellow-green flowers in late spring. In autumn, they produce purple fruits if plants of both sexes are present. Grow as specimen plants for a shrub border or as hedging; ideal as windbreaks in coastal regions. In frost-prone areas, grow half-hardy plants in a cool greenhouse.

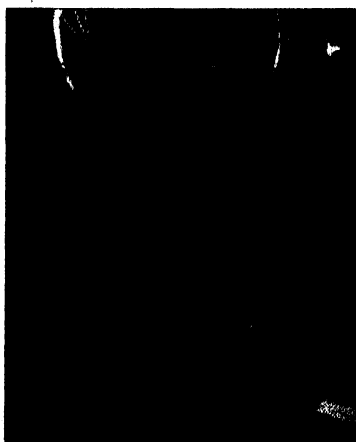
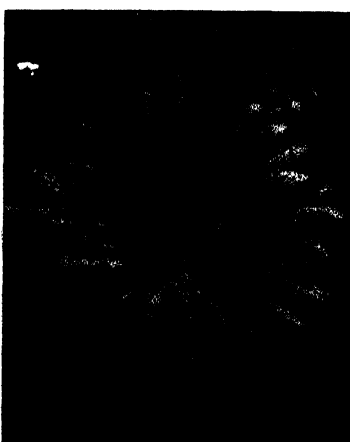
• **HARDINESS** Mostly frost hardy or half hardy; *G. littoralis* will withstand temperatures down to -12°C (10°F).

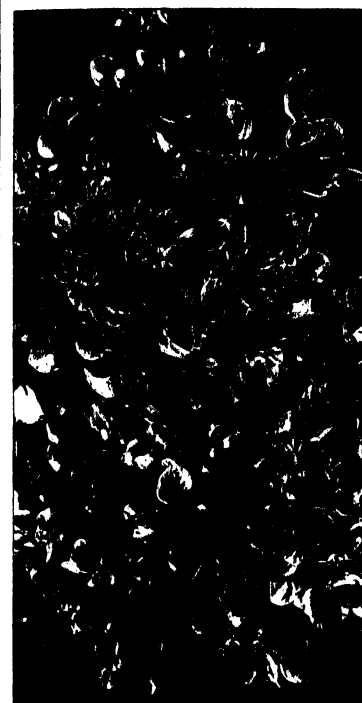
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in light, fertile, well-drained soil in full sun, with shelter from cold, drying winds. Pruning group 9; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Susceptible to fungal leaf spot.

**G. littoralis** [M] (Broadleaf). Vigorous, dense, upright shrub (or tree in very mild areas) producing broadly ovate to ovate-oblong, glossy, leathery, bright apple-green leaves, to 10cm (4in) long. ‡ to 8m (25ft), ↔ 5m (15ft). New Zealand. \*\*\* (borderline). 'Dixon's Cream' [M] bears leaves boldly marked in the centre with creamy white; ‡ 3m

*Greyia sutherlandii**Grindelia chilensis**Griseelinia littoralis* 'Dixon's Cream'



*Griselinia littoralis* 'Variegata'

(10ft), ↔ 2m (6ft). 'Variegata' ■ produces leaves irregularly margined creamy white and streaked grey-green; ‡ 3m (10ft), ↔ 2m (6ft).

**G. lucida.** Vigorous, upright shrub with broadly ovate, leathery, glossy, mid-green leaves, very unequal at the bases, to 18cm (7in) long, ‡ 6m (20ft), ↔ 5m (15ft). New Zealand. \*

- ▷ **Ground elder** see *Aegopodium*, *A. podagraria* 'Variegatum'
- ▷ **Ground ivy, Variegated** see *Glechoma hederacea* 'Variegata'
- ▷ **Groundsel,**
  - Bush** see *Baccharis halimifolia*
  - Chinese** see *Senecio tanguticus*
  - Golden** see *Ligularia dentata*
- ▷ **Guava,**
  - Chilean** see *Ugni molinae*
  - Pineapple** see *Acca sellowiana*
- ▷ **Guayiga** see *Zamia pumila*
- ▷ **Guelder rose** see *Viburnum opulus*
- ▷ **Guillauminia albiflora** see *Aloe albiflora*
- ▷ **Gum** see *Eucalyptus*
  - Alpine snow** see *Eucalyptus pauciflora* subsp. *niphophila*
  - Black** see *Nyssa sylvatica*
  - Blue** see *Eucalyptus leucoxydon*
  - Brittle** see *Eucalyptus mannifera* subsp. *maculosa*
  - Cabbage** see *Eucalyptus pauciflora*
  - Cider** see *Eucalyptus gunnii*
  - Kybean** see *Eucalyptus parvifolia*
  - Manna** see *Eucalyptus viminalis*
  - Mountain** see *Eucalyptus dalrympleana*
  - Oriental sweet** see *Liquidambar orientalis*
  - Powdered** see *Eucalyptus pulverulenta*
  - Red-flowering** see *Eucalyptus ficifolia*
  - Red river** see *Eucalyptus camaldulensis*
  - Ribbon** see *Eucalyptus viminalis*
  - Round-leaved snow** see *Eucalyptus perriniana*
  - Silver dollar** see *Eucalyptus polyanthemus*

#### ▷ Gum cont.

- Silver-leaved mountain** see *Eucalyptus pulverulenta*
- Small-leaved** see *Eucalyptus parviflora*
- Snow** see *Eucalyptus pauciflora* subsp. *niphophila*
- Sour** see *Nyssa sylvatica*
- Spinning** see *Eucalyptus perriniana*
- Sweet** see *Liquidambar styraciflua*
- Tasmanian blue** see *Eucalyptus globulus*
- Tasmanian snow** see *Eucalyptus coccifera*
- Tasmanian yellow** see *Eucalyptus johnstonii*
- Tingiringi** see *Eucalyptus glaucescens*
- Urn** see *Eucalyptus urnigera*
- Urn-fruited** see *Eucalyptus urnigera*
- Weeping** see *Eucalyptus pauciflora*
- White** see *Eucalyptus viminalis*
- Wolgan snow** see *Eucalyptus gregsoniana*
- Yellow** see *Eucalyptus leucoxydon*
- ▷ **Gum plant** see *Grindelia*

## GUNNERA

GUNNERACEAE/HALORAGIDACEAE

Genus of about 45 species of summer-flowering, rhizomatous, herbaceous or evergreen perennials from moist areas in southern Africa, Australasia, and South America. Gunneras vary in size from diminutive and mat-forming to extremely large and clump-forming with massive leaves. They are cultivated primarily for their handsome foliage, although in some species the flower spikes and fruits are also attractive.

The leaves are rounded to ovate, often heart-shaped, lobed, and usually toothed. The tiny, usually greenish yellow flowers are produced in dense, upright, brush-like spikes or panicles; the basal flowers are normally female, the uppermost male, with those in between sometimes bisexual. A few species are dioecious. Large species are excellent architectural plants for the edge of a pond or stream, or a bog garden, while smaller ones are suitable for a rock garden or an alpine house.

• **HARDINESS** Fully hardy to frost hardy. Most fully hardy species are not reliably cold-tolerant below about -12°C (10°F).

• **CULTIVATION** Grow in deep, permanently moist, humus-rich soil in sun or partial shade. Large species need shelter from cold, drying winds. Small species prefer partial shade, but are best in full sun in areas with cool summers.



*Gunnera magellanica*



*Gunnera manicata*

In frost-prone climates, protect the crowns of large species in winter with a dry mulch.

• **PROPAGATION** Sow seed in containers as soon as ripe, and keep cool but frost-free through the winter; germination is slow. Seed quickly loses viability. Large species may also be increased by taking cuttings of leafy, basal buds in spring. Divide small species in spring.

• **PESTS AND DISEASES** Prone to slug and snail damage outdoors; under glass, may be susceptible to aphids and whiteflies.

**G. brasiliensis** see *G. manicata*.

**G. chilensis** see *G. tinctoria*.

**G. hamiltonii.** Compact, cushion-forming, evergreen perennial with triangular-ovate, scalloped, grey-green leaves, to 3cm (1¼in) long. In summer, produces insignificant green flowers in spikes to 5cm (2in) long, followed by ellipsoid red fruit, to 3mm (¼in) long. ‡ 10cm (4in), ↔ 20cm (8in). New Zealand (coastal dunes on Stewart Island). \*\*

**G. magellanica** ■ Mat-forming herbaceous perennial with cupped, kidney-shaped, scalloped, dark green leaves, 5–9cm (2–3½in) across, borne on upright stalks, 8–15cm (3–6in) long. In summer, bears compact panicles, 1.5–12cm (½–5in) long, of tiny green flowers, followed by ovoid to spherical, orange-red fruit, 5mm (¼in) across. ‡ 15cm (6in), ↔ 30cm (12in) or more. S. South America, Falkland Islands. \*\* **G. manicata** ■ ♀ syn. *G. brasiliensis*. Very large, clump-forming herbaceous perennial with rounded to kidney-shaped, palmately lobed, prominently

veined, sharply toothed, deep green leaves, to 2m (6ft) long, borne on prickly stalks, to 2.5m (8ft) long. In early summer, branches 15cm (6in) long bear numerous tiny, greenish red flowers in conical, branched panicles, to 1m (3ft) or more tall; these are followed by spherical, red-green fruit, to 3mm (¼in) long. ‡ 2.5m (8ft), ↔ 3–4m (10–12ft) or more. Colombia to Brazil. \*\* \* (borderline)

**G. prorepens.** Mat-forming herbaceous perennial with ovate, scalloped, short-stalked, purple-green leaves, to 3cm (1¼in) long. In summer, bears compact spikes, to 6cm (2½in) long, of insignificant green flowers, followed by dense, mulberry-like clusters of almost spherical, dark red fruit, to 4mm (¼in) across. ‡ 10cm (4in), ↔ 20cm (8in). Bogs and damp grassland in New Zealand. \*\* \* (borderline)

**G. scabra** see *G. tinctoria*.

**G. tinctoria.** syn. *G. chilensis*, *G. scabra*. Large, slowly spreading herbaceous perennial, forming a denser clump than *G. manicata*. Heart-shaped to rounded, deeply lobed, sharply toothed, deep green leaves, 1–2m (3–6ft) long, are borne on prickly stalks, to 1.5m (5ft) long. Cylindrical panicles, to 50cm (20in) tall, of numerous tiny, rusty red flowers, borne on straight branches, 10cm (4in) long, are produced from early to late summer. Spherical fruit, to 3mm (¼in) long, are green, strongly suffused red. ‡ 1.5m (5ft), ↔ 2m (6ft). Chile. \*\* \*

▷ **Gutta-percha tree** see *Eucommia ulmoides*

## GUZMANIA

## BROMELIACEAE

Genus of over 120 species of virtually stemless, evergreen, mainly epiphytic perennials (bromeliads), found in the USA (S. Florida), Central America, the West Indies, and N. and W. South America. They occur mainly in the Andean rainforest, to 3,500m (11,500ft) high. The lance-shaped leaves form funnel-shaped rosettes, above or within which flowerheads of tubular, white or yellow flowers, usually surrounded by colourful floral bracts, are borne on conspicuous, yellow, orange, or bright red stems, in summer. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse or as houseplants. In warmer areas, grow in shady, humid, moist areas of the garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in epiphytic bromeliad compost in bright filtered or indirect light, or grow epiphytically on artificial tree branches. When in growth, mist daily with soft water, preferably in the early morning. In winter, keep barely moist and do not mist. Outdoors, attach to the branches of trees in partial shade. See also p.47.
- **PROPAGATION** Sow seed at 27°C (81°F), or remove offsets, in mid-spring.
- **PESTS AND DISEASES** Vulnerable to mealybugs.

**G. dissitiflora.** Stemless, stoloniferous, epiphytic bromeliad with rosettes of lance-shaped, mid-green leaves, 30–90cm (12–36in) long, with red-striped, pale green sheaths with dark brown bases. In summer, erect inflorescences of 7–15 flowers, to 3–4cm (1¼–1½in) long, with bright yellow sepals fused to form a tube, and flared white petals, are borne on short, erect stems among overlapping, bright red bracts. ↑ to 90cm (36in). Costa Rica, Panama, Colombia. ♀ (min. 15°C/59°F)



Guzmania lingulata



Guzmania lingulata var. minor

**G. lingulata** ♀ Variable, epiphytic bromeliad with rosettes of narrowly lance-shaped, sometimes red-violet-striped, deep green leaves, 45cm (18in) long, with sheaths brown-scaly beneath. In summer, erect stems produce overlapping, bright red, orange, or pink bracts, around loose corymbs of tubular, yellow-white flowers, 4.5cm (1¾in) long. ↑ to 30–45cm (12–18in). N. Central America, West Indies to Brazil. ♀ (min. 15°C/59°F). **var. minor** ♀ has dark green sheaths and few-flowered inflorescences with bright red bracts; ↑ to 23–30cm (9–12in); Central America (Guatemala), N. South America (Colombia to N.E. Brazil).

**G. monostachia** ♀ syn. *G. monostachya*, *G. tricolor*. Stemless, epiphytic bromeliad with dense rosettes of lance-shaped to strap-shaped, pale green or yellowish green leaves, to 40cm (16in) long. In summer, produces cylindrical inflorescences, to 15cm (6in) long, with pale green stem bracts and brown-black-striped green basal bracts. Tubular white flowers, 2.5–3cm (1–1¼in) long, are surrounded by bright red or white bracts. ↑ to 40cm (16in). USA (Florida), Central America,



Guzmania monostachia

West Indies, W. and N. South America. ♀ (min. 15°C/59°F). 'Variegata' has green- and white-striped leaves.

**G. monostachya** see *G. monostachia*.

**G. musaica** ♀ Stemless, epiphytic bromeliad with rosettes of broadly linear, outward-spreading, brown-sheathed, dark green leaves, to 70cm (28in) long; they are thinly banded with pale green, deep green, or reddish brown, and often flushed purple beneath. In summer, erect stems with overlapping, bright red or pink bracts produce almost spherical heads of rose-pink floral bracts and flowers, to 4.5cm (1¾in) long, with yellow sepals and yellowish white petals. ↑ to 50cm (20in), ↔ 70cm (28in). Panama, Colombia. ♀ (min. 15°C/59°F)

**G. sanguinea** ♀ Stemless, epiphytic bromeliad with almost flat rosettes of broadly lance-shaped, arching leaves, to 40cm (16in) long, sometimes spotted dark green, becoming suffused with yellow, red, and orange at flowering time. In summer, corymbs of tubular, yellow, greenish yellow, or white flowers, to 8cm (3in) long, with spreading petals and surrounded by red bracts, are borne within the leaf rosettes. Offsets freely. ↑ 20cm (8in), ↔ to 35cm (14in). Costa Rica, Trinidad, Tobago, Venezuela, Colombia, Ecuador. ♀ (min. 15°C/59°F)

**G. tricolor** see *G. monostachia*.

**G. vittata.** Stemless, epiphytic bromeliad with loose rosettes of erect, lance-shaped, deep green leaves, 40–60cm (16–24in) long, cross-banded with paler green and sometimes banded purple beneath. In summer, erect stems



Guzmania musaica

with overlapping, purple-spotted, pale green basal bracts produce compact, ovoid, branched inflorescences with short spikes of tubular white flowers, 2cm (¾in) or more long. ↑ to 35–60cm (14–24in). S. and E. Colombia, N.W. Brazil. ♀ (min. 15°C/59°F)

**G. wittmackii.** Stemless, epiphytic bromeliad with rosettes of lance-shaped, dark green leaves, to 85cm (34in) long, with brown-scaly sheaths and minute scales. In summer, arching stems produce branched inflorescences with densely overlapping red bracts and few-flowered clusters of tubular white flowers, to 9cm (3½in) long. ↑ to 50cm (20in), ↔ 1.2m (4ft). S. Colombia, Ecuador. ♀ (min. 15°C/59°F)

## GYMNOCALYCIUM

## CACTACEAE

Genus of 50 or more species of spherical to cylindrical, perennial cacti from rocky scrub, hillsides, and grassland in Brazil, Bolivia, Paraguay, Argentina, and Uruguay. Most have prominently rounded, sometimes spiralling ribs, separated by diagonal grooves. Diurnal, funnel- to bell-shaped flowers are produced in early summer, usually from near the crowns or from the side areoles. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse. In warmer climates, grow in a desert garden.

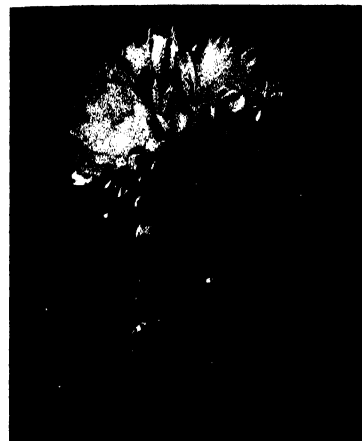
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun. Water freely in spring and summer, applying a low-nitrogen liquid fertilizer every 4 or 5 weeks. Keep dry in winter. Outdoors, grow in poor, sharply drained soil in full sun or partial shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in late winter or early spring. Remove offsets in spring.
- **PESTS AND DISEASES** Susceptible to mealybugs.

**G. andreae** ♀ Clustering cactus with spherical, glossy, dark blue-green or black-green stems, each with about 8 nearly flat, warty ribs. Tubercles are rounded, with a central areole bearing 7 thin, straight, spreading, brown-based white radial spines and 1–3 curved, dark brown centrals. Broadly funnel-shaped, bright yellow flowers, 4.5cm (1¾in) across, with yellow-green, darker-striped outer tepals, are borne in early summer. ↑ to 6cm (2½in), ↔ to 15cm (6in). N. Argentina. ♀ (min. 10°C/50°F)

**G. bruchii.** Clustering cactus with almost spherical, dark green stems, each with 12 low ribs with rounded, indistinct tubercles. Areoles each produce 10–17 white radial spines, sometimes brown at the base, and 1, occasionally 3, longer white to brown central spines. In early summer, bears funnel-shaped, sometimes faintly scented, pale pink flowers, to 4.5cm (1¾in) across, with dark pink mid-stripes outside. ↑ to 4cm (1½in), ↔ to 10cm (4in). N. Argentina. ♀ (min. 10°C/50°F)

**G. gibborum.** Simple or offsetting cactus with spherical, later cylindrical, dark bluish green or brownish green stems, each with 12–19 rounded, notched ribs, small, prominent



*Gymnocalycium andreae*

tubercles, and areoles producing pale brown, later grey spines (7–14 radials and up to 3 centrals). Funnel-shaped flowers, to 7cm (3in) across, pure white or with pale pink mid-stripes on the outsides of the outer tepals, are borne in early summer. ↓ 20cm (8in), ↔ 15cm (6in). Argentina. ☼ (min. 10°C/50°F)

***G. mihanovichii* 'Red Head'** ■ syn. *G. mihanovichii* 'Hibotan', *G. mihanovichii* 'Red Cap'. Perennial cactus producing spherical, flat-topped red stems, each with about 8 prominent, scarcely warty ribs. Areoles bear curved, pinkish white spines (3–5 radials and no centrals). Funnel-shaped pink flowers, to 5cm (2in) across, are borne in early summer. Lacks chlorophyll and survives only by being grafted on to robust stock plants of *Hylocereus*. ↓ to 12cm (5in) (grafted), ↔ 6cm (2½in). ☼ (min. 10°C/50°F)

***G. queblanum*** ♀ Variable cactus with flat-topped, spherical, greyish green stems, bronzing in sun, each with 8–15 ribs divided into prominent, rounded tubercles. Areoles bear pale brown spines (2–5 or more radials and no centrals). Funnel-shaped white flowers, 3–5cm (1¼–2in) across, often pinkish red in the throats, are borne in early summer. ↓ 5cm (2in), ↔ 7cm (3in). N. Argentina. ☼ (min. 10°C/50°F)

***G. saglionis*** ■ Perennial cactus with flat-topped, spherical, green or bluish green stems with 10–30 or more ribs bearing prominent, rounded tubercles. Areoles produce red-brown to yellow spines (7–15 radials and about 3 centrals). Broadly funnel-shaped flowers, 2cm (¾in) across, with pinkish white inner tepals and pale green, pink-flushed

*Gymnocalycium mihanovichii* 'Red Head'*Gymnocalycium saglionis*

outer tepals, are borne in early summer. ↓ 10cm (4in), ↔ to 30cm (12in). N.W. Argentina. ☼ (min. 10°C/50°F)

***G. schickendantzii***. Flat-topped, spherical cactus with 7- to 14-ribbed, dark green stems, bronzing in full sun. Areoles bear grey-red to pale brown, often darker tipped spines (5–7 radials and no centrals). Funnel-shaped, white to red flowers, to 2cm (¾in) across, with olive-green, often red-tinged outer tepals, are borne in early summer. ↓ to 10cm (4in). N. Argentina. ☼ (min. 10°C/50°F)

## GYMNOCARPIUM

DRYOPTERIDACEAE/WOODSIACEAE

Genus of about 5 species of deciduous, rhizomatous, terrestrial ferns found in moist woodland throughout the N. hemisphere. Fronds, arising singly from long, creeping rhizomes in spring, are triangular and 2- or 3-pinnate or pinnatifid, with leaf-blades that tilt at right-angles to the light. Small, rounded sori form on the undersides of the fronds, without protective indusia. Ideal for ground cover in moist, shady places.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in preferably neutral to acid, leafy, moist soil, enriched with garden compost before planting, in deep shade.
- **PROPAGATION** Sow spores at 15°C (59°F) when ripe, or divide in spring. See also p. 51.
- **PESTS AND DISEASES** Trouble free.

***G. dryopteris*** ♀ (Oak fern). Deciduous fern bearing very distinctive, triangular, 3-pinnate fronds, each with a leaf-blade 10–18cm (4–7in) long and across, on a stem 10cm (4in) long. Pinnae are triangular, divided into oblong to ovate, toothed and scalloped segments. Pale yellowish green when young, the fronds darken to vivid rich green with age. ↓ 20cm (8in), ↔ indefinite. Europe, Turkey, N. Asia, China, Japan, Canada, USA. \*\*\*. 'Plumosum' has broader, overlapping pinnae.

***G. robertianum*** (Limestone polypody). Rhizomatous, deciduous, spreading fern with dull, dark green, broadly triangular, 3-pinnate fronds, to 35cm (14in) long, on stems to 15cm (6in) long. Pinnae are oblong to narrowly triangular, divided into oblong, entire or finely toothed segments. ↓ to 35cm (14in), ↔ indefinite. Eurasia, North America. \*\*\*

## GYMNOCLADUS

CAESALPINACEAE/LEGUMINOSAE

Genus of 4 species of dioecious, deciduous trees from rich woodland in E. Asia and North America. They are cultivated for their spreading habit and for their large, 2-pinnate leaves, borne alternately. The small, greenish white flowers, borne in terminal panicles, are likely to be produced only in areas with prolonged temperatures above 24°C (75°F). They are best grown as specimen trees.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, after nicking or soaking. Take root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

***G. dioica*** ☉ (Kentucky coffee tree). Slow-growing, spreading, deciduous tree with large, 2-pinnate leaves, to 1m (3ft) long, each leaflet divided again into 8–14 ovate, softly hairy, dark green leaflets, pink-tinged when young, yellow in autumn. Large panicles of small, star-shaped, greenish white or creamy white flowers, to 30cm (12in) long on female trees, 10–13cm (4–5in) long on males, are borne in early summer, followed on female plants by pendent pods, to 25cm (10in) long. Seeds are toxic if ingested. ↓ 20m (70ft) or more, ↔ 15m (50ft). C. and E. North America. \*\*\*

▷ *Gymnogramma triangularis* see *Pityrogramma triangularis*

## GYNANDRIRIS

IRIDACEAE

Genus of 9 species of small, cormous perennials occurring in garigue, grassy pastures, and stony slopes in South Africa and from the Mediterranean to Pakistan. In spring, they bear narrow, channelled, basal leaves and a succession of small, short-lived, iris-like flowers, each with 3 large, pendent outer petals and 3 usually smaller inner petals. Plant on a warm, sunny bank or by a warm wall. In wet, frost-prone areas, grow in an alpine house or bulb frame.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil that is moist in winter and spring but dries out in

*Gynandriris sisyrinchium*

summer, in full sun. In frost-prone climates, grow in loam-based potting compost (J1 No.2), with added sharp sand, in a bulb frame or alpine house.

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, and overwinter seedlings in frost-free conditions. Remove offsets in summer.
- **PESTS AND DISEASES** Trouble free.

***G. sisyrinchium*** ■ syn. *Iris sisyrinchium*. Cormous perennial with 1 or 2 semi-erect or prostrate, narrow, basal leaves, 2–8cm (¾–3in) long. In spring, bears a succession of small, iris-like flowers, 2–4cm (¾–1½in) across; opening in the afternoon, they vary from pale lavender-blue to violet-blue, with a white, yellow, or orange mark on the 3 larger petals. ↓ 10–20cm (4–8in), ↔ 5cm (2in). Mediterranean to S.W. Asia. \*\*

## GYNURA

ASTERACEAE/COMPOSITAE

Genus of about 50 species of evergreen perennials and subshrubs, some scandent and trailing, from tropical woodland in Africa and Asia. The toothed leaves are alternate, simple, and pinnate or pinnatifid. The flowerheads, usually borne singly or in corymbs at the tips of the branches, lack ray-florets; they resemble groundsel (*Senecio*) flowerheads, but are larger and more colourful. Where temperatures fall below 13°C (55°F), grow as houseplants or in a temperate or warm greenhouse. Elsewhere, use in a shady, moist border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. Pot on or top-dress in spring. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Provide scandent species with light support. Pinch out tips to stop plants becoming too leggy and to encourage young shoots. Outdoors, grow in fertile, moist but well-drained soil in partial shade.
- **PROPAGATION** Root softwood cuttings in late spring or semi-ripe cuttings in summer, both with bottom heat.
- **PESTS AND DISEASES** Aphids and red spider mites may be troublesome under glass.

***G. aurantiaca*** ■ (Purple velvet plant, Royal velvet plant, Velvet plant). Woody-based perennial or subshrub,

*Gynura aurantiaca*

erect at first then semi-scandent, densely covered in velvety, violet-purple hairs. Simple, ovate to broadly elliptic leaves, 10–20cm (4–8in) long, are coarsely toothed, semi-lustrous, deep green, and overlaid with purple hairs. Orange-yellow flowerheads, 1.5–2cm (½–¾in) across, tinted purple with age, are borne in loose, terminal corymbs, to 3cm (1¼in) across, mainly in winter. ‡ to 60cm (24in), or 2–3m (6–10ft) with support; ↔ 45–120cm (18–48in). Indonesia (Java). ☼ (min. 13°C/55°F). **'Purple Passion'** ♀ syn. *G. sarmentosa* of gardens, is trailing or semi-twining, with purple-haired stems and lance-shaped, lobed leaves, 6–14cm (2½–5½in) long, densely covered with red-purple hairs beneath, more lightly above; ‡ 1–3m (3–10ft), ↔ 1m (3ft) or more.

*G. sarmentosa* of gardens see *G. aurantiaca* 'Purple Passion'.

## GYPSOPHILA

CARYOPHYLLACEAE

Genus of over 100 species of annuals and herbaceous, semi-evergreen, or evergreen perennials, sometimes woody-based, some cushion- or mat-forming. They occur in alpine habitats, dry, stony slopes, or sandy steppes, usually on alkaline soils, from the E. Mediterranean to the Caucasus, C. Asia, and N.W. China. They are valued particularly for their small, 5-petalled, star-shaped to shallowly trumpet-shaped, white or pink flowers, borne singly or in spreading panicles. They have usually lance-shaped to linear-lance-shaped, glaucous leaves, borne in opposite pairs. Larger species are useful annual or border plants and provide good cut flowers. The alpine species are excellent for a raised bed, dry-stone wall, or rock garden, as well as for an alpine house or scree bed.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in deep, light, preferably alkaline, sharply drained soil in full sun. Most dislike winter wet, although *G. 'Rosenschleier'* tolerates moist soil.

• **PROPAGATION** Sow seed of annuals *in situ* in spring. Sow seed of perennials at 13–18°C (55–64°F) in winter, or in a cold frame in spring. Perennials may also be increased by root cuttings (species only) or by grafting (for named cultivars), both in late winter.

• **PESTS AND DISEASES** Stem rots may be a problem.



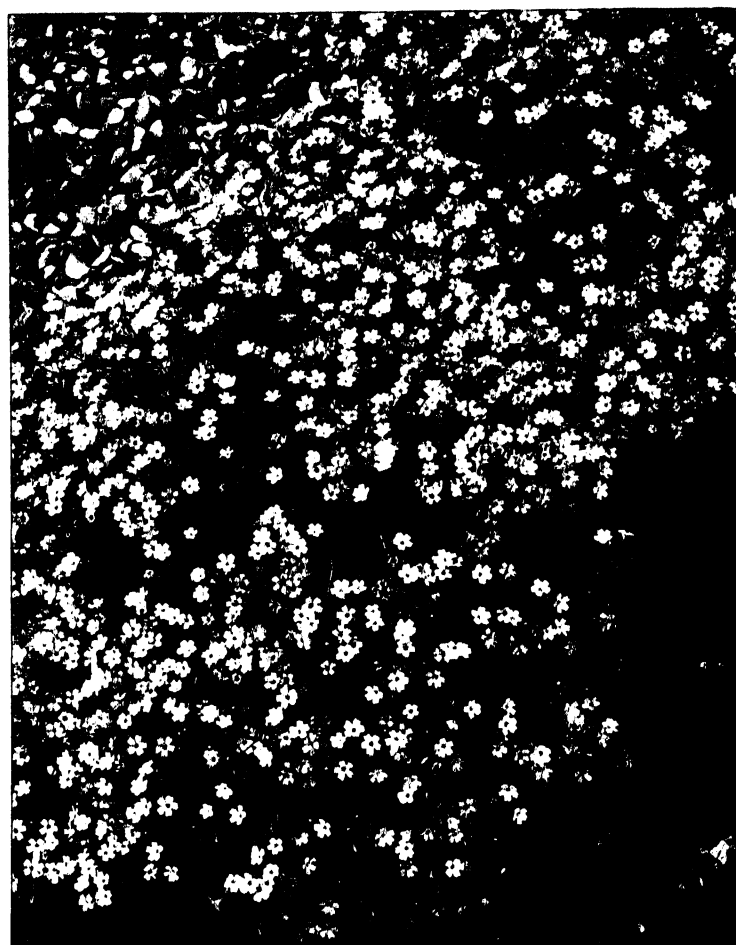
*Gypsophila elegans*

*G. acutifolia*. Deep-rooting herbaceous perennial with many-branched stems bearing lance-shaped, pointed, greyish green leaves, 2–8cm (¾–3in) long. From midsummer to early autumn, bears spreading panicles, 5cm (2in) across, of star-shaped, pale pink flowers, to 2cm (¾in) across. ‡ 1m (3ft), ↔ 1.5m (5ft). N. Caucasus, S. Russia. \*\*\*

*G. aretioides*. Very dense, hard, cushion-forming, evergreen perennial with tiny, oblong, fleshy, grey-green leaves, 2–5mm (⅛–¼in) long. Bears small, usually solitary, stemless, star-shaped white flowers in summer. Ideal for an alpine house or scree bed. ‡ 5cm (2in), ↔ to 15cm (6in). Caucasus, mountains of N. Iran. \*\*\*

*G. cerastioides* □ Loose, mat-forming, semi-evergreen perennial with tufts of grey-hairy leaves, 6–10mm (¼–½in) long, that are long-stalked and spoon-shaped, or almost stalkless and broadly obovate. Loose panicles of shallowly trumpet-shaped white flowers, to 1.5cm (½in) across, veined and faintly tinged pink, are borne over long periods from late spring to summer. ‡ 5cm (2in), ↔ to 15cm (6in). Himalayas. \*\*\*

*G. elegans* □ Erect, branching annual with narrow, oblong-lance-shaped to linear-lance-shaped, grey-green leaves, 2–4cm (¾–1½in) long. Loosely branched panicles, to 10cm (4in) or more across, of 4-petalled, star-shaped, white or carmine-pink, sometimes pink- or purple-veined flowers, to 1cm (½in) across, are produced on long, slender stalks in summer. Good for cut flowers. ‡ to 60cm (24in), ↔ 30cm (12in). S. Ukraine, Turkey. \*\*\*. **'Bright Rose'**



*Gypsophila repens* 'Dorothy Teacher'

produces bright rose-pink flowers.

**'Carminea'** has deep carmine-pink flowers. **'Covent Garden'** bears large, white flowers, to 1.5cm (½in) across. **'Giant White'** has large white flowers, to 2cm (¾in) across. **'Red Cloud'** flowers very profusely, bearing deep carmine-pink blooms. **'Rosea'** □ has pale rose-pink flowers.

*G. paniculata* (Baby's breath). Tap-rooted herbaceous perennial with branching stems forming an airy mound of linear-lance-shaped, usually hairless, glaucous leaves, 5–7cm (2–3in) long. In mid- and late summer, bears numerous loose, many-flowered panicles of shallowly trumpet-shaped white flowers, to 8mm (⅜in) across, forming mounds to 45cm (18in) or more across. ‡ to 1.2m (4ft). C. and E. Europe. \*\*\*.

**'Bristol Fairy'** ♀ has large, double white flowers, to 1.5cm (½in) across, but is less robust, and liable to be short-lived. **'Compacta Plena'** has double, soft pink to white flowers; ‡ 20–30cm (8–12in), ↔ to 60cm (24in).

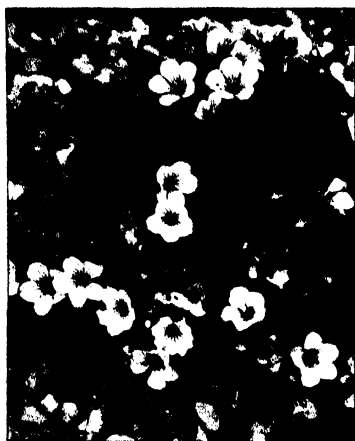
**'Flamingo'** is less robust than the species, with larger, double, pale pink flowers, to 1cm (½in) across; ‡ 75–90cm (30–36in), ↔ 90cm (36in).

*G. repens*. Mat-forming, semi-evergreen perennial with linear, often sickle-shaped, mid- or slightly bluish green leaves, 1.5–3cm (½–1¼in) long. Over long periods in summer, bears loose, corymb-like panicles, 4–8cm (1½–3in) across, of star-shaped, white, pink, or pink-purple flowers, to 1.5cm (½in) across. ‡ 20cm (8in), ↔ 30–50cm (12–20in). Mountains of C. and S. Europe. \*\*\*. **'Dorothy Teacher'** □ ♀ has a neat habit, blue-green leaves, and pale pink flowers that darken with age; ‡ 5cm (2in), ↔ to 40cm (16in).

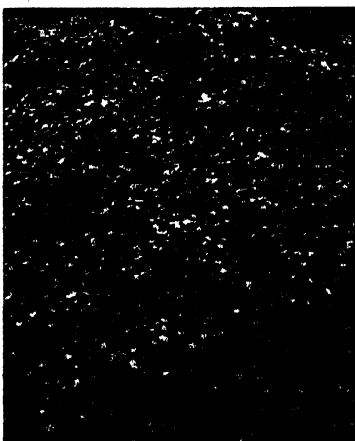
**'Fratensis'** has grey-green leaves and pale pink flowers; ‡ 5–7cm (2–3in), ↔ to 30cm (12in).

*G. 'Rosenschleier'* □ ♀ syn. *G. 'Rosy Veil'*. Vigorous, dense, mound-forming, semi-evergreen perennial with branching stems that produce linear-lance-shaped, usually hairless, bluish green leaves, 2.5–4cm (1–1½in) long. In mid- and late summer, bears numerous loose, many-flowered panicles of double flowers, 1cm (½in) across, opening white and becoming very pale pink; they form dense clouds of bloom, 45cm (18in) wide. ‡ 40–50cm (16–20in), ↔ 1m (3ft). \*\*\*

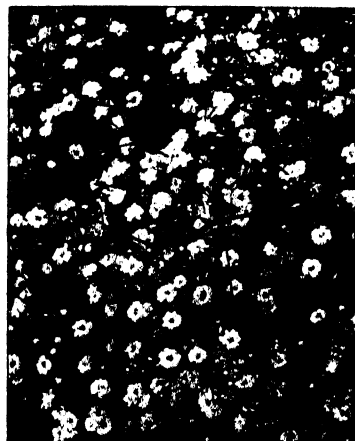
*G. 'Rosy Veil'* see *G. 'Rosenschleier'*.



*Gypsophila cerastioides*



*Gypsophila elegans* 'Rosea'



*Gypsophila* 'Rosenschleier'

# H

## HAAGEOCEREUS

CACTACEAE

Genus of 40–50 species (some authorities accept only 5–10) of shrubby or tree-like, columnar, solitary or clump-forming, perennial cacti from dry coastal to mountainous areas, to 2,500m (8,000ft) high, in Peru and Chile. They have ribbed, densely spiny stems and, in summer, bear tubular-funnel-shaped flowers near the tops of the stems; these open from late afternoon until well into the following morning. The green, yellow, or reddish pink fruits, 3–4cm (1¼–1½in) long, are spherical to ovoid, sparsely scaly, hairy, and fleshy. In temperate regions, grow in a temperate greenhouse. In warmer climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. Provide low humidity and good ventilation. In growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep completely dry in winter. Outdoors, grow in poor, sharply drained soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or root stem cuttings in spring or summer.
- **PESTS AND DISEASES** Susceptible to aphids while flowering.

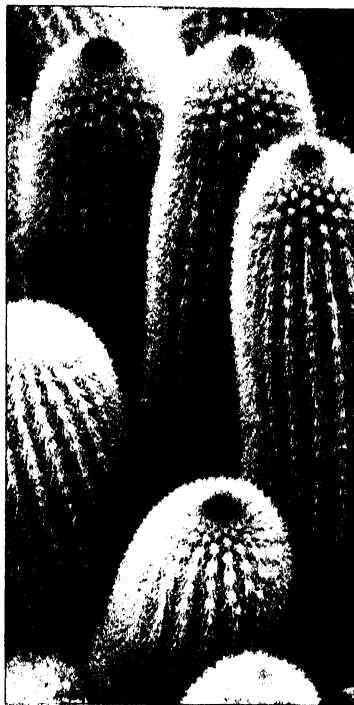
*H. acranthus* see *H. limensis*.

*H. aureispinus*. Erect, clump-forming cactus with 18- to 20-ribbed, bright green stems. Yellow areoles each bear 30–40 yellow radial spines and 1 or 2 longer, brownish yellow centrals. Pure white flowers, 6–7cm (2½–3in) long, are borne on scaly, woolly tubes in summer. †80cm (32in), ↔ 8cm (3in) or more. Peru. ♀ (min. 11°C/52°F)

*H. australis* see *H. decumbens*.

*H. decumbens*, syn. *H. australis*. Semi-prostrate, clump-forming cactus with 15- to 22-ribbed, often jointed and branching, mid-green stems. White-woolly areoles bear 20–30 thin, red-tipped yellow radial spines and 1–5 longer, erect, black-tipped red centrals. In summer, bears white flowers, to 8cm (3in) long, with reddish brown outer segments and brown- or red-green tubes. †30cm (12in), ↔ to 1m (3ft). S.W. Peru, N.W. Chile. ♀ (min. 11°C/52°F)

*H. limensis*, syn. *H. acranthus*. Erect, thickly clustering cactus producing mid-green stems with 10–14 slightly warty, low ribs. White areoles bear 20–30 yellow radial spines and 1–3 longer, downward-pointing brown centrals. Greenish white or pinkish white flowers, 6–8cm (2½–3in) long, with green tubes, are produced in summer. †2m (6ft), ↔ to 1m (3ft). C. Peru. ♀ (min. 11°C/52°F)



*Haageocereus versicolor*

*H. versicolor* ■ Erect, clump-forming cactus, often branching from the base, with 16- to 22-ribbed, dark green stems. Brown-felted areoles bear yellow to reddish brown spines, which comprise 25–30 radials and 1–4 longer centrals. White flowers, 6–8cm (2½–3in) long, with pinkish green outer segments and light green tubes, are borne in summer. †2m (6ft), ↔ 1m (3ft). N. Peru. ♀ (min. 11°C/52°F)

## HAASTIA

Vegetable sheep

ASTERACEAE/COMPOSITAE

Genus of 3 species of cushion-forming or clump-forming, occasionally trailing perennials or subshrubs from high-altitude scree and rocky sites, to 2,000m (6,500ft), in the mountains of New Zealand. They have variably shaped, small, usually densely hairy, overlapping leaves, 1–3.5cm (½–1½in) long, and tiny, daisy-like flowerheads. Vegetable sheep are fascinating foliage plants but difficult to cultivate. Grow in an alpine house, as they must have protection from winter wet.

- **HARDINESS** Fully hardy.
- **CULTIVATION** In an alpine house, grow in loam-based potting compost (JI No.1) with 1 part added leaf mould and 2 parts grit; apply a top-dressing of grit and wedges of small stones to keep the cushion of leaves clear of the soil surface. Provide moderate humidity and good ventilation. When in growth, water moderately but avoid wetting the foliage; keep just moist in winter.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe; water seedlings from below. Root rosette cuttings in early summer.
- **PESTS AND DISEASES** Prone to aphids and red spider mites in dry conditions.

*H. pulvinaris* (Vegetable sheep). Extremely dense, cushion-forming perennial with tightly packed branches concealed by rosetted, overlapping,

broadly wedge-shaped, grey, tawny-hairy leaves, to 1cm (½in) long. In summer, produces insignificant white flowerheads, which are hidden within the cushions. †5cm (2in), ↔ to 10cm (4in) or more. New Zealand. \*\*\*

## HABENARIA

ORCHIDACEAE

Genus of 500–600 species of evergreen and deciduous, terrestrial orchids found in grassland in both tropical and temperate regions, especially in tropical South America, temperate North America, Africa, and Asia. They have fleshy, underground tubers and produce basal tufts of smooth, dark green leaves. Smaller, sheathing leaves are produced on leafy stems, which bear terminal racemes, 12–22cm (5–9in) long, of mostly green or white, hooded flowers with brightly coloured lips. Grow hardy species in humus-rich soil in a woodland garden.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in terrestrial orchid compost in bright filtered light. Pot on in spring. In growth, water freely and apply a dilute balanced liquid fertilizer at every third watering; keep just moist in winter. See also p.46.
- **PROPAGATION** Divide tubers when the plants have died down.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

*H. rhodocheila*. Deciduous, terrestrial orchid with fleshy tubers and an erect stem bearing 4–6 linear to lance-shaped, dark green leaves, 6–12cm (2½–5in) long. Upright racemes of green flowers, 2.5cm (1in) across, with deeply 3-lobed, bold, scarlet, orange, or yellow lips, are borne in summer. †30cm (12in), ↔ 20cm (8in). S. China to Malaysia and the Philippines. ♀ (min. 13–16°C/55–61°F; max. 30°C/86°F)

## HABERLEA

GESNERIACEAE

Genus of 2 species of stemless, evergreen perennials from shaded, rocky habitats in the Balkans. They have basal rosettes of obovate, scalloped, dark green leaves, and loose umbels of up to 6 nodding, trumpet-shaped, 2-lipped flowers, borne from spring to early summer. They are attractive plants for a wall, rock crevice, rock garden, or alpine house.



*Haberlea ferdinandi-coburgii*



*Haberlea rhodopensis* 'Virginalis'

- **HARDINESS** Fully hardy.
- **CULTIVATION** In an alpine house, grow in loam-based potting compost (JI No.2) with added grit or sharp sand and leaf mould, in bright indirect light. In the growing season, water freely and apply a half-strength balanced liquid fertilizer monthly. Outdoors, grow in moist but well-drained, acid to neutral, gritty, humus-rich soil in full or partial shade, preferably planted on their sides in vertical rock crevices to avoid an accumulation of moisture in the foliage rosettes. Protect from excessive winter wet and cold, drying winds. Root disturbance is resented.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide, or root leaf cuttings, in early summer.
- **PESTS AND DISEASES** Slugs and snails may be a problem.

*H. ferdinandi-coburgii* ■ syn.

*H. rhodopensis* var. *ferdinandi-coburgii*. Dense, rosette-forming perennial with obovate to oblong-ovate, coarsely scalloped leaves, 3–8cm (1¼–3in) long, smooth and almost hairless above, finely hairy beneath. From spring to early summer, produces umbels of violet-blue to lavender-blue flowers, 1.5–2.5cm (½–1in) across, with yellowish white throats speckled dark violet-blue. † to 15cm (6in), ↔ to 25cm (10in). Bulgaria. \*\*\*

*H. rhodopensis* ♀ Dense, rosette-forming perennial with obovate to ovate-oblong, coarsely scalloped leaves, 3–8cm (1¼–3in) long, softly hairy above and beneath. Umbels of pale blue-violet flowers, to 2.5cm (1in) across, are borne from spring to early summer. † to 15cm (6in), ↔ to 25cm (10in). Bulgaria, N.E. Greece. \*\*\*. var. *ferdinandi-coburgii* see *H. ferdinandi-coburgii*. 'Virginalis' ■ has pure white flowers.

## HABRANTHUS

AMARYLLIDACEAE

Genus of 10 species of bulbous perennials from dry, upland slopes in temperate South America. They have semi-erect, narrow, linear, basal leaves, evergreen in some species, deciduous or developing after the flowers in others. Solitary, funnel-shaped flowers, held at an angle to the stems, are borne from summer to autumn. They are followed by seed capsules, which quickly ripen and open to reveal conspicuous black seeds; seed capsules are sometimes

*Habranthus robustus**Hacquetia epipactis*

H

produced at the same time as the flowers. In frost-prone areas, grow in a cool greenhouse or conservatory, or at the base of a warm, sunny wall. In frost-free regions, grow at the front of a bed or border.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, plant bulbs 7–10cm (3–4in) deep, in loam-based potting compost (J1 No.2) with added grit and leaf mould, in full light. Water moderately as growth begins, freely in leaf; reduce water as foliage dies back and keep barely moist when dormant. Apply a balanced liquid fertilizer weekly when in bud. Outdoors, plant bulbs in spring with the necks above the soil surface. Grow in fertile, well-drained, neutral to alkaline soil in full sun. Protect from excessive winter wet.
- **PROPAGATION** Sow seed at 16°C (61°F) as soon as ripe. Remove offsets in winter and pot up separately.
- **PESTS AND DISEASES** Trouble free.

*H. andersonii* see *H. tubispathus*.

*H. brachyandrus*. Showy, bulbous perennial producing mid-green, basal leaves, 30cm (12in) long, in summer or early autumn, at the same time as leafless stems bear solitary, open funnel-shaped, bright pinkish red flowers, 7–10cm (3–4in) across. †30cm (12in), ↔ 5cm (2in). Brazil, Paraguay. \*

*H. robustus* ■ syn. *Zephyranthes robusta*. Robust, bulbous perennial with deep green, basal leaves, 15–20cm (6–8in) long, emerging in summer at the same time as, or just before, leafless stems bear solitary, open funnel-shaped, pale pink flowers, 6cm (2½in) across. †20–30cm (8–12in), ↔ 5cm (2in). Brazil. \*

*H. texanus* see *H. tubispathus*.

*H. tubispathus*, syn. *H. andersonii*, *H. texanus*, *Zephyranthes andersonii*. Upright, bulbous perennial producing a succession of solitary flowering stems, each bearing a small, funnel-shaped, coppery red, orange, or yellow flower, 2.5cm (1in) across, in summer. The deep green, basal leaves, 13–15cm (5–6in) long, emerge after the flowers. †10–15cm (4–6in), ↔ 2.5cm (1in). USA (Texas), S. Brazil, Uruguay, E. Argentina, S. Chile. \*

- ▷ **Hackberry** see *Celtis*, *C. occidentalis*  
**Common** see *C. laevigata*  
**Mississippi** see *C. laevigata*  
**Sugar** see *C. laevigata*  
**Western** see *C. reticulata*

## HACQUETIA syn. DONDIA

APIACEAE/UMBELLIFERAE

Genus of a single species of small, clump-forming, rhizomatous perennial found in lowland and upland woodland in Europe. Grown for its foliage and early, long-lasting, tiny yellow flowers surrounded by bright green bracts, it is suitable for moist, shady sites, such as a rock or woodland garden, or a peat bed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, neutral to acid soil in partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or in autumn. Divide in spring. Insert root cuttings in winter.
- **PESTS AND DISEASES** Slugs and snails may damage young growth in spring.

*H. epipactis* ■ ♀ syn. *Dondia epipactis*. Rhizomatous, clump-forming perennial with glossy, emerald-green leaves that develop fully only after flowering. The leaves, to 7cm (3in) long, are rounded, with 3 wedge-shaped, toothed lobes. Tiny yellow flowers, surrounded by bright green bracts, are borne in dense umbels, to 4cm (1½in) across, in late winter and early spring. †5cm (2in), to 15cm (6in) after flowering, ↔ 15–30cm (6–12in). Europe. \*\*\*

## HAEMANTHUS

Blood lily

AMARYLLIDACEAE

Genus of 21 species of bulbous perennials, some of them evergreen, from grassy, rocky hillsides in South Africa. From summer to autumn, and occasionally in winter, they bear tiny flowers in showy umbels that resemble shaving brushes. These are borne above erect, or semi-erect to spreading, strap-shaped to lance-shaped, broadly elliptic, or rounded, mid- to dark green, basal leaves. In frost-prone areas, grow in a temperate greenhouse or as houseplants. In frost-free areas, grow in semi-shaded or sunny sites between shrubs. All parts of blood lilies may cause mild stomach upset if ingested; contact with the sap may irritate skin.

- **HARDINESS** Frost tender.
- **CULTIVATION** Plant bulbs with the necks just above the soil surface, in autumn or winter. Under glass, grow in loam-based potting compost (J1 No.2)

with added leaf mould and grit, in full light. Provide bright filtered light when buds open, to prolong flowering. In growth, water freely and apply a dilute, balanced liquid fertilizer monthly; keep evergreen species just moist when dormant, and deciduous species dry after flowering. Blood lilies flower best when pot-bound; if necessary, pot on as growth begins. Outdoors, grow in well-drained, moderately fertile, neutral to alkaline soil in sun or dappled shade.

- **PROPAGATION** Sow seed at 16–18°C (61–64°F) as soon as ripe. Remove and pot up offsets in early spring.
- **PESTS AND DISEASES** Trouble free.

*H. albiflos* (Shaving brush plant, White paint brush). Evergreen, bulbous perennial producing pairs of semi-erect then spreading, broadly strap-shaped, mid-green leaves, to 40cm (16in) long, sometimes spotted white, with hairy margins. From autumn to winter, stout stems bear brush-like heads, to 3–7cm (1¼–3in) across, of up to 50 tiny white flowers with protruding stamens; these are followed by ovoid, fleshy, white to red fruit. †20–30cm (8–12in), ↔ 15cm (6in). South Africa (Eastern Cape, Western Cape) ♀ (min. 10°C/50°F)

*H. coccineus* ■ (Cape tulip). Deciduous, bulbous perennial with 2, occasionally 3, semi-erect to prostrate, elliptic to strap-shaped, mid-green, sometimes purple-marked leaves, to 45cm (18in) long, developing soon after flowering. From summer to autumn, leafless, dark red-streaked stems bear up to 100 tiny red flowers, with prominent yellow stamens, surrounded by large

*Haemanthus coccineus*

scarlet bracts, in umbels to 5–10cm (2–4in) across. Flowers are followed by ovoid, fleshy, white to pink fruit. † to 35cm (14in), ↔ 15cm (6in). South Africa (Eastern Cape, Northern Cape, Western Cape). ♀ (min. 10°C/50°F)

*H. katherinae* see *Scadoxus multiflorus* subsp. *katherinae*.

*H. magnificus* see *Scadoxus puniceus*.

*H. multiflorus* see *Scadoxus multiflorus*.

*H. natalensis* see *Scadoxus puniceus*.

*H. puniceus* see *Scadoxus puniceus*.

*H. sanguineus*. Deciduous, bulbous perennial with pairs of prostrate, broadly elliptic to oblong, dark green leaves, to 40cm (16in) long, hairy beneath, developing soon after flowering. From summer to autumn, leafless, dark red stems bear dense umbels, to 3–8cm (1¼–3in) across, of up to 100 small, red, salmon-pink, or pale pink flowers, with white markings and prominent stamens, followed by spherical to ovoid, fleshy, cream to dark red fruit. †30cm (12in), ↔ 15cm (6in). South Africa (Eastern Cape, Northern Cape, Western Cape). ♀ (min. 10°C/50°F)

▷ **Hair grass** see *Aira*, *A. elegantissima*, *Deschampsia*

**Glaucous** see *Koeleria glauca*

**Tufted** see *Deschampsia cespitosa*

**Wavy** see *Deschampsia flexuosa*

## HAKEA

PROTEACEAE

Genus of at least 130 species of evergreen trees and shrubs found in acid soils from coastal to mountainous areas in Australia, where they grow in woodland, on hillsides, and on heathland. The alternate, leathery leaves are often linear and needle-like, but vary greatly within the genus, and may be toothed or lobed. Small, tubular flowers, borne in short, axillary racemes, have prominent, often brightly coloured styles, and are followed by woody seed pods, 2–3cm (¾–1¼in) long, each containing only 1 or 2 seeds. In frost-prone areas, grow in a cool or temperate greenhouse. In mild areas, grow at the base of a sunny wall, in a shrub border, as specimens, or as informal hedging. Long, hot summers are needed for good flowering.

• **HARDINESS** Half hardy to frost tender; *H. lissosperma* will tolerate short spells at -5°C (23°F).

• **CULTIVATION** Under glass, grow in a mix of equal parts loam, peat or leaf mould, and sharp sand, in full light. In growth, water moderately, applying a phosphate-free liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, well-drained, sandy, slightly acid soil in full sun, although partial shade is tolerated. Pruning group 1; plants under glass may need restrictive pruning.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) as soon as ripe; sow seed singly in containers to avoid root disturbance. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** *Phytophthora* root rot may be a problem in moist soil.

*H. lissosperma* ■ ♀ syn. *H. sericea* of gardens (Mountain hakea). Erect, open to bushy shrub or small tree with linear, stiffly leathery, often upward-curving, grey-green leaves, to 15cm (6in) long,

*Hakea lissosperma*

with prickly tips. From spring to summer, bears small white flowers in axillary racemes, 2.5cm (1in) long, from the upper leaf axils; they are followed by ovoid, smooth or warty, dark brown seed pods. †3–6m (10–20ft), ↔ 1–4m (3–12ft). Australia (New South Wales, Victoria, Tasmania). \*

**H. salicifolia** ♀ syn. *H. saligna* (Willow-leaved hakea). Large shrub or small tree with spreading to pendent branches and narrowly lance-shaped to oblong-elliptic leaves, 10–15cm (4–6in) long. Leaves are purple when young, thin, leathery, and dark green when mature. In spring, bears axillary racemes, 2cm (¾in) long, of 4–9 tiny, creamy white flowers, sometimes followed by ovoid, warty, dark brown seed pods. †3–8m (10–25ft), ↔ 1–6m (3–20ft). Australia (Queensland, New South Wales). ☼ (min. 5–7°C/41–45°F). 'Gold Medal' has pinkish green young leaves, yellow-variegated when mature. *H. saligna* see *H. salicifolia*.

**H. sericea** of gardens see *H. lissosperma*.

#### ▷ Hakea,

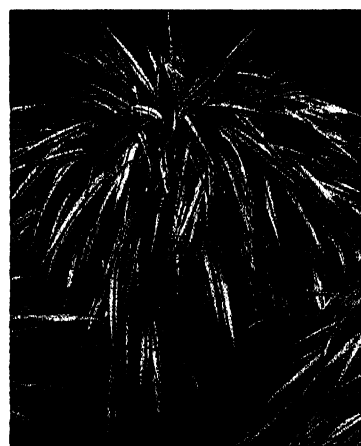
Mountain see *Hakea lissosperma*

Willow-leaved see *Hakea salicifolia*

## HAKONECHLOA

GRAMINEAE/POACEAE

Genus of one species of deciduous, rhizomatous, clump-forming, perennial grass occurring in wooded and often mountainous areas of Japan. *H. macra* has smooth leaves and loose, nodding panicles of 3- to 5-flowered spikelets. Its variegated cultivars, among the most

*Hakonechloa macra* 'Aureola'

attractive of ornamental grasses, are useful in a woodland or rock garden, or at the front of a mixed or herbaceous border. They are also ideal for patio containers or a courtyard garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun or partial shade. Variegated cultivars produce best leaf colour in partial shade.

• **PROPAGATION** Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**H. macra** 'Aureola' ♂ ♀ Perennial grass, spreading slowly to form mounds of arching, linear leaves, to 25cm (10in) long. Leaves are bright yellow with narrow green stripes, becoming red-flushed in autumn, the colour often persisting into winter. From late summer to mid-autumn, bears needle-like, pale green spikelets in open panicles, to 18cm (7in) long. †35cm (14in), ↔ 40cm (16in). \*\*\*

## HALESIA

Silver bell, Snowdrop tree

STYRACACEAE

Genus of 5 species of deciduous trees and shrubs found in woodland, at woodland margins, and on riverbanks in E. China and S.E. USA. They have alternate, ovate to elliptic, or oblong leaves, and are cultivated for their pendent, bell-shaped flowers, curious winged fruits, and autumn colour. Ideal specimen plants for the back of a shrub border or for a woodland garden.

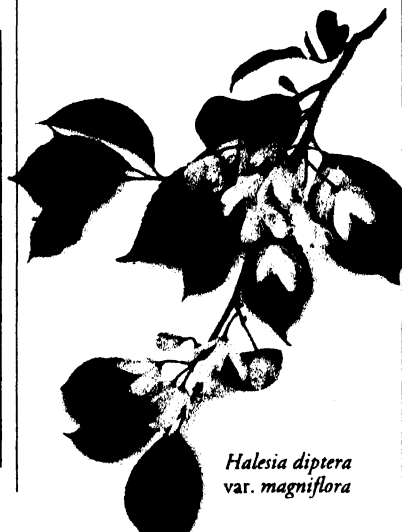
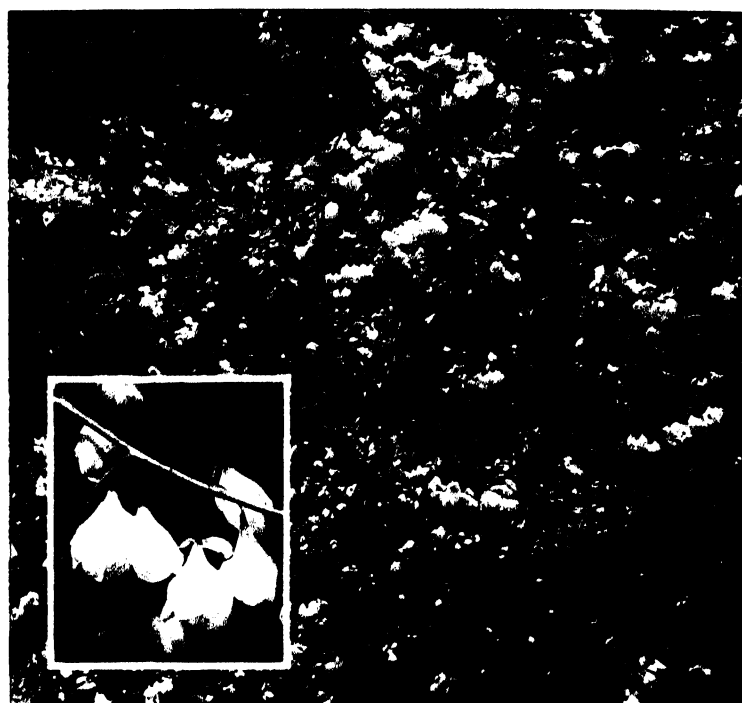
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained, neutral to acid soil in sun or partial shade; shelter from cold winds. Pruning group 1.

• **PROPAGATION** Sow seed at 14–25°C (57–77°F) in autumn, moving the containers to a cold frame after 60 days. Root softwood cuttings in summer, or layer in spring.

• **PESTS AND DISEASES** Trouble free.

**H. carolina** ♀ syn. *H. tetraptera*. Spreading tree or shrub with ovate to elliptic, minutely toothed, mid-green leaves, to 16cm (6in) long, turning yellow in autumn. Axillary clusters of 2–6 pendent, bell-shaped white flowers, to 2cm (¾in) long, hang in profusion from the branches in late spring, just before the leaves emerge. They are followed by 4-winged green fruit. †8m (25ft), ↔ 10m (30ft). S.E. USA. \*\*\*

*Halesia diptera*  
var. *magniflora**Halesia monticola* (inset: flower detail)

**H. diptera** ♀ Spreading shrub or small tree with elliptic to obovate, mid-green leaves, to 14cm (5½in) long, turning yellow in autumn. Axillary clusters or short racemes of 3–6, deeply 4-lobed white flowers, to 2cm (¾in) long, are borne in early summer, after the leaves; they are followed by 2-winged green fruit. †6m (20ft), ↔ 10m (30ft). S.E. USA. \*\*\*. **var. magniflora** ♂ has larger flowers, to 3cm (1¼in) long.

**H. monticola** ♂ Vigorous, usually conical tree with ovate, tapered, downy, mid-green leaves, to 20cm (8in) long, becoming hairless with age, and turning yellow in autumn. Axillary clusters of 2–5 wide, bell-shaped white flowers, to 2.5cm (1in) long, are borne in late spring, before or with the leaves; flowers are followed by 4-winged green fruit. †12m (40ft), ↔ 8m (25ft). USA (N. Carolina, Arkansas). \*\*\*. **f. rosea** bears pink-tinged white flowers.

**f. vestita** ♀ has hairless leaves and bears larger white, occasionally pink-tinged flowers.

**H. tetraptera** see *H. carolina*.

## X HALIMIOCISTUS

CISTACEAE

Hybrid genus of evergreen shrubs derived from crosses between *Cistus* and *Halimium*, some of which are found in hot, dry soils from Portugal to France (Cevennes), where the parent species overlap. They have opposite, linear-lance-shaped to elliptic-lance-shaped or ovate leaves, and are cultivated for their flowers, which resemble rock roses (*Cistus* and *Helianthemum*). Grow at the front of a shrub or mixed border, at the base of a sunny wall, or in a raised bed or large rock garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in well-drained, sandy, poor to moderately fertile soil in full sun; they are less hardy if grown in shade or very fertile soil. Shelter from cold, drying winds. Pruning group 9; but pruning is rarely needed.

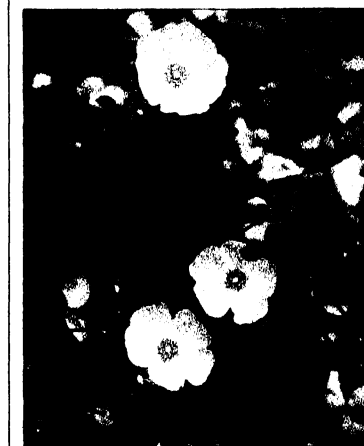
• **PROPAGATION** Root semi-ripe cuttings in late summer.

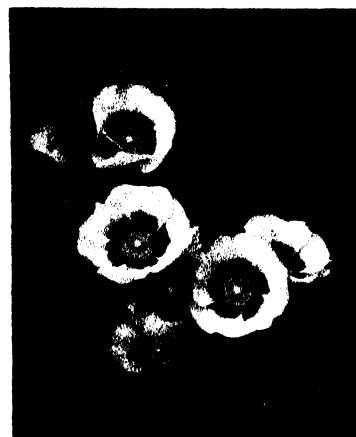
• **PESTS AND DISEASES** Trouble free.

**x H. 'Ingwersenii'**, syn. *Cistus ingwerseniana*, x *H. ingwersenii*. Dense, spreading shrub with linear-lance-shaped, dark green leaves, to 3.5cm (1½in) long. From late spring to late summer, bears umbel-like cymes of saucer-shaped white flowers, 2–2.5cm (¾–1in) across. †45cm (18in), ↔ 90cm (36in). Portugal. \*\*\* (borderline)

**x H. sahucii** ♂ ♀ (*Cistus salvifolius* x *Halimium umbellatum*) syn. *Cistus revolii* of gardens. Compact, mound-forming or spreading shrub with linear to inversely lance-shaped, dark green leaves, to 4cm (1½in) long. Umbel-like cymes of saucer-shaped white flowers, 3cm (1¼in) across, are borne in summer. †45cm (18in), ↔ 90cm (36in). S. France. \*\*\*

**x H. wintonensis** ♀ (*Cistus salvifolius* x *Halimium ocymoides*) syn. *Cistus wintonensis*, *Halimium wintonense*. Spreading shrub with ovate or elliptic-lance-shaped, white-woolly, grey-green leaves, to 5cm (2in) long. In late spring and early summer, bears umbel-like

*x Halimiocistus sahucii*



x *Halimocistus wintonensis* 'Merrist Wood Cream'

cymes of saucer-shaped white flowers, 5cm (2in) across, with yellow stamens and dark crimson-maroon bands.  $\pm$  60cm (24in),  $\leftrightarrow$  90cm (36in). Garden origin. \*\*\* (borderline). 'Merrist Wood Cream'  $\square$  ♀ has creamy yellow, red-banded flowers, with yellow centres.

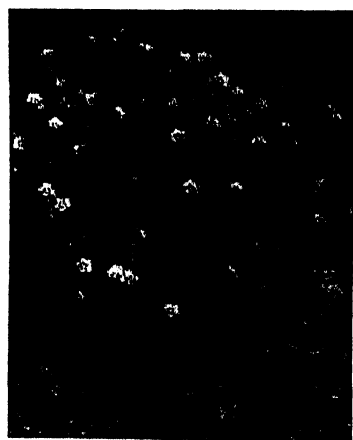
## HALIMIUM

CISTACEAE

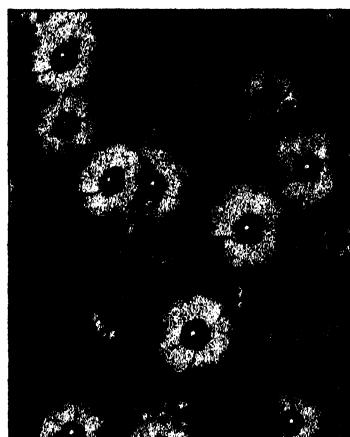
Genus of 9–12 species of evergreen shrubs found in thickets, rocky and sandy places, and dry woodland in the Mediterranean, Turkey, and N. Africa. They have opposite, variably shaped, light to grey-green leaves and are grown for their showy, saucer-shaped flowers, which resemble rock roses (*Cistus* and *Helianthemum*). Grow at the front of a mixed or shrub border, in a large rock garden, or in containers on a patio or in a courtyard garden. Halimiums flower best in regions with long, hot summers.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in well-drained, moderately fertile, sandy soil in full sun with shelter from cold, drying winds. Established plants dislike transplanting. Pruning group 9.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*H. atriplicifolium*. Upright shrub with elliptic to broadly elliptic, silver-scaly leaves, to 5cm (2in) long. Bright yellow flowers, 4–4.5cm (1½–1¾in) across, unmarked or with a dark red-brown



*Halimium lasianthum* subsp. *formosum*



*Halimium* 'Susan'

spot at the base of each petal, are borne in panicle-like cymes in late spring and early summer.  $\pm$  1.5m (5ft),  $\leftrightarrow$  1m (3ft). Spain, Morocco. \*\*

*H. formosum* see *H. lasianthum*.

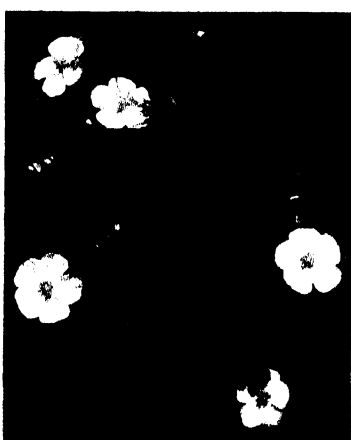
*H. halimifolium*. Upright shrub with narrowly obovate to elliptic leaves, to 4.5cm (1¾in) long, whitish and hairy at first, later grey-green. Yellow flowers, 3–3.5cm (1¼–1½in) across, sometimes with a dark red-brown spot at the base of each petal, open in panicle-like cymes in late spring and early summer.  $\pm$  1m (3ft). S.W. Europe, N. Africa. \*\*

*H. lasianthum* ♀ syn. *H. formosum*. Spreading, bushy shrub with ovate to oblong, grey-green leaves, 4cm (1½in) long. Axillary clusters of golden yellow flowers, to 3cm (1¼in) across, with or without a brownish red mark at the base of each petal, open in late spring and early summer.  $\pm$  1m (3ft),  $\leftrightarrow$  1.5m (5ft). S. Portugal, S. Spain. \*\*.

*formosum*  $\square$  has flowers to 4cm (1½in) across, with bold brownish red marks at the bases of the petals; S. Portugal.

*H. ocymoides* ♀ syn. *Cistus algarvensis*. Bushy, usually erect shrub with obovate to inversely lance-shaped, white-downy, grey-green leaves, to 3cm (1¼in) long. In early summer, golden yellow flowers, to 3cm (1¼in) across, with black-purple centres, are borne in erect, terminal panicles.  $\pm$  60cm (24in),  $\leftrightarrow$  1m (3ft). Portugal, Spain. \*\*

*H. 'Susan'*  $\square$  ♀ Spreading shrub with oval, grey-green leaves, to 4cm (1½in) long. In summer, bears terminal panicles of bright yellow, often semi-double flowers, 2–2.5cm (¾–1in) across, with



*Halimium umbellatum*

bold red-purple centres.  $\pm$  45cm (18in),  $\leftrightarrow$  60cm (24in). \*\*

*H. umbellatum*  $\square$  syn. *Helianthemum umbellatum*. Upright shrub with linear, glossy, dark green leaves, to 3cm (1¼in) long, white-hairy beneath. Terminal racemes of up to 8 white flowers, to 2cm (¾in) across, each petal stained yellow at the base, open from red buds in early summer.  $\pm$  45cm (18in),  $\leftrightarrow$  60cm (24in). S.W. Europe. \*\*

*H. wintonense* see x *Halimocistus wintonensis*.

## HALIMODENDRON

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of deciduous, spiny shrub found on salt-rich flood plains from Ukraine to N. and E. Asia. Valued for its silvery foliage and pea-like flowers, it is useful for a shrub border, and is ideal for coastal areas, where it is an effective windbreak.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor, sharply drained, neutral to alkaline soil in full sun. Will tolerate salty soil, but not winter wet. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Take root cuttings in winter, or layer in summer or autumn. Seedlings grown on their own roots are prone to rot in wet soils or humid climates; graft them on to *Caragana* or *Laburnum* in late winter.
- **PESTS AND DISEASES** Trouble free.

*H. halodendron* (Salt tree). Open-branched, spiny shrub with alternate, pinnate, silver-grey leaves, 2–3.5cm (¾–1½in) long, each ending in a spine and having 1 or 2 pairs of inversely lance-shaped leaflets. Axillary racemes, to 4cm (1½in) long, of pea-like, violet to purple-pink flowers, to 2cm (¾in) long, are borne in early and mid-summer.  $\pm$  2m (6ft). Ukraine, Georgia, N.E. Turkey, Iran, C. and E. Asia, and Russia (S.E. Russia, Siberia). \*\*\*

## HAMAMELIS

Witch hazel

HAMAMELIDACEAE

Genus of 5 or 6 species of deciduous shrubs occurring in woodland, at woodland margins, and on riverbanks in E. Asia and North America. They have alternate, broadly ovate to obovate leaves, and are grown for their autumn colour and their frost-resistant, fragrant,



*Hamamelis x intermedia* 'Arnold Promise'



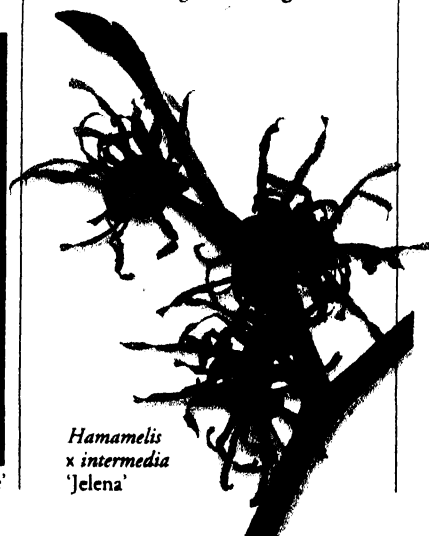
*Hamamelis x intermedia* 'Diane'

spider-shaped flowers. The flowers, 2–3cm (¾–1¼in) across, with 4 narrow petals, are borne in dense, axillary clusters, mainly from winter to autumn. Witch hazels are good specimen plants, and are also effective planted in groups in a shrub border or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained, acid to neutral soil in full sun or partial shade, in an open but not exposed site. Witch hazels will also tolerate deep, humus-rich soils over chalk. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Graft cultivars in late winter, or bud in late summer.
- **PESTS AND DISEASES** Honey fungus and coral spot may be a problem.

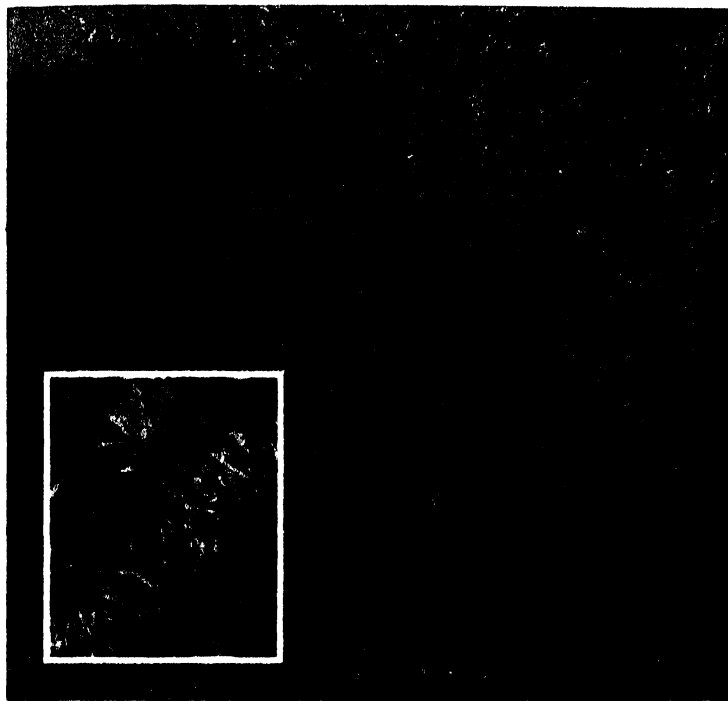
*H. x intermedia* (*H. japonica* x *H. mollis*). Vase-shaped shrub with ascending branches and broadly oval to obovate, bright green leaves, to 15cm (6in) long, turning yellow in autumn. In early and midwinter, bears fragrant, yellow, dark red, or orange flowers, with crimped petals, on the bare branches.  $\pm$  4m (12ft). Garden origin. \*\*\*.

'Advent' bears bright yellow flowers in early winter. 'Allgold' bears small, dark yellow flowers in mid- and late winter. 'Arnold Promise'  $\square$  ♀ produces large yellow flowers in mid- and late winter. 'Diane'  $\square$  ♀ has dark red flowers in mid- and late winter, and orange to yellow and red autumn foliage. 'Jelena'  $\square$  ♀ bears large, coppery orange flowers in early and midwinter, and has orange and red autumn foliage. 'Moonlight' bears



*Hamamelis x intermedia* 'Jelena'

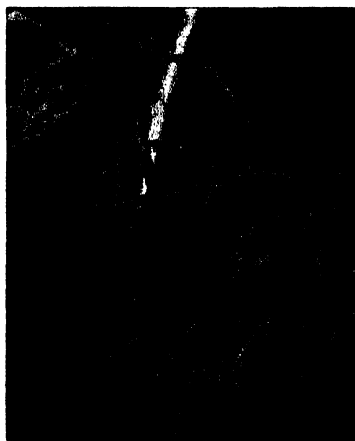




*Hamamelis x intermedia* 'Pallida' (inset: flower detail)

large, pale yellow flowers in mid- and late winter. 'Pallida' ■♀ syn. *H. mollis* 'Pallida', has clusters of large, sulphur-yellow flowers in mid- and late winter. 'Sunburst' is narrowly upright, with large, pale yellow flowers in mid- and late winter; ↔ 2.5m (8ft). 'Vezna' ■ has large, dark orange-yellow flowers with pendent petals, flushed red at the bases, in mid- and late winter.

*H. japonica* (Japanese witch hazel). Upright, open-branched shrub with broadly oval to obovate, glossy mid-green leaves, to 10cm (4in) long, which turn yellow in autumn. Yellow flowers, with crimped petals, open on bare branches in mid- and late winter. ↔ 4m (12ft). Japan. \*\*\*. 'Sulphurea' ■ bears a profusion of small, pale sulphur-yellow flowers in mid- and late winter. 'Zuccariniana' bears pale lemon-yellow flowers in late winter and early spring, and has orange-yellow autumn foliage. *H. mollis* (Chinese witch hazel). Erect shrub with broadly oval to obovate, softly hairy, mid-green leaves, to 15cm (6in) long, turning yellow in autumn. Very fragrant, golden yellow flowers are borne on bare branches in mid- and late winter. ↔ 4m (12ft). W. and W.

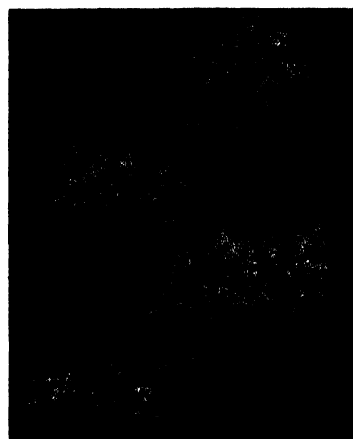


*Hamamelis x intermedia* 'Vezna'

central China. \*\*\*. 'Brevipetala' ■ has dense clusters of short-petalled, golden yellow flowers, to 1.5cm (½in) across; it is possibly of hybrid origin. 'Coombe Wood' is spreading, with large, strongly scented flowers; ↑ 4m (12ft), ↔ 5m (15ft). 'Goldcrest' bears large flowers, flushed red at the bases of the petals, from midwinter to spring. 'Pallida' see *H. x intermedia* 'Pallida'. *H. vernalis* (Ozark witch hazel). Erect shrub with obovate, mid-green leaves, to 12cm (5in) long, turning yellow in autumn. Bears small, yellow to orange, sometimes red-ringed flowers on bare shoots in late winter and early spring. ↔ 5m (15ft). S. central USA. \*\*\*. 'Lombart's Weeping' has spreading, pendent branches; ↑ 2m (6ft), ↔ 3m (10ft). 'Sandra' ♀ has purple young leaves, turning yellow, orange, red, and purple in autumn, and bears dark yellow flowers. *H. virginiana* (Virginian witch hazel). Erect shrub with broadly oval, obovate, or nearly rounded leaves, to 15cm (6in) long, turning yellow in autumn. Small yellow flowers are borne in autumn, as the leaves begin to fall. ↔ 4m (12ft). E. North America. \*\*\*



*Hamamelis japonica* 'Sulphurea'



*Hamamelis mollis* 'Brevipetala'

- ▷ *Hamatocactus crassihamatus* see *Sclerocactus uncinatus* var. *crassihamatus*
- ▷ *Hamatocactus hamatacanthus* see *Ferocactus hamatacanthus*
- ▷ *Hamatocactus setispinus* see *Thelocactus setispinus*
- ▷ *Hamatocactus uncinatus* see *Sclerocactus uncinatus*
- ▷ **Handkerchief tree** see *Davidia*

## HAPLOPAPPUS

ASTERACEAE/COMPOSITAE

Genus of 160 species of annuals, perennials, subshrubs, and shrubs found in open, sunny habitats in North and South America. Cultivated for their usually opposite, entire or lobed leaves, and yellow, sometimes purple, daisy-like flowerheads, they are suitable for a rock garden, trough, or raised bed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in neutral to slightly alkaline, poor to moderately fertile, sharply drained soil in full sun; protect from excessive winter wet. Trim back untidy plants after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Root softwood cuttings in spring.
- **PESTS AND DISEASES** Trouble free.

*H. acaulis* see *Stenotus acaulis*.  
*H. coronopifolius* see *H. glutinosus*.  
*H. glutinosus*, syn. *H. coronopifolius*. Tufted, evergreen perennial, usually forming dense cushions of spreading or erect stems clothed in oblong or elliptic, lobed or pinnatisect, sticky leaves, to 4cm (1½in) long. Solitary, daisy-like yellow flowerheads, to 2.5cm (1in) across, are borne in summer. ↑ 15cm (6in), ↔ to 30cm (12in). Chile, Argentina. \*\*\*

## HARDENBERGIA

Coral pea

LEGUMINOSAE/PAPILIONACEAE

Genus of 3 species of evergreen, twining or trailing climbers occurring in Australia in a diverse range of habitats, from coastal plains to rocky scree in mountainous areas. They have alternate, ovate to lance-shaped leaves, which may be 3-palmate (rarely 5-palmate) or may consist of only 1 leaflet, with the 2 lateral leaflets suppressed. Colourful, small, pea-like flowers are borne, often in profusion, in axillary racemes or



*Hardenbergia comptoniana*

occasionally in panicles. In frost-prone areas, grow in a temperate greenhouse or conservatory. In milder climates, use to cover an arbour, pergola, or wall, or grow through large shrubs or small trees.

- **HARDINESS** Half hardy to frost tender; *H. comptoniana* may survive short spells down to 0°C (32°F) and *H. violacea* to -4°C (25°F).
- **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.2), sharp sand, and leaf mould, in full light with shade from hot sun; provide low to moderate humidity. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Provide with support. Outdoors, grow in moderately fertile, moist but well-drained, acid to neutral soil in full sun or partial shade. Pruning group 11, after flowering.
- **PROPAGATION** Sow seed at 20°C (68°F) in spring; pre-soak for 24 hours to aid germination. Root softwood cuttings in spring.
- **PESTS AND DISEASES** Prone to red spider mites and aphids under glass.

*H. comptoniana* ■♀ Vigorous climber with 3-palmate, occasionally 5-palmate, dark green leaves, composed of narrowly lance-shaped to broadly ovate leaflets, to 15cm (6in) long. From early spring to midsummer, bears pendent racemes, to 13cm (5in) long, of mauve to purple-blue flowers, to 1.5cm (½in) across, the standards with green-spotted white marks at the bases. ↑ 3m (10ft) or more. Australia (Western Australia). ☼ (min. 3-5°C/37-41°F)

*H. monophylla* see *H. violacea*.  
*H. violacea* ♀ syn. *H. monophylla* (Purple coral pea). Strong-growing climber, sometimes trailing in habit. Each leaf has 1 ovate to lance-shaped, leathery, rich green leaflet, to 12cm (5in) long; the other 2 leaflets are suppressed. Purple to violet, sometimes white, pink, or lilac flowers, 1cm (½in) across, the standards spotted yellow or green, are borne in pendent racemes, 10-13cm (4-5in) long, from late winter to early summer. ↑ 2m (6ft) or more. Australia (South Australia, Queensland to Tasmania). \*. 'Alba' see 'White Crystal'. 'Happy Wanderer' is very vigorous, bearing panicles of mauve-purple flowers. 'Pink Cascade' bears pink flowers. 'White Crystal', syn. 'Alba', produces pure white flowers in late winter.

- ▷ **Hardheads** see *Centaurea*  
 ▷ **Harebell** see *Campanula rotundifolia*  
 ▷ **Hare's ear**, **Shrubby** see *Bupleurum fruticosum*  
 ▷ **Hare's tail** see *Lagurus, L. ovatus*  
 ▷ **Harlequin flower** see *Sparaxis*

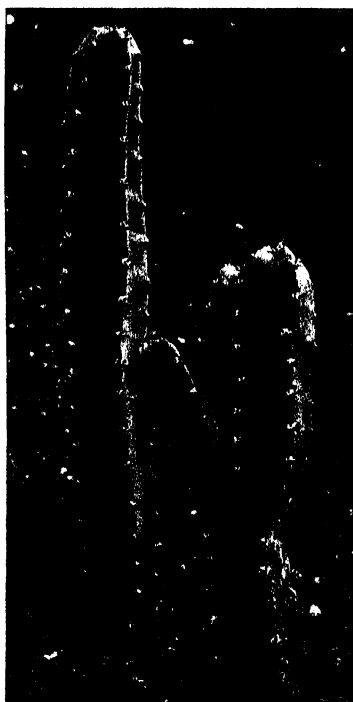
## HARRISIA

CACTACEAE

Genus of 10–20 species of tree-like, perennial cacti closely allied to *Eriocereus*, with which they are often confused. They are found in hilly and low mountainous areas of S.E. USA, the Bahamas, the West Indies, and South America. The slender, erect or spreading, occasionally decumbent stems usually have 9–11 rounded ribs. The large, narrowly or widely funnel-shaped flowers open at night in summer. In frost-prone regions, grow in a warm greenhouse or conservatory. In warm, dry climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light, with shade from hot sun. In growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep dry in winter. Provide good ventilation but keep clear of draughts. Outdoors, grow in poor, sharply drained, acid to neutral soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring. Root stem cuttings, or remove and pot up offsets, in spring or summer.
- **PESTS AND DISEASES** Prone to scale insects, especially on young growth.

**H. bonplandii**, syn. *Eriocereus pomanensis*, *H. pomanensis*. Erect to prostrate cactus with bluish green stems bearing 4 or 5 obtuse or rounded ribs with low, broad grooves between. Grey areoles bear white- or pink-tinged, later black-tipped spines (6–8 radials and 1 longer central). White flowers, 15cm (6in) or more long, with green outer



Harrisia jusberrtii

segments, are borne in summer. ♂→ 2m (6ft). S. Brazil, Paraguay, N. and W. Argentina. ♀ (min. 13°C/55°F)  
**H. gracilis**. Spreading or erect, tree-like cactus producing branching, dark green stems with 8–12 ribs, white areoles, and black-tipped white spines (10–16 radials and 1 central). In summer, bears white flowers, 20cm (8in) long, with toothed inner tepals and pale brown outer segments. ♂ to 5m (15ft) or more, ♂→ 2m (6ft). S.E. USA (Florida), Jamaica. ♀ (min. 13°C/55°F)

**H. jusberrtii** [ ] syn. *Eriocereus jusberrtii*. Erect, occasionally branching cactus producing dark green stems with 4–6 broad ribs, yellowish grey areoles, and brown or black spines (about 7 radials and 1–4 slightly longer centrals). In summer, bears flowers to 18cm (7in) long, with white inner petals and brownish green outer segments. Origin unknown. ♂→ 1m (3ft) or more. ♀ (min. 13°C/55°F)

**H. pomanensis** see *H. bonplandii*.

▷ **Harry Lauder's walking stick** see *Corylus avellana* 'Contorta'

## HATORIA syn. RHIPSIDOPSIS

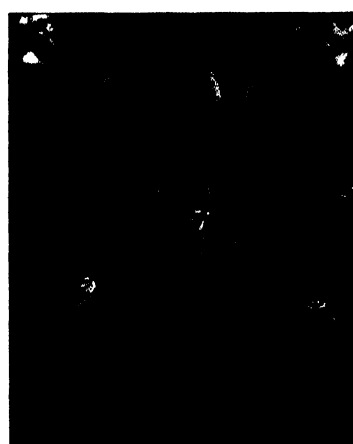
CACTACEAE

Genus of about 6 species of epiphytic or terrestrial, freely branching, perennial cacti, now incorporating the Easter cacti (*Rhipsalidopsis*), from forest or rocky areas in Brazil. They have slender, generally segmented, erect or pendent stems. New growth and the trumpet-to funnel-shaped, diurnal flowers are produced only from the areoles, which form at the apex of each segment. The flowers are followed by spherical to obovoid, white or yellow fruits, 3–5mm (¼–¼in) across. Where temperatures fall below 13°C (55°F), grow as house-plants, or in a warm greenhouse, in containers or hanging baskets, or with air plants (*Tillandsia* species) on a bromeliad "tree". In warmer climates, grow in containers on a patio or in a courtyard garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow epiphytically or in epiphytic cactus compost in bright filtered or indirect light, with high humidity. In growth, water moderately, mist daily with soft water, and apply a half-strength, low-nitrogen liquid fertilizer monthly. Keep just moist in winter until buds develop, then increase water slightly. Outdoors,



Hattoria epiphyllodes



Hattoria gaertneri

grow in containers or in poor, humus-rich, moist but well-drained, acid to neutral soil in full sun or dappled shade. See also pp.48–49.

- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring. Root cuttings in spring or summer.
- **PESTS AND DISEASES** Susceptible to mealybugs.

**H. epiphyllodes** [ ] syn.

*Pseudozygocactus epiphyllodes*. Pendent cactus producing stems with cylindrical to wedge-shaped, fleshy, bright green segments, to 2.5cm (1in) long, and minute, spineless areoles. In early spring, bears funnel-shaped yellow flowers, 1cm (½in) long. ♂ 45cm (18in), ♂→ 20cm (8in). Brazil. ♀ (min. 13°C/55°F)

**H. gaertneri** [ ] syn. *Rhipsalidopsis gaertneri*. Bushy, semi-pendent cactus producing stems with flat, oblong or elliptic, shallowly scalloped, mid-green segments, 4–7cm (1½–3in) long. Each segment has 3–5 tubercles, with areoles on each side bearing 1 or 2 yellow-brown bristles. Funnel-shaped scarlet flowers, 4–8cm (1½–3in) long, are produced from the newer segments in spring. ♂ 15cm (6in), ♂→ 25cm (10in). E. Brazil. ♀ (min. 13°C/55°F)  
**H. rosea** [ ] syn. *Rhipsalidopsis rosea* (Easter cactus). Shrubby, pendent or erect cactus producing stems with flat, sometimes 3- to 5-angled, mid-green segments, 2–4cm (¾–1½in) long, usually with thin red margins and minute areoles bearing a few hairy, pale brown bristles. In early spring, trumpet-shaped, rose-pink flowers, 3–4cm (1¼–1½in) long, open on longer areoles



Hattoria rosea



Hattoria salicornioides

at the tops of the segments. ♂→ to 15cm (6in). S.E. Brazil. ♀ (min. 13°C/55°F)  
**H. salicornioides** [ ] ♀ (Drunkard's dream). Bushy, erect or pendent cactus producing stems with club-shaped, mid-green to bronze-green segments, 1–5cm (½–2in) long, usually arranged in whorls of 2–5. In spring, bears funnel-shaped, golden yellow or orange flowers, 1cm (½in) long, from the areoles of new segments. ♂→ 40cm (16in). S.E. Brazil. ♀ (min. 13°C/55°F)

▷ **Hat plant, Mexican** see *Kalanchoe daigremontiana*

▷ **Hattie's pincushion** see *Astrantia*

▷ **Haw,**

**Possum** see *Ilex decidua*

**Yellow** see *Crataegus flava*

▷ **Hawk's beard** see *Crepis*

▷ **Hawkweed** see *Hieracium*

**Leafy** see *Hieracium umbellatum*

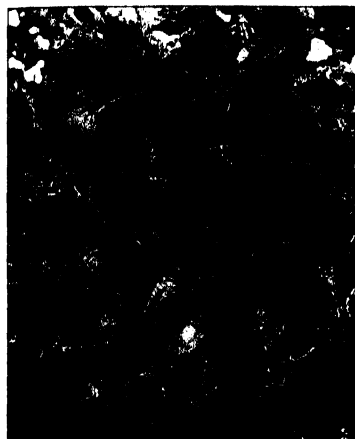
**Orange** see *Pilosella aurantiaca*

## HAWORTHIA

ALOEACEAE/LILIACEAE

Genus of over 150 species of dwarf, basal-rosetted, more or less stemless, perennial succulents from lowland and sometimes hillsides of Namibia, Swaziland, Mozambique, and South Africa. They generally offset to form clumps. The linear to broadly ovate or triangular, fleshy, variably coloured leaves are often covered with minute, bright tubercles, which are sometimes almost transparent. The small, tubular to funnel-shaped flowers are borne in loose racemes from spring to autumn. In frost-prone areas, grow as foliage plants in a temperate or warm greenhouse or conservatory. In warmer regions, grow in a trough or raised bed, or in containers outdoors.

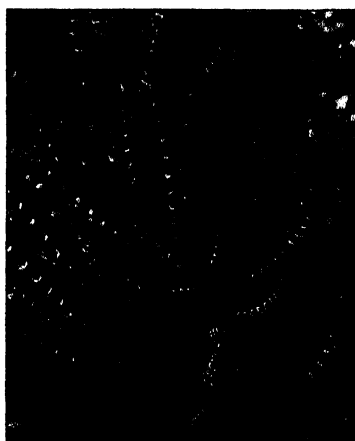
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in bright filtered light, with low humidity and good ventilation. In growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep dry in winter. Pot on in spring. Outdoors, grow in poor, sharply drained, neutral to slightly alkaline soil in sun or partial shade; protect from excessive winter wet.
- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring. Pot up offsets, or divide, in spring. Root leaf cuttings from soft-leaved species in spring or summer.
- **PESTS AND DISEASES** Susceptible to mealybugs.

*Haworthia arachnoidea*

***H. arachnoidea*** ■ syn. *Aprica arachnoidea*, *H. setata*. Clump-forming succulent producing oblong or lance-shaped, dark green leaves, 2–7cm (¾–3in) long, margined and tipped with white to pale brown teeth; leaf surfaces are transparent with continuous darker lines. In spring, stems to 30cm (12in) tall bear tubular to funnel-shaped white flowers, to 1.5cm (½in) long, in racemes 8cm (3in) long, ‡ to 5cm (2in), ↔ 10cm (4in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☀ (min. 10°C/50°F)

***H. attenuata***. Extremely variable, clump-forming succulent, which is either stemless or has a short stem. Narrowly triangular, dark green leaves, 3–8cm (1¼–3in) long, are covered with a median line of white tubercles above, and a transverse band of white tubercles beneath. In summer, stems to 40cm (16in) long bear tubular to funnel-shaped, green-keeled white flowers, to 1.5cm (½in) long, in racemes to 18cm (7in) long, ‡ to 12cm (5in). South Africa (Northern Cape, Eastern Cape). ☀ (min. 10°C/50°F). ***f. clariperla*** ■ has triangular leaves to 6cm (2½in) long, the upper surfaces covered with small white tubercles, the undersides with rows of larger tubercles.

***H. cymbiformis*** ■ syn. *H. planifolia*. Variable, clump-forming succulent with obovate to ovate, tapering, smooth or finely toothed leaves, 3–5cm (1¼–2in) long. They are bright pale green, sometimes flushed pink, concave above, convex beneath, and have translucent tips with thin, longitudinal, pale green or greenish white stripes. In spring,

*Haworthia attenuata* f. *clariperla**Haworthia cymbiformis*

stems to 20cm (8in) long bear funnel-shaped, pinkish white flowers, to 1.5cm (½in) long, with brownish green keels, in racemes to 10cm (4in) long. ‡ 8cm (3in), ↔ 25cm (10in). South Africa (Eastern Cape). ☀ (min. 10°C/50°F)

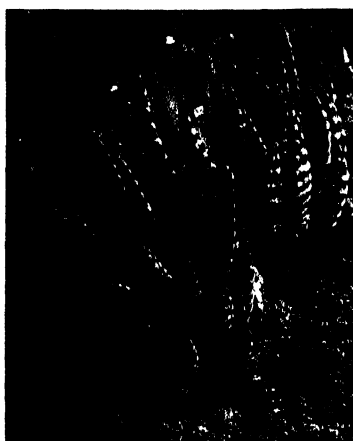
***H. fasciata*** ■ Very variable, clump-forming, stemless succulent producing triangular-lance-shaped, dark green leaves, to 8cm (3in) long, smooth above, convex and cross-banded with white tubercles beneath. In summer, stems to 40cm (16in) long bear tubular to funnel-shaped white flowers, to 1.5cm (½in) long, with red-brown keels, in racemes 11cm (4½in) long. ‡ to 10cm (4in), ↔ 30cm (12in). South Africa (Eastern Cape). ☀ (min. 10°C/50°F)

***H. margaritifera*** see *H. pumila*.

***H. maughanii***. Clustering succulent with erect, conical to cylindrical, blunt-tipped, thick, rough, greyish green to reddish brown leaves, to 2.5cm (1in) long; most of the plant is below soil level, with only the flat, translucent, window-tip of each leaf exposed. From autumn to winter, stems to 21cm (8in) long bear brown-keeled white flowers, to 1.5cm (½in) long, in racemes to 7cm (3in) long. ‡ 2cm (¾in), ↔ 10cm (4in). South Africa (Western Cape). ☀ (min. 10°C/50°F)

***H. planifolia*** see *H. cymbiformis*.

***H. pumila***, syn. *H. margaritifera* (Pearl plant). Very variable, clump-forming succulent with incurved to erect, triangular-ovate, dark green or purple-green leaves, to 10cm (4in) long, with small, silver tubercles on both surfaces and sharp, red-brown tips. In summer, branched stems, to 40cm (16in) long,

*Haworthia fasciata**Haworthia tessellata*

bear tubular to funnel-shaped, brownish or yellowish green flowers, to 1.5cm (½in) long, in racemes 14cm (5½in) long. ‡ to 12cm (5in), ↔ 45cm (18in). South Africa (Western Cape). ☀ (min. 10°C/50°F)

***H. reinwardtii***. Variable, freely offsetting succulent with dense rosettes of spirally arranged, ovate to lance-shaped, dark green to yellow-green leaves, 2–5cm (¾–2in) long. The leaves have small, green or white tubercles in 1–3 longitudinal rows above; the undersides have tubercles in longitudinal rows or cross-bands. In spring, stems to 35cm (14in) long bear lax racemes, 9–17cm (3½–7in) long, of tubular, pinkish white flowers, 2cm (¾in) long, with greenish brown keels. ‡ 20cm (8in), ↔ indefinite. South Africa (Western Cape, Eastern Cape). ☀ (min. 10°C/50°F)

***H. retusa***. Variable, clump-forming succulent with ovate-triangular leaves, 3–8cm (1¼–3in) long, recurved horizontally on the upper surfaces, with rounded, sometimes rough or almost translucent tips. The leaves are pale or deep green, and often have minute tubercles, pale lines, and sometimes numerous isolated soft teeth. In late winter and early spring, stems to 70cm (28in) long bear narrowly tubular, green-keeled white flowers, to 1.5cm (½in) long, in racemes to 50cm (20in) long. ‡ 6cm (2½in), ↔ 20cm (8in). South Africa (Western Cape, Eastern Cape). ☀ (min. 10°C/50°F)

***H. setata*** see *H. arachnoidea*.

***H. tessellata*** ■ ☐ syn. *H. venosa* subsp. *tessellata*. Mat-forming succulent spreading by subterranean branches.

*Haworthia truncata*

The triangular-ovate, tapering, usually recurved, bluish grey-green leaves, 5–7cm (2–3in) long, are convex above, roughly warty beneath and on the margins; the upper surfaces are chequered with pale lines. In spring, stems to 50cm (20in) long bear tubular, greenish white flowers, to 2cm (¾in) long, in racemes to 15cm (6in) long. ‡ 10cm (4in), ↔ 30cm (12in). Namibia, South Africa. ☀ (min. 10°C/50°F)

***H. truncata*** ■ Clustering succulent producing 2 rows of erect, incurved, oblong, thick, bluish grey leaves, 2cm (¾in) long, with grey lines, rough, warty surfaces, and very blunt tips forming flat ends, which are slightly translucent when young. The plant body is below soil level, with only the window-tip of each leaf exposed. From summer to autumn, stems 23cm (9in) long bear tubular, green-keeled white flowers, to 1.5cm (½in) long, in racemes to 7cm (3in) long. ‡ 2cm (¾in), ↔ 10cm (4in). South Africa (Western Cape). ☀ (min. 10°C/50°F)

***H. venosa*** subsp. *tessellata* see *H. tessellata*.

▷ **Hawthorn** see *Crataegus*

**Common** see *Crataegus monogyna*

**Indian** see *Raphiolepis indica*

**Midland** see *Crataegus laevigata*

**Water** see *Aponogeton distachyos*

▷ **Hazel** see *Corylus*

**Chilean** see *Gevuina avellana*

**Corkscrew** see *Corylus avellana*

'Contorta'

**Turkish** see *Corylus colurna*

▷ **Headache tree** see *Umbellularia californica*

▷ **Heart leaf** see *Philodendron cordatum*, *P. scandens*

▷ **Heart of flame** see *Bromelia balansae*

▷ **Heart of Jesus** see *Caladium bicolor*

▷ **Heart pea** see *Cardiospermum halicacabum*

▷ **Heartsease** see *Viola tricolor*

▷ **Heart seed** see *Cardiospermum*

▷ **Hearts on a string** see *Ceropegia linearis* subsp. *woodii*

▷ **Heath** see *Erica*

**Alpine** see *Erica carnea*

**Azores** see *Daboecia azorica*

**Besom** see *Erica scoparia*

**Blood-red** see *Erica cruenta*

**Cantabrian** see *Daboecia cantabrica*

**Channelled** see *Erica canaliculata*

**Common Australian** see *Epacris impressa*

**Cornish** see *Erica vagans*

**Corsican** see *Erica terminalis*

**Cross-leaved** see *Erica tetralix*

**Darley Dale** see *Erica x darleyensis*

**Dorset** see *Erica ciliaris*

**Dwarf Spanish** see *Erica umbellata*

**Erica** see *Erica cerinthoides*

**Fire** see *Erica cerinthoides*

**Irish** see *Erica erigena*

**Kapokkie** see *Erica peziza*

**Mackay's** see *Erica mackaiana*

**Mealie** see *Erica patersonia*

**Mediterranean** see *Erica erigena*

**Portuguese** see *Erica lusitanica*

**Prince of Wales** see *Erica perspicua*

**St. Dabeoc's** see *Daboecia cantabrica*

**Spanish** see *Erica australis*

**Spike** see *Bruckenthalia spiculifolia*

**Tree** see *Erica arborea*

**Veitch's** see *Erica x veitchii*

**Wandering** see *Erica vagans*

**Water** see *Erica curviflora*

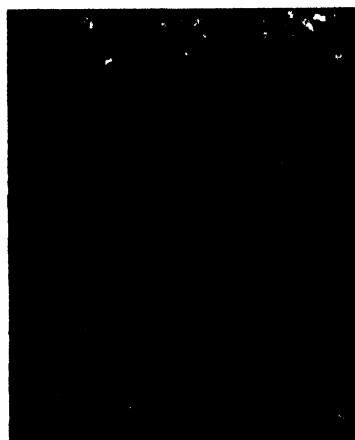
**Watson's** see *Erica x watsonii*

▷ **Heath cont.****Whorled** see *Erica manipuliflora***Williams** see *Erica x williamsii***Winter** see *Erica carnea*▷ **Heather** see *Calluna***Bell** see *Erica cinerea***False** see *Cuphea hyssopifolia***Golden** see *Cassinia leptophylla*subsp. *fulvida***Scots** see *Calluna vulgaris***Silver** see *Cassinia leptophylla* subsp. *vauvilliersii* var. *albida***HEBE**

## SCROPHULARIACEAE

Genus of approximately 100 species of evergreen shrubs, rarely trees, from a wide variety of habitats, ranging from rocky sites and cliffs to scrub and grassland; they are found from coastal areas to mountain regions, mainly in New Zealand, but also in S.E. Australia, New Guinea, and South America. The dense, opposite, sometimes 2- or 4-ranked leaves are scale-like to lance-shaped, rounded or ovate. Tubular flowers, expanding into 4 spreading lobes, are borne in terminal or axillary racemes, spikes, or small heads; they vary in colour from white to pink, blue, purple, or red. Most flowers range in size from 1–12mm (¼–½in), and are described below as: small, 1–5mm (¼–½in) across; medium, 6–8mm (¼–½in) across; and large, 9–12mm (¾–½in) across.

Hebes are suitable for a wide range of sites, including a mixed or shrub border, or a rock garden. In mild areas, particularly on the coast, they are useful

*Hebe* 'Bowles' Variety

as hedging and ground cover. Grow the less hardy species in an alpine house or cool greenhouse. Hebes are also good container plants and will tolerate some pollution. Those with small, scale-like leaves lying flat against the stems are known as "whipcord hebes", and are excellent plants for growing in a rock garden.

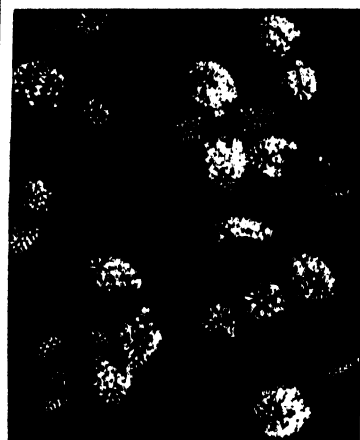
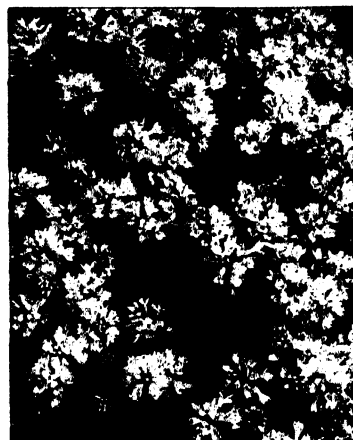
• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. Provide low to moderate humidity and good ventilation. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in poor or moderately fertile, moist but well-drained, neutral to slightly alkaline soil in sun or partial shade, with shelter from cold, drying winds. Pruning group 9; most hebes need little or no pruning.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; hebes hybridize freely. Root semi-ripe cuttings with bottom heat in late summer or autumn.

• **PESTS AND DISEASES** Leaf spot, *Phytophthora* root rot, downy mildew, and aphids may be a problem.

***H. albicans*** ■♀ Compact, mound-forming, spreading shrub with ovate, grey-green leaves, to 3cm (1¼in) long. In early and midsummer, bears medium-sized white flowers in short, terminal racemes, 3–6cm (1¼–2½in) long. †60cm (24in), ↔90cm (36in). New Zealand (South Island). \*\*

*Hebe albicans**Hebe* 'Autumn Glory'*Hebe canterburiensis*

'Pewter Dome' see *H.* 'Pewter Dome'.

'Red Edge' see *H.* 'Red Edge'.

***H.* 'Alicia Amherst'** ♀ syn. *H.*

'Veitchii'. Vigorous, upright shrub producing elliptic to elliptic-ovate, glossy, dark green leaves, to 11cm (4½in) long. Medium-sized, dark violet-purple flowers are borne in axillary spikes, 7–9cm (3–3½in) long, from late summer to autumn. †→1.2m (4ft). \*\*  
***H.* 'Amy'**, syn. *H.* 'Lady Ardilaun', *H.* 'Purple Queen'. Rounded, evergreen shrub with elliptic, dark green leaves, to 8cm (3in) long, dark bronze-purple when young and in winter. In late summer, bears large, violet-purple flowers in short, axillary spikes, to 5cm (2in) long. †→1.5m (5ft). \*

***H. x andersonii* 'Argenteovariegata'** see *H. x andersonii* 'Variegata'.

***H. x andersonii* 'Variegata'**, syn. *H. x andersonii* 'Argenteovariegata'. Bushy shrub with elliptic to inversely lance-shaped, dark green leaves, to 10cm (4in) long, streaked with grey-green in the centres and margined creamy white. From midsummer to autumn, bears medium-sized, pale violet flowers in axillary spikes, 6–9cm (2½–3½in) long. †→2m (6ft). \*

***H. anomala*** see *H. odora*.

***H. armstrongii***, syn. *H. lycopodioides* 'Aurea'. Rounded, whipcord hebe with broadly ovate, yellow-green leaves, 1mm (¼in) long, turning light green in winter. Small white flowers are borne in terminal spikes, 1–2cm (½–¾in) long, in late spring and early summer. †→90cm (36in). New Zealand (South Island). \*\*\*

***H.* 'Autumn Glory'** ■ Erect then spreading shrub with bronze shoots and broadly elliptic to obovate, dark green leaves, to 2.5cm (1in) long, with red margins. Small, dark purple-blue flowers, with white tubes, open in dense, axillary and terminal, sometimes branched racemes, 3–4.5cm (1¼–1¾in) long, from midsummer to early winter. †60cm (24in), ↔90cm (36in). \*\*

***H.* 'Bowles' Hybrid'**. Rounded shrub with elliptic, slightly glossy, pale green leaves, to 2.5cm (1in) long. Medium-sized, lavender-purple flowers are borne in axillary racemes, 8–10cm (3–4in) long, from midsummer to autumn. †50cm (20in), ↔60cm (24in). \*

***H.* 'Bowles' Variety'** ■ Compact shrub with ovate-oblong, slightly glossy, mid-green leaves, to 4cm (1½in) long. In summer, bears medium-sized, mauve-blue flowers in compact, tapered,

terminal racemes, to 8cm (3in) long. †45cm (18in), ↔60cm (24in). \*\*  
***H. brachysiphon***. Dense, rounded shrub with elliptic to lance-shaped, mid-to dark green leaves, to 2.5cm (1in) long. In midsummer, bears small white flowers in dense, axillary racemes, to 2.5cm (1in) long. †→2m (6ft). New Zealand (South Island). \*\*\*. 'White Gem' ■ is a compact hybrid of *H. brachysiphon*, bearing flowers in early and midsummer; †75–100cm (30–39in), ↔1m (3ft).

***H. buechananii***. Compact, much-branched, spreading shrub with broadly ovate, leathery, dark green leaves, to 7mm (¼in) long. In summer, small white flowers are borne in erect, axillary spikes, to 2cm (¾in) long, mainly towards the shoot tips. †20cm (8in), ↔to 90cm (36in). New Zealand (Canterbury Alps, South Island). \*\*\*. 'Minor' is more compact, with smaller leaves, and is suitable for a trough; †to 10cm (4in), ↔to 15cm (6in).

***H. buxifolia* of gardens** see *H. odora*.

***H. canterburiensis*** ■ syn. *H.* 'Tom Marshall'. Spreading shrub with oval to obovate, dark green leaves, to 1.5cm (½in) long, loosely overlapping and in 2 ranks. In summer, bears a profusion of medium-sized white flowers, to 8mm (⅜in) across, in dense, axillary racemes, to 2.5cm (1in) long. †60cm (24in), ↔to 90cm (36in). New Zealand. \*\*\*. 'Prostrata' is procumbent and lower-growing; †30cm (12in).

***H.* 'Carl Teschner'** see *H.* 'Youngii'.

***H. carnosula***. Low or nearly prostrate, spreading shrub with broadly obovate, slightly convex, glaucous, greyish green leaves, to 1cm (½in) long. Medium-sized white flowers, purplish pink in bud, are borne in dense, subterminal racemes, 1cm (½in) long, in early summer. †15–30cm (6–12in), ↔30cm (12in) or more. New Zealand (South Island). \*\*

***H. chathamica*** ■ Prostrate shrub with elliptic to ovate-oblong, fleshy, glossy, mid-to deep green leaves, to 3cm (1¼in) long. In early summer, bears medium-sized white flowers, tinged violet at first, in dense, axillary racemes, to 4cm (1½in) long. Good ground cover in mild areas. †15cm (6in), ↔90cm (36in). New Zealand (Chatham Islands). \*\*

***H.* 'County Park'**. Wide-spreading, decumbent shrub with ovate, red-margined, grey-green leaves, to 1cm (½in) long. Small violet flowers are

*Hebe chathamica*



*Hebe cupressoides*

produced in short, axillary spikes, 2.5cm (1in) long, in early and midsummer. Suitable for ground cover. ‡ 20cm (8in), ↔ 45cm (18in). \* \*

**H. 'cupressoides'** Dense, upright, whipcord hebe with cypress-like branches of scale-like, narrowly ovate to triangular, glaucous, mid-green leaves, to 1.5cm (½in) long. In early and midsummer, mature plants bear masses of small, pale lilac-blue flowers in axillary racemes, to 2.5cm (1in) long. ‡ 1.2m (4ft). New Zealand (South Island). \* \*

**'Boughton Dome'** is a dwarf, domed shrub with congested, slender, grey-green branchlets bearing scale-like, pale green leaves, to 6mm (¼in) long, pressed close to the stems but not hiding them. It seldom flowers. Suitable for a rock garden; ‡ 30cm (12in), ↔ 60cm (24in); \* \*

**H. 'Edinensis'**. Low, spreading shrub with ascending branches and whipcord-like, narrowly lance-shaped to oblong-ovate, glossy, mid-green leaves, to 6mm (¼in) long. Occasionally bears small, bluish white flowers in summer, but blooms infrequently. ‡ 30cm (12in), ↔ 75cm (30in). \* \*

**H. elliptica 'Variegata'** see *H. x franciscana* 'Variegata'.

**H. epacridea**. Mat-forming shrub with prostrate and ascending branches clothed in dense, ovate, rigid, dull mid-green leaves, 5–8mm (¼–⅓in) long. Small, fragrant white flowers open in ovoid, terminal heads, to 1.5cm (½in) long, in late spring. ‡ 45cm (18in), ↔ 60cm (24in). New Zealand (South Island). \* \*

**H. 'Eveline'** see *H. 'Gauntlettii'*.



*Hebe cupressoides* 'Boughton Dome'



*Hebe x franciscana* 'Variegata'

**H. 'Fairfieldii'**. Upright shrub with broadly ovate, coarsely toothed, glossy, mid- to dark green, red-margined leaves, 2–3cm (¾–1¼in) long. Medium-sized, lavender-violet flowers are borne in large, open, freely branched, terminal panicles, to 23cm (9in) long, in late spring and early summer. Dead-head after flowering. ‡ 60cm (24in). \* \*

**H. x franciscana** (*H. elliptica* x *H. speciosa*). Dense, rounded shrub with 4-ranked, obovate to elliptic, fleshy, dull dark green leaves, 4–6cm (1½–2½in) long. From summer to autumn, bears pink-tinged purple flowers, to 1cm (½in) across, in dense, axillary racemes, 5–8cm (2–3in) long. ‡ 60–120cm (2–4ft). Garden origin. \* \*. **'Blue Gem'** syn. *H. latifolia*, is spreading, with elliptic to inversely lance-shaped, light to mid-green leaves, 2.5–7cm (1–3in) long, and light mauve flowers; ‡ 1.3m (4½ft). **'Variegata'** syn. *H. elliptica* 'Variegata', has leaves broadly margined creamy white.

**H. 'Gauntlettii'** syn. *H. 'Eveline'*. Upright, bushy shrub with elliptic to inversely lance-shaped, glossy, rich green leaves, to 8cm (3in) or more long. Medium-sized pink flowers, 1.5cm (6in) across, with purple tubes, are borne in pendent, axillary racemes, 12–15cm (5–6in) long, from late summer to late autumn. ‡ 1m (3ft). \*

**H. glaucophylla 'Variegata'**. Rounded shrub (probably of hybrid origin) with slender shoots and lance-shaped, cream-margined, grey-green leaves, 9–15mm (⅜–⅝in) long. In summer, bears large, pale lilac-blue flowers in short, terminal racemes, 2–3cm (¾–1¼in) long. ‡ 1m (3ft). \* \*

**H. 'Great Orme'** Open, rounded shrub with dark purple shoots and oblong to lance-shaped, glossy, mid-green leaves, to 6cm (2½in) long. Large, bright pink flowers, fading to white, are borne in dense, slender, axillary spikes, 5–10cm (2–4in) long, over a long period from midsummer to mid-autumn. ‡ 1.2m (4ft). \* \*

**H. 'Hagley Park'** Erect to slightly spreading shrub with upright shoots and oblong-elliptic to obovate, blunt-toothed, glossy, mid-green leaves, to 5cm (2in) long, margined with red. Medium-sized, rose-purple flowers are borne in large, terminal panicles, to 15cm (6in) or more long, in summer. ‡ 45cm (18in), ↔ 60cm (24in). \* \*

**H. hulkeana**. Open, upright shrub producing oblong-elliptic to broadly



*Hebe* 'Gauntlettii'

ovate, toothed, glossy, mid-green leaves, to 4cm (1½in) long, with red margins. Bears large, lavender-blue, lilac, or white flowers in terminal panicles, 20–30cm (8–12in) long, in late spring and early summer. ‡ 60cm (24in). \* \*. **'Lilac Hint'** has pale green leaves without red margins, and pale lilac flowers.

**H. 'Lady Ardilaun'** see *H. 'Amy'*.

**H. 'La Séduisante'** syn. *H. speciosa* 'Ruddigore'. Upright shrub with purple-tinged shoots and broadly elliptic, glossy, dark green leaves, to 10cm (4in) long, purple beneath when young. From late summer to autumn, produces medium-sized, dark purple-red flowers in axillary racemes, 8cm (3in) long. ‡ 1m (3ft). \* \*

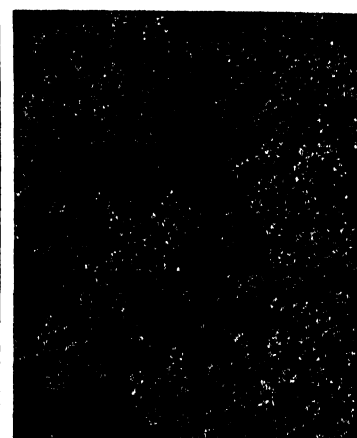
**H. latifolia** see *H. x franciscana* 'Blue Gem'.

**H. 'Loganioides'**, syn. *H. selaginoides* of gardens. Whipcord hebe with slender, yellow-green shoots and tiny, ovate to lance-shaped, finely hairy, bright green leaves, 5mm (¼in) long. Small white flowers are borne in axillary or terminal racemes, 2.5–5cm (1–2in) long, in summer. ‡ 25cm (10in). \* \*

**H. lycopodioides**. Whipcord hebe with rigid, angled, yellow-green shoots and



*Hebe* 'Great Orme'



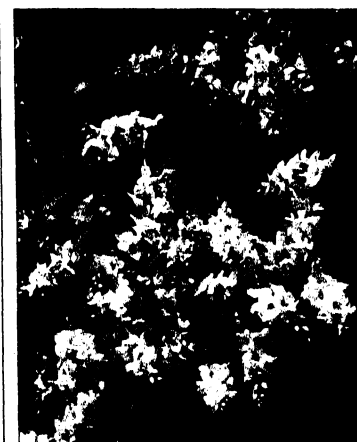
*Hebe* 'Hagley Park'

triangular to rounded, yellow-margined, mid-green leaves, to 2mm (⅛in) long. Small white flowers are borne in small, terminal racemes, 1–2cm (½–¾in) long, in summer. ‡ 60cm (24in), ↔ 90cm (36in). New Zealand (South Island).

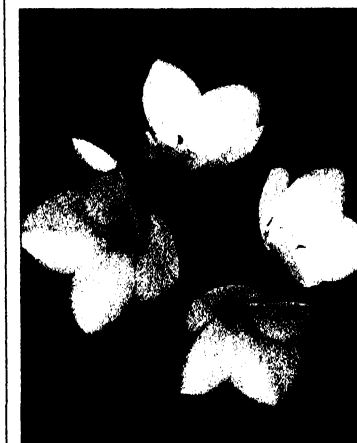
\* \*. **'Aurea'** see *H. armstrongii*.

**H. macrantha** Erect, open-branched, then spreading shrub with obovate to elliptic, blunt-toothed, leathery, bright green leaves, to 2.5cm (1in) long. Large white flowers, to 2cm (¾in) across, are produced in clusters of 3 from the upper leaf axils in early summer. ‡ 60cm (24in), ↔ 90cm (36in). New Zealand (South Island). \* \*

**H. 'Marjorie'**. Compact, rounded shrub with elliptic, glossy, mid-green leaves, to 5cm (2in) long. From midsummer to early autumn, bears axillary racemes,

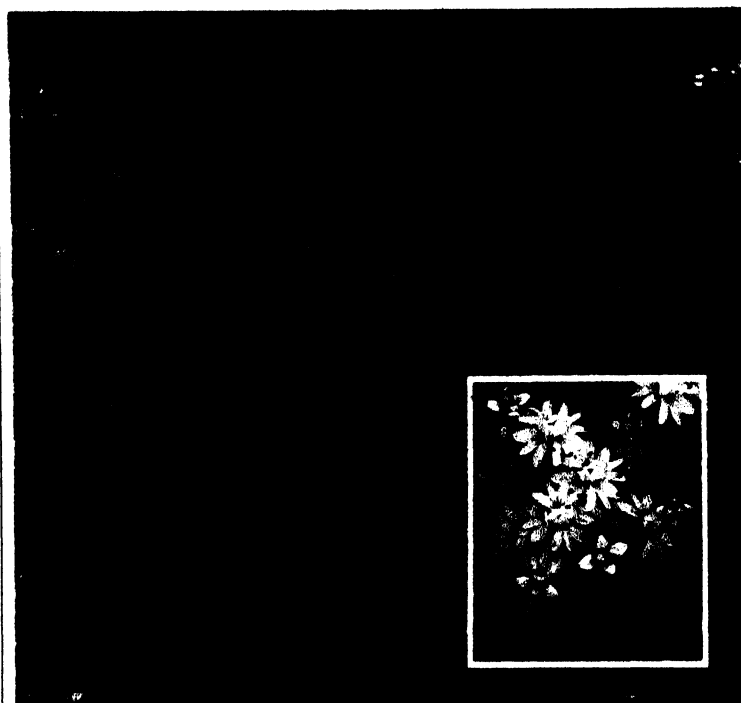


*Hebe hulkeana* 'Lilac Hint'



*Hebe macrantha*

H



*Hebe ochracea* 'James Stirling' (inset: flower detail)

to 12cm (5in) long, of medium-sized, mauve-blue flowers, fading to white. ‡ 1.2m (4ft), ↔ 1.5m (5ft). \*\*\*

**H. 'Midsummer Beauty'** ♀ Upright, rounded shrub with purplish brown stems and oblong to lance-shaped, bright green leaves, 9–11cm (3½–4½in) long, flushed red-purple beneath when young. Medium-sized, lilac-purple flowers, fading to white, are borne in axillary racemes, 12–15cm (5–6in) long, from midsummer to late autumn. ‡ 2m (6ft), ↔ 1.5m (5ft). \*\*

**H. 'Mrs. Winder'** ♀ syn. *H. 'Waikiki'*, *H. 'Warleyensis'*. Compact, rounded shrub with purplish brown shoots and oblong-elliptic, dark green leaves, dark red-purple when young, to 4cm (1½in) long, with brown-purple midribs. In late summer, bears medium-sized, violet-blue flowers in axillary racemes, 6–8cm (2½–3in) long. ‡ 1m (3ft), ↔ 1.2m (4ft). \*\*

**H. ochracea 'James Stirling'** ♀ Compact, erect then arching, whipcord hebe with triangular, rich ochre-yellow leaves, to 2–3mm (¼–½in) long, particularly attractive in winter. Small to medium-sized white flowers are borne in small, axillary racemes, 1–2cm (½–¾in)

long, in late spring and early summer. ‡ 45cm (18in), ↔ 60cm (24in). \*\*\*

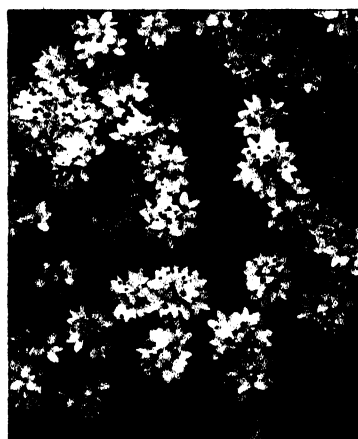
**H. odora**, syn. *H. anomala*, *H. buxifolia* of gardens. Bushy shrub with upright shoots and elliptic-ovate, glossy, dark green leaves, 1–2cm (½–¾in) long. In early and midsummer, bears small to medium-sized white flowers in dense, terminal racemes, 1–2cm (½–¾in) long. ‡ 1m (3ft), ↔ 1.5m (5ft). New Zealand. \*\*\*

**H. 'Pewter Dome'** ♀ syn. *H. albicans* 'Pewter Dome'. Dense, dome-shaped shrub producing ovate, grey-green leaves, to 2cm (¾in) long. In late spring and early summer, bears small white flowers in dense, axillary racemes, 2.5cm (1in) long. ‡ 40cm (16in), ↔ 60cm (24in). \*\*

**H. pimeleoides**. Rounded shrub with upright, purple-tinged shoots and ovate to narrowly lance-shaped, leathery, glaucous, grey-green leaves, to 1cm (½in) long, with narrow red margins. Small, purple-blue flowers are borne in axillary spikes, 1.5cm (½in) long, in summer. ‡ 45cm (18in), ↔ 60cm (24in). New Zealand (South Island). \*\*  
**var. glaucocaulerulea** has very glaucous foliage. **'Quicksilver'** ♀ is spreading,



*Hebe* 'Pewter Dome'



*Hebe pinguifolia* 'Pagei'

with small, silver-grey leaves and pale lilac-blue flowers; ‡ 30cm (12in).

**H. pinguifolia 'Pagei'** ♀ Erect then semi-prostrate shrub with 4-ranked, obovate-elliptic, leathery, blue-green leaves, to 1.5cm (½in) long, borne on purple stems. In late spring and early summer, bears a profusion of medium-sized white flowers, to 8mm (⅜in) across, in dense, axillary spikes, to 2.5cm (1in) long. Good ground cover. ‡ 30cm (12in), ↔ 90cm (36in). \*\*\*

**H. 'Purple Queen'** see *H. 'Amy'*.

**H. 'Purple Tips'** of gardens see *H. speciosa* 'Tricolor'.

**H. rakaiensis** ♀ Rounded shrub with dense, elliptic to obovate, glossy, bright green leaves, to 2cm (¾in) long. Bears large white flowers in axillary racemes, to 4cm (1½in) long, in early and midsummer. ‡ 1m (3ft), ↔ 1.2m (4ft). New Zealand (South Island). \*\*\*

**H. recurva**. Compact, spreading shrub with slender, narrowly lance-shaped, curved, blue-grey leaves, to 5cm (2in) long. Small to medium-sized white flowers are borne in narrow, axillary spikes, to 6cm (2½in) long, in summer. ‡ 60cm (24in), ↔ 75cm (30in). New Zealand (South Island). \*\*

**H. 'Red Edge'** ♀ syn. *H. albicans* 'Red Edge'. Spreading shrub producing ovate, grey-green leaves, to 2cm (¾in) long, narrowly margined and veined red when young. Medium-sized, lilac-blue flowers, fading to white, are borne in terminal spikes, to 3cm (1¼in) long, in summer. ‡ 45cm (18in), ↔ 60cm (24in). \*\*

**H. salicifolia**. Erect to spreading shrub with narrow, pointed, willow-like, lance-shaped to oblong-lance-shaped, mid-green leaves, to 12cm (5in) or more long. Small, white or pale lilac-blue flowers are borne in slender, axillary, often pendent racemes, to 20cm (8in) long, in summer. ‡ 2.5m (8ft). New Zealand (South Island). \*\*\*

**H. selaginoides** of gardens see *H. 'Loganioides'*.

**H. 'Simon Delaux'** ♀ Rounded shrub with ovate, dark green leaves, to 5cm (2in) long, conspicuously flushed dark red-purple when young. Medium-sized crimson flowers are borne in dense, axillary spikes, to 10cm (4in) long, in summer. ‡ 1.2m (4ft). \*

**H. speciosa 'Ruddigore'** see *H. 'La Séduisante'*.

**H. speciosa 'Tricolor'** syn. *H. 'Purple Tips'* of gardens. Rounded shrub with upright shoots and elliptic, grey-green leaves, to 5cm (2in) long, margined creamy white and flushed purple beneath, particularly when young and in winter. In summer, bears medium-sized, violet-purple flowers in axillary spikes, to 8cm (3in) long. ‡ 1.2m (4ft). \*

**H. tetragona**. Whipcord hebe with stout, upright, 4-angled shoots and tiny, densely set, triangular to awl-shaped, leathery, glossy, yellow-green leaves, 2mm (⅛in) long. Small to medium-sized white flowers are borne in terminal spikes, 4cm (1½in) long, in early summer. ‡ 45cm (18in), ↔ 60cm (24in). New Zealand (North Island). \*\*\*

**H. tetraeticha**. Dwarf, whipcord hebe with procumbent then erect, tetragonal stems covered with triangular, scale-like, dark green leaves, to 2mm (⅛in) long. In summer, produces 1–3 pairs of large white flowers from the leaf axils at the stem tips. Seldom blooms in cultivation.



*Hebe rakaiensis*

Needs cool conditions and humus-rich, gritty soil. ‡ 10cm (4in), ↔ 20cm (8in). New Zealand (Canterbury Alps, South Island). \*\*\*

**H. 'Tom Marshall'** see *H. canterburiensis*.

**H. topiaria**. Dense, dome-shaped shrub with broadly elliptic to obovate, glossy, grey-green leaves, to 1.5cm (½in) long. Medium-sized white flowers are borne in short, dense, terminal racemes, 1–2cm (½–¾in) long, in summer. ‡ 60cm (24in), ↔ 80–90cm (32–36in). New Zealand (South Island). \*\*\*

**H. 'Veitchii'** see *H. 'Alicia Amherst'*.

**H. vernicosa**. Compact, rounded shrub with dense, elliptic, glossy, dark green leaves, to 1cm (½in) long. Medium-sized white flowers, sometimes pale lilac-blue at first, are borne in axillary racemes, to 5cm (2in) long, in early and midsummer. ‡ 60cm (24in), ↔ 1.2m (4ft). New Zealand (South Island). \*\*

**H. 'Waikiki'** see *H. 'Mrs. Winder'*.

**H. 'Warleyensis'** see *H. 'Mrs. Winder'*.

**H. 'Wingletye'**. Low, spreading shrub with obovate, glaucous, grey-green leaves, to 1cm (½in) long. Small, lilac-blue flowers are borne in axillary racemes, 2.5cm (1in) long, in summer. ‡ 15cm (6in), ↔ 30cm (12in). \*\*

**H. 'Youngii'**, syn. *H. 'Carl Teschner'*. Compact, mat-forming, dark-stemmed shrub with elliptic to broadly obovate, dark green leaves, to 7mm (¼in) long, sometimes red-margined. Large violet flowers with white throats are borne in axillary racemes, to 3cm (1¼in) long, in summer. ‡ 20cm (8in), ↔ 60cm (24in). \*\*\*

## HECHTIA

### BROMELIACEAE

Genus of over 40 species of short-stemmed or stemless, dioecious, evergreen, terrestrial perennials (bromeliads) found in rocky terrain and forest, up to altitudes of 2,000m (6,500ft), in S.W. USA, Mexico, Guatemala, Honduras, and Nicaragua. They have dense rosettes



of narrowly triangular, fleshy, coarsely spiny leaves. In summer, inconspicuous, funnel-shaped, green, yellow, or white flowers are produced in long, branching racemes or panicles among the foliage rosettes. Plants of both sexes are needed in order to obtain fruits. In frost-prone climates, grow in a temperate greenhouse or conservatory. In frost-free regions, grow outdoors in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light. During the growing season, water moderately and apply a half-strength, low-nitrogen liquid fertilizer monthly; keep plants completely dry in winter. Outdoors, grow in sharply drained, poor to moderately fertile soil in full sun. Provide protection from winter wet. See also p.47.

• **PROPAGATION** Sow seed at 21–24°C (70–75°F) as soon as ripe. Remove and pot up offsets in spring.

• **PESTS AND DISEASES** Susceptible to mealybugs and scale insects.

**H. argentea** □ syn. *Dyckia argentea*. Rosetted perennial with about 100 narrowly triangular-linear, densely scaly, silvery green leaves, to 60cm (24in) long, with jagged, marginal spines. Lax panicles of white flowers, with brown bracts and white-hairy sepals, are produced from the rosettes in summer. ↑→ 1m (3ft) or more. Mexico. ☉ (min. 10°C/50°F)

**H. glomerata**. Rosetted perennial producing about 40 narrowly triangular, spreading, often red-tipped, mid-green leaves, 25–40cm (10–16in) long, covered on the undersides with fine, white or brown scales. Narrowly ovoid white flowers, with brown bracts and sepals, are borne in branched, lateral racemes, to 50cm (20in) long, in summer. ↑→ 40cm (16in) or more. USA (Texas), Mexico, Guatemala. ☉ (min. 10°C/50°F)

**H. montana**. Rosette-forming perennial with numerous, narrowly triangular, shiny, mid-green leaves, 15–45cm (6–18in) long, densely white-scaly beneath, with slender brown, marginal teeth and brown sheaths. Narrowly ovoid, pale yellow flowers are borne in pyramidal, 2-branched, white-woolly racemes, to 50cm (20in) long, in summer. ↑→ to 50cm (20in). USA (S. California), N.W. Mexico. ☉ (min. 10°C/50°F)



*Hechtia argentea*

## HEDERA

Ivy

ARALIACEAE

Genus of 9–11 species of evergreen, woody-stemmed, trailing or self-clinging climbers. They are found in light woodland or on trees or rocks in N. Africa, the Canary Islands, the Azores, and Madeira, and from Europe to the Himalayas, China, Korea, and Japan. They have alternate, 3- to 5-lobed or entire leaves (see panel right), which are sometimes attractively variegated. Ivies show 2 distinct stages of growth. In the creeping or climbing juvenile stage, ivies have adventitious rootlets, lobed leaves, and minutely hairy young shoots. In the adult stage, they produce aerial "bushes" with entire, usually broadly ovate leaves and, in autumn, spherical umbels of tiny, 5-lobed, yellowish green, bisexual flowers; these are followed by spherical, black, sometimes orange or yellow fruits, 4–7mm (1/8–1/4in) across, which are a valuable winter food source for birds.

Ivies vary greatly in size and vigour and should be selected to suit the space available. They are ideal as a backdrop for other plantings, or for covering a wall. Variegated ivies are useful for lightening a dark corner. If wall-grown, ivies will not damage sound brickwork, but they may dislodge loose mortar and damage paintwork. Dense-growing ivies are excellent ground cover, thriving even in dry shade. *H. helix* has produced numerous variants and cultivars, many of which are easily grown as houseplants in hanging baskets or containers. Ivies may also be trained on wire forms to produce topiary features. All parts of ivy may cause severe discomfort if ingested; contact with the sap may aggravate skin allergies or irritate skin.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright indirect to low light. Water freely in growth, applying a balanced liquid fertilizer monthly; keep moist in winter. Outdoors, ivies tolerate a range of conditions, but grow best in fertile, humus-rich, preferably alkaline, moist but well-drained soil. Green-leaved ivies are shade-tolerant, but variegated ones prefer more light, with shelter from cold wind. Some ivies, especially variegated ones, may be damaged in severe winters, but will usually recover in spring. To encourage rapid establishment of self-clinging growth, peg young stems down to the soil; they will quickly produce lateral, climbing shoots. Pruning group 11, at any time.

• **PROPAGATION** In summer, root semi-ripe cuttings of juvenile growth to obtain plants with a trailing habit; use adult growth to obtain plants with a bushy, "tree-ivy" habit. If standards are required, graft small-leaved ivies on to single-stemmed *x Fatshedera lizei* specimens, 45–90cm (18–36in) above soil level.

• **PESTS AND DISEASES** Red spider mites, scale insects, aphids, and leaf spot may be a problem.

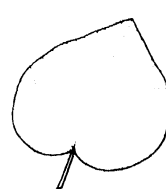
**H. algeriensis** see *H. canariensis* var. *algeriensis*.

**H. azorica**, syn. *H. canariensis* 'Azorica'. Vigorous climber with slightly hairy

### IVY LEAF SHAPES

Ivies produce leaves in a variety of shapes: when young, they are usually 3- to 5-lobed, but may be unlobed or

crested in some species and cultivars. When they reach the adult stage, ivies usually produce entire, unlobed leaves.



UNLOBED



3-LOBED



CRESTED

stems producing 5- to 7-lobed, ovate-triangular, matt, light green leaves, to 8cm (3in) long. Excellent for a wall. ↑ 6m (20ft). Azores. \* \*

**H. canariensis** (Canary Island ivy, North African ivy). Vigorous climber with 3-lobed, ovate-triangular, glossy, bright green leaves, 10–12cm (4–5in) long, borne on smooth, wine-red leaf-stalks. May be damaged in severe winters. Suitable for a sheltered wall. ↑ 4m (12ft). Algeria, Tunisia. \* \*

**var. algeriensis**, syn. *H. algeriensis*, has yellow-green leaves, becoming dark green with age. The stems and undersides of the leaves are red-hairy.

'Azorica' see *H. azorica*. 'Gloire de Marengo' □ ♀ has light silvery green leaves, variegated creamy white. An excellent houseplant; also suitable for a sheltered wall. **var. maderensis**, syn. *H. maderensis*, is slow-growing, with small, dark green leaves, 4cm (1 1/2in) long. Ideal ground cover. Madeira. ↑ 2m (6ft). 'Ravensholst' □ is vigorous, with shallowly 3- to 5-lobed, glossy, dark green leaves, 10–14cm (4–5 1/2in) long. Best for a wall or as ground cover. ↑ 5m (15ft).

**H. cinerea** see *H. nepalensis*.

**H. colchica** ♀ (Bullock's heart ivy, Persian ivy). Vigorous climber with entire, ovate, leathery, dark green leaves, 8–12cm (3–5in) long. Suitable for ground cover or for a large wall. ↑ 10m (30ft). Caucasus, N. Iran. \* \* \*

'Dentata' □ ♀ has arching, bright green leaves, 25cm (10in) long, slightly toothed at the margins, with purple-flushed stems and leaf-stalks. Good for

ground cover or for a large wall.

'Dentata Variegata' ♀ has light green leaves, 15cm (6in) long, mottled grey-green, and broadly margined creamy white. Suitable for a wall or as ground cover. ↑ 5m (15ft). 'Paddy's Pride' see 'Sulphur Heart'. 'Sulphur Heart' □ ♀ syn. 'Paddy's Pride', is similar to 'Dentata Variegata' but grows more rapidly and has more elongated, mid-green leaves, suffused with creamy yellow. Good for a wall. ↑ 5m (15ft).

**H. helix** (Common ivy, English ivy). Vigorous, variable, self-clinging climber or trailing perennial with 3- to 5-lobed, broadly ovate to triangular, glossy, dark green leaves, 4–6cm (1 1/2–2 1/2in) long. Seldom cultivated, but suitable for a wildlife garden. ↑ 10m (30ft). Europe. \* \* \*. *H. helix* has given rise to many attractive variants and cultivars, which are more commonly grown than the species. In the descriptions below, leaf sizes have been grouped as follows: small, 2–4cm (3/4–1 1/2in) long; medium-sized, 4–6cm (1 1/2–2 1/2in) long; large, 6cm (2 1/2in) or more long. 'Adam' □ has small, 3-lobed, light to dark grey-green leaves, heart-shaped at the bases, with creamy white variegation; the leaves become suffused and variegated with yellow as they mature. Moderately vigorous; excellent as a houseplant or for growing on a wall. ↑ 5m (15ft).

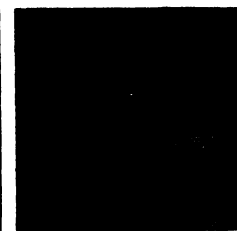
'Angularis Aurea' □ ♀ has medium-sized, slightly angular, shallowly lobed, glossy, mid-green leaves; as the leaves mature, they become suffused and variegated with yellow. Moderately vigorous; ideal for a wall. ↑ 5m (15ft).



*Hedera canariensis*  
'Gloire de Marengo'



*Hedera canariensis*  
'Ravensholst'



*Hedera colchica* 'Dentata'



*Hedera colchica* 'Sulphur Heart'

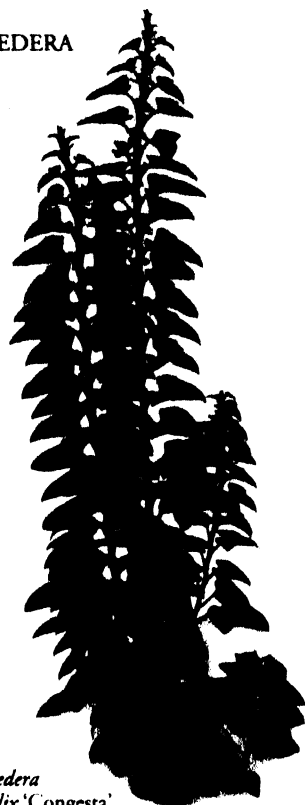


*Hedera helix* 'Adam'



*Hedera helix* 'Angularis Aurea'

H



*Hedera helix* 'Congesta'

'Anne Borch' see 'Anne Marie'. 'Anne Marie'  $\square$  syn. 'Anne Borch', produces medium-sized, mid-grey-green leaves with 5 rounded lobes that are cream-variegated mostly on the margins. Use as a houseplant or on a sheltered wall.  $\pm 1.2\text{m}$  (4ft). \*\* 'Asterisk' is a short-jointed climber or trailer, with small, deeply lobed, light green leaves. Use as a houseplant or in a hanging basket.  $\pm 1\text{m}$  (3ft). \*\* 'Atropurpurea'  $\square$   $\nabla$  syn. 'Purpurea' (Purple-leaved ivy), has large, 5-lobed, dark green leaves that turn deep purple in cold weather. Use on a wall.  $\pm 8\text{m}$  (25ft). 'Aureovariegata' has medium-sized, entire, triangular, mid-green leaves with central markings in lime-green and creamy yellow. Use on a wall.  $\pm 2\text{m}$  (6ft). \*\* 'Booskoop' is similar to 'Green Ripple', having large, 5-lobed, mid-green leaves, but the leaves are more curled and have less distinctive veining.  $\pm 1\text{m}$  (3ft). \*\* 'Bruder Ingobert' has small, irregularly shaped, 3- to 5-lobed, grey-green leaves with dark green markings, often margined

with creamy white. A good houseplant.  $\pm 1\text{m}$  (3ft). \*\* 'Buttercup'  $\square$   $\nabla$  has large, 5-lobed leaves that are pale green when grown in shade but bright yellow in full sun. Ideal for a wall.  $\pm 2\text{m}$  (6ft). 'Caecilia', usually grown as a houseplant, has small, 5-lobed, light green leaves with cream variegation and frilled margins.  $\pm 1\text{m}$  (3ft). \*\* 'Caenwoodiana' see 'Pedata'. 'California Fan' has small, light green leaves with 5-7 boldly veined, fan-shaped lobes. Use as a houseplant.  $\pm 1\text{m}$  (3ft). \*\* 'Cavendishii'  $\nabla$  syn. 'Marginata Minor', has medium-sized, mid-green leaves with mostly marginal, creamy yellow variegation. An excellent wall ivy.  $\pm 8\text{m}$  (25ft). 'Chester' produces small, almost triangular, 3-lobed leaves, variegated lime-green and cream with dark green central blotches. Grow on a low wall or as a houseplant.  $\pm 1\text{m}$  (3ft). \*\* 'Congesta'  $\square$   $\nabla$  is non-climbing, forming a neat bush with spire-like shoots. It has small, 3-lobed, dark green leaves borne in 2 opposite ranks along the stems. Use in a rock garden.  $\pm 45\text{cm}$  (18in). 'Conglomerata' is a scrambling or climbing ivy with medium-sized, entire or shallowly 3-lobed, thick, dark green leaves with wavy margins. Use in a rock garden or as a houseplant.  $\pm 1\text{m}$  (3ft). \*\* 'Cristata' see 'Parsley Crested'. 'Curley-Q' see 'Dragon Claw'. 'Curly Locks' see 'Manda's Crested'. 'Dealbata' has small, 3-lobed, triangular to arrow-shaped, dark green leaves, spotted and splashed creamy white. Best grown on a wall.  $\pm 2\text{m}$  (6ft). 'Deltoidea' see *H. hibernica* 'Deltoidea'. 'Diana' is trailing, and has variable, medium-sized, 3-lobed, dark green leaves, with the apex of each lobe drawn out to a wisp. Good in a hanging basket.  $\pm 1\text{m}$  (3ft). \*\* 'Dragon Claw'  $\square$  syn. 'Curley-Q', is a vigorous, climbing ivy with medium-sized, 3- to 5-lobed, strongly curled, dark green leaves.  $\pm 2\text{m}$  (6ft). 'Duckfoot', usually grown as a houseplant, has small, light green leaves with 3 shallow lobes and wedge-shaped bases; each leaf resembles a duck's foot.  $\pm 45\text{cm}$  (18in). \*\* 'Erecta'  $\square$   $\nabla$  is a stiffly upright ivy, similar to, but more vigorous than 'Congesta', with medium-sized, more rounded leaves. Use in a shrub border or large rock garden.  $\pm 1\text{m}$  (3ft). 'Eva'  $\square$   $\nabla$  has small, 3-lobed,

grey-green leaves with creamy white margins; each central lobe is twice as long as the lateral lobes. Similar to 'Adam', but with wedge-shaped leaf bases. Ideal as a houseplant.  $\pm 1.2\text{m}$  (4ft). \*\* 'Flamenco' has variable, small, dark green leaves, usually 5-lobed but often entire, with flattened leaf-stalks. Use as a houseplant.  $\pm 45\text{cm}$  (18in). \*\* 'Fluffy Ruffles'  $\square$  is usually grown as a houseplant, and has small, wavy, 5-lobed, mid-green leaves with frilled margins.  $\pm 45\text{cm}$  (18in). \*\* 'Glacier'  $\square$   $\nabla$  has small, almost triangular, 3- to 5-lobed, grey-green leaves variegated with silver-grey and cream. Use on a wall, as ground cover, or as a houseplant.  $\pm 2\text{m}$  (6ft) or more. 'Glymii'  $\square$  syn. 'Scutifolia', has medium-sized, entire to 3-lobed, glossy, dark green leaves that turn deep red-purple in cold weather. Ideal for a wall.  $\pm 2\text{m}$  (6ft). 'Goldchild'  $\square$   $\nabla$  syn. 'Gold Harald', has small, 3- to 5-lobed, grey-green leaves with broad yellow margins. Ideal as a houseplant or on a low wall.  $\pm 1\text{m}$  (3ft). \*\* 'Golden Ingot' is similar to 'Goldchild', but has more pointed leaf lobes.  $\pm 1\text{m}$  (3ft). \*\* 'Golden Kolibri' see 'Midas Touch'. 'Gold Harald' see 'Goldchild'. 'Goldheart'  $\square$  syn. 'Jubiläum Goldherz', 'Jubilee Goldheart', 'Oro di Bogliasco', has medium-sized, 3-lobed, dark green leaves, each with a central splash of bright yellow. An excellent wall ivy, slow to establish but then fast-growing; tends to lose its variegation if grown as ground cover.  $\pm 8\text{m}$  (25ft). 'Green Feather' see 'Triton'. 'Green Finger' see 'Très Coupé'. 'Green Ripple'  $\square$  has large, mid-green leaves with 5 jagged, forward-pointing, prominently veined lobes. Use on a wall.  $\pm 2\text{m}$  (6ft). 'Hahn's Self-branching' see 'Pittsburgh'. 'Helena' has small, 5-lobed, mid-green leaves with creamy white margins. Each leaf has a central lobe, twice as long as the lateral lobes, that is curved and downward-pointing. A good houseplant.  $\pm 45\text{cm}$  (18in). \*\* 'Helvig' see 'White Knight'. subsp. *hibernica* see *H. hibernica*. 'Ingelise' see 'Sagittifolia Variegata'. 'Ivalace'  $\square$   $\nabla$  syn. 'Mini Green', has medium-sized, 5-lobed, lustrous, dark green leaves with wavy, curled, and crimped margins. Excellent, all-round ivy for a low wall,

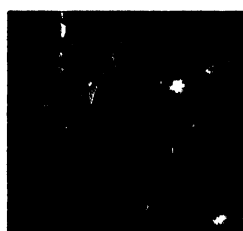


*Hedera helix* 'Erecta'

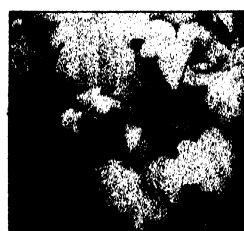
as ground cover, or as a houseplant.  $\pm 1\text{m}$  (3ft). 'Jubiläum Goldherz' see 'Goldheart'. 'Jubilee' is a compact, slow-growing ivy with small, entire or 3- to 5-lobed, grey-green leaves, marked darker green, and margined with cream. Mostly used as a houseplant.  $\pm 45\text{cm}$  (18in). \*\* 'Jubilee Goldheart' see 'Goldheart'. 'Kolibri'  $\nabla$  has small, neat, 5-lobed, creamy white-variegated, mid-green leaves, with long-pointed central lobes and short-pointed lateral lobes. Very variable but a good houseplant.  $\pm 45\text{cm}$  (18in). \*\* 'Königer'  $\square$  is a vigorous wall ivy producing large, mid-green leaves with 5 narrow, elongated lobes; the central lobes are often twice as long as the lateral lobes.  $\pm 2\text{m}$  (6ft). \*\* 'Lalla Rookh' is trailing, with medium-sized, light green leaves, the 5 irregularly toothed lobes cut almost to the central veins. Use in hanging basket.  $\pm 1\text{m}$  (3ft). \*\* 'Leo Swicegood' is an unusual houseplant ivy with small, entire, linear, mid-green leaves.  $\pm 45\text{cm}$  (18in). \*\* 'Little Diamond'  $\square$   $\nabla$  is compact and



*Hedera helix* 'Anne Marie'



*Hedera helix* 'Atropurpurea'



*Hedera helix* 'Buttercup'



*Hedera helix* 'Dragon Claw'



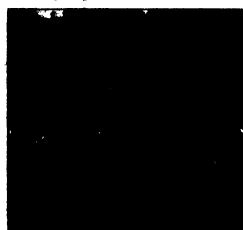
*Hedera helix* 'Eva'



*Hedera helix* 'Fluffy Ruffles'



*Hedera helix* 'Glacier'



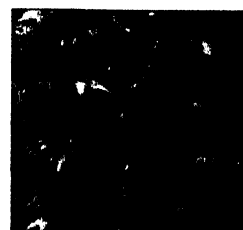
*Hedera helix* 'Glymii'



*Hedera helix* 'Goldchild'



*Hedera helix* 'Goldheart'



*Hedera helix* 'Green Ripple'



*Hedera helix* 'Ivalace'



*Hedera helix* 'Pedata'

slow-growing, with medium-sized, entire, diamond-shaped, grey-green leaves, variegated creamy white. Use as a houseplant or in a rock garden. ‡ 30cm (12in). \*\* 'Luzii' ■ has medium-sized, shallowly 5-lobed, mid-green leaves, heavily speckled and spotted yellow-cream. A good houseplant. ‡ 1m (3ft). \*\* 'Manda's Crested' ■ syn. 'Curly Locks', has large, curled, 5-lobed, mid-green leaves with downward-pointing tips. The leaves become copper-tinted in cold weather. Good for a wall and as ground cover. ‡ 2m (6ft). \*\* 'Maple Leaf' ■ has medium-sized, 5-lobed, mid-green leaves with irregularly indented margins; each central lobe is almost twice as long as the lateral lobes. Suitable for a wall. ‡ 2m (6ft). \*\* 'Marginata Major' will cover a high wall with its large, 3-lobed, mid-green leaves, variegated yellow-cream, mainly at the leaf margins. ‡ 5m (15ft). 'Marginata Minor' see 'Cavendishii'. 'Melanie' is similar to 'Parsley Crested', but has leaves with

light purple, crested margins. An unusual houseplant ivy, but prone to leaf browning if grown outside. ‡ 45cm (18in). \*\* 'Midas Touch' ♀ syn. 'Golden Kolibri', has small, ovate, usually entire, dark green leaves with irregular, bright yellow variegation. Use as a houseplant or on a low wall. ‡ 1m (3ft). \*\* 'Mini Green' see 'Ivalace'. 'Minor Marmorata' (Salt-and-pepper ivy) has small, 3-lobed, dark green leaves, spotted and splashed with creamy white. Use on a wall. ‡ 2m (6ft). 'Misty' is a neat houseplant ivy, with small, 3-lobed, grey-green leaves, variegated creamy yellow at the leaf margins, and with arching central lobes. ‡ 45cm (18in). \*\* 'Mrs. Pollock' has medium-sized, mid-green leaves with 5-7 forward-pointing lobes, suffused with yellow. A good variegated climber for a wall, but totally green when young. ‡ 3m (10ft). 'Oro di Bogliasco' see 'Goldheart'. 'Parsley Crested' ■ syn. 'Cristata', has medium-sized, entire, ovate to almost rounded, mid- to dark

green leaves with waved and crested margins. Use on a wall. ‡ 2m (6ft). \*\* 'Pedata' ■ ♀ syn. 'Caenwoodiana' (Bird's foot ivy), is an excellent wall ivy, with medium-sized, 5-lobed, grey-green leaves. Each leaf has an elongated central lobe and backward-pointing lateral lobes, resembling the shape of a bird's foot. ‡ 4m (12ft). 'Perkeo' ■ is a short-jointed ivy, with medium-sized, almost rounded, thickened, dark green leaves, streaked mid-green, with purple-tinted veins. Usually grown as a houseplant. ‡ 45cm (18in). \*\* 'Pin Oak' has small, 3-lobed, light green leaves, with the central lobes twice the length of the lateral lobes; usually grown as a houseplant. ‡ 1m (3ft). \*\* 'Pittsburgh' ■ syn. 'Hahn's Self-branching', is a short-jointed ivy with medium-sized, mid-green leaves, heart-shaped at the bases, with 5 pointed lobes. Use as a houseplant, on a low wall, or as ground cover. ‡ 1m (3ft). \*\* f. *poetarum* ■ syn. 'Poetica Arborea' (Italian ivy, Poet's ivy), has large, 5-lobed, shiny mid-green leaves. It is often grown as a "bush ivy", as it bears distinctive, orange-yellow fruit, even on comparatively young plants. Good for a wall. ‡ 3m (10ft). 'Poetica Arborea' see f. *poetarum*. 'Professor Friedrich Tobler' has small, 3- to 5-lobed, mid-green leaves, the lobes sometimes cut almost to the central veins, giving the impression of separate leaflets. Excellent for a hanging basket. ‡ 45cm (18in). \*\* 'Purpurea' see 'Atropurpurea'. 'Romanze' has small, 5-lobed, light green leaves, the margins waved and curled so that the lobing is indistinct. Young leaves are clothed with velvety hairs. An attractive houseplant. ‡ 45cm (18in). \*\* 'Sagittifolia Variegata', syn. 'Ingelise', is similar to 'Pedata' but has medium-sized, 5-lobed, creamy white-variegated leaves. A good wall ivy. ‡ 2m (6ft). 'Schäfer Three' is a short-jointed houseplant ivy with small, entire or shallowly 3-lobed, dark green leaves, marked grey-green with creamy white variegation. ‡ 1m (3ft). \*\* 'Scutifolia' see 'Glymii'. 'Shamrock' ♀ (Clover-leaf ivy) has small, 3-lobed, dark green leaves with wedge-shaped central lobes; the lateral lobes are cut almost to the central veins. Use for topiary, on a low wall, or in a hanging basket. ‡ 1m (3ft). 'Silver



*Hedera helix* f. *poetarum*

Queen' see 'Tricolor'. 'Spectre' ■ has medium-sized, 3- to 5-lobed, mid-green, creamy yellow-streaked leaves; each lobe is curled and twisted, with pointed, downward-curling tips. Ideal as a houseplant or for ground cover. ‡ 1m (3ft). 'Spetchley' ■ ♀ has variable, tiny, dark green leaves, 5-15mm (¼-½in) long, usually 3-lobed, but often with a single elliptic or triangular lobe. It occasionally reverts to leaves similar to those of the species. Ideal for ground cover or as a houseplant. ‡ 15cm (6in). 'Telecurl' ■ is an elegant houseplant ivy with small, 5-lobed, slightly folded, bright dark green leaves, with leaf-blades that curl between the lobes. ‡ 1m (3ft). \*\* 'Très Coupé', syn. 'Green Finger', has small, dark green leaves with 3 deep lobes. Use as a houseplant or on a low wall. ‡ 1m (3ft). 'Tricolor', syn. 'Silver Queen', has small, entire, triangular, grey-green leaves with irregular cream-yellow margins, the edges of which are pink, becoming more intensely coloured in cold weather. Suitable for a wall. ‡ 1.5m (5ft). 'Triton', syn. 'Green Feather', is a non-climbing, spreading ivy with medium-sized, deeply 5-lobed, prominently veined, dark green leaves; the lobes are slender, pointed, and twisted. Use as ground cover or in a hanging basket. ‡ 45cm (18in). 'Walthamensis' has small, matt, dark green leaves with 3 blunt-tipped lobes. Useful for ground cover. ‡ 1.2m (4ft). 'White Knight' ■ syn. 'Helvig', is

H



*Hedera helix* 'Königer'



*Hedera helix* 'Little Diamond'



*Hedera helix* 'Luzii'



*Hedera helix* 'Manda's Crested'



*Hedera helix* 'Maple Leaf'



*Hedera helix* 'Parsley Crested'



*Hedera helix* 'Perkeo'



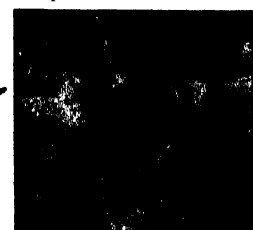
*Hedera helix* 'Pittsburgh'



*Hedera helix* 'Spectre'



*Hedera helix* 'Spetchley'



*Hedera helix* 'Telecurl'



*Hedera helix* 'White Knight'



*Hedera pastuchovii* var. *cypria*

slow-growing, and is usually grown as a houseplant. It has small, 3-lobed, mid-green leaves with white variegation, mostly confined to the centre of each leaf. ‡30cm (12in). \*\* \* **'William Kennedy'** is compact and slow-growing, producing small, usually 3-lobed, but sometimes entire, grey-green leaves with creamy yellow variegation. ‡45cm (18in). \*\* \* **'Wingertsberg'** has large, 5-lobed, dark green leaves that colour purple-green in cold weather. Suitable for growing on a wall or as ground cover. ‡4m (12ft). **'Woerner'**, syn. **'Woerner'**, is vigorous and similar to **'Wingertsberg'**, but has large, 3-lobed, dark green leaves, colouring deep purple in cold weather. ‡4m (12ft). **H. hibernica** [?] syn. *H. helix* subsp. *hibernica* (Irish ivy). Vigorous climber producing broadly ovate to triangular, dark green leaves, 5–8cm (2–3in) long, with 5 triangular lobes. The leaves are slightly upward-folded. Useful for a wall or as fast-growing ground cover. ‡ to 10m (30ft). W. Europe. \*\* \*\*.

**'Deltoidea'** [?] syn. *H. helix* **'Deltoidea'** (Sweetheart ivy), is slow-growing, producing neat, densely arranged, entire or very shallowly 3-lobed, dark green leaves, 6–10cm (2½–4in) long. The basal lobes are overlapping, giving each leaf a heart shape. ‡5m (15ft). **'Rona'** is less hardy, and has leaves with extensive, yellow-freckled variegation. ‡3m (10ft). \*\* \* **'Sulphurea'** [?] has irregularly 3-lobed, mid-green to grey-green leaves, 5–7cm (2–3in) long, margined and splashed with sulphur-yellow. Suitable for growing on a wall or as ground cover. ‡3m (10ft). **'Variegata'** produces leaves with sharply defined, yellow-cream variegation, but it sometimes also has totally green, non-variegated leaves. ‡ to 10m (30ft).

**H. himalaica** see *H. nepalensis*.

**H. maderensis** see *H. canariensis* var. *maderensis*.

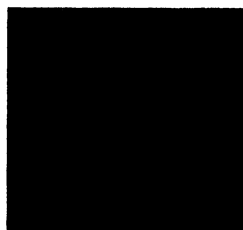
**H. nepalensis**, syn. *H. cinerea*, *H. himalaica* (Nepal ivy). Strong-growing, self-clinging climber producing usually entire, elliptic, olive-green leaves, 6–10cm (2½–4in) long; the leaves sometimes have 3–6 toothed, projecting lobes, giving the leaf margins a "stepped" appearance. An interesting climber for a sheltered wall. ‡3m (10ft). Himalayas. \*\* \* var. *sinensis* is more vigorous than the species, with unlobed or only very shallowly lobed, mid-green leaves, 7–9cm (3–3½in) long. Suitable for covering a tree. ‡4m (12ft). China. **'Suzanne'** [?] is similar to, but less vigorous than, the species. It has 5-lobed, olive-green leaves with backward-pointing basal lobes, resembling the shape of a bird's foot. ‡2m (6ft).

**H. pastuchovii**. Moderately vigorous, self-clinging climber producing entire, narrowly ovate, dark green leaves, 4–9cm (1½–3½in) long. Suitable only for a wall. ‡2m (6ft). Caucasus, N. Iran. \*\* \* var. *cypria* [?] has leaves with prominent, grey-green veins. A vigorous wall ivy. ‡3m (10ft). Cyprus (Troodos Mountains).

**H. rhombea** (Japanese ivy). Self-clinging climber producing unlobed, ovate to triangular, mid-green leaves, 2–4cm (¾–1½in) long. ‡ to 3m (10ft). Korea, Japan. \*\* \* **'Variegata'** [?] is slower-growing, and produces leaves with attractive creamy white margins. ‡2m (6ft).



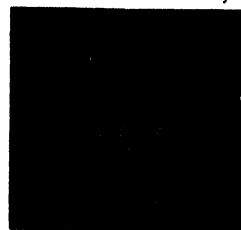
*Hedera helix*  
**'William Kennedy'**



*Hedera hibernica*



*Hedera hibernica*  
**'Deltoidea'**



*Hedera hibernica*  
**'Sulphurea'**



*Hedera nepalensis*  
**'Suzanne'**



*Hedera rhombea* **'Variegata'**

## HEDYCHIMUM

syn. BRACHYCHILUM  
Garland lily, Ginger lily

### ZINGIBERACEAE

Genus of about 40 species of rhizomatous perennials from moist, lightly wooded areas of Asia. They have stout, fleshy rhizomes and usually lance-shaped leaves, borne in 2 parallel ranks on unbranched, reed-like stems.

Hedychiums are grown for their foliage and for their exotic, 2-lipped, tubular or almost trumpet-shaped, often fragrant, white, yellow, or orange-red flowers, with large bracts, borne in congested, spike-like racemes. The flowers are followed by ovoid, capsular fruits with sometimes colourful seeds. Hedychiums are most effective when planted in groups next to still water, or in a mixed or herbaceous border. In frost-prone areas, grow tender species in a warm greenhouse and hardier species in a cold one; in summer, they may be placed outdoors or planted out.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright indirect light. Provide moderate to high humidity and good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer monthly. In winter, keep just moist and remove old stems as they deteriorate. Outdoors, grow in humus-rich, moist but well-drained soil in sun or partial shade, with shelter from cold winds. In frost-prone areas, frost-hardy hedychiums may survive in a warm position if given a deep winter mulch.

• **PROPAGATION** Sow seed at 21–24°C (70–75°F) as soon as ripe. Divide rhizomes in spring. Sow bulbils of *H. greenei* when ripe.

• **PESTS AND DISEASES** Prone to red spider mites and aphids under glass.

**H. coccineum** ♀ (Red ginger lily, Scarlet ginger lily). Erect, rhizomatous perennial with long, sharp-pointed, lance-shaped, mid-green leaves, 30–50cm (12–20in) long. Tubular, scented, pale to deep red, orange, pink, or white flowers, with prominent red stamens, are borne in terminal, cylindrical racemes, to 25cm (10in) long, from late summer to autumn. ‡ to 3m (10ft), ↔ 1m (3ft). Himalayas. \* **'Tara'** ♀ has orange flowers with slightly redder stamens and styles; \*\* **H. coronarium** (Garland flower, White ginger lily). Upright, rhizomatous perennial with long, sharp-pointed, lance-shaped, mid-green leaves, 60cm (24in) long, downy beneath. Very fragrant, butterfly-like white flowers, with yellow basal marks, are borne in terminal, elliptic racemes, 20cm (8in) long, in mid- and late summer. ‡ to 3m (10ft), ↔ 1m (3ft) or more. India. \* **H. densiflorum** [?] Clump-forming perennial with oblong to lance-shaped, pointed, glossy, mid-green leaves, 30–40cm (12–16in) long. In late summer, bears tubular, fragrant, orange or yellow flowers in dense, terminal, cylindrical racemes, 20cm (8in) long. ‡ to 5m (15ft), ↔ 2m (6ft) or more. Himalayas. \*\* \* **'Assam Orange'** bears deep orange flowers in very dense, bottlebrush-like racemes. **'Stephen'** [?]



*Hedychium densiflorum*

has larger, laxer racemes of flowers with more protruding, pale orange-yellow corolla lobes and deep orange stamens.

**H. forrestii**. Rhizomatous perennial with leafy stems bearing narrow, lance-shaped, stalkless, strongly veined, mid-green leaves, 30–50cm (12–20in) long. In late summer and early autumn, bears narrow-lobed white flowers in dense, cylindrical racemes, to 50cm (20in) long. ‡ to 1.5m (5ft), ↔ 60cm (24in). China (Yunnan). \*\* \*

**H. gardnerianum** [?] ♀ (Kahili ginger). Upright, rhizomatous perennial with lance-shaped, greyish green leaves, 25–40cm (10–16in) long. Butterfly-like, fragrant, lemon-yellow flowers, with bright red stamens, are borne in dense, broadly cylindrical, terminal racemes, 25–35cm (10–14in) long, in late summer and early autumn. ‡ to 2–2.2m (6–7ft) or more, ↔ to 1m (3ft). N. India, Himalayas. \*

**H. greenei**. Rhizomatous, clump-forming perennial with long, oblong, sharp-pointed, mid-green leaves, 20–25cm (8–10in) long. Butterfly-like, bright red flowers are borne in terminal, cylindrical racemes, 12cm (5in) long, in summer. Sometimes produces bulbils



*Hedychium densiflorum* **'Stephen'**

*Hedychium gardnerianum*

from which it can be propagated. ↑ to 2m (6ft), ↔ 60cm (24in) or more. W. Bhutan. \*

**H. horsfieldii**, syn. *Brachyichilum horsfieldii*. Slender-stemmed perennial with stalkless, lance-shaped to linear, leathery, glossy, mid-green leaves, 30cm (12in) long. From summer to autumn, bears showy, tubular, greenish white flowers in terminal racemes, 6–17cm (2½–7in) long. ↑ 1–1.5m (3–5ft), ↔ 1m (3ft). Indonesia (Java). ☼ (min. 16°C/61°F)

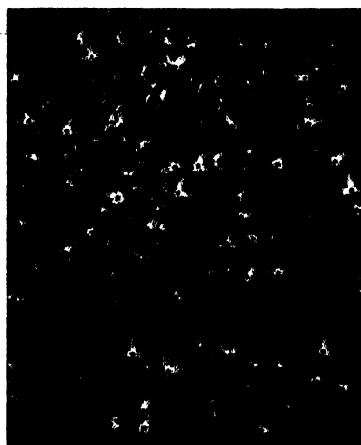
## HEDYOTIS

Bluets

RUBIACEAE

Genus of about 50 species of upright or prostrate, often stem-rooting perennials, from moist habitats in North America. They are attractive, sometimes short-lived plants valued for their 4-petalled, salverform or funnel-shaped, blue or white flowers, borne in profusion from spring to summer. The small, shiny, ovate or oval leaves, 0.5–5cm (¼–2in) long, are opposite or occasionally clustered. Grow in a woodland or rock garden, ideally in shady rock crevices.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, preferably acid soil in dappled to full shade. Mulch in autumn and spring.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring or autumn. Root stem-tip cuttings in early summer.
- **PESTS AND DISEASES** Very susceptible to damage by slugs and snails.

*Hedyotis michauxii*

**H. michauxii** ☼ syn. *Houstonia serpyllifolia* (Creeping bluets). Mat-forming perennial with rooting stems and rounded, ovate or oval, glossy, mid-green leaves, to 7mm (¼in) long. In late spring and early summer, short, erect stems bear usually solitary, axillary and terminal, salverform, light blue flowers, to 1cm (½in) across, with white eyes. ↑ 7cm (3in), ↔ to 30cm (12in). USA (Virginia, S. Carolina to W. Tennessee). \*\*\*

## HEDYSARUM

LEGUMINOSAE/PAPILIONACEAE

Genus of 100 species of perennials and subshrubs widespread in mountains and prairies throughout the N. hemisphere. They have alternate, pinnate, mid-green leaves and bear axillary racemes of pea-like flowers in violet, purple, red, or pink, occasionally white or yellow. They are attractive to bees. Tall species, such as *H. coronarium*, are suitable for the back of a mixed or herbaceous border, and provide sweet-smelling cut flowers. Small species are ideal for a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, preferably stony or sandy, poor to moderately fertile, alkaline soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide with care in spring, as the roots resent disturbance.
- **PESTS AND DISEASES** Trouble free.

**H. coronarium** ☼ (French honeysuckle). Upright, bushy perennial, sometimes biennial, with pinnate leaves comprising 7–15 paired, elliptic to obovate or rounded, entire leaflets, 3.5cm (1½in) long. Racemes of very fragrant, pea-like, deep red flowers, to 2cm (¾in) long, are borne on erect, angular stems throughout spring. ↑ to 1m (3ft), ↔ 60cm (24in). W. Mediterranean to Italy (Sicily). \*\*\*. 'Album' has white flowers.

**H. hedsaroides**. Rhizomatous, hairless perennial forming spreading clumps of erect, angular, unbranched stems. The numerous pinnate leaves have 7–21 obovate leaflets, 2.5cm (1in) long. Loose, conical racemes of pea-like, red-violet or white flowers, to 2.5cm (1in) long, are borne in mid- and late summer. ↑ to 60cm (24in), ↔ 90cm (36in). Arctic Russia to S. central Europe. \*\*\*

*Hedysarum coronarium*

## HEDYSCEPE

Umbrella palm

ARECACEAE/PALMAE

Genus of one species of single-stemmed palm from the upper mountain slopes of Lord Howe Island, Australia. Pinnate leaves with up to 80 leaflets are carried in terminal tufts above a distinct crown-shaft. Panicles of bowl-shaped, 3-petalled flowers are produced one at a time, just below the leaves. Where temperatures fall below 15°C (59°F), grow in a warm conservatory or greenhouse. In tropical areas, use as specimen trees, either singly or in small groups.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added leaf mould, in bright filtered or indirect light. Provide moderate to high humidity and good ventilation. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun or partial shade, with shelter from wind.
- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

**H. canterburyana** ♀ syn. *Kentia canterburyana*. Small to medium-sized palm with a slender stem topped by a prominent crownshaft, tinted silvery blue-white. Rigidly curved leaves, to 1.5m (5ft) long, have 40–80 lance-shaped, erect to ascending, rich green leaflets, smooth above, downy beneath. In summer, bears deep yellow to orange-yellow flowers, to 1cm (½in) across, in horizontal panicles, to 45cm (18in) across. ↑ to 10m (30ft), ↔ to 5m (15ft). Australia (Lord Howe Island). ☼ (min. 15°C/59°F)

▷ *Heeria* see *Heterocentron*

▷ *Heimerliodendron* see *Pisonia*

*H. brunonianum* see *P. umbellifera*

## HELENUM

Helen's flower

ASTERACEAE/COMPOSITAE

Genus of about 40 species of annuals, biennials, and perennials found in damp, swampy meadows or at woodland margins in North and Central America. They are mostly clump-forming plants with sturdy, branching stems and ovate to inversely lance-shaped, mid-green leaves, 15–20cm (6–8in) long. The daisy-like flowerheads have prominent yellow or brown disc-florets, and ray-florets in yellow, bronze, orange, or red. Heleniums flower over a long period and are suitable for a sunny, mixed or herbaceous border. The flowerheads are useful for cutting and are attractive to bees. All parts may cause severe discomfort if ingested; contact with the foliage may aggravate skin allergies.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any fertile, moist but well-drained soil in full sun. Provide support for taller species and cultivars. Dead-head to prolong flowering. Divide every 2–3 years to maintain vigour.
- **PROPAGATION** Sow seed of species, or root basal cuttings of cultivars, in

containers in a cold frame in spring. Divide in autumn or spring.

- **PESTS AND DISEASES** Leaf spot may be a problem.

**H. autumnale** (Sneezeweed). Upright, clump-forming perennial with branched, winged stems and ovate to lance-shaped, toothed leaves, 10–15cm (4–6in) long. From late summer to mid-autumn, bears flowerheads, to 5cm (2in) long, with yellow ray-florets that reflex as the brown disc-florets open. ↑ to 1.5m (5ft), ↔ 45cm (18in). Canada, E. USA. \*\*\*

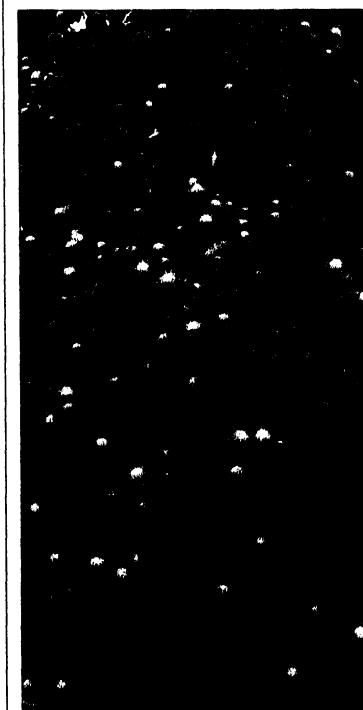
**H. 'Baudirektor Linne'**. Clump-forming perennial bearing large, long-lasting flowerheads, to 7cm (3in) across, with velvety, brownish red ray-florets and brown disc-florets, in late summer and early autumn. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*\*

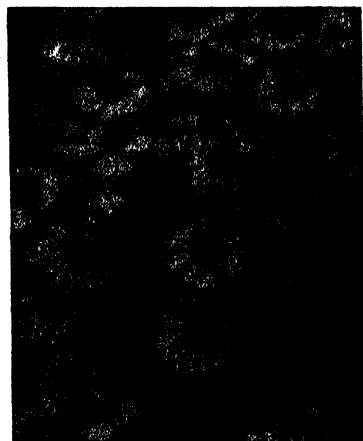
**H. bigelovii**. Clump-forming perennial with sparsely branched stems and lance-shaped to inversely lance-shaped leaves, 15–23cm (6–9in) long. In early and midsummer, bears flowerheads, 6cm (2½in) across, with brownish yellow disc-florets, and yellow ray-florets that reflex as the disc-florets open. ↑ 60cm (24in), ↔ 30cm (12in). USA (California to Oregon). \*\*\*. 'Aurantiacum' has golden yellow flowerheads.

**H. 'Blütentisch'**. Stout perennial with branched upper stems bearing flowerheads 7cm (3in) across, with golden yellow, brown-flecked ray-florets and brown disc-florets, from midsummer to early autumn. ↑ 80–90cm (32–36in), ↔ 60cm (24in). \*\*\*

**H. 'Bressingham Gold'**. Vigorous perennial bearing flowerheads 6–9cm (2½–3½in) across, with deep gold ray-florets, shaded crimson, and brown disc-florets, in mid- and late summer. ↑ 90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Bruno'** ☼ Erect perennial bearing flowerheads 6–9cm (2½–3½in) across, with deep crimson or reddish brown ray-florets and brown disc-florets, in late summer and early autumn. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*\*

*Helenium 'Bruno'*

*Helium* 'Butterpat'*Helium* 'Moerheim Beauty'

**H. 'Butterpat'** ■ Upright perennial bearing flowerheads 5–8cm (2–3in) across, with rich yellow ray-florets and yellow-brown disc-florets, from midsummer to early autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Coppelia'**. Erect perennial bearing flowerheads 5–8cm (2–3in) across, with warm copper-orange ray-florets and brown disc-florets, from midsummer to early autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Feuersiegel'**. Upright perennial bearing flowerheads 5–8cm (2–3in) across, with golden brown to red ray-florets and brown disc-florets, in late summer and early autumn. †1.5m (5ft), ↔ 60cm (24in). \*\*\*

**H. 'Goldene Jugend'**, syn. *H. 'Golden Youth'*. Upright perennial producing flowerheads to 8cm (3in) across, with golden yellow ray-florets and yellow disc-florets, in early and midsummer. †80cm (32in), ↔ 60cm (24in). \*\*\*

**H. 'Golden Youth'** see *H. 'Goldene Jugend'*.

**H. 'Gold Fox'**. Erect perennial bearing flowerheads to 8cm (3in) across, with tawny-orange ray-florets and brown disc-florets, from midsummer to early autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Goldrausch'**. Upright perennial bearing flowerheads to 7cm (3in) across, with golden yellow, brown-marked ray-florets and brown disc-florets, in late summer and early autumn. † to 1.5m (5ft), ↔ 60cm (24in). \*\*\*

**H. boopesii**. Erect, clump-forming perennial with basal rosettes of inversely lance-shaped, greyish green leaves,

*Helium* 'Pumilum Magnificum'

25–30cm (10–12in) long, becoming smaller towards the tops of the stems. In early summer, bears branched, lax, terminal corymbs of 3–8 flowerheads to 8cm (3in) across, the bright yellow to orange ray-florets reflexing as the yellow-brown disc-florets open. Will tolerate dry soil. † to 1m (3ft), ↔ 45cm (18in). Mountains of USA (California to Oregon, Wyoming, New Mexico). \*\*\*

**H. 'Kupferzwerg'**. Upright perennial bearing flowerheads 5–8cm (2–3in) across, with brownish red ray-florets and brown disc-florets, in mid- and late summer. †70cm (28in), ↔ 60cm (24in). \*\*\*

**H. 'Margot'**. Upright perennial producing flowerheads 5–8cm (2–3in) across, with brownish red, yellow-tipped

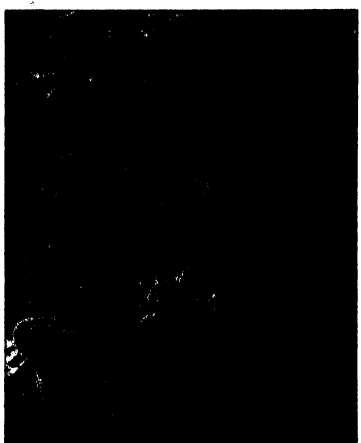
ray-florets and brown disc-florets, from midsummer to early autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Moerheim Beauty'** ■ Upright perennial bearing flowerheads 5–8cm (2–3in) across, with dark copper-red ray-florets and dark brown disc-florets, from early to late summer. †90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Pumilum Magnificum'** ■ Erect perennial bearing flowerheads to 7cm (3in) across, with golden yellow ray-florets and yellow-brown disc-florets, from late summer to mid-autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

**H. 'Red and Gold'** see *H. 'Rotgold'*.

**H. 'Riverton Gem'**. Upright perennial producing flowerheads 5–7cm (2–3in) across, with deep crimson, yellow-streaked ray-florets and brown disc-

*Helium* 'Septemberfuchs'*Helium* 'Sonnenwunder'*Helium* 'Wyndley'

florets, in late summer and early autumn. †1.2m (4ft), ↔ 60cm (24in). \*\*\*

**H. 'Rotgold'**, syn. *H. 'Red and Gold'*. Upright perennial bearing flowerheads to 8cm (3in) across, with ray-florets in varying shades or combinations of red and yellow, and brown disc-florets, in late summer and early autumn. †1.2m (4ft), ↔ 60cm (24in). \*\*\*

**H. 'Septemberfuchs'** ■ Upright perennial bearing flowerheads 5–8cm (2–3in) across, with bright orange-brown ray-florets, suffused yellow, and brown disc-florets, from late summer to mid-autumn. †1.5m (5ft), ↔ 60cm (24in). \*\*\*

**H. 'Sonnenwunder'** ■ Erect perennial bearing flowerheads 5–8cm (2–3in) across, with yellow ray-florets and green, then pale brownish yellow disc-florets, from late summer to mid-autumn. †1.5m (5ft), ↔ 60cm (24in). \*\*\*

**H. 'Waldtraut'**. Upright, sturdy perennial bearing flowerheads 5–8cm (2–3in) across, with golden brown ray-florets and brown disc-florets, in late summer and early autumn. †80–100cm (32–39in), ↔ 60cm (24in). \*\*\*

**H. 'Wyndley'** ■ Erect perennial bearing flowerheads 5–8cm (2–3in) across, with yellow ray-florets, overlaid dark orange, and with darker orange-brown disc-florets, from midsummer to early autumn. †80cm (32in), ↔ 60cm (24in). \*\*\*

**H. 'Zimbelstern'**. Upright perennial producing flowerheads 5–8cm (2–3in) across, with golden brown, wavy-margined ray-florets and brown disc-florets, in mid- and late summer. † to 1.2m (4ft), ↔ 60cm (24in). \*\*\*

▷ *Helium's flower see Helium*

## HELIANTHEMUM

Rock rose, Sun rose

CISTACEAE

Genus of about 110 species of evergreen or semi-evergreen shrubs occurring in alpine meadows or open scrub in North and South America, Asia, Europe, and North Africa, particularly around the Mediterranean. They have opposite, oblong to linear, silver- to grey-green or light to mid-green leaves, and are grown for their raceme-like cymes of saucer-shaped, 5-petalled, brightly coloured flowers, which are borne over a long period from late spring to midsummer. They are ideal for a rock garden, a raised





*Helianthemum apenninum*

bed, or the front of a herbaceous or mixed border, or as ground cover on a sunny bank. The hybrids most often grown are crosses involving *H. apenninum*, *H. nummularium*, and *H. croceum*; those described below are evergreen shrubs of similar habit and appearance to *H. apenninum*, with silver, mid-green, or grey-green leaves and saucer-shaped flowers.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained, neutral to alkaline soil in full sun. Pruning group 10, after flowering.

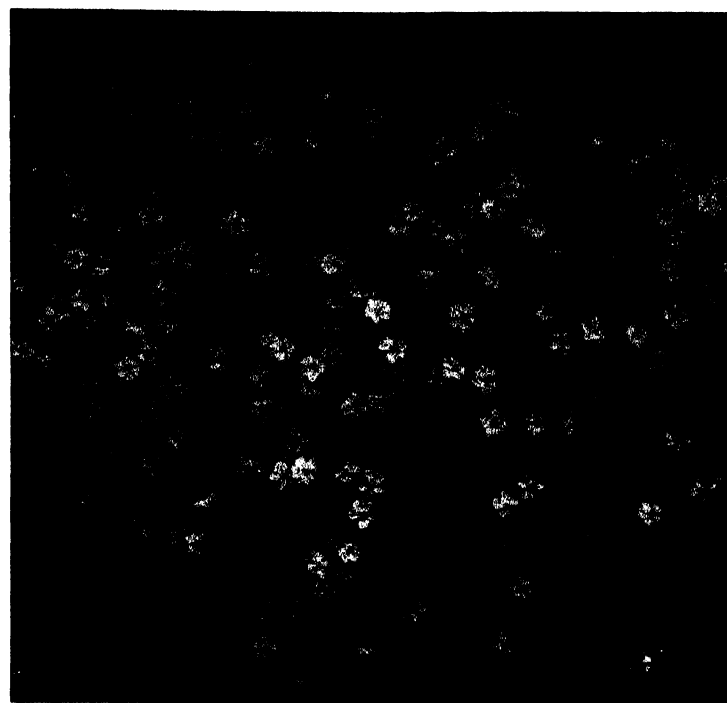
• **PROPAGATION** Sow seed of species in containers in a cold frame as soon as ripe or in spring. Root softwood cuttings in late spring or early summer.

• **PESTS AND DISEASES** Trouble free.

**H. apenninum** [■] Spreading, loosely mat-forming, evergreen shrub with elliptic-oblong to linear, downy, grey-green leaves, to 3cm (1¼in) long, on branching, downy stems. From late spring to midsummer, bears few-flowered cymes of white flowers, 2.5cm (1in) across, with conspicuous, deep yellow anthers. † to 40cm (16in), ↔ to 60cm (24in). Europe, Turkey. \*\*\*

**H. 'Ben Hope'**. Spreading shrub with downy, pale grey-green leaves, 1–4cm (½–1½in) long. Bears carmine-red flowers, to 2.5cm (1in) across, with deep orange centres. † 20–30cm (8–12in), ↔ 30cm (12in). \*\*\*

**H. 'Ben Nevis'**. Spreading shrub, more compact than *H. apenninum*, with dark green leaves, 1–4cm (½–1½in) long. Produces rich orange-yellow flowers, to



*Helianthemum lunulatum*

2.5cm (1in) across, with bronze-crimson centres. † to 20cm (8in). \*\*\*

**H. 'Chocolate Blotch'**. Spreading shrub producing grey-green leaves, 1–4cm (½–1½in) long, and buff-coloured flowers, to 2.5cm (1in) across, marked chocolate-brown at the petal bases. † 20–30cm (8–12in), ↔ 30cm (12in). \*\*\*

**H. 'Fire Dragon'** [■] ♀ syn. *H. 'Mrs. Clay'*. Spreading shrub with grey-green leaves, 1–4cm (½–1½in) long. Produces vivid orange-red flowers, to 2.5cm (1in) across. † 20–30cm (8–12in), ↔ 30cm (12in). \*\*\*

**H. guttatum** see *Tuberaria guttata*.

**H. 'Henfield Brilliant'** ♀ Spreading shrub producing grey-green leaves, 1–4cm (½–1½in) long, and brick-red flowers, 2.5cm (1in) across. † 20–30cm (8–12in), ↔ 30cm (12in). \*\*\*

**H. lunulatum** [■] Dwarf, initially erect then spreading, evergreen shrub with elliptic to lance-shaped, hairy, grey-green leaves, to 1cm (½in) long. In late spring and early summer, clear yellow flowers, to 1.5cm (½in) across, with prominent, orange-yellow anthers, are borne singly or in cymes. † 15cm (6in), ↔ 25cm (10in). S. Europe. \*\*\*

**H. 'Mrs. Clay'** see *H. 'Fire Dragon'*.

**H. nummularium 'Amy Baring'** ♀ Dwarf shrub producing erect then procumbent branches and ovate or lance-shaped to elliptic, grey-green leaves, 0.5–5cm (¼–2in) long. Bears deep yellow flowers, to 2.5cm (1in) across, with orange centres. † 15cm (6in), ↔ to 20cm (8in). \*\*\*

**H. oelandicum subsp. alpestre**. Neat, mat-forming shrub with lance-shaped, downy, grey-green leaves, to 2cm (¾in) long. Terminal cymes of up to 5 yellow flowers, each to 1.5cm (½in) across, are borne from late spring to midsummer. † 12cm (5in), ↔ to 20cm (8in). S. Europe. \*\*\*

**H. 'Raspberry Ripple'** [■] Spreading shrub with dark greyish green leaves, 1–4cm (½–1½in) long. White flowers, to 2.5cm (1in) across, have purplish pink centres, the colour spreading irregularly into the petal margins. † 20cm (8in), ↔ to 30cm (12in). \*\*\*

**H. 'Rhodanthe Carneum'** [■] ♀ syn. *H. 'Wisley Pink'*. Long-flowering, spreading shrub, more robust than *H. apenninum*. It has silver-grey leaves, 2.5–3.5cm (1–1½in) long, and bears pale pink flowers, to 2.5cm (1in) across,



*Helianthemum 'Wisley White'*

flushed yellow at the centres. † to 30cm (12in), ↔ to 45cm (18in). \*\*\*

**H. tuberaria** see *Tuberaria lignosa*.

**H. umbellatum** see *Halimium umbellatum*.

**H. 'Wisley Pink'** see *H. 'Rhodanthe Carneum'*.

**H. 'Wisley Primrose'** ♀ Spreading shrub with grey-green leaves, to 4cm (1½in) long. Bears pale primrose-yellow flowers, 2–2.5cm (¾–1in) across, with deep golden yellow centres. † to 30cm (12in), ↔ to 45cm (18in). \*\*\*

**H. 'Wisley White'** [■] Spreading shrub with grey leaves, to 4cm (1½in) long. Bears creamy white flowers, 2–2.5cm (¾–1in) across, with mid- to deep yellow centres and yellow stamens. † to 30cm (12in), ↔ to 45cm (18in). \*\*\*

## HELIANTHUS

Sunflower

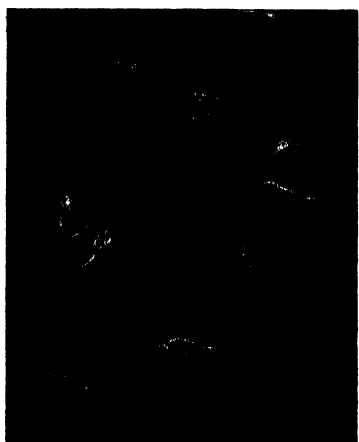
ASTERACEAE/COMPOSITAE

Genus of about 70–80 species of annuals and perennials, some occurring in dry woodland and prairies, others in damp, swampy habitats, in North America, Central America, Peru, and Chile. Usually tall, coarse plants, they have creeping or tuberous roots and large, simple, bristly, alternate or opposite leaves. The showy, daisy-like flowerheads, with sterile ray-florets, are usually 5–10cm (2–4in) across, but up to 30cm (12in) in the giant annuals; they are borne singly or in loose corymbs and have yellow, occasionally red, or very rarely violet, ray-florets, and yellow, brown, or purple disc-florets. As the nomenclature of many cultivars and hybrids is confused, some names used here may be amended in the future.

Sunflowers are effective in an annual, herbaceous, or mixed border. The taller, spreading species and hybrids, such as *H. x laetiflorus* and *H. salicifolius*, are suitable for a wild garden; small annuals, such as *H. annuus* 'Teddy Bear', are ideal for containers. Sunflowers provide good cut flowers and many are attractive to bees. Contact with the foliage of sunflowers may aggravate skin allergies.

• **HARDINESS** Fully hardy to frost hardy.

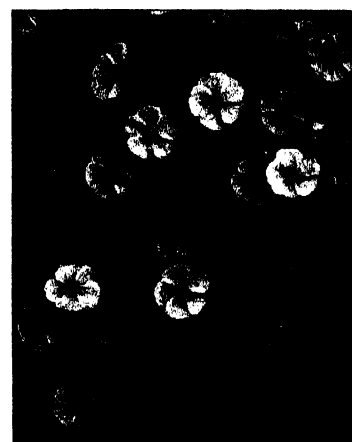
• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, neutral to alkaline soil in full sun. Sunflowers need long, hot summers to flower well. Most will tolerate dry soil, *H. pauciflorus* and *H. salicifolius* prefer it. *H. decapetalus*, *H. x laetiflorus*, and *H. x multiflorus* thrive in moist soil.



*Helianthemum 'Fire Dragon'*



*Helianthemum 'Raspberry Ripple'*



*Helianthemum 'Rhodanthe Carneum'*



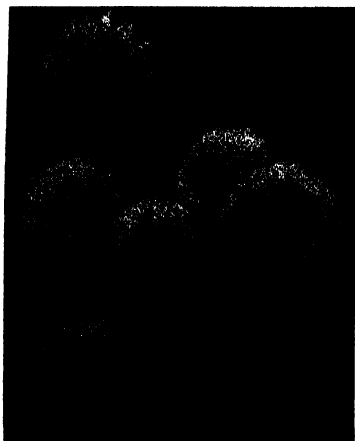
*Helianthus annuus* 'Music Box'

particularly near water. Tall species and cultivars require support. Top-dress perennials annually with garden compost or well-rotted manure. Divide and transplant perennials every 2–4 years to maintain vigour.

• **PROPAGATION** Sow seed of perennials in containers in a cold frame in spring; sow annuals at 16°C (61°F) in late winter, or *in situ* in spring. Cultivars may not come true from seed, and hybridize freely. Divide perennials in spring or autumn. Root basal cuttings in spring.

• **PESTS AND DISEASES** Susceptible to slugs, powdery mildew, and *Sclerotinia*.

**H. annuus** (Sunflower). Fast-growing, tall, branched to unbranched, hairy-stemmed annual with broadly oval to heart-shaped, toothed, roughly hairy,



*Helianthus annuus* 'Teddy Bear'



*Helianthus atrorubens* 'Monarch'



*Helianthus debilis*  
subsp. *cucumerifolius*  
'Italian White'

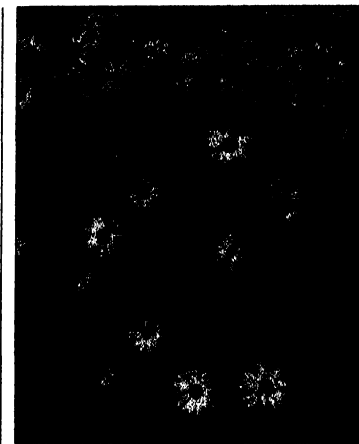
mid- to dark green leaves, 10–40cm (4–16in) long. In summer, bears large, daisy-like flowerheads, to 30cm (12in) wide, with yellow ray-florets and brown or purple disc-florets, sometimes tinged red or purple. ‡ to 5m (15ft), ↔ to 60cm (24in). USA to Central America. \*\*\*. 'Autumn Beauty' has flowerheads to 15cm (6in) across, with dark mahogany-red, lemon-yellow, golden yellow, or bronze-red ray-florets, sometimes zoned with additional shades; ‡ 1.5m (5ft) or more. 'Big Smile' bears flowerheads to 10cm (4in) across, with yellow ray-florets and darker yellow disc-florets; ‡ 40cm (16in). 'Music Box' is free-flowering and many-branched; it bears flowerheads 10–12cm (4–5in) across, with ray-florets in colours ranging from creamy yellow to dark red, including

some bicolours, and black disc-florets; ‡ 70cm (28in). 'Russian Giant' is tall, with large yellow flowerheads, to 25cm (10in) across; ‡ 3.5m (11ft). 'Sunspot' produces large yellow flowerheads, to 25cm (10in) across; ‡ 60cm (24in). 'Teddy Bear' is compact, bearing double, deep yellow flowerheads, to 13cm (5in) across; ‡ 90cm (36in).

**H. atrorubens**, syn. *H. sparsifolius* (Dark-eye sunflower). Clump-forming perennial with hairy, purple-green stems and ovate to lance-shaped, toothed to scalloped, hairy, mid-green, mainly basal leaves, 20–30cm (8–12in) long. In late summer, bears flowerheads 5–9cm (2–3½in) across, with deep yellow ray-florets and purplish maroon disc-florets. ‡ to 1.5m (5ft), ↔ 1.2m (4ft). S.E. USA. \*\*\*. 'Gullick's Variety' is vigorous, wide-spreading, and free-blooming; it produces narrow, pointed leaves, and from late summer to mid-autumn, bears flowerheads with yellow ray-florets and brownish purple disc-florets; ‡ 1.2–1.7m (4–5½ft). 'Monarch' is vigorous, bearing semi-double flowerheads, to 15cm (6in) across when disbudded, with yellow-brown disc-florets, in early and mid-autumn; ‡ to 2m (6ft); \*\*.

**H. cucumerifolius** see *H. debilis* subsp. *cucumerifolius*.

**H. debilis**. Tall, smooth to hairy annual with stout, strongly branched stems, occasionally mottled purple, and ovate to lance-shaped, sometimes toothed, glossy, mid-green leaves, 5–14cm (2–5½in) long. Slightly nodding flowerheads, 6cm (2½in) or more across, with bright yellow, sometimes red-flushed ray-florets and deep purple-red disc-



*Helianthus x multiflorus*

florets, are borne in summer. ‡ 2m (6ft), ↔ 45–60cm (18–24in). USA (Florida, Texas). \*\*\*. subsp. *cucumerifolius*, syn. *H. cucumerifolius*, is shorter, with purple-mottled stems, coarsely hairy, sharply toothed leaves, to 10cm (4in) long, and larger flowerheads, to 15cm (6in) across, from summer to autumn; ‡ 1m (3ft); USA (S.E. Texas). subsp. *cucumerifolius* 'Italian White' has flowerheads to 10cm (4in) across, with creamy white to pale primrose-yellow ray-florets and black disc-florets; ‡ 1.5m (5ft). subsp. *cucumerifolius* 'Vanilla Ice' has creamy yellow ray-florets.

**H. decapetalus** (Thin-leaved sunflower). Rhizomatous perennial with tall stems, hairless at the bases and bristly towards the flowerheads. Thin, lance-shaped to broadly ovate, mid-green leaves, to 20cm (8in) long, are smooth above and rough-hairy beneath. Flowerheads 5–8cm (2–3in) across, with yellow ray-florets and yellow-brown disc-florets, are borne from late summer to mid-autumn. ‡ 1.5m (5ft), ↔ 1.1m (3½ft). C. and S.E. USA. \*\*\*.

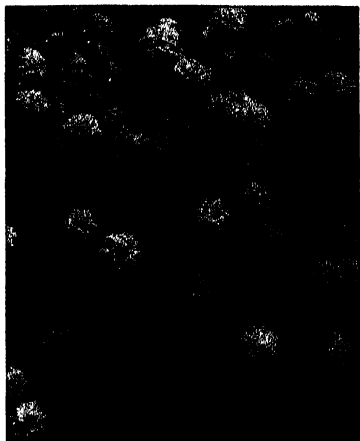
**H. x laetiflorus** (*H. pauciflorus* x *H. tuberosus*). Spreading, rhizomatous perennial with rough stems and thin, ovate, coarsely toothed, dark green leaves, to 30cm (12in) long. Flowerheads 10–12cm (4–5in) across, with bright yellow ray-florets and yellow disc-florets, open from late summer to mid-autumn. ‡ 1.5–2.2m (5–7ft), ↔ 1.2m (4ft) or more. Garden origin. \*\*\*. 'Miss Mellish' spreads vigorously, and bears semi-double flowerheads with orange-yellow ray-florets. 'Morning Sun' bears large, semi-double flower-



*Helianthus*  
*x multiflorus*  
'Capenoch Star'



*Helianthus x laetiflorus* 'Morning Sun'



*Helianthus x multiflorus* 'Loddon Gold'

heads with golden yellow ray-florets and quilled disc-florets, from midsummer to autumn; † 1.2m (4ft), ↔ 60cm (24in).

**H. 'Lemon Queen'**. Rhizomatous perennial with ovate, conspicuously veined, dark green leaves, to 12cm (5in) long. Flowerheads 8–12cm (3–5in) across, with pale yellow ray-florets and slightly darker yellow disc-florets, open from late summer to mid-autumn.

† 1.7m (5½ft), ↔ 1.2m (4ft). \*\*\*

**H. x multiflorus** (H. annuus x H. decapetalus). Clump-forming perennial with lance-shaped to ovate, slightly hairy, dark green leaves, to 20cm (8in) long. Flowerheads to 12cm (5in) across, with domed, yellow-brown disc-florets, and golden yellow ray-florets, open from late summer to mid-autumn. † to 2m (6ft), ↔ 90cm (36in). Garden origin.

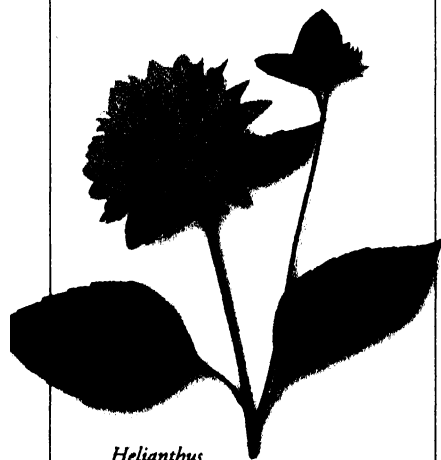
\*\*\*. **'Capenoch Star'** (H. x multiflorus) has single flowerheads with lemon-yellow ray-florets and quilled, slightly darker yellow disc-florets; good for cutting; † to 1.5m (5ft). **'Loddon Gold'** (H. x multiflorus) has double, rich yellow flowerheads; † to 1.5m (5ft).

**'Soleil d'Or'** (H. x multiflorus) has large, double yellow flowerheads. **'Triomphe de Gand'** (H. x multiflorus) bears large flowerheads with deep golden yellow ray-florets and quilled disc-florets; ↔ 1.2m (4ft).

**H. orgyalis** see *H. salicifolius*.

**H. pauciflorus**, syn. *H. rigidus*.

Vigorous, rhizomatous perennial with roughly hairy stems and coarsely hairy, broadly lance-shaped to narrowly ovate, entire or toothed, dark green leaves, to 25cm (10in) long. Flowerheads 8cm (3in) across, with yellow ray-florets and reddish purple disc-florets, are borne in



*Helianthus x multiflorus* 'Soleil d'Or'



*Helianthus x multiflorus* 'Triomphe de Gand'

late summer. † to 2m (6ft), ↔ 60cm (24in). W. to C. USA. \*\*\*

**H. rigidus** see *H. pauciflorus*.

**H. salicifolius**, syn. *H. orgyalis* (Willow-leaved sunflower). Rhizomatous, clump-forming perennial with linear to lance-shaped, slightly hairy, dark green leaves,

to 20cm (8in) long, arching outwards from stout stems. Flowerheads 5–7cm (2–3in) across, with golden yellow ray-florets and brown disc-florets, open in early and mid-autumn. † 2.5m (8ft), ↔ 90cm (36in). S. central USA. \*\*\*

**H. sparsifolius** see *H. atrorubens*.

## HELICHRYSUM

ASTERACEAE/COMPOSITAE

Genus of about 500 species of annuals, herbaceous or evergreen perennials, and evergreen shrubs and subshrubs, widely distributed throughout Europe, Asia, Africa, and particularly Australasia and South Africa, where they are usually found in dry, sunny sites. They have woolly or hairy stems and alternate leaves, sometimes opposite or arranged in basal rosettes, which are aromatic in some species. The flowerheads are daisy-like or shaving-brush-like, either produced singly or in corymbs, and "everlasting" when dried. Grow small, prostrate or cushion-forming helichrysums in a rock garden, scree bed, or alpine house; taller perennials and subshrubs are suitable for growing in a mixed or herbaceous border. In frost-prone regions, tender species, such as *H. petiolare*, are excellent in hanging baskets or containers; in warmer climates, cultivate as annuals in borders or beds.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in well-drained, poor to moderately fertile, neutral to alkaline soil in full sun. Low-growing alpines need gritty, sharply drained soil. Protect from excessive winter wet and cold, drying winds. Pruning group 10, in spring, for larger subshrubs and shrubs, including *H. italicum*, *H. splendidum*, and *H. stoechas*.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F), or in containers in a cold frame, in spring; sow seed of alpines in containers in an open frame as soon as ripe or in spring. Divide perennials in spring. Root heel or semi-ripe cuttings of shrubby species in summer and overwinter in frost-free conditions.



*Helichrysum petiolare*

• **PESTS AND DISEASES** Powdery mildew may be a problem.

**H. alveolatum** see *H. splendidum*.

**H. angustifolium** see *H. italicum*.

**H. arwaae**. Prostrate to low mound-forming, evergreen subshrub producing branched, woody stems and alternate, crowded, oblong to lance-shaped, silvery grey leaves, to 1cm (½in) long. Solitary, daisy-like white flowerheads, 1.5–3cm (½–1¼in) across, with incurving white bracts, are borne in summer. † 5cm (2in), ↔ to 30cm (12in). Yemen. \*\*

**H. bellidioides**. Mat-forming, evergreen perennial with white-hairy stems when young, later smooth and reddish brown. The obovate to narrowly obovate leaves, 5–10mm (¼–½in) long, are mid-green above and white-felted beneath. From late spring to summer, erect, leafy stems bear solitary, papery, daisy-like white flowerheads, 1.5–3cm (½–1¼in) across. † 15cm (6in) in flower, ↔ 60cm (24in). New Zealand. \*\*\* (borderline)

**H. bracteatum** see *Bracteantha bracteata*.

**H. coralloides** see *Ozothamnus coralloides*.

**H. italicum** ♀ syn. *H. angustifolium*. Bushy, evergreen subshrub with woolly stems and linear, aromatic, silver-grey to yellowish green leaves, to 3cm (1¼in) long. Dark yellow flowerheads, 2–4mm (⅛–⅙in) across, are borne in corymbs to 8cm (3in) across, from summer to autumn. † 60cm (24in), ↔ 1m (3ft). S. Europe. \*\* **subsp. serotinum**, syn. *H. serotinum* (Curry plant), is compact, with leaves to 4cm (1½in) long; the



*Helichrysum petiolare* 'Roundabout'

foliage is intensely aromatic; † 40cm (16in), ↔ 75cm (30in).

**H. lanatum** see *H. thianschanicum*.

**H. ledifolium** see *Ozothamnus ledifolius*.

**H. marginatum** of gardens see *H. milfordiae*.

**H. milfordiae**, syn. *H. marginatum* of gardens. Cushion-forming, evergreen perennial with rosettes of alternate, obovate to oblong, densely silvery hairy, mid-green leaves, to 1.5cm (½in) long. Solitary, "everlasting", daisy-like white flowerheads, 2.5–3cm (1–1¼in) across, with glossy, white, crimson-backed bracts, are borne in spring. † 5–10cm (2–4in) in flower, ↔ 15–30cm (6–12in). South Africa (KwaZulu/Natal), Lesotho, at 3,000m (10,000ft) and above. \*\* (borderline)

**H. milliganii**. Clump-forming, evergreen subshrub or herbaceous perennial with tufted, often woolly stems and ovate-oblong to narrowly spoon-shaped, fleshy, mid-green leaves, to 2.5cm (1in) long. In summer, white-downy stems bear solitary, papery flowerheads, 4cm (1½in) across, white inside and yellowish white or red on the reverse of the bracts. † 15–20cm (6–8in), ↔ 20cm (8in). Australia (Tasmania). \*\*

**H. orientale**. Subshrubby, bushy, evergreen perennial with white-woolly, leafy stems and oblong-spoon-shaped, white-woolly leaves, 2–6cm (¾–2½in) long, becoming narrower and shorter higher up the stems. Hemispherical, shiny, light yellow flowerheads, 7–10mm (¼–½in) across, are borne in terminal corymbs, to 8cm (3in) across, in mid-summer. † 20–30cm (8–12in), ↔ 30cm (12in). E. Mediterranean (including Greece and the Aegean islands). \*\*\*

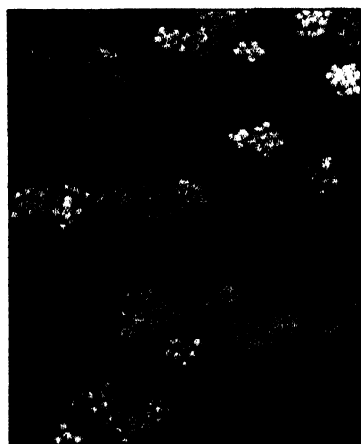
**H. petiolare** (H. x multiflorus) syn. *H. petiolatum* of gardens. Mound-forming or trailing, evergreen shrub with branching stems and broadly ovate to heart-shaped leaves, 3–5cm (1½in) long, densely grey-woolly above, lighter beneath. In late summer and autumn, bears hemispherical, off-white flowerheads, to 1.5cm (½in) across, in loose, terminal corymbs, 2.5–5cm (1–2in) across. † to 50cm (20in), ↔ 2m (6ft) or more.

South Africa. \*. **'Aurea'** see 'Limelight'. **'Limelight'**, syn. **'Aurea'**, has bright lime-green leaves. **'Roundabout'** (H. x multiflorus) is a miniature sport of 'Variegatum', and occasionally reverts; † 15cm (6in), ↔ 30cm (12in). **'Variegatum'** (H. x multiflorus) has grey leaves, variegated cream.

**H. petiolatum** of gardens see *H. petiolare*.



*Helichrysum petiolare* 'Variegatum'

*Helichrysum* 'Schweffellicht'

*H. rosmarinifolium* see *Ozothamnus rosmarinifolius*.

*H. 'Schweffellicht'* ■ syn. *H. 'Sulphur Light'*. Clump-forming herbaceous perennial with erect to spreading, white-woolly stems and narrow, lance-shaped, woolly, silvery white leaves, to 10cm (4in) long. Fluffy, hemispherical, sulphur-yellow flowerheads, 8–15mm (3/8–1/2in) across, becoming orange-yellow with age, are borne in tight, branched corymbs, to 5–8cm (2–3in) across, in late summer. †40cm (16in), ↔ 30cm (12in). \*\*\*

*H. selago* see *Ozothamnus selago*.

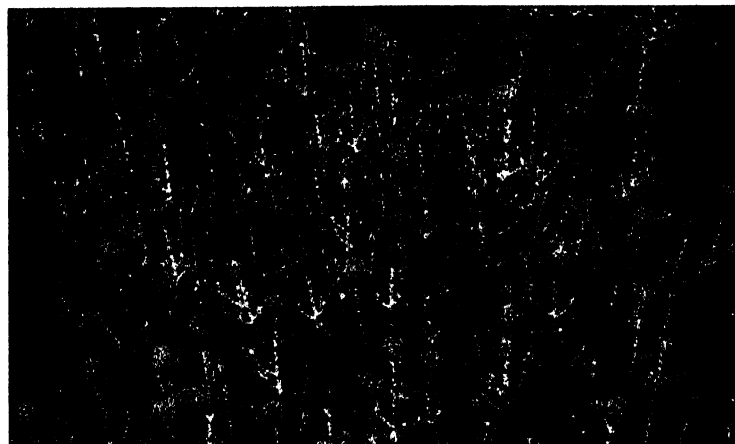
*H. serotinum* see *H. italicum* subsp. *serotinum*.

*H. sibthorpii* ■ syn. *H. virginicum*. Cushion-forming, evergreen perennial bearing densely white-woolly stems and alternate, oblong, strongly 3-veined, white-woolly, mid-green leaves, 1.5–6cm (1/2–2 1/2in) long. In summer, bears hemispherical yellow flowerheads, to 1.5cm (1/2in) across, with white bracts, singly or in corymbs of 2 or 3. † to 10cm (4in), ↔ 20cm (8in). N.E. Greece. \*\*

*H. siculum* see *H. stoechas* subsp. *barrelieri*.

*H. splendidum* ■ ♀ syn. *H. alveolatum*, *H. trilineatum*. Compact, bushy, evergreen shrub with white-woolly stems and linear-oblong, strongly 3-veined, silver-grey leaves, 2–4cm (3/4–1 1/2in) long. Ovoid-oblong, dark yellow flowerheads, 4–6mm (1/8–1/4in) across, open in hemispherical corymbs, 3cm (1 1/4in) across, from late summer to autumn. †↔ 1.2m (4ft). South Africa. \*\*\*

*H. stoechas*. Bushy, evergreen subshrub or woody-based, aromatic perennial

*Helichrysum splendidum*

producing branched or unbranched, white-woolly stems and alternate, linear to linear-spoon-shaped, white-woolly, grey-green leaves, 2–3cm (3/4–1 1/4in) long. In late spring, bears spherical to ovoid yellow flowerheads, 4–6mm (1/8–1/4in) across, in corymbs 3cm (1 1/4in) or more across. †20–50cm (8–20in), ↔ 1m (3ft). W. and S. Europe to Balkans. \*\*. subsp. *barrelieri*, syn. *H. siculum*, is shorter-growing, and has broadly linear, non-aromatic leaves, to 2cm (3/4in) long; it bears small clusters of ovoid yellow flowerheads in summer; †15–30cm (6–12in); Italy, Greece, Balkans, Turkey, Lebanon, N.W. North Africa. 'White Barn' has densely white-felted leaves, and bears sulphur-yellow flowerheads.

*H. 'Sulphur Light'* see *H. 'Schweffellicht'*.

*H. thianschanicum*, syn. *H. lanatum*. Mound-forming, woolly-hairy herbaceous perennial with erect stems, lance-shaped, silvery grey basal leaves, to 10cm (4in) long, and stalkless, linear stem leaves. Hemispherical to ovoid yellow flowerheads, to 1cm (1/2in) across, are borne in dense, lateral or terminal corymbs, to 8cm (3in) across, in early and midsummer. †↔ to 40cm (16in). C. Asia. \*\*\*. 'Goldkind', syn. 'Golden Baby', bears papery, golden yellow flowerheads with a lovage-like scent; †30cm (12in).

*H. thyrsoides* see *Ozothamnus thyrsoides*.

*H. trilineatum* see *H. splendidum*.

*H. virginicum* see *H. sibthorpii*.

warmer regions, use as specimen plants for borders or containers outdoors. All last well as cut flowers.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts pulverized pine bark, moss peat, and coarse sand or grit, in bright filtered to indirect light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in humus-rich, moist but well-drained, neutral to slightly acid soil, enriched with garden compost, in partial shade. Shelter from strong winds, which will damage foliage.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Divide rhizomes in spring.

• **PESTS AND DISEASES** Susceptible to red spider mites, mealybugs, and snails.

*Phytophthora* root rot and *Pythium* stem rot may also be a problem.

*H. acuminata*. Rhizomatous perennial with elliptic to narrowly elliptic or oblong, smooth, leathery, dark green leaf-blades, 15–70cm (6–28in) long. Erect inflorescences, 50–90cm (20–36in) long, each bear 2 ranks of 4–6 slender, clustered, red, orange, or yellow, green-tipped bracts. The red-, orange-, or yellow-stalked flowers have white to orange-yellow sepals with dark green-banded tips. †0.6–3m (2–10ft), ↔ indefinite. Brazil to S.E. Peru. ♀ (min. 15°C/59°F)

*H. angusta*. Rhizomatous perennial with elliptic or oblong, mid- to deep green leaf-blades, 25–90cm (10–36in) long, usually brown-woolly beneath.

Erect inflorescences, 70cm (28in) long, each bear 4–8 red or yellow bracts in 2 ranks, and flowers with white sepals. †60–120cm (24–48in), ↔ indefinite.

S.E. Brazil. ♀ (min. 15°C/59°F)

*H. aurantiaca* ■ Rhizomatous perennial with oblong or narrowly elliptic, dark green leaf-blades, 17–40cm (7–16in) long. Produces erect, dense inflorescences, to 20cm (8in) long, each with 3–5 broad, clustered, red or yellow, green-tipped bracts arranged in 2 ranks. Flowers have pale yellow to orange sepals, often with paler tips, becoming dark green with age. †0.6–2m (2–6ft), ↔ indefinite. S. Mexico to Costa Rica. ♀ (min. 15°C/59°F)

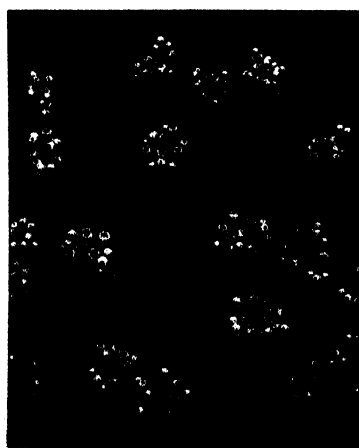
*H. bihai*, syn. *H. humilis*. Variable, rhizomatous perennial with oblong or oblong-oval, dark green leaf-blades, to 2m (6ft) long, with pale midribs. Erect inflorescences, to 1.1m (3 1/2ft) long, each have 3–15 broad red bracts in 2 ranks, with yellow keels and green margins. Flowers have green-tipped white sepals. †0.6–5m (2–15ft), ↔ indefinite. Central America, West Indies (Dominica to Grenada). ♀ (min. 15°C/59°F). 'Aurea' has inflorescences of 6–12 red-centred bracts with broad, golden yellow margins and green tips; flowers have green and white sepals; †3–6m (10–20ft). 'Chocolate Dancer' has inflorescences of 6–9 brown-red bracts, with gold-edged upper margins, and flowers with green and white sepals; †2–3m (6–10ft). 'Purple Throat' has maroon leaf-stalks, and inflorescences of 7–10 deep red bracts with purple bases and green upper margins; flowers have green sepals; †5–6m (15–20ft). 'Yellow Dancer' has inflorescences of 5–12 green-tipped yellow bracts and flowers with green and white sepals; †1.5–5m (5–15ft).

*H. caribaea* 'Chartreuse'. Rhizomatous perennial with oblong, glaucous, mid-green leaf-blades, 0.6–1.3m (2–4 1/2ft) long. Erect inflorescences, 20–40cm (8–16in) long, have 11 or 12 bright lime-green bracts, arranged in 2 ranks, with yellow bases; the flowers have green and white sepals. †4–6m (12–20ft), ↔ indefinite. ♀ (min. 15°C/59°F)

*H. humilis* see *H. bihai*.

*H. humilis* of gardens see *H. stricta* 'Dwarf Jamaican'.

*H. nutans*. Rhizomatous perennial producing oblong, dark green leaf-blades, 50–90cm (20–36in) long. Pendent inflorescences, 60–100cm (24–39in) long, each have 3–12 spirally

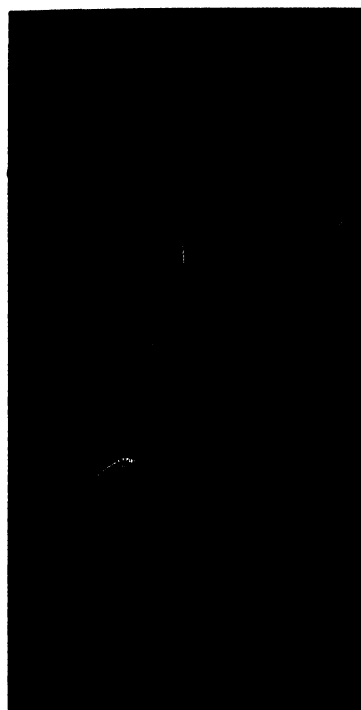
*Helichrysum sibthorpii*

## HELICONIA

HELICONIACEAE/MUSACEAE

Genus of about 100 species of evergreen perennials found in habitats ranging from tropical forest to open scrub in tropical and subtropical Central and South America, and the S.W. Pacific. They have short rhizomes and long-stalked, paddle- or spoon-shaped, mid- to dark green leaves, to 2m (6ft) long, similar to those of the closely related banana (*Musa*) and *Strelitzia*. From spring to summer, they produce large, exotic, erect or pendent flower spikes, made up of brilliantly coloured bracts, arranged spirally or in 2 opposite rows. The bracts enclose the true flowers, which have 3 petals and 3 showy sepals, often in contrasting colours. In frost-prone areas, grow in a warm greenhouse or conservatory; in

*Heliconia aurantiaca**Heliconia psittacorum*



*Heliconia schiedeana*

arranged or 2-ranked, orange-red bracts; flowers have yellow sepals. † 1–2m (3–6ft), ↔ indefinite. Costa Rica, Panama. ☼ (min. 15°C/59°F)

***H. psittacorum*** ☐ (Parrot's flower, Parrot's plantain). Variable, rhizomatous perennial with elliptic or oblong to linear, leathery, rich dark green leaf-blades, 10–50cm (4–20in) long, on red leaf-stalks. Bears erect inflorescences, 12–70cm (5–28in) long, of 2–7 slender, upcurved, orange-red bracts in 2 ranks; flowers have orange-red sepals with green-banded tips. † 0.6–2m (2–6ft), ↔ indefinite. Lesser Antilles to E. Brazil. ☼ (min. 15°C/59°F)

***H. rostrata***. Rhizomatous perennial producing ovate-oblong, mid-green leaf-blades, 60–120cm (24–48in) long. Pendent inflorescences, 30–60cm (12–24in) long, each have 4–35 red bracts, in 2 ranks, with yellow-green tips and green margins; the flowers have yellowish white sepals. † 1–6m (3–20ft), ↔ indefinite. Ecuador, Peru. ☼ (min. 15°C/59°F)

***H. schiedeana*** ☐ Upright, rhizomatous perennial with opposite, oblong, mid-green leaf-blades, to 1.5m (5ft) long. Produces erect, sparsely to densely hairy inflorescences, 30–70cm (12–28in) long, comprising 7–10 spirally arranged, slender red bracts, and flowers with yellow sepals. † 1–3m (3–10ft), ↔ 1m (3ft). S. Mexico. ☼ (min. 15°C/59°F)

***H. stricta***. Variable, rhizomatous perennial with maroon leaf-stalks bearing oblong, mid- to dark green leaf-blades, 40–150cm (16–66in) long. The upright inflorescences, 20–30cm (8–12in) long, each have 2 ranks of 3–10 red or orange, green-tipped bracts, with yellow upper margins and keels. The flowers have white-tipped green sepals. † 0.6–4m (2–12ft), ↔ indefinite. Venezuela, Surinam, Ecuador, Bolivia. ☼ (min. 15°C/59°F). 'Bucky' has inflorescences comprising 3–6 bright red bracts with narrow green margins; † 1–2m (3–6ft). 'Dorado Gold' produces inflorescences of 5 or 6 peach-

yellow bracts with small, elongated, central pink marks; † 1–2m (3–6ft). 'Dwarf Jamaican', syn. *H. humilis* of gardens, has inflorescences bearing 3–5 peach-red bracts with narrow green upper margins; † 30–100cm (1–3ft). 'Fire Bird' has leaves with maroon midribs and leaf-stalks, and produces inflorescences comprising 6 or 7 dark red bracts with narrow green margins; † 1–1.5m (3–5ft).

## HELICTOTRICHON

GRAMINEAE/POACEAE

Genus of about 50 species of tussock-forming, deciduous and evergreen, perennial grasses from rocky slopes, wasteland, or field margins in temperate Europe, W. Asia, and North America. The linear, mid- to light green, or grey-blue leaves are flat, ribbed, or folded, or have rolled margins. Oblong, flattened, glistening spikelets are borne in erect or nodding panicles. Use in a herbaceous or mixed border, or for gravel plantings, where they associate well with purple- or silver-leaved plants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, poor to moderately fertile, preferably alkaline soil in full sun. Remove dead leaves and old flowering stems in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in spring, or divide in spring.

• **PESTS AND DISEASES** Rust may be a problem.

***H. sempervirens*** ☐ ♀ syn. *Avena candida*, *A. sempervirens* (Blue oat grass). Densely tufted, evergreen, perennial grass, forming a hemispherical mound of flat or tightly rolled, linear, grey-blue leaves, to 23cm (9in) long. In early and midsummer, stiff, upright stems bear glistening, straw-coloured, purple-marked spikelets in open panicles, to 18cm (7in) long, nodding at the tips. † to 1.4m (4½ft), ↔ 60cm (24in). C. and S.W. Europe. \* \* \*



*Helictotrichon sempervirens*

## HELIOCEREUS

CACTACEAE

Genus, closely related to *Disocactus*, of about 6 species of perennial, epiphytic or terrestrial, free-flowering cacti found in a range of shaded habitats in the lowlands of Mexico, Guatemala, and El Salvador. They produce succulent, sometimes spreading, angular-ribbed stems, which bear spiny, white or pale yellow areoles, later becoming brown. Long-lasting, large, trumpet-shaped, colourful flowers open in early summer. Some species have been cross-pollinated with *Epiphyllum* to produce many outstanding cultivars. In frost-prone regions, grow as houseplants or in a warm greenhouse. In humid, tropical gardens, use in a shady border, or in containers on a patio.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in epiphytic cactus compost in bright filtered light, shaded from hot sun; provide high humidity. During the growing season, water freely and apply a half-strength, balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in poor to moderately fertile, sharply drained, acid soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–21°C (66–70°F) in spring. Root cuttings of stem segments in spring or summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

***H. cinnabarinus***. Trailing cactus with 3-ribbed, toothed, dark green stems, 3- or 4-angled above, 5- or 6-angled beneath, bearing short, bristly, white or yellowish brown spines. Trumpet-shaped, glossy red flowers, 12–16cm (5–6in) long, with greenish yellow outer segments, often yellow towards the bases, are produced in early summer. † 60cm (24in), ↔ 45cm (18in). Mexico, Guatemala, El Salvador. ☼ (min. 13°C/55°F)

***H. speciosus***. Semi-pendent to erect cactus producing cylindrical, unevenly toothed, mid-green stems. The stems have 3–5 prominent, acute ribs, and areoles and spines that are yellow at first, later becoming pale brown. Trumpet-shaped red flowers, 11–17cm (4½–7in) long, with purple-tinged sepals, are borne in early summer. † to 45cm (18in). Mexico. ☼ (min. 13°C/55°F).

**var. amecameensis** ☐ produces pure



*Heliocereus speciosus* var. *amecameensis*

white flowers. **var. superbus** has 3- to 7-ribbed stems with yellowish brown spines that often fall quickly; the flowers are rich, glossy, purplish red, with red outer segments.

## HELIOPHILA

BRASSICACEAE/CRUCIFERAE

Genus of about 75 species of erect, spreading, or occasionally climbing annuals, biennials, perennials, and subshrubs found in a range of habitats, including rocky sites, sandy soils, and coastal areas, in South Africa. The leaves are entire, lobed, or finely divided. Heliophilas are grown for their loose racemes of cross-shaped, 4-petalled, often scented flowers in white, blue, or pink, borne from spring to summer. For short-lived summer colour, grow in an annual or mixed border; alternatively, use in a cool greenhouse or conservatory to flower in late winter and spring. The long, pendent, chain-like seedpods of *H. leptophylla* are useful for dried flower arrangements.

• **HARDINESS** Frost hardy.

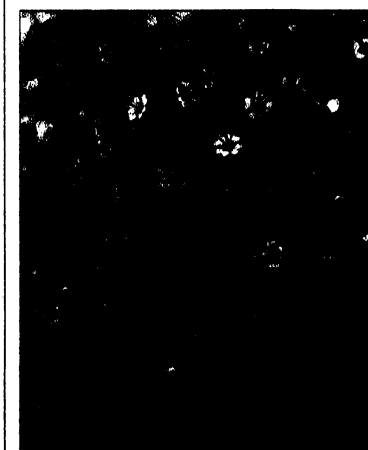
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. Water plants moderately at all times. Outdoors, grow in fertile, well-drained soil in full sun, providing shelter from strong winds.

• **PROPAGATION** Sow seed *in situ* in spring or, for winter-flowering container plants, at 16–19°C (61–66°F) in early spring or in autumn. Sow seed in succession to obtain a long display of flowers.

• **PESTS AND DISEASES** Trouble free.

***H. coronopifolia*** ☐ syn. *H. longifolia*. Slender-stemmed, many-branched, occasionally hairy annual producing simple or pinnate, mid-green leaves, 6–15cm (2½–6in) long, with linear leaflets. From spring to summer, bears pale to bright blue or blue-violet, occasionally pink or white, sometimes purple-spotted flowers, to 1cm (½in) across, with green-yellow centres. † 10cm (4in), ↔ to 30cm (12in). South Africa (Western Cape). \* \*. 'Atlantis' produces bright blue flowers with white eyes, which are followed by attractive seed pods in autumn.

***H. leptophylla***. Slender-stemmed, basally branching annual with pinnate, blue-green leaves, 2.5–5cm (1–2in) long, composed of narrow leaflets. Slightly pendent spikes of clear blue



*Heliophila coronopifolia*

## HELIOPHILA

flowers, to 1cm (½in) across, with a yellow base to each petal, are produced from spring to summer. ‡45cm (18in), ↔23cm (9in). South Africa (Western Cape). \*\*

*H. longifolia* see *H. coronopifolia*.

## HELIOPSIS

Ox eye

ASTERACEAE/COMPOSITAE

Genus of 12 or 13 species of perennials found in dry prairies and open woodland in North America. They have stiff, branching stems with opposite, ovate to lance-shaped, toothed, 3-veined, mid- or dark green leaves. The solitary, terminal, sunflower-like flowerheads are usually yellow and to 8cm (3in) across. Unlike the ray-florets of sunflowers (*Helianthus*), those of *Helopsis* are fertile. Use in a herbaceous or mixed border, or in informal plantings. Ox eyes also provide long-lasting cut flowers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun. Divide every 2–3 years to maintain vigour. Taller species and cultivars may need support.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring or autumn. Root basal cuttings in spring.

• **PESTS AND DISEASES** Young shoots are prone to slug damage.

*H. helianthoides*. Clump-forming perennial with ovate to lance-shaped, toothed, almost hairless, 3-veined, mid-green leaves, to 15cm (6in) long. Numerous long-stalked, single to double flowerheads, 4–8cm (1½–3in) across, with yellow ray-florets and disc-florets, are borne on branched stems from mid-summer to early autumn. ‡1–1.8m (3–6ft), ↔60cm (24in). E. North America (Ontario to Florida and Missouri). \*\*\*. **'Ballerina'** has semi-double flowerheads with golden yellow ray-florets and slightly darker disc-florets; ‡1m (3ft). **'Gigantea'** has large, semi-double, golden yellow flowerheads; ‡to 1.2m (4ft). **'Incomparabilis'** has double, zinnia-like, orange-yellow flowerheads, to 8cm (3in) across; ‡90cm (36in). **'Mars'** has large, single, yellow-orange flowerheads; ‡to 1.5m (5ft). **'Patula'** has large, flattish, semi-double, golden yellow flowerheads, with 3 rows of frilled or toothed ray-florets; ‡to 1.2m (4ft). **subsp. scabra** has coarsely



*Helopsis helianthoides* 'Incomparabilis'



*Helopsis helianthoides* subsp. *scabra* 'Light of Loddon'

hairy leaves, and bears only 1–4 yellow flowerheads; ‡to 1m (3ft); USA (New Jersey to Arkansas), Mexico. **subsp. scabra** **'Goldgefieder'** ♀ syn. **subsp. scabra** **'Golden Plume'** bears double flowerheads with golden yellow ray-florets and green disc-florets; ‡to 1.4m (4½ft). **subsp. scabra** **'Goldgrünherz'**, syn. **subsp. scabra** **'Goldgreenheart'**, has double, lemon-yellow flowerheads, shaded green in the centres until fully open; ‡90cm (36in). **subsp. scabra** **'Light of Loddon'** has dark green leaves, to 20cm (8in) long, and bears semi-double, bright yellow flowerheads with raised centres; ‡to 1.1m (3½ft); **subsp. scabra** **'Sommersonne'** has single, occasionally semi-double flowerheads with deep golden yellow ray-florets, sometimes flushed orange-yellow, and brownish yellow disc-florets; ‡90cm (36in). \*\*\*

▷ *Heliosperma alpestris* see *Silene alpestris*

▷ *Heliotrope* see *Heliotropium*, *H. arborescens*

Winter see *Petasites fragrans*



*Helopsis helianthoides* subsp. *scabra* 'Sommersonne'

## HELIOTROPIUM

Heliotrope

BORAGINACEAE

Genus of about 250 species of erect, bushy annuals, perennials, subshrubs, and shrubs from dry, open, and sandy habitats, including scrub, in S.W. and E. USA, Mexico, South America, Hawaii, Pacific islands, and the Canary Islands. They have simple, mostly entire, roughly hairy, and usually alternate leaves. Heliotropes are cultivated mainly for their tiny, sweetly scented, tubular flowers, which are produced in summer in clusters of coiled cymes, each forming a slightly domed or flattened flowerhead. They are attractive to butterflies. Contact with the foliage may irritate both skin and eyes. In frost-prone climates, grow in a cool or temperate greenhouse, or use as summer bedding or in containers or window-boxes. In warmer regions, grow heliotropes at the front of a border or in containers outdoors.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light with shade from hot sun; provide moderate humidity. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in any fertile, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root stem-tip cuttings, or semi-ripe cuttings of named cultivars, in summer.

• **PESTS AND DISEASES** Whiteflies may be a problem under glass.

*H. arborescens* has syn. *H. peruvianum* (Cherry pie, Heliotrope). Bushy, short-lived shrub, often grown as an annual, with broadly oval to lance-shaped, wrinkled, mid- to dark green, sometimes purple-tinged leaves, to 8cm (3in) long. Deep violet-blue or lavender-blue



*Heliotropium arborescens*

flowers are borne in dense flowerheads, 8–10cm (3–4in) across, in summer.

‡1.2m (4ft) in open ground, to 45cm (18in) in containers, ↔30–45cm (12–18in). Peru. \*. Numerous hybrids and cultivars of *H. arborescens* are used for summer bedding: **'Chatsworth'** ♀ is vigorous and strongly scented, bearing bright, deep purple flowerheads. **'Iowa'** is compact, producing deep green, blue-tinged leaves and dark purple flowerheads. **'Lord Roberts'** is compact, bearing light violet-blue flowerheads.

**'Marine'** is compact, with deep violet-blue flowerheads, to 15cm (6in) across; ‡to 45cm (18in). **'Mini Marine'** is dwarf, and has deep violet-blue flowerheads; ‡to 40cm (16in). **'Princess Marina'** ♀ is compact, bearing deep violet-blue, highly scented flowerheads; ‡to 30cm (12in). **'Regal Dwarf'** is very compact, and has large, fragrant, dark blue flowerheads. **'White Lady'** is compact, producing white flowerheads tinged pink in bud; ‡to 30cm (12in).

*H. peruvianum* see *H. arborescens*.

▷ *Helipterium humboldtianum* see *Pteropogon humboldtianus*

▷ *Helipterium manglesii* see *Rhodanthe manglesii*

▷ *Helipterium roseum* see *Rhodanthe chlorocephala* subsp. *rosea*

▷ *Hellebore* see *Helleborus*

**Corsican** see *Helleborus argutifolius*

**False** see *Veratrum album*

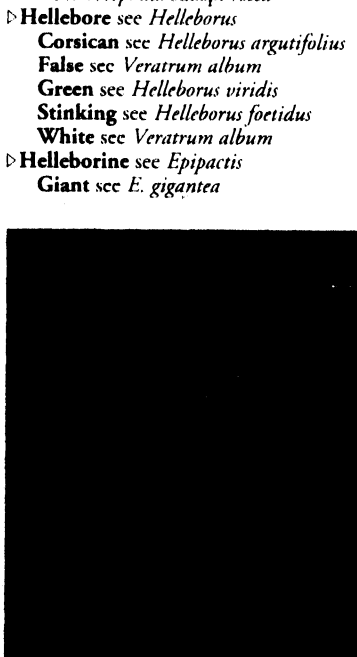
**Green** see *Helleborus viridis*

**Stinking** see *Helleborus foetidus*

**White** see *Veratrum album*

▷ *Helleborine* see *Epipactis*

**Giant** see *E. gigantea*



*Heliotropium arborescens* 'Marine'



## HELLEBORUS

Hellebore

RANUNCULACEAE

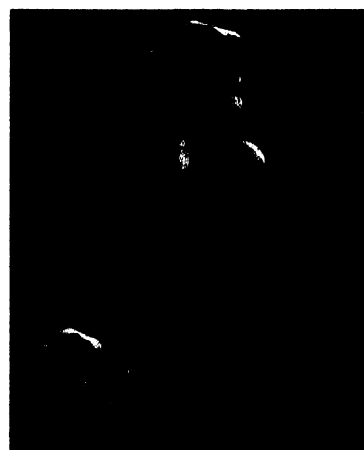
Genus of 15 species of perennials found in scrub, woodland, and grassy and rocky sites, usually on chalk or limestone soils, from C., E., and S. Europe to W. Asia. They are rhizomatous, and either clump-forming with deciduous, basal leaves or almost shrub-like, with leafy, biennial stems. The leaves are lobed or fully divided into leaflets, and often pedate (the lateral leaflets or lobes further subdivided or lobed); they are generally toothed, leathery, and light to dark green. The loose, usually few-flowered cymes, to 45cm (18in) tall in most species, have leafy bracts and are borne from late winter to mid-spring. The flowers are white, cream, pink, purple, or green, sometimes spotted, and are pendent or outward-facing, saucer- to cup-shaped, or tubular-bell-shaped. Each has 5 tepals, numerous stamens, and 2–10 free carpels. Hellebores are effective when grown in groups in a mixed or shrub border, or naturalized in a woodland garden. Smaller species are ideal for a rock garden. All parts may cause severe discomfort if ingested, and the sap may irritate skin on contact.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Hellebores tolerate a range of moist, fertile, humus-rich soils, but have varying "ideal" cultivation requirements. For ease of reference, these have been grouped as follows:
  1. Neutral to alkaline soil in dappled shade.
  2. Heavy, neutral to alkaline soil in dappled shade.
  3. Neutral to alkaline soil in full sun or dappled shade.
  4. Any soil, but preferably acid, in partial shade.

Incorporate leaf mould or organic matter at planting, and mulch annually in autumn. For all groups, avoid dry or waterlogged soils, and provide shelter from strong, cold winds.

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; named cultivars do not come true from seed. Divide all species and named cultivars after flowering, in early spring or late summer. *H. foetidus* and *H. argutifolius* are best raised from seed as they are not suitable for division.

- **PESTS AND DISEASES** Susceptible to snails, aphids, leaf spot, and black rot.

*Helleborus argutifolius*

*H. argutifolius* [♂] syn. *H. corsicus*, *H. lividus* subsp. *corsicus* (Corsican hellebore). Hairless perennial producing overwintering, leafy, biennial flowering stems and leathery, dark green leaves, 8–23cm (3–9in) long, comprising 3 elliptic to broadly elliptic, spiny-toothed leaflets, paler green beneath. Pendent, shallow bowl-shaped, pale green flowers, 2.5–5cm (1–2in) across, open in many-flowered, terminal cymes in late winter and early spring. Cultivation group 1, 2, or 3. ↑ to 1.2m (4ft), ↔ 90cm (36in). Corsica, Sardinia. \*\*\*

*H. atrorubens*. Hairless perennial with deciduous, pedate, dark green, basal leaves, to 25cm (10in) long, composed of 7–11 leaflets; the 2 lateral leaflets each have 3–5 narrowly elliptic, toothed lobes. Stems and leaves may be suffused purple. Cymes of 2 or 3 outward-facing, saucer-shaped, deep purple flowers, 4–5cm (1½–2in) across, green-shaded within, open before the leaves, from late winter to spring. Cultivation group 1. ↑ 30cm (12in), ↔ 45cm (18in). N.W. Balkans. \*\*\*

*H. atrorubens* of gardens see *H. orientalis* subsp. *abchasicus*.

*H. x ballardiae* (*H. lividus* x *H. niger*). Clump-forming perennial with short, overwintering, leafy, biennial stems. The pedate, deep bluish green leaves, to 25cm (10in) long, each have 3–5 elliptic to inversely lance-shaped-oblong, toothed leaflets, boldly veined silvery cream. From midwinter to early spring, bears cymes of 3 or 4 saucer-shaped white flowers, 5–9cm (2–3½in) across, flushed pink inside, becoming purplish pink with age. Cultivation group 1. ↑ to 35cm (14in), ↔ 30cm (12in). Garden origin. \*\*\*. 'December Dawn' [♂] has saucer-shaped white flowers, 6–8cm (2½–3in) across, flushed pinkish purple, maturing to a dull metallic purple.

*H. corsicus* see *H. argutifolius*.

*H. cyclophyllus* [♂] Deciduous perennial with pedate, toothed, pale green, basal leaves, to 30cm (12in) long, hairy beneath with bold veins; each central leaflet is divided or entire, the 2 lateral leaflets deeply 5- to 7-lobed. From midwinter to early spring, bears cymes of up to 7 outward-facing or pendent, saucer-shaped, scented, yellowish green flowers, 5–7cm (2–3in) across. Cultivation group 1. ↑ to 40cm (16in), ↔ 45cm (18in). S. Balkans. \*\*\*

*H. foetidus* [♂] (Bear's foot, Dungwort, Stinking hellebore, Stinkwort). Erect perennial with hairless, leafy, biennial stems. The pedate, dark green leaves, 23cm (9in) long, smell unpleasant when crushed, and each has 7–10 narrowly lance-shaped or elliptic, coarsely toothed or nearly entire lobes. From midwinter to mid-spring, bears many-flowered cymes of pendent, bell-shaped green flowers, 1.5–2.5cm (½–1in) across, usually purple-margined and sometimes pleasantly scented, above large, pale green bracts. Cultivation group 1, 2, or 3. ↑ to 80cm (32in), ↔ 45cm (18in). W. and C. Europe. \*\*\*. 'Wester Flisk' has reddish green stems, leaf-stalks, and flower-stalks, the colour diffusing into the leaf bases; the leaves are dark grey-green. Comes true from seed if isolated from other variants of the species.

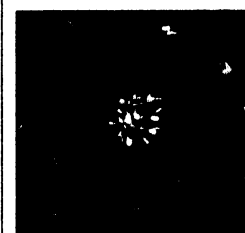
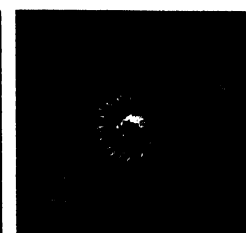
*H. x hybridus*. Group of variable, clump-forming, perennial hybrids of *H. orientalis* and other species. The

*Helleborus x ballardiae* 'December Dawn'

deciduous or overwintering, pedate, leathery, mid- to dark green leaves, to 40cm (16in) long, each have 7–11 elliptic to inversely lance-shaped, toothed lobes or leaflets. From midwinter to mid-spring, stout stems bear loose cymes of up to 4 pendent to outward-facing, saucer-shaped flowers, 5–8cm (2–3in) across, in a range of colours including white, purple, yellow, green, and pink. Cultivation group 2, but tolerant of all but very poorly drained or dry soils. ↑ to 45cm (18in). Garden origin. \*\*\*. 'Citron' [♂] produces bowl-shaped, primrose-yellow flowers. 'Peggy Ballard' [♂] bears large flowers, to 8cm (3in) across, deep reddish pink outside, dusky purple-pink with darker veins inside. 'Philip Ballard' has dark blue-black flowers. 'Pluto' [♂] bears small flowers that are purple outside, green-shaded purple within, with purple nectaries. 'Yellow Button' produces small, deep yellow flowers that are initially cup-shaped, becoming saucer-shaped.

*H. lividus* [♂] Erect or spreading perennial with overwintering, hairless, biennial stems. The leathery, glossy, dark green or bluish green leaves, to 23cm (9in) long, each have 3 elliptic or oblong-elliptic leaflets, entire or with a few shallow teeth; they have creamy silver veins, and pinkish purple leaf-stalks and main veins beneath. From midwinter to early spring, long, purplish green stalks bear cymes of up to 10 bowl-shaped, creamy green flowers, 3–5cm (1¼–2in) across, suffused pinkish purple. Cultivation group 1. In frost-prone areas, best grown in a cold greenhouse. ↑ to 45cm (18in), ↔ 30cm (12in). Majorca. \*\*\*. subsp. *corsicus* see *H. argutifolius*.

*H. multifidus* subsp. *hercegovinus* [♂] Erect, clump-forming perennial producing deciduous, pedate, mid-green, basal leaves, to 23cm (9in) long, each with 45–70 linear, toothed, prominently veined segments, hairy beneath, often brown-tinted when young. Cymes of 3–8 pendent, conical

*Helleborus cyclophyllus**Helleborus foetidus**Helleborus x hybridus* 'Citron'*Helleborus x hybridus* 'Peggy Ballard'*Helleborus x hybridus* 'Pluto'*Helleborus multifidus* subsp. *hercegovinus*

H

*Helleborus niger* 'Potter's Wheel'

to cup-shaped green flowers, 4–5cm (1½–2in) across, are borne in late winter and early spring. Cultivation group 1 or 3. ‡ to 30cm (12in), ↔ 45cm (18in). Bosnia & Herzegovina (Adriatic coastal mountains). \*\*\*

**H. niger** [♀] (Christmas rose). Clump-forming, hairless perennial with overwintering, pedate, leathery, dark green, basal leaves, 5–20cm (2–8in) long, comprising 7–9 oblong to inversely lance-shaped leaflets, toothed towards the apex. From early winter to early spring, stout, purple-marked stems bear shallowly saucer-shaped flowers, 4.5–8cm (1¾–3in) across, singly, or occasionally in cymes of 2 or 3 blooms; the flowers are white, sometimes strongly pink-flushed, with greenish white centres, ageing to pinkish white. Cultivation group 2. ‡ to 30cm (12in), ↔ 45cm (18in). Germany, Austria, Switzerland, Italy, Slovenia. \*\*\*

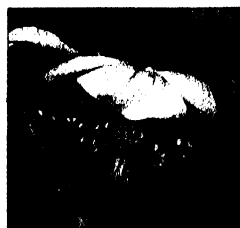
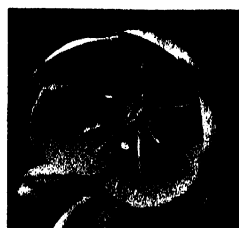
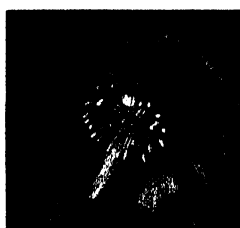
**subsp. macranthus** has spiny-toothed, bluish or grey-green leaves with broadly lance-shaped lobes, and white flowers,

8–11cm (3–4½in) across; Italy, Slovenia. **'Potter's Wheel'** [♂] has large, bowl-shaped white flowers with green eyes.

**H. x nigercors** ♀ (*H. argutifolius* x *H. niger*). Clump-forming perennial with short, overwintering, leafy, biennial stems. Variable, pedate, mid-green basal and stem leaves, 10–30cm (4–12in) long, have 3–5 coarsely toothed lobes. From midwinter to early spring, short stems bear clustered cymes of numerous flattish, white, sometimes pink-flushed flowers, 7–10cm (3–4in) across.

Cultivation group 1. ‡ 30cm (12in), ↔ 90cm (36in). Garden origin. \*\*\* **'Alabaster'** is very vigorous, and bears creamy white flowers, 6–7cm (2½–3in) across, with green shading.

**H. odorus**. Clump-forming perennial with overwintering, pedate, leathery, deep green, basal leaves, 40cm (16in) long, hairy beneath. Each central leaflet is entire; the lateral leaflets are divided into 3–5 elliptic to inversely lance-shaped, toothed lobes. Cymes of 3–5 saucer-shaped, outward-facing, fragrant

*Helleborus niger**Helleborus purpurascens**Helleborus x sternii**Helleborus x sternii* 'Boughton Beauty'*Helleborus torquatus* 'Dido'*Helleborus viridis**Helleborus orientalis* subsp. *guttatus*

green flowers, 5–7cm (2–3in) across, open from midwinter to early spring. Cultivation group 1 or 3. ‡↔ 30–50cm (12–20in). S. Hungary, N. Balkans (including Romania). \*\*\*

**H. orientalis** (Lenten rose). Hairless or slightly hairy perennial producing overwintering, pedate, leathery, deep green, basal leaves, to 40cm (16in) long, each with 7–9 elliptic or inversely lance-shaped leaflets. From midwinter to mid-spring, stout, usually branched stems bear pendent or almost outward-facing, saucer-shaped, white or greenish cream flowers, 5–7cm (2–3in) across, becoming pinker with age. Cultivation group 2, but tolerant of most garden conditions. ‡↔ to 45cm (18in). N.E. Greece, N. Turkey, C. and W. Caucasus. \*\*\*

**subsp. abchasicus**, syn. *H. atrorubens* of gardens, has pale green flowers, deeply tinted reddish purple outside, sometimes almost masking the green, and sometimes with deeper purple spots. Reliably early-flowering; W. Caucasus.

**subsp. guttatus** [♂] has creamy white flowers, variably spotted maroon within, with green centres; W. Caucasus.

**H. purpurascens** [♂] Clump-forming perennial producing deciduous, leathery, mid-green, basal leaves, to 27cm (11in) long, hairy beneath, usually comprising 5 leaflets, each with 2–6 lance-shaped, toothed lobes. Cymes of 2–4 pendent, cup-shaped flowers, 4–7cm (1½–3in) across, are borne before the leaves, from midwinter to early or mid-spring. The flowers are purplish or slate grey, often pink- or purple-flushed, light green within. Cultivation group 3 or 4. ‡ 5–30cm (2–12in), ↔ 30cm (12in). S.E. Poland, W. Ukraine, Slovakia, C. and N. Hungary, Romania. \*\*\*

**H. x sternii** [♂] (*H. argutifolius* x *H. lividus*). Clump-forming hybrid perennial, sometimes resembling one parent more than the other, with overwintering, leafy, biennial stems. Entire to spiny leaves, 10–28cm (4–11in) long, have 3 broadly elliptic leaflets or lobes, creamy veins, and pinkish purple leaf-stalks and main veins. Creamy green flowers, 2.5–5cm (1–2in) across, suffused pinkish purple, are borne in many-flowered cymes from late winter to mid-spring. Cultivation group 3. ‡ 30–35cm (12–14in), ↔ 30cm (12in). Garden origin. \*\*\* (borderline).

**'Blackthorn'** ♀ syn. Blackthorn Group, has purple stems, and boldly veined, greyish green leaves. Produces purplish or pink-stained green flowers; \*\*\*.

**'Boughton Beauty'** [♂] has purple-pink stems and veined, mid-green leaves. The flowers are pinkish purple outside, greener within; ‡ 50–60cm (20–24in); \*\*

**H. torquatus**. Very variable, clump-forming perennial producing pedate, deciduous, mid-green leaves, to 45cm (18in) long, each with 10–30 tapered, lance-shaped, toothed lobes, hairy beneath. Outward-facing to pendent, saucer-shaped, violet-purple flowers, often green within, with dark veins, are borne before the leaves, from midwinter to early spring; they are 3–6cm (1¼–2½in) across, and borne singly or in cymes of 2–5 (occasionally up to 7) flowers. Cultivation group 2 or 3. ‡ 20–40cm (8–16in), ↔ 30cm (12in).

Montenegro, Bosnia & Herzegovina, W. Serbia, Croatia. **'Dido'** [♂] produces double flowers, 4–5cm (1½–2in) across, suffused brown or purple-brown on the outsides, green within, with green margins; ‡ 25–30cm (10–12in). \*\*\*

**H. viridis** [♂] (Green hellebore). Clump-forming perennial with deciduous, pedate, slightly hairy or hairless, dark green, basal leaves, to 30cm (12in) long, each with 7–13 narrowly oblong to lance-shaped or elliptic, toothed lobes. In late winter and early spring, bears cymes of 2–4 saucer-shaped, pendent green flowers, 3–5cm (1¼–2in) across. Cultivation group 2. ‡ 20–40cm (8–16in). ↔ 45cm (18in). Spain, UK to Austria, Germany. \*\*\*

▷ **Helmet flower** see *Scutellaria*, *Sinningia cardinalis*

## HELONIAS

LILIACEAE/MELANTHIACEAE

Genus of one species of evergreen, rhizomatous perennial found in bogs and swampland in the USA. It has rosettes of strap-shaped leaves, and is grown for its dense racemes of many fragrant, star-shaped, pinkish purple flowers, borne in spring. Ideal for a bog garden or for growing beside a pond or stream. May also be grown in a cold greenhouse for early flowering.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist, preferably acid soil in sun or dappled shade.

• **PROPAGATION** Sow seed in containers in an open frame in autumn, or divide in spring.

• **PESTS AND DISEASES** Trouble free.

**H. bullata** (Swamp pink). Clump-forming, rhizomatous perennial with basal rosettes of strap-shaped, glossy, bright green leaves, 15–45cm (6–18in) long. In spring, 25–30 tiny, fragrant, 6-lobed, pinkish purple flowers are borne in dense, terminal, conical racemes, 3–10cm (1¼–4in) long, on erect stems above the leaves. ‡35–45cm (14–18in), ↔30cm (12in). USA (New York to North Carolina). \*\*\*

## HELONIOPSIS

LILIACEAE/MELANTHIACEAE

Genus of 4 species of rhizomatous, evergreen, rosette-forming perennials found in scrub, woodland, and meadows in the mountains of Japan, Korea, Taiwan, and Sakhalin, Russia. They have oblong or lance-shaped, pale to mid-green leaves. From late spring to summer, erect stems bear one-sided racemes of nodding, funnel-shaped flowers, each with 6 spreading tepals. Grow in a shady rock garden or woodland garden; best suited to areas with cool, damp summers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, neutral to slightly acid, moist but well-drained soil in partial shade. Provide shelter from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring, or divide after flowering in spring.
- **PESTS AND DISEASES** Young growth is prone to slug and snail damage.

**H. breviscapa** see *H. orientalis* var. *breviscapa*.

**H. grandiflora** see *H. orientalis* var. *grandiflora*.

**H. orientalis** ☐ Rosetted perennial with broadly lance-shaped, leathery, pale green leaves, 7–15cm (3–6in) long. In late spring and early summer, dark red stems bear dense, umbel-like racemes of 3–10 nodding, narrowly funnel-shaped, rose-pink flowers, 1.5cm (½in) across, with protruding styles and stamens. The stems usually elongate after flowering. ‡15–20cm (6–8in). Japan, Korea, Russia (Sakhalin). \*\*\*. var.

**breviscapa**, syn. *H. breviscapa*, *H. grandiflora*, has sharp-pointed, leathery, mid-green leaves, 8–10cm (3–4in) long, shorter flower stems, and smaller, but more widely funnel-shaped, white or very pale pink flowers.

▷ *Helxine* see *Soleirolia*

**H. soleirolii** see *S. soleirolii*



*Heloniopsis orientalis*

## HEMEROCALLIS

Daylily

HEMEROCALLIDACEAE/LILIACEAE

Genus of about 13–15 species of evergreen, semi-evergreen, and herbaceous perennials from which over 30,000 named cultivars have been raised. Daylilies are found at forest margins, in mountainous areas, marshy river valleys, and meadowland in China, Korea, and Japan. They are mostly clump-forming, and occasionally rhizomatous, with arching, strap-shaped, dark green leaves, usually 75–120cm (30–48in) long, but often only 23–35cm (9–14in) long in dwarf or compact species and cultivars. Flowers, in a variety of forms (see panel right), are borne on erect, sometimes branching scapes over a long period, mainly from late spring to late summer. Many daylilies are remountant, flowering repeatedly during the season. The flowers range in colour from almost white through yellow and orange to dark purple and deepest red-black. Most flowers last for only one day; in nocturnal daylilies the flowers open in late afternoon and last throughout the night. The flowers of extended-blooming daylilies remain open for at least 16 hours.

Grow daylilies in a mixed or herbaceous border: some are effective planted in drifts in a wild garden. Dwarf daylilies are ideal for a small garden or for containers.

- **HARDINESS** Fully hardy except for a few evergreen daylilies that are frost hardy only, and may be weakened and killed by alternating frost and thaw.
- **CULTIVATION** Grow in fertile, moist but well-drained soil; all those described here prefer full sun, unless otherwise stated. Mulch in late autumn or spring. From spring until buds develop, water freely and apply a balanced liquid fertilizer every 2–3 weeks. Dry conditions and excessive shade will reduce flowering; some red- and purple-flowered cultivars are intolerant of heavy rainfall and very hot sun. Divide every 2 or 3 years to maintain vigour. Plant evergreen species and cultivars in spring rather than autumn.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring; seed from hybrids and cultivars do not come true. Divide hardy daylilies in spring or autumn; divide all evergreen daylilies in spring.

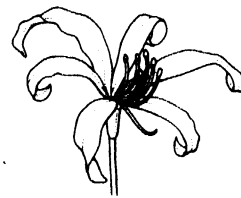
• **PESTS AND DISEASES** Susceptible to rust, hemerocallis gall midge, aphids, red spider mites, and thrips. Slugs and snails may damage young leaves. Crown rot is usually a problem only in high humidity and temperatures over 32°C (90°F). In climates with alternating winter frosts and thaws, bacterial leaf and stem rot (spring sickness) may be a problem.

**H. 'Amadeus'**. Vigorous, semi-evergreen perennial with sturdy scapes bearing remountant, circular, rich scarlet flowers, 14cm (5½in) across, with thick tepals and yellow throats, in early and midsummer. ‡60cm (24in), ↔1m (3ft). \*\*\*

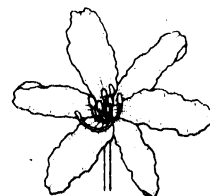
**H. 'American Revolution'**. Free-flowering, evergreen perennial with narrow leaves and slender scapes. In

## HEMEROCALLIS FLOWER FORMS

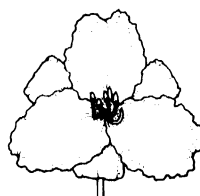
Daylilies produce shallowly to deeply trumpet-shaped flowers in a variety of forms. The species and older cultivars bear flowers with tapered tepals, while modern hybrids and newer cultivars usually have flowers with thicker, rounded, ruffled-margined, clearer-coloured tepals. The flowers may be **circular**, with mostly rounded, flat or sometimes recurved, ruffled-margined tepals; **star-shaped**, with tapered or sometimes rounded, flat or ruffled-margined tepals; **spider-shaped**, with mostly narrow, tapered tepals; **triangular**, with triangular to rounded, flat or ruffled-margined tepals; or **double**, with rounded or tapered, flat or ruffled-margined tepals. Most daylilies have single flowers, but some hybrids and cultivars bear semi- to fully double flowers; hot weather, in particular, may cause some daylilies to bear flowers with extra petals and stamens.



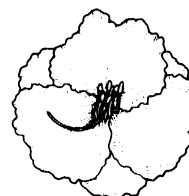
SPIDER-SHAPED



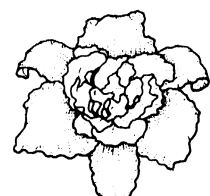
STAR-SHAPED



TRIANGULAR



CIRCULAR



DOUBLE

early and midsummer, black-red buds open to remountant, star-shaped, velvety black to deep red flowers, 10cm (4in) across, with recurved tepals and green throats. ‡70cm (28in), ↔60cm (24in). \*\*\*

**H. 'Ann Kelley'**. Extended-blooming, free-flowering, semi-evergreen perennial with sturdy, branched scapes. In midsummer, bears upward-facing, circular, deep rose-pink flowers, 14cm (5½in) across, with lighter pink midribs and black anthers. ‡65cm (26in), ↔1m (3ft). \*\*\*

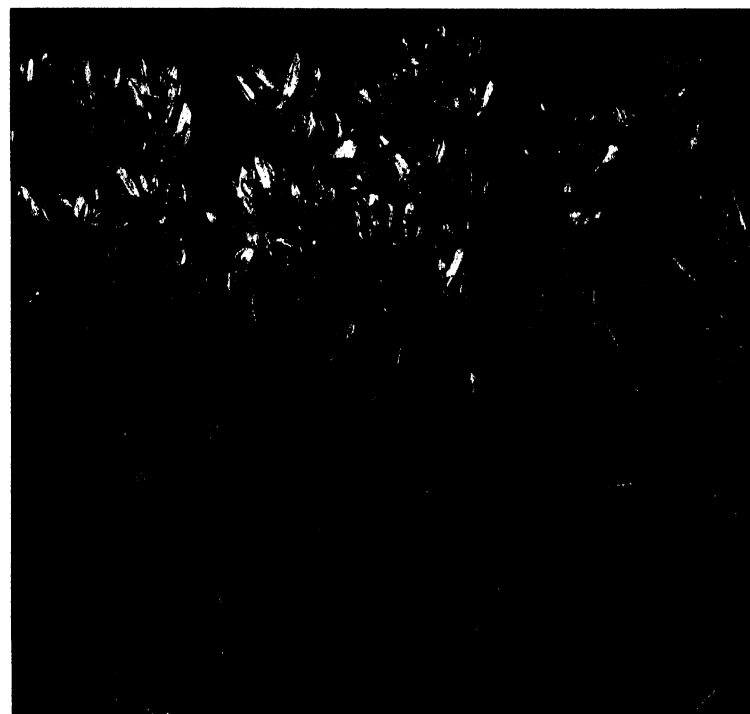
**H. 'Apple Court Champagne'**. Very free-flowering, semi-evergreen perennial with well-branched scapes. In mid- and late summer, these bear circular, glistening, creamy lemon flowers, 17cm

(7in) across, with recurved, ruffled-margined petals, ivory-pink midribs, and green throats. ‡70cm (28in), ↔75cm (30in). \*\*

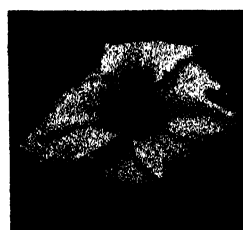
**H. 'Apple Tart'** ☐ Semi-evergreen perennial with sturdy scapes bearing nocturnal, triangular to star-shaped, bright red flowers, 15cm (6in) across, in mid- and late summer; they have rounded tepals with yellow midribs and yellow throats. ‡70cm (28in), ↔75cm (30in). \*\*\*

**H. 'Aquamarine'**. Evergreen perennial with slender scapes bearing spider- to star-shaped, lavender-blue flowers, 17cm (7in) across, in early summer. ‡70cm (28in), ↔60cm (24in). \*\*\*

**H. 'Atlanta Full House'**. Evergreen perennial with branched scapes bearing



*Hemerocallis* 'Apple Tart'

*Hemerocallis* 'Beauty to Behold'*Hemerocallis* 'Betty Woods'*Hemerocallis* 'Brocade Gown'*Hemerocallis* 'Cartwheels'*Hemerocallis* 'Cat's Cradle'*Hemerocallis* 'Chorus Line'*Hemerocallis citrina**Hemerocallis* 'Condilla'*Hemerocallis* 'Corky'*Hemerocallis* 'Eenie Weenie'*Hemerocallis* 'Francis Joiner'*Hemerocallis* 'Frank Gladney'

circular yellow flowers, 15cm (6in) across, with flat, ruffled-margined tepals, recurved at the tips, in midsummer. ‡65cm (26in), ↔ 1m (3ft). \*\*\*

**H. 'Attribution'**. Semi-evergreen perennial with slender scapes. In early and midsummer, bears circular, deep rose-pink flowers, 18cm (7in) across, with darker rose-pink eyes, white midribs, green throats, and lighter pink sepals. ‡60cm (24in), ↔ 75cm (30in). \*\*\*

**H. 'Barbara Mitchell'**. Semi-evergreen perennial with relatively few, narrow leaves. Branched scapes bear circular, soft pink flowers, 18cm (6in) wide, with recurved tepals, sometimes tinted beige, in midsummer. ‡50cm (20in), ↔ 75cm (30in). \*\*\*

**H. 'Beauty To Behold'**. Vigorous, extended-blooming, free-flowering, semi-evergreen perennial with abundant foliage. Nocturnal, circular, glistening, lemon-yellow flowers, 14cm (5½in) across, are borne on sturdy scapes in mid- or late summer. ‡60cm (24in), ↔ 75cm (30in). \*\*\*

**H. 'Bertie Ferris'**. Extended-blooming, compact, herbaceous perennial. Star-shaped, peach-orange flowers, 6cm (2½in) across, with rounded tepals, are borne on slender scapes in early summer. ‡50cm (20in), ↔ 45cm (18in). \*\*\*

**H. 'Beas Ross'**. Evergreen perennial with slender leaves. Narrowly star-shaped, velvety, rich bright red flowers, 12cm (5in) across, with slightly recurved tepals and yellow throats, are produced on slender scapes in midsummer. ‡80cm (32in), ↔ 75cm (30in). \*\*

**H. 'Betty Woods'**. Evergreen perennial with well-branched scapes. From midsummer to late autumn, these bear nocturnal, remountant, double, deep yellow flowers, 14cm (5½in) across, with rounded, ruffled-margined tepals and green throats. ‡65cm (26in), ↔ 60cm (24in). \*\*\*

**H. 'Bitsy'**. Compact, semi-evergreen perennial with narrow, yellowish green leaves. Slender scapes bear remountant, star-shaped, lemon-yellow flowers, 4cm (1½in) across, with slightly ruffled-margined tepals and black-tipped sepals, from early summer to late autumn. Tolerates sun or shade. ‡45cm (18in), ↔ 40cm (16in). \*\*\*

**H. 'Brocade Gown'**. Extended-blooming, semi-evergreen perennial with branched scapes. In midsummer, these bear nocturnal, circular, glistening, creamy yellow flowers, 15cm (6in) across, with green throats and recurved, crêpe-textured tepals. ‡65cm (26in), ↔ 75cm (30in). \*\*\*

**H. 'Butterscotch Ruffles'**. Compact, free-flowering, semi-evergreen perennial with narrow leaves. Well-branched scapes bear remountant, circular, orange-buff flowers, 7cm (3in) across, with crêpe-textured tepals, yellow midribs, and small green throats, from early summer to late autumn. ‡60cm (24in), ↔ 40cm (16in). \*\*\*

**H. 'Camden Gold Dollar'**. Compact, evergreen perennial with narrow, mid-to dark green leaves. Slender scapes bear remountant, circular, deep golden yellow flowers, 7cm (3in) across, with very ruffled-margined tepals, from midsummer to late autumn. ‡45cm (18in). \*\*\*

**H. 'Cartwheels'**. Free-flowering, evergreen perennial with slender scapes bearing nocturnal, star-shaped, orange-gold flowers, 15cm (6in) across, in midsummer. ‡75cm (30in). \*\*\*

**H. 'Catherine Woodbery'**. Extended-blooming, evergreen perennial with narrow leaves. Branched scapes bear star-shaped, light lavender-pink flowers, 12cm (5in) across, with broad, slightly ruffled-margined tepals, light green throats, and recurved sepals, in mid-

and late summer. ‡75cm (30in), ↔ 60cm (24in). \*\*\*

**H. 'Cat's Cradle'**. Evergreen perennial producing narrow leaves and slender, well-branched scapes. In midsummer, these bear nocturnal, spider-shaped, bright yellow flowers, 20cm (8in) across. ‡90cm (36in), ↔ 75cm (30in). \*\*\*

**H. 'Charles Johnston'**. Free-flowering, semi-evergreen perennial with sturdy scapes bearing circular, bright cherry-red to bluish red flowers, 15cm (6in) across, with green throats, in early and midsummer. ‡60cm (24in), ↔ 1m (3ft). \*\*\*

**H. 'Cherry Cheeks'**. Evergreen perennial with sturdy scapes. In mid- and late summer, these bear circular, bright pink-tinted, deep pink flowers, 15cm (6in) across, with white midribs, yellow throats, and black anthers. ‡70cm (28in), ↔ 1m (3ft). \*\*\*

**H. 'Chestnut Lane'**. Free-flowering, semi-evergreen perennial with sturdy scapes bearing circular, light golden brown flowers, 15cm (6in) across, with fluted tepals, chestnut-brown eyes, and yellow throats, in midsummer. ‡75cm (30in), ↔ 1m (3ft). \*\*\*

**H. 'Chicago Apache'**. Vigorous, free-flowering, evergreen perennial with masses of stiff leaves. In late summer, sturdy scapes bear circular, velvety, rich scarlet flowers, 12cm (5in) across, the tepals with ruffled, deeper red margins and white midribs. ‡70cm (28in), ↔ 1m (3ft). \*\*\*

**H. 'Chicago Sunrise'**. Vigorous, free-flowering, evergreen perennial with sturdy scapes bearing circular, deep to golden yellow flowers, 12cm (5in) across, in midsummer. ‡65cm (26in), ↔ 1m (3ft). \*\*\*

**H. 'Chorus Line'**. Extended-blooming, semi-evergreen perennial with stiff, wide-branching scapes. From early to late summer, these produce remountant, triangular, slightly fragrant, bright pink flowers, 9cm (3½in) across, with pink- and yellow-marked tepals and dark green throats. ‡50cm (20in), ↔ 60cm (24in). \*\*\*

**H. citrina**. Herbaceous perennial with coarse, recurved leaves, 70–80cm (28–32in) long, which die down in late summer. In midsummer, stiff scapes bear nocturnal, star-shaped, fragrant,

greenish yellow to pale lemon-yellow flowers, 9–12cm (3½–5in) across, with brown-tipped sepals. China. ‡1.2m (4ft), ↔ 75cm (30in). \*\*\*

**H. 'Condilla'**. Slow-growing, evergreen perennial with erect scapes bearing double, deep yellow flowers, 11cm (4½in) across, with broad tepals, in early and midsummer. ‡50cm (20in), ↔ 75cm (30in). \*\*\*

**H. 'Cool Jazz'**. Semi-evergreen perennial with sturdy scapes bearing remountant, circular, clear pink flowers, 14cm (5½in) across, with overlapping, gold-margined tepals, in early summer. ‡70cm (28in), ↔ 75cm (30in). \*\*\*

**H. 'Corky'**. Compact, free-flowering, evergreen perennial with narrow leaves. Slender, wiry scapes bear reddish brown buds that open to star-shaped, clear yellow flowers, 6cm (2½in) across, with reddish brown sepals, in midsummer. Prefers a sunny site, but tolerates some shade. ‡70cm (28in), ↔ 40cm (16in). \*\*\*

**H. 'Curly Ripples'**. Free-flowering, evergreen perennial with sturdy scapes. In midsummer, these bear nocturnal, triangular, slightly scented, golden cream to soft apricot flowers, 17cm (7in) across, with rounded, very ruffled-margined tepals. ‡65cm (26in), ↔ 60cm (24in). \*\*\*

**H. 'Dominic'**. Vigorous, evergreen perennial with sturdy scapes bearing circular, very dark black-red flowers, 14cm (5½in) across, in early and midsummer. ‡75cm (30in). \*\*\*

**H. 'Dorethe Louise'**. Free-flowering, evergreen perennial with erect scapes bearing nocturnal, circular, very fragrant, greenish yellow flowers, 17cm (7in) across, with green throats, in midsummer. ‡45cm (18in), ↔ 75cm (30in). \*\*\*

**H. dumortieri**. Compact, herbaceous perennial with early-produced, stiff, narrow leaves, to 35cm (14in) long. Slender, arching, reddish brown scapes bear star-shaped, orange-yellow flowers, 5–7cm (2–3in) across, which open from reddish brown buds in early summer. Grow in full sun or partial shade. ‡50cm (20in), ↔ 45cm (18in). Korea, E. Russia, Japan. \*\*\*

**H. 'Edna Spalding'**. Free-flowering, evergreen perennial with slender scapes. In early summer, bears nocturnal, star-

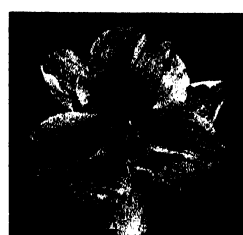
*Hemerocallis* 'Bertie Ferris'



*Hemerocallis fulva* 'Flore Pleno'



*Hemerocallis* 'Gentle Shepherd'



*Hemerocallis* 'Gingerbread Man'



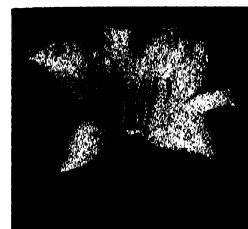
*Hemerocallis* 'Golden Chimes'



*Hemerocallis* 'Green Flutter'



*Hemerocallis* 'Hope Diamond'



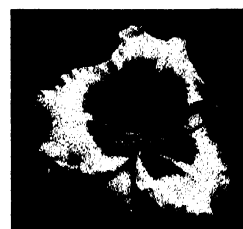
*Hemerocallis* 'Hyperion'



*Hemerocallis* 'Ice Castles'



*Hemerocallis* 'Janice Brown'



*Hemerocallis* 'Jason Salter'



*Hemerocallis* 'Joan Senior'



*Hemerocallis* 'Jolyene Nichole'

shaped, pure pink flowers, 11cm (4½in) across, with yellow-green throats. Grow in partial shade. ‡60cm (24in), ↔75cm (30in). \*\*\*

**H. 'Eenie Weenie'** ■ Compact, free-flowering, evergreen perennial with neat, mounded foliage. Erect scapes bear remountant, circular yellow flowers, 5cm (2in) across, with tapered tepals in early and midsummer. ‡25cm (10in), ↔40cm (16in). \*\*\*

**H. 'Erin Prairie'**. Free-flowering, evergreen perennial with erect scapes bearing star-shaped, deep lemon-yellow flowers, 17cm (7in) across, with bright green throats, in midsummer. ‡70cm (28in), ↔75cm (30in). \*\*\*

**H. 'Fairy Tale Pink'**. Semi-evergreen perennial with narrow, wispy, mid-green leaves hidden by profuse blooms. In midsummer, erect scapes bear circular, glistening, pale orange-pink to beige-pink flowers, 14cm (5½in) across, with ruffled-margined tepals. ‡60cm (24in), ↔1m (3ft). \*\*\*

**H. flava** see *H. lilioasphodelus*.

**H. 'Francis Joiner'** ■ Evergreen perennial with sturdy, well-branched scapes bearing remountant, double, pink-orange flowers, 14cm (5½in) across, with rounded tepals and greenish yellow throats, in midsummer. ‡60cm (24in). \*\*\*

**H. 'Frank Gladney'** ■ Semi-evergreen perennial with erect scapes bearing circular, coral-pink flowers, 17cm (7in) across, with recurved tepals and gold throats, from early summer to late autumn. ‡65cm (26in), ↔1m (3ft). \*\*\*

**H. fulva**. Semi-evergreen, rhizomatous perennial with wide, dark bluish green leaves, 30–90cm (12–36in) long. Branched scapes bear trumpet-shaped, orange-brown flowers, 6–10cm (2½–4in) across, with recurved tepals, in mid- and late summer. ‡1 to 1m (3ft), ↔1.2m (4ft). China or Japan. \*\*\*

**'Europa'** ■ is a robust cultivar bearing tawny-orange flowers with yellow tepal bases. **'Flore Pleno'** ■ has strong, erect scapes bearing double flowers with dark red eyes; ‡75cm (30in). **'Kwanzo Variegata'** is similar to 'Flore Pleno', with strong, erect scapes bearing double, red-eyed flowers, 12cm (5in) across, but it has narrow, white-margined leaves; ‡75cm (30in).

**H. 'Gentle Shepherd'** ■ Semi-evergreen perennial with wispy leaves. Circular, ivory-white flowers, 14cm (5½in) across, with oval tepals and green throats, are borne on slender scapes in midsummer. ‡65cm (26in), ↔1.2m (4ft). \*\*\*

**H. 'Gingerbread Man'** ■ Semi-evergreen perennial with sturdy scapes bearing remountant, circular, orange-brown flowers, 17cm (7in) across, with dark red-brown eyes, in early summer. ‡70cm (28in), ↔1m (3ft). \*\*

**H. 'Gleber's Top Cream'**. Semi-evergreen perennial with sturdy scapes bearing circular ivory flowers, 15cm (6in) across, with recurved, pale peach-tinted tepals and green throats, in midsummer. ‡45cm (18in), ↔1m (3ft). \*\*\*

**H. 'Golden Chimes'** ■ Free-flowering, evergreen perennial with narrow leaves and slender, well-branched, reddish brown scapes. Star-shaped, deep yellow flowers, 5cm (2in) across, with reddish brown backs to the

outer tepals, open from reddish brown buds in early summer. Grow in full sun or partial shade. ‡90cm (36in), ↔45cm (18in). \*\*\*

**H. 'Golden Prize'**. Evergreen perennial with triangular, golden yellow flowers, 17cm (7in) across, borne on sturdy, well-branched scapes in late summer. ‡65cm (26in), ↔1m (3ft). \*\*\*

**H. 'Grape Velvet'**. Evergreen perennial with erect scapes. In midsummer, these bear triangular, deep purple flowers, 11cm (4½in) across, with lighter purple midribs, green throats, and recurved tepals. ‡60cm (24in), ↔75cm (30in). \*\*

**H. 'Green Flutter'** ■ Extended-blooming, free-flowering, evergreen perennial with narrow leaves. In midsummer, slender scapes bear nocturnal, triangular to star-shaped, light yellow flowers, 9cm (3½in) across, with thick, rounded, slightly ruffled-margined tepals and green-tinted throats. ‡50cm (20in), ↔1m (3ft). \*\*\*

**H. 'Green Glitter'**. Vigorous, evergreen perennial with bright green leaves. In early summer, sturdy scapes bear circular, fragrant, creamy yellow flowers, 16cm (6in) across, with thick tepals, deeper yellow eyes, and green throats. ‡75cm (30in). \*\*\*

**H. 'Happy Returns'**. Free-flowering, evergreen perennial with narrow leaves. In early summer, erect scapes bear nocturnal, remountant, circular, light yellow flowers, 6cm (2½in) across. Good for containers. ‡40cm (16in), ↔60cm (24in). \*\*\*

**H. 'Helle Berlinerin'** ■ Evergreen perennial with sturdy scapes bearing circular cream flowers, 13cm (5in) across, in midsummer. ‡70cm (28in), ↔1m (3ft). \*\*\*

**H. 'Hope Diamond'** ■ Evergreen perennial with erect scapes. Nocturnal, triangular to circular, cream to very pale yellow flowers, 11cm (4½in) across, with rounded, crinkly, slightly ruffled-margined tepals, are borne in midsummer. ‡55cm (28in), ↔1m (3ft). \*\*\*

**H. 'Hyperion'** ■ Evergreen perennial with narrow leaves. In midsummer, slender scapes bear nocturnal, triangular to star-shaped, fragrant, lemon-yellow flowers, 10cm (4in) across. ‡90cm (36in), ↔75cm (30in). \*\*\*

**H. 'Ice Castles'** ■ Vigorous, evergreen perennial with erect scapes bearing circular, pale ivory flowers, 6cm (2½in) across, with yellow-suffused throats, in midsummer. ‡45cm (18in), ↔75cm (30in). \*\*\*

**H. 'Janice Brown'** ■ Semi-evergreen perennial with well-branched scapes bearing circular flowers, 11cm (4½in) across, with flat tepals, strongly recurved at the tips, in midsummer. Flowers are light pink with wide, rose-pink eyes and green throats. ‡55cm (22in), ↔75cm (30in). \*\*\*

**H. 'Jason Salter'** ■ Semi-evergreen perennial with erect scapes bearing triangular flowers, 6cm (2½in) across, with flat tepals, recurved at the tips, in midsummer. Flowers are deep yellow with deep purple-red eyes, and lime-green throats. ‡45cm (18in). \*\*\*

**H. 'Joan Senior'** ■ Vigorous, free-flowering, semi-evergreen perennial with erect scapes bearing circular, off-white, pink-flushed flowers, 15cm (6in) across, with recurved tepals and yellowish green throats, in mid- and late summer. ‡60cm (24in), ↔75cm (30in). \*\*\*

**H. 'Jolyene Nichole'** ■ Vigorous, semi-evergreen perennial with abundant blue-green leaves. Sturdy scapes produce nocturnal, circular, rose-pink flowers, 14cm (5½in) across, the tepals veined deep pink, in midsummer. ‡45cm (18in), ↔1m (3ft). \*\*\*

**H. 'Journey's End'**. Semi-evergreen perennial with erect scapes bearing circular, off-white flowers, 13cm (5in) across, with crêpe-textured tepals and lemon-yellow throats, in midsummer. ‡40cm (16in), ↔75cm (30in). \*\*\*

**H. 'Judah'**. Evergreen perennial with sturdy scapes bearing circular, deep gold flowers, 15cm (6in) across, with yellow throats and rounded, bronze-margined tepals, in midsummer. ‡75cm (30in), ↔1m (3ft). \*\*\*

**H. 'Kecia'**. Vigorous, free-flowering, semi-evergreen perennial with branched scapes bearing circular, creamy yellow flowers, 15cm (6in) across, with green throats, and flat tepals with ruffled margins, in midsummer. ‡70cm (28in), ↔60cm (24in). \*\*\*

**H. 'Kindly Light'**. Evergreen perennial with narrow leaves. In midsummer, slender scapes bear nocturnal, spider-shaped, bright yellow flowers, 22cm



*Hemerocallis fulva* 'Europa'



*Hemerocallis* 'Lady Fingers'



*Hemerocallis* 'Lavender Tonic'



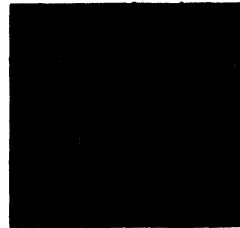
*Hemerocallis lilioasphodelus*



*Hemerocallis* 'Marion Vaughn'



*Hemerocallis* 'Martha Adams'



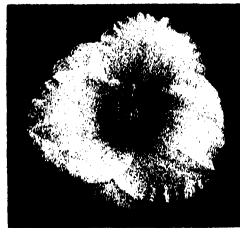
*Hemerocallis* 'Mauna Loa'



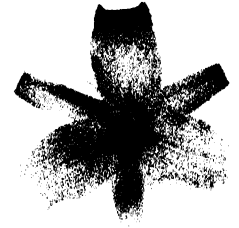
*Hemerocallis* 'Michele Coc'



*Hemerocallis* 'Millie Schlumpf'



*Hemerocallis* 'Moonlight Mist'



*Hemerocallis* 'Nova'



*Hemerocallis* 'Pandora's Box'



*Hemerocallis* 'Penelope Vestey'

H

(9in) across, with – in cool conditions – faint salmon-pink eyes. †70cm (28in), ↔ 75cm (30in). \*\*\*

**H. 'Lady Fingers'** ■ Semi-evergreen perennial with narrow leaves. In mid-summer, slender scapes bear spider-shaped, pale yellow-green flowers with green throats, 16cm (6in) across, with spoon-shaped tepals. †80cm (32in), ↔ 75cm (30in). \*\*\*

**H. 'Lavender Tonic'** ■ Evergreen perennial with sturdy, well-branched scapes bearing circular, soft lavender-pink flowers, 13cm (5in) across, with yellow throats, in midsummer. †45cm (18in). \*\*\*

**H. lilioasphodelus** ■ ♀ syn. *H. flava*. Rhizomatous, extended-blooming, semi-evergreen perennial with narrow leaves, 50–65cm (20–26in) long. In early summer, slender scapes bear nocturnal, star-shaped, fragrant, clear bright lemon-yellow flowers, to 9cm (3½in) across. China. †1m (3ft). \*\*\*

**H. 'Little Business'** ■ Compact, free-flowering, semi-evergreen perennial with abundant mounded leaves. Sturdy scapes bear remountant, triangular, strawberry-crimson flowers, 7cm (3in) across, with velvety tepals and yellow-green throats, in mid- and late summer. †40cm (16in), ↔ 60cm (24in). \*\*\*

**H. 'Little Deeke'** ■ Vigorous, evergreen perennial with sturdy scapes. In early summer, produces circular, orange-gold flowers, 11cm (4½in) across, with flat, crêpe-textured, ruffled-margined, bronze-veined tepals, recurved at the tips, and green throats. †50cm (20in), ↔ 75cm (30in). \*\*\*

**H. 'Little Fat Dazzler'** ■ Compact, free-flowering, evergreen perennial with narrow leaves. Circular, deep rose-red flowers, 7cm (3in) across, are borne on erect scapes in early and midsummer. †40cm (16in), ↔ 40cm (16in). \*\*\*

**H. 'Little Grapette'** ■ Vigorous, free-flowering, compact, semi-evergreen perennial with narrow leaves. In mid-summer, slender scapes bear star-shaped, deep purple flowers, 5cm (2in) across, with rounded, ruffled-margined tepals, darker purple eyes, and green throats. †30cm (12in), ↔ 45cm (18in). \*\*\*

**H. 'Little Gypsy Vagabond'** ■ Semi-evergreen, compact perennial with narrow, arching leaves. In midsummer, slender scapes bear circular, light yellow

flowers, 7cm (3in) across, with rounded, flat tepals and black-purple eyes. †30cm (12in), ↔ 35cm (14in). \*\*\*

**H. 'Little Maggie'** ■ Free-flowering, compact, evergreen perennial with narrow leaves. In early summer, erect scapes bear remountant, circular, deep rose-pink flowers, 8cm (3in) across, with burgundy-red eyes. †30cm (12in), ↔ 45cm (18in). \*\*\*

**H. 'Little Rainbow'** ■ Evergreen perennial with slender scapes bearing multi-coloured, creamy yellow, beige-pink, and mauve-pink flowers, 9cm (3½in) across, with rounded tepals and orange throats, in midsummer. †60cm (24in), ↔ 45cm (18in). \*\*\*

**H. 'Lullaby Baby'** ■ Evergreen perennial with branched scapes bearing nocturnal, circular, very pale ice-pink flowers, 9cm (3½in) wide, with green throats, in mid- and late summer. †45cm (18in), ↔ 1m (3ft). \*\*\*

**H. 'Lusty Leland'** ■ Extended-blooming, free-flowering, evergreen perennial with bluish green leaves. Sturdy scapes bear nocturnal, circular scarlet flowers, 12cm (5in) across, with velvety, yellow-backed tepals and yellow throats, in midsummer. †70cm (28in), ↔ 1m (3ft). \*\*\*

**H. 'Luxury Lace'** ■ Evergreen perennial with narrow leaves and slender scapes. These bear star-shaped, pink-tinted, lavender-pink flowers, 10cm (4in) across, with rounded, ruffled-margined tepals and green throats, in midsummer. †80cm (32in), ↔ 75cm (30in). \*\*\*

**H. 'Marion Vaughn'** ■ ♀ Free-flowering, evergreen perennial with narrow leaves. Nocturnal, star-shaped, very fragrant, clear lemon-yellow flowers, 10cm (4in) across, are borne on slender scapes in mid- and late summer. †85cm (34in), ↔ 75cm (30in). \*\*\*

**H. 'Martha Adams'** ■ Extended-blooming, evergreen perennial with erect scapes bearing circular, pale pink, beige-tinted flowers, 17cm (7in) across, with yellow-green throats, in early summer. †45cm (18in), ↔ 75cm (30in). \*\*\*

**H. 'Mauna Loa'** ■ Evergreen perennial with sturdy scapes bearing circular, very bright tangerine-orange flowers, 13cm (5in) across, with crimped tepals, green throats, and black anthers, in summer. †55cm (22in), ↔ 1m (3ft). \*\*\*

**H. 'Meadow Sprite'** ■ Free-flowering, vigorous, compact, evergreen perennial with neatly mounded leaves. Nocturnal, circular, magenta-lilac flowers, 9cm (3½in) across, with purple eyes, bright green throats, and black anthers, are borne on erect scapes in early and midsummer. †35cm (14in), ↔ 45cm (18in). \*\*\*

**H. 'Melon Balls'** ■ Evergreen perennial with narrow leaves. In midsummer, slender scapes bear star-shaped, glowing, beige-pink flowers, 9cm (3½in) across, tinted mauve-pink, with crêpe-textured tepals, gold throats, and recurved sepals. †80cm (32in), ↔ 75cm (30in). \*\*\*

**H. 'Michele Coc'** ■ Evergreen perennial with sturdy scapes bearing circular, pale apricot flowers, 13cm (5in) across, with light lavender-pink midribs, in midsummer. †1m (3ft), ↔ 75cm (30in). \*\*\*

**H. middendorffii** ■ Semi-evergreen perennial with narrow, stiff leaves, to 30cm (12in) long. In early summer, slender, reddish brown scapes bear

ridged, reddish brown buds that open to star-shaped, deep orange flowers, 6–8cm (2½–3in) across. †90cm (36in), ↔ 45cm (18in). E. Russia, N. China, Korea, Japan. \*\*\*

**H. 'Millie Schlumpf'** ■ Vigorous, free-flowering, evergreen perennial. In midsummer, erect scapes bear nocturnal, remountant, triangular, glistening, pale pink flowers, 13cm (5in) across, with darker pink eyes and bright light green throats. †50cm (20in), ↔ 60cm (24in). \*\*\*

**H. 'Mini Pearl'** ■ Compact, free-flowering, evergreen perennial with glossy leaves. Remountant, circular, pink-flushed white flowers, 8cm (3in) across, with rounded petals, are borne on erect scapes in early and midsummer. †40cm (16in), ↔ 40cm (16in). \*\*\*

**H. 'Moonlight Mist'** ■ Compact, evergreen perennial with erect scapes bearing circular, pale ivory to pale peach flowers, 8cm (3in) across, in mid-summer. †45cm (18in), ↔ 40cm (16in). \*\*\*

**H. 'Night Raider'** ■ Vigorous, free-flowering, evergreen perennial with well-branched scapes. Nocturnal, circular, bright to dark red flowers, 12cm (5in) across, with slightly recurved tepals and yellow throats, are borne in midsummer. †70cm (28in), ↔ 60cm (24in). \*\*\*

**H. 'Nile Plum'** ■ Evergreen perennial with sturdy scapes. In late summer, produces nocturnal, circular, rich purple flowers, 11cm (4½in) across, with recurved tepals and large, lemon-ivory eyes. †55cm (22in), ↔ 1m (3ft). \*\*\*

**H. 'Nova'** ■ ♀ Free-flowering, evergreen perennial with slender scapes bearing star-shaped, fragrant, lemon-yellow flowers, 14cm (5½in) across, in early and midsummer. †60cm (24in), ↔ 1m (3ft). \*\*\*

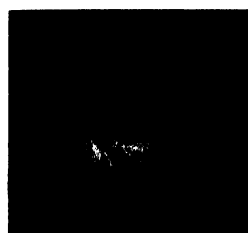
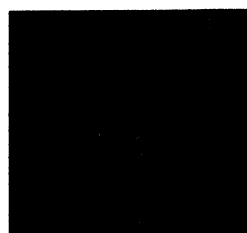
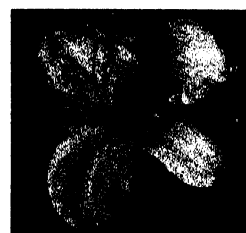
**H. 'Olive Bailey Langdon'** ■ Free-flowering, evergreen perennial. Sturdy scapes bear remountant, circular, violet-purple flowers, 13cm (5in) across, with yellow-green throats, in early and midsummer. †70cm (28in), ↔ 1m (3ft). \*\*\*

**H. 'Outrageous'** ■ Evergreen perennial with sturdy scapes bearing circular, light copper-orange flowers, 11cm (4½in) across, with large, dark brownish red eyes, in midsummer. †55cm (22in), ↔ 1m (3ft). \*\*\*



*Hemerocallis* 'Little Rainbow'



*Hemerocallis* 'Prairie Blue Eyes'*Hemerocallis* 'Real Wind'*Hemerocallis* 'Red Joy'*Hemerocallis* 'Red Rum'*Hemerocallis* 'Ruffled Apricot'*Hemerocallis* 'Scarlet Orbit'*Hemerocallis* 'Siloam Double Classic'*Hemerocallis* 'Siloam Merle Kent'*Hemerocallis* 'Siloam Ury Winniford'*Hemerocallis* 'Siloam Virginia Henson'*Hemerocallis* 'Solano Bulls Eye'*Hemerocallis* 'Stafford'

**H. 'Pandora's Box'** ■ Free-flowering, vigorous, compact, evergreen perennial with narrow leaves. In midsummer, erect scapes bear remount, star-shaped, pale cream flowers, 11cm (4½in) across, with bright purple eyes and green throats. ‡ 50cm (20in), ↔ 60cm (24in). \*\*\*

**H. 'Pardon Me'**. Free-flowering, compact, evergreen perennial producing narrow leaves. Slender, well-branched, stiff scapes bear remount, circular, rich red flowers, 6cm (2½in) across, with green throats, in midsummer. ‡ 45cm (18in). \*\*\*

**H. 'Penelope Vestey'** ■ Free-flowering, semi-evergreen perennial producing narrow leaves. In midsummer, slender scapes bear star-shaped to triangular, bright pink flowers, 13cm (5in) across, the tepals marked with darker pink, and with orange throats. ‡ 85cm (34in), ↔ 1m (3ft). \*\*\*

**H. 'Penny's Worth'**. Compact, evergreen perennial with arching, grass-like leaves. In early summer, slender scapes bear circular, pale yellow flowers, 4cm (1½in) across. ‡ 24cm (10in), ↔ 30cm (12in). \*\*\*

**H. 'Prairie Blue Eyes'** ■ Free-flowering, semi-evergreen perennial with narrow leaves. In midsummer, slender scapes bear star-shaped, lavender-blue flowers, 13cm (5in) across, with wide, darker blue eyes. ‡ 70cm (28in), ↔ 75cm (30in). \*\*\*

**H. 'Purple Rain'**. Compact, evergreen perennial with narrow leaves. In early and midsummer, erect scapes bear nocturnal, remount, circular, bright deep purple flowers, 8cm (3in) across, with large, near-black eyes. ‡ 40cm (16in), ↔ 45cm (18in). \*\*\*

**H. 'Real Wind'** ■ Free-flowering, evergreen perennial with dense foliage. Sturdy scapes bear triangular, pale salmon-pink flowers, 17cm (7in) across, with recurved tepals and large, rose-pink eyes, in mid- and late summer. ‡ 65cm (26in), ↔ 1m (3ft). \*\*\*

**H. 'Red Joy'** ■ Evergreen perennial with erect scapes bearing triangular, bright red flowers, 15cm (6in) across, with velvety tepals and wide, yellow-green throats, in midsummer. ‡ 85cm (34in), ↔ 1m (3ft). \*\*\*

**H. 'Red Rum'** ■ Semi-evergreen perennial with erect, bright green leaves.

In midsummer, slender scapes bear remount, star-shaped, deep brick-red flowers, 11cm (4½in) across, with thick, crêpe-textured tepals and yellow-green throats. ‡ 40cm (16in), ↔ 75cm (30in). \*\*\*

**H. 'Rose Emily'**. Semi-evergreen perennial with slender scapes bearing circular, rose-pink flowers, 13cm (5in) across, with recurved, ruffled-margined petals and pale green throats, in midsummer. ‡ 45cm (18in). \*\*\*

**H. 'Ruffled Apricot'** ■ Slow-growing, evergreen perennial with dense foliage. Star-shaped, rich apricot flowers, 18cm (7in) across, are borne on slender scapes in early and midsummer. ‡ 70cm (28in), ↔ 1m (3ft). \*\*\*

**H. 'Sari'**. Vigorous, evergreen perennial with erect scapes bearing circular, bright coral-pink flowers, 15cm (6in) across, with thick tepals, in midsummer. ‡ 50cm (20in), ↔ 1m (3ft). \*\*\*

**H. 'Scarlet Orbit'** ■ Free-flowering, semi-evergreen perennial with sturdy scapes bearing nocturnal, circular, bright red flowers, 16cm (6in) across, with yellow-green throats, in midsummer. ‡ 50cm (20in), ↔ 1m (3ft). \*\*\*

**H. 'Scarlock'**. Evergreen perennial with sturdy scapes. In early and midsummer, these bear, nocturnal, remount, circular, rich cherry-red flowers, 17cm (7in) across, with thick, crimped tepals and green throats. ‡ 80cm (32in), ↔ 1m (3ft). \*\*\*

**H. 'Sebastian'**. Evergreen perennial with sturdy scapes bearing circular, vivid violet-purple flowers, 14cm (5½in) across, with ruffled-margined tepals and lime-green throats, in early and midsummer. ‡ 50cm (20in), ↔ 45cm (18in). \*\*\*

**H. 'Seducator'**. Evergreen perennial with abundant foliage and erect scapes. Remount, circular, cranberry-red flowers, 16cm (6in) across, with ruffled-margined, overlapping tepals and lime-green throats, are borne in early and midsummer. ‡ 45cm (18in). \*\*\*

**H. 'Selma Timmons'**. Semi-evergreen perennial. In midsummer, well-branched scapes bear circular, orange-pink flowers, 11cm (4½in) across, highlighted deeper pink; they have thick, very ruffled-margined tepals and tiny, rounded, greenish gold throats. ‡ 45cm (18in), ↔ 60cm (24in). \*\*\*

**H. 'Show Amber'**. Very free-flowering, semi-evergreen perennial. In midsummer, sturdy scapes bear circular, bright, light bronze-orange flowers, 14cm (5½in) across, with deeper bronze eyes, lighter orange midribs, and tangerine-orange throats. ‡ 1m (3ft). \*\*\*

**H. 'Siloam Baby Talk'**. Vigorous, compact, free-flowering, evergreen perennial with neatly mounded foliage. Erect scapes bear circular, buff-pink flowers, 6cm (2½in) across, with deep rose-pink eyes and green throats, in midsummer. ‡ 40cm (16in), ↔ 60cm (24in). \*\*\*

**H. 'Siloam Bo Peep'**. Vigorous, compact, evergreen perennial with erect leaves. In early and midsummer, erect scapes bear circular, buff- to mauve-pink flowers, 11cm (4½in) across, with purple eyes and green throats. ‡ 45cm (18in). \*\*\*

**H. 'Siloam Double Classic'** ■ Evergreen perennial with erect scapes bearing double, peach-pink flowers, 11cm (4½in) across, with rounded, recurved, ruffled-margined tepals, in early and midsummer. ‡ 50cm (20in), ↔ 45cm (18in). \*\*\*

**H. 'Siloam Ethel Smith'**. Compact, evergreen perennial, free-flowering once established. Circular, creamy beige flowers, 9cm (3½in) across, with flat tepals, recurved at the tips, and large, triangular, red, yellow, and olive-green eyes, are produced on erect scapes in

midsummer. ‡ 50cm (20in), ↔ 45cm (18in). \*\*\*

**H. 'Siloam Grace Stamile'**. Compact, evergreen perennial. In midsummer, erect scapes bear circular, deep red flowers, 6cm (2½in) across, with deeper red eyes and green throats. ‡ 40cm (16in). \*\*\*

**H. 'Siloam Merle Kent'** ■ Compact, evergreen perennial with erect scapes. In midsummer, bears circular, bright mauve-pink flowers, 9cm (3½in) across, with deep purple eyes and green throats. ‡ 45cm (18in). \*\*\*

**H. 'Siloam Tiny Mite'**. Compact, free-flowering, evergreen perennial with circular, deep gold flowers, 6cm (2½in) across, which have recurved tepals and dark burgundy-red eyes; they are borne on erect scapes in midsummer. ‡ 40cm (16in). \*\*\*

**H. 'Siloam Ury Winniford'** ■ Vigorous, free-flowering, compact, evergreen perennial with well-branched scapes. In early and midsummer, these bear remount, circular to triangular, deep cream flowers, 10cm (4in) across, with red-purple or rich purple eyes and green throats. ‡ 50cm (20in), ↔ 60cm (24in). \*\*\*

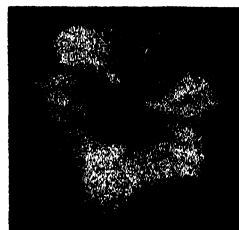
**H. 'Siloam Virginia Henson'** ■ Free-flowering, compact, evergreen perennial. In early and midsummer, well-branched scapes bear remount, circular, pink-tinted cream flowers, 10cm (4in) across, with flat tepals, recurved at the tips, and ruby-red eyes. ‡ 40cm (16in). \*\*\*

**H. 'Smoky Mountain Autumn'**. Free-flowering, evergreen perennial with narrow leaves. Circular, copper-pink flowers, 14cm (5½in) across, with recurved tepals, lavender-pink haloes, and yellow-green throats, are borne on slender scapes in midsummer. ‡ 45cm (18in), ↔ 60cm (24in). \*\*\*

**H. 'Solano Bulls Eye'** ■ Vigorous, free-flowering, evergreen perennial with erect scapes. These bear circular, bright yellow flowers, 16cm (6in) across, with deep brownish purple eyes, over a long period from early to late summer. ‡ 50cm (20in), ↔ 75cm (30in). \*\*\*

**H. 'Stafford'** ■ Free-flowering, evergreen perennial with narrow leaves. In midsummer, slender scapes bear star-shaped scarlet flowers, 10cm (4in) across, with yellow midribs and throats. ‡ 70cm (28in), ↔ 1m (3ft). \*\*\*

*Hemerocallis* 'Lusty Leland'



Hemerocallis 'Stella de Oro'



Hemerocallis 'Super Purple'



Hemerocallis 'Taffy Tot'



Hemerocallis 'Tonia Gay'



Hemerocallis 'Unique Style'



Hemerocallis 'Yellow Lollipop'

H

**H. 'Stella de Oro'** ■ Vigorous, free-flowering, evergreen perennial bearing remount, circular, bright yellow flowers, 6cm (2½in) across, on slender scapes in early summer. ‡ 30cm (12in), ↔ 45cm (18in). \*\*\*

**H. 'Strutter's Ball'** ■ Free-flowering, evergreen perennial with dense foliage. Erect scapes bear triangular, rich deep blue-purple flowers, 15cm (6in) across, in midsummer. ‡ 70cm (28in), ↔ 60cm (24in). \*\*\*

**H. 'Sugar Cookie'** ■ Evergreen perennial with erect scapes bearing circular, ivory flowers, 9cm (3½in) across, with recurved tepals and green throats, in midsummer. ‡ 50cm (20in), ↔ 45cm (18in). \*\*\*

**H. 'Superlative'** ■ Vigorous, evergreen, free-flowering perennial with slender, semi-erect leaves. In midsummer, erect scapes bear circular, deep red flowers, 14cm (5½in) across, with deep green throats. ‡ 60cm (24in). \*\*\*

**H. 'Super Purple'** ■ Semi-evergreen, extended-blooming perennial. In mid-

summer, erect scapes bear circular, deep purple flowers, 14cm (5½in) across, with lime-green and yellow throats. ‡ 65cm (26in), ↔ 75cm (30in). \*\*

**H. 'Taffy Tot'** ■ Compact, evergreen perennial with erect scapes bearing circular, light orange-buff flowers, 7cm (3in) across, with brown eyes and yellow throats, in midsummer. ‡ 45cm (18in). \*\*\*

**H. thunbergii**, syn. *H. vespertina*. Semi-evergreen, robust perennial with narrow leaves. In late summer, well-branched, slender scapes bear nocturnal, star-shaped, fragrant, lemon-yellow flowers, 9–11cm (3½–4½in) across, with green throats and green-backed outer tepals. ‡ 1.1m (3½ft), ↔ 1m (3ft). China, Korea. \*\*\*

**H. 'Timeless Fire'** ■ Evergreen perennial with wide leaves. Nocturnal, triangular, bright red flowers, 13cm (5in) across, later becoming deep orange-red, with wide, yellow-green throats, are produced on erect scapes in midsummer. ‡ 45cm (18in). \*\*\*

**H. 'Tobacco Road'** ■ Semi-evergreen perennial with light green leaves. In midsummer, sturdy scapes bear circular, wide-open, bright orange flowers, 18cm (7in) across, with wide, rounded, brownish pink eyes and green throats. ‡ 70cm (28in), ↔ 75cm (30in). \*\*\*

**H. 'Tonia Gay'** ■ Free-flowering, evergreen perennial, vigorous once established. In midsummer, erect scapes bear triangular, glistening, light pink flowers, 14cm (5½in) across, with light yellow and green throats. ‡ 40cm (16in), ↔ 75cm (30in). \*\*\*

**H. 'Unique Style'** ■ Evergreen perennial with erect scapes bearing circular, greenish yellow flowers, 9cm (3½in) across, in midsummer. The rounded, ruffled yellow tepals have amber margins. ‡ 55cm (22in), ↔ 75cm (30in). \*\*\*

**H. vespertina** see *H. thunbergii*.

**H. 'White Temptation'** ■ Semi-evergreen perennial with slender scapes bearing circular, off-white flowers, 13cm (5in) across, with green throats and lightly ruffled-margined tepals, in midsummer. ‡ 80cm (32in), ↔ 75cm (30in). \*\*\*

**H. 'Wind Song'** ■ Semi-evergreen perennial with abundant wide leaves. Nocturnal, circular, creamy yellow

flowers, 15cm (6in) across, are produced on sturdy scapes in early and mid-summer. ‡ 70cm (28in), ↔ 1m (3ft). \*\*\*

**H. 'Yellow Lollipop'** ■ Compact, free-flowering, evergreen perennial with very narrow leaves. Remount, circular, bright yellow flowers, 6cm (2½in) across, are produced on erect scapes in early summer. ‡ 28cm (11in), ↔ 60cm (24in). \*\*\*

## HEMIGRAPHIS

### ACANTHACEAE

Genus of 90 species of low-growing, slender-stemmed annuals, perennials, and subshrubs from woodland margins in tropical Asia. They are grown mainly for their colourful, opposite, toothed or scalloped leaves, which are useful for ground cover. From spring to summer, small, tubular, 5-lobed, usually white flowers are borne in terminal spikes. In frost-prone areas, grow in a temperate greenhouse or conservatory; some species are suitable for use in hanging baskets. In warmer climates, grow in a border or as edging.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in bright filtered light, with moderate to high humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; keep moist in winter. Outdoors, grow in any fertile, moist but well-drained soil in partial shade. Shelter from strong winds. Cut back established plants in spring.

• **PROPAGATION** Root softwood or stem-tip cuttings in summer or autumn. Separate rooted stems in spring.

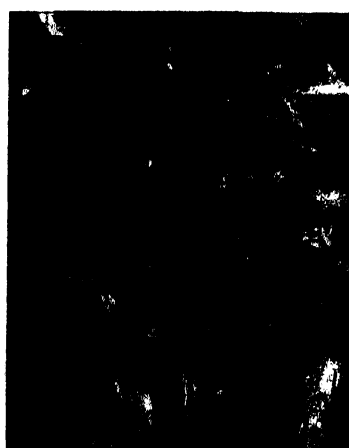
• **PESTS AND DISEASES** Whiteflies may be a problem.

**H. alternata**, syn. *H. colorata* (Red flame ivy). Slightly hairy, evergreen perennial with prostrate stems that root down freely. The heart-shaped to ovate, scalloped leaves, 9cm (3½in) long, are silver-grey above and purple beneath. White flowers, 1.5cm (½in) across, are produced in terminal spikes, 2.5cm (1in) long, from spring to summer. ‡ 15cm (6in), ↔ 45cm (18in). India, Indonesia (Java). ☞ (min. 10°C/50°F)

**H. colorata** see *H. alternata*.

**H. 'Exotica'** (Purple waffle plant).

Compact, evergreen perennial producing ovate, hairless, purplish green leaves, 9cm (3½in) long, puckered



Hemigraphis repanda

between the veins, with a purple sheen and deep red beneath. White flowers, 1cm (½in) across, are borne in terminal spikes, 6cm (2½in) long, from spring to summer. ‡ 23cm (9in), ↔ 50cm (20in). ☞ (min. 10°C/50°F)

**H. repanda** ■ Creeping, evergreen perennial with slender, maroon or red stems that root down freely. The narrowly lance-shaped, toothed leaves, to 5cm (2in) long, are red-flushed greyish green, shading to purple above, and darker purple beneath. White flowers, 1.5cm (½in) across, are borne in dense spikes, 5cm (2in) long, from spring to summer. ‡ 23cm (9in), ↔ 45cm (18in). Malaysia. ☞ (min. 10°C/50°F)

## HEMIONITIS

### PTERIDACEAE

Genus of 7 or 8 species of evergreen ferns, with short rhizomes, mainly from moist, shaded sites in tropical Asia and America. The crowded, rounded, heart-shaped or palmate fronds are usually borne on shining black stalks. Sori form a network of lines on the lower surfaces of fertile fronds, which are narrower than sterile ones. Small plantlets often develop on the main veins of the fronds, near the bases. In temperate regions, grow in a warm greenhouse or as houseplants. In warmer areas, grow as edging or at the front of a border, in containers outdoors, or in a raised bed.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered light. Water moderately in the growing season and keep fairly dry in winter; avoid overwatering, as plants are prone to root rot when waterlogged. Outdoors, grow in fertile, moist but well-drained soil in partial shade. Protect from strong winds. Will tolerate dry conditions.

• **PROPAGATION** Sow spores at 19–24°C (66–75°F) as soon as ripe, or detach and pot up plantlets or bulbils. See also p.51.

• **PESTS AND DISEASES** Trouble free.

**H. arifolia**. Rhizomatous fern with tufted, simple fronds that have heart- or spear-shaped, glossy, mid-green blades, 5–15cm (2–6in) long, on shining black stalks. Sterile fronds are ovate to oblong, deeply heart- or spear-shaped at the bases, leathery above, hairy and scaly beneath. Fertile fronds are long-stalked and oblong to triangular. ‡ 15cm (6in), ↔ 20cm (8in). S.E. Asia. ☞ (min. 6°C/43°F)

**H. elegans**, syn. *Doryopteris elegans*. Rhizomatous fern producing tufted, palmately lobed, dull, dark green fronds, to 18cm (7in) long, with lance-shaped to triangular segments. Sterile fronds are broad; fertile fronds are more deeply lobed. ‡ 25cm (10in), ↔ 30cm (12in). Mexico. ☞ (min. 6°C/43°F)

▷ **Hemlock** see *Tsuga*

**Carolina** see *T. caroliniana*

**Eastern** see *T. canadensis*

**Mountain** see *T. mertensiana*

**Northern Japanese** see *T.*

*diversifolia*

**Southern Japanese** see *T. sieboldii*

**Western** see *T. heterophylla*

## HEPATICA

- ▷ **Hemp,**  
African see *Sparrmannia africana*  
Bowstring see *Sansevieria*  
Indian see *Hibiscus cannabinus*
- ▷ **Hemp agrimony** see *Eupatorium*,  
*E. cannabinum*
- ▷ **Hempweed, Climbing** see *Mikania*  
*scandens*
- ▷ **Hen and chickens houseleek** see  
*Jovibarba sobolifera*
- ▷ **Henbane** see *Hyoscyamus*, *H. niger*  
Black see *H. niger*
- ▷ **Henna tree** see *Lawsonia*

## HEPATICA

RANUNCULACEAE

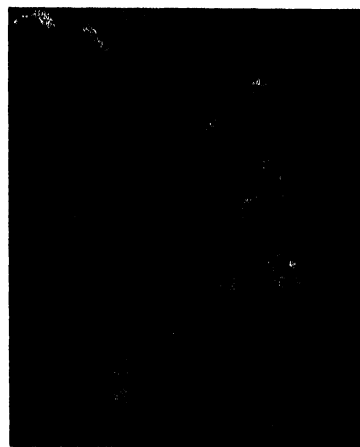
Genus, allied to *Anemone*, of about 10 species of spring-flowering perennials from woodland in N. temperate regions. They have usually kidney-shaped, 3- to 5-lobed, simple or toothed, dark green, basal leaves, often purple beneath, and sometimes marbled silver or white. The solitary, bowl- to star-shaped flowers usually open before the leaves have fully developed. They have brightly coloured, petal-like sepals with an involucre of 3 leaf-like bracts immediately beneath them. Suitable for a shady site in a rock or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, neutral to alkaline soil in partial shade; hepaticas thrive in heavy soils. Top-dress each year with leaf mould or garden compost in autumn, or in late spring after flowering. Hepaticas do not transplant easily.
- **PROPAGATION** Sow seed in an open frame as soon as ripe. Divide in spring; divisions are slow to re-establish.
- **PESTS AND DISEASES** Young growth is vulnerable to slug and snail damage.

**H. acutiloba.** Slow-growing perennial producing rounded or kidney-shaped, 3- to 7-lobed, mid-green leaves, 4–8cm (1½–3in) long, the lobes deeply cut and sharply pointed. In early spring, bears cup-shaped, blue, pink, or white



*Hepatica nobilis*



*Hepatica nobilis* var. *japonica*

flowers, 1–2.5cm (½–1in) across. †8cm (3in), ↔ to 15cm (6in). E. USA. \*\*\*  
**H. angulosa** see *H. transilvanica*.  
**H. x media 'Ballardii'** ♀ Dome-shaped, slow-growing perennial with rounded, 3-lobed, long-stalked, soft, mid-green leaves, to 10cm (4in) long. Cup-shaped, semi-double, deep blue flowers, to 3cm (1¼in) across, are borne in early spring. †15cm (6in), ↔ to 20cm (8in). \*\*\*  
**H. nobilis** ♂♀ syn. *Anemone hepatica*, *H. triloba*. Slow-growing, semi-evergreen, dome-shaped perennial producing rounded or kidney-shaped, mid-green leaves, 3–6cm (1¼–2½in) long, with 3 ovate, entire lobes, silky-hairy and purple-tinted beneath. Open bowl-shaped, white, pink, blue, or blue-purple flowers, to 2.5cm (1in) across, each with 6 or 7 sepals, are borne in early spring, mainly before the leaves. †10cm (4in) ↔ 15cm (6in). Europe. \*\*\*  
**var. japonica** ♂ is smaller, producing dark green leaves with pointed lobes and flowers that are more star-shaped, each with 6–9 white, pink, or blue tepals; † to 8cm (3in); Japan.  
**'Rubra Plena'** bears fully double, deep purplish red flowers. \*\*\*  
**H. transilvanica** ♀ syn. *H. angulosa*. Semi-evergreen, slow-spreading perennial producing hairy, pale green leaves, 6–10cm (2½–4in) long, with 3 ovate, scalloped lobes. In early spring, bears many-petalled, open bowl-shaped, blue, white, or very pale pink flowers, to 4cm (1½in) across. † to 15cm (6in), ↔ to 20cm (8in). Romania. \*\*\*  
**H. triloba** see *H. nobilis*.

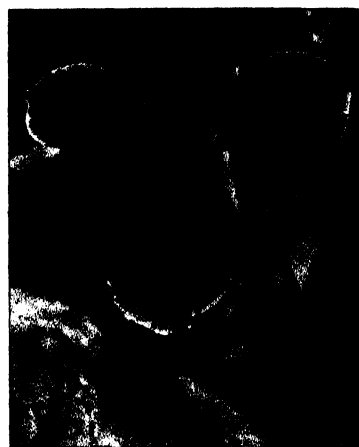
- ▷ **Herald's trumpet** see *Beaumontia grandiflora*
- ▷ **Herb Christopher** see *Actaea spicata*

## HERBERTIA

IRIDACEAE

Genus of 6 species of cormous perennials from dry slopes and rocky areas of temperate South America. They have lance-shaped, pleated, mid- to deep green, basal leaves. A succession of short-lived, iris-like flowers, 2–4cm (¾–1½in) across, is borne for several weeks from winter to spring. In frost-prone areas, grow in a cool greenhouse; elsewhere, grow at the front of a border or in a sheltered site in a rock garden.

- **HARDINESS** Half hardy, but tolerates occasional temperatures to -5°C (23°F).
- **CULTIVATION** Plant corms 10cm (4in) deep in autumn for spring flowering, or



*Herbertia lahue*

in spring for summer flowering. Under glass, grow in loam-based potting compost (J1 No.2) with additional sharp sand and leaf mould, in full light. When in leaf, water freely and apply a balanced liquid fertilizer monthly; keep plants dry when dormant. Outdoors, grow in well-drained, humus-rich soil in full sun. Protect from excessive summer and winter wet; apply a winter mulch in frost-prone areas.

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets in late summer or autumn.
- **PESTS AND DISEASES** Trouble free.

**H. lahue** ♂ syn. *Alopha lahue*. Bulbous perennial with erect, linear, basal leaves, 5–20cm (2–8in) long. In spring, bears a succession of pale blue and violet flowers, 2–3cm (¾–1¼in) across, each with a reflexed, cup-like centre. †15cm (6in), ↔ 5cm (2in). Chile, Argentina. \*  
**H. pulchella.** Bulbous perennial with erect, linear, basal leaves, to 20cm (8in) long. In spring, bears a succession of blue or lilac flowers, 5–5.5cm (2–2¼in) across, often streaked deep purple; each flower has a white central stripe, and a partially reflexed, bowl-like centre. †10–15cm (4–6in), ↔ 5cm (2in). S. Brazil, Chile. \*

- ▷ **Herb Robert** see *Geranium robertianum*
- ▷ **Herbs** see p.39
- ▷ **Hercules' club** see *Aralia spinosa*

## HEREROA

AIZOACEAE

Genus of about 30 species of dwarf, short-stemmed, mat-forming, perennial succulents, mostly from low, dry, hilly terrain in Namibia and South Africa. The opposite, fleshy leaves are joined at the bases, and are wedge-shaped and expanded towards the tips. The scented, daisy-like, usually yellow flowers open mainly by day, in summer. In frost-prone areas, grow as houseplants or in a warm greenhouse. In warmer regions, use in a raised bed, in containers, or in a rock garden or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. When in growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep almost dry in winter. Outdoors, grow in poor to moderately fertile, sharply

## HERMANNIA

drained, neutral to slightly alkaline soil in full sun. Protect from excessive winter and summer wet. See also pp.48–49.

- **PROPAGATION** Sow seed in spring at 21–24°C (70–75°F). Divide, or separate offsets, in spring or summer.
- **PESTS AND DISEASES** Prone to aphids.

**H. dyeri.** Compact succulent with short stems bearing cylindrical, bluish green leaves, 5cm (2in) long, keeled beneath, tapering towards the hatchet-shaped tips, and marked with raised dots. In summer, bears open bowl-shaped, golden yellow flowers, 2.5cm (1in) across. †8cm (3in), ↔ indefinite. South Africa (Eastern Cape, Western Cape, KwaZulu/Natal). ☞ (min. 10°C/50°F)  
**H. hesperantha.** Erect, stiff, branching succulent with almost columnar to spherical, 3-angled, fleshy, grey-green leaves, 3–5cm (1¼–2in) long, expanded at the tips and covered with dark dots. Open bowl-shaped, golden yellow flowers, to 2cm (¾in) across, are produced in summer. †↔ 20cm (8in). Namibia, South Africa (Northern Cape, Western Cape). ☞ (min. 10°C/50°F)

## HERMANNIA

STERCULIACEAE

Genus of at least 100 species of evergreen perennials, subshrubs, and shrubs from open, sandy sites in Africa. The leaves are alternate, and may be simple and entire, or toothed, incised, or lobed, usually with soft, star-shaped hairs. Bell-shaped flowers, each with 5 often overlapping and spirally twisted petals, are borne singly or in terminal or axillary cymes. In frost-prone areas, grow in a cool or temperate conservatory or greenhouse. In warmer areas, grow at the base of a warm, sunny wall or in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional sharp sand, in full light shaded from hot sun; provide low to moderate humidity. When in growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun, shaded from midday sun. Protect from excessive winter wet. Pinch out the growing tips of young plants to promote bushiness. Pruning group 8; plants under glass may need restrictive pruning.
- **PROPAGATION** Sow seed at 16–19°C (61–66°F) in spring. Root softwood cuttings in late spring or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Prone to white-flies and red spider mites under glass.

**H. candicans** see *H. incana*.

**H. incana.** syn. *H. candicans*. Bushy shrub or subshrub, becoming untidy with age unless regularly pruned. Ovate-oblong to oblong, mid-green leaves, to 3.5cm (1½in) long, have scalloped, wavy margins, and grey-white undersides covered in star-shaped, soft white hairs. From spring to summer, produces pendent yellow flowers, 1cm (½in) long, in terminal cymes, 8–15cm (3–6in) long, or sometimes singly from the leaf axils. †1m (3ft) (more if unpruned), ↔ 45–90cm (18–36in). South Africa (Western Cape). ☞ (min. 7°C/45°F)

*Hermodactylus tuberosus*

## HERMODACTYLUS

IRIDACEAE

Genus of one species of tuberous perennial found on dry slopes and in rocky areas from S. Europe to N. Africa, Israel, and Turkey. It has irregularly shaped, long, finger-like tubers and linear leaves. Grown for its solitary, iris-like, fragrant flowers borne in spring. *H. tuberosus* will thrive in a dry, sunny, mixed or herbaceous border, and is good for naturalizing in grass. It is also suitable for the base of a warm, sunny wall, or as an early-flowering container plant. In frost-prone areas, grow in an alpine house or bulb frame to protect the early flowers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Plant tubers 10cm (4in) deep in autumn, in moderately fertile, sharply drained, alkaline soil in full sun. Protect from excessive summer rain; needs dry summers to flower well.
- **PROPAGATION** Divide as soon as the leaves have died back in early summer.
- **PESTS AND DISEASES** Slugs and snails may be a problem.

*H. tuberosus* ■ syn. *Iris tuberosa* (Widow iris). Tuberous perennial with linear, bluish green or greyish green leaves, to 50cm (20in) long, and square in cross-section. In spring, bears solitary, scented, greenish yellow flowers, 5cm (2in) across, with velvety, blackish brown outer segments. † 20–40cm (8–16in), ↔ 5cm (2in). S.E. France to N. Africa, Israel, and Turkey. \*\*\*

- ▷ **Heron's bill** see *Erodium*
- ▷ **Herringbone plant** see *Maranta leuconeura* 'Erythroneura'

## HESPERALOE

AGAVACEAE

Genus of about 3 species of perennial succulents, closely related to *Yucca*, although the flowers are more similar to those of *Aloe*. They occur in semi-arid regions of Texas, USA, and N. Mexico. Short, fleshy stems bear basal rosettes of tough, elongating, linear leaves with fibrous margins. The tall inflorescences of tubular-bell-shaped flowers are often curved and branching. In frost-prone areas, grow in a temperate greenhouse or conservatory. In warmer climates, grow in a desert garden or in containers.

- **HARDINESS** Frost tender.

*Hesperaloe parviflora*

- **CULTIVATION** Under glass, grow in standard cactus compost in full light. When in growth, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep completely dry in winter. Outdoors, grow in poor to moderately fertile, sharply drained, neutral to acid soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F), or pot up offsets, in spring.
- **PESTS AND DISEASES** Prone to scale insects and, while flowering, aphids.

*H. parviflora* ■ syn. *Yucca parviflora*. Clump-forming succulent with arching, linear, leathery, bright dark green leaves, 60–90cm (24–36in) long, often with peeling, fibrous margins. In summer, the upper part of the panicle-like inflorescence, 1m (3ft) or more long, bears crowded, pendent, dark to bright red flowers, to 3.5cm (1½in) long, with golden yellow throats. † 1m (3ft), ↔ 2m (6ft). USA (S.W. Texas). ♀ (min. 7°C/45°F)

## HESPERANTHA

IRIDACEAE

Genus of 55 species of cormous perennials from rocky and sandy areas in Africa. Those in cultivation have linear to lance-shaped, mostly mid-green, basal leaves, and bear spikes or racemes of cup- or star-shaped flowers on wiry stems in spring. In frost-prone climates, grow in a cold greenhouse. In warmer regions, grow at the front of a border, in a rock garden or trough, or at the base of a warm, sunny wall.

- **HARDINESS** Half hardy.
- **CULTIVATION** Plant corms 10–15cm (4–6in) deep in autumn. Under glass, grow in loam-based potting compost (J1 No.2) with added leaf mould and grit, in full light. Provide moderate humidity and good ventilation. Water sparingly until flowering, then freely. After flowering, reduce water; keep plants dry while dormant. Outdoors,

grow in fertile, well-drained soil in full sun. Protect with a dry mulch in winter.

- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in autumn or spring. Separate offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

*H. bubrii* see *H. cucullata*.

*H. cucullata*, syn. *H. bubrii*. Cormous perennial with 3 linear leaves, 14–21cm (5½–8in) long. Single or branched stems of up to 10 star-shaped, scented, white, pink-backed flowers, 4cm (1½in) across, are borne in spring. Flowers open during the afternoon. † to 30cm (12in), ↔ 5cm (2in). South Africa. \*

*H. falcata*, syn. *H. lutea*. Cormous perennial with 2–4 linear leaves, 4–8cm (1½–3in) long. In spring, branched stems bear up to 10 star-shaped flowers, 2cm (¾in) across. Flowers are usually white with red-flushed backs, but yellow variants are also known; the white flowers are scented and open at night, the yellow variants are unscented and open during the day. † to 30cm (12in), ↔ 8cm (3in). South Africa. \*

*H. inflexa* see *H. vaginata*.

*H. lutea* see *H. falcata*.

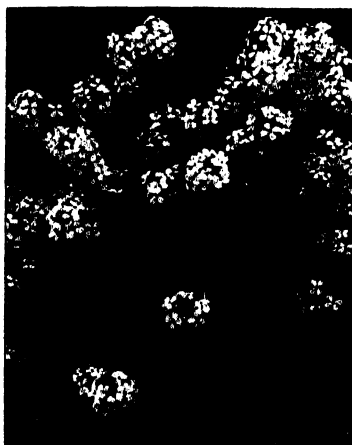
*H. vaginata*, syn. *H. inflexa*. Cormous perennial with 3 linear leaves, 23cm (9in) long. In spring, bears single or branched stems of up to 4 cup-shaped, clear yellow or purple-striped yellow flowers, 6cm (2½in) across, opening in the late afternoon. † to 18cm (7in), ↔ 8cm (3in). South Africa. \*

## HESPERIS

BRASSICACEAE/CRUCIFERAE

Genus of about 30 species of biennials and perennials found in stony sites, wasteland, and woodland from Europe to China and Siberia. Most have ovate to spoon-shaped, entire to pinnatifid, pale to mid-green leaves. They are grown for their loose racemes or panicles of cross-shaped, 4-petalled, fragrant, purple, yellowish white, or white flowers. Cultivars with double flowers are good for cutting. Use in a mixed or herbaceous border, or in a wild garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral to alkaline soil in sun or partial shade. Add leaf mould or organic matter when planting double-flowered cultivars. Replace every 2–3 years, as flowering diminishes with age.
- **PROPAGATION** Sow seed *in situ* in spring. Root basal cuttings in spring.

*Hesperis matronalis* var. *albiflora*

- **PESTS AND DISEASES** Viruses, mildew, slugs, snails, flea beetles, and caterpillars may be a problem.

*H. matronalis* (Dame's violet, Sweet rocket). Rosette-forming biennial or short-lived perennial with leafy stems and ovate to elliptic or oblong, toothed, hairy, dark green leaves, 10–20cm (4–8in) long. From late spring to mid-summer, bears racemes or panicles of usually lilac or purple, sometimes white or very pale lilac flowers, 3–4cm (1¼–1½in) across. Very attractive to insects. † to 90cm (36in), ↔ 45cm (18in). S. Europe, Russia (Siberia), W. and C. Asia. \*\*\*. var. *albiflora* ■ has white flowers, and comes true from seed if it is isolated from other colour variants. var. *albiflora* 'Alba Plena' bears double white flowers. subsp. *candida* has hairless leaves and white flowers. 'Lilacina Flore Pleno' bears double lilac flowers. 'Purpurea Plena' has double, dark lilac or purple flowers with neatly arranged petals.

## HESPEROCALLIS

LILIACEAE

Genus of one species of bulbous perennial occurring in desert areas in S.W. USA. It has linear, wavy-margined bluish green leaves, and is valued for its terminal racemes of funnel-shaped, fragrant white flowers borne from spring to summer. In frost-prone regions, grow in a cool greenhouse. In dry, frost-free areas, use in a desert garden or at the base of a warm, sunny wall.

- **HARDINESS** Half hardy.
- **CULTIVATION** Plant in autumn with the necks of the bulbs at the soil surface. Under glass, grow in standard cactus compost in full light. In the growing season, water sparingly and apply a balanced liquid fertilizer monthly; keep completely dry in winter. Outdoors, grow in gritty, dry, neutral to slightly alkaline soil in full sun. Protect from excessive winter or summer wet.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F), or remove offsets, in spring.
- **PESTS AND DISEASES** Trouble free.

*H. undulata* (Desert lily). Bulbous perennial with a basal cluster of linear, wavy-margined, blue-green leaves, to 30cm (12in) long. From spring to summer, produces terminal racemes of upward-facing, funnel-shaped, 6-lobed white flowers, to 7cm (3in) long, with a green central stripe on the outside of each tepal. † to 30cm (12in), ↔ 15cm (6in). S.W. USA. \*

- ▷ *Hesperoyucca* see *Yucca*
- ▷ **Hesper palm** see *Brahea*
- Blue see *B. armata*
- San Jose see *B. brandegeei*

## HETEROCENTRON

syn. HEERIA

MELASTOMATACEAE

Genus of 27 species of herbaceous perennials and low-growing, evergreen shrubs or subshrubs from open bush in Mexico and Central and South America. They have heart-shaped to lance-shaped, pale to dark green leaves, and bear open funnel-shaped, 4-petalled, white, pink, or mauve flowers singly or in panicles,

*Heterocentron elegans*

from summer into autumn and winter. In frost-prone areas, grow as houseplants or in a temperate greenhouse; elsewhere, use as ground cover on a sunny bank or in a rock garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely and apply a balanced liquid fertilizer every month; keep moist in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pinch out the growing tips to encourage a bushy habit.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Divide in spring, or root softwood cuttings in spring or early summer.
- **PESTS AND DISEASES** Trouble free.

**H. elegans** ■ (Spanish shawl). Carpet-forming, evergreen subshrub with dense, ovate to oblong-ovate, bristly to downy, mid-green leaves, to 2.5cm (1in) long. From summer to autumn, bears solitary, open funnel-shaped magenta flowers, to 5cm (2in) across. ↑ 10cm (4in), ↔ 45cm (18in). Mexico, Guatemala, Honduras. ☉ (min. 7°C/45°F)

▷ *Heteromeles* see *Photinia*

## HETEROTHECA

syn. *CHRYSOPSIS*

ASTERACEAE/COMPOSITAE

Genus of about 20 species of clump-forming, erect annuals and perennials from dry, sunny sites, usually in well-drained, sandy soil, in North America. The alternate, simple, ovate to inversely lance-shaped leaves are toothed or entire, sometimes softly silver-hairy, and usually mid-green. Branched stems bear corymbs of daisy-like yellow flowerheads. Grow in a mixed or herbaceous border or in a large rock garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in full sun. Protect from excessive winter wet.

- **PROPAGATION** Sow seed in containers in a cold frame in spring; if sown early, perennials may flower the same year. Divide perennials in spring.
- **PESTS AND DISEASES** Trouble free.

**H. mariana**, syn. *Chrysopsis mariana*. Softly grey-hairy perennial with short stolons and both decumbent and erect stems. Basal leaves are spoon-shaped to inversely lance-shaped, shallowly toothed, and to 20cm (8in) long; stem leaves are rounded to elliptic-oblong, entire, and to 3cm (1¼in) long. From midsummer to early autumn, bears corymbs of yellow flowerheads, each 4.5cm (1¾in) across. ↑ to 90cm (36in), ↔ 50cm (20in). USA (New York State south to Florida, Texas). \*\*\*

**H. villosa**, syn. *Chrysopsis villosa* (Hairy golden aster). Softly grey-hairy, sometimes rhizomatous perennial with erect to decumbent stems. Basal leaves are oblong-elliptic to lance-shaped, usually entire, occasionally toothed, and 2–4cm (¾–1½in) long; stem leaves are linear-lance-shaped and 1–3cm (½–1¼in) long. From midsummer to early autumn, bears corymbs of yellow flowerheads, each 2–4cm (¾–1½in) across. Needs a very well-drained, sunny site. ↑ 20–80cm (8–32in), ↔ 20cm (8in). W. and S. central USA. \*\*\*

▷ *Heterotropae* see *Asarum*

## HEUCHERA

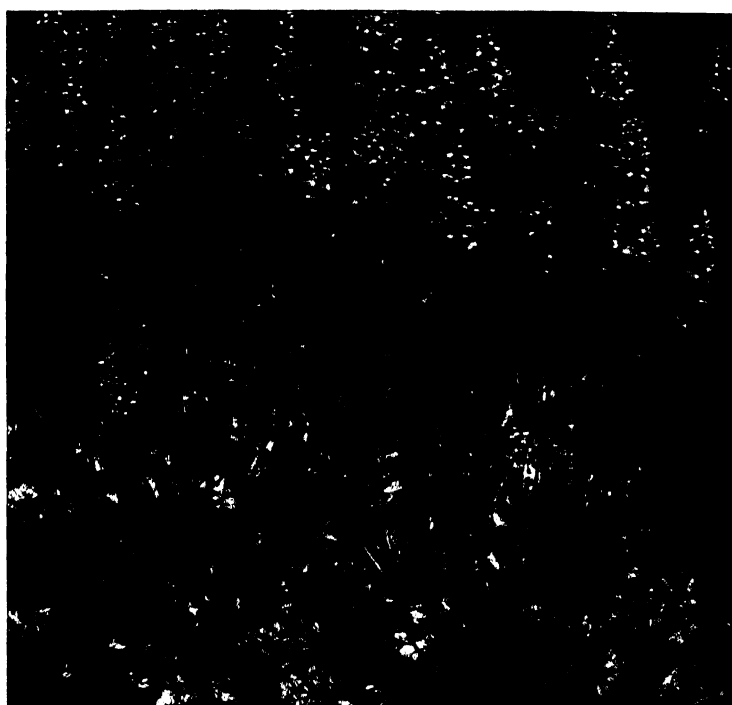
Coral flower

SAXIFRAGACEAE

Genus of about 55 species of evergreen and semi-evergreen perennials from woodland and rocky sites in North America, chiefly the Rocky Mountains, with a few from Mexico. They have woody rootstocks and form clumps or mounds of rounded to heart-shaped, lobed, and often toothed, long-stalked, boldly veined leaves. Those with darker or paler shading or variegation are excellent foliage plants. Hybrids of *H. cylindrica*, *H. sanguinea*, and *H. micrantha* share their parents' habits and leaf characteristics. The small, sometimes petalless, tubular flowers, 2–6mm (¼–¼in) long, occasionally to 10mm (½in), have conspicuous, colourful calyces, and are borne in narrow, loose racemes or panicles. Use as ground cover or in a herbaceous, mixed, or shrub border; the flowers are good for cutting and are attractive to bees.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral soil in sun or partial shade; full shade may be tolerated in a moist site. The woody rootstock tends to push upwards, so mulch annually; eventually lift and replant in late summer or early autumn, with just the crown above the soil surface, or replace with new plants.
- **PROPAGATION** Sow seed of species in containers in a cold frame in spring. Divide species and cultivars in autumn.
- **PESTS AND DISEASES** Leaf eelworms, vine weevil larvae, and a gall-causing infection may be a problem.

**H. americana**. Mound-forming perennial with rosettes of broadly ovate to heart-shaped, 5- to 9-lobed, glossy, leathery leaves, 5–14cm (2–5½in) long.

*Heuchera cylindrica* 'Greenfinch'

Young foliage is marbled and veined brown, maturing to deep green with copper-green shading. In early summer, bears panicles of brownish green flowers, 30cm (12in) or more long. ↑ 45cm (18in), ↔ 30cm (12in). C. and E. North America. \*\*\*

**H. 'Apple Blossom'**. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Short-branched panicles of pale pink flowers open from rose pink buds in early summer. ↑ 60cm (24in), ↔ 30–45cm (12–18in). \*\*\*

**H. 'Coral Cloud'**. Clump-forming perennial producing crinkled, glistening leaves, similar to those of *H. sanguinea*. Bears wide panicles of coral-red flowers in early summer. ↑ 75cm (30in), ↔ 30cm (12in). \*\*\*

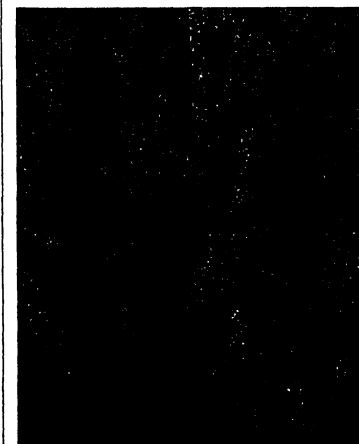
**H. cylindrica**. Mound-forming perennial with rounded to broadly ovate, deeply round-lobed, often hairy, dark green leaves, 2.5–8cm (1–3in) long; they have scalloped margins and metallic, paler green mottling. From mid-spring to midsummer, leafless stems bear yellowish green or cream flowers in very short-branched, spike-like panicles, to 15cm (6in) long. Good foliage plant. ↑ 30–50cm (12–20in),

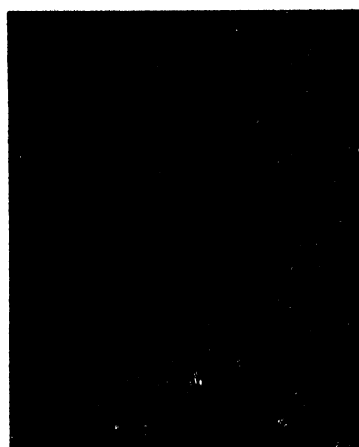
↔ 30cm (12in). N.W. North America.

\*\*\* **'Chartreuse'** has pink buds opening to large, lime-green flowers in early summer. **'Greenfinch'** ■ bears green flowers in tall, stiff, very short-branched panicles; ↑ to 90cm (36in), ↔ 60cm (24in). **'Hyperion'** bears stiff spikes of deep pink, green-tinged flowers; ↑ 75cm (30in), ↔ 45cm (18in). **H. 'Dennis Davidson'** see *H. 'Huntsman'*.

**H. 'Feuerregen'** see *H. 'Pluie de Feu'*. **H. 'Firebird'**. Compact, free-blooming perennial with leaves similar to those of *H. sanguinea*. In early summer, bears panicles of glowing, crimson-scarlet flowers on erect stems. ↑ 60cm (24in), ↔ 30cm (12in). \*\*\*

**H. 'Firefly'** ■ syn. *H. 'Leuchtkäfer'*. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Bears fragrant vermilion flowers in short-branched panicles in early summer. ↑ 75cm (30in), ↔ 30cm (12in). \*\*\* **H. 'Green Ivory'** ■ Clump-forming perennial with leaves similar to those of *H. cylindrica*. Strong, erect stems bear short-branched panicles of numerous green flowers in early summer. ↑ 75cm (30in). \*\*\*

*Heuchera* 'Firefly'*Heuchera* 'Green Ivory'

*Heuchera* 'Huntsman'*Heuchera micrantha* var. *diversifolia*  
'Palace Purple'

***H. grossulariifolia***. Clump-forming perennial producing rounded to kidney-shaped, toothed, mid-green leaves, to 6cm (2½in) long. In early summer, bears bell-shaped, pure white flowers in panicles 1–6cm (½–2½in) long. ‡ 10cm (4in), ↔ to 15cm (6in). W. USA. \*\*\*

***H. 'Huntsman'*** ■ syn. *H. 'Dennis Davidson'*. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Short-branched panicles of bright red flowers open in early summer. ‡ 30–45cm (12–18in). \*\*\*

***H. 'Leuchtkäfer'*** see *H. 'Firefly'*.

***H. micrantha***. Mound- or clump-forming perennial with ovate to heart-shaped, shallowly 5- to 7-lobed, hairy, grey-marbled leaves, 2–8cm (¾–3in) long. In early summer, bears loose panicles, to 30cm (12in) or more long, of numerous tiny, tubular, pink-flushed white flowers with red anthers. ‡ 90cm (36in), ↔ 45cm (18in). W. North America (British Columbia to Sierra Nevada). \*\*\*. var. *diversifolia* 'Palace Purple' ■ ♀ has large, jagged, glistening, almost metallic, bronze-red leaves, to 15cm (6in) long. Bears loose panicles of numerous greenish cream flowers with red anthers, which give them a salmon-pink appearance; flowers are followed by rose-pink seed heads. Many seed-raised plants do not retain the deep bronze-red leaf colour. ‡ 45–60cm (18–24in).

***H. 'Mother of Pearl'***. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Panicles of pink-flushed white flowers are borne in early summer. ‡ 60cm (24in), ↔ 30cm (12in). \*\*\*

*Heuchera* 'Pewter Moon'

***H. 'Pearl Drops'***. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Bears dainty, arching panicles of pink-tinged white flowers in early summer. ‡ 60cm (24in), ↔ 30cm (12in). \*\*\*

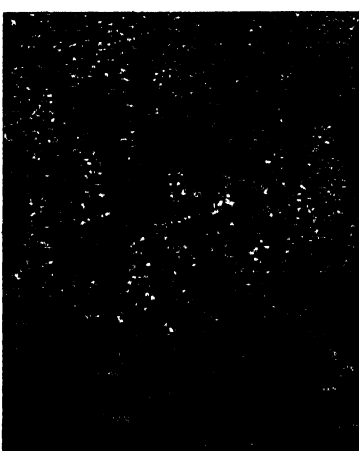
***H. 'Pewter Moon'*** ■ Clump-forming perennial with leaves similar to those of *H. micrantha*. In early summer, bears panicles of large, pale pink flowers. ‡ to 40cm (16in), ↔ 30cm (12in). \*\*\*

***H. 'Pluie de Feu'*** ■ syn. *H. 'Feuerregen'*, *H. 'Rain of Fire'*. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Bears narrow panicles of bright red flowers from early to late summer. ‡ 50cm (20in), ↔ 30cm (12in). \*\*\*

***H. 'Rachel'***. Clump-forming perennial with leaves similar to those of *H. sanguinea*. In early summer, bears erect panicles of large, pale pink flowers. ‡ 30cm (12in). \*\*\*

***H. 'Rain of Fire'*** see *H. 'Pluie de Feu'*.

***H. 'Red Spangles'*** ■ ♀ Clump-forming perennial with leaves similar to those of *H. sanguinea*. Bears short-branched, open panicles of large, scarlet-crimson flowers throughout summer. ‡ 50cm (20in), ↔ 25cm (10in). \*\*\*

*Heuchera* 'Pluie de Feu'*Heuchera* 'Red Spangles'

***H. rubescens***. Clump-forming, tufted perennial with rounded to broadly ovate, deeply 3- to 7-lobed, sharp-toothed, mid-green leaves, to 5cm (2in) long. In summer, bears loose, spike-like panicles, to 15cm (6in) long, of bell-shaped, white to pale pink flowers, becoming reddish pink with age. ‡ to 15cm (6in). W. USA. \*\*\*

***H. sanguinea*** (Coral bells). Mat- or clump-forming perennial with rounded to kidney-shaped, shallowly lobed, toothed, glandular-hairy, dark green leaves, 2–8cm (¾–3in) long, marbled with pale green. In summer, bears large, tubular, red, rarely pink or white flowers in open panicles, to 15cm (6in) long. ‡ 30cm (12in). S.W. USA. \*\*\*

***H. 'Schneewittchen'***. Clump-forming perennial with leaves similar to those of *H. sanguinea*. Bears short-branched panicles of white flowers in early and midsummer. ‡ 50cm (20in), ↔ 25cm (10in). \*\*\*

***H. 'Scintillation'*** ♀ Clump-forming perennial with leaves similar to those of *H. sanguinea*. Bears panicles of deep pink, coral-pink-rimmed flowers in early summer. ‡ 60cm (24in), ↔ 30cm (12in). \*\*\*

***H. 'Snow Storm'***. Clump- or mound-forming perennial with leaves similar to those of *H. sanguinea*, but marbled silvery white. Panicles of cerise-red flowers are borne in early summer. ‡ 30cm (12in). \*\*\*

***H. 'Taff's Joy'***. Clump-forming perennial with leaves similar to those of *H. sanguinea*, but variegated cream and tinged pink. Panicles of pink flowers are produced in early summer. ‡ 25–30cm (10–12in), ↔ 20cm (8in). \*\*\*

## X HEUCHERELLA

SAXIFRAGACEAE

Hybrid genus, resulting from crosses between *Heuchera* and *Tiarella*, of evergreen, mat- or clump-forming, occasionally stoloniferous perennials. They have heart-shaped or broadly ovate, lobed, boldly veined, sometimes hairy leaves, shaded brown when young and turning reddish brown in autumn. Short, loose panicles of tubular-bell-shaped, pink or white flowers, to 6mm (¼in) long, are borne over a long period from spring to autumn. They are excellent as ground cover or edging in a herbaceous, mixed, or shrub border, or for a woodland garden.

• **HARDINESS** Fully hardy.

x *Heucherella tiarelloides*

• **CULTIVATION** Grow in light, fertile, moist but well-drained, neutral to slightly acid soil; sun or partial shade is best, but full shade is tolerated.

• **PROPAGATION** Divide in autumn or spring. Separate plantlets from rooted stolons in autumn.

• **PESTS AND DISEASES** Trouble free.

x ***H. alba* 'Bridget Bloom'**. Clump-forming perennial, lacking stolons, with broadly ovate, shallowly 7- to 9-lobed, toothed, mid-green leaves, 4–10cm (1½–4in) long, heart-shaped at the bases and marked brown along the veins. From late spring to mid-autumn, produces erect panicles of tiny white flowers, 3–5mm (¼–¼in) long, with pink calyces. ‡ to 40cm (16in), ↔ 30cm (12in). \*\*\*

x ***H. tiarelloides*** ■ ♀ (*Heuchera* x *brizoides* x *Tiarella cordifolia*). Stoloniferous, hairless perennial with rounded, shallowly lobed, toothed, light green leaves, 7–9cm (3–3½in) long, heart-shaped at the bases, and often with brown markings when young. Brownish red stems bear narrow, short-branched panicles of tiny pink flowers, to 3mm (¼in) long, from mid-spring to early summer. ‡ 45cm (18in). \*\*\*

▷ *Hexastylis* see *Asarum*

▷ *Heyderia decurrens* see *Calocedrus decurrens*

▷ *Hiba* see *Thujopsis dolabrata*

## HIBBERTIA syn. CANIXOLLEA

DILLENIACEAE

Genus of about 120 species of evergreen trees, shrubs, and climbers mainly from scrub, heathland, and sandy areas of Australia, but also found in Madagascar, New Guinea, New Caledonia, and Fiji. The alternate, simple, variably shaped, sometimes stem-clasping leaves have entire, wavy, or toothed margins. The saucer- to bowl-shaped, yellow, occasionally pink or white flowers each have 5 spreading, shallowly to deeply notched petals and are borne singly or in terminal or axillary, raceme-like cymes. In frost-prone areas, grow in a cool greenhouse. Elsewhere, use the shrubs in a shrub border or at the base of a warm, sunny wall; train the climbers over a pergola, arch, or arbour.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, with moderate



*Hibbertia cuneiformis*

humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; keep moist in winter. Provide support for climbers. Outdoors, grow in fertile, moist but well-drained soil in partial shade, or in sun with midday shade. Pruning group 8 for shrubs; group 11 for climbers, after flowering.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** In winter, hairy species are susceptible to grey mould (*Botrytis*). Vulnerable to scale insects under glass.

*H. cuneiformis* ■ syn. *Candollea cuneiformis*. Erect, freely branching, sometimes spreading and twining shrub with oblong to narrowly obovate, bright

green leaves, 2.5–5cm (1–2in) long, often toothed at the tips. From late winter to spring, short, lateral shoots bear solitary, rich yellow flowers, 1.5–4.5cm (½–1¾in) across, with shallowly notched petals. Tolerates full shade and desert conditions. †1–2m (3–6ft), ↔ 1–1.5m (3–5ft). Australia (coast of Western Australia). ☀ (min. 5°C/41°F)

*H. dentata*. Trailing or twining shrub or subshrub with red-flushed green stems. Elliptic-oblong to oblong, sparsely toothed, sometimes wavy-margined leaves, 5–9cm (2–3½in) long, are bronze-red or purple-tinted when young, becoming glossy, deep green when mature. From late winter to summer, bears solitary, terminal flowers, 3–5cm (1¼–2in) across, with shallowly notched, bright yellow petals. Good for a hanging basket. †↔ 1–2m (3–6ft). Australia (New South Wales, Victoria). ☀ (min. 3–5°C/37–41°F)

*H. scandens* ■ ♀ syn. *H. volubilis*. Vigorous shrub with procumbent or twining, reddish brown stems and silky-hairy shoots. Elliptic or oblong-elliptic to obovate, leathery leaves, to 10cm (4in) long, are entire or shallowly toothed near the tips; they are usually glossy, rich green above, paler and silky-hairy beneath. Solitary, terminal, pale to bright yellow flowers, 5–7cm (2–3in) across, with slightly notched petals, are borne mainly in summer. Suitable as ground cover. Thrives in coastal sites. †3–6m (10–20ft), ↔ 1.5–2.5m (5–8ft). Australia (Northern Territory, Queensland, New South Wales, often coastal). ☀ (min. 5°C/41°F)

*H. sericea*. Dwarf to small shrub, usually erect but sometimes spreading with age, producing grey, silky hairy young shoots. Narrowly linear-lance-shaped to broadly lance-shaped leaves, to 1.5cm (½in) long, are softly hairy and grey- to mid-green, the upper surfaces rough, and the margins rolled under. Pale to rich yellow flowers, 1.5–3cm (½–1¼in) across, with deeply notched, wavy-margined petals, are borne singly or in small, terminal clusters from late winter to summer. †30–120cm (12–48in), ↔ 30–90cm (12–36in). Australia (New South Wales, Victoria, Tasmania). \*

*H. volubilis* see *H. scandens*.

## HIBISCUS

### MALVACEAE

Genus of more than 200 species of deciduous and evergreen shrubs, trees, annuals, and herbaceous perennials widely distributed in warm-temperate, subtropical, and tropical regions, where they occur in a variety of habitats including streamsides, moist woodland, and dry, rocky sites. They have alternate, entire or shallowly to palmately lobed, sometimes toothed leaves, and are grown for their showy, mainly funnel-shaped, solitary or clustered flowers, borne over a long period from spring to autumn. The flowers are red, pink, purple, blue, yellow, or white, and sometimes have contrasting marks at the bases of the petals, and prominent, colourful stamens. Grow in a sunny mixed, herbaceous, or shrub border; in frost-prone areas, grow tender species and cultivars in a temperate or warm greenhouse. Some perennials may be grown as annuals.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered light. Provide moderate humidity and good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained, neutral to slightly alkaline soil in full sun. Hibiscus need long, hot summers to flower well. Those grown at the limits of their hardiness level need mulching in winter. *H. mutabilis* will regenerate from its woody base if cut back by frost. Pruning group 1 for deciduous hibiscus, group 9 for evergreens; however, little or no pruning is usually necessary.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide perennials in spring. Root greenwood cuttings of shrubs in late spring, or semi-ripe cuttings in summer. Layer in spring or summer.

• **PESTS AND DISEASES** Aphids, scale insects, mealybugs, whiteflies, and powdery mildew may be a problem, especially under glass.

*H. abelmoschus* see *Abelmoschus moschatus*.

*H. acetosella*, syn. *H. cetyldeanus*. Upright, bushy, fast-growing annual or short-lived, woody-based perennial producing long-stalked, broadly ovate, unlobed or 3- to 5-lobed, often red-flushed, mid-green leaves, to 30cm (12in) long. Solitary, axillary, funnel-

shaped, yellow or purple-red flowers, 6–10cm (2½–4in) across, with deep purple centres, are borne from late summer to autumn. †0.6–1.5m (2–5ft), ↔ to 1m (3ft). C. and E. Africa. \*

'Coppertone' ■ syn. *H. 'Red Shield'*, has brilliant maroon-purple leaves.

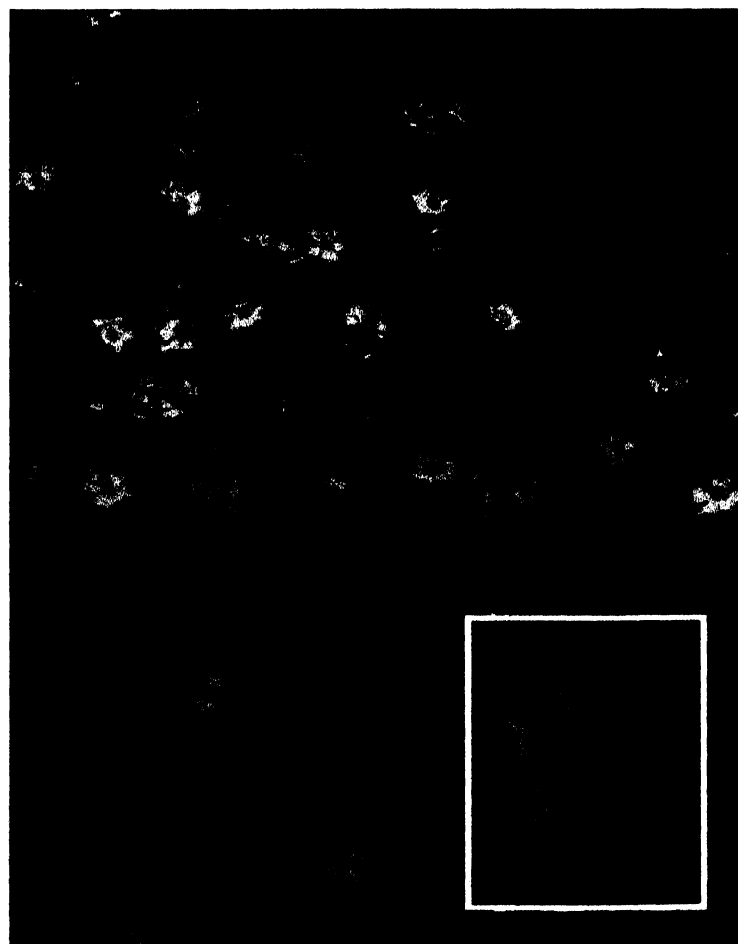
*H. arnottianus* ◊ Rounded, usually fairly open, evergreen, large shrub or small tree with ovate, entire or toothed, leathery, dark green leaves, to 25cm (10in) long. Solitary, lightly scented, funnel-shaped white flowers, 10–18cm (4–7in) across, with pink veins and central sheaves of red stamens, are produced from the leaf axils in summer. †3–8m (10–25ft), ↔ 2–6m (6–20ft). Hawaii. ☀ (min. 15°C/59°F). 'Wilder's White' has pure white flowers.

*H. calyphyllus*. Woody-based, evergreen perennial or shrub producing leaves and young shoots covered with soft, star-shaped hairs. The broadly ovate, entire or shallowly 3-lobed, occasionally 5-lobed, rich green leaves, to 12cm (5in) long, have pointed to rounded teeth. Axillary, solitary, funnel-shaped, sulphur-yellow flowers, 7–13cm (3–5in) across, with maroon or brownish red eyes, are produced from spring to autumn. † to 3m (10ft), ↔ 1.5–2m (5–6ft). Tropical to southern Africa, Madagascar, Mascarene Islands. ☀ (min. 15°C/59°F)

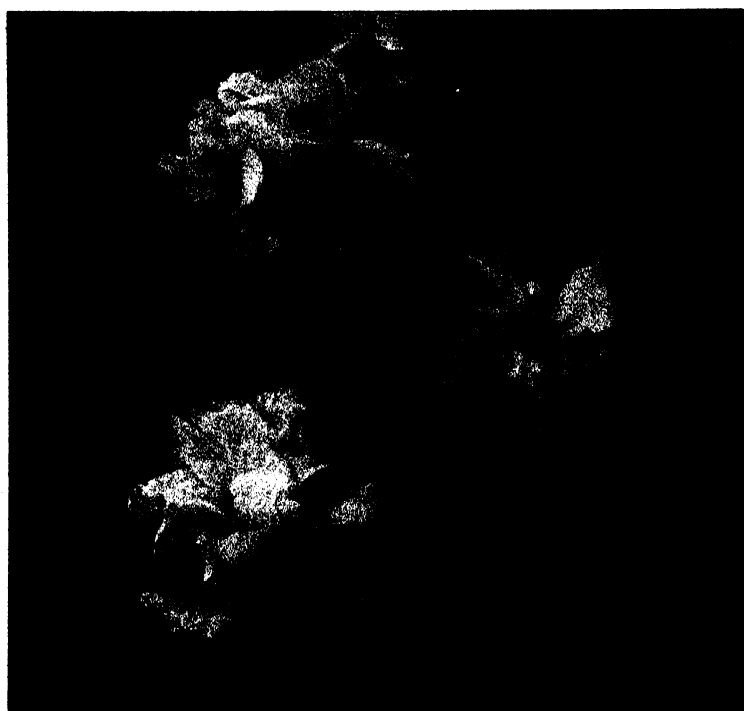
*H. cannabinus* (Indian hemp, Kenaf). Erect, almost unbranched, fast-growing, minutely spiny-stemmed annual or short-lived, woody-based perennial. Long-stalked, ovate, dark green upper leaves, to 15cm (6in) long, are palmately 3- to 7-lobed; leaves lower down the stems are unlobed. Axillary, funnel-shaped, pale yellow, occasionally purple-red flowers, 8–15cm (3–6in) across, with crimson-red centres, are borne singly or in few-flowered racemes from summer to autumn. †1–3.5m (3–11ft), ↔ to 1.5m (5ft). Origin uncertain, possibly Indonesia. \*

*H. cetyldeanus* see *H. acetosella*.

*H. huegelii* see *Alyogyne huegelii*.

*Hibiscus acetosella* 'Coppertone'*Hibbertia scandens* (inset: flower detail)

## H

*Hibiscus rosa-sinensis* 'Crown of Bohemia'

**H. moscheutos** ■ (Common rose mallow, Swamp rose mallow). Strong-growing, woody-based perennial with erect stems. Produces broadly ovate to lance-shaped, unlobed or shallowly 3- to 5-lobed, toothed, mid-green leaves, 8–23cm (3–9in) long, white-hairy beneath. Widely funnel-shaped flowers, to 20cm (8in) across, with spreading petals, are white, pink, or crimson, sometimes with crimson petal bases, and borne singly from the leaf axils in summer. ‡ 2.5m (8ft), ↔ 1m (3ft). S. USA. ☼ (min. 5°C/41°F). **Disco Belle Series** cultivars are compact perennials, usually treated as annuals for greenhouse display, with red, pink, or white flowers, to 23cm (9in) across; ‡ to 50cm (20in). **'Southern Belle'** has toothed leaves and dark red flowers, 20cm (8in) across, with paler red margins; ‡ to 1m (3ft). **H. mutabilis** ♀ (Confederate rose mallow, Cotton rose). Erect to spreading, usually freely branching, evergreen, large shrub or small tree with stems covered in soft, star-shaped hairs.

Broadly ovate to rounded, palmately 3- to 7-lobed, toothed leaves, to 17cm (7in) long, are rich green above, and covered with star-shaped hairs beneath. Funnel-shaped, white or pink flowers, 8–12cm (3–5in) across, sometimes with darker pink bases, are produced singly or in few-flowered, terminal clusters from the leaf axils from spring to autumn. ‡ 2–5m (6–15ft), ↔ 1.5–2.5m (5–8ft). China. ☼ (min. 13°C/55°F) **H. 'Red Shield'** see *H. acetosella* 'Coppertone'.

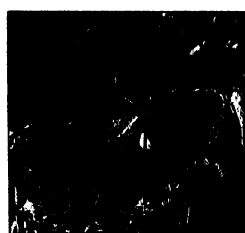
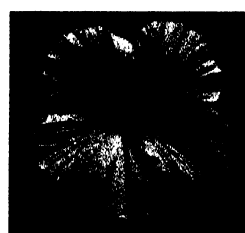
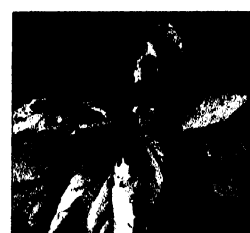
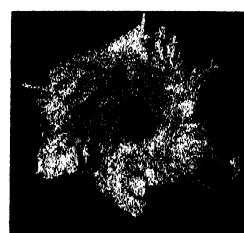
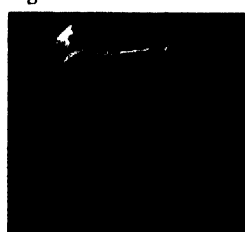
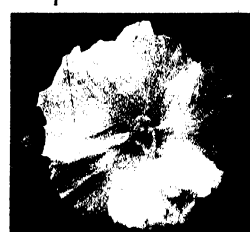
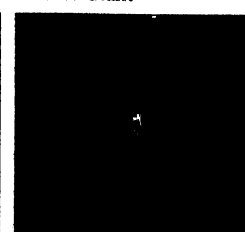
**H. rosa-sinensis** ♀ (Chinese hibiscus, Hawaiian hibiscus, Rose of China). Rounded, bushy, evergreen, large shrub or small tree with hairless or slightly hairy shoots and ovate to broadly lance-shaped, glossy, dark green leaves, to 15cm (6in) long, with toothed margins. Solitary, 5-petalled, bright crimson flowers, 10cm (4in) across, with yellow-anthered red stamens, are produced from the leaf axils from summer to autumn. Flower colour is very variable in cultivation, ranging from crimson to

orange, yellow, or white. ‡ 2.5m–5m (8–15ft), ↔ 1.5m–3m (5–10ft). Origin unknown, probably tropical Asia. ☼ (min. 10–13°C/50–55°F). Numerous cultivars have been raised, some with semi-double or double flowers. **'Agnes Galt'** ■ is upright, bushy, and very free-flowering; it bears pink flowers, 12–17cm (5–7in) across, lighter red on the petal margins, with deep rose-pink veins and stamens, and yellow anthers. **'Cooperi'** ■ is compact, with lance-shaped leaves marbled olive-green and white, sometimes tinted pink, and bearing red flowers; ‡ 1–2m (3–6ft). **'Crown of Bohemia'** ■ bears double, golden yellow flowers, flushed bright reddish orange in the centres, with reddish orange stamens. **'Dainty Pink'** see *'Fantasia'*. **'Dainty White'**, syn. *H. 'Swan Lake'*, *H. 'White La France'*, has white flowers, 10cm (4in) across, with petals margined creamy pale yellow, and white stamens. **'Fantasia'**, syn. *'Dainty Pink'*, *'Pink La France'*, is free-flowering, bearing strongly veined, reddish pink flowers, 10cm (4in) across, with pink or white stamens; the outer petals are slightly fringed, margined white, and have creamy-white central zones. **'Fiesta'** has large, deep apricot-orange flowers, 18cm (7in) across, with finely waved petals, bright red and white centres, and cream stamens. **'Full Moon'** see *'Mrs. James E. Hendry'*. **'Kinchen's Yellow'** ■ has yellow flowers, 12–15cm (5–6in) across, with white centres and yellow stamens. **'Mrs. James E. Hendry'**, syn. *'Full Moon'*, has double, lemon-yellow flowers, 15cm (6in) across, with white eyes and white veins, and deep yellow stigmas. **'Pink La France'** see *'Fantasia'*. **'Scarlet Giant'** ■ has scarlet flowers, 12–17cm (5–7in) across, with red- and yellow-anthered stamens. **'The President'** ■ is erect and bushy, bearing rich red flowers, 16–18cm (6–7in) across, with darker red centres, stamens, and veins; the petals have slightly ruffled margins, and cream markings at the bases.

**H. schizopetalus** ■ ♀ (Japanese lantern). Tall, slender, evergreen shrub with arching or pendent branches and ovate, toothed, mid- to deep green leaves, to 12cm (5in) long. Long-stalked, pendent, pink or red flowers, to 8cm (3in) across, each with a long staminal

*Hibiscus schizopetalus*

column, pink stamens, and deeply and irregularly fringed, reflexed petals, are produced singly from the upper leaf axils in summer. ‡ to 3m (10ft) or more, ↔ 1–1.5m (3–5ft). Kenya, Tanzania, Mozambique. ☼ (min. 13°C/55°F) **H. sinosyriacus**. Spreading, deciduous shrub of open habit with broadly ovate, shallowly 3-lobed, mid-green leaves, to 10cm (4in) long. From late summer to mid-autumn, bears solitary, trumpet-shaped white flowers, 8–9cm (3–3½in) across, with red centres and yellow-anthered white stamens. ‡ 2.5m (8ft), ↔ 3m (10ft). C. China. \*\*\*. **'Autumn Surprise'** has white flowers with petal bases feathered cherry pink. **'Lilac Queen'** ■ bears pale lilac-mauve flowers with red centres. **H. 'Swan Lake'** see *H. rosa-sinensis* 'Dainty White'. **H. syriacus**. Erect, deciduous shrub with ovate to diamond-shaped, shallowly to palmately 3-lobed, coarsely toothed, dark green leaves, to 10cm (4in) long. Large, trumpet-shaped, dark

*Hibiscus moscheutos**Hibiscus rosa-sinensis* 'Agnes Galt'*Hibiscus rosa-sinensis* 'Cooperi'*Hibiscus rosa-sinensis* 'Kinchen's Yellow'*Hibiscus rosa-sinensis* 'Scarlet Giant'*Hibiscus rosa-sinensis* 'The President'*Hibiscus sinosyriacus* 'Lilac Queen'*Hibiscus syriacus* 'Blue Bird'*Hibiscus syriacus* 'Diana'*Hibiscus syriacus* 'Red Heart'*Hibiscus syriacus* 'Woodbridge'*Hibiscus trionum*

pink flowers, to 6cm (2½in) across, with dark red centres and yellow-anthered white stamens, are produced singly or in pairs from the leaf axils, from late summer to mid-autumn. ‡ 3m (10ft), ↔ 2m (6ft). China to India. \* \* \*

'Blue Bird' ■ syn. 'Oiseau Bleu', has bright blue flowers, to 8cm (3in) across, with small red centres. 'Diana' ■ ♀ bears very large white flowers, to 12cm (5in) across, with wavy-margined petals. 'Elegantissimus' see 'Lady Stanley'. 'Lady Stanley', syn. 'Elegantissimus', has double white flowers, flushed pink and dark red in the centres. 'Meehanii', syn. 'Variegatus', has leaves margined creamy white, and lilac-mauve, maroon-centred flowers. 'Oiseau Bleu' see 'Blue Bird'. 'Pink Giant' ♀ has large, clear pink flowers with dark red eyes. 'Red Heart' ■ ♀ bears white flowers with dark red centres. 'Variegatus' see 'Meehanii'. 'William R. Smith' has large white flowers, to 10cm (4in) across. 'Woodbridge' ■ ♀ bears large, rich pink flowers, to 10cm (4in) across, with dark pink centres.

**H. trionum** ■ (Flower-of-an-hour). Fast-growing, erect to spreading, hairy annual or short-lived perennial with ovate, palmately 3- to 5-lobed, toothed, dark green leaves, to 7cm (3in) long, the central lobes longest; leaves lower down the stems are unlobed. From summer to early autumn, trumpet-shaped, creamy yellow flowers, to 8cm (3in) across, with brown centres and dark purple stamens, are produced singly from the leaf axils; they are followed by inflated, bladder-like seed capsules. ‡ 75cm (30in), ↔ to 60cm (24in). Origin uncertain. \*

**H. waimeae** ♂ Evergreen, spreading, small tree with shoots clothed in soft, star-shaped hairs. Broadly ovate to rounded, toothed leaves, to 18cm (7in) long, are rich green above, grey-downy beneath. From late spring to late summer, bears solitary, richly fragrant, funnel-shaped flowers, 12–20cm (5–8in) across, opening white, then fading to pink, with crimson stamens. ‡ 3–5m (10–15ft), ↔ 2–3m (6–10ft). Hawaii. ☉ (min. 15°C/59°F)

**H. 'White La France'** see *H. rosa-sinensis* 'Dainty White'.

#### ▮ Hibiscus,

**Chinese** see *Hibiscus rosa-sinensis*  
**Hawaiian** see *Hibiscus rosa-sinensis*  
**Norfolk Island** see *Lagunaria*

#### ▮ Hickory see *Carya*

**Bitternut** see *C. cordiformis*  
**Pignut** see *C. glabra*  
**Shagbark** see *C. ovata*  
**Swamp** see *C. cordiformis*

## HIERACIUM

*Hawkweed*

ASTERACEAE/COMPOSITAE

Genus of 250–260 species (often subdivided into about 10,000 microspecies) of perennials, many of which are weeds. They are widespread over the N. hemisphere, occurring in diverse habitats, including grassland, dry, stony slopes, cultivated fields, and alpine meadows. They have basal rosettes of lance-shaped to linear or obovate, entire to deeply toothed, pale to dark green leaves, and dandelion-like flowerheads with strap-shaped ray-florets. Those described below are grown mainly for their downy



*Hieracium lanatum*

foliage and loose panicles of yellow flowerheads borne in summer. They are suitable for a large rock garden or wild garden, but may self-seed freely.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor, well-drained soil in full sun. The flowerheads may be removed for best foliage effects, but if retained should be dead-headed to prevent excessive self-seeding.
- **PROPAGATION** Sow seed in containers in an open frame in autumn or spring. Divide in spring.
- **PESTS AND DISEASES** Caterpillars, slugs, and snails may be a problem.

**H. aurantiacum** see *Pilosella aurantiaca*.

**H. brunneocroceum** see *Pilosella aurantiaca*.

**H. lanatum** ■ syn. *H. welwitschii*. Clump-forming perennial with lance-shaped to ovate, grey-green, white-margined leaves, to 10cm (4in) long, densely clothed in long white hairs. In summer, bears loose panicles of 3–7 deep yellow flowerheads, to 2.5cm (1in) across, on wiry, branching stems. ‡ 45cm (18in), ↔ 20cm (8in). S. Europe. \* \* \*

**H. umbellatum** (Leafy hawkweed). Variable, softly hairy perennial with linear to lance-shaped, slightly toothed, dark green leaves, 1.5cm (½in) long. Lax panicles of up to 10 yellow flowerheads, 2–3cm (¾–1¼in) across, with black-brown bracts, are borne on robust stems in summer. ‡ 40–60cm (16–24in), ↔ 25–40cm (10–16in). Europe, W. Asia. \* \* \*

**H. villosum**. Clump-forming perennial with oblong to lance-shaped, grey-green, basal leaves, to 10cm (4in) long, densely clothed in long white hairs. In summer, clear, pale yellow flowerheads, 4–5cm (1½–2in) across, are borne singly or in 2- to 4-flowered panicles on wiry, hairy stems. ‡ to 40cm (16in), ↔ to 20cm (8in). Mountains of Europe. \* \* \*

**H. welwitschii** see *H. lanatum*.

## HIMALAYACALAMUS

GRAMINEAE/POACEAE

Genus of 15 species of perennial bamboos from cool forest in India and the Himalayas. They are valued for their dense clumps of hollow, glossy canes, sometimes attractively striped or stained, and their linear, bluish green leaves. They thrive in areas with cool, damp summers, but are intolerant of winter wet and temperatures below -6°C.

(21°F). In frost-prone areas, grow in a cool greenhouse. In warmer areas, grow as specimen plants in a woodland or wild garden, or in containers.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added leaf mould and sharp sand or grit, in bright filtered light. Provide moderate to high humidity. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, humus-rich soil in sun or dappled shade, with protection from excessive winter wet.
- **PROPAGATION** Divide in early spring.
- **PESTS AND DISEASES** Trouble free.

**H. falconeri**, syn. *Arundinaria falconeri*, *Drepanostachyum falconeri*, *Thamnocalamus falconeri* (Noble bamboo). Dense, clump-forming bamboo with smooth, olive-green canes, stained purple at the nodes, and linear, blue-green leaves, to 15cm (6in) long. Inner canes are stiffly erect, outer ones arch gently to form a distinctive and graceful clump. ‡ to 9m (28ft) (much smaller in containers), ↔ 3m (10ft). C. Himalayas, India. \* \*

## HIPPEASTRUM

*Amaryllis*

AMARYLLIDACEAE

Genus of about 80 species of bulbous perennials found in Central and South America, in habitats ranging from streambanks to rocky hillsides, from sea level to subalpine regions. Umbels of showy, funnel-shaped flowers are borne on leafless stems, mainly from winter to spring. Semi-erect, strap-shaped, light to mid-green or grey-green, basal leaves develop with or just after the flowers. Many large-flowered, colourful hybrids (incorrectly known as *Amaryllis*, a separate South African genus), have been bred for cultivation in containers. These usually produce 4–6 bold, open funnel-shaped flowers, 10–15cm (4–6in) across, and strap-shaped, deep green leaves, 45cm (18in) long. In frost-prone areas, grow as houseplants or in a warm greenhouse or conservatory. In warmer areas, grow in a border or in containers outdoors. All parts may cause mild stomach upset if ingested.

• **HARDINESS** Mainly frost tender; *H. x acramanii* may survive short spells outdoors at 0°C (32°F).

• **CULTIVATION** Plant bulbs in autumn with the neck and shoulders above the soil surface. Under glass, grow in loam-based potting compost (J1 No.2). Place in bright filtered or full light and water sparingly until in active growth, then water freely and apply a dilute, balanced liquid fertilizer every 2 weeks. After flowering, reduce water as the leaves die off; keep dry when dormant. Root disturbance is resented; pot on every 3–5 years, in autumn. Outdoors, grow in fertile, well-drained soil in sun or dappled shade. Protect *H. x acramanii* and tender species grown outdoors with a deep winter mulch in cooler areas.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) as soon as ripe; keep seedlings growing without a dormant period to encourage early flowering. Remove offsets in autumn.



*Hippeastrum* 'Apple Blossom'

- **PESTS AND DISEASES** Susceptible to bulb scale mite, large narcissus bulb fly, and various fungal diseases.

**H. x acramanii** (*H. aulicum* × *H. psittacinum*). Bulbous perennial with bright green leaves, 30–60cm (12–24in) long, emerging with or just after the flowers. In winter or spring, bears an umbel of up to 3 funnel-shaped scarlet flowers, 15cm (6in) long, with white petal margins and green-and-white centres. ‡ 60cm (24in), ↔ 30cm (12in). Garden origin. \* (borderline)

**H. advenum** see *Rhodophiala advena*.

**H. 'Apple Blossom'** ■ Robust, large-flowered, bulbous perennial bearing white flowers, 10–15cm (4–6in) across, with pink-tinged petal tips, in winter. ‡ 30–50cm (12–20in), ↔ 30cm (12in). ☉ (min. 13°C/55°F)

**H. aulicum** ■ syn. *H. morelianum*. Bulbous perennial with mid-green leaves, 30–50cm (12–20in) long, produced with the flowers. In winter or spring, a stout stem bears 2 funnel-shaped crimson flowers, 15cm (6in) across, with green throats. ‡ 30–50cm (12–20in), ↔ 30cm (12in). Brazil, Paraguay. ☉ (min. 13°C/55°F)

**H. bifidum** see *Rhodophiala bifida*.

**H. 'Christmas Gift'**. Early-flowering, bulbous perennial bearing pure white flowers, 10–15cm (4–6in) across, in early winter. ‡ 30–50cm (12–20in), ↔ 30cm (12in). ☉ (min. 13°C/55°F)

**H. 'Liberty'**. Large-flowered, bulbous perennial producing deep red flowers, 10–15cm (4–6in) across, in winter. ‡ 30–50cm (12–20in), ↔ 30cm (12in). ☉ (min. 13°C/55°F)



*Hippeastrum aulicum*

H

*Hippeastrum* 'Picotee'

**H. 'Ludwig's Dazzler'**. Large-flowered, bulbous perennial bearing pure white flowers, 10–15cm (4–6in) across, in winter. †30–50cm (12–20in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. 'Minerva'**. Large-flowered, bulbous perennial with white-centred red flowers, 10–15cm (4–6in) across, in winter. †30–50cm (12–20in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. morelianum** see *H. aulicum*.

**H. 'Orange Sovereign'** ♀ Large-flowered, bulbous perennial with orange-red flowers, 10–15cm (4–6in) across, in winter. †30–50cm (12–20in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. 'Picotee'** ■ Large-flowered, bulbous perennial with red-margined white flowers, 12cm (5in) across, in winter. †30–50cm (12–20in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. pratense** see *Rhodophiala pratensis*.

**H. procerum** see *Worsleya rayneri*.

**H. 'Red Lion'** ■ Large-flowered, bulbous perennial bearing scarlet flowers, 15cm (6in) across, in winter. †30–50cm (12–20in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. reginae** (Mexican lily). Bulbous perennial with mid-green leaves, to

60cm (24in) long, produced after the flowers. In summer, stout stems bear umbels of 2–4 nodding, funnel-shaped scarlet flowers, 10–15cm (4–6in) across, each with a star-shaped green mark in the throat. †50cm (20in), ↔ 30cm (12in). Mexico, West Indies, Brazil, Peru. ☼ (min. 13°C/55°F)

**H. reticulatum** var. **striatifolium** ■ Upright, bulbous perennial producing dark green leaves, 20–30cm (8–12in) long, with prominent white midribs.

In summer, bears an umbel of up to 5 funnel-shaped, rose-pink flowers, 8–10cm (3–4in) across, veined darker pink inside. †25–35cm (10–14in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. rutilum** see *H. striatum*.

**H. 'Star of Holland'** ♀ Bulbous perennial bearing very large red flowers, 10–15cm (4–6in) across, each with a star-shaped white mark in the throat, in winter. †30–50cm (12–20in), ↔ 30cm (12in). ☼ (min. 13°C/55°F)

**H. striatum**, syn. *H. rutilum*. Bulbous perennial with bright green leaves, 30–50cm (12–20in) long, emerging with the flowers. In spring or summer, a stout stem bears an umbel of up to 4 funnel-shaped, coral-red flowers,

10–15cm (4–6in) across, each petal with a central green stripe. †↔ 30cm (12in). Brazil. ☼ (min. 13°C/55°F)

**H. vittatum** (St. Joseph's lily). Robust, bulbous perennial producing stout stems with umbels of 3–6 funnel-shaped, red-striped white flowers, 12cm (5in) across, in spring. Bright green leaves, to 60cm (24in) long, develop after the flowers. † to 90cm (36in), ↔ 30cm (12in). Peru. ☼ (min. 13°C/55°F)

## HIPPOCREPIS

Horseshoe vetch, Vetch

LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of annuals and perennials from Europe, N. Africa, and W. Asia, occurring in scree, among alpine rocks, and in short turf on chalk downland. They usually have woody, creeping stems, alternate, pinnate, light to mid-green leaves, and small, pea-like flowers in raceme-like heads, which are attractive to butterflies. Some may be invasive, but others are suitable for a wild garden or rock garden, scree bed, trough, or raised bed. *H. comosa* 'E.R. Janes' is excellent for crevices in a wall, rock, or paving.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor, well-drained, alkaline soil in full sun.

• **PROPAGATION** Sow scarified seed in containers in a cold frame in spring or autumn. Root cuttings of non-flowering shoots in summer.

• **PESTS AND DISEASES** Trouble free.

**H. comosa**. Vigorous, creeping, woody-based perennial with mid-green leaves, 3–10cm (1¼–4in) long, each divided into 3–8 pairs of linear to obovate leaflets. From late spring to late summer, bears raceme-like heads of up to 12 lemon-yellow flowers, 1cm (½in) across. †↔ to 40cm (16in). C. and S. Europe, N. Africa. \*\*\*. 'E.R. Janes' is compact, and spreads less vigorously; † to 8cm (3in), ↔ indefinite.

**H. emerus** see *Coronilla emerus*.

## HIPPOPHAE

ELAEAGNACEAE

Genus of 3 species of deciduous, dioecious shrubs and trees from Europe and Asia, occurring on coastal dunes, and in screes and on riverbanks in the mountains. They are cultivated for their linear or linear-oblong, silvery, grey-green or mid-green leaves, and for their spherical, usually orange fruits. Both male and female plants are needed to produce fruit. Inconspicuous flowers are borne in racemes in spring. Grow in a mixed or shrub border, in a wild garden, or as specimen plants. In coastal areas, *H. rhamnoides* is used for windbreaks, hedging, and for stabilizing sand dunes.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in full sun in moist but well-drained, neutral to alkaline, preferably sandy soil. Pruning group 1, in late summer; pruning is seldom necessary.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe or in spring. Stratify spring-sown seed for 3 months at 4°C (39°F). Root semi-ripe cuttings in summer, hardwood cuttings in late autumn. Layer in autumn.

• **PESTS AND DISEASES** Trouble free.

*Hippophae rhamnoides*

**H. rhamnoides** ■ ♀ ♂ (Sea buckthorn). Bushy, deciduous, large shrub or small tree with spiny shoots bearing linear, grey-green leaves, to 6cm (2½in) long, silver-scaly to bronze-scaly on both surfaces. Tiny, yellow-green flowers are borne in racemes to 2cm (¾in) long, in spring. On female plants, flowers are followed by persistent, spherical, bright orange fruit, to 8mm (⅓in) across. †↔ 6m (20ft). Europe, Asia. \*\*\*

▷ **Hobble bush** see *Viburnum lantanoide*s

▷ **Hognut** see *Carya glabra*

## HOHENBERGIA

BROMELIACEAE

Genus of over 40 species of stemless, evergreen, terrestrial or epiphytic perennials (bromeliads) from scrub, rainforest, and rocky terrain up to altitudes of 1,600m (5,000ft) in South America and the West Indies. They produce rosettes of mainly triangular or strap-shaped leaves with spiny tips and margins, and unusually large sheaths. In summer, prominent scapes bear compound spikes of colourful, tubular flowers. Where temperatures fall below 15°C (59°F), grow as houseplants or in a warm green-house. In warmer regions, grow in a humid, moist area of the garden, or in containers or a raised bed.

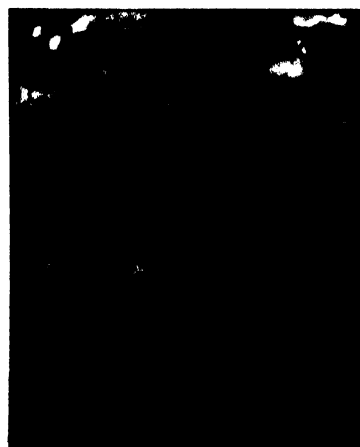
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in bright indirect to moderate light. Keep just moist at all times. Apply a half-strength, low-nitrogen fertilizer monthly from spring to autumn. Outdoors, grow in fertile, moist but very well-drained soil in partial shade; use terrestrial bromeliad compost for container-grown plants outdoors. Protect from strong winds. See also p.47.

• **PROPAGATION** Sow seed at 24°C (75°F) as soon as ripe. Divide offsets in spring or summer.

• **PESTS AND DISEASES** Young growth is susceptible to scale insects.

**H. edmundoi**. Rosette-forming, terrestrial perennial producing strap-shaped, grey-scaly, mid-green leaves, to 45cm (18in) long, the rounded tips with sharp brown spines. Branched, spike-like inflorescences, to 70cm (28in) long, have broadly ovate, white-woolly stem bracts, each with 2–4 tiny purple

*Hippeastrum* 'Red Lion'*Hippeastrum reticulatum* var. *striatifolium*

## HOHENBERGIA

flowers,  $\frac{1}{2}$ –45–50cm (18–20in). E. Brazil. ☞ (min. 15°C/59°F)

**H. stellata.** Rosette-forming, terrestrial or epiphytic perennial producing strap-shaped, silver-scaly, dark green leaves, 60–90cm (24–36in) long, the tips and margins with brown spines. Branched, spike-like inflorescences have white-woolly, red or yellow stem bracts and 2–8 bright blue or purple flowers, each surrounded by triangular, red or purple bracts.  $\frac{1}{2}$ –1m (3ft). Trinidad, Tobago, Venezuela, N.E. Brazil. ☞ (min. 15°C/59°F)

## HOHENBERGIOPSIS

BROMELIACEAE

Genus of a single species of evergreen, epiphytic perennial (bromeliad), closely related to *Hohenbergia*, from rainforest at altitudes up to 1,800m (6,000ft) in Guatemala. It produces rosettes of strap-shaped, spiny-toothed leaves, and stout, woolly scapes bearing cylindrical, densely flowered inflorescences in summer.

Where temperatures fall below 18°C (64°F), grow as a houseplant or in a warm greenhouse. In warmer areas, grow in containers, or in a raised bed in a humid, moist area of the garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in epiphytic bromeliad compost in bright filtered light, away from all draughts. Provide moderate to high humidity. Keep just moist and mist daily at all times. Apply a half-strength, low-nitrogen fertilizer monthly from spring to autumn. Outdoors, grow in fertile, moist but well-drained soil in partial shade; use terrestrial bromeliad compost for container-grown plants. Protect from cold, drying winds. See also p.47.

• **PROPAGATION** Sow seed at 24°C (75°F) as soon as ripe. Remove offsets in spring.

• **PESTS AND DISEASES** Scale insects may be a problem.

**H. guatemalensis.** Epiphytic perennial producing strap-shaped, mid-green leaves, 50–60cm (20–24in) long, each tipped with a spine 1cm ( $\frac{1}{2}$ in) long. In summer, bears a 2- or 3-branched, cylindrical inflorescence, 20cm (8in) long, with brown floral bracts and deep purple flowers, to 8mm ( $\frac{3}{8}$ in) long.  $\frac{1}{2}$ –1m (3ft) or more. Guatemala. ☞ (min. 18°C/64°F)

## HOHERIA

MALVACEAE

Genus of 5 species of deciduous and evergreen trees and shrubs from New Zealand, where they occur from the coast to the mountains in forest, at forest margins, and on streambanks. The alternate leaves are lance-shaped to broadly ovate, toothed, sometimes hairy, and grey- to dark green when mature. Juvenile foliage, which is present for several years on young seedlings, may be lobed and have a metallic cast. Hoherias are grown mainly for their graceful habit and their cup-shaped, fragrant white flowers, attractive to butterflies, borne singly or in cymes. They prefer maritime climates. Grow in a shrub border, in a woodland garden, as specimen plants, or against a sunny wall.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained, neutral to alkaline soil in full sun or partial shade, sheltered from cold, drying winds. The deciduous species are more reliably hardy than the evergreens and may regenerate from their woody bases if cut back by frost in winter; protect the roots of evergreens with a winter mulch. Pruning group 1, in spring or after flowering; pruning is seldom necessary.

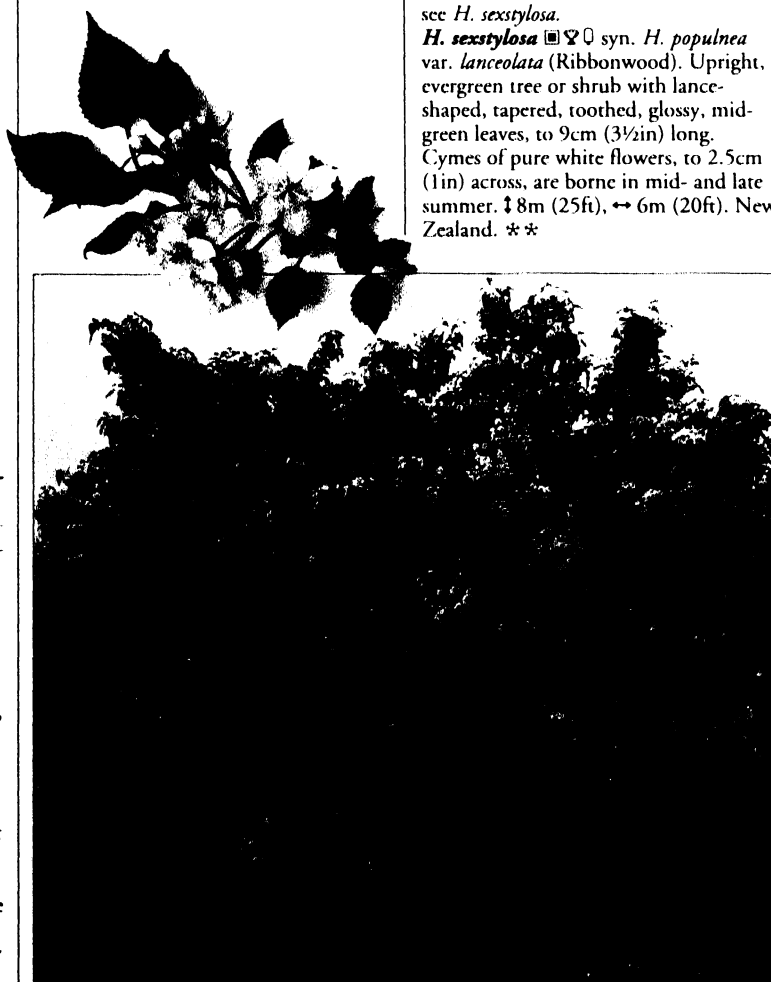
• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings in late summer or autumn.

• **PESTS AND DISEASES** Prone to coral spot, particularly in damp, shady sites.

**H. angustifolia** ♀ syn. *H. microphylla*. Columnar, evergreen tree with oblong to inversely lance-shaped, toothed, glossy, dark green leaves, to 3cm (1 $\frac{1}{4}$ in) long. In mid- and late summer, bears white flowers, to 2cm ( $\frac{3}{4}$ in) across, often singly from the leaf axils.  $\frac{1}{2}$ –7m (22ft),  $\leftrightarrow$  3m (10ft). New Zealand. \* \*

**H. glabrata** ♂♀ Deciduous, spreading tree with hairless, broadly ovate, tapered, dark green leaves, to 10cm (4in) long, turning yellow in autumn. In midsummer, bears small cymes of white flowers, to 4cm (1 $\frac{1}{2}$ in) across, with purple anthers. Often confused with *H. lyallii*.  $\frac{1}{2}$ –7m (22ft). New Zealand (South Island). \* \*

**H. 'Glory of Amlwch'** ♀♀ Spreading, semi-evergreen tree with narrowly ovate, toothed, glossy, bright green leaves, to 10cm (4in) long. Cymes of large white flowers, to 4cm (1 $\frac{1}{2}$ in) across, are borne in mid- and late summer.  $\frac{1}{2}$ –7m (22ft),  $\leftrightarrow$  6m (20ft). \* \*



*Hoheria glabrata* (inset: flower detail)



*Hoheria sexstylosa*

**H. lyallii** ♀♀ syn. *Plagianthus lyallii*. Spreading, deciduous tree with ovate, deeply toothed, densely hairy, grey-green leaves, to 10cm (4in) long. Cymes of white flowers, to 3cm (1 $\frac{1}{4}$ in) across, with purple anthers, are borne in midsummer. Often confused with *H. glabrata*.  $\frac{1}{2}$ –7m (22ft). New Zealand (South Island). \* \*

**H. microphylla** see *H. angustifolia*.

**H. populnea** ♂ (lace-bark). Spreading, evergreen tree, often with flaky, pale brown and white bark when mature. The elliptic to broadly ovate, toothed leaves, to 15cm (6in) long, are glossy, dark green. Dense cymes of pure white flowers, 3cm (1 $\frac{1}{4}$ in) across, are borne in late summer and early autumn.  $\frac{1}{2}$ –12m (40ft),  $\leftrightarrow$  10m (30ft). New Zealand (North Island). \* \*. **var. lanceolata** see *H. sexstylosa*.

**H. sexstylosa** ♂♀ syn. *H. populnea* var. *lanceolata* (Ribbonwood). Upright, evergreen tree or shrub with lance-shaped, tapered, toothed, glossy, mid-green leaves, to 9cm (3 $\frac{1}{2}$ in) long. Cymes of pure white flowers, to 2.5cm (1in) across, are borne in mid- and late summer.  $\frac{1}{2}$ –8m (25ft),  $\leftrightarrow$  6m (20ft). New Zealand. \* \*



*Holboellia coriacea*

## HOLBOELLIA

LARIDIZABALACEAE

Genus of 5 species of twining, evergreen climbers from thickets and shady woodland in the Himalayas and China. They are cultivated mainly for their alternate, 3- to 9-palmate, dark green leaves. Small male and female flowers, to 1.5cm ( $\frac{1}{2}$ in) long, are borne in axillary corymbs or racemes, separately on the same plant; fruits are produced only irregularly. Train on a support, grow through a small tree, or use to clothe a pergola, arch, or trellis.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in well-drained, moderately fertile, humus-rich soil in full sun or partial shade, sheltered from cold, drying winds. Pruning group 11, in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in late summer or autumn. Layer in autumn.

• **PESTS AND DISEASES** Trouble free.

**H. coriacea** ♂ Vigorous climber with dark green leaves, to 15cm (6in) long, composed of 3 oblong leaflets. In spring, bears small, mauve male flowers and purple-tinged, greenish white female flowers in dense corymbs, to 15cm (6in) across. Flowers are sometimes followed by sausage-shaped purple fruit, to 6cm (2 $\frac{1}{2}$ in) long.  $\frac{1}{2}$ –7m (22ft). C. China. \* \*

**H. latifolia.** Vigorous climber with dark green leaves, to 12cm (5in) long, composed of 3–7 oblong leaflets. Small, greenish white male flowers and purple female flowers are borne in racemes to 12cm (5in) across, in spring. Flowers are sometimes followed by sausage-shaped, red to purple fruit, to 10cm (4in) long.  $\frac{1}{2}$ –5m (15ft). Himalayas. \* \*

## HOLCUS

GRAMINEAE/POACEAE

Genus of 8 species of often invasive, annual or perennial grasses from woodland and grassland in Europe, N. Africa, and W. Asia. They have linear, flat or folded, mid-green or bluish green leaves, and dense or open, spike-like panicles of flattened, 2-flowered spikelets borne in summer. Only *H. mollis* 'Albovariegatus' is usually cultivated; it is an attractive carpeting plant for the front of a herbaceous border or rock garden.

• **HARDINESS** Fully hardy.

*Holcus mollis* 'Albovariegatus'

• **CULTIVATION** Grow in any moist but well-drained, poor to moderately fertile soil in sun or partial shade; avoid full sun on poor, dry soil. Trim *H. mollis* 'Albovariegatus' lightly after flowering and dead-head to avoid self-seeding, as offspring will be green-leaved and invasive. Avoid planting too close to less vigorous plants.

• **PROPAGATION** Divide *H. mollis* 'Albovariegatus' in spring; it will not come true from seed.

• **PESTS AND DISEASES** Trouble free.

***H. mollis* 'Albovariegatus'** ■ Loosely tufted, mat-forming, perennial grass producing linear, flat, soft, blue-green leaves, 15–45cm (6–18in) long, with wide, creamy white margins. In summer, erect stems bear pale green spikelets in relatively few, narrowly oblong to ovate panicles, to 12cm (5in) long,  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  45cm (18in) or more. \*\*\*

▷ **Holly** see *Ilex*

**American** see *Ilex opaca*

**Blue** see *Ilex x meserveae*

**Box-leaved** see *Ilex crenata*

**Common** see *Ilex aquifolium*

**English** see *Ilex aquifolium*

**Hedgehog** see *Ilex aquifolium* 'Ferox'

**Himalayan** see *Ilex dipyrrena*

**Horned** see *Ilex cornuta*

**Japanese** see *Ilex crenata*

**Miniature** see *Malpighia coccigera*

**Moonlight** see *Ilex aquifolium*

'Flavescens'

**Mountain** see *Olearia ilicifolia*

**Sea** see *Eryngium*

**Singapore** see *Malpighia coccigera*

**Summer** see *Arctostaphylos diversifolia*

**Topel** see *Ilex x attenuata*

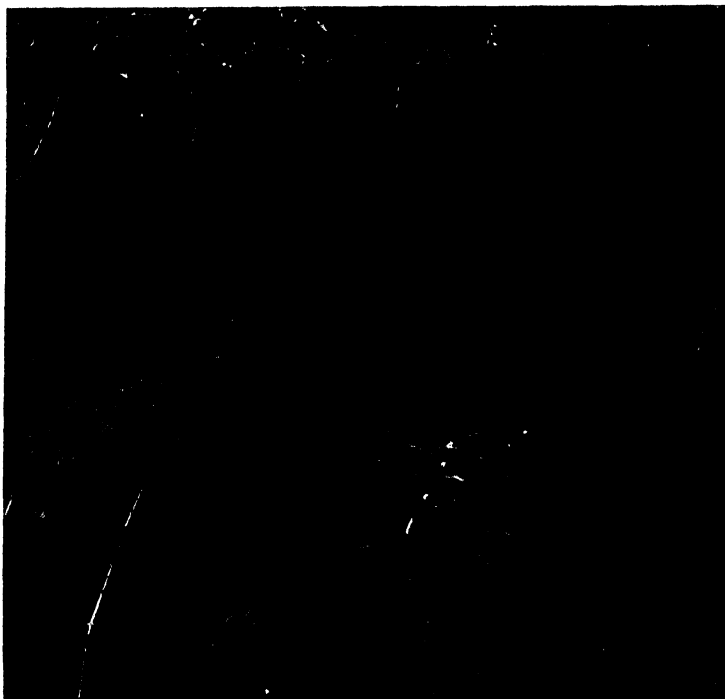
**West Indian** see *Leea coccinea*

▷ **Hollyhock** see *Alcea*, *A. rosea*

## HOLMSKIOLDIA

VERBENACEAE

Genus of 10 species of evergreen shrubs or scandent climbers from tropical woodland in Africa, Madagascar, and the Himalayas. They are valued for their terminal panicles or axillary racemes of tubular to salverform or trumpet-shaped flowers with conspicuous, saucer-shaped, brightly coloured calyces. The opposite leaves are simple and usually ovate to obovate. Where temperatures fall below 16°C (61°F), grow in a warm

*Holmskioldia sanguinea*

greenhouse or conservatory. In tropical climates, use as specimen plants or grow in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. Top-dress in late winter or early spring, and pot on in spring. In summer, water freely and apply a balanced liquid fertilizer monthly; keep moist in winter. Outdoors, grow in moist but well-drained, moderately fertile soil in full sun, with some midday shade and shelter from strong winds. Established plants are drought tolerant and useful in poor, sandy soils. Provide support for climbers. Pruning group 9 for shrubs; group 11 for climbers, after flowering.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings with bottom heat in late summer.

• **PESTS AND DISEASES** Whiteflies, red spider mites, and mealybugs may be a problem under glass.

***H. sanguinea*** ■ (Chinese-hat plant). Erect, then scandent shrub with ovate or ovate-elliptic, slender-pointed, slightly toothed leaves, 5–10cm (2–4in) long. From summer to autumn, bears curved, narrowly trumpet-shaped flowers, to 2.5cm (1in) long, with crimson petals and orange-red calyces, 2.5cm (1in) across, in racemes to 12cm (5in) long,  $\uparrow$  3–10m (10–30ft),  $\leftrightarrow$  1.5–3m (5–10ft). Himalayas. ☉ (min. 15°C/59°F).

**var. citrina** bears yellow flowers.

## HOLODISCUS

ROSACEAE

Genus of 8 species of deciduous shrubs found in dry woodland from W. North America to N. South America. They produce alternate, oblong to rounded, lobed to pinnatifid, usually softly hairy leaves, and are valued for their attractive, airy panicles of numerous small, cup-shaped flowers. Suitable for a mixed or

shrub border, or for growing in light woodland, or as specimen plants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, fertile, humus-rich soil in sun or partial shade. Pruning group 1 or 2; remove only a few older shoots each year, after flowering.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Root semi-ripe cuttings in summer. Layer in summer or autumn.

• **PESTS AND DISEASES** Trouble free.

***H. discolor*** ■ (Ocean spray). Vigorous, upright shrub with arching branches and broadly ovate, shallowly to deeply 4- to 8-lobed, grey-green leaves, to 8cm (3in) long, white-hairy beneath. Tiny,

*Holodiscus discolor*

cup-shaped, creamy-white flowers are borne in large, pendent, plume-like panicles, to 30cm (12in) long, in mid-summer.  $\uparrow$   $\leftrightarrow$  4m (12ft). W. North America. \*\*\*

▷ ***Homalocephala texensis*** see *Echinocactus texensis*

## HOMALOCADIUM

Ribbon bush

POLYGONACEAE

Genus of one species of evergreen shrub from tropical forest in the Solomon Islands. It is grown for its ornamental, flattened, jointed green stems with alternate, lance- or arrow-shaped leaves, which are usually short-lived or may be absent. The small, petalless, whitish green flowers have 5-lobed calyces that later turn red or red-purple, enlarging and becoming fleshy as the seeds form. In frost-prone areas, grow in a warm greenhouse or as a houseplant (plants in containers rarely flower or fruit). In warmer regions, grow in a shrub border or courtyard garden, or at the base of a warm, sunny wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered or full light. Water moderately in growth, more sparingly in winter. Apply a balanced liquid fertilizer once in spring. Pot on or top-dress in spring. Outdoors, grow in moist but well-drained, fertile, humus-rich soil in full sun; partial shade is tolerated.

Pruning group 8, if necessary, in spring.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root stem section cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

***H. platycladum***, syn. *Muehlenbeckia platyclados*. Spreading, erect shrub or scrambling climber producing ribbon-like, jointed, glossy, mid-green stems, to 2cm (¾in) wide, with raised veins running lengthways. Compact flower clusters, to 1.5cm (½in) across, and usually short-lived, lance-shaped, bright green leaves, 1.5–6cm (½–2½in) long, are borne on the margins or at the joints of the stems in spring.  $\uparrow$  60–120cm (2–4ft),  $\leftrightarrow$  45–90cm (18–36in) in a container or greenhouse border;  $\uparrow$  to 3m (10ft),  $\leftrightarrow$  2m (6ft) outdoors in warm climates. Solomon Islands. ☉ (min. 5–7°C/41–45°F)

## HOMERIA

IRIDACEAE

Genus of 31 species of cormous perennials, often found on sandy slopes from low to high altitudes in South Africa. They are cultivated for their scented, showy flowers, borne several in succession from pairs of bracts on branched stems, from spring to summer. They have erect, linear to strap-shaped basal leaves, and 1 or 2 narrow leaves on the lower part of the flowering stems. In frost-prone climates, grow in a sheltered site, at the base of a warm, sunny wall, or in a cool greenhouse. In warmer areas, grow at the front of a border. *H. collina* is toxic to livestock.

• **HARDINESS** Half hardy, but may withstand occasional falls to -5°C (23°F).



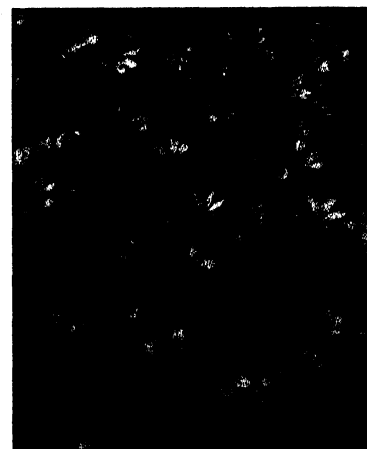
## HOMERIA

- **CULTIVATION** Plant corms 10cm (4in) deep in autumn or spring. Under glass, grow in loam-based potting compost (J1 No.2) with equal parts additional sand and leaf mould, in full light with good ventilation. Water freely in growth; dry off gradually as the flowers fade and keep completely dry when dormant. Store corms in a cool, dry place until autumn planting. Outdoors, grow in well-drained, fertile, humus-rich soil in full sun. Where temperatures regularly fall below -5°C (23°F), provide a deep mulch or grow under glass.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in autumn. Separate offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

**H. collina** ■ Cormous perennial with wiry, unbranched or rarely branched stems and linear, mid-green leaves, to 55cm (22in) long. Cup-shaped, scented, yellow, peach, or pink flowers, to 7cm (3in) across, are borne in succession from spring to summer. † 16–40cm (6–16in), ↔ 5cm (2in). South Africa. \*

**H. ochroleuca.** Upright, cormous perennial with branched stems and erect, linear, mid-green leaves, to 30cm (12in) long. Cup-shaped, musk-scented, pale yellow flowers, to 8cm (3in) across, sometimes with orange central stains, are borne from spring to summer. † 40–60cm (16–24in), ↔ 8cm (3in). South Africa. \*

- ▷ **Homoglossum** see *Gladiolus*
- ▷ **Honesty** see *Lunaria*, *L. annua*  
Perennial see *L. rediviva*
- ▷ **Honey-balls** see *Cephalanthus occidentalis*
- ▷ **Honey bush** see *Melianthus major*
- ▷ **Honey locust** see *Gleditsia triacanthos*
- ▷ **Honeysuckle** see *Lonicera*  
Bush see *Diervilla*  
Cape see *Tecoma capensis*  
Common see *Lonicera periclymenum*  
Coral see *Lonicera sempervirens*  
Early Dutch see *Lonicera periclymenum* 'Belgica'  
Etruscan see *Lonicera etrusca*  
Fly see *Lonicera xylosteum*  
French see *Hedysarum coronarium*  
Giant Burmese see *Lonicera hildebrandiana*  
Himalayan see *Leycesteria formosa*  
Italian see *Lonicera caprifolium*  
Japanese see *Lonicera japonica*  
Late Dutch see *Lonicera periclymenum* 'Serotina'  
New Zealand see *Knightia excelsa*



*Homeria collina*

- ▷ **Honeysuckle cont.**  
Scarlet trumpet see *Lonicera x brownii*  
Trumpet see *Lonicera sempervirens*

## HOODIA

ASCLEPIADACEAE

Genus, closely related to *Trichocaulon*, of about 20 species of branching, leafless, perennial succulents found in periodically very dry areas of Angola, Namibia, Botswana, and South Africa. The many-angled, fleshy, greyish green stems have hard, thorn-like tubercles, and produce large, saucer- to cup-shaped or shallowly trumpet-shaped, unpleasantly scented flowers in the stem grooves towards the tips. Where temperatures fall below 10°C (50°F), grow in a warm greenhouse; in warm, dry areas, grow in a desert garden, trough, or raised bed.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost with additional leaf mould, in full light; shade from hot sun, and provide low humidity. From spring to summer, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moderately fertile, sharply drained soil with additional leaf mould and sharp sand, in full sun with some midday shade. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or graft stems on to *Stapelia* or *Ceropegia linearis*, both in spring.
- **PESTS AND DISEASES** Trouble free.

**H. bainii** ■ Erect succulent with fleshy stems branching from or near the base, with 12–15 angular ribs, each bearing tubercles with a brown spine. From summer to early autumn, cup-shaped to shallowly trumpet-shaped, beige-pink to dull yellow flowers, 2–7cm (¾–3in) across, with dark red-brown coronas, are borne singly, occasionally in clusters of 2 or 3. The 5 shallow petal lobes have outward-curved margins and small red dots at the centres. † 20cm (8in), ↔ 10cm (4in). Namibia, South Africa (Western Cape, Northern Cape, Eastern Cape). ☉ (min. 10°C/50°F)

**H. currorii.** Erect succulent with thick, pale greyish green stems branching freely from the base. The stems have 15–25 angular ribs, each bearing tubercles with sharp, downward-pointing spines. From summer to early autumn, bears cup-shaped or shallowly trumpet-shaped, thick-stalked flowers, to 12cm (5in) across, singly or in clusters of up to 5. The flowers are green to ivory or pink, later becoming yellowish pink, and each has 5 rounded, violet-hairy lobes and a hairy, pale orange-red corolla. † 60cm (24in), ↔ 20cm (8in). S.W. Angola, N.W. Namibia. ☉ (min. 10°C/50°F)

**H. gordonii.** Clump-forming succulent with erect stems branching from the base, each with 12–14 longitudinal ribs and short tubercles tipped with woody spines. Saucer-shaped flowers, 7–10cm (3–4in) across, are borne singly or in clusters of up to 3 blooms, from summer to early autumn. The flowers are pale brownish pink to maroon, with coronas of the same colour, and each has 5 shallow petal lobes with outward-curved margins and small red dots at the



*Hoodia bainii*

centres. † 45cm (18in) or more, ↔ 30cm (12in). S. Namibia, South Africa (Western Cape). ☉ (min. 10°C/50°F)

- ▷ **Hop** see *Humulus*, *H. lupulus*  
False see *Justicia brandegeana*
- ▷ **Hop bush** see *Dodonaea viscosa*
- ▷ **Hop tree** see *Ptelea trifoliata*

## HORDEUM

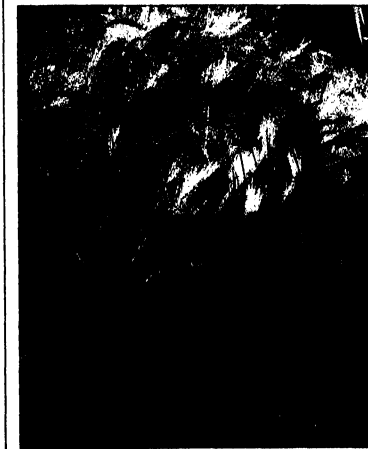
Barley

GRAMINEAE/POACEAE

Genus of about 20 species of annual and perennial grasses (including the cereal crop, barley) from disturbed ground in the temperate regions of both hemispheres. They have linear, flat or rolled, light to mid-green or blue-green leaves. Dense, narrow, cylindrical, occasionally flattened, spike-like panicles, with long-bristled spikelets, are borne in 2 ranks. The flowerheads of many species are useful for dried flower arrangements. Use in an annual, mixed, or herbaceous border, or in a wild garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun. Cut flowerheads for drying before fully mature.
- **PROPAGATION** Sow seed *in situ* in spring or autumn.
- **PESTS AND DISEASES** Trouble free.

**H. jubatum** ■ (Squirrel tail grass). Densely tufted, annual or perennial grass with erect or arching, linear, light green leaves, to 15cm (6in) long. In early and midsummer, erect stems bear dense, broad, nodding panicles, to 13cm



*Hordeum jubatum*

## HORMINUM

(5in) long, of silky, long-bristled, pale green spikelets, flushed red or purple, which turn beige with age. † 50cm (20in), ↔ 30cm (12in). N.E. Asia, North America. \*\*\*

- ▷ **Horehound** see *Marrubium*

## HORMINUM

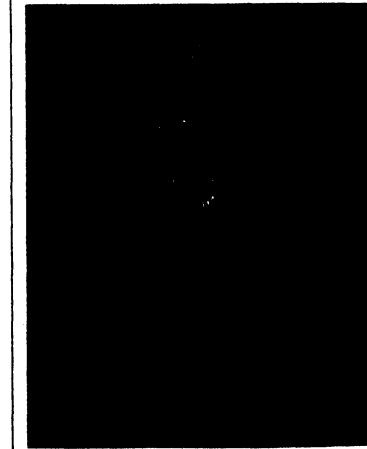
LABIATAE/LAMIACEAE

Genus of one species of low-growing, rhizomatous perennial from rocks, screes, and meadows in subalpine areas of the Pyrenees and European Alps. It has basal rosettes of dark green leaves, and is grown for its spikes of tubular-bell-shaped, usually violet flowers, borne in summer. Grow at the front of a herbaceous border or in a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed in autumn in containers in an open frame. Divide in spring.
- **PESTS AND DISEASES** Prone to slug and snail damage.

**H. pyrenaicum** ■ (Dragon's mouth, Pyrenean dead nettle). Perennial with rosettes of ovate, toothed, glossy, dark green leaves, to 7cm (3in) long. In summer, bears a succession of tubular-bell-shaped, 2-lipped flowers, to 2cm (¾in) long, in axillary whorls. The flowers have prominent stamens, and are usually dark violet-blue, occasionally pink or white. † 20cm (8in), ↔ to 30cm (12in). Pyrenees, Alps. \*\*\*

- ▷ **Hornbeam** see *Carpinus*  
American see *Carpinus caroliniana*  
American hop see *Ostrya virginiana*  
Common see *Carpinus betulus*  
Hop see *Ostrya carpinifolia*
- ▷ **Horncone, Mexican** see *Ceratozamia mexicana*
- ▷ **Hornwort** see *Ceratophyllum*, *C. demersum*
- ▷ **Horse chestnut** see *Aesculus*, *A. hippocastanum*  
Chinese see *A. chinensis*  
Indian see *A. indica*  
Japanese see *A. turbinata*  
Red see *A. x carnea*  
Sunrise see *A. x neglecta* 'Erythroblastos'
- ▷ **Horsemint** see *Mentha longifolia*
- ▷ **Horseradish** see *Armoracia rusticana*
- ▷ **Horsetail tree** see *Casuarina equisetifolia*



*Horminum pyrenaicum*

## HOSTA

Plantain lily

HOSTACEAE/LILIACEAE

Genus of about 70 species of mostly clump-forming, occasionally rhizomatous or stoloniferous perennials from sun-baked volcanic cliffs, rocky streamsides, woodland, and alpine meadows in China, Korea, Japan, and E. Russia. Numerous hybrids have also been raised, mainly in the USA. Hostas are grown primarily for their bold foliage, produced in dense mounds of overlapping, ovate to heart-shaped or lance-shaped leaves (see panel below). The leaves may be green, yellow, grey-blue, or variegated, and are often glaucous. One-sided racemes of bell- or funnel-shaped flowers, to 3cm (1¼in) long, are borne on usually leafless, sometimes leafy scapes, mainly in summer. They are followed by oblong, green, later pale brown seed capsules. Plant heights given in the descriptions below refer to the mounds of foliage; flower (scape) heights are given separately.

Hostas may be grown as ground cover under deep-rooted, deciduous trees, in a mixed or herbaceous border, or near water. Smaller hostas are excellent for a rock garden, a peat bed, or containers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil with shelter from cold, drying winds. Most hostas prefer a site in full or partial shade (fewer flowers will be produced in full shade), but yellow-leaved hostas colour better in a sunny position with some midday shade. Hostas will not tolerate drought and should be mulched annually in spring to conserve moisture.

• **PROPAGATION** Although easily raised from seed sown in containers in a cold frame in spring, only seedlings of *H. ventricosa* will come reliably true in cultivation. Divide in late summer or early spring. Many new hostas are propagated through tissue culture.

• **PESTS AND DISEASES** Particularly susceptible to damage from slugs and

snails. Container-grown plants are vulnerable to vine weevil. Virus infections may also be a problem.

*H. albomarginata* see *H. sieboldii*.

*H. 'Allan P. McConnell'* ■ Clump-forming perennial producing broadly to narrowly ovate, olive-green leaves, 8cm (3in) long, with narrow white margins. In midsummer, bears bell-shaped purple flowers on ridged scapes, 35–40cm (14–16in) long. ‡ 15–20cm (6–8in), ↔ 30–45cm (12–18in). \*\*\*

*H. 'Antioch'* ■ Robust, clump-forming perennial with broadly ovate, tapered, arching, matt, dark green leaves, 25cm (10in) long, irregularly margined grey-green and creamy yellow, fading to white. In midsummer, arching, leafy scapes, 90cm (36in) long, bear funnel-shaped, lavender-blue flowers. ‡ 50cm (20in), ↔ 90cm (36in). \*\*\*

*H. 'Argentea Variegata'* see *H. undulata* var. *undulata*.

*H. 'August Moon'* ■ Vigorous, clump-forming perennial with rounded to heart-shaped, cupped, puckered, pale green leaves, 15cm (6in) long, becoming golden yellow with a faint glaucous bloom. In summer, glaucous scapes, 70cm (28in) long, bear bell-shaped, greyish white flowers. ‡ 50cm (20in), ↔ 75cm (30in). \*\*\*

*H. 'Aurcomaculata'* see *H. fortunei* 'Albopicta'.

*H. 'Big Daddy'*. Clump-forming perennial with rounded to heart-shaped, cupped, deeply puckered, glaucous, grey-blue leaves, 28cm (11in) long. In early summer, bears bell-shaped, greyish white flowers on leafy, glaucous scapes, 80cm (32in) long. ‡ 60cm (24in), ↔ 1m (3ft). \*\*\*

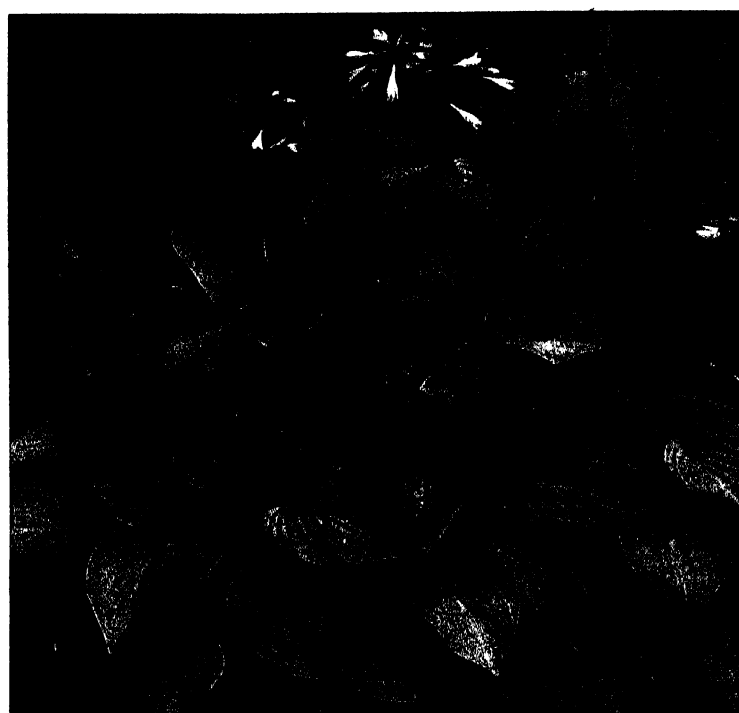
*H. 'Birchwood Parky's Gold'* ■ syn. *H. 'Golden'*, *H. 'Golden Nakaiana'*.

Vigorous, clump-forming perennial with heart-shaped, matt, yellow-green leaves, 13cm (5in) long, becoming rich yellow with age. In midsummer, scapes 70cm (28in) long bear bell-shaped, pale lavender-blue flowers. ‡ 35–40cm (14–16in), ↔ indefinite. \*\*\*

*H. 'Blue Angel'* ♀ Slow-growing, clump-forming perennial with ovate to heart-shaped, wavy, glaucous, bluish grey leaves, 40cm (16in) long. In midsummer, bears bell-shaped white flowers on glaucous scapes, 1m (3ft) long. ‡ 1m (3ft), ↔ 1.2m (4ft). \*\*\*

*H. 'Blue Blush'* ■ Clump-forming perennial with lance-shaped, glaucous, deep blue-green leaves, 10cm (4in) long. Bell-shaped, lavender-blue flowers are borne on glaucous scapes, 24cm (10in) long, in midsummer. ‡ 20cm (8in), ↔ 35–40cm (14–16in). \*\*\*

*H. 'Blue Dimples'*. Clump-forming perennial with ovate to heart-shaped, thick, glaucous, blue-green leaves, 18cm



*Hosta* 'Birchwood Parky's Gold'

(7in) long, becoming dimpled with wavy margins when mature. In midsummer, bears bell-shaped lilac flowers on glaucous scapes, 50cm (20in) long. ‡ 35cm (14in), ↔ 50cm (20in). \*\*\*

*H. 'Blue Moon'* ■ Slow-growing, clump-forming perennial producing broadly heart-shaped, pointed, glaucous, deep blue-green leaves, 8cm (3in) long, becoming slightly puckered with age. In midsummer, glaucous scapes, 30cm (12in) long, bear dense racemes of bell-shaped, pale mauve-grey flowers. ‡ 10cm (4in), ↔ 30cm (12in). \*\*\*

*H. 'Blue Skies'*. Clump-forming perennial with heart-shaped, pointed, flat, smooth, glaucous, blue-green leaves, 13cm (5in) long. In midsummer, bears bell-shaped, lavender-blue flowers on glaucous scapes, 40cm (16in) long. ‡ 20cm (8in), ↔ 40cm (16in). \*\*\*

*H. 'Blue Umbrellas'*. Clump-forming perennial with ovate to heart-shaped, cupped, stiff, puckered, thick, glaucous, blue-green leaves, 33cm (13in) long. Bell-shaped, greyish white flowers are borne on scapes 1m (3ft) long, in midsummer. Will tolerate sun or partial shade. ‡ 1m (3ft). \*\*\*

*H. 'Blue Wedgwood'*. Clump-forming perennial with ovate to lance-shaped, pointed, wavy, glaucous, grey-blue leaves, 15cm (6in) long, dimpled when mature. Bell-shaped, pale lavender-blue flowers are borne on glaucous scapes, 40cm (16in) long, in midsummer. ‡ 25cm (10in), ↔ 55cm (22in). \*\*\*

*H. 'Bold Ribbons'*. Stoloniferous perennial with spoon-shaped, arching, matt, olive-green leaves, 15cm (6in) long, margined with yellow that fades to creamy white. In summer, bears funnel-shaped violet flowers on scapes 60cm (24in) long. ‡ 25cm (10in), ↔ 60cm (24in). \*\*\*

*H. 'Brim Cup'*. Slow-growing, clump-forming perennial with erect, heart-shaped, slightly cupped, thick, dark green leaves, 15cm (6in) long, puckered between the veins. The irregular, creamy yellow leaf margins turn white with age. In midsummer, scapes 45cm (18in) long bear bell-shaped, pale lavender-blue flowers, fading to white. ‡ 30cm (12in), ↔ 35–40cm (14–16in). \*\*\*

*H. 'Buckshaw Blue'*. Slow-growing, clump-forming perennial with short leaf-stalks bearing ovate to heart-shaped, concave, puckered, glaucous, deep blue-green leaves, 15cm (6in) long. In early summer, bears bell-shaped, greyish white flowers on glaucous scapes, 45cm (18in) long. ‡ 35cm (14in), ↔ 60cm (24in). \*\*\*

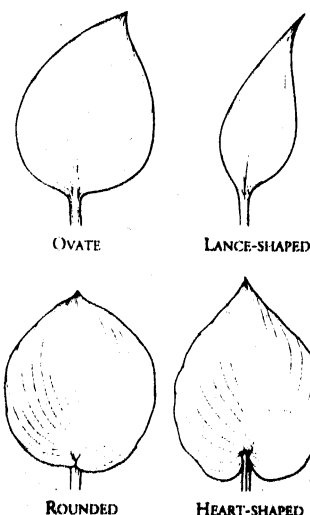
*H. 'Candy Hearts'*. Vigorous, clump-forming perennial with heart-shaped, pointed, bluish grey-blue leaves, 15cm (6in) long. Bell-shaped, pale lavender-blue to off-white flowers are borne on scapes 50cm (20in) long, in summer. ‡ 35–40cm (14–16in), ↔ 55cm (22in). \*\*\*

*H. capitata*. Clump-forming perennial producing ovate to heart-shaped, thin, ruffled leaves, to 13cm (5in) long, with wavy margins. They are deep olive-green with sunken veins, glossy beneath. In midsummer, bell-shaped purple flowers with darker purple veins, open from spherical buds on straight, ridged, leafy scapes, 30–40cm (12–16in) long. Well-established plants are sometimes remountant. ‡ 18cm (7in), ↔ 45cm (18in). Korea, Japan. \*\*\*

*H. 'Carol'* ■ Vigorous, clump-forming perennial with ovate to heart-shaped, slightly concave, puckered, olive-green to dark green leaves, 23cm (9in) long,

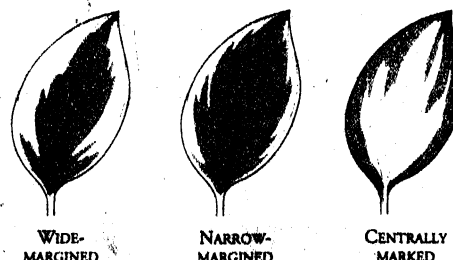
## HOSTA LEAF SHAPES

Hostas are grown for their bold leaves, which may be ovate, lance-shaped, rounded, or heart-shaped.



## HOSTA LEAF VARIATION

Many hostas have attractively variegated foliage. The leaves may be widely or narrowly margined in a paler colour, or have a wide, pale, central marking and darker margins.



irregularly margined white, and splashed grey-green. In summer, funnel-shaped, lavender-blue flowers are produced on arching, leafy, glaucous, purple-tinted scapes, 75cm (30in) long, ‡ 50cm (20in), ↔ 1m (3ft). \*\*\*

**H. 'Chinese Sunrise'**. Stoloniiferous perennial with lance-shaped, pointed, thin, glossy, yellow-green leaves, 15cm (6in) long, fading to pale green, and narrowly margined dark green. In late summer, arching, leafy scapes, 70cm (28in) long, bear bell-shaped purple flowers. ‡ 35cm (14in), ↔ 70cm (28in). \*\*\*

**H. 'Christmas Tree'**. Clump-forming perennial whose outline, when in flower, resembles a Norway spruce (*Picea abies*). Heart-shaped, deeply puckered, glaucous, mid- to dark green leaves, 20cm (8in) long, have irregular, creamy white margins. In midsummer, bears funnel-shaped, very pale lavender-white flowers on arching, leafy scapes, 60cm (24in) long, ‡ 45cm (18in), ↔ 1m (3ft). \*\*\*

**H. 'Cream Delight'** see *H. undulata* var. *undulata*.

**H. 'Crispula'** ♀ syn. *H. 'Crispula'*, *H. 'Sazanami'*. Clump-forming perennial with deeply channelled leaf-stalks bearing broadly lance-shaped to heart-shaped, wavy-margined, mid- to deep green leaves, 20–30cm (8–12in) long, tapering to long, twisted tips, and irregularly margined white. In early summer, produces funnel-shaped, lavender-white flowers on erect, leafy scapes, 75–90cm (30–36in) long. ‡ 50cm (20in), ↔ 1m (3ft). Probably Japan. \*\*\*

**H. 'Crispula'** see *H. crispula*.

**H. 'decorata'**, syn. *H. 'Decorata'*. Stoloniiferous perennial producing broadly ovate to rounded, blunt-tipped, slightly wavy-margined, leathery, matt, dark green leaves, 10–16cm (4–6in) long, margined white. In midsummer, bears funnel-shaped, deep violet or sometimes white flowers, with pale purple stripes, on leafy scapes, 50cm (20in) long, ‡ 30cm (12in), ↔ 45cm (18in). Probably Japan. \*\*\*

**f. 'normalis'** has dark green leaves with no variegation.

**H. 'Decorata'** see *H. decorata*.

**H. 'Devon Blue'**. Vigorous, clump-forming perennial with ovate to heart-shaped, pointed, glaucous, grey-blue leaves, 18cm (7in) long. Bell-shaped, deep lavender-blue flowers are borne on glaucous scapes, 50cm (20in) long, in midsummer. ‡ 50cm (20in), ↔ 1m (3ft). \*\*\*

**H. 'Diamond Tiara'**. Vigorous perennial forming a compact mound of ovate to heart-shaped, slightly wavy-margined, thin, pale olive-green leaves, 10cm (4in) long, irregularly margined cream to white and splashed grey-green. In midsummer, bears bell-shaped, sometimes remountant violet flowers on scapes 70cm (28in) long, ‡ 35cm (14in), ↔ 65cm (26in). \*\*\*

**H. 'Dorset Blue'**. Slow-growing, clump-forming perennial with ovate to heart-shaped, slightly cupped, puckered, thick, dark blue-green leaves, 8cm (3in) long, very glaucous beneath. In midsummer, bears bell-shaped, lavender-white flowers on stout, leafy, glaucous, greyish mauve scapes, 25cm (10in) long, ‡ 20cm (8in), ↔ 45cm (18in). \*\*\*

**H. 'Eldorado'** see *H. 'Frances Williams'*.

**H. 'Emerald Tiara'** ♂ Vigorous perennial forming a compact mound of broadly lance-shaped to ovate or heart-shaped, slightly wavy, bright green leaves, 10cm (4in) long. Bell-shaped violet flowers, sometimes remountant, are borne on scapes 70cm (28in) long, in midsummer. ‡ 35cm (14in), ↔ 65cm (26in). \*\*\*

**H. 'Fair Maiden'**. Clump-forming perennial with erect leaf-stalks bearing heart-shaped, pointed, flat, dark green leaves, 10cm (4in) long, with irregular cream margins, turning white with age. In midsummer, glaucous scapes, 65cm (26in) long, bear bell-shaped, lavender-blue, sometimes remountant flowers. ‡ 35cm (14in), ↔ 40cm (16in). \*\*\*

**H. 'fluctuans 'Sagae'** ♀ syn. *H. 'fluctuans 'Variegated'*, *H. 'Sagae'*.

Clump-forming perennial with erect leaf-stalks bearing ovate to lance-shaped, horizontal, wavy-margined leaves, 20–30cm (8–12in) long, glaucous, dull olive-green above, glaucous, mid-green beneath, and boldly margined creamy yellow. In mid- and late summer, thick, semi-erect, leafy, glaucous scapes, 1.5m (5ft) long, bear long racemes of bell-shaped white flowers, 5–6cm (2–2½in) long, suffused violet to pale purple. ‡↔ 1m (3ft). Garden origin. \*\*\*

**H. 'fluctuans 'Variegated'** see *H. 'fluctuans 'Sagae'*.

**H. 'fortunei'**. Vigorous, clump-forming perennial with ovate, pointed, matt, dark green leaves, 20–30cm (8–12in) long. In midsummer, leafy scapes, 80cm (32in) long, bear funnel-shaped mauve flowers. ‡ 55cm (22in), ↔ 80cm (32in). Probably garden origin. \*\*\*

**'Albomarginata'**, syn. *H. 'Fortunei Albomarginata'*, has large, dull mid- to deep green leaves, to 30cm (12in) long, the irregular cream margins turning white with age. The amount of variegation may vary from year to year. **'Albopicta'** ♂♀ syn. *H. 'Aureomaculata'*, var. *albopicta*, *H. 'Fortunei Albopicta'*, produces narrowly heart-shaped, thin, creamy yellow leaves, 20–25cm (8–10in) long, irregularly margined dark green, fading slowly to dull mid-green; ↔ 1m (3ft).

**'Aureomarginata'** ♂♀ syn. var. *aureomarginata*, *H. 'Fortunei Aureomarginata'*, *H. 'Obscura Marginata'*, has ovate to heart-shaped, leathery, distinctly veined, deep olive-green leaves, 20–25cm (8–10in) long, irregularly margined yellow. The flowers are borne freely on scapes 85cm (34in) long, in summer. Tolerates sun or partial shade; ↔ 1m (3ft). **'Gloriosa'**, syn. *H. 'Fortunei Gloriosa'*, is slow-growing, producing narrowly elliptic, cupped, slightly puckered, glossy, dark olive-green leaves, 15cm (6in) long, with regular, very narrow white margins. In summer, lavender-blue flowers are borne on scapes 1m (3ft) long; ‡ 45cm (18in), ↔ 60cm (24in). **var. 'hyacinthina'** ♀ syn. *'Hyacinthina'*, *H. 'Fortunei Hyacinthina'*, produces ovate to heart-shaped, wavy, slightly puckered, thick, glaucous, grey-green leaves, finely margined white and blue-grey beneath. In summer, violet flowers are borne freely on slightly arching, glaucous scapes, 1m (3ft) long; ‡ 60cm (24in), ↔ 1m (3ft).

**'Fortunei Albomarginata'** see *H. 'fortunei' 'Albomarginata'*. **'Fortunei Albopicta'** see *H. 'fortunei' 'Albopicta'*. **'Fortunei Aureomarginata'** see *H. 'fortunei' 'Aureomarginata'*. **'Fortunei Gloriosa'** see *H. 'fortunei' 'Gloriosa'*. **'Fortunei Hyacinthina'** see *H. 'fortunei' var. 'hyacinthina'*. **'Fragrant Bouquet'**. Clump-forming perennial producing ovate to heart-shaped, slightly wavy-margined, glossy, pale green leaves, 20cm (8in) long, with irregular, creamy yellow margins. In late summer, funnel-shaped, fragrant, mauvish white flowers are borne on scapes 90cm (36in) long. Tolerates sun or partial shade. ‡ 45cm (18in), ↔ 65cm (26in). \*\*\*



*Hosta* 'Blue Blush'

**H. 'Fortunei Albomarginata'** see *H. 'fortunei' 'Albomarginata'*.

**H. 'Fortunei Albopicta'** see *H. 'fortunei' 'Albopicta'*.

**H. 'Fortunei Aureomarginata'** see *H. 'fortunei' 'Aureomarginata'*.

**H. 'Fortunei Gloriosa'** see *H. 'fortunei' 'Gloriosa'*.

**H. 'Fortunei Hyacinthina'** see *H. 'fortunei' var. 'hyacinthina'*.

**H. 'Fragrant Bouquet'**. Clump-forming perennial producing ovate to heart-shaped, slightly wavy-margined, glossy, pale green leaves, 20cm (8in) long, with irregular, creamy yellow margins. In late summer, funnel-shaped, fragrant, mauvish white flowers are borne on scapes 90cm (36in) long. Tolerates sun or partial shade. ‡ 45cm (18in), ↔ 65cm (26in). \*\*\*



*Hosta* 'Allan P. McConnell'



*Hosta* 'Antioch'



*Hosta* 'August Moon'



*Hosta* 'Blue Moon'



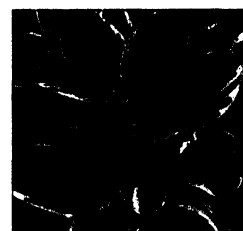
*Hosta* 'Carol'



*Hosta* 'Emerald Tiara'



*Hosta fortunei* 'Albopicta'



*Hosta fortunei* 'Aureomarginata'



*Hosta* 'Fragrant Gold'

**H. 'Frances'** ■♀ Vigorous, clump-forming perennial producing ovate to heart-shaped, slightly cupped, puckered, olive-green leaves, 18cm (7in) long, with irregular white margins. Arching, leafy scapes, 75cm (30in) long, bear funnel-shaped, lavender-blue flowers in summer. ‡55 cm (22in), ↔ 1m (3ft). \*\*\*

**H. 'Frances Williams'** ■♀ syn. *H. 'Eldorado'*, *H. 'Golden Circles'*, *H. sieboldiana* 'Frances Williams', *H. sieboldiana* 'Yellow Edge'. Clump-forming perennial producing heart-shaped, cupped, very puckered, thick, glaucous, blue-green leaves, 20cm (8in) long, with wide, irregular, green-yellow margins. In early summer, bears bell-shaped, greyish white flowers on glaucous scapes, 65cm (26in) long. ‡60cm (24in), ↔ 1m (3ft). \*\*\*

**H. 'Frosted Jade'** ■ Clump-forming perennial with ovate, pointed, glaucous, dark green leaves, 30cm (12in) long, with narrow white margins and splashed grey-green, giving the appearance of 'frosting'. Funnel-shaped, very pale lavender-blue, almost white flowers are borne on arching, leafy scapes, to 1.1m (3½ft) long, in early summer. ‡80cm (32in), ↔ 1m (3ft). \*\*\*

**H. 'Ginko Craig'**. Clump-forming perennial with lance-shaped, flat, dark green leaves, 8cm (3in) long, margined clear white. Mature plants (after about 4 years if not divided) have broader leaves with wider margins. In summer, bare scapes, 45cm (18in) long, bear funnel-shaped, deep purple to violet flowers. ‡25cm (10in), ↔ 45cm (18in). \*\*\*

**H. glauca** see *H. sieboldiana* var. *elegans*. **H. 'Gold Edger'**. Vigorous perennial with heart-shaped, smooth, pale green-yellow leaves, 10cm (4in) long. Bell-shaped, very pale lavender-blue flowers are borne on scapes 40cm (16in) long, in summer. ‡30cm (12in), ↔ 45cm (18in). \*\*\*

**H. 'Golden'** see *H. 'Birchwood Parky's Gold'*.

**H. 'Golden Circles'** see *H. 'Frances Williams'*.

**H. 'Golden Medallion'**. Slow-growing, clump-forming perennial with rounded to heart-shaped, cupped, puckered yellow leaves, 15cm (6in) long. In mid-summer, bell-shaped, greyish white flowers are borne on scapes 45cm (18in) long. Prefers a sunny site. ‡35–40cm (14–16in), ↔ 60cm (24in). \*\*\*

**H. 'Golden Nakaiana'** see *H. 'Birchwood Parky's Gold'*.



*Hosta montana* 'Aureomarginata'

**H. 'Golden Prayers'** ■ Erect, clump-forming perennial with heart-shaped, cupped, close-veined, slightly puckered, deep yellow leaves, 10cm (4in) long. In summer, scapes 45cm (18in) long bear bell-shaped, pale lavender-blue flowers. ‡35cm (14in), ↔ 60cm (24in). \*\*\*

**H. 'Golden Tiara'** ■♀ Vigorous perennial forming a mound of ovate to heart-shaped, mid-green leaves, 10cm (4in) long, irregularly margined with yellow. In summer, scapes 60cm (24in) long bear bell-shaped, deep purple, sometimes remountant flowers, striped lavender-purple. ‡30cm (12in), ↔ 50cm (20in). \*\*\*

**H. 'Gold Regal'**. Clump-forming perennial with erect leaf-stalks bearing ovate, slightly concave, erect, flat, thick, pale green-yellow leaves, 18cm (7in) long; they only colour well in full sun. Dense racemes of bell-shaped, greyish purple flowers, 2.5–8cm (1–3in) long, are borne on glaucous scapes, 70cm (28in) long, in summer. ‡60cm (24in), ↔ 1m (3ft). \*\*\*

**H. 'Gold Standard'** ■ Clump-forming perennial with ovate to heart-shaped, green-yellow leaves, 18cm (7in) long, fading through yellow to cream, and narrowly and irregularly margined dark green. In midsummer, funnel-shaped, lavender-blue flowers are borne on scapes to 1.1m (3½ft) long. ‡65cm (26in), ↔ 1m (3ft). \*\*\*

**H. gracillima**. Clump-forming perennial with lance-shaped, wavy-margined leaves, 2–6cm (¾–2½in) long, glossy, deep green above, paler beneath. From summer to autumn, arching, leafless, purple-dotted scapes, 20–25cm (8–10in) long, bear widely funnel-shaped, lavender-blue flowers, purple-striped inside. ‡5cm (2in), ↔ 18cm (7in). Japan. \*\*\*

**H. 'Granary Gold'**. Clump-forming perennial with ovate to heart-shaped, wavy, slightly puckered, green- to light yellow leaves, 13cm (5in) long, fading to greenish white. In summer, leafy, glaucous scapes, 75cm (30in) long, bear funnel-shaped, lavender-blue flowers. ‡50cm (20in), ↔ 75cm (30in). \*\*\*

**H. 'Grand Tiara'** ■ Vigorous perennial forming a compact mound of ovate to heart-shaped, mid-green leaves, 10cm (4in) long, with irregular, wide yellow margins. In summer, bell-shaped, sometimes remountant, deep purple flowers, striped lavender-blue within, are produced on scapes 60cm (24in) long. ‡30cm (12in), ↔ 50cm (20in). \*\*\*

**H. 'Great Expectations'** ■ Clump-forming perennial with green-margined white leaf-stalks bearing heart-shaped, stiff, puckered, thick leaves, 15cm (6in) long; they are glaucous, blue-green, and irregularly but widely splashed with yellow, fading to white in the centres. In early summer, bell-shaped, greyish white flowers are borne on leafy scapes, 85cm (34in) long. ‡55cm (22in), ↔ 85cm (34in). \*\*\*

**H. 'Green Acres'**. Clump-forming perennial with ovate to heart-shaped, tapered, furrowed, thick, coarse, mid-green leaves, 45cm (18in) long, with rough undersides. Funnel-shaped, whitish mauve flowers are borne on straight, leafy scapes, 1m (3ft) long, in early summer. ‡↔ 1m (3ft). \*\*\*

**H. 'Green Fountain'** ■ Clump-forming perennial with red-dotted leaf-



*Hosta* 'Moonlight'

stalks bearing lance-shaped, tapering, arching, wavy-margined, glossy, mid-green leaves, 25cm (10in) long. In summer, bears funnel-shaped, widely spaced, pale mauve flowers on arching, leafy, red-dotted scapes, 60cm (24in) long. ‡45cm (18in), ↔ 1m (3ft). \*\*\*

**H. 'Green Sheen'**. Vigorous, clump-forming perennial with ovate to heart-shaped, thick, leathery, shiny, pale green leaves, 30cm (12in) long, glaucous beneath. In summer, bears bell-shaped, pale lavender-blue, white-striped flowers on leafless scapes, 1.5m (5ft) long. ‡75cm (30in) tall, ↔ 1m (3ft). \*\*\*

**H. 'Ground Master'** ■ Vigorous, stoloniferous, prostrate perennial with ovate to lance-shaped, matt, olive-green leaves, 13cm (5in) long, with wavy, irregular cream margins, fading to white. Mature plants (after about 4 years if not divided) have broader leaves with wider margins. In summer, produces funnel-shaped purple flowers on straight, leafy scapes, 50cm (20in) long. ‡25cm (10in), ↔ 55cm (22in). \*\*\*

**H. 'Hadspen Blue'** ■ Slow-growing, clump-forming perennial with ovate to heart-shaped, thick, glaucous, close-veined, grey-blue leaves, 13cm (5in) long. In summer, purple-dotted scapes, 35cm (14in) long, bear dense racemes of bell-shaped, pale grey-mauve flowers. ‡25cm (10in), ↔ 60cm (24in). \*\*\*

**H. 'Hadspen Heron'**. Clump-forming perennial with narrowly lance-shaped, slightly wavy-margined, glaucous, grey-blue leaves, 10cm (4in) long. In summer, bears bell-shaped, grey-mauve flowers on scapes 12in (30cm) long. ‡23cm (9in), ↔ 55cm (22in). \*\*\*

**H. 'Halcyon'** ■♀ syn. *H. 'Holstein'*. Clump-forming perennial with heart-shaped, smooth, thick, glaucous, bright grey-blue leaves, 20cm (8in) long. In summer, bears dense racemes of bell-shaped, lavender-grey flowers on scapes 45cm (18in) long. ‡35–40cm (14–16in), ↔ 70cm (28in). \*\*\*

**H. belonioides** f. *albopicta* see *H. rohdeifolia*.

**H. 'Holstein'** see *H. 'Halcyon'*.

**H. 'Honeybells'** ■♀ Vigorous perennial forming a lax, open mound of ovate to heart-shaped, slightly wavy-margined, strongly veined, lustrous, pale green leaves, 28cm (11in) long. Fragrant, bell-shaped, white, sometimes lavender-blue-striped flowers are borne on leafy scapes, 1m (3ft) long, in late summer. ‡75cm (30in), ↔ 1.2m (4ft). \*\*\*

**H. hypoleuca**. Clump-forming perennial with broadly ovate to heart-shaped, slightly wavy-margined, glaucous, pale green leaves, 25–45cm (10–18in) long, intensely white-coated beneath. In summer, bears bell-shaped, very pale lavender-blue flowers on arching, leafy, glaucous, red-dotted scapes, 35cm (14in) long. Thrives in sun or partial shade. ‡45cm (18in), ↔ 1m (3ft). Japan. \*\*\*

**H. 'Invincible'** ■ Vigorous, clump-forming perennial with ovate-oblong to lance-shaped, tapered, wavy-margined, thick, glossy, dark olive-green leaves, 13cm (5in) long. In late summer, bears funnel-shaped, fragrant, pale lavender-blue to white flowers on arching, leafy scapes, 50cm (20in) long. Grow in sun or partial shade. ‡30cm (12in), ↔ 60cm (24in). \*\*\*

**H. 'June'**. Clump-forming perennial, a variegated sport of *H. 'Halcyon'*, with heart-shaped, smooth, glaucous, grey-blue leaves, 20cm (8in) long, centrally and irregularly variegated yellow and yellow-green. Racemes of bell-shaped, lavender-grey flowers are borne on glaucous scapes, 45cm (18in) long, in summer. ‡35–40cm (14–16in), ↔ 70cm (28in). \*\*\*

**H. 'Kabitan'** ■ syn. *H. sieboldii* 'Kabitan'. Clump-forming perennial producing lance-shaped, thin, bright yellow leaves, 25cm (10in) long, with rippled, dark green margins. In late summer, bears narrow, later flaring, funnel-shaped, deep violet flowers on leafy scapes, 30cm (12in) long. ‡20cm (8in), ↔ 25cm (10in). \*\*\*

**H. kikutii.** Clump-forming perennial with ovate to lance-shaped or elliptic, tapered, prominently veined, arching, glossy, dark green leaves, 18–23cm (7–9in) long, lustrous beneath. In summer, bears dense racemes of funnel-shaped, white, sometimes faintly purple-flushed flowers on arching, leafy, red-dotted scapes, 60cm (24in) long. ‡40cm (16in), ↔ 60cm (24in). Japan. \*\*\*

**H. 'Krossa Regal'** ♀ Clump-forming perennial with semi-erect, ovate to lance-shaped, deeply veined, glaucous, bluish green leaves, 23cm (9in) long. In summer, glaucous scapes, 1.4m (4½ft) long, bear bell-shaped, pale lilac flowers. ‡70cm (28in), ↔ 75cm (30in). \*\*\*

**H. lancifolia** [♀] syn. *H. lancifolia* var. *fortis*. Perennial forming a dense mound of arching, narrowly lance-shaped, thin, glossy, dark green leaves, 10–17cm (4–7in) long. In late summer, slender, very leafy, red-dotted scapes, 65cm (26in) long, bear narrowly funnel-shaped, deep purple flowers. ‡45cm (18in), ↔ 75cm (30in). Korea, Japan. \*\*\*

\*\*\* var. *fortis* see *H. lancifolia*. **H. 'Lemon Lime'** [♀] Vigorous, clump-forming perennial with lance-shaped, wavy, thin, yellow-green to yellow leaves, 8cm (3in) long. In summer, produces remountant, bell-shaped, white-striped purple flowers on scapes 30cm (12in) long. ‡15cm (6in), ↔ 45cm (18in). \*\*\*

**H. longipes.** Vigorous, clump-forming perennial with ovate to heart-shaped, sometimes rounded, slightly wavy-margined, mid- to deep green leaves, 9–13cm (3½–5in) long, glossy beneath, and spotted purple at the bases of the midribs and on the leaf-stalks. In late summer and autumn, leafy, purple-dotted scapes, 40cm (16in) long, bear bell-shaped, wide-tubed, pale purple to chalky white flowers. ‡30cm (12in), ↔ 50cm (20in). Korea, Japan. \*\*\*

**H. longissima** [♀] Moisture-loving, upright, clump-forming perennial with narrowly lance-shaped, erect to arching, dark green leaves, 15–20cm (6–8in) long, glossy beneath. In late summer, bears long racemes of funnel-shaped, purple-striped mauve flowers on leafy scapes, 55cm (22in) long. ‡25cm (10in), ↔ 50cm (20in). Japan. \*\*\*

**H. 'Love Pat'** [♀] Slow-growing, clump-forming perennial with upright, heart-shaped, cupped, very puckered, thick, glaucous, deep blue leaves, 15cm (6in) long. In midsummer, bell-shaped, off-white flowers are borne on scapes 55cm (22in) long. ‡45cm (18in), ↔ 1m (3ft). \*\*\*

**H. 'Mediovariegata'** see *H. undulata* var. *undulata*.

**H. 'Midas Touch'.** Very slow-growing, clump-forming perennial with ovate to heart-shaped, cupped, very dimpled yellow leaves, 23cm (9in) long. Scapes 50cm (20in) long bear bell-shaped, pale lavender-white flowers in midsummer. Thrives in sun or partial shade. ‡50cm (20in), ↔ 65cm (26in). \*\*\*

**H. minor** f. *alba* of gardens see *H. sieboldii* var. *alba*.

**H. montana.** Clump-forming perennial with ovate to heart-shaped, thick, boldly veined leaves, 20–30cm (8–12in) long, varying from shiny, mid- to dark green to glaucous, pale green, with rough undersides. Leafy, purple-dotted scapes, 1m (3ft) long, bear funnel-shaped, grey-

mauve to white flowers in early summer. ‡75cm (30in), ↔ 1m (3ft). Japan.

\*\*\* **'Aureomarginata'** [♀] has narrower, tapering, wavy-margined, glossy, dark green leaves, 30cm (12in) long, with irregular yellow margins, turning cream; the leaves emerge early in spring. Scapes are 90cm (36in) long; ‡70cm (28in), ↔ 90cm (36in).

**H. 'Moonlight'** [♀] Clump-forming perennial with ovate to heart-shaped, cupped, olive-green leaves, 18cm (7in) long, fading to yellow, and irregularly margined white. In midsummer, bears funnel-shaped, lavender-blue flowers on straight, leafy scapes, 65cm (26in) long. ‡50cm (20in), ↔ 70cm (28in). \*\*\*

**H. 'Neat Splash Rim'.** Stoliferous perennial with broadly lance-shaped, olive-green leaves, 18cm (7in) long, boldly margined with cream, fading to white. Funnel-shaped purple flowers are borne on leafy scapes, 50cm (20in) long, in late summer. ‡35cm (14in), ↔ 60cm (24in). \*\*\*

**H. nigrescens** [♀] Clump-forming perennial with ovate-heart-shaped, concave, partly wrinkled, glaucous, grey-green leaves, 25–45cm (10–18in) long. In late summer, leafy, glaucous scapes, 1.4m (4½ft) long, bear funnel-shaped white flowers. ‡70cm (28in), ↔ 65cm (26in). Japan. \*\*\*

**H. 'Obscura Marginata'** see *H. fortunei* 'Aureomarginata'.

**H. 'On Stage'.** Clump-forming perennial with ovate to heart-shaped, tapered, light yellow leaves, 20cm (8in) long, irregularly margined and splashed dark and light green. In early summer, bears funnel-shaped, pale lavender-blue flowers on scapes 50cm (20in) long. ‡35cm (14in), ↔ 60cm (24in). \*\*\*

**H. opipara.** syn. *H. 'Opipara'*. Clump-forming perennial with flattened, wide leaf-stalks and rounded to heart-shaped, leathery, glossy, bright green leaves, 18–23cm (7–9in) long, with broad, wavy, yellow margins, turning cream. In late summer, arching, leafy scapes, 75cm (30in) long, bear bell-shaped, purple-striped mauve flowers. ‡70cm (28in), ↔ 1.5m (5ft). Japan. \*\*\*

**H. 'Opipara'** see *H. opipara*.

**H. 'Patriot'.** Vigorous, clump-forming perennial with ovate to heart-shaped, slightly cupped, puckered, olive-green leaves, 20cm (8in) long, very widely and irregularly margined white, and with grey-green splashes. In summer, bears funnel-shaped, lavender-blue flowers on leafy, glaucous scapes, 75cm (30in) long. ‡55cm (22in), ↔ 1m (3ft). \*\*\*

**H. 'Paul's Glory'.** Clump-forming perennial with heart-shaped, puckered yellow leaves, 15cm (6in) long, irregularly margined glaucous, grey-blue and yellow-green. In midsummer, leafy, arching, glaucous scapes, 60cm (24in) long, bear bell-shaped, lavender-grey flowers. ‡45cm (18in), ↔ 65cm (26in). \*\*\*

**H. 'Paxton's Original'** see *H. sieboldii*.

**H. 'Pearl Lake'.** Vigorous perennial forming a mound of heart-shaped, flat, glaucous, grey-green leaves, 10cm (4in) long. Bell-shaped, opalescent, lavender-blue, sometimes remountant flowers open on glaucous scapes, 60–80cm (24–32in) long, in midsummer. ‡35–40cm (14–16in), ↔ 1m (3ft). \*\*\*

**H. 'Piedmont Gold'** [♀] Robust, clump-forming perennial with narrowly heart-



Hosta 'Francee'



Hosta 'Frances Williams'



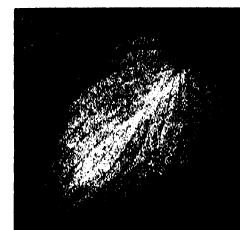
Hosta 'Frosted Jade'



Hosta 'Golden Prayers'



Hosta 'Golden Tiara'



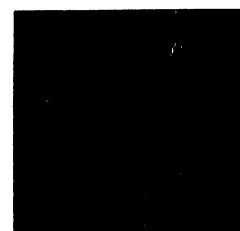
Hosta 'Gold Standard'



Hosta 'Grand Tiara'



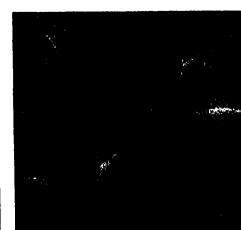
Hosta 'Great Expectations'



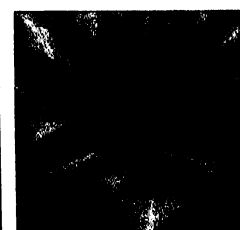
Hosta 'Green Fountain'



Hosta 'Ground Master'



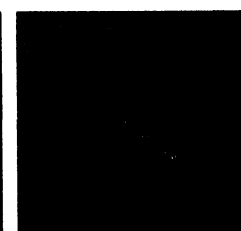
Hosta 'Hadspen Blue'



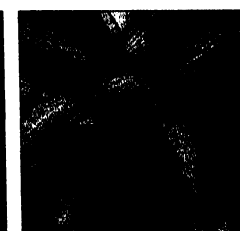
Hosta 'Halcyon'



Hosta 'Honeybells'



Hosta 'Invincible'



Hosta 'Kabitan'



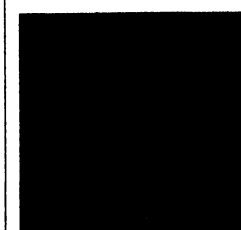
Hosta lancifolia



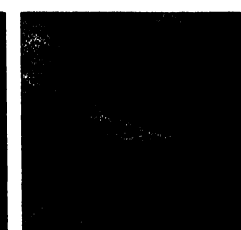
Hosta 'Lemon Lime'



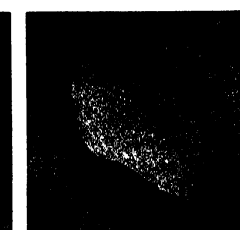
Hosta longissima



Hosta 'Love Pat'



Hosta nigrescens



Hosta 'Piedmont Gold'



shaped, wavy-margined, matt, glaucous yellow leaves, 28cm (11in) long. In summer, bears funnel-shaped, greyish white flowers on scapes 65cm (26in) long.  $\uparrow$  50cm (20in),  $\leftrightarrow$  1m (3ft). \*\*\*  
**H. 'Pizzazz'**. Clump-forming perennial producing ovate to heart-shaped, puckered, glaucous, mid-green leaves, 18cm (7in) long, splashed blue-green and irregularly margined cream. Bell-shaped, pale lavender-blue flowers are freely borne on leafy, glaucous scapes, 45cm (18in) long, in summer.  $\uparrow$  35cm (14in),  $\leftrightarrow$  60cm (24in). \*\*\*

**H. plantaginea**. Clump-forming perennial producing ovate to heart-shaped, slightly wavy, glossy, light green leaves, 16–28cm (6–11in) long, with prominent, widely spaced, raised veins. Trumpet-shaped, long-tubed, very fragrant white flowers, 10cm (4in) long, are borne on leafy, bright green scapes, 65–75cm (26–30in) long, in late summer and early autumn. Prefers a sunny site.  $\uparrow$  60cm (24in),  $\leftrightarrow$  1m (3ft). China. \*\*\*. **'Aphrodite'** bears double flowers that hardly ever open.

**'Grandiflora'**  $\varnothing$  syn. var. *japonica*, has ovate to lance-shaped, wavy leaves, 23cm (9in) long, and bears flowers 13cm (5in) long. var. *japonica* see **'Grandiflora'**.

**H. pycnophylla**. Slow-growing, clump-forming perennial with ovate to heart-shaped, very wavy-margined, glaucous, dull light green leaves, 20–25cm (8–10in) long, coated white beneath. In late summer, bears funnel-shaped, purple to dark purple flowers on arching, leafy, glaucous, purple-dotted scapes, 35cm (14in) long.  $\uparrow$  30cm (12in),  $\leftrightarrow$  70cm (28in). Japan. \*\*\*

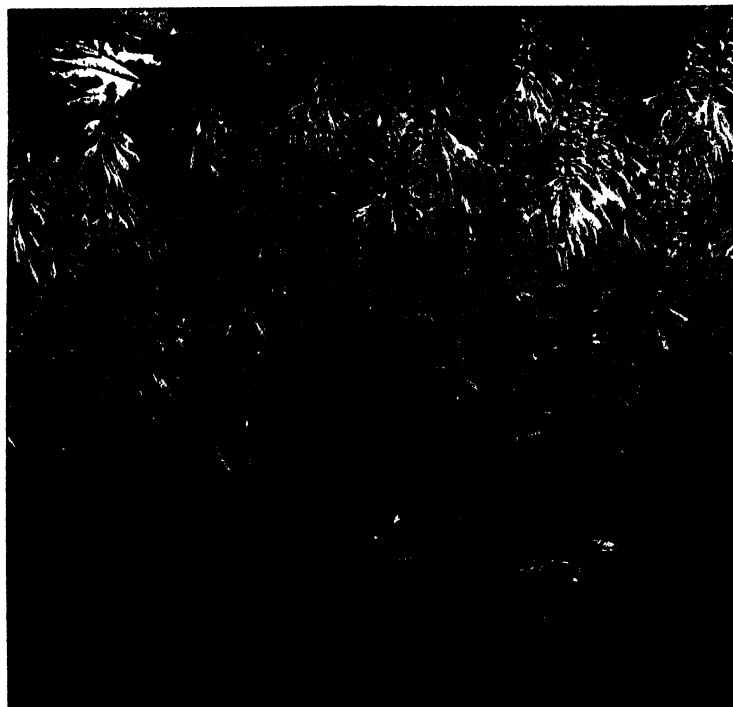
**H. rectifolia**. Sturdy, clump-forming perennial with ovate, shallowly cupped, dull to dark green leaves, to 30cm (12in) long. In late summer, bears widely spaced racemes of bell-shaped, deep-purple-striped purple flowers on stout, leafy scapes, 60–75cm (24–30in) long.  $\uparrow$  45cm (18in),  $\leftrightarrow$  75cm (30in). Japan, Russia (Kurile Islands). \*\*\*

**H. 'Regal Splendor'**  $\square$  Clump-forming perennial with long, arching leaf-stalks bearing ovate to lance-shaped, semi-erect, deeply veined, thick, glaucous, grey-green leaves, 30cm (12in) long, irregularly margined white to yellow. In summer, bears bell-shaped, greyish pink flowers on glaucous scapes, 1.4m (4½ft) long.  $\uparrow$  75cm (30in),  $\leftrightarrow$  1m (3ft). \*\*\*  
**H. 'Robusta'** see *H. sieboldiana* var. *elegans*.

**H. rohdeifolia**, syn. *H. belonioides* f. *albopicta*, *H. 'Rohdeifolia'*. Erect, clump-forming perennial with lance-shaped to inversely lance-shaped, blunt-tipped, flat, olive-green leaves, 13–18cm (5–7in) long, often with yellow margins, fading to cream. Funnel-shaped, dark-purple-striped purple flowers are borne on leafy scapes, 50–100cm (20–39in) long, in summer.  $\uparrow$  30cm (12in),  $\leftrightarrow$  45cm (18in). Probably Japan. \*\*\*

**H. 'Rohdeifolia'** see *H. rohdeifolia*.

**H. 'Royal Standard'**  $\square$   $\varnothing$  Vigorous, clump-forming perennial with ovate to heart-shaped, ribbed, glossy, bright pale green leaves, 20cm (8in) long. Funnel-shaped, fragrant white flowers, 2.5–8cm (1–3in) long, are borne on leafy scapes, 1m (3ft) long, in late summer. Tolerates sun or partial shade.  $\uparrow$  60cm (24in),  $\leftrightarrow$  1.2m (4ft). \*\*\*



*Hosta* 'Tall Boy'

**H. rupifraga**. Clump-forming perennial with broadly ovate-heart-shaped, wavy-margined, smooth, thick, glossy, dark green leaves, 12–15cm (5–6in) long, mid-green beneath. In early autumn, arching, leafy, glaucous, purple-dotted scapes, 30–40cm (12–16in) long, bear dense racemes of bell-shaped, light mauve flowers.  $\uparrow$  20cm (8in),  $\leftrightarrow$  60cm (24in). Japan. \*\*\*

**H. 'Sagae'** see *H. fluctuans* 'Sagae'.

**H. 'Saishu Jima'**. Vigorous perennial with narrowly lance-shaped, wavy-margined, dark green leaves, 10cm (4in) long. In mid- and late summer, bears bell-shaped, dark purple-striped purple flowers on scapes 23cm (9in) long.  $\uparrow$  20cm (8in),  $\leftrightarrow$  35–40cm (14–16in). \*\*\*

**H. 'Sazanami'** see *H. crispula*.

**H. 'Sea Drift'**. Slow-growing, clump-forming perennial with heart-shaped, pointed, wavy-margined, dark green leaves, 35cm (14in) long. In summer, funnel-shaped, lavender-blue flowers are borne on scapes 70cm (28in) long.  $\uparrow$  60cm (24in),  $\leftrightarrow$  1m (3ft). \*\*\*

**H. 'Sea Octopus'**. Slow-growing, clump-forming perennial with heart-shaped, pointed, very wavy-margined, dark green leaves, 15cm (6in) long. In summer, funnel-shaped, lavender-blue flowers are borne on scapes 70cm (28in) long.  $\uparrow$  20cm (8in),  $\leftrightarrow$  1m (3ft). \*\*\*

**H. 'September Sun'**  $\square$  Vigorous, clump-forming perennial with ovate to heart-shaped, flat, lime-green to yellow leaves, 15cm (6in) long, irregularly margined dark green, the variegation developing as the leaves mature. In summer, scapes 75cm (30in) long bear bell-shaped, very pale lavender-blue flowers. Thrives in sun or partial shade.  $\uparrow$  65cm (26in),  $\leftrightarrow$  1m (3ft). \*\*\*

**H. 'Shade Fanfare'**  $\square$   $\varnothing$  Clump-forming perennial with heart-shaped, wavy-margined, light to mid-green leaves, 18cm (7in) long, irregularly margined cream, turning white with age. Funnel-shaped, lavender-blue flowers are borne freely on leafy scapes, 60cm

(24in) long, in summer.  $\uparrow$  45cm (18in),  $\leftrightarrow$  60cm (24in). \*\*\*

**H. 'Shining Tot'**. Clump-forming perennial with heart-shaped, flat, thick, glossy, dark green leaves, 3cm (1¼in) long. Funnel-shaped, lavender-blue flowers are borne on arching, bare scapes, 15cm (6in) long, in summer.  $\uparrow$  5cm (2in),  $\leftrightarrow$  20cm (8in). \*\*\*

**H. sieboldiana**. Clump-forming perennial with ovate-heart-shaped to rounded, cupped, puckered, thick leaves, 25–50cm (10–20in) long, glaucous, grey-green to blue above, paler, sometimes glaucous beneath. In early summer, leafy, glaucous scapes, 1m (3ft) long, bear bell-shaped, pale lilac-grey flowers, fading to lilac-tinted white or pure white.  $\uparrow$  1m (3ft),  $\leftrightarrow$  1.2m (4ft). Japan. \*\*\*. var. *elegans*  $\square$   $\varnothing$  syn. 'Elegans', *H. glauca*, *H. 'Robusta'*, has rounded-heart-shaped, heavily and deeply puckered, very thickly glaucous, grey-blue leaves, 20–30cm (8–12in) long. 'Frances Williams' see *H. 'Frances Williams'*.

**H. 'Sieboldii'**  $\varnothing$  syn. *H. albomarginata*, *H. 'Paxton's Original'*. Vigorous, clump-forming perennial with broadly lance-shaped, blunt-tipped, flat, matt, olive-green leaves, 10–15cm (4–6in) long, narrowly and irregularly margined white. Racemes of funnel-shaped, deep violet flowers, purple-and-white-striped within, are borne on leafy scapes, 50cm (20in) long, in late summer and early autumn.  $\uparrow$  30cm (12in),  $\leftrightarrow$  60cm (24in). Japan. \*\*\*. var. *alba*, syn. *H. minor* f. *alba* of gardens, has mid-green leaves and white flowers. 'Kabitan' see *H. 'Kabitan'*.

**H. 'Snow Cap'**. Clump-forming perennial with heart-shaped, slightly cupped, puckered, glaucous, blue-green leaves, 20cm (8in) long, irregularly margined creamy white. In summer, bears large, fragrant, funnel-shaped, purple-striped white flowers on scapes 55cm (22in) long.  $\uparrow$  40cm (16in),  $\leftrightarrow$  60cm (24in). \*\*\*

**H. 'Snowden'**  $\square$  Slow-growing, clump-forming perennial with ovate to heart-shaped, pointed, flat, thick, glaucous, grey-green leaves, 35cm (14in) long. Funnel-shaped, greyish white flowers are borne on thick scapes, 1m (3ft) long, in midsummer.  $\uparrow$   $\leftrightarrow$  1m (3ft). \*\*\*

**H. 'Snowflakes'**. Clump-forming perennial with ovate to heart-shaped, pointed, flat, thick, glaucous, grey-green leaves, 35cm (14in) long. In mid-summer, scapes 35cm (14in) long bear funnel-shaped, greyish white flowers.  $\uparrow$  20cm (8in),  $\leftrightarrow$  30cm (12in). \*\*\*

**H. 'So Sweet'**  $\square$  Clump-forming perennial with ovate to lance-shaped, flat, glossy, mid-green leaves, 18cm (7in) long, margined creamy white. In mid- and late summer, lavender-blue buds open to funnel-shaped, fragrant, purple-striped white flowers on scapes 60cm (24in) long.  $\uparrow$  35cm (14in),  $\leftrightarrow$  55cm (22in). \*\*\*

**H. 'Stiletto'**. Vigorous, erect, clump-forming perennial with lance-shaped, rippled, mid-green leaves, 18cm (7in) long, margined creamy white. Funnel-shaped, purple-striped, lavender-blue flowers are borne on leafy scapes, 30cm (12in) long, in summer.  $\uparrow$  15cm (6in),  $\leftrightarrow$  20cm (8in). \*\*\*

**H. 'Sugar and Cream'**  $\square$  Vigorous perennial forming a lax, open mound of ovate to heart-shaped, mid-green leaves, 25cm (10in) long, with slightly wavy, irregular cream margins. Fragrant, bell-shaped white flowers, striped lavender-blue, are borne on leafy scapes, 1m (3ft) long, in late summer. Thrives in sun or partial shade.  $\uparrow$  75cm (30in). \*\*\*

**H. 'Sum and Substance'**  $\square$   $\varnothing$  Clump-forming perennial with heart-shaped, flat, glossy, yellow-green to yellow leaves, 50cm (20in) long, glaucous beneath, becoming puckered when mature. In mid- and late summer, bears dense racemes of bell-shaped, very pale lilac flowers on leaning, glaucous scapes, 1m (3ft) long. Thrives in sun or partial shade.  $\uparrow$  75cm (30in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**H. 'Summer Fragrance'**. Clump-forming perennial with ovate to heart-shaped, pointed, flat, mid-green leaves, 20cm (8in) long, irregularly and narrowly margined creamy white. Bell-shaped, fragrant, deep lavender-purple flowers are borne on leafy scapes, 85cm (34in) long, in late summer.  $\uparrow$  60cm (24in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**H. 'Sun Power'**. Clump-forming perennial with ovate to heart-shaped, wavy, yellow-green to bright yellow leaves, 25cm (10in) long. Funnel-shaped, pale lavender-blue to white flowers are borne on arching, leafy scapes, to 1.2m (4ft) long, in summer.  $\uparrow$  60cm (24in),  $\leftrightarrow$  1m (3ft). \*\*\*

**H. 'Tall Boy'**  $\square$  Erect, clump-forming perennial with short, straight leaf-stalks bearing ovate, mid-green leaves, 23cm (9in) long. Dense racemes of funnel-shaped purple flowers are produced on leafy scapes, 1m (3ft) long, in late summer.  $\uparrow$  50cm (20in),  $\leftrightarrow$  1m (3ft). \*\*\*

**H. tardiflora**  $\square$  Clump-forming perennial producing lance-shaped, thick, glossy, dark green leaves, 8–15cm (3–6in) long, matt, dark green beneath. Funnel-shaped mauve flowers are borne on slightly arching, leafy, glaucous, purple-tinted scapes, to 35cm (14in)

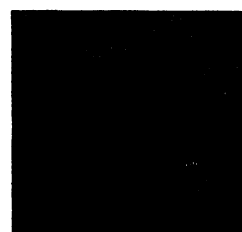


long, in autumn. †25cm (10in), ↔ 60cm (24in). Probably Japan. \*\*\*  
**H. 'Thomas Hogg'** see *H. undulata* var. *undulata* 'Albomarginata'.  
**H. 'Tiny Tears'**. Clump-forming perennial with narrowly heart-shaped, flat, dark green leaves, 8cm (3in) long. In summer, dense racemes of bell-shaped purple flowers are borne on scapes 25cm (10in) long. †8cm (3in), ↔ 15cm (6in). \*\*\*  
**H. tokudama**, syn. *H. 'Tokudama'*. Slow-growing, clump-forming perennial with heart-shaped to rounded, cupped, puckered, vividly glaucous, deep blue-green leaves, 20–30cm (8–12in) long. From early to late summer, bears widely bell-shaped, greyish white flowers on leafy, glaucous scapes, 40cm (16in) long. †35cm (14in), ↔ 1m (3ft). Japan. \*\*\*  
**'Aureonebulosa'** □ syn. f. *aureonebulosa*, *H. 'Tokudama Aureonebulosa'*, has green-yellow leaves, 20–25cm (8–10in) long, irregularly margined and splashed deep blue-green. **'Flavocircinalis'** □ syn. f. *flavocircinalis*, *H. 'Tokudama Flavocircinalis'*, has ovate to heart-shaped blue leaves, irregularly margined creamy yellow; it bears flowers on scapes 45cm (18in) long, in midsummer; †40cm (16in), ↔ 75cm (30in).  
**H. 'Tokudama'** see *H. tokudama*.  
**H. 'Tokudama Aureonebulosa'** see *H. tokudama* 'Aureonebulosa'.  
**H. 'Tokudama Flavocircinalis'** see *H. tokudama* 'Flavocircinalis'.  
**H. 'True Blue'**. Clump-forming perennial with ovate to heart-shaped, pointed, puckered, thick, glaucous, grey-blue leaves, 30cm (12in) long. In midsummer, bears bell-shaped, off-white flowers on scapes 70cm (28in) long. †60cm (24in), ↔ 1m (3ft). \*\*\*  
**H. 'Undulata'** see *H. undulata* var. *undulata*.  
**H. 'Undulata Erromena'** see *H. undulata* var. *erromena*.  
**H. undulata** var. *undulata* ♀ syn. *H. 'Argentea Variegata'*, *H. 'Cream Delight'*, *H. 'Mediovariegata'*, *H. 'Undulata'*, *H. 'Variegata'*. Clump-forming perennial, the type of the species *H. undulata*, with twisted, deeply channelled, lance-shaped to elliptic or narrowly ovate, slightly pointed, mid-green leaves, 13–18cm (5–7in) long; they are thin but leathery, and strongly wavy-margined, with central white or pale yellow-white markings. Arching, leafy white scapes, 50–80cm (20–32in) long, bear funnel-shaped mauve flowers in early and midsummer. †to 1m (3ft), ↔ 45m (18in). Probably Japan. \*\*\*  
**'Albomarginata'** □ syn. var. *albomarginata*, *H. 'Thomas Hogg'*, produces broadly ovate, flat or only slightly wavy-margined leaves, dark green with irregular cream or pale yellow margins; †55cm (22in), ↔ 60cm (24in). var. *erromena* ♀ syn. *H. 'Undulata Erromena'*, is vigorous, and has broadly ovate, tapering, matt, mid-green leaves, 13–23cm (5–9in) long. var. *univittata* □ ♀ syn. *H. 'Undulata Univittata'*, has ovate, twisted, matt, olive-green leaves, 13–18cm (5–7in) long, each with a central cream zone; †45cm (18in), ↔ 70cm (28in).  
**H. 'Undulata Univittata'** see *H. undulata* var. *univittata*.  
**H. 'Vanilla Cream'**. Clump-forming perennial with slightly red-dotted leaf-stalks bearing ovate to heart-shaped,

cupped, slightly puckered, thick, creamy yellow-green leaves, 8cm (3in) long. Funnel-shaped, pale lavender-blue flowers are produced on scapes 30cm (12in) long, in midsummer. †12cm (5in), ↔ 25cm (10in). \*\*\*  
**H. 'Variegata'** see *H. undulata* var. *undulata*.  
**H. ventricosa** □ ♀ syn. *H. 'Ventricosa'*. Clump-forming perennial with broadly ovate to heart-shaped, slightly wavy, wide-veined, thin, glossy, dark green leaves, 20–30cm (8–12in) long. In late summer, bears tubular-bell-shaped, deep purple flowers, white-striped within, on leafy, leaning scapes, 80–100cm (32–39in) long. †50cm (20in), ↔ 1m (3ft). China, N. Korea. \*\*\*  
**'Aureomaculata'**, syn. var. *aureomaculata*, *H. 'Ventricosa Aureomaculata'*, is slow-growing, and has leaves centrally splashed yellow, fading to yellow-green. **'Variegata'** □ ♀ syn. *H. 'Ventricosa Aureomarginata'*, has leaves irregularly margined with yellow, turning creamy white.  
**H. 'Ventricosa'** see *H. ventricosa*.  
**H. 'Ventricosa Aureomaculata'** see *H. ventricosa* 'Aureomaculata'.  
**H. 'Ventricosa Aureomarginata'** see *H. ventricosa* 'Variegata'.  
**H. venusta** □ ♀ Clump-forming perennial producing ovate to heart-shaped, flat, wavy-margined, dark green leaves, 3–5cm (1¼–2in) long, glossy beneath. Trumpet-shaped violet flowers are borne freely on ridged, leafy scapes, 25–35cm (10–14in) long, from midsummer to mid-autumn. †5cm (2in), ↔ 25cm (10in). Korea, Japan. \*\*\*  
**H. 'Vera Verde'** □ Stoloniiferous perennial with lance-shaped, flat, olive-green leaves, 9cm (3½in) long, narrowly margined cream. In summer, bears funnel-shaped, purple-striped, pale mauve flowers on scapes 30cm (12in) long. †15cm (6in), ↔ 35–40cm (14–16in). \*\*\*  
**H. 'Wide Brim'** □ ♀ Clump-forming perennial with heart-shaped, slightly cupped, heavily puckered, glaucous, dark green leaves, 18cm (7in) long, irregularly and widely margined cream, fading to white. Funnel-shaped, pale lavender-blue flowers are borne on scapes 55cm (22in) long in summer. †45cm (18in), ↔ 1m (3ft). \*\*\*  
**H. 'Wind River Gold'**. Clump-forming perennial with red-dotted leaf-stalks bearing ovate to lance-shaped, tapered, wavy, thin, deep yellow leaves, 10cm (4in) long, fading to yellow-green. In midsummer, produces funnel-shaped purple flowers on scapes 24cm (10in) long. †13cm (5in), ↔ 25cm (10in). \*\*\*  
**H. 'Yellow River'** □ Clump-forming perennial with ovate to heart-shaped, pointed, thick, dark green leaves, 35cm (14in) long, irregularly margined yellow. Leafy scapes, 1m (3ft) long, bear funnel-shaped, very pale lavender-blue flowers in early summer. †55cm (22in), ↔ 1m (3ft). \*\*\*  
**H. 'Zounds'** □ Clump-forming perennial with heart-shaped, puckered, thick yellow leaves, 28cm (11in) long, with a metallic sheen. In summer, leafy scapes, 60cm (24in) long, bear funnel-shaped, pale lavender-blue flowers. †55cm (22in), ↔ 1m (3ft). \*\*\*  
 ▷ **Hottentot fig** see *Carpobrotus edulis*



*Hosta* 'Regal Splendor'



*Hosta* 'Royal Standard'



*Hosta* 'September Sun'



*Hosta* 'Shade Fanfare'



*Hosta sieboldiana* var. *elegans*



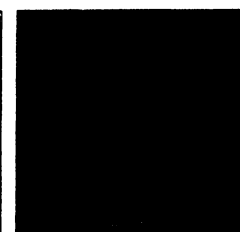
*Hosta* 'Snowden'



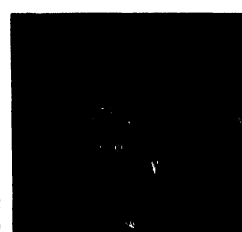
*Hosta* 'So Sweet'



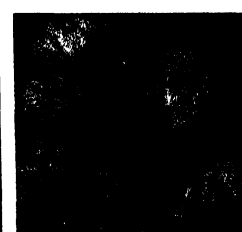
*Hosta* 'Sugar and Cream'



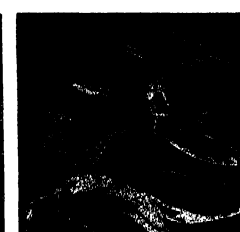
*Hosta* 'Sum and Substance'



*Hosta tardiflora*



*Hosta tokudama* 'Aureonebulosa'



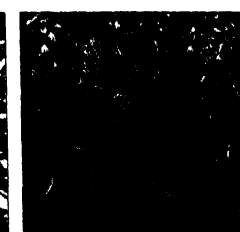
*Hosta tokudama* 'Flavocircinalis'



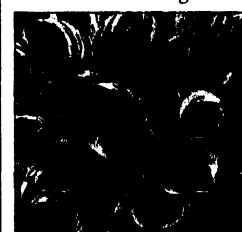
*Hosta undulata* var. *undulata* 'Albomarginata'



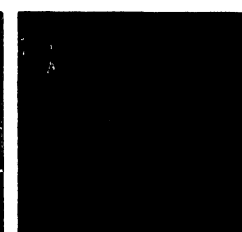
*Hosta undulata* var. *univittata*



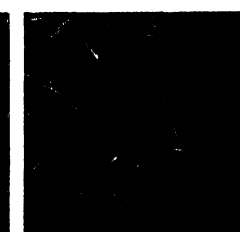
*Hosta ventricosa*



*Hosta ventricosa* 'Variegata'



*Hosta venusta*



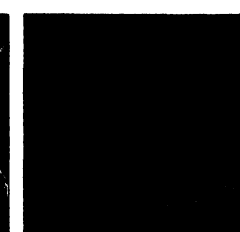
*Hosta* 'Vera Verde'



*Hosta* 'Wide Brim'



*Hosta* 'Yellow River'



*Hosta* 'Zounds'

## HOTTONIA

PRIMULACEAE

Genus of 2 species of submerged aquatic perennials, widely distributed in temperate Eurasia and E. USA, usually found in slow-moving water in ditches and in shallow water where silting has occurred. They have delicate, primula-like, white to lilac flowers, borne in terminal racemes, and attractive, whorled or alternate, feathery, pinnate, light green leaves. Hottonias are good oxygenators, and are suitable for a small decorative pool or a larger wildlife pool.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in the muddy bottom of a shallow pond in clear, still water in full sun. Hottonias may be difficult to establish, particularly in a recently constructed pool. Winter-resting buds will sink to the bottom of the pond, usually rising again and producing new growth in spring. See also pp.52–53.

• **PROPAGATION** Sow seed in trays submerged to their rims in water in spring. Divide, or take cuttings of established plants, in spring, and either throw into the water or plant into the submerged, muddy margins of a pond.

• **PESTS AND DISEASES** Filamentous algae may smother the delicate foliage.

**H. inflata** (American featherfoil). Submerged perennial with branched, spongy stems bearing whorls of stalkless, pinnate to 2-pinnate, oblong, light green leaves, 1–5cm (½–2in) long, composed of linear leaflets. Salverform white flowers, 5–8mm (¼–⅜in) across, are borne in 2- to 10-flowered racemes, 15–20cm (6–8in) tall, above the water in spring. †60cm (24in), ↔45cm (18in). E. USA. \*\*\*

**H. palustris** (Water violet). Submerged perennial with spreading and erect stems bearing whorled or alternate, pinnate to 2-pinnate, comb-like, light green leaves, 2–13cm (¾–5in) long, with linear leaflets. In spring, produces salverform, pale violet, lilac, or white flowers, 2–2.5cm (¾–1in) across, with yellow throats; they are borne above the water in 3–9 whorls on flower-stalks 30–40cm (12–16in) tall. †30–90cm (12–36in), ↔indefinite. Eurasia. \*\*\*

▷ **Hot water plant** see *Achimenes*

▷ **Hound's tongue** see *Cynoglossum*, *C. nervosum*, *C. officinale*

▷ **Houpara** see *Pseudopanax lessonii*

▷ **Houseleek** see *Sempervivum*

▷ **Cobweb** see *Sempervivum arachnoideum*

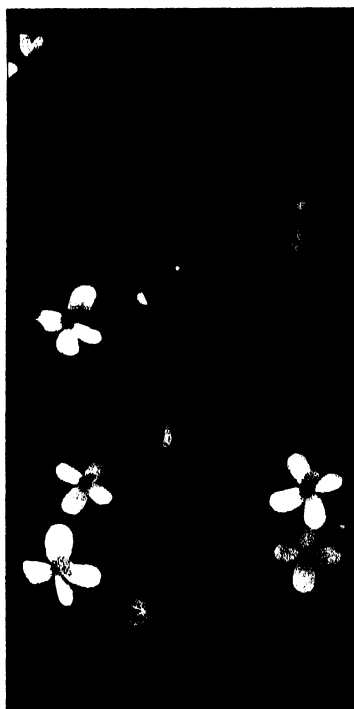
▷ **Common** see *Sempervivum tectorum*

▷ **Houstonia serpyllifolia** see *Hedyotis michauxii*

## HOULTUYNIA

SAURURACEAE

Genus of one species of perennial found in damp, shady sites in woodland, scrub, and marshy habitats in E. Asia. It has widely spreading rhizomes and is grown mainly for its foliage. Use as ground cover in a damp, mixed or herbaceous border, at a pond- or streamside, or for plantings in shallow water. *H. cordata* may be invasive, especially in moist soils; cultivars are generally less vigorous.

*Houttuynia cordata*

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist soil in full sun or dappled shade; variegated cultivars produce greener leaves in shade. On wet soils in frost-prone areas, apply a winter mulch to protect the roots. At the water's edge, grow in 8–10cm (3–4in) of water; in shallow ponds, spread may be limited by planting in a basket.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide rhizomes in spring. Root softwood cuttings in late spring.

• **PESTS AND DISEASES** Slugs and snails may be a problem.

**H. cordata** □ Rapidly spreading perennial with simple, ovate to heart-shaped, dull bluish or greyish green leaves, 3–9cm (1¼–3½in) long, with red-tinted margins. The leaves have an unusual, orange-like scent when bruised. In spring, bears dense spikes, to 3cm (1¼in) long, of tiny, yellowish green flowers, surrounded at the bases by 4–6 green-white, later pure white, obovate, petal-like bracts, 6–10mm (¼–½in) across. †to 15–30cm (6–12in) or more, ↔indefinite. China, Japan. \*\*\*.

*Houttuynia cordata* 'Chameleon'

'Chameleon' □ syn. 'Tricolor', has brightly variegated leaves in shades of green, pale yellow, and red, and is less spreading than the species. The small flowers of 'Flore Pleno', syn. 'Plena', are surrounded by 8 or more pure white bracts. 'Tricolor' see 'Chameleon'.

## HOVEA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of evergreen, sometimes spiny shrubs from Australia, found in sheltered woodland, moist gulleys, on exposed rocky outcrops, and on heathland, from sea level to above the snow line. They produce usually showy, pea-like flowers from the leaf axils, either in short racemes or clusters.

The alternate, linear, lance-shaped, oblong-elliptic, or ovate leaves are simple and entire or toothed. In frost-prone areas, grow in a cool or temperate greenhouse; elsewhere, grow at the base of a warm, sunny wall, in a shrub border, or in a courtyard garden.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered or full light, with good ventilation and moderate humidity.

Water moderately in growth, applying a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, humus-rich, moderately fertile soil in full sun; woodland species will tolerate dappled shade. Chlorosis may occur in low-nitrogen soils. Shelter from cold, drying winds. Pruning group 8; plants under glass may need restrictive pruning.

• **PROPAGATION** Sow scarified or pre-soaked seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

**H. chorizemifolia** (Holly-leaved hovea). Open, upright shrub, often with rust-red-hairy stems. The lance-shaped to ovate, prickly-toothed leaves, 2.5–8cm (1–3in) long, are matt, dark green, with prominent veins. In spring, bears short racemes or clusters of 2–8 pea-like flowers, 1cm (½in) across; they are light blue-purple to violet, and have broad standard petals, each with a white patch at the base. †50–150cm (20–60in), ↔30–80cm (12–32in). Australia (Western Australia). ☼ (min. 5°C/41°F)

**H. longifolia** var. *montana* see *H. montana*.

*Hovea montana*

**H. montana** □ syn. *H. longifolia* var. *montana*, *H. purpurea* var. *montana*. Dwarf, spreading shrub with rust-red-hairy stems. Oblong to linear leaves, 1–3cm (½–1¼in) long, are glossy, deep green above, red-brown-hairy beneath. In spring, bears axillary clusters of 2 or 3 pea-like, deep purple to bluish purple flowers, 8–10mm (⅜–½in) across, with a white patch at the base of each standard petal. †20–40cm (8–16in), sometimes more, ↔50–100cm (20–39in). Australia (New South Wales, Victoria, Tasmania). \*

**H. purpurea** var. *montana* see *H. montana*.

▷ **Hovea, Holly-leaved** see *Hovea chorizemifolia*

## HOVENIA

RHAMNACEAE

Genus of 2 species of deciduous trees found in woodland or forest, cultivated and naturalized in E. and S.E. Asia (their exact country of origin is unknown). The leaves are alternate, heart-shaped to oval, and toothed. They are grown mainly for their fragrant flowers and small, spherical fruits. The shallowly cup-shaped, yellow or greenish yellow flowers, to 6mm (¼in) across, are produced in terminal and axillary, forked cymes. Hovenias are attractive specimen trees and will thrive in regions with long, hot summers where the shoots can thoroughly ripen. In areas with cool summers, flowers and fruits are not always freely borne.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, neutral to slightly alkaline soil in full sun, with shelter from cold, drying winds. Unripened wood is liable to frost damage, but regrowth usually occurs from undamaged shoots. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or scarify seed and sow in spring. Root greenwood

*Hovenia dulcis*

cuttings in early summer, and hardwood cuttings in late autumn.

• **PESTS AND DISEASES** Prone to coral spot, if wood is not fully ripened.

**H. dulcis** □ ◯ (Raisin-tree). Upright then spreading tree with heart-shaped to oval, toothed, glossy, dark green leaves, 10–20cm (4–8in) long, downy beneath. In summer, bears cymes 5–7cm (2–3in) across of tiny, greenish yellow flowers. After flowering, the flower-stalks swell, becoming red, fleshy, sweet, and edible; they later bear spherical black fruit, to 5mm (¼in) across. ‡ 12m (40ft), ↔ 10m (30ft). E. and S.E. Asia. \* \* \*

## HOWEA

Sentry palm

ARECACEAE/PALMAE

Genus of 2 species of single-stemmed palms found at low altitudes, to 300m (1,000ft), usually on basalt soils, on Lord Howe Island, Australia. The long-stalked, pinnate leaves are arranged in terminal clusters with no crownshaft, and star-shaped, 3-petaled flowers are borne on long spikes between them. In frost-prone areas, grow young specimens as houseplants, or in a conservatory or warm greenhouse. In warmer areas, use as free-standing specimens on a lawn or in a courtyard garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with equal parts added pulverized bark and leaf mould, in full light. Shade from hot sun and provide moderate humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Top-dress or pot on in spring; howeas are slow-growing and need re-potting infrequently. Outdoors, grow in fertile, moist but well-drained soil in full sun, although they will tolerate dappled shade. Shelter from strong, drying winds.

• **PROPAGATION** Sow seed at 26°C (79°F) as soon as ripe.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

**H. forsteriana** □ ♀ ♂ syn. *Kentia forsteriana* (Kentia palm, Thatch leaf palm). Moderately slow-growing palm with a slender stem, ringed with old leaf scars. Long-stalked, pinnate, mid- to dark green leaves, 2–3m (6–10ft) long, are borne almost horizontally. The leaves comprise numerous, narrowly

lance-shaped, semi-lustrous leaflets with pendent tips. In summer, bears star-shaped, green female and pale brown male flowers, in erect, later pendent, axillary clusters of spikes to 1m (3ft) long. They are followed by ellipsoid, orange-red fruit, to 2cm (¾in) long, ‡ to 18m (60ft), ↔ to 6m (20ft). Australia (Lord Howe Island). ☉ (min. 15°C/59°F)

## HOYA

Wax flower

ASCLEPIADACEAE

Genus of over 200 species of evergreen, climbing and shrubby perennials, some epiphytic, from coastal bluffs, stream margins, escarpments, and rainforest in the warmer regions of Asia, Australia, and the Pacific islands. They produce opposite pairs of simple, often fleshy or succulent, sometimes leathery, variably shaped leaves. The often colourful and fragrant flowers are borne in stalked umbels or cymes from the upper leaf axils. They each have 5 waxy, usually fleshy, spreading petals, and a central crown or corona of hooded, white, pale yellow, red, pink, or purple stamens. Flowers are followed by long, cylindrical pods containing seeds with tufts of hair. In frost-prone areas, a warm greenhouse is best for all hoyas except *H. carnosa*, which should be grown in a temperate greenhouse or as a houseplant. In warmer areas, grow climbing hoyas through shrubs or trees, or over an arch, arbour, or pergola. Shrubby species may be grown epiphytically on large shrubs or trees, or in hanging baskets.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with equal parts added leaf mould, sharp sand, pulverized bark, and charcoal, in indirect or bright filtered light. Maintain moderate to high humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; keep moist in winter. Provide support for climbers. Outdoors, grow in fertile, moist but well-drained soil in full sun, with some midday shade. Shelter from strong, drying winds. Pruning group 9 for shrubs; group 11 for climbers, after flowering.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings with bottom heat in late summer. Layer in spring or summer.

• **PESTS AND DISEASES** Mealybugs may be a problem under glass.



*Hoya linearis*

**H. australis**, syn. *H. darwinii* of gardens. Vigorous, twining, succulent climber with broadly ovate to elliptic or obovate, fleshy, dark green leaves, to 12cm (5in) long, smooth above and densely hairy beneath. In summer, bears umbels, 6cm (2½in) across, of 12–40 star-shaped, fragrant white flowers, to 4cm (1½in) across, with a red spot at the base of each petal, and red-purple coronas. ‡ 4–10m (12–30ft). Australia (Queensland, New South Wales). ☉ (min. 10°C/50°F)

**H. bella** see *H. lanceolata* subsp. *bella*.

**H. carnosa** □ ♀ (Wax plant). Vigorous, stem-rooting, succulent, often epiphytic climber with ovate, rigid, very fleshy leaves, to 8cm (3in) long, usually smooth and dark green. From late spring to autumn, bears dense, convex umbels, to 6cm (2½in) across, of up to 20 star-shaped, waxy, night-scented, pure white flowers, 1.5cm (½in) across, with red coronas; sometimes produces 2 or more umbels per stem. ‡ to 6m (20ft) or more. India, S. China, Burma. ☉ (min. 5–7°C/41–45°F). 'Exotica' ♀ has yellow-flushed, pink-variegated foliage. 'Picta' has leaves with creamy white margins.

**H. coronaria**. Slow-growing, thick-stemmed climber with broadly oval to oblong, leathery, fleshy, mid-green leaves, to 10cm (4in) long, downy beneath, with prominent midribs. From summer to autumn, produces umbels, 8–10cm (3–4in) across, of up to 10 shallowly bell-shaped, night-scented, creamy yellow to greenish white flowers, to 2.5cm (1in) across; they have a red spot at the base of each petal and crimson-spotted coronas. ‡ to 3m (10ft). Thailand, Philippines, Malaysia, Indonesia, New Guinea. ☉ (min. 10°C/50°F)

**H. darwinii** of gardens see *H. australis*.

**H. imperialis**. Strong-growing, twining climber producing thickly downy stems and narrowly oblong to elliptic, leathery, fleshy, mid-green leaves, 15–23cm (6–9in) long, with wavy margins.

Umbels, to 20cm (8in) across, of 7–12 star-shaped, reddish brown to purple-brown flowers, to 7cm (3in) across, with white coronas, are borne mainly in summer. ‡ 6m (20ft) or more. Malaysia, Indonesia. ☉ (min. 10°C/50°F)

**H. lanceolata** subsp. *bella* ♀ syn.

**H. bella**. Spreading to pendent, epiphytic shrub with arching, densely downy, soft stems and narrowly ovate or ovate to lance-shaped, fleshy, rich green leaves, to 3cm (1¼in) long. Bears umbels, 3–4cm (1¼–1½in) across, of 7–9 star-shaped, very sweetly scented white flowers, 1.5cm (½in) across; they have red-violet coronas and are borne mainly in summer. ‡ to 45cm (18in). Himalayas to N. Burma. ☉ (min. 10°C/50°F)

**H. linearis** □ Pendent, epiphytic, succulent perennial with slender, soft, greyish green stems bearing linear, hairy, dark green leaves, 2.5–5cm (1–2in) long, deeply grooved beneath. From late summer to autumn, produces lax umbels, to 3–4cm (1¼–1½in) across, of 10–13 star-shaped, scented, pure white flowers, to 1cm (½in) across, with pink-tinged, yellowish white coronas. ‡ to 60–90cm (24–36in). Himalayas. ☉ (min. 13°C/55°F)

**H. macgillivrayi** □ Strong-growing, twining climber with thick stems and ovate to broadly ovate, rigid, thickly fleshy, lustrous, dark green leaves, 7–20cm (3–8in) long, tinted red-purple when young. From spring to summer, bears umbels, 20–25cm (8–10in) across, of 5–15 cup-shaped, red, red-purple, purple, or brownish red flowers, each 4–8cm (1½–3in) across, with dark red, occasionally white-centred coronas. ‡ 5–8m (15–25ft). Australia (Queensland). ☉ (min. 7°C/45°F).

**H. nepalensis** see *H. polynura*.

**H. polynura**, syn. *H. nepalensis*.

Pendent, epiphytic shrub with short-stalked, ovate to lance-shaped, fleshy, glossy, dark green leaves, 6–10cm (2½–4in) long, with slightly pointed tips, and prominent, paler green veins. Up to 15 star-shaped, waxy, white to cream flowers, 1cm (½in) across, with purplish brown or bronze-red coronas, are borne in umbels to 4–5cm (1½–2in) across, in summer. ‡ to 1m (3ft). Himalayas to S. China. ☉ (min. 13°C/55°F)

▷ **Huckleberry** see *Gaylussacia*

**Black** see *Gaylussacia baccata*

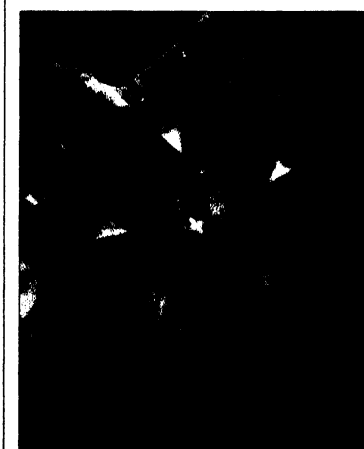
**Fool's** see *Menziesia ferruginea*



*Howea forsteriana*



*Hoya carnosa*



*Hoya macgillivrayi*

# HUERNIA

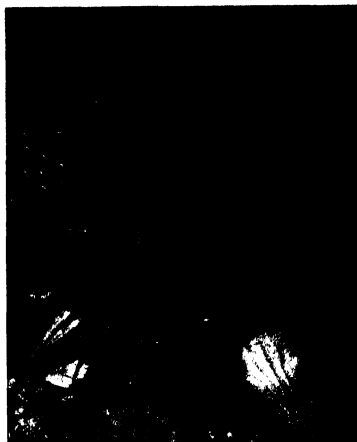
ASCLEPIADACEAE

Genus of about 60–70 species of low-growing, perennial succulents from South Africa to Ethiopia and the Arabian Peninsula (with one species from W. Africa), occurring in hilly, semi-desert areas. They branch freely from the bases and often form large clumps of short, angled, fleshy stems; the prominent margins have greyish green or red teeth. The leaves are reduced to scales and are lost soon after they develop. Tubular or cup-shaped to shallowly saucer-shaped, warty, fleshy, unpleasantly scented flowers, with 5 pointed lobes, are borne in short-stalked umbels from summer to early autumn. Where temperatures fall below 11°C (52°F), grow in a warm greenhouse. In warmer areas, grow in a trough, raised bed, or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost with added leaf mould in bright filtered or indirect light; provide low humidity. In growth, water moderately and apply a half-strength, low-nitrogen liquid fertilizer monthly. Keep almost dry in winter; overwatering may cause black rot. Outdoors, grow in poor to moderately fertile, preferably sandy, sharply drained soil; incorporate sharp sand and leaf mould at planting. Grow in dappled shade or in full sun with midday shade. Protect from excessive winter wet.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root cuttings of stem sections in spring or summer.
- **PESTS AND DISEASES** Trouble free.

**H. macrocarpa** var. **arabica** ■ Clump-forming succulent producing slender, 4-angled, glossy, mid-green stems with slightly toothed tubercles. Short-lobed, fleshy, white-hairy flowers, 1cm (½in) across, are borne in early autumn; the lobes are pale yellow with concentric purple bands, or unmarked, purple-crimson outside, and roughly warty inside. 1–10cm (4in). South Yemen. (min. 11°C/52°F)

**H. pillansii** ■ Variable succulent with almost spherical, then finger-like, grey-green stems bearing dense, bristly, hairy-tipped tubercles in longitudinal, spiralling rows. Fleshy, densely red-warty and red-spotted, cream to red or pink flowers, 3–4cm (1¼–1½in) across,



*Huernia pillansii*

pale yellow inside with crimson spots, are borne from the base of new growth from summer to early autumn. 4cm (1½in), 10cm (4in). South Africa (Western Cape). (min. 11°C/52°F)

**H. primulina** see *H. thuretii* var. *primulina*.

**H. procumbens**. Prostrate or semi-pendent succulent with 5- or 6-angled, dull purplish green stems. In late summer, bears fleshy, pale yellowish brown flowers, to 3cm (1¼in) across, margined with brownish red; the narrowly lance-shaped white lobes are covered with short, dark purple-red hairs. 1–15cm (6in). South Africa (Northern Transvaal, Eastern Transvaal). (min. 11°C/52°F)

**H. quinta** ■ Clump-forming succulent producing 4-angled, greyish purple stems with horned teeth. In summer, bears shallowly 5-lobed, fleshy, white or yellow flowers, to 3cm (1¼in) across, the cup-shaped tubes banded dark red with papillae at the mouths. 1–7cm (3in). South Africa (Northern Transvaal, Eastern Transvaal). (min. 11°C/52°F)

**H. thuretii**. Clump-forming succulent with 4- or 5-angled, prominently toothed, greyish green stems. From summer to early autumn, bears 5-lobed, fleshy, red-spotted yellow flowers, to 2.5cm (1in) across, with red-banded tubes. 5cm (2in), 10cm (4in) or more. South Africa (Eastern Cape). (min. 11°C/52°F) var. **primulina** ■ syn. *H. primulina*, has tufts of acutely angled, greyish green stems, and bears waxy, fleshy, pale red flowers, creamy yellow with red spots on the lobes, and with blackish brown coronas; 1–8cm (3in).



*Huernia thuretii* var. *primulina*

**H. zebrina** (Owl's eyes). Variable, clump-forming succulent producing 4- or 5-angled, greyish green stems with stout, conical teeth. From summer to early autumn, bears fleshy, creamy yellow flowers, 3–4cm (1¼–1½in) across, with shallow, maroon-purple tubes, and 5 triangular lobes strongly cross-banded and heavily suffused maroon-purple. 6–8cm (2½–3in), 15cm (6in) or more. Namibia, Botswana, South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal), Swaziland, Zimbabwe. (min. 11°C/52°F)

▷ **Humble plant** see *Mimosa pudica*

▷ **Humea** see *Calomeria*

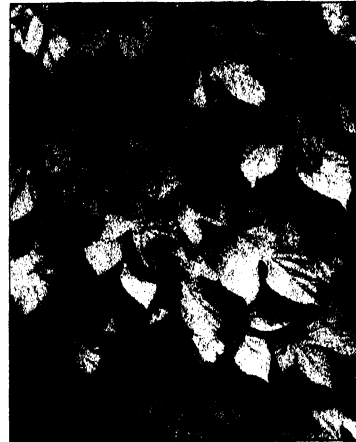
**H. elegans** see *C. amaranthoides*

## HUMULUS

Hop

CANNABIDACEAE

Genus of 2 species of herbaceous perennials, with twining stems, widely distributed and naturalized in woodland and hedgerows in N. temperate regions (their exact country of origin is unknown). The cultivars are grown for their brightly coloured foliage, which may be golden or attractively variegated. The leaves are opposite and palmately 3- to 7-lobed, with large, broadly ovate to rounded lobes. Small male and female flowers are borne on separate plants in mid- and late summer: the males in axillary panicles, the females in cone-like spikes. The female inflorescences of *H. lupulus* ("hops") are used in brewing. Train over a fence or trellis, or into a



*Humulus lupulus* 'Aureus'

large shrub or small tree. The flowers are useful for dried flower arrangements.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich soil in sun or partial shade. For best leaf colour, grow *H. lupulus* 'Aureus' in a sunny position.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring; seed of *H.*

*japonicus* and its cultivars may be sown *in situ* in late spring. Variegated and golden-leaved cultivars other than *H. japonicus* 'Variegatus' do not often come true from seed. Root softwood cuttings in spring, or greenwood and leaf-bud cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Susceptible to *Verticillium* wilt.

**H. japonicus** 'Variegatus'. Twining perennial with roughly hairy shoots and deeply 5- to 7-lobed, sharply toothed, dark green leaves, to 13–15cm (5–6in) long, heavily mottled and streaked with white. Ovoid spikes of green female flowers, to 2cm (¾in) long, are borne in mid- and late summer. Usually treated as a half-hardy annual. 13m (10ft). \* **H. lupulus** (Hop). Rhizomatous, twining perennial with roughly hairy shoots and deeply 3- to 5-lobed, coarsely toothed, light green leaves, to 15cm (6in) long. In summer, bears broadly ovoid, fragrant, green, then straw-coloured spikes of female flowers, to 2cm (¾in) long. 16m (20ft). Europe, W. Asia, North America. \*\*\* **'Aureus'** ■ ♀ has golden yellow foliage.

## HUNNEMANNIA

PAPAVERACEAE

Genus of one species of perennial, closely related to *Eschscholzia*, from rocky and stony areas in the highlands of Mexico. It has deeply divided leaves, with 3 narrow lobes, and glossy, saucer-to cup-shaped flowers that are good for cutting. Grow at the base of a warm, sunny wall, or in a herbaceous or mixed border. In frost-prone areas, grow as an annual or, for winter flowers, in a temperate greenhouse or conservatory.

• **HARDINESS** Half hardy.

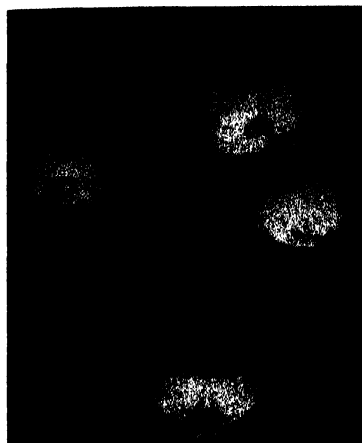
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with low humidity. In the growing season, water moderately and apply a dilute, balanced liquid fertilizer monthly. Outdoors, grow in moderately fertile, well-drained soil in full sun, with



*Huernia macrocarpa* var. *arabica*



*Huernia quinta*

*Hunnemannia fumariifolia*

protection from winter wet. Avoid disturbing the roots.

• **PROPAGATION** Sow seed *in situ* in early spring, or in autumn in frost-free areas. For winter-flowering container plants, sow seed at 13–16°C (55–61°F) in autumn.

• **PESTS AND DISEASES** Susceptible to slugs, snails, and aphids.

**H. fumariifolia** ■ (Mexican tulip poppy). Woody-based, hairless perennial producing glaucous, blue-green leaves, 5–10cm (2–4in) long, with 3 linear lobes. From midsummer to late autumn, bears poppy-like, solitary, glossy, golden yellow flowers, to 5–8cm (2–3in) across, with 4 rounded, overlapping petals, later spreading to reveal deeper yellow stamens. ‡ 60–90cm (24–36in), ↔ 25cm (10in). Mexico. \* **'Sunlite'** is fast-growing and mostly grown as an annual; it has lax stems and clear yellow flowers; ‡ to 60cm (24in), ↔ 20cm (8in).

## HUNTLEYA

ORCHIDACEAE

Genus of about 10 species of evergreen, rhizomatous, epiphytic orchids, without pseudobulbs, from Central and South America, and Trinidad. *H. meleagris*, the only species generally cultivated, grows in cloud forest up to 1,200m (4,000ft). The folded, lance-shaped to ovate, soft-textured leaves are arranged in 2 ranks in a broad fan shape. In summer, scapes arising between the lower leaves bear solitary, star-shaped, waxy flowers with prominent lips.

• **HARDINESS** Frost tender.

• **CULTIVATION** Intermediate-growing orchids. Grow in containers of epiphytic orchid compost or on slabs of bark in bright indirect light, with high humidity. Water freely in growth, and apply fertilizer monthly; water sparingly in winter. Keep foliage dry at all times. See also p.46.

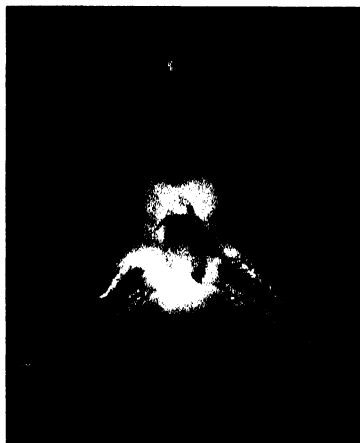
• **PROPAGATION** Pot up offset rhizomes in spring.

• **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**H. burtii** see *H. meleagris*.

**H. meleagris** ■ syn. *H. burtii*.

Epiphytic orchid with a fan of tufted, lance-shaped to ovate, pale green leaves, 20–40cm (8–16in) long; new growth develops from the base on extending rhizomes. In summer, scapes to 17cm (7in) long bear solitary, star-shaped,

*Huntleya meleagris*

waxy, very glossy, chestnut-brown flowers, 8–13cm (3–5in) across, with white or cream centres, often flecked with yellow. ‡ 30cm (12in). Trinidad. Central America, N.W. South America. ♠ (min. 13°C/55°F; max. 30°C/86°F)

▷ **Huntsman's cup** see *Sarracenia purpurea*

▷ **Hyacinth** see *Hyacinthus*

**Grape** see *Muscari*

**Tassel Grape** see *Muscari comosum*

**Water** see *Eichhornia*, *E. crassipes*

**Wild** see *Camassia scilloides*

## HYACINTHELLA

HYACINTHACEAE/LILIACEAE

Genus, closely related to *Muscari*, of about 16 species of small, bulbous perennials from E. and S.E. Europe to W. Asia, found on scree and stony, often limestone hillsides and in open pine forest. They have linear to elliptic-ovate, mostly mid-green, basal leaves and are cultivated for their racemes of bell-shaped flowers, 6–15mm (¼–½in) long, borne in spring. In regions with wet summers, they are best grown in an alpine house or bulb frame. In climates with low summer rainfall, grow in a trough, raised bed, or rock garden, or at the base of a warm, sunny wall.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Plant bulbs 5–8cm (2–3in) deep in autumn. Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in full light. Maintain low humidity and good ventilation. Water moderately from autumn to spring; keep dry in summer.

*Hyacinthella glabrescens*

Apply a high-potash liquid fertilizer once after flowering. Outdoors, grow in moderately fertile, well-drained soil in full sun; protect from summer rain.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Remove offsets in summer, when dormant.

• **PESTS AND DISEASES** Trouble free.

**H. dalmatica** see *H. pallens*.

**H. glabrescens** ■ Bulbous perennial with 2 wide, strap-shaped leaves, to 12cm (5in) long. In spring, bears loose, erect racemes, 5–15cm (2–6in) long, of 10–25 tubular-bell-shaped, violet-blue flowers. ‡ 5–15cm (2–6in), ↔ 8cm (3in). Turkey (S. Anatolia). \* \*

**H. pallens**, syn. *H. dalmatica*. Bulbous perennial with narrow, linear leaves, to 8cm (3in) long. Dense racemes, to 10cm (4in) long, of 6–20 narrowly bell-shaped, mid-blue flowers are borne in spring. ‡ 10cm (4in), ↔ 5cm (2in). Croatia (Dalmatia). \* \* \*

## HYACINTHOIDES

syn. ENDYMION

Bluebell

HYACINTHACEAE/LILIACEAE

Genus, closely related to *Scilla*, of 3 or 4 species of vigorous, bulbous perennials from deciduous woodland and moist meadows in W. Europe and N. Africa. They have strap-shaped to lance-shaped or linear, basal leaves, and bear racemes of bell- or tubular-bell-shaped, blue or white, sometimes pink flowers in spring. Bluebells are ideal for naturalizing in grass, for a wild or woodland garden, or for underplanting in a shrub border. All parts may irritate skin on contact, and may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Plant bulbs 8cm (3in) deep in autumn, in moderately fertile, humus-rich, moist but well-drained soil in dappled shade. *H. hispanica* tolerates a wide range of soils. Remove flowers as they fade to prevent self-seeding, except in wild plantings.

*Hyacinthoides hispanica* 'Excelsior'*Hyacinthoides hispanica* 'La Grandesse'

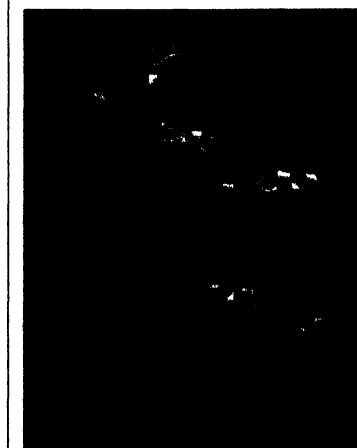
• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; keep shaded and do not allow to dry out. Remove offsets in summer.

• **PESTS AND DISEASES** Trouble free.

**H. hispanica**, syn. *Endymion hispanicus*, *Scilla campanulata*, *S. hispanica* (Spanish bluebell). Robust, bulbous perennial, quickly forming large clumps of erect, strap-shaped, glossy, dark green leaves, 20–60cm (8–24in) long. In spring, bears racemes of up to 15 upright, bell-shaped, unscented blue flowers, 2cm (¾in) long, with reflexed tips and blue anthers. ‡ 40cm (16in), ↔ 10cm (4in). Portugal, Spain, N. Africa. \* \* \*. Most cultivars offered are hybrids with *H. non-scripta*, and have pendent flowers intermediate between those of the 2 parents. **'Excelsior'** ■ has violet-blue flowers, striped paler blue; ‡ 50–55cm (20–22in). **'La Grandesse'** ■ has nodding, pure white flowers, 2.5cm (1in) long. **'Rosabella'** has racemes of violet-pink flowers.

**H. italica**. Bulbous perennial with semi-erect, linear to lance-shaped, dull dark green leaves, 10–25cm (4–10in) long. Dense racemes of 6–30 upward-facing, bell-shaped, mid-blue flowers, 1cm (½in) long, are borne in spring. ‡ 10–20cm (4–8in), ↔ 5cm (2in). Portugal, Spain, S.E. France, N.W. Italy. \* \* \*

**H. non-scripta** ■ syn. *Endymion non-scriptus*, *Scilla non-scripta*, *S. nutans* (English bluebell). Vigorous, clump-forming, bulbous perennial with spreading, linear to lance-shaped, glossy, dark green leaves, 20–45cm (8–18in)

*Hyacinthoides non-scripta*

long. In spring, bears 6–12 pendent, narrowly bell-shaped, scented, mid-blue, sometimes white flowers, 1.5–2cm (½–¾in) long, with cream anthers, in a one-sided raceme that bends over at the top. † 20–40cm (8–16in), ↔ 8cm (3in). W. Europe. \*\*\*

## HYACINTHUS

*Hyacinth*

HYACINTHACEAE/LILIACEAE

Genus of 3 species of bulbous perennials from rocky, limestone slopes and cliffs, to 2,600m (8,200ft) high, in W. and C. Asia. They are cultivated for their loose to dense racemes of strongly fragrant flowers, borne in spring. The semi-erect, basal leaves, 15–35cm (6–14in) long, are strap-shaped, channelled, and glossy, dark green. All cultivars are derived from *H. orientalis*, and usually have racemes to 20cm (8in) long, packed with up to 40 tubular-bell-shaped, single or double flowers, 2–3.5cm (¾–1½in) long. Closer in character to the wild species are the Multiflora and Roman cultivars, which produce several smaller, loosely flowered racemes, to 12cm (5in) long. They are now rarely grown.

Hyacinths are excellent for spring bedding displays in an annual, mixed, or herbaceous border, or for growing in containers; some are specially prepared for early flowering indoors. All parts may cause stomach upset if ingested; contact with the bulbs may aggravate skin allergies.

• **HARDINESS** Fully hardy in the ground, but liable to frost damage in containers outdoors.

• **CULTIVATION** Outdoors, plant bulbs 10cm (4in) deep, a minimum of 8cm (3in) apart, in autumn. Grow in any well-drained, moderately fertile soil in sun or partial shade. Protect container-grown plants from excessive winter wet. Specially prepared bulbs may be forced into early growth for indoor display in winter. Plant them with the tips of the bulbs just showing, in loam-based



*Hyacinthus orientalis* 'Amethyst'



*Hyacinthus orientalis* 'Blue Jacket'



*Hyacinthus orientalis* 'City of Haarlem'



*Hyacinthus orientalis* 'Distinction'



*Hyacinthus orientalis* 'Jan Bos'



*Hyacinthus orientalis* 'Lady Derby'



*Hyacinthus orientalis* 'Princess Maria Christina'



*Hyacinthus orientalis* 'Queen of the Pinks'

potting compost (J1 No.2) in containers with drainage holes; use bulb fibre if planting in bowls. Keep in a cool, dark place at a temperature no higher than 7°C (45°F), for at least 6 weeks to allow roots to develop. When the shoots are about 2.5cm (1in) long, increase light and temperature gradually. Water carefully, avoiding wetting the shoots or waterlogging the compost; damp conditions and poor drainage may cause rot and fungal diseases. After flowering, forced hyacinths may be planted in the garden, where they will flower in spring in subsequent years.

• **PROPAGATION** Remove offsets when dormant in summer.

• **PESTS AND DISEASES** Trouble free.

*H. amethystinus* see *Brimeura amethystina*.

*H. azureus* see *Muscari azureum*.

*H. orientalis*. Bulbous perennial with linear to lance-shaped, channelled, bright green leaves, 15–35cm (6–14in) long. In early spring, bears erect racemes of up to 40 tubular-bell-shaped, waxy, very fragrant, single flowers, 2–3.5cm (¾–1½in) long, pale violet-blue at the bases and almost white above, with spreading, then recurved lobes. † 20–30cm (8–12in), ↔ 8cm (3in). C. and S. Turkey, N.W. Syria, Lebanon. \*\*\*.

• **'Amethyst'** ♀ bears strongly scented, single, violet-lilac flowers. **'Amsterdam'** bears single, bright rose-red flowers. **'Anna Liza'** produces single, pale purple flowers with darker veins. **'Anna Marie'** ♀ bears racemes of single, pale pink flowers; good for forcing. **'Ben Nevis'** bears compact racemes of double, ivory-white flowers. **'Blue Jacket'** ♀ produces racemes of single, navy-blue flowers with purple veins. **'Carnegie'** bears compact racemes of single, pure white flowers in late spring. **'City of Haarlem'** ♀ bears racemes of single, soft primrose-yellow flowers in late spring. **'Delft Blue'** ♀ produces single, soft blue flowers. **'Distinction'** ♀ bears slender, open racemes of single, beetroot-purple flowers. **'Gipsy Queen'** ♀ bears single, salmon-orange flowers. **'Hollyhock'** produces double, bright crimson-red flowers in late spring. **'Jan Bos'** ♀ produces racemes of single, cerise-red flowers. **'Lady Derby'** ♀ has single, rose-pink flowers. **'Ostara'** ♀ bears single flowers in violet-blue. **'Pink Pearl'** ♀ bears single, deep pink flowers with paler edges. **'Princess Maria Christina'** ♀ has single apricot flowers. **'Queen of the Pinks'** ♀ bears single, deep pink flowers in late spring. **'Sheila'** produces single, pale pink flowers in mid-spring. **'White Pearl'** bears single, pure white flowers in mid-spring.

*H. romanus* see *Bellevalia romana*.



*Hyacinthus orientalis* 'Ostara'

## HYDRANGEA

HYDRANGEACEAE

Genus of 80 or more species of deciduous and evergreen shrubs and climbers, rarely trees, found in woodland in E. Asia and North and South America. Grown mainly for their large, showy flowerheads, many hydrangeas also have ornamental, flaky, peeling bark when mature, and attractive foliage with good autumn colour. The leaves are broadly to narrowly ovate, or lance-shaped, toothed, and either opposite or in whorls of 3. The flat, domed, or conical, terminal flowerheads comprise corymbs or panicles of both tiny fertile flowers and larger sterile flowers with showy, petal-like sepals.

Cultivars of *H. macrophylla* are divided into 2 groups: "Lacecaps" have flattened flowerheads with small fertile flowers in the centres, surrounded by larger sterile flowers; "Hortensias" (mophead hydrangeas) have spherical flowerheads of large sterile flowers. Some cultivars of *H. serrata* are also described as Lacecaps.

Flower colour is affected by the relative availability of aluminium ions in the soil. Acid soils with a pH of less than 5.5 produce blue flowers; soils with a pH greater than this produce pink flowers. In more or less neutral soils, flower colour can be influenced by the addition of a blueing compound. White flowers are not affected by pH.

Hydrangeas are useful for a range of garden sites: they are excellent as specimen plants or in group plantings, in a shrub border, or in containers. Use the climbers to clothe a shaded wall or fence. The flowerheads may be dried for use in arrangements. All parts of hydrangeas may cause mild stomach upset if ingested; contact with the foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich soil in sun or partial shade; provide shelter from cold, drying winds. Some hydrangeas become chlorotic in shallow chalk soil. Pruning group 1 for most species; group 4 for *H. macrophylla*, *H. 'Preziosa'*, and *H. serrata*; group 1 or 6 for *H. paniculata*; and group 11 for climbers, after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root soft-wood cuttings of deciduous hydrangeas in early summer, or hardwood cuttings in winter. Root semi-ripe cuttings of non-flowering shoots of evergreens with bottom heat in summer.

• **PESTS AND DISEASES** Prone to grey mould (*Botrytis*), *Hydrangea* virus, powdery mildew, leaf spot, honey fungus, aphids, red spider mites, scale insects, vine weevil, and capsid bugs.

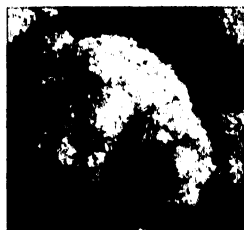
*H. anomala* subsp. *petiolaris* see *H. petiolaris*.

*H. arborescens* (Sevenbark). Rounded, deciduous shrub with long-stalked, broadly ovate leaves, to 18cm (7in) long, dark green above and paler beneath. Domed or flattened corymbs, to 15cm (6in) across, of crowded, dull white, mainly fertile flowers are borne in summer. †→ 2.5m (8ft). E. USA. \*\*\*. **'Annabelle'** ♀ bears large, spherical flowerheads, 20cm (8in) across,

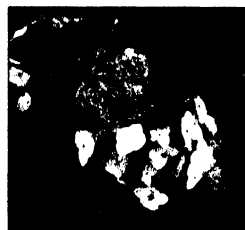




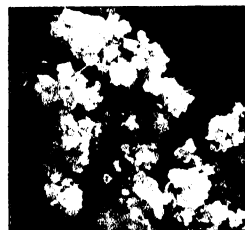
*Hydrangea arborescens*  
'Annabelle'



*Hydrangea arborescens*  
'Grandiflora'



*Hydrangea aspera*



*Hydrangea involucrata*  
'Hortensis'



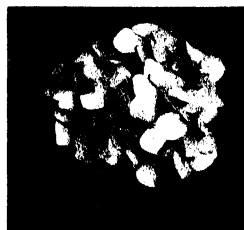
*Hydrangea macrophylla*  
'Altona'



*Hydrangea macrophylla*  
'Ayesha'



*Hydrangea macrophylla*  
'Blue Bonnet'



*Hydrangea macrophylla*  
'Bouquet Rose'



*Hydrangea macrophylla*  
'Hamburg'



*Hydrangea macrophylla*  
'Lanarth White'



*Hydrangea macrophylla*  
'Lilacina'



*Hydrangea macrophylla*  
'Veitchii'

comprising mainly sterile flowers. **subsp. *discolor* 'Sterilis'**, syn. 'Sterilis', *H. cinerea* 'Sterilis', is similar to 'Grandiflora', but the leaves are grey-hairy beneath, and it has fewer sterile flowers. '**Grandiflora**' ♀ has smaller flowerheads than 'Annabelle', but larger sterile flowers. '**Sterilis**' see subsp. *discolor* 'Sterilis'.

***H. aspera*** ♀ Upright, deciduous shrub with large, lance-shaped to narrowly ovate, dark green leaves, to 25cm (10in) long, downy beneath. From late summer to autumn, bears flattened corymbs, to 25cm (10in) across, of blue to purple fertile flowers, surrounded by white, sometimes pink- to mauve-tinged sterile flowers. †↔ 3m (10ft). E. Asia. \*\*\*.

**subsp. *sargentiana*** see *H. sargentiana*.

**subsp. *strigosa*** has narrower leaves, with short, stiff hairs beneath, and often flowers very late in summer. C. China.

**Villosa Group** see *H. villosa*.

***H. cinerea* 'Sterilis'** see *H. arborescens* subsp. *discolor* 'Sterilis'.

***H. integrifolia*** see *H. serratifolia*.

***H. involucrata***. Spreading, deciduous shrub with broadly ovate-oblong, bristly, dark green leaves, to 15cm (6in) long. In late summer, bears domed corymbs, to 12cm (5in) across, of small, blue fertile flowers, surrounded by white to pale blue or pink sterile flowers. † 1m (3ft), ↔ 2m (6ft). Japan, Taiwan. \*\*\*.

**'Hortensis'** ♀ bears flowerheads of double, pinkish white sterile flowers.

***H. macrophylla*** (Common hydrangea). Rounded, deciduous shrub with broadly ovate, coarsely toothed, glossy, dark green leaves, to 20cm (8in) long. In mid- and late summer, bears flattened corymbs, 15–20cm (6–8in) across, of a few pink sterile flowers and numerous blue or pink fertile flowers. † 2m (6ft), ↔ 2.5m (8ft). Japan. \*\*\*. Cultivars of *H. macrophylla* are divided into 2 groups: Lacecaps and Hortensias (see introduction). '**Altona**' ♀ (Hortensia) has large flowerheads of rich pink to dark purple-blue flowers; † 1m (3ft), ↔ 1.5m (5ft). '**Ami Pasquier**' ♀ (Hortensia) is slow-growing, with dark

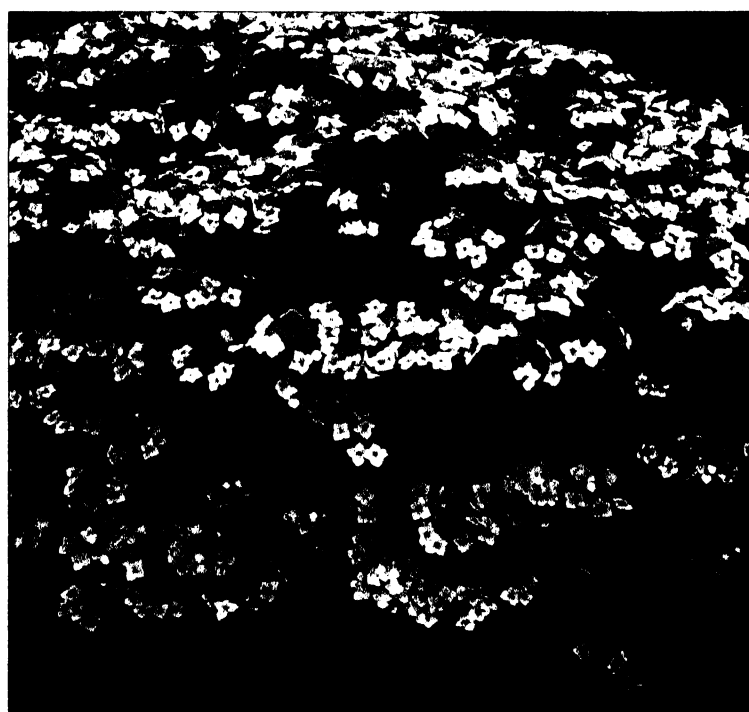
crimson or blue-purple flowers; may be grown as a houseplant when young; † 1.5m (5ft), ↔ 2m (6ft). '**Ayesha**' ♀ (Hortensia) has unusual, lilac-like flowers with small, cupped, pale pink to pale blue sepals; † 1.5m (5ft), ↔ 2m (6ft). '**Blue Bonnet**' ♀ (Hortensia) has dense flowerheads of rich blue to pink flowers. '**Blue Wave**' ♀ syn. 'Mariesii Perfecta' (Lacecap), produces rich blue to mauve, or lilac-blue to pink sterile flowers, and darker fertile flowers.

**'Bouquet Rose'** ♀ (Hortensia) has pink to mauve flowers borne in large flowerheads on slender, arching stems.

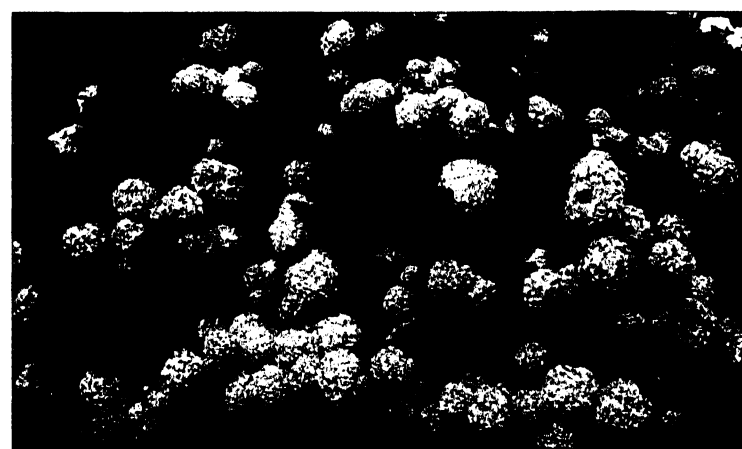
**'Deutschland'** (Hortensia) bears large flowerheads of dark pink flowers, mauve on acid soil. '**Domotoi**' (Hortensia) has conical flowerheads of large, light blue to mauve or pink flowers with sharply toothed sepals; † 1m (3ft), ↔ 1.5m (5ft).

**'Enzian-dom'**, syn. 'Gentian Dome' (Hortensia), bears deep pink to dark gentian-blue flowers. '**Europa**' ♀ (Hortensia) is vigorous, with large flowerheads of dark pink to purple-blue flowers. '**Générale Vicomtesse de Vibraye**' ♀ (Hortensia) has pale blue or pink flowers in large flowerheads; use as a houseplant when young. '**Gentian Dome**' see 'Enzian-dom'. '**Geoffrey Chadbund**' ♀ (Lacecap) has dark brick-red flowers. '**Goliath**' (Hortensia) is vigorous, with large flowerheads of soft pink or pale blue flowers. '**Hamburg**' ♀ (Hortensia) is vigorous, bearing large flowerheads of dark pink to dark blue

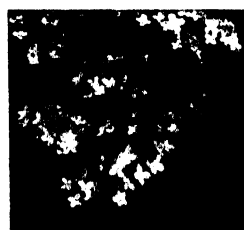
flowers with toothed sepals. '**Kluis Superba**' (Hortensia) has flowerheads of dark purple-blue to dark pink flowers. '**La France**' (Hortensia) is vigorous, with very large flowerheads of pink to mid-blue flowers. '**Lanarth White**' ♀ (Lacecap) has pink to blue fertile flowers surrounded by pure white sterile flowers; †↔ 1.5m (5ft). '**Lilacina**' ♀ (Lacecap) has mauve-pink to blue fertile and sterile flowers. '**Maréchal Foch**' (Hortensia) has rich pink to purple, or dark vivid blue flowers; suitable for growing as a houseplant when young. '**Mariesii**' ♀ (Lacecap) produces domed flowerheads of numerous pale pink to pale blue sterile flowers; †↔ 1.2m (4ft). '**Mariesii Perfecta**' see 'Blue Wave'. '**Masja**' (Hortensia) is compact, with dense flowerheads of vivid red flowers and very dark green foliage; † 1m (3ft), ↔ 1.5m (5ft). '**Mme Emile Mouillère**' ♀ (Hortensia) has white flowers becoming pink-tinged with age; use as a houseplant when young. '**Pia**', syn. 'Pink Elf' (Hortensia), is compact, producing bright red flowers with white centres; † 60cm (24in), ↔ 1m (3ft). '**Pink Elf**' see 'Pia'. '**Preziosa**' see *H. 'Preziosa'*. '**Quadricolor**' (Lacecap) has leaves boldly variegated with pale and dark green, cream, and yellow, and has pale pink flowers; often confused with 'Tricolor', which is weaker-growing; † 1.5m (5ft), ↔ 1.2m (4ft). **subsp. *serrata*** see *H. serrata*. '**Veitchii**' ♀ (Lacecap) has large flowerheads with



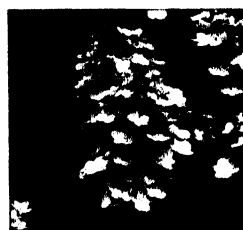
*Hydrangea macrophylla* 'Blue Wave'



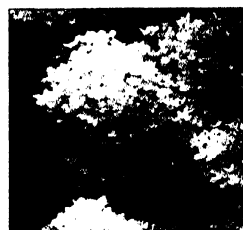
*Hydrangea macrophylla* 'Générale Vicomtesse de Vibraye'



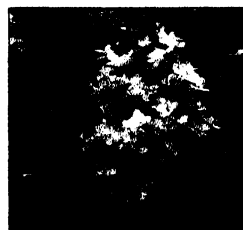
*Hydrangea paniculata*  
'Brussels Lace'



*Hydrangea paniculata*  
'Floribunda'



*Hydrangea paniculata*  
'Grandiflora'



*Hydrangea paniculata*  
'Pink Diamond'



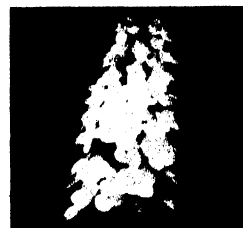
*Hydrangea paniculata*  
'Praecox'



*Hydrangea*  
'Preziosa'



*Hydrangea quercifolia*



*Hydrangea quercifolia*  
'Snow Queen'



*Hydrangea serrata*



*Hydrangea serrata*  
'Bluebird'



*Hydrangea serrata* 'Rosalba'



*Hydrangea villosa*

H

white sterile flowers turning pink to red with age. 'White Wave' ♀ (Lacecap) has pink to blue fertile flowers and large white sterile flowers; †↔ 1.5m (5ft).

*H. paniculata*. Vigorous, spreading to upright, deciduous shrub with ovate, pointed, toothed, mid- to dark green leaves, 7–15cm (3–6in) long. Large, conical panicles, 7–20cm (3–8in) tall, of creamy white fertile flowers and large, pinkish white sterile flowers are borne in late summer and early autumn. To obtain larger flowerheads on cultivars, cut back previous season's shoots to within a few buds of the woody framework in spring. †3–7m (10–22ft), ↔ 2.5m (8ft). Russia (Sakhalin), China, Japan. \*\*\*. 'Brussels Lace' ♀ bears a profusion of small panicles of mainly fertile flowers and a few sterile flowers. 'Floribunda' ♀ has large flowerheads of white sterile flowers, becoming pink-tinged as they age. 'Grandiflora' ♀ has large flowerheads, 20–30cm (8–12in) tall, sometimes more, of mainly sterile white flowers that turn pinkish white

with age. 'Kyushu' ♀ is erect, with glossy leaves. 'Pink Diamond' ♀ has broad, open panicles, to 30cm (12in) tall, of fertile and sterile flowers, creamy white at first, becoming deep pink with a red reverse to the petals as they age.

'Praecox' ♀ flowers early, from mid-summer onwards. 'Tardiva' is late-flowering, in early and mid-autumn. 'Unique' ♀ is similar to 'Grandiflora' but more vigorous, with large sterile flowers in flowerheads 20cm (8in) across. 'White Moth' has spherical flowerheads with large sterile flowers, attractive over a long period in autumn.

*H. petiolaris* ♀ syn. *H. anomala* subsp. *petiolaris* (Climbing hydrangea). Vigorous, woody, deciduous climber, clinging by aerial roots. Ovate-rounded leaves, to 11cm (4½in) long, have heart-shaped bases and are dark green, turning yellow in autumn. In summer, bears domed corymbs, to 25cm (10in) across, of white fertile and sterile flowers. †15m (50ft). Russia (Sakhalin), Korea, Taiwan, Japan. \*\*\*

*H. 'Preziosa'* ♀ syn. *H. macrophylla* 'Preziosa', *H. serrata* 'Preziosa'. Upright, deciduous shrub with broadly ovate, glossy, mid-green leaves, to 15cm (6in) long. Small, spherical corymbs of white sterile flowers, 10–13cm (4–5in) across, turning to rich red, blue, or mauve on acid soil, are borne on dark stems in late summer. †↔ 1.5m (5ft). \*\*

*H. quercifolia* ♀ (Oak-leaved hydrangea). Deciduous, mound-forming shrub with deeply 5- to 7-lobed, mid-green leaves, to 20cm (8in) long, turning bronze-purple in autumn. From midsummer to autumn, bears conical panicles, to 25cm (10in) tall, of white fertile and sterile flowers; the sterile flowers become pink-tinged with age. †2m (6ft), ↔ 2.5m (8ft). S.E. USA. \*\*\*. 'Snow Flake' has arching panicles of long-lasting, sterile, double white flowers, later turning pink. 'Snow Queen' ♀ has profuse, large sterile flowers in dense, upright flowerheads.

*H. sargentiana* ♀ syn. *H. aspera* subsp. *sargentiana*. Upright, deciduous shrub with stout, bristly shoots and large, broadly ovate, very bristly, dark green leaves, to 25cm (10in) long. Flattened corymbs, to 23cm (9in) across, of blue to purple fertile flowers, surrounded by white sterile flowers, sometimes tinged purple, are produced from late summer to autumn. †3m (10ft) or more, ↔ 2.2–2.5m (7–8ft). China. \*\*\*

*H. seemannii*. Woody, evergreen climber, clinging by aerial roots, with elliptic to lance-shaped, leathery, mid-green leaves, to 15cm (6in) long. In summer, bears greenish white fertile flowers surrounded by white sterile flowers, in domed corymbs, to 15cm (6in) across. †10m (30ft). Mexico. \*\*

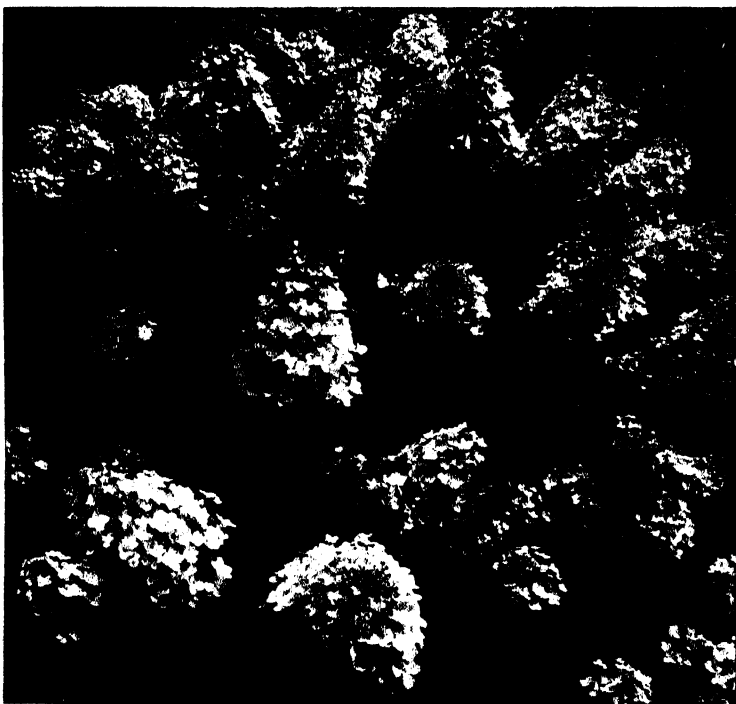
*H. serrata* ♀ syn. *H. macrophylla* subsp. *serrata*. Compact, erect, deciduous shrub with narrowly ovate, pointed, mid-green leaves, to 15cm (6in) long. Flattened corymbs, 5–10cm (2–4in) across, with a few pink or blue sterile flowers and numerous blue or pink fertile flowers, open from summer to autumn. Some *H. serrata* cultivars are also described as Lacecaps (see introduction). †↔ 1.2m (4ft). Korea, Japan. \*\*\*. 'Acutinata' see 'Bluebird'. 'Bluebird' ♀ syn. 'Acutinata' (Lacecap), bears rich blue fertile flowers surrounded by pale blue sterile flowers over a very long period.

Leaves turn red in autumn. 'Diadem' (Lacecap) has domed flowerheads of pale pink or blue flowers in early summer; †80cm (32in), ↔ 1m (3ft). 'Grayswood' ♀ (Lacecap) is vigorous, bearing broad flowerheads of small, mauve fertile flowers; the white sterile flowers turn dark red as they age; †↔ 2m (6ft). 'Preziosa' see *H. 'Preziosa'*.

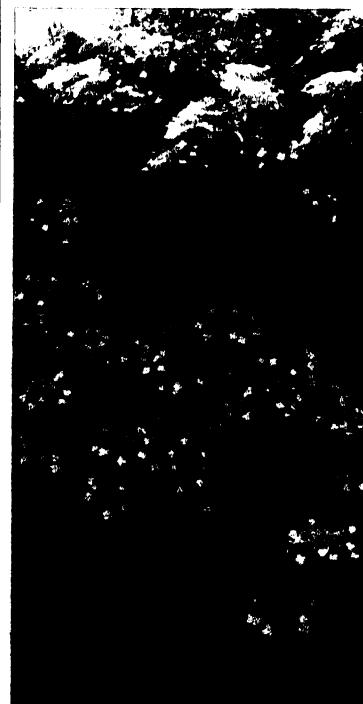
'Rosalba' ♀ (Lacecap) has flowerheads with small, pink fertile flowers and white sterile flowers, becoming red-marked with age.

*H. serratifolia*, syn. *H. integerrima*. Vigorous, woody, evergreen climber, similar to *H. seemannii*, but with elliptic, leathery, dark green leaves, to 15cm (6in) long, sharply toothed on young plants. In summer, clustered, corymb-like flowerheads, to 15cm (6in) across, with white fertile flowers and usually no sterile flowers, open from large, spherical buds. †15m (50ft). Chile, Argentina. \*\*

*H. villosa* ♀ syn. *H. aspera* Villosa Group. Spreading to erect, deciduous



*Hydrangea paniculata* 'Unique'



*Hydrangea petiolaris*

## HYDRANGEA

shrub or small tree with lance-shaped to narrowly ovate, velvety, dark green leaves, 9–24cm (3½–10in) long. In late summer, bears flattened corymbs, 15cm (6in) across (often more), of blue-purple or rich blue fertile flowers and lilac-white or rose-lilac sterile flowers.  $\pm$  1–4m (4–12ft). Tibet, China, Burma, Taiwan. \*\*\*

### ▷ Hydrangea.

**Climbing** see *Hydrangea petiolaris*

**Common** see *Hydrangea macrophylla*

**Oak-leaved** see *Hydrangea quercifolia*

## HYDROCHARIS

Frogbit

### HYDROCHARITACEAE

Genus of 2 species of submerged or floating aquatic perennials, inhabiting shallow water and marshes in Europe, Asia, and Africa. They have short, stolon-like stems that form mats just below the water surface or root into the mud. Resembling small water lilies, frogbits are cultivated for their foliage and their attractive, 3-petalled white flowers; the male flowers are borne in clusters of up to 4 blooms, the females are solitary. The small, basal leaves are stalked, kidney-shaped to rounded, and mid- to dark green. Use as surface cover for a large wildlife pool.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in still, alkaline, preferably shallow water in full sun. Strongest growth occurs in water shallow enough for the leaves to float and the stolons to root into the mud at the bottom of the pool; in deep water, the plants float on the surface and are less vigorous. Winter water levels must be sufficient to prevent freezing at the bottom of the pool, as this is where the overwintering buds hibernate; they rise to the surface and produce new growth in spring. See also pp.52–53.

• **PROPAGATION** Sow seed in shallow trays of water as soon as ripe, or separate stolons and place them on the water surface in spring.

• **PESTS AND DISEASES** Leaves may be eaten or disfigured by water snails and larvae of the brown china-mark moth.

**H. morsus-ranae** (Frogbit). Floating perennial with horizontal, floating stolons, which form new plants at their tips, and with rosettes of rounded, glossy, mid-green leaves, 3cm (1¼in) long. Bowl-shaped flowers, 2cm (¾in) across, with 3 broadly ovate, papery white petals, each with a yellow spot at the base, open in summer.  $\pm$  indefinite. Europe, W. Asia, N. Africa. \*\*\*

## HYDROCLEYS

### LIMNOCHARITACEAE

Genus of 9 species of stoloniferous, evergreen and deciduous, submerged aquatic annuals or perennials, found in slow-moving or still water in South America. They are cultivated for their attractive, bowl-shaped flowers, borne singly or sometimes in umbels, and their water-lily-like, ovate to rounded, mid- to dark green leaves. In frost-prone areas, grow at the margins of a pond in a cool greenhouse. In warmer climates, grow in submerged containers, or rooted



*Hydrocleys nymphoides*

in the mud at the margins of a sunny pond outdoors.

• **HARDINESS** Frost tender.

• **CULTIVATION** Grow in soft, acid water to 22cm (9in) deep. Under glass, grow in aquatic planting baskets or containers at the pool margins, in bright filtered light. Provide a water temperature of up to 25°C (77°F). Outdoors, grow in containers or at pond margins, in full sun. *H. nymphoides* hibernates below 18°C (64°F). See also pp.52–53.

• **PROPAGATION** Sow seed in pans at 20°C (68°F) as soon as ripe; cover the seed with silver sand, and place the pans in water up to the rims. On germination, immerse, so that the surfaces of the pans are covered by 1cm (½in) of water. Divide young plantlets in spring.

• **PESTS AND DISEASES** Trouble free.

**H. nymphoides** ■ (Water poppy). Deciduous, submerged perennial with prostrate, stoloniferous shoots and long-stalked, thick, broadly-ovate to rounded, floating leaves, 5–8cm (2–3in) long, heart-shaped at the bases. Short-lived, solitary, poppy-like, 3-petalled yellow flowers, 5–8cm (2–3in) across, with purple centres, are borne just above the water surface in summer.  $\pm$  indefinite. Tropical S. America. ♀ (min. 1°C/34°F)

## HYDROCOTYLE

Pennywort

### APIACEAE/UMBELLIFERAE

Genus of 75 species of moisture-loving herbaceous perennials and marginal aquatic perennials from Eurasia, North America, and New Zealand, found at stream or lake margins, in swamps, or in moist woodland. They have a low, creeping habit, rounded, light to dark green leaves, and inconspicuous, rounded flowers in small umbels. Grow as ground cover in a bog garden, in damp sites in a rock garden, or at pond margins. In frost-prone areas, grow tender species at the margins of an indoor pool or in an aquarium.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist soil in sun or partial shade. To grow pennyworts as marginal aquatics, plant in the muddy margins of a pond, or in baskets of loamy soil to confine their spread. In an aquarium, grow in an inert medium in bright filtered light or full light, with a water temperature of 5–24°C (41–75°F). See also pp.52–53.

• **PROPAGATION** Sow seed in containers in a cold frame from autumn to spring. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**H. americana**, syn. *H. ranunculoides*.

Creeping, marginal aquatic perennial with rounded, mid-green leaves, to 5cm (2in) long, borne on leaf-stalks 1–1.1cm (½–4½in) long. Stalkless umbels of 3–5 inconspicuous, rounded, greenish white flowers are produced in summer.

$\pm$  indefinite. North America, New Zealand. \*\*\* (borderline)

**H. ranunculoides** see *H. americana*.

## HYGROPHILA

### ACANTHACEAE

Genus of 100 species of evergreen and deciduous, marginal and submerged aquatic perennials found in lakes, rivers, streams, bogs, and marshes in tropical regions, particularly in Africa and S.E. Asia. They have opposite, entire to finely pinnatifid or pinnate, ovate or lance-shaped leaves, and produce tight racemes or panicles of whorled, tubular, 2-lipped flowers from the leaf axils in summer. In tropical areas, hygrophilas are attractive foliage plants for growing at pond margins; elsewhere, grow in a pond in a warm greenhouse, or in an aquarium.

• **HARDINESS** Frost tender.

• **CULTIVATION** Outdoors, grow either at pond margins or in the mud at the base of a pond, in full light. Under glass, grow either in baskets at the margins of a pool or submerged in an aquarium, in bright filtered light and with a water temperature of 20–24°C (68–75°F). See also pp.52–53.

• **PROPAGATION** Divide in summer.

Root stem-tip or softwood cuttings in summer. Detached floating leaves will also form roots.

• **PESTS AND DISEASES** Soft young growth may be damaged by water snails.

**H. difformis** (Water wisteria).

Evergreen, marginal or submerged aquatic perennial with slender, soft stems, to 60cm (24in) long, clothed in pinnate, pinnatifid, or comb-like, mid-green, submerged leaves, to 10cm (4in) long. In summer, whorls of tubular, lilac to violet flowers, 10–15mm (½in) long, streaked red-violet within, are produced in leafy racemes, to 45cm (18in) long, from the axils of the thicker, lance-shaped, scalloped, dark green aerial leaves.  $\pm$  indefinite. India to Thailand. ♀ (min. 20°C/68°F)

## HYLOCEREUS

### CACTACEAE

Genus of about 20 species of robust, climbing, sometimes scrambling, epiphytic, perennial cacti from forest in S. Mexico, the West Indies, and Central and tropical South America. They have prominent aerial roots and 3-ribbed stems, which may grow to 5m (15ft) long. The stems often have scalloped ribs with areoles bearing a few short spines or bristles. Large, funnel-shaped flowers open by night in summer; they are followed by spherical to ovoid, scaly red fruits, to 10cm (4in) across, containing kidney-shaped black seeds. Where temperatures fall below 15°C

(59°F), grow in a warm greenhouse. In warmer areas, grow against a wall, or over a fence or tree-trunk.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless, epiphytic cactus compost in bright indirect light; provide high humidity. In growth, water freely and apply a half-strength, balanced liquid fertilizer monthly; keep moist in winter. Outdoors, grow in sharply drained, poor to moderately fertile, acid soil in partial or dappled shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root cuttings of stem segments in spring or summer.

• **PESTS AND DISEASES** Scale insects may be a problem.

**H. calcaratus**. Semi-epiphytic cactus with ribbed, bright green stems, 4–7cm (1½–3in) thick. Rib margins are divided into prominent, rounded lobes with small areoles, either spineless or bearing 2–4 white bristles. In summer, bears very fragrant, white or creamy white flowers, 20–30cm (8–12in) across, with long, greenish white outer segments.  $\pm$  2m (6ft) or more. Costa Rica. ♀ (min. 15°C/59°F)

**H. ocampensis**. Climbing cactus with slightly wavy, glaucous, blue-green stems, 6cm (2½in) thick, and areoles bearing 3–8 yellow spines. In summer, bears fragrant flowers, to 30cm (12in) across, with wide, pure white inner petals and narrower, pale yellowish green outer segments.  $\pm$  2m (6ft) or more. S. Mexico. ♀ (min. 15°C/59°F)

**H. polyrhizus**. Scrambling, epiphytic cactus with slender, low-ribbed greenish white stems, 3–4cm (1¼–1½in) thick, soon becoming green; the areoles bear 2–4 brown spines. In summer, purple buds open to fragrant flowers, 25–30cm (10–12in) across, with off-white inner petals and red outer segments.  $\pm$  4m (12ft),  $\pm$  60cm (24in). Panama to Ecuador. ♀ (min. 15°C/59°F)

**H. undatus** ■ Fast-growing, free-branching, epiphytic or climbing cactus



*Hylocereus undatus*

H

with jointed, scalloped, horny stems, 5–8cm (2–3in) thick, and areoles bearing up to 3 conical, dark brown or grey-brown spines. In summer, bears fragrant white flowers, 30cm (12in) across, with yellowish green outer segments.  $\pm$  2–4m (6–12ft). West Indies; widely naturalized in tropical America.  $\blacklozenge$  (min. 15°C/59°F)

## HYLOMECON

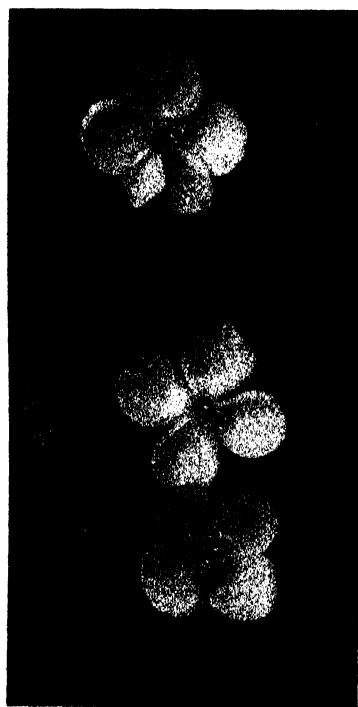
PAPAVERACEAE

Genus of one species of rhizomatous herbaceous perennial from woodland in E. Asia. It has mostly basal, pinnate leaves, and is grown for its poppy-like flowers, produced over long periods from late spring to summer. Excellent as a woodland or wild garden plant, or for shady pockets in a large rock garden, but may spread quickly and smother small plants nearby.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich, neutral to slightly acid soil in partial to deep shade. Add organic matter at planting.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in autumn. Divide in spring.
- **PESTS AND DISEASES** Prone to damage by slugs and snails, especially in spring.

**H. japonica**  $\blacksquare$  Clump-forming perennial with pinnate, pale green leaves, to 20cm (8in) long, consisting of 5- to 7-toothed, ovate or obovate leaflets. Solitary, saucer- to cup-shaped, 4-petalled, deep yellow flowers, to 5cm (2in) across, are borne from late spring to summer.  $\pm$  30cm (12in),  $\leftrightarrow$  30cm (12in) or more. E. China, Korea, Japan. \*\*\*

- ▷ *Hylotelephium* see *Sedum*
- H. roseum* see *S. erythrostictum*
- ▷ *Hymenanthera* see *Meliclytus*
- H. crassifolia* see *M. crassifolius*
- H. dentata* see *M. dentatus*



*Hylomecon japonica*

## HYMENOCALLIS

syn. ISMENE  
Spider lily

AMARYLLIDACEAE

Genus of about 40 species of bulbous perennials, some evergreen, found in grassland and rocky habitats from S. USA to South America. In spring, summer, or winter, they bear terminal umbels of fragrant flowers resembling spidery daffodils (*Narcissus*), each with 6 narrow petals (tepals), and a large cup, formed from the fused lower parts of the stamens. The anthers are attached to the cup and face inwards. The leaves are basal, strap-shaped or oblong, and mid-to dark green. In frost-prone areas, grow in a warm greenhouse (except for *H. narcissiflora*, which is best in a cool greenhouse); in warmer areas, grow in a bed or border, at the base of a warm, sunny wall, or in containers.

- **HARDINESS** Frost tender; *H. narcissiflora* may withstand short spells around 0°C (32°F).
- **CULTIVATION** Plant bulbs in autumn with the neck and shoulders above soil level. Under glass, grow in loam-based potting compost (J1 No.2) with added leaf mould and grit, in bright filtered or full light. Provide low humidity for deciduous species, and moderate to high humidity for evergreens. Water freely in growth, and apply a dilute, balanced liquid fertilizer every 2 or 3 weeks. Keep deciduous species dry and evergreens just moist when dormant. Outdoors, grow in moderately fertile, moist but well-drained soil in sun or partial shade;

when dormant, protect from excessive wet. In frost-prone areas, plant *H. narcissiflora* in spring and lift for winter.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Remove offsets in spring.
- **PESTS AND DISEASES** Trouble free.

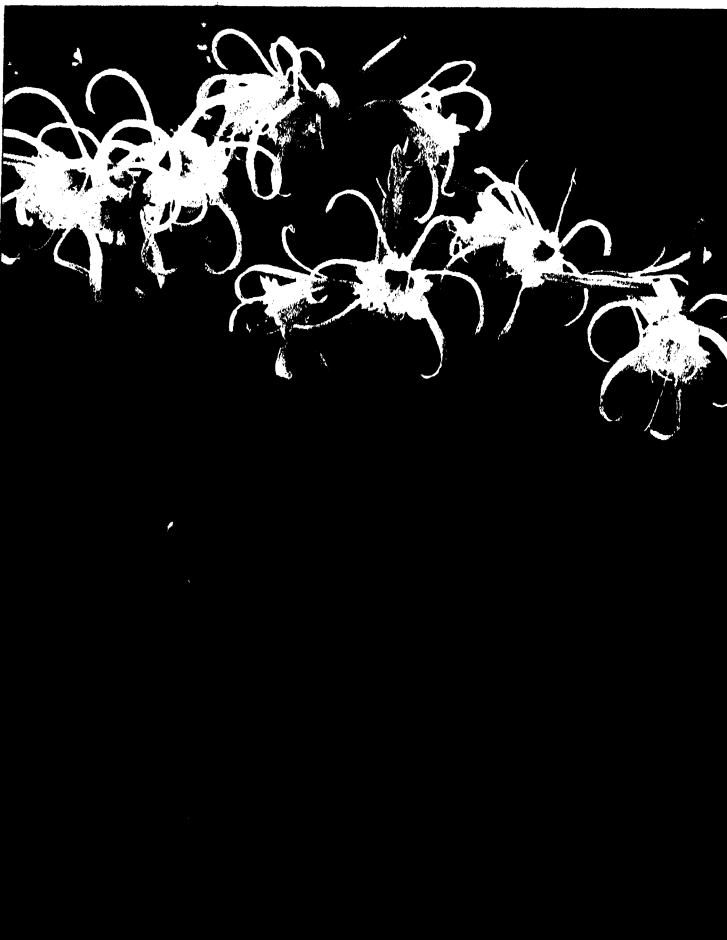
**H. amancaes.** Bulbous perennial with semi-erect, strap-shaped, dark green, basal leaves, to 45cm (18in) long, fused at their bases to form a false stem around the bottom of the flower stems. In summer, these bear loose umbels of 2–6 scented, deep yellow flowers, 9cm (3½in) across.  $\pm$  30cm (12in),  $\leftrightarrow$  25cm (10in). Peru.  $\blacklozenge$  (min. 15°C/59°F)

**H. calathina** see *H. narcissiflora*.

**H. caribaea.** Evergreen, bulbous perennial with semi-erect, strap-shaped, glossy, mid-green, basal leaves, to 60cm (24in) long. From summer to autumn, bears umbels of 8–10 scented white flowers, 15cm (6in) across.  $\pm$  to 60cm (24in),  $\leftrightarrow$  30cm (12in). West Indies.  $\blacklozenge$  (min. 15°C/59°F)

**H. x festalis**  $\blacksquare$  (*H. longipetala* x *H. narcissiflora*). Evergreen, bulbous perennial with semi-erect, oblong, mid-green, basal leaves, to 90cm (36in) long. From spring to summer, bears umbels of 2–5 scented white flowers, 8–12cm (3–5in) across, with long, narrow petals and wide cups; the upper 3 stamens of each flower curve downwards, the lower 3 are straight.  $\pm$  80cm (32in),  $\leftrightarrow$  30cm (12in). Garden origin.  $\blacklozenge$  (min. 15°C/59°F)

**H. x macrostephana**  $\text{♀}$  (*H. narcissiflora* x *H. speciosa*). Bulbous perennial with semi-erect, inversely lance-shaped,



*Hymenocallis x festalis*

bright mid-green, basal leaves, 50–90cm (20–36in) long. Umbels of up to 10 fragrant flowers, 15cm (6in) across, varying from white to cream or greenish yellow, are borne in spring or summer.  $\pm$  80cm (32in),  $\leftrightarrow$  30cm (12in). Garden origin.  $\blacklozenge$  (min. 15°C/59°F)

**H. narcissiflora**, syn. *H. calathina*, *Ismene calathina* (Peruvian daffodil). Bulbous perennial with strap-shaped, semi-erect, dark green, basal leaves, to 60cm (24in) long, sheathing at the bases to form a false stem. In summer, bears umbels of up to 5 strongly scented white flowers, 10cm (4in) across, sometimes with green-striped tubes; all the stamens curve upwards across the cup.  $\pm$  60cm (24in),  $\leftrightarrow$  30cm (12in). Peruvian Andes.  $\blacklozenge$  (min. 5°C/41°F)

**H. speciosa.** Evergreen, bulbous perennial producing semi-erect, broadly elliptic to oblong, mid-green, basal leaves, to 65cm (26in) long. Umbels of up to 12 scented, greenish white flowers, 23cm (9in) across, open from autumn to winter.  $\pm$  to 45cm (18in),  $\leftrightarrow$  30cm (12in). West Indies.  $\blacklozenge$  (min. 15°C/59°F)

**H. 'Sulphur Queen'.** Bulbous perennial with semi-erect, strap-shaped, dark green, basal leaves, 25–60cm (10–24in) long. Umbels of up to 6 scented, soft sulphur-yellow flowers, 15cm (6in) across, with green-striped, paler yellow tubes, are borne from spring to summer.  $\pm$  60cm (24in),  $\leftrightarrow$  30cm (12in).  $\blacklozenge$  (min. 15°C/59°F)

## HYMENOSPORUM

Australian frangipani

PITTOSPORACEAE

Genus of one species of evergreen, flowering shrub or tree from rainforest or temperate forest in E. Australia and New Guinea. It is valued for its showy, umbel-like panicles of tubular flowers, with 5 spreading lobes, and its alternate, lance-shaped to obovate or oval-oblong, glossy leaves. In frost-prone areas, grow in a conservatory or temperate greenhouse; in warmer regions, grow as a handsome specimen tree.

- **HARDINESS** Frost tender, but may survive short spells around 0°C (32°F), if the shoots are well ripened in summer.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun and low to moderate humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep moist in winter. Outdoors, grow in humus-rich, moist but well-drained soil in full sun. Pruning group 1 or 8; hard pruning is tolerated.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Layer, or air layer, in spring or autumn.
- **PESTS AND DISEASES** Trouble free.

**H. flavum**  $\square$  (Australian frangipani). Large shrub or small to medium-sized tree, usually with a single main stem and well-spaced but bushy branches. Lance-shaped to obovate or oval-oblong leaves, 6–15cm (2½–6in) long, are glossy, dark green above, paler green beneath. From spring to summer, bears loose, umbel-like panicles, to 20cm (8in) across, of tubular, fragrant flowers, 3cm (1¼in) across, with 5 spreading lobes; they open pale cream and rapidly age to orange-

yellow. † 4–20m (12–70ft), ↔ 3–7m (10–22ft). Australia (Queensland, New South Wales), New Guinea. ☉ (min. 5°C/41°F)

▷ *Hymenoxys acaulis* see *Tetraneuris acaulis*

## HYOPHORBE

Bottle palm

ARECACEAE/PALMAE

Genus of 5 species of single-stemmed palms from volcanic or limestone soils in forest, from sea level to 700m (2,300ft), on the Mascarene Islands, E. of Madagascar. They have erect trunks, swollen at the base or middle, topped by a cluster of pinnate leaves above a prominent crownshaft. Bowl-shaped, 3-petalled flowers are borne in solitary panicles beneath the lowest leaf. In frost-prone areas, grow in a warm greenhouse or conservatory; elsewhere, use in a courtyard garden or as lawn specimens.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, shaded from hot sun, with moderate humidity. Water moderately all year. Apply a dilute, balanced liquid fertilizer monthly in growth. Outdoors, grow in moderately fertile, moist but well-drained soil in sun or partial shade.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*H. lagenicaulis* ☐ syn. *Mascarena lagenicaulis* (Bottle palm). Small palm with a flask-shaped grey trunk, swollen at ground level, with vertical fissures in the bark. The narrowly ovate, pinnate leaves, 1.3–1.8m (4½–6ft) long, have many linear, mid- to deep green leaflets. In summer, bears tiny, green to cream flowers in panicles to 80cm (32in) long. † to 6m (20ft), ↔ to 3m (10ft). Mascarene Islands (Round Island). ☉ (min. 15–16°C/59–61°C)



*Hyophorbe lagenicaulis*

## HYOSCYAMUS

Henbane

SOLANACEAE

Genus of 15 species of tap-rooted, often strong-smelling, hairy, sticky annuals, biennials, and perennials found on banks, cliffs, wasteland, and shingle beaches in Europe, N. Africa, and Asia. They have lance-shaped to rounded, thick, coarse, felted, usually toothed leaves, and bear branching, leafy racemes of funnel- to bell-shaped flowers from late spring to autumn. They are grown for their unusual flowers and interesting seed heads, which are useful in dried flower arrangements. Grow in poor stony soils, on a dry bank, or in wall crevices. Henbanes will tolerate coastal conditions. All parts of henbanes are highly toxic if ingested, and may irritate the skin on contact.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in well-drained, preferably alkaline soil in full sun.

• **PROPAGATION** Sow seed *in situ* in spring; henbanes often self-seed freely.

• **PESTS AND DISEASES** Trouble free.

*H. albus*. Erect annual or biennial with broadly ovate, sticky, pale mid-green leaves, to 10cm (4in) long. In spring, bears long racemes of unevenly lobed, 2-lipped, veined, pale yellow-green flowers, 3cm (1¼in) long. † 30–90cm (12–36in), ↔ to 45cm (18in). S. Europe. \*\*\*

*H. niger* (Black henbane, Henbane, Stinking nightshade). Sticky, strong-smelling annual or biennial producing oval to lance-shaped, entire or toothed, thickly felted, grey-green leaves, to 20cm (8in) long, mostly in basal rosettes. From summer to autumn, 5-lobed flowers, to 2.5cm (1in) across, dull yellow with purple centres and narrow purple veins, are borne singly or in pairs at the tips of forked, arching racemes. † 0.6–1.2m (2–4ft), ↔ to 1m (3ft). Europe, W. Asia. \*\*\*

## HYPERICUM

St. John's wort

CLUSIACEAE/GUTTIFERAE

Genus of more than 400 species of deciduous, evergreen, and semi-evergreen shrubs and trees, annuals, and herbaceous perennials, occurring worldwide in a wide range of habitats, from woodland and scrub to mountains and cliffs. They have variably shaped, opposite, or occasionally whorled leaves, some with attractive autumn colour. Showy yellow flowers with prominent stamens are borne singly in terminal, occasionally axillary cymes, usually over a long period. The fruits, ornamental in a few species, are usually 3- to 5-valved capsules, or occasionally berry-like. Depending on size, hypericums are suitable for a variety of situations, from a shrub or mixed border to a rock garden; *H. elodes* grows well in boggy ground or as a marginal aquatic. Grow tender species in a cool or temperate greenhouse in frost-prone areas, and in a shrub border in warmer regions.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil, the larger species in sun or partial shade, the dwarf species in full sun and in sharply drained soil. *H. androsaemum* and *H. calycinum* thrive in partial to deep shade. Grow *H. elodes* along the margins of a muddy-bottomed pool, in no more than 2.5cm (1in) of water, in dappled shade. Protect small rock garden species from excessive winter wet; shelter evergreen hypericums from cold, drying winds. Pruning group 1; or group 6 for deciduous species, and group 8 for evergreens. Cut *H. calycinum* to ground level in spring.

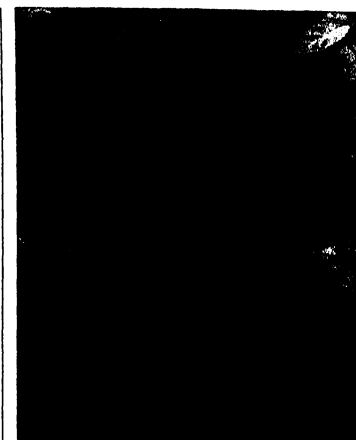
• **PROPAGATION** Sow seed in containers in a cold frame in autumn (species may hybridize). Divide perennials in spring or autumn (*H. elodes* in spring only). Root softwood cuttings of perennials in late spring; root greenwood or semi-ripe cuttings of shrubs in summer.

• **PESTS AND DISEASES** *H. calycinum* and *H. x inodorum* are susceptible to rust.

*H. acmosepalum*. Upright, bushy, semi-evergreen shrub with arching branches and oblong to elliptic-oblong, dark green leaves, to 6cm (2½in) long, bluish green or glaucous beneath, turning orange and red in autumn. In summer, bears terminal cymes of up to 6 star-shaped, deep yellow, sometimes red-tinged flowers, to 5cm (2in) across, followed by conical red capsules. † 1–2m (3–6ft). China (Yunnan, Sichuan, Guizhou, Guangxi). \*\*

*H. aegypticum*. Low, spreading, evergreen shrub with densely arranged, oblong, glaucous, mid-green leaves, to 1.5cm (½in) long. From late spring to summer, bears small, solitary, star-shaped, pale yellow flowers, to 1cm (½in) across, clustered at the ends of leafy shoots. † 50cm (20in), ↔ 90cm (36in). Mediterranean. \*\* (borderline)

*H. androsaemum* (Tutsan). Bushy, deciduous shrub with erect branches and broadly ovate to oblong, mid-green leaves, to 15cm (6in) long, paler green beneath. In midsummer, bears cymes of up to 11 star-shaped or cupped, yellow flowers, to 2cm (¾in) across, followed



*Hypericum androsaemum* 'Albury Purple'

by spherical red, berry-like fruit that ripen to black. † 75cm (30in), ↔ 90cm (36in). W. Europe, Mediterranean to N. Iran. \*\*\*. 'Albury Purple' ☐ produces purple-flushed leaves, and is often considered to be a cultivar of *H. x inodorum*.

*H. augustinii*. Upright, sparsely branched, evergreen to semi-evergreen shrub with broadly ovate to oblong-lance-shaped, leathery, pale green leaves, to 8cm (3in) long. Cymes of 3–13 saucer-shaped, pale to golden yellow flowers, to 6cm (2½in) across, are borne from late summer to autumn. † 1.2m (4ft). S.W. China (Yunnan). \*\*

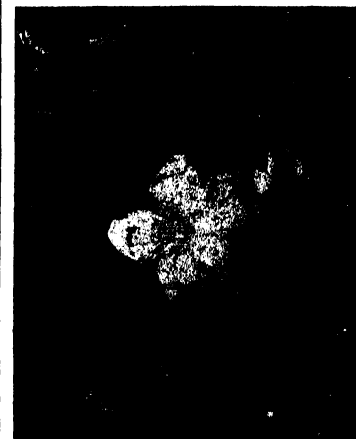
*H. balearicum*. Densely branched, evergreen shrub producing ovate-oblong, leathery, dark green leaves, to 1.5cm (½in) long, with wavy margins and warty glands. From early to late summer, bears solitary, star-shaped, bright yellow flowers, to 4cm (1½in) across. Needs well-drained soil; ideal for a rock garden. † 25cm (10in). Spain (Balearic Islands). \*\*\* (borderline)

*H. beanii* 'Gold Cup' see *H.*

*x cyathiflorum* 'Gold Cup'.

*H. bellum*. Bushy, erect to arching, deciduous shrub producing oblong-lance-shaped to broadly ovate, mid-green leaves, to 8cm (3in) long, with wavy margins. In summer, bears cymes of up to 7 cup-shaped, pale to golden yellow flowers, to 2.5–6cm (1–2½in) across. † 1m (3ft). W. and S.W. China, Himalayas, N. India, Burma. \*\*

*H. calycinum* ☐ (Aaron's beard, Rose of Sharon). Dwarf, evergreen or semi-evergreen shrub, spreading by runners,



*Hypericum calycinum*

H

*Hypericum cerastioides*

with oblong to elliptic or narrowly ovate, dark green leaves, to 10cm (4in) long, paler green beneath. From mid-summer to mid-autumn, saucer-shaped, bright yellow flowers, to 10cm (4in) across, are borne singly, or occasionally in small cymes of 2 or 3. Good ground cover in shade. †60cm (24in), ↔ indefinite. S.E. Bulgaria, N.W. and N.E. Turkey. \*\*\*

***H. cerastioides*** [syn. *H. rhodopeum*]. Perennial with upright and arching stems bearing ovate, oblong, or elliptic, downy, grey-green leaves, to 3cm (1¼in) long. Cymes of up to 5 star-shaped, deep yellow flowers, 2–4.5cm (¾–1¼in) across, are borne in profusion in late spring and early summer. †15cm (6in), ↔ 40cm (16in) or more. S. Bulgaria, N.E. Greece, N.W. Turkey. \*\*\*

***H. coris***. Dome-shaped, evergreen subshrub or herbaceous perennial with erect, wiry stems bearing whorls of linear, mid-green leaves, to 1.5cm (½in) long, glaucous beneath. In summer, bears an abundance of pyramidal cymes of up to 20 shallowly cup-shaped, golden yellow, sometimes red-veined flowers, 1.5–2cm (½–¾in) across, with

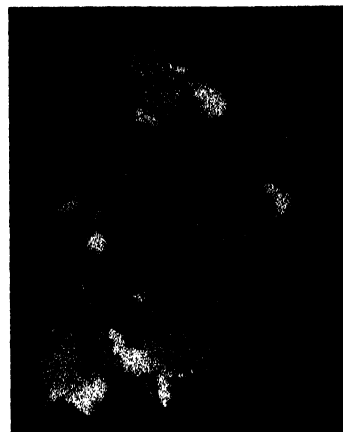
conspicuous stamens. †20cm (8in), ↔ to 30cm (12in). S.E. France, Switzerland, Italy. \*\*\*

***H. cuneatum*** sec *H. pallens*.

***H. x cyathiflorum*** 'Gold Cup', syn. *H. bearii* 'Gold Cup'. Bushy, deciduous shrub with arching branches and lance-shaped, mid-green leaves, to 8cm (3in) long. Pyramidal cymes of up to 9 cup-shaped, golden yellow flowers, 5cm (2in) across, are produced in summer. †1.5m (5ft), ↔ 2m (6ft). \*\*\*

***H. 'Eastleigh Gold'***. Semi-evergreen shrub with arching branches and elliptic-oblong to lance-shaped, mid-green leaves, to 5cm (2in) long. In summer, bears cymes of up to 4 large, shallowly cup-shaped, golden yellow flowers, to 6cm (2½in) across. †1m (3ft), ↔ 1.5m (5ft). \*\*\*

***H. elodes*** [Marsh hypericum]. Marsh or submerged aquatic perennial with creeping stolons, 10–30cm (4–12in) long, and broadly ovate to elliptic, soft, densely woolly, grey-green leaves, to 1.5cm (½in) long. Saucer-shaped, bright yellow flowers, to 1cm (½in) across, are borne singly or in cymes of 3–10 in summer. †7–15cm (3–6in), ↔ indefinite. W. Europe. \*\*\*

*Hypericum empetrifolium*

***H. empetrifolium*** [Dwarf, evergreen, stiffly erect to decumbent and cushion-forming shrub producing linear, mid-green leaves, to 1.5cm (½in) long, usually in whorls of 3. In summer, bears cylindrical to narrowly pyramidal cymes of up to 40 star-shaped, golden yellow flowers, to 2cm (¾in) across. †45cm (18in), ↔ 90cm (36in). S.E. Europe, S.W. Asia. \*\*\*

**subsp. *oliganthum***. syn. var. *prostratum* of gardens, is prostrate, with branching stems clothed in whorls of stalkless, linear, or sometimes narrowly elliptic, dark green leaves, to 6mm (¼in) long, with rolled margins. In summer, bears cymes of 4–7 deep yellow flowers. Suitable for a sunny wall or rock garden; needs good drainage; †5cm (2in), ↔ to 30cm (12in); Greece (Crete); \*\*\*

**var. *prostratum* of gardens** sec subsp. *oliganthum*.

***H. forrestii*** [syn. *H. patulum* var. *forrestii*]. Upright, spreading, deciduous shrub with triangular-ovate to broadly ovate or lance-shaped, mid-green leaves, to 6cm (2½in) long, turning red in late autumn and early winter. Cymes of up to 20 large, cup- to saucer-shaped, golden yellow flowers, to 6cm (2½in) across, are borne from summer to autumn. †1.2m (4ft), ↔ 1.5m (5ft). China (Yunnan, Sichuan), N.E. Burma. \*\*\*

***H. frondosum*** [Erect, deciduous shrub with stout, flaking stems and oblong, bluish green leaves, to 6cm (2½in) long. In mid- and late summer, bears cymes of up to 7 saucer-shaped, golden yellow flowers, to 4.5cm (1¾in) across, with prominent, central bosses of

yellow stamens. †60–120cm (2–4ft). S.E. USA. \*\*\*

***H. henryi***. Variable, bushy, deciduous shrub with upright to arching branches clothed in narrowly elliptic or lance-shaped to ovate, mid-green leaves, to 4cm (1½in) long, glaucous beneath. Cymes of up to 5, occasionally 7, cup-shaped, golden yellow flowers, to 5cm (2in) across, are produced from late summer to autumn. †2m (6ft). S.W. China, E. Burma, North Vietnam, Indonesia. \*\*

***H. 'Hidcote'*** [Dense, bushy, evergreen or semi-evergreen shrub with lance-shaped, dark green leaves, to 6cm (2½in) long. From midsummer to early autumn, bears corymb-like cymes of up to 6, sometimes more, large, cup-shaped, golden yellow flowers, to 6cm (2½in) across. †1.2m (4ft), ↔ 1.5m (5ft). \*\*\*

***H. x inodorum*** (*H. androsaemum* x *H. hircinum*). Upright, bushy, deciduous or semi-evergreen shrub producing oblong-lance-shaped to broadly ovate, aromatic, dark green leaves, to 11cm (4½in) long. Cymes of 3–23 small, star-shaped yellow flowers, 1.5–3cm (½–1¼in) across, are borne from midsummer to mid-autumn, followed by dark cerise, conical capsules. †1.2m (4ft), ↔ 1.5m (5ft). \*\*\*

**'Elstead'** [has large fruit, which flush pinkish red on ripening. 'Ysella' has golden yellow leaves.

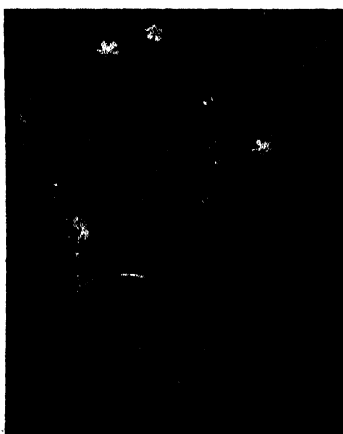
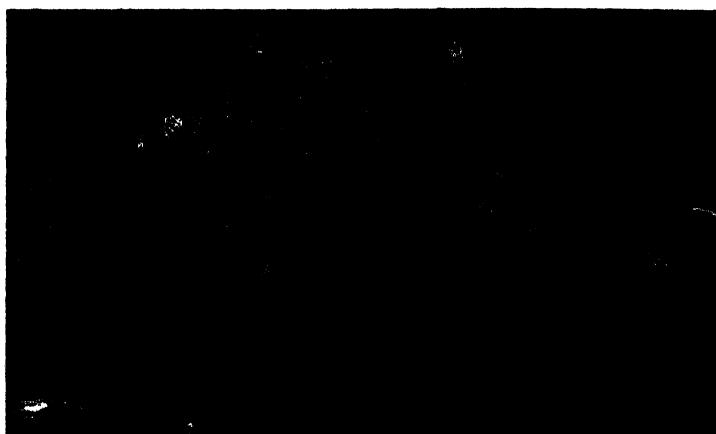
***H. kalmianum***. Erect, bushy, evergreen shrub producing narrowly oblong to inversely lance-shaped, bluish green leaves, to 5cm (2in) long. In mid- and late summer, bears cymes of up to 7 saucer-shaped, golden yellow flowers, to 3.5cm (1½in) across. †75cm (30in). E. North America (Great Lakes area of Canada and USA). \*\*\*

***H. kowytchense*** [syn. *H. patulum* var. *grandiflorum*, *H. 'Sungold'*]. Rounded, bushy, semi-evergreen shrub with arching shoots and elliptic to ovate or lance-shaped, dark bluish green leaves, to 6cm (2½in) long, paler beneath. Cymes of up to 11 star-shaped, golden yellow flowers, to 6cm (2½in) across, with partially reflexed petals, are borne from summer to autumn, followed by conical, bright red fruit. †1m (3ft), ↔ 1.5m (5ft). China (Guizhou). \*\*\*

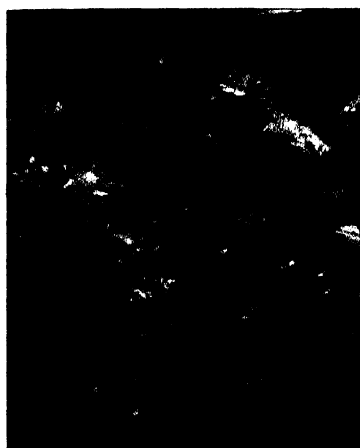
***H. lancasteri*** [Spreading, deciduous shrub with triangular-lance-shaped to oblong leaves, to 6cm (2½in) long, bronze when young, maturing to mid-green, glaucous beneath. In summer, bears cymes of up to 11 star-shaped to shallowly cup-shaped, golden yellow flowers, to 6cm (2½in) across, with star-shaped calyces with red-margined sepals, conspicuous before they open. †1m (3ft). China (N. Yunnan, S. Sichuan). \*\*\*

***H. x moserianum*** 'Tricolor', syn. *H. 'Variegatum'*. Spreading, semi-evergreen shrub with arching, red-flushed shoots and ovate, mid-green leaves, to 6cm (2½in) long, attractively variegated with cream, pink, and green. From summer to autumn, bears cymes of up to 8 cup-shaped yellow flowers, to 5cm (2in) across. Needs a sheltered position. †30cm (12in), ↔ 60cm (24in). \*\*\*

***H. olympicum*** [Deciduous shrub with erect stems clothed in oblong, elliptic, or linear-lance-shaped, pointed, grey-green leaves, to 4cm (1½in) long, glaucous beneath. In summer, bears cymes of up

*Hypericum elodes**Hypericum empetrifolium*



*Hypericum x inodorum* 'Elstead'

to 5 star-shaped, deep yellow flowers, each to 6cm (2½in) across. ‡25cm (10in), ↔30cm (12in). N. Greece, N.W. Turkey. \*\*\*. **f. uniflorum** 'Citrinum' ♀ syn. 'Citrinum', produces broadly elliptic to obovate leaves, to 2–3cm (¾–1¼in) long, and pale lemon-yellow flowers; ideal for a rock garden.

**H. orientale**. Erect or decumbent perennial with elliptic, oblong, linear, or inversely lance-shaped, dark green leaves, 1–4cm (½–1½in) long. Dense cymes of up to 17 star-shaped, deep golden yellow flowers, to 3cm (1¼in) across, are borne in summer. ‡30cm (12in), ↔30cm (12in). Turkey, Georgia, Azerbaijan. \*\*\*

**H. pallens**, syn. *H. cuneatum*. Dwarf, evergreen shrub with stalkless, elliptic, oblong, inversely lance-shaped, or obovate, mid-green leaves, to 2.5cm (1in) long, borne on brittle, branching, red-tinted stems. Cymes of up to 3 star-shaped, pale yellow flowers, 1.5–2.5cm (½–1in) across, open from red-tipped buds in summer. Excellent for a rock garden or alpine house; requires good drainage. ‡15cm (6in), ↔20cm (8in). S. Turkey, W. Syria. \*\*\* (borderline)

**H. patulum**. Bushy, evergreen or semi-evergreen shrub with spreading branches and lance-shaped to oblong-lance-shaped or oblong-ovate, dark green leaves, to 6cm (2½in) long. Cymes of up to 15 cup-shaped, golden yellow flowers, to 4cm (1½in) across, are borne from summer to early autumn. ‡1.2m (4ft), ↔1.5m (5ft). China (Guizhou, Sichuan). \*\*\*. **var. forrestii** see *H. forrestii*. **var. grandiflorum** see *H.*

*Hypericum lancasteri*

*kouytchense*. **var. henryi** of gardens see *H. pseudohenryi*.

**H. perforatum** (Perforate St. John's wort). Tufted perennial with stiff, 2-ridged stems bearing opposite, ovate to elliptic-oblong or linear, mid-green leaves, 3cm (1¼in) long, with large, translucent dots. Numerous star-shaped, bright yellow flowers, to 1.5cm (½in) across, are borne in cylindrical cymes in summer. Ideal for a wildflower garden. ‡60–110cm (24–42in), ↔20cm (24in). Europe, W. Asia. \*\*\*

**H. pseudohenryi**, syn. *H. patulum* **var. henryi** of gardens. Bushy, semi-evergreen shrub with erect shoots and ovate-oblong to lance-shaped, dark green leaves, to 8cm (3in) long. In summer, bears cymes of up to 7, sometimes up to 25, shallowly cup-shaped to star-shaped, golden yellow flowers, to 6cm (2½in) across, followed by conical, red-tinged green fruit. ‡1.7m (5½ft), ↔2m (6ft). China (Yunnan, Sichuan). \*\*\*

**H. reptans** ☐ Deciduous, prostrate, mat-forming shrub with rooting stems and elliptic, leathery, mid-green leaves, 0.7–2cm (¼–¾in) long, turning red or yellow in autumn. Solitary, deeply cup-shaped, golden yellow flowers, to 3cm (1¼in) across, often crimson-flushed in bud, are borne in summer. Excellent for a sunny wall or rock garden. ‡5cm (2in), ↔20cm (8in). Himalayas (Nepal to Yunnan). \*\*\*

**H. rhodoppeum** see *H. cerastioides*.

**H. 'Rowallane'** ♀ Semi-evergreen shrub with upright, arching branches and oblong-ovate to oblong-lance-shaped, dark green leaves, to 7cm (3in) long. Cymes of up to 3 shallowly cupped, dark golden yellow flowers, to 8cm (3in) across, are borne from late summer to autumn. ‡to 1.8m (6ft), ↔to 1m (3ft). \*\*\*

**H. 'Sungold'** see *H. kouytchense*.

**H. trichocaulon**. Deciduous subshrub or herbaceous perennial with prostrate branches and ovate-oblong to elliptic or linear, pale grey-green leaves, to 1.5cm (½in) long. In summer, red-tinged buds open to 2 or 3 star-shaped, golden yellow flowers, to 2.5cm (1in) across, borne singly or in cymes. Suitable for an alpine house. ‡10cm (4in), ↔20cm (8in). Greece (Crete). \*\*\* (borderline)

**H. 'Variegatum'** see *H. x moserianum* 'Tricolor'.

▷ **Hypericum, Marsh** see *Hypericum elodes*

*Hypericum reptans*

## HYPHAENE

Doum palm

ARECACEAE/PALMAE

Genus of about 10 species of palms from Africa, Madagascar, the Arabian Peninsula, India, and Sri Lanka, occurring on poor or exhausted soils, often poorly drained, usually in hot, dry areas. Some doum palms are stemless, some have creeping stems; others are tree-like with branching trunks. The leaves are fan-shaped, and tiny, bowl-shaped, 3-petalled flowers are borne in panicles between them. In frost-prone climates, grow doum palms in a warm greenhouse (they require very dry heat to thrive under glass). In dry, frost-free regions, grow the creeping and stemless species as ground cover and the tree-like ones as specimen trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional grit, in full light. Provide low humidity. Water sparingly at all times. Apply a balanced liquid fertilizer every 6–8 weeks, when in growth. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. Protect from winter and summer wet.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring; seed may be difficult to germinate.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**H. coriacea** ♀ (Doum palm). Small palm with a single stem, or sometimes suckering to form a clump. Each stem forks several times to form a head of branches all on one plane. Long-stalked, waxy, fan-shaped leaves have many fan-shaped blades, 30–80cm (12–32in) long, grey- to blue-green with scale-like black hairs. Tiny, bowl-shaped, green to white flowers are borne in panicles, to 1m (3ft) long, mainly in summer. ‡to 5m (15ft), ↔1.2–4m (4–12ft). E.

*Hyphaene thebaica*

Africa, South Africa, Madagascar.

☞ (min. 13–15°C/55–59°F)

**H. thebaica** ☐ ♀ (Gingerbread palm). Medium-sized palm with a single stem that forks at regular intervals. The fan-shaped, grey-green leaves have long, spiny stalks and numerous rounded leaf-blades, 60–75cm (24–30in) long. Tiny, bowl-shaped yellow flowers are borne in panicles, to 1m (3ft) long, usually in summer. ‡6–10m (20–30ft), ↔3–6m (10–20ft). N. Africa. ☞ (min. 13–15°C/55–59°F)

## HYPOCALYMMA

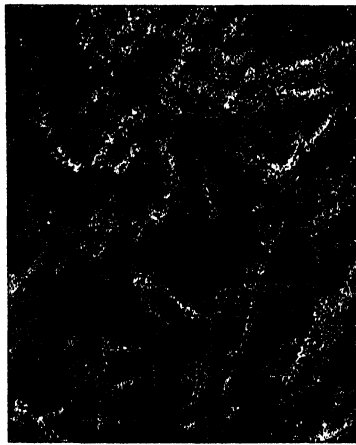
MYRTACEAE

Genus, related to *Leptospermum*, of 13 species of evergreen shrubs found on sandy or gravelly soils from sea level to 900m (3,000ft) in Australia. They have opposite, simple, linear to broadly ovate, grey-green to light or dark green leaves, with entire or fringed margins. Cup-shaped, 5-petalled, many-stamened flowers are produced singly, in pairs, or occasionally in small clusters from the leaf axils. Where temperatures fall below 7°C (45°F), grow in a cool greenhouse. In warmer regions, grow at the base of a warm, sunny wall, in a shrub border, in a courtyard garden, or as a hedge.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional sharp sand, in full light or bright filtered light; provide low humidity. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moderately fertile, moist but well-drained, light, sandy, neutral to slightly alkaline soil in full sun or dappled shade. Pruning group 8; plants grown under glass may need restrictive pruning.

• **PROPAGATION** Surface-sow seed on to permanently moist seed compost at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in late summer.

*Hypocalymma cordifolium* 'Golden Veil'

• **PESTS AND DISEASES** Prone to grey mould (*Botrytis*) under glass, and to *Phytophthora* root rot outdoors.

***H. cordifolium* 'Golden Veil'** ■ Dwarf to small shrub with branching, 4-angled or 4-winged stems, often bunched or twisted together. Broadly ovate, bright green, cream-variegated leaves, to 1.5cm (½in) long, have heart-shaped bases and recurved, wavy, fringed margins. From early spring to midsummer, white flowers, to 1cm (½in) across, are borne singly or in twos or threes from the leaf axils. ‡ 0.3–1.5m (1–5ft), ↔ 0.3–2.5m (1–8ft). Australia (Western Australia). \*

▷ *Hypocyrtia radicans* see *Nematanthus gregarius*

▷ *Hypocyrtia strigillosa* see *Nematanthus strigillosus*

## HYPOESTES

Polka dot plant

ACANTHACEAE

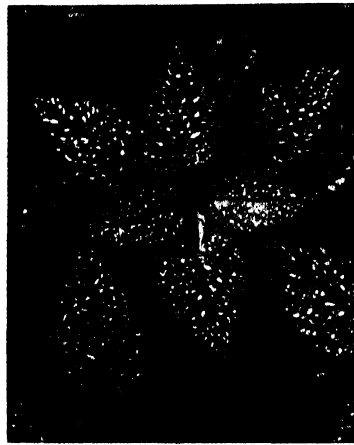
Genus of 40 species of woody-based, evergreen perennials, subshrubs, and shrubs from open woodland in South Africa, Madagascar, and S.E. Asia. Some polka dot plants are grown for their foliage and some for their flowers. The leaves are opposite, usually ovate, entire or toothed, and smooth or slightly velvety. Terminal or lateral racemes of solitary or clustered, tubular, 2-lipped flowers, with twisted corolla tubes, are borne from late summer to winter. In frost-prone areas, grow in a warm greenhouse. *H. phyllostachya* and its cultivars are good houseplants; they may also be grown as annuals and used as bedding or in patio containers. In warmer regions, grow in a shrub border or in containers.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, with moderate to high humidity. Water freely in growth, sparingly in winter. Apply a balanced liquid fertilizer every 2–3 weeks in summer. Outdoors, grow in moist but well-drained, moderately fertile, humus-rich soil in partial shade, sheltered from cold winds. Pinch out the growing tips to promote a bushy habit.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root softwood or tip cuttings in late spring, or semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Powdery mildew may be a problem.

*Hypoestes phyllostachya*

***H. aristata*** (Ribbon bush). Erect, evergreen, woody-based perennial with ovate, entire, dull mid-green leaves, to 8cm (3in) long, with velvety surfaces. Racemes of pale magenta to purple flowers, 3cm (1¼in) long, sometimes spotted or lined with white or mauve within, are produced from the leaf axils over a long period from summer to winter. ‡ 1.2m (4ft), ↔ 45cm (18in). South Africa. ☼ (min. 13°C/55°F)

***H. phyllostachya*** ■ ♀ syn. *H. sanguinolenta* of gardens (Freckle face, Polka dot plant). Subshrub with ovate, downy, dark green leaves, 5cm (2in) long, spotted with reddish or bluish pink. From late summer to winter, bears terminal, spike-like racemes, 16cm (6in) long, of tiny, magenta to lilac flowers. ‡ 30cm (12in), ↔ 23cm (9in). Madagascar. ☼ (min. 10°C/50°F). 'Carmina' has bright red foliage.

'Purpuriana' has purple leaves. 'Splash' has showy leaves splashed with pink.

*H. sanguinolenta* of gardens see *H. phyllostachya*.

## HYPOXIS

Starflower

HYPOXIDACEAE

Genus of about 150 species of cormous perennials widespread in woodland in Africa, S.E. Asia, Australia, and North, Central, and South America. Species in cultivation have linear to lance-shaped, light to mid-green, basal leaves, and bear small, star-shaped flowers from spring to summer. In frost-prone areas, grow in an alpine house or cool greenhouse. In warmer climates, grow in a sheltered rock garden.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Plant corms 3cm (1¼in) deep when dormant. Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand and leaf mould; move from a shaded position at planting to full light or bright filtered light as shoots appear. When in growth, water moderately and apply a balanced liquid fertilizer monthly; dry off after flowering and keep dry in winter. Outdoors, grow in humus-rich, moist but well-drained soil in full sun with midday shade, or in dappled shade. Protect from excessive winter and summer wet, and shelter from cold, drying winds. Starflowers resent transplanting once established.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Remove offsets in summer or autumn.

*Hypoxis angustifolia*

• **PESTS AND DISEASES** Mice may damage clumps outdoors during winter.

***H. angustifolia*** ■ Small, cormous perennial with erect, grass-like, linear to lance-shaped, hairy, mid-green, basal leaves, 10–15cm (4–6in) long. In summer, bears stems of up to 7 upward-facing yellow flowers, to 1cm (½in) across. ‡ 10–20cm (4–8in), ↔ 5cm (2in). Widespread in South Africa. \*

***H. capensis***, syn. *H. stellata*, *Spiloxene capensis*. Cormous perennial with erect, narrowly linear, finely toothed, folded, mid-green, basal leaves, 10–30cm (4–12in) long. In spring, bears solitary, upward-facing, white or yellow flowers, 2–6cm (¾–2½in) across, with bright purple or green basal spots. ‡ 10–20cm (4–8in), ↔ 5cm (2in). South Africa (Western Cape, Northern Cape, Eastern Cape). \*

***H. hemerocallidea***, syn. *H. rooperi*. Cormous perennial with arching, lance-shaped, hairy, mid-green, basal leaves 30–45cm (12–18in) long. Branched stems of up to 8 yellow, green-backed flowers, 3–4cm (1¼–1½in) across, are produced from spring to summer. ‡ 15–20cm (6–8in), ↔ 5cm (2in). Widespread in South Africa. \*

***H. hirsuta***. Cormous perennial with semi-erect, narrowly linear, ribbed, hairy, mid-green, basal leaves, to 30cm (12in) long. From spring to summer, bears stems of up to 7 upward-facing, yellow, green-backed flowers, to 2.5cm (1in) across. ‡ 10–20cm (4–8in), ↔ 5cm (2in). E. North America. \*

*H. rooperi* see *H. hemerocallidea*.

*H. stellata* see *H. capensis*.

## HYPSELA

CAMPANULACEAE

Genus of 4 species of prostrate perennials found in moist sites at mid- to high altitudes in Australia, New Zealand, and South America. They are cultivated for their alternate, variably shaped, entire or toothed, mid- to dark green leaves, and their tubular, 5-lobed flowers. They are suitable for a large rock garden, but are too invasive for a small area.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in gritty, humus-rich, moist but well-drained soil in sun or shade. Hypselas spread freely in moist soils and warm conditions.

• **PROPAGATION** Sow seed at 6–12°C (43–54°F), or divide, in spring.

• **PESTS AND DISEASES** Slugs and snails may be a problem.

*H. longiflora* see *H. reniformis*.

***H. reniformis***, syn. *H. longiflora*. Vigorous, creeping perennial with rooting stems and elliptic or rounded to kidney-shaped, fleshy, bright mid-green leaves, to 1cm (½in) long. Solitary, almost stemless, white to pale pink flowers, to 8mm (¾in) long, with crimson veins, open from late spring to summer. ‡ 2cm (¾in), ↔ indefinite. South America. \*\*\* (borderline)

▷ **Hyssop** see *Hyssopus*, *H. officinalis*  
▷ **Anise** see *Agastache foeniculum*

## HYSSOPUS

Hyssop

LABIATAE/LAMIACEAE

Genus of about 5 often variable species of aromatic herbaceous perennials and evergreen or semi-evergreen shrubs, occurring in dry, sandy, and rocky sites from the Mediterranean to C. Asia. The linear to lance-shaped, ovate, or oblong leaves are mid- or blue-green. Tubular, violet-blue to pink flowers are borne in whorls on narrow, spike-like, terminal inflorescences. *H. officinalis* and its cultivars are grown for their aromatic foliage and flowers, and are excellent for a rock garden or herb garden. They are also suitable for low hedging, and for growing at the base of a warm, sunny wall or in containers. The flowers are attractive to bees and butterflies; the foliage has culinary and medicinal uses.

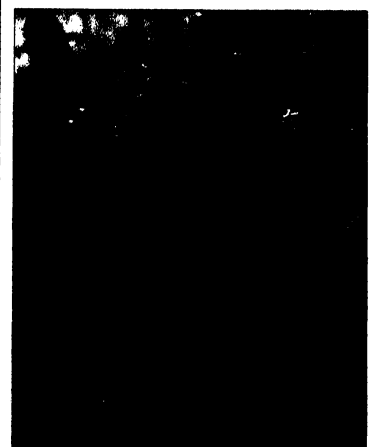
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained, neutral to alkaline soil in full sun. Pruning group 10, in mid-spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***H. officinalis*** ■ (Hyssop). Dwarf, semi-evergreen, aromatic shrub with erect shoots and linear to narrowly lance-shaped, or oblong, mid-green leaves, to 5cm (2in) long. Slender spikes of whorled, funnel-shaped, 2-lipped, dark blue flowers, 1.5cm (½in) long, are produced from midsummer to early autumn. ‡ 60cm (24in), ↔ 1m (3ft). S. Europe. \*\*\*. *f. albus* has white flowers. *subsp. aristatus* has a dense, upright habit, and produces bright green leaves. *f. roseus* has pink flowers.

*Hyssopus officinalis*



## IBERIS

Candytuft

BRASSICACEAE/CRUCIFERAE

Genus of about 40 species of annuals, perennials, and evergreen subshrubs from open sites in free-draining, calcareous soil in Crimea, S. Europe, N. Africa, Cyprus, Syria, N. Iraq, Turkey, and Caucasus. They have alternate, linear to obovate, entire to pinnatisect leaves. The inflorescences are corymbs or racemes of sometimes fragrant, white, occasionally purple, pink, or red flowers, 1cm (½in) across, each with 4 petals, one pair usually larger than the other. Grow perennials and subshrubs, which may be short-lived, in a rock garden or in walls. Grow annual candytufts, which flower profusely over long periods, mainly in summer, as bedding, at the front of borders, or in containers.

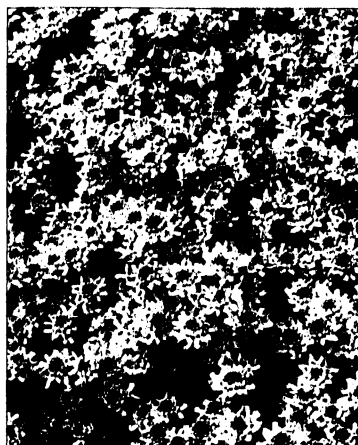
• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in poor to moderately fertile, moist but well-drained, neutral to alkaline soil in full sun. *I. pruitii* requires sharply drained soil. Pruning group 10, after flowering. Trim perennials and subshrubs lightly after flowering to maintain compactness.

• **PROPAGATION** Sow seed of annuals *in situ* in spring or autumn. Sow seed of perennials and subshrubs in containers in a cold frame in autumn. Root soft-wood cuttings in late spring or semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Susceptible to clubroot. May be attacked by slugs and snails and occasionally by caterpillars.

*I. amara*. Variable, erect, branched annual with lance-shaped to spoon-shaped leaves, to 8cm (3in) long, toothed towards the tips. Small, lightly scented, purplish white or white flowers are borne in large, domed racemes, 10–15cm (4–6in) long, in summer. †15–45cm (6–18in), ↔ to 15cm (6in). W. Europe. \*\*\*. 'Giant Hyacinth-

*Iberis amara* 'Iceberg'*Iberis saxatilis*

**flowered'** bears large racemes of white flowers. 'Iceberg' produces pure white flowers. 'Pinnacle' has very fragrant, pure white flowers.

*I. candolleana* see *I. pruitii*.

*I. commutata* see *I. sempervirens*.

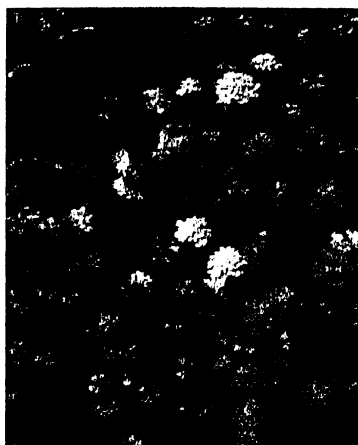
*I. jordanii* see *I. pruitii*.

*I. pruitii*, syn. *I. candolleana*, *I. jordanii*.

Short-lived, evergreen, procumbent to erect annual or perennial with rosettes of spoon-shaped, fleshy, dark green leaves, to 2cm (¾in) long. In summer, bears dense corymbs, to 4cm (1½in) across, of white, occasionally lilac flowers. † to 15cm (6in), ↔ to 20cm (8in). Spain, France, Italy, Greece. \*\*

*I. saxatilis* Evergreen subshrub with linear, almost cylindrical, fleshy, dark green leaves, to 2cm (¾in) long, on upright stems. From late spring to summer, bears flattened corymbs, 3–4cm (1¼–1½in) across, of small white flowers, often purple-tinged with age. Leaves on flowering shoots are flat, linear, and acute. † to 15cm (6in), ↔ to 30cm (12in). Spain, France, Italy, Greece, Romania, Crimea. \*\*\*

*I. sempervirens*. Evergreen subshrub with broadly spoon-shaped, slightly fleshy, dark green leaves, 2–6cm (¾–2½in) long. Produces fragrant white flowers borne in crowded corymbs, to 5cm (2in) across, from winter to early spring. † to 30cm (12in), ↔ 60cm (24in) or more. S. Italy (including Sicily). \*\* *I. sempervirens* syn. *I. commutata*. Spreading, evergreen subshrub with oblong-spoon-shaped, dark green leaves, 2.5–3.5cm (1–1½in) long. In late spring and early summer, bears corymb-like racemes, to 5cm (2in) across, of small

*Iberis sempervirens**Iberis umbellata* Fairy Series

white flowers, occasionally flushed lilac. † to 30cm (12in), ↔ to 40cm (16in). S. Europe. \*\*\*. 'Little Gem' see

'Weisser Zwerg'. 'Schneeflocke' syn. 'Snowflake', is mound-forming, and bears dense, corymb-like racemes of

snow-white flowers; † to 25cm (10cm), ↔ to 60cm (24in). 'Snowflake' see

'Schneeflocke'. 'Weisser Zwerg', syn. 'Little Gem', is very compact, with

short, linear leaves, to 1cm (½in) long.

Bears abundant white flowers in spring; † 15cm (6in), ↔ to 25cm (10in).

*I. umbellata* (Common candytuft). Bushy, mound-forming annual with

linear-lance-shaped leaves, to 10cm (4in) long, the lower leaves toothed.

The abundant small, scented flowers are white, lavender, purple, pink, crimson,

or occasionally bicoloured, and are borne in flattened corymbs, to 5cm

(2in) across, from spring to summer; † 15–30cm (6–12in), ↔ to 23cm (9in).

S. Europe. \*\*\*. **Fairy Series** cultivars have white, pink, lilac-purple,

or red-pink flowers. **Flash Series** cultivars have vibrant pink, purple, or

carmine-red flowers.

## IBERVILLEA

CUCURBITACEAE

Genus of 3 or 4 species of climbing, perennial, dioecious succulents from semi-desert regions of Texas and Arizona, USA, and N. Mexico. They have swollen, caudex-like stems that are partly underground, and very slender branches bearing ovate to kidney-shaped, deeply 3- to 5-lobed leaves with simple tendrils. In summer, bell-shaped, usually hairy flowers, with pointed lobes, are borne in racemes or clusters on male plants, or singly on female plants. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse. In warmer climates, grow in a desert garden, or on a trellis in a dry, sunny position.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand or grit, in full light with low humidity. During the growing season, water moderately and apply a balanced liquid fertilizer monthly. Keep totally dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun, and mulch with a layer of limestone chippings, 5cm (2in) deep. Protect from excessive winter wet. See also pp.48–49.

• **PROPAGATION** Sow seed at 20°C (68°F) in early spring. Root softwood cuttings in late spring and early summer with gentle bottom heat.

• **PESTS AND DISEASES** Vulnerable to scale insects.

*I. sonorae*. Climbing, free-branching succulent with a bottle-shaped caudex and fissured, corky, greyish white bark. Produces bluish green tendrils and fan-shaped, deeply 3-lobed, bluish green leaves, 4–12cm (1½–5in) long, often with rough hairs beneath. Small, hairy, greenish yellow flowers, 1cm (½in) across, are borne in summer. † 2–3m (6–10ft), ↔ 30cm (12in). N. Mexico. ♀ (min. 10°C/50°F)

▷ **Ice plant** see *Dorotheanthus*, *Sedum spectabile*

## IDESIA

FLACOURTIACEAE

Genus of one species of deciduous tree from woodland in China, Korea, Japan, and Taiwan. Leaves are alternate and slightly toothed. Male and female flowers are borne on separate plants; both are needed to produce fruit.

Grown for its bold foliage and clusters of red berries, it is a fine specimen tree, or is suitable for a woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained, neutral to acid soil in full sun or light shade, with shelter from other trees. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root greenwood cuttings in late spring or semi-ripe cuttings in midsummer.

• **PESTS AND DISEASES** Trouble free.

*I. polycarpa* Spreading, deciduous tree with open, tiered branches and ovate-heart-shaped, sharply pointed, glossy, mid- to dark green leaves, to 20cm (8in) long, often purple-tinged when young. Large, pendulous panicles, to 30cm (12in) long, of small, fragrant, yellow-green flowers, lacking petals, are borne in midsummer, followed by spherical red berries on female plants. † 12m (40ft). China (Sichuan), Korea, Japan, Taiwan. \*\*\*

▷ *Idria columnaris* see *Fouquieria columnaris*

▷ *Ilang-ilang* see *Cananga odorata*

*Idesia polycarpa*

# ILEX

Holly

AQUIFOLIACEAE

Genus of over 400 species of evergreen and deciduous trees, shrubs, and climbers from woodland in tropical, subtropical, and temperate regions, grown for their foliage and berries. The leaves may have entire, spine-toothed, spiny, or rarely scalloped margins, and are usually simple and alternate, sometimes in opposite pairs. Flowers, borne from spring to early summer, are produced singly or in clusters or cymes in the leaf axils. They are small, cup-shaped, up to 8mm (3/8in) across, each with 3-8 petals, usually white or cream, but may be pink, green, or lavender-blue. Male and female flowers are usually borne on separate plants; both sexes are needed to obtain fruits. In temperate climates, hollies bear fruits in autumn. The red or black, occasionally white, orange, or yellow berries are spherical, sometimes ellipsoid, and may cause mild stomach upset if ingested.

Grow hollies in a woodland garden or as specimen trees; some make good hedges or windbreaks, particularly *I. aquifolium* and *I. x altacelerensis* cultivars; several *I. crenata* cultivars are useful in a rock garden. In cold areas, grow frost-tender species in a cool greenhouse.

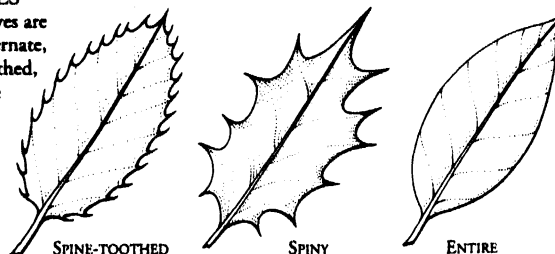
• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich soil in full sun (which produces the best leaf colour in variegated hollies) or in partial shade. Planting or transplanting is best done in late winter or early spring. Pruning group 1. Prune free-standing specimens to shape in the early years only; clip formally grown plants in summer; trim hedges in early spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Germination may take 2 or 3 years. Take semi-ripe cuttings in late summer or early autumn.

## ILEX LEAVES

Most holly leaves are simple and alternate, with spine-toothed, spiny, or entire margins.



• **PESTS AND DISEASES** Young shoots are susceptible to aphids; scale insects and leaf miners may be a problem on evergreen species. Sometimes suffers from *Phytophthora* root rot.

**I. 'Accent'** ♂ Narrowly conical, evergreen male tree, spindly when mature, with brittle branches. Bears elliptic, dark green leaves, 2-4cm (3/4-1 1/2in) long. Sometimes short-lived. Pollinating male for *I. 'Elegance'*. ‡ 6m (20ft), ↔ 3m (10ft). \*\*

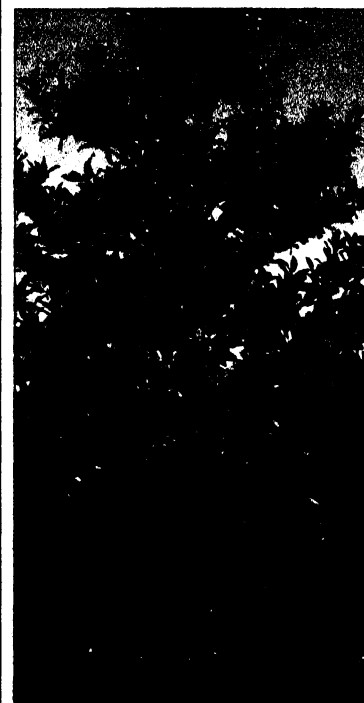
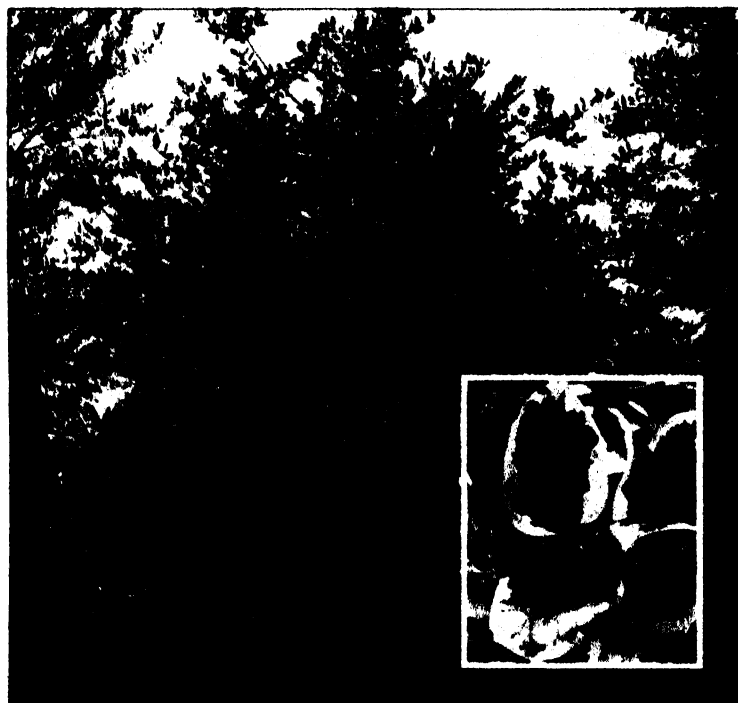
**I. altacelerensis** sec *I. x altacelerensis*.

**I. x altacelerensis** ♂ (*I. aquifolium* x *I. perado*) syn. *I. altacelerensis*. Vigorous, evergreen tree or shrub of variable habit, with grey bark. Leaves are elliptic, elliptic-lance-shaped or broadly ovate, glossy, dark green, 6-13cm (2 1/2-5in) long, with spine-toothed or entire margins. Berries are red, 6-8mm (1/4-3/8in) across. Similar to *I. aquifolium* but more vigorous, and usually with less spiny, broader, larger leaves. Tolerates pollution and coastal exposure. Excellent for tall hedges and windbreaks. ‡ to 20m (70ft), ↔ 12-15m (40-50ft). Garden origin. \*\*. **'Belgica Aurea'** ♂♀ syn. *'Silver Sentinel'*, *I. perado* 'Aurea'. An erect female shrub with yellow-streaked green stems, bearing elliptic-lance-shaped, sparsely spine-toothed leaves, to 11cm (4 1/2in) long, mottled grey-green in the centre and with irregular, golden yellow margins.

Produces few berries. ‡ 12m (40ft), ↔ 5m (15ft). **'Camelliifolia'** ♂♀ is a large, conical female shrub with purple-tinged stems, elliptic-oblong, usually entire, deep green leaves, to 13cm (5in) long, and scarlet berries. ‡ 14m (46ft). **'Golden King'** ♂♀ is a compact female shrub, a sport of *'Hendersonii'*, with oblong to ovate, spine-toothed or entire leaves, to 10cm (4in) long, mottled grey-green in the centre, with broad, bright gold margins. Reddish brown berries, ripening to red, are sparsely produced. ‡ 6m (20ft). **'Hendersonii'** ♂ is a compact female tree with oblong-elliptic, dull green leaves, to 11cm (4 1/2in) long. Long-lasting, brown-red berries, ripening to red, are sparsely produced. ‡ to 15m (50ft), ↔ to 4m (12ft). **'Hodginsii'** ♀ is a magnificent, robust male tree bearing dark purple stems and broadly ovate, glossy, black-green leaves, 5-8cm (2-3in) long, spine-toothed when young. ‡ 14m (46ft), ↔ 10m (30ft). **'Lawsoniana'** ♂♀ is a compact female shrub, a sport of *'Hendersonii'*. Yellow-streaked green stems bear oblong to ovate leaves, to 11cm (4 1/2in) long, irregularly splashed gold and light green in the centres. Bears reddish brown berries, ripening to red. ‡ to 6m (20ft). **'Silver Sentinel'** see *'Belgica Aurea'*. **'Wilsonii'** ♀ is a vigorous, dense, oblong female tree, well-furnished to the base with purple-green branches. Bears broadly ovate, glossy, bright green, spiny leaves, to 10cm (4in) long, with prominent veins. Large scarlet fruit are produced in abundance. ‡ 8m (25ft).

**I. aquifolium** ♂♀-♂ (Common holly, English holly). Usually erect, dense, pyramidal or oblong, evergreen shrub or tree with grey bark. Bears elliptic or ovate, glossy, dark green leaves, 5-10cm (2-4in) long, with entire, wavy, spine-toothed or spiny margins, and long-lasting, red or rarely yellow or orange berries, 4-6mm (1/8-1/4in) across. ‡ to 25m (80ft), ↔ 8m (25ft). W. and S. Europe, North Africa, W. Asia. \*\*. **'Amber'** ♂ is a female tree with mid-green stems. Bears elliptic, usually entire, bright green leaves, to 8cm (3in) long, and abundant amber-yellow fruit. ‡ to 6m (20ft), ↔ 2.5m (8ft). **'Argentea Marginata'** ♀ syn. *'Argentea Variegata'*, is a columnar female tree with cream-streaked green stems and large, broadly ovate, spiny leaves, to 7cm (3in) long, with wide white margins. Leaves are purplish pink when young. Bears abundant bright red berries. ‡ to 15m (50ft), ↔ 4m (12ft). **'Argentea Marginata Pendula'** ♂♀ syn. *'Argentea Pendula'*, is a weeping female tree with purple stems and elliptic, spiny, cream-margined leaves,

to 8cm (3in) long, purple-pink when young. Sparsely produces red fruit. ‡ to 4m (12ft), ↔ 3m (10ft). **'Argentea Pendula'** see *'Argentea Marginata Pendula'*. **'Argentea Variegata'** see *'Argentea Marginata'*. **'Aurea Regina'** see *'Golden Queen'*. **'Bacciflora'** is a female tree with ovate, spiny, dark green leaves, to 8cm (3in) long. Bears yellow berries. ‡ to 15m (50ft), ↔ 4m (12ft). **'Ferox'** (Hedgehog holly) is a large, upright male shrub with purple stems and ovate, thick, leathery leaves, 3-4cm (1 1/4-1 1/2in) long, covered in spines. ‡ to 15m (50ft). **'Ferox Argentea'** ♂♀ is a sport of *'Ferox'*, also male but slower-growing, with cream-margined leaves, 3-4cm (1 1/4-1 1/2in) long, covered in spines. ‡ to 8m (25ft), ↔ 4m (12ft). **'Flavescens'** (Moonlight holly) is a broadly columnar female shrub with purplish red stems. Bears elliptic to ovate, spine-toothed leaves, 8cm (3in) long, yellow flushed when young, turning mid-green in shade. Yellow leaf colour lasts all year if grown in good light. Produces red berries. ‡ 6m (20ft), ↔ 3m (10ft). **'Golden Milkboy'** ♂♀ is a dense, upright male shrub with purplish green stems. Bears elliptic, spiny leaves, 6-8cm (2 1/2-3in) long, with irregular gold central markings. ‡ 6m (20ft), ↔ 4m (12ft). **'Golden Queen'** ♀ syn. *'Aurea Regina'*, is a male tree bearing cream-streaked green stems and large, broadly ovate, spine-toothed leaves, 6-8cm (2 1/2-3in) long, broadly margined with gold. ‡ 10m (30ft), ↔ 6m (20ft). **'Golden van Tol'** ♂ is a broad, upright female shrub bearing purple branches and ovate, puckered, dull green leaves, 3-7cm (1 1/4-3in) long, with golden yellow margins and few marginal spiny teeth. Sparsely produces red fruit. ‡ 4m (12ft), ↔ 3m (10ft). **'Handsworth New Silver'** ♂♀ is a dense, columnar female shrub with dark purple stems bearing oblong-elliptic, mid-green, spiny leaves, 6-9cm (2 1/2-3 1/2in) long, with creamy margins. Produces bright red berries. ‡ 8m (25ft), ↔ 5m (15ft).



**'J.C. van Tol'** ♀ is a broad female tree with dark purple stems and elliptic, puckered, almost entire, dark green leaves, to 8cm (3in) long. Bears abundant bright red berries. Self-fertile. ‡ 6m (20ft), ↔ 4m (12ft). \*\*\*. **'Mme Briot'** ♀ is a vigorous, bushy female tree or large shrub with purplish stems. Bears broadly ovate, dark green leaves, 8–10cm (3–4in) long, with spiny, bright gold margins and scarlet fruit. ‡ 10m (30ft), ↔ 5m (15ft). **'Pyramidalis'** ♀ is a narrowly conical, upright female shrub or small tree with yellow-green stems bearing narrowly elliptic, entire to few-spined, bright green leaves, 6–8cm (2½–3in) long. Produces abundant bright red berries. Self-fertile. ‡ 6m (20ft), ↔ 5m (15ft). **'Pyramidalis Aurea Marginata'** ♀ is an upright female shrub or small tree bearing mid-green stems with narrowly elliptic, mid-green leaves, with few to many spines and gold margins. Produces red berries freely. ‡ 6m (20ft), ↔ 5m (15ft). \*\*\*. **'Pyramidalis Fructu Luteo'** ♀ is a conical female shrub or small tree bearing green stems when young, with oval, usually entire, mid-green leaves. Very freely produces yellow berries. ‡ 6m (20ft), ↔ 4m (12ft). **'Silver King'** see 'Silver Queen'. **'Silver Milkboy'** is a dense male shrub bearing greenish yellow stems and elliptic, spiny, mid-green leaves, 5–6cm (2–2½in) long, with irregular silver central markings. Shy flowering, but when it does bear fruit, produces abundant scarlet berries. ‡ 6m (20ft), ↔ 4m (12ft). **'Silver Milkmaid'** ♀ is similar to 'Silver Milkboy', with an open habit, spreading when mature. Produces elliptic-ovate, sharply spined, dark green leaves, 3.5–5cm (1½–2in) long, with irregular, silvery white markings in the centres. Bears abundant scarlet berries. ‡ 6m (20ft), ↔ 4m (12ft). **'Silver Queen'** ♀ syn. 'Silver King', is a dense, upright, slow-growing male tree with purple stems. Bears broadly ovate, spiny leaves, 4.5–7cm (1¾–3in) long, with broad, creamy white margins. ‡ 10m (30ft), ↔ 4m (12ft).

***I. x aquipernyi*** ♂ (*I. aquifolium* x *I. pernyi*). Conical, evergreen shrub or small tree with diamond-shaped to oblong, spiny, glossy, dark green leaves, to 3.5cm (1½in) long, with long tips. Bears red fruit, 6–8mm (¼–⅓in) across. ‡ 6m (20ft), ↔ 4m (12ft). Garden origin. \*\*\*.

***I. x attenuata*** (*I. cassine* x *I. opaca*) (Topel holly). Conical, evergreen shrub with obovate-lance-shaped, light green leaves, 3–8cm (1¼–3in) long, spine-toothed near the tip. Produces dark red berries, 6mm (¼in) across. ‡ 4m (12ft), ↔ 2m (6ft). Natural hybrid from S. USA. \*\*\*.

***I. 'Brilliant'*** ♂♂ (*I. aquifolium* x *I. ciliispinosa*). Pyramidal, evergreen female shrub with oblong, spiny, bright green leaves, 3.5–4.5cm (1½–1¾in) long. Bears red fruit, 6mm (¼in) across. ‡ 3m (10ft), ↔ 2m (6ft). \*\*\*.

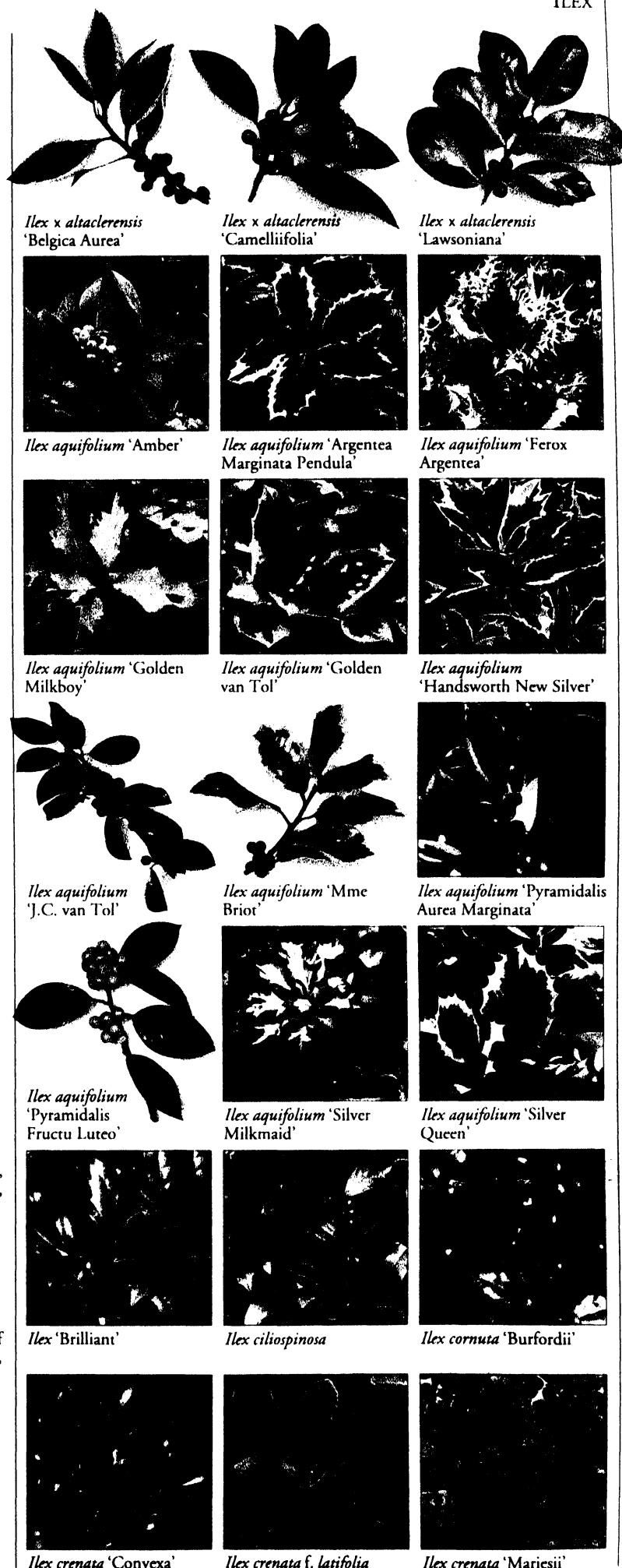
***I. chinensis* of gardens** see *I. purpurea*.

***I. ciliispinosa*** ♂♂ Upright, usually multi-stemmed, evergreen shrub bearing elliptic-ovate, dull, dark green leaves, 4–6cm (1½–2½in) long, with short, fine spines. Produces red fruit, 6mm (¼in) across. ‡ 6m (20ft), ↔ 4m (12ft). W. China. \*\*\*.

***I. 'Clusterberry'*** ♂ Upright, evergreen female shrub with oblong or obovate-oblong, few-spined, glossy, dark green leaves, 8–15cm (3–6in) long. Bears large red berries, 8–10mm (⅓–½in) across. ‡ to 5m (15ft), ↔ to 2.5m (8ft). \*\*\*. ***I. cornuta*** ♀ (Horned holly). Dense, rounded, evergreen shrub with rectangular, glossy, dark green leaves 5–8cm (2–3in) long, usually with prominent spines. Bears long-lasting, large red berries, 10mm (½in) across. ‡ to 2–4m (6–12ft). China, Korea. \*\*\*. **'Burfordii'** ♀ has leaves with a spine at each apex, and bears red berries very freely; ↔ 4–5m (12–15ft). **'Dwarf Burford'** has a dense, compact habit and produces dark red berries; ‡ to 2.5m (8ft).

***I. crenata*** ♀ (Box-leaved holly, Japanese holly). Evergreen, very variable shrub or small tree, usually with ovate to elliptic, minutely scalloped, glossy, dark green leaves, 2–3cm (¾–1¼in) long, often pitted beneath. Produces glossy black, sometimes white or yellow fruit, 6mm (¼in) across. ‡ 5m (15ft), ↔ 4m (12ft). Russia (Sakhalin), Japan, Korea. \*\*\*. **'Aureovariegata'** see 'Variegata'. **'Bruns'** ♂ is a compact male shrub with greyish green leaves. ‡ 1m (3ft), ↔ 1.5m (5ft). **'Bullata'** see 'Convexa'. **'Convexa'** ♀ ♂ syn. 'Bullata', is a dense, broad female shrub with purple-green stems bearing elliptic, curved, glossy, mid- to dark green leaves, 1–2cm (½–¾in) long. Produces abundant glossy black fruit. ‡ to 2.5m (8ft), ↔ 2m (6ft). **'Fukarin'** see 'Shiro-Fukurin'. **'Golden Gem'** ♀ is a compact, low-growing, shy-flowering female shrub with golden yellow leaves, 1–2cm (½–¾in) long, turning yellow-green in summer. Bears black berries. Best grown in full sun. ‡ 1.1m (3½ft), ↔ 1.2–1.5m (4–5ft). **'Ivory Tower'** is a fast-growing, upright female shrub with late-ripening, ivory-white fruit. ‡ 4m (12ft), ↔ 3m (10ft). **f. latifolia** ♀ syn. 'Latifolia', is a shrub or small tree with oval, minutely scalloped leaves, 2–4cm (¾–1½in) long; female plants produce black berries. ‡ to 1.5m (5ft). **'Luteovariegata'** see 'Variegata'. **'Mariesii'** ♀ syn. var. *nummularioides*, *I. mariesii*, is a very slow-growing, erect female shrub with tiny, broadly ovate to rounded, entire, dark green leaves, to 6mm (¼in) long. Produces black fruit. ‡ 60–100cm (24–36in) after many years. var. *nummularioides* see 'Mariesii'. **'Shiro-Fukurin'** syn. 'Fukarin', *I. 'Snow Flake'*, is an upright female shrub bearing ovate, grey-green leaves with cream markings. Produces black fruit. ‡ to 4m (12ft). **'Variegata'**, syn. 'Aureovariegata', 'Luteovariegata', is a shy-flowering male shrub with elliptic leaves, spotted or marked yellow. Frequently reverts to green-leaved form. ‡ to 4m (12ft).

**'Wiesmoor Silber'** ♂ is a female sport of 'Convexa', with elliptic, silver-margined, greyish green leaves and black berries. ‡ 2.5m (8ft), ↔ 2m (6ft). ***I. decidua*** ♂ (Possum haw). Upright, deciduous shrub, late to come into leaf in spring. Oval or narrowly obovate, scalloped, bright green leaves, 2.5–4cm (1–1½in) long, are crowded on short lateral spurs. Bears red or orange, occasionally yellow fruit, 4–9mm (⅓–⅓½in) across. ‡ to 2–6m (6–20ft). C. and S.E. USA. \*\*\*.



*I. dimorphophylla*. Evergreen, rounded shrub with ovate, entire, spine-tipped, glossy, dark green leaves, 2–3cm (¾–1¼in) long, elliptic and very spiny when young. Bears small red fruit, 3mm (⅓in) across. ‡1.5m (5ft), ↔1m (3ft). Japan (Liuku Islands). \*

*I. dipyrrena* ♂ (Himalayan holly).

Dense, upright, evergreen tree bearing oblong or elliptic, leathery, dull green leaves, 5–11cm (2–4½in) long, with abundant spines when young, fewer when mature. Bears red fruit, 6–8mm (¼–⅓in) across. ‡15m (50ft), ↔12m (40ft). E. Himalayas, W. China. \*\*\*

*I. 'Elegance'* ♂ Narrowly conical, evergreen female tree, sometimes spindly when mature, with brittle branches and elliptic, spiny, dark green leaves, 2–5cm (¾–2in) long. Bears red fruit, to 10mm (½in) across. May be short-lived. *I. 'Accent'* is the pollinating male. ‡6m (20ft), ↔3m (10ft). \*\*

*I. fargesii* ♂ Broadly conical, evergreen shrub or tree with oblong to linear-lance-shaped, leathery, dull, dark green leaves, 6–12cm (2½–5in) long. Bears scarlet fruit, 4–7mm (⅓–¼in) across. ‡12m (40ft), ↔6m (20ft). Tibet, China (Hubei, Sichuan, Yunnan), Burma. \*\*

*I. glabra* (Gallberry, Inkberry). Erect, evergreen shrub with narrowly obovate to inversely lance-shaped, glossy, dark green leaves, 2–5cm (¾–2in) long, pitted beneath. Bears black, occasionally white fruit, 4–8mm (⅓–⅓in) across. ‡3m (10ft). E. North America. \*\*\*

*I. 'Indian Chief'* ♂ (*I. cornuta* x *I. pernyi*). Compact, upright, evergreen female shrub with almost stalkless, diamond-shaped to nearly rectangular, glossy, dark green leaves, to 10cm (4in) long, with 5 prominent spines. Bears red fruit, 8mm (⅓in) across. ‡2–3m (6–10ft), ↔1.5–2.5m (5–8ft). \*\*\*

*I. insignis* see *I. kingiana*.

*I. 'John T. Morris'* ♂ (*I. cornuta* x *I. pernyi*). Dense, conical, evergreen male shrub. Bears almost stalkless, glossy, diamond-shaped to nearly rectangular, dark green leaves, 4–6cm (1½–2½in) long, with 5 spines. Pollinating male for *I. 'Lydia Morris'*. ‡7m (22ft), ↔5m (15ft). \*\*\*

*I. kingiana* ♂ syn. *I. insignis*. Upright, evergreen tree with stout, silvery grey branches. Bears elliptic-lance-shaped to ovate, leathery, glossy, mid- to dark green leaves, 15–20cm (6–8in) long, very spiny when young, slightly toothed or entire when mature. Young seedlings have waxy leaves, 6–8mm (¼–⅓in) long, with marginal spines pointing in all directions. Bears large clusters of bright red berries, 5mm (¼in) across. ‡5m (15ft), ↔4m (12ft). E. Himalayas, China (Yunnan). \*\*

*I. x koehneana* ♂ (*I. aquifolium* x *I. latifolia*). Narrowly conical, evergreen shrub with olive-green twigs. Large, glossy, mid-green leaves are oblong to elliptic, 8–12cm (3–5in) long, with large marginal spines. Produces red fruit, 8mm (⅓in) across. ‡7m (22ft), ↔5m (15ft). Garden origin. \*\*\*. 'Chestnut Leaf' ♂ ♀ is female, with light or yellowish green leaves and red berries.

*I. latifolia* ♂ Narrowly conical, evergreen shrub with stout, olive-green twigs and oblong or oblong-ovate, entire or spine-toothed, leathery, glossy, dark green leaves, 8–18cm (3–7in) long. Yellowish green flowers are borne in late spring and early summer, followed by abundant orange-red berries, 7mm (¼in) across. ‡7m (22ft), ↔5m (15ft). China, Japan. \*\*

*I. 'Lydia Morris'* ♂ (*I. cornuta* x *I. pernyi*). Dense, conical, evergreen female shrub with almost stalkless, diamond-shaped to nearly rectangular, glossy, black-green leaves, 4–8cm (1½–3in) long, with 5 spines. Produces red fruit, 8mm (⅓in) across, which is often hidden by the foliage. *I. 'John T. Morris'* is the pollinating male. ‡7m (22ft), ↔5m (15ft). \*\*\*

*I. macrocarpa* ♂ Rounded to broadly spreading, deciduous tree with spur-like branchlets and elliptic or ovate-elliptic, shallowly toothed, bright green leaves, 7–11cm (3–4½in) long. In late spring, bears greenish white flowers, followed by flattened, spherical, mid-green berries, 1–2cm (½–¾in) across, maturing to black. ‡17m (56ft), ↔12m (40ft). S. and S.W. China. \*\*\*

*I. mariesii* see *I. crenata* 'Mariesii'.

*I. x meserveae* (*I. aquifolium* x *I. rugosa*) (Blue holly). Dense, vigorous, erect to spreading, evergreen shrub, resembling *I. aquifolium*. Bears usually small, elliptic to ovate, spiny, glossy, bluish green leaves, 2–5cm (¾–2in) long. White to pinkish white flowers appear in late spring, followed on female plants by glossy red fruit, to 7mm (¼in) across. ‡5m (15ft), ↔3m (10ft). Garden origin. \*\*\*. 'Blue Angel' ♀ is a slow-growing, compact female shrub with dark purple stems and elliptic, glossy, dark bluish green leaves, 4.5cm (1¾in) long. Least hardy of the blue hollies. ‡4m (12ft), ↔2m (6ft). 'Blue Boy' is a spreading male shrub with purplish green stems and ovate, glossy, dark greenish blue leaves, 4–4.5cm (1½–1¾in) long. ‡3m (10ft). 'Blue

Girl' is the female counterpart of 'Blue Boy', with abundant red berries. ‡3m (10ft). 'Blue Maid' is a dense female shrub producing an abundance of fruit. Probably the hardiest of the blue hollies. ↔4m (12ft). 'Blue Prince' ♂ is similar to 'Blue Boy', with purplish green stems bearing glossy, bright green leaves. ↔4m (12ft). 'Blue Princess' ♂ ♀ is similar to 'Blue Girl', with larger, glossier leaves, 4.5–6cm (1¾–2½in) long, and more abundant fruit. ‡3m (10ft).

*I. 'Nellie R. Stevens'* ♂ (*I. aquifolium* x *I. cornuta*). Vigorous, conical, evergreen female tree with oblong-ovate, sparsely spiny, highly glossy, dark green leaves, 5–8cm (2–3in) long. Produces abundant shiny scarlet fruit, 8–10mm (⅓–½in) across. ‡7m (22ft), ↔4m (12ft). \*\*\*

*I. opaca* ♂ (American holly). Erect, evergreen, large shrub or tree with oblong-elliptic, spine-toothed or entire, leathery, matt, dark green leaves, 5–10cm (2–4in) long. Bears crimson, or occasionally yellow or orange fruit, 6mm (¼in) across. ‡15m (50ft), ↔7m (22ft). C. and E. USA. \*\*\*. 'Morgan Gold' is compact and free fruiting, with bright yellow berries.

*I. pedunculosa* ♂ Upright, evergreen tree or shrub with elliptic to ovate, spineless, glossy, dark green leaves, 4–8cm (1½–3in) long, bronze-tinted when young. Bears bright red fruit, 8mm (⅓in) across, on long stalks. ‡10m (30ft), ↔7m (22ft). China, Taiwan, Japan. \*\*\*

*I. perado* ♂ Upright, evergreen shrub or small tree with ovate to oblong or lance-shaped, toothed or entire, leathery, thorny, glossy, dark green leaves, 6–10cm (2½–4in) long. Bears red fruit, 8mm (⅓in) across. ‡6–10m (20–30ft), ↔7m (22ft). Canary Islands (Gomera, Tenerife), Azores. \*\*\*. 'Aurea' see *I. x altaclerensis* 'Belgica Aurea'. subsp. *platyphylla*, syn.

*I. platyphylla*, has broadly ovate leaves, 10–15cm (4–6in) long.

*I. pernyi* ♂ Upright, evergreen shrub with almost stalkless, diamond-shaped to nearly rectangular, glossy, dark green leaves, 2–3cm (¾–1¼in) long, with 5 spines. Bears yellowish flowers in late spring, followed by bright red fruit, 6–8mm (¼–⅓in) across. ‡9m (28ft), ↔3m (10ft). W. and C. China (Gansu, Hubei). \*\*\*. var. *veitchii* has larger and broader leaves, 4–5cm (1½–2in) long, with 3–5 spines on each side. China (Hubei).

*I. x meserveae* (Blue holly). Dense, vigorous, erect to spreading, evergreen shrub, resembling *I. aquifolium*. Bears usually small, elliptic to ovate, spiny, glossy, bluish green leaves, 2–5cm (¾–2in) long. White to pinkish white flowers appear in late spring, followed on female plants by glossy red fruit, to 7mm (¼in) across. ‡5m (15ft), ↔3m (10ft). Garden origin. \*\*\*. 'Blue Angel' ♀ is a slow-growing, compact female shrub with dark purple stems and elliptic, glossy, dark bluish green leaves, 4.5cm (1¾in) long. Least hardy of the blue hollies. ‡4m (12ft), ↔2m (6ft). 'Blue Boy' is a spreading male shrub with purplish green stems and ovate, glossy, dark greenish blue leaves, 4–4.5cm (1½–1¾in) long. ‡3m (10ft). 'Blue



*Ilex kingiana*

I



*Ilex 'Elegance'*



*Ilex fargesii*



*Ilex 'John T. Morris'*



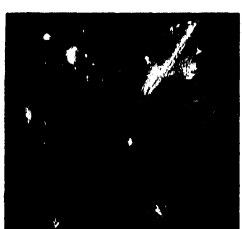
*Ilex x koehneana* 'Chestnut Leaf'



*Ilex latifolia*



*Ilex macrocarpa*



*Ilex x meserveae* 'Blue Prince'



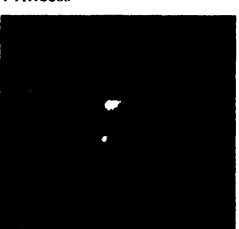
*Ilex x meserveae* 'Blue Princess'



*Ilex opaca*



*Ilex pedunculosa*



*Ilex pernyi*



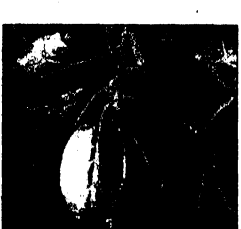
*Ilex purpurea*



*Ilex 'Sparkleberry'*



*Ilex verticillata*



*Ilex yunnanensis*



*I. platyphylla* see *I. perado* subsp. *platyphylla*.

*I. purpurea* [ ] ♂ syn. *I. chinensis* of gardens. Conical, evergreen tree with elliptic-lance-shaped, occasionally ovate, mid- to dark green leaves, 5–11cm (2–4½in) long, purplish green when young. Bears ellipsoid, glossy red fruit, to 12mm (½in) across. ‡ to 13m (43ft), ↔ 4m (12ft). China, Japan. \*\*\*

*I. 'September Gem'* ♂ (*I. x aquipermyi* x *I. ciliospinosa*). Conical, evergreen female shrub bearing ovate, glossy, dark green leaves, 4–5cm (1½–2in) long, with insignificant spiny teeth. Bears bright red berries, 6–8mm (¼–⅓in) across. ‡ 3m (10ft), ↔ 2m (6ft). \*\*

*I. serrata* (Japanese winterberry). Deciduous, bushy shrub with slender, purple twigs and elliptic, finely toothed, dull green leaves, 4–8cm (1½–3in) long, downy on both surfaces. Bears bright pink flowers, followed by bright red, occasionally yellow or white fruit, 4–5mm (¼–⅓in) across. Often used for bonsai. ‡ to 5m (15ft), ↔ 3m (10ft). China (Sichuan), Japan. \*\*

*I. 'Snow Flake'* see *I. crenata* 'Shiro-Fukurin'.

*I. 'Sparkleberry'* [ ] ♂ (*I. serrata* x *I. verticillata*). Vigorous (especially when young), deciduous, upright female shrub or small tree. Bears ovate, toothed, dark green leaves, 4–10cm (1½–4in) long, which persist until early winter.

Produces glossy red berries, 6mm (¼in) across. *I. 'Apollo'* is the male pollinator. ‡ 5m (15ft), ↔ 4m (12ft). \*\*\*

*I. verticillata* [ ] ♂ (Black alder, Winterberry). Deciduous tree, usually a suckering shrub in cultivation. Leaves are obovate or lance-shaped, toothed, bright green, 4–10cm (1½–4in) long, with long, sharp-pointed tips, softly hairy beneath. In mid-spring, produces white flowers, followed by stalkless, spherical, dark red to scarlet, sometimes orange or yellow fruit, 4–5mm (¼–⅓in) across. ‡ 5m (15ft). E. North America. \*\*\* Dwarf male selections are available for pollinating cultivars that flower in early to mid-spring, such as 'Nana'. Late male selections are also available to pollinate late-flowering cultivars, such as 'Winter Red'. 'Nana', syn. 'Red Sprite', is a small, rounded female shrub with ovate, mid-green leaves, 3–6cm (1¼–2½in) long. Bears abundant large, bright red fruit, to 12mm (½in) across. ‡ 60–120cm (2–4ft), ↔ 1–1.5m (3–5ft). 'Red Sprite' see 'Nana'. 'Winter Red' is a robust, broad female shrub with dark green leaves. Produces long-lasting, intensely red berries, 8mm (⅓in) across, which persist until spring. ‡ 2.5–3m (8–10ft), ↔ 3m (10ft).

*I. 'Washington'* ♂ (*I. ciliospinosa* x *I. cornuta*). Erect, conical, evergreen female shrub with ovate to oblong, spiny, glossy, light green leaves, 4–5cm (1½–2in) long. Bears red fruit. ‡ 4m (12ft), ↔ 2m (6ft). \*\*\*

*I. yunnanensis* [ ] Evergreen, upright to rounded shrub with downy branchlets and ovate or ovate-lance-shaped, scalloped to toothed, glossy, dark green leaves, 2–3.5cm (¾–1½in) long. Bears red fruit, 6mm (¼in) across. ‡ 4m (12ft). N. Burma, China (Sichuan, Hubei). \*\*

▷ *Iliamna* see *Sphaeralcea*

## ILICCIUM

ILICACEAE

Genus of about 40 species of aromatic, evergreen shrubs and trees from woodland in S.E. Asia, S.E. USA, and the West Indies. They are cultivated for their thick, glossy leaves, borne alternately or in near-whorls, their unusual flowers, which are composed of numerous tepals, and their woody, star-shaped fruits. Where temperatures fall below -5°C (23°F), grow in a cool greenhouse. Elsewhere, grow in a woodland garden or shrub border.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, shaded from the hottest sun, or in bright filtered light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moist but well-drained, humus-rich, lime-free soil, in full sun or partial shade. Shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Take semi-ripe cuttings in summer. Layer in summer.

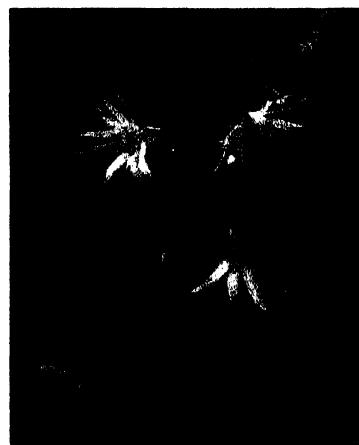
• **PESTS AND DISEASES** Trouble free.

*I. anisatum* [ ] ♂ syn. *I. religiosum* (Chinese anise). Conical, evergreen shrub or small tree bearing oval to lance-shaped, blunt-tipped, glossy, dark green leaves, to 12cm (5in) long. Star-shaped, fragrant, yellow-green, later creamy white flowers, to 2.5cm (1in) across, are produced in mid-spring. ‡ to 8m (25ft), ↔ 6m (20ft). China, Japan, Taiwan. \*\*

*I. floridanum* ♂ (Purple anise). Bushy, evergreen shrub bearing narrowly oval to lance-shaped, glossy, dark green leaves, to 10cm (4in) long. Nodding, star-shaped, fragrant, red to red-purple flowers, to 5cm (2in) across, are borne in late spring and early summer. ‡ 2.5m (8ft). S.E. USA. \*\*

*I. religiosum* see *I. anisatum*.

*I. verum* ♂ (Chinese anise, Star anise). Small, rounded, evergreen tree with inversely lance-shaped to narrowly elliptic, sharply tapered, glossy, dark green leaves, to 15cm (6in) long. Star-shaped flowers, 1.5cm (½in) across, with pink- or red-flushed yellow tepals, are borne in early summer, followed by glossy, red-brown fruit. ‡ 18m (60ft), ↔ 6m (20ft). China, Vietnam. \*\*



*Illicium anisatum*

## IMPATIENS

Balsam, Busy Lizzie

BALSAMINACEAE

Genus of about 850 species of erect annuals, and evergreen perennials and subshrubs, found in a great variety of often damp habitats, near streams, lakes, or in woodland, throughout tropical and warm-temperate regions (except Australia, New Zealand, and South America). All have brittle, almost succulent stems and lush, fleshy, semi-translucent foliage; leaves vary from alternate to opposite or whorled.

Flowers are asymmetrical, spurred and sometimes hooded, 5-petalled, borne singly or in clusters or racemes, and are followed by explosive seed capsules. Most are excellent as houseplants and summer bedding plants, particularly in light shade, and provide long-lasting summer colour in a window-box or container on a patio. *I. walleriana* cultivars and *I. balsamina* are free-flowering and tolerate shade. Many, including some New Guinea Group hybrids, are also grown for their bronze- or yellow-flushed or variegated foliage. Grow hardy perennials in a woodland garden. In frost-prone areas, grow tender perennials in a temperate or warm greenhouse, or as houseplants. All will self-seed in favourable conditions.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in full to bright filtered light, with moderate to high humidity. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade, with shelter from wind.

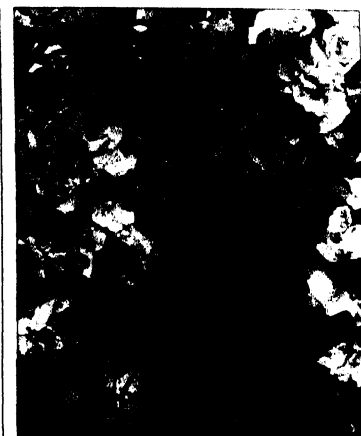
• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in early spring. For hardy species, sow seed *in situ* in late spring. Root softwood cuttings of *I. walleriana* and New Guinea Group cultivars in spring or early summer.

• **PESTS AND DISEASES** Seedlings are prone to damping off. Grey mould (*Botrytis*) may affect flower buds if conditions are too damp. Red spider mites, whiteflies, vine weevil, and aphids may be troublesome under glass.

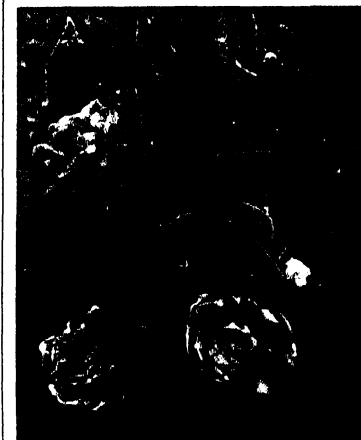
*I. balsamina*. Sparsely branched, slightly hairy annual with alternate, narrowly lance-shaped to narrowly elliptic, deeply toothed, pale green leaves, 2.5–9cm (1–3½in) long. From summer to early autumn, cup-shaped, hooded, pink, red, purple, or white flowers, 2.5–5cm (1–2in) across, are produced either singly in the leaf axils or in small clusters of 2 or 3. ‡ to 75cm (30in), ↔ 45cm (18in). India, China, Malaysia. ☉ (min. 5°C/41°F).

'Blackberry Ice' produces abundant double purple flowers, splashed white; ‡ to 70cm (28in). **Camellia-flowered Series** [ ] cultivars have large, double, white-mottled, pink or red flowers; ‡ to 70cm (28in). **Tom Thumb Series** [ ] cultivars are dwarf, with large, double, pink, scarlet, violet, or white flowers, 5–6cm (2–2½in) across; ‡ to 30cm (12in).

*I. glandulifera*, syn. *I. roylei* (Policeman's helmet). Tall, fast-growing



*Impatiens balsamina* Camellia-flowered Series

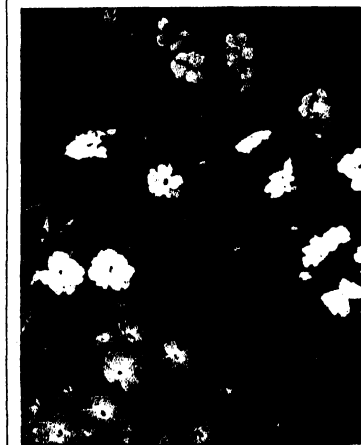


*Impatiens balsamina* Tom Thumb Series

annual with thick, sparsely branched, red-tinged stems and whorls of ovate to lance-shaped, toothed, light green leaves, to 23cm (9in) long. Long-stalked racemes of 3–15 nodding, hooded, scented, purple, rose-pink, or white flowers, to 5cm (2in) long, spotted yellow or brown inside, are borne in summer, followed by explosive seed capsules. ‡ 1–2m (3–6ft), ↔ to 1m (3ft). Himalayas. \*\*\*

*I. New Guinea Group*. Subshrubby, hybrid perennials, derived from *I. hawkeri* and other species, usually grown as annuals, valued for their foliage and brightly coloured flowers.

☉ (min. 10°C/50°F). 'Spectra' [ ] is a seed-raised cultivar with opposite or whorled, lance-shaped, toothed, mid-green leaves, 8–15cm (3–6in) long.



*Impatiens* New Guinea Group 'Spectra'



*Impatiens niamniensis* 'Congo Cockatoo'

From summer to autumn, bears abundant flattened, deep rose-pink, scarlet-red, salmon-pink, lavender, or white flowers, with some bicolours, to 6cm (2½in) across. †35cm (14in), ↔ 30cm (12in). 'Tango' is a seed-raised cultivar with opposite or whorled, lance-shaped, toothed, dark bronze-green leaves, 8–15cm (3–6in) long. Bears abundant flattened, 5-petalled, tangerine-orange flowers, to 5cm (2in) across, from summer to autumn. †35cm (14in), ↔ 30cm (12in).

***I. niamniensis* 'Congo Cockatoo'**

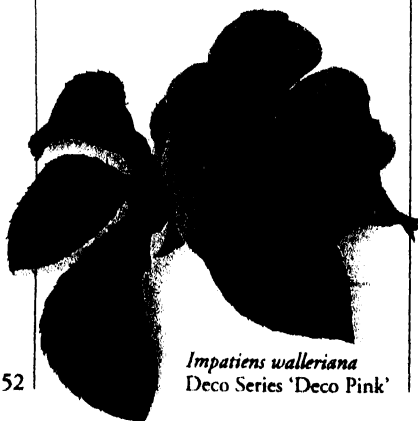
■ Erect, short-lived perennial with spirally arranged, ovate or elliptic, scalloped, dark green leaves, 5–22cm (2–9in) long. Narrow, hooded, bright red and yellow flowers, 4cm (1½in) long, each with a distinctive hooked spur, are borne singly or in small clusters of 2–8 in the leaf axils at any time of year. †90cm (36in), ↔ 35cm (14in). ☼ (min. 15°C/59°F)

*I. oliveri* see *I. sodenii*.

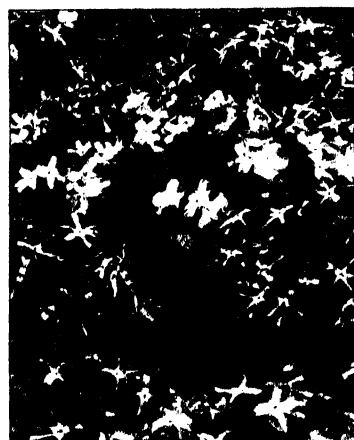
*I. repens* ♀ Creeping or trailing perennial with alternate, kidney-shaped, scalloped leaves, to 2.5cm (1in) long. Solitary, hooded, clear yellow flowers, 4cm (1½in) long, are borne in the leaf axils from summer to autumn. Good for hanging baskets. †19cm (7in), ↔ 30cm (12in). India, Sri Lanka. ☼ (min. 13°C/55°F)

*I. roylei* see *I. glandulifera*.

*I. sodenii*, syn. *I. oliveri*. Erect, shrubby perennial with whorls of 6–8 inversely lance-shaped, toothed leaves, 20cm (8in) long, with pale green midribs. Long-stalked, pale lilac, pink, or sometimes white flowers, 6cm (2½in) across, are borne mainly in summer. †3m (10ft), ↔ 1.4m (4½ft). E. tropical Africa. ☼ (min. 10°C/50°F)



*Impatiens walleriana*  
Deco Series 'Deco Pink'



*Impatiens walleriana* 'Starbright'

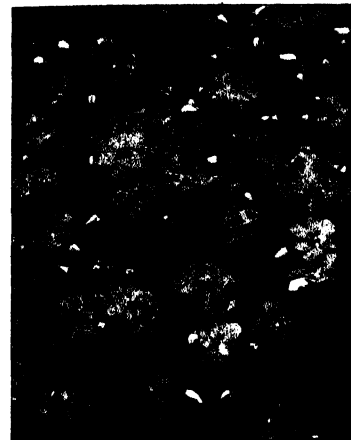
*I. tinctoria*. Vigorous, erect, tuberous perennial with spirally arranged, oblong, ovate, or oblong-lance-shaped, scalloped or toothed leaves, 8–23cm (3–9in) long. Racemes of long-stalked, scented white flowers, 6cm (2½in) across, the throats marked with pink or magenta, and each with a slender spur, are borne freely from summer to autumn. †2.2m (7ft), ↔ 1m (3ft). E. Africa. \*

*I. walleriana* (Busy Lizzie). Variable subshrubby perennial, usually grown as an annual, with light green to red-flushed stems and spirally arranged, elliptic to lance-shaped, slightly toothed, scalloped, light to bronze-green or red-flushed leaves, to 12cm (5in) long. In summer, the many cultivars from the species produce flattened, slender-spurred flowers, 2.5–6cm (1–2½in) across, in white, many shades of orange, pink, scarlet, red, crimson, violet, purple, and lavender-blue, as well as bicolours. †↔ to 60cm (24in). ☼ (min. 10°C/50°F). **Accent Series** ♀ cultivars are compact, with flowers in white and a very wide range of colours, including shades of orange, pink, crimson, wine-red, lilac, violet and lavender-blue, some



*Impatiens walleriana* Swirl Series

with central stars; † to 20cm (8in). **Blitz 2000 Series** cultivars are tall and many-branched, with dark green foliage and flowers to 6cm (2½in) across, in white and shades of orange, pink, red, and violet; † to 35cm (14in). **Confection Series** cultivars bear mostly double and semi-double flowers in shades of orange, pink, and red, and have deep green foliage. **Deco Series** cultivars have bronze-green leaves and flowers in shades of orange, pink, red, and violet; † to 20cm (8in). **Deco Series 'Deco Pink'** ■ has mid-pink flowers, each with a deep pink eye. **Expo Series** cultivars are compact and uniform, with flowers to 6cm (2½in) across, in white and shades of orange, pink, red, and violet, including bicolours; † to 20cm (8in). **Florette Star Series** cultivars are low-growing, and have flowers in shades of orange, pink, red, and violet, or mixtures, each with a central white star; † 15–20cm (6–8in). **Impulse Series** cultivars are in a wide colour range, including pastel colours and shades of violet, lilac, orange, pink, and red, and some bicolours. 'Mega Orange Star' has orange flowers, to 6cm (2½in)



*Impatiens walleriana* Tempo Series  
'Tempo Lavender'

across, each with a central white star; † 20–25cm (8–10in). 'Starbright' ■ has flowers to 6cm (2½in) across, in rose-pink, red, orange, and violet-blue, each with a central white star; † to 20cm (8in). **Super Elfin Series** ■ ♀ cultivars are spreading and flat, with a wide colour range, including pastel colours and shades of violet, orange, pink and red; † to 25cm (10in). **Swirl Series** ■ cultivars have pink-and-orange flowers margined in rose-red; † 15–20cm (6–8in). **Tempo Series** ♀ cultivars have a wide colour range, including shades of violet, lavender-blue, orange, pink, and red, as well as bicolours and picotees; † to 23cm (9in). **Tempo Series 'Tempo Lavender'** ■ has lavender-pink flowers.

## IMPERATA

GRAMINEAE/POACEAE

Genus of 6 species of slender-stemmed, rhizomatous, perennial grasses from tropical and warm-temperate, open grassland in Japan. They have flat, linear, pointed leaves and erect, spike-like panicles of short, silvery spikelets, borne in summer. Variegated cultivars



*Imperata cylindrica* 'Rubra'

are grown for their striking foliage. Grow at the front of a mixed or herbaceous border, in a light woodland garden, or in containers. All need long, warm summers to flower well.

- **HARDINESS** Hardy to -10°C (14°F).
- **CULTIVATION** Grow in moist but well-drained, humus-rich soil in full sun or light dappled shade. In cold climates, provide a winter mulch, especially when plants are young.
- **PROPAGATION** Divide in spring or early summer.
- **PESTS AND DISEASES** Trouble free.

*I. cylindrica* 'Rubra' [■] syn. *I. cylindrica* 'Red Baron'. Slowly spreading, perennial grass forming loose clumps of flat, linear, mid-green leaves, to 50cm (20in) long, which quickly turn deep blood-red from the tips almost to the bases. Narrow, spike-like panicles, to 20cm (8in) long, of fluffy, silvery white spikelets, to 4.5cm (1½in) long, are produced in late summer. †40cm (16in), ↔ 30cm (12in) or more. \* \*

## INCARVILLEA

syn. AMPHICOME  
BIGNONIACEAE

Genus of 14 species of annuals and tap-rooted perennials from mountainous areas, some species in rocky sites, others in open grassland, in C. and E. Asia. They are cultivated for their exotic terminal racemes or panicles of tubular, trumpet-shaped, 2-lipped flowers, with 5 spreading petals. The flowers are supported on strong stems above the usually alternate, pinnate or pinnatisect leaves. Grow in a mixed or herbaceous border, or in a rock garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun, with some shade in summer. Does not tolerate excessive winter wet. Plant crowns 8–10cm (3–4in) deep; mulch in areas where ground remains frozen for long periods. Avoid damaging thick, fleshy roots.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Keep autumn-sown seedlings frost-free over winter. Seedlings take 3 years to flower except *I. arguta*, which usually flowers the same year. In spring, root basal stem cuttings of perennials, or divide with care.
- **PESTS AND DISEASES** May be attacked by slugs.



*Incarvillea delavayi*

*I. arguta* [■] Erect, woody-based perennial, often grown as an annual, with pinnate, dark green leaves, 5–20cm (2–8in) long, some basal and some arranged alternately on red-tinted stems; the leaflets, in 2–6 opposite pairs, are ovate, lance-shaped, or elliptic, and coarsely toothed. Racemes of 5–20 pendent, tubular, pink or white flowers, to 3.5cm (1½in) long, are produced in early and midsummer. †to 90cm (36in), ↔ 30cm (12in). W. Himalayas to W. China. \* \*

*I. delavayi* [■] Tap-rooted perennial with basal rosettes of pinnate, mid-green leaves, to 30cm (12in) long, divided into 6–11 pairs of oblong-lance-shaped, coarsely toothed leaflets, the terminal segment larger. Racemes of up to 10 tubular, widely trumpet-shaped, yellow-throated, deep rose-pink to purple flowers, to 8cm (3in) across, are borne in early and midsummer. †60cm (24in), ↔ 30cm (12in). China (Yunnan). \* \* \*. 'Bee's Pink' has pale pink flowers, to 10cm (4in) across; †30–45cm (12–18in), ↔ 20cm (8in).

*I. mairei* [■] Tap-rooted perennial with basal rosettes of pinnate, wrinkled, dark green leaves, 12–25cm (5–10in) long, composed of 4–7 pairs of ovate to oblong, finely toothed or scalloped leaflets, the terminal segment larger. In early summer, bears few-flowered racemes of widely trumpet-shaped, yellow-throated, purple-crimson flowers, 4–6cm (1½–2½in) across, with white-striped purple marks on the lower lobes. †15–50cm (6–20in), ↔ 30cm (12in). Himalayas to W. Nepal, S.W. China. \* \* \*. 'Frank Ludlow' has crimson-

pink flowers; †10cm (4in), ↔ 15cm (6in). var. *grandiflora* has leaves with only 1 or 2 pairs of leaflets. Flowers are usually solitary but slightly larger than the species and deeper crimson-pink; †10–15cm (4–6in), ↔ 20cm (8in).

'Nyoto Sama' has smooth leaves; bears large, bright pink flowers, 8cm (3in) across, in late spring; ↔ 15cm (6in).

*I. olgae*. Tap-rooted, woody-based, subshrubby perennial, with several sparsely branched stems bearing opposite, pinnate, mid-green leaves, 5–15cm (2–6in) long, with 3 or 4 pairs of elliptic, slightly toothed leaflets. Loose racemes of 3–10 tubular, rose-pink or paler pink, sometimes white flowers, to 3.5cm (1½in) across, are produced in early and midsummer. †to 1.2m (4ft), ↔ 30cm (12in). Turkestan, Afghanistan. \* \* \*

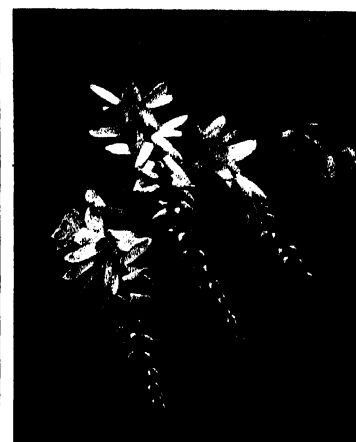
- ▷ **Incense cedar**, Chilean see *Austrocedrus chilensis*
- ▷ **Incense plant** see *Calomeria*, *C. amaranthoides*, *Olearia moschata*
- ▷ **Inch plant**, Striped see *Callisia elegans*
- ▷ **Indian blanket** see *Gaillardia pulchella*
- ▷ **Indian physic** see *Gillenia trifoliata*
- ▷ **Indian root** see *Asclepias curassavica*
- ▷ **Indian shot plant** see *Canna*
- ▷ **India rubber fig** see *Ficus elastica*
- ▷ **India rubber tree** see *Ficus elastica*
- ▷ **Indigo**,  
Bastard see *Amorpha fruticosa*  
False see *Baptisia*  
Wild see *Baptisia*

## INDIGOFERA

LEGUMINOSAE/PAPILIONACEAE

Genus of 700 or more species of evergreen or deciduous trees and shrubs, annuals, and herbaceous perennials, widely distributed in mainly tropical and subtropical regions worldwide, in a variety of habitats. They are grown for their small, pea-like flowers and elegant foliage. The flowers are rarely solitary, often borne in loose or dense, terminal or axillary racemes or spikes. The usually pinnate leaves are arranged alternately. Grow in a shrub border or train against a warm, sunny wall; low-growing species are useful in rock gardens.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 1, or 13 if wall-trained; pruning group 6 or 7 in areas with severe winters.



*Indigofera decora*

- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root basal cuttings in spring, greenwood cuttings in late spring, and semi-ripe cuttings in early or midsummer.
- **PESTS AND DISEASES** Trouble free.

*I. amblyantha* [■] Deciduous shrub bearing pinnate leaves, to 15cm (6in) long, divided into 7–11 narrowly ovate, bright green leaflets. Produces slender, upright racemes, to 11cm (4½in) long, of small, pea-like pink flowers, to 6mm (¼in) across, from summer to early autumn. †2m (6ft), ↔ 2.5m (8ft). China. \* \* \*

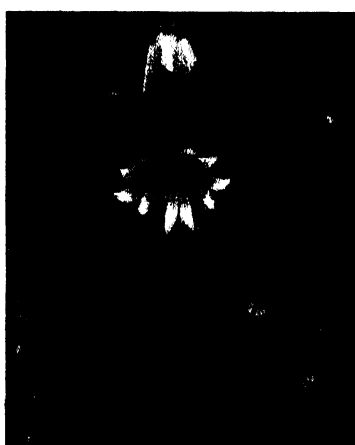
*I. decora* [■] Spreading deciduous shrub with arching branches bearing pinnate leaves, to 20cm (8in) long, each with 7–13 narrowly oblong, glossy, dark green leaflets. Erect racemes, to 20cm (8in) long, of pea-like white flowers, heavily suffused pale crimson, to 2cm (¾in) across, are produced in mid- and late summer. Suitable for a rock garden. †to 60cm (24in), ↔ 90cm (36in). China, Japan. \* \*

*I. dielsiana* [■] Upright, open shrub with pinnate, dark green leaves, to 12cm (5in) long, each with 7–11 pairs of oval leaflets. Bears erect racemes, to 15cm (6in) long, of pea-like, pale pink flowers, 1.5cm (½in) across, from early summer to early autumn. †to 1.5m (5ft). S.W. China. \* \*

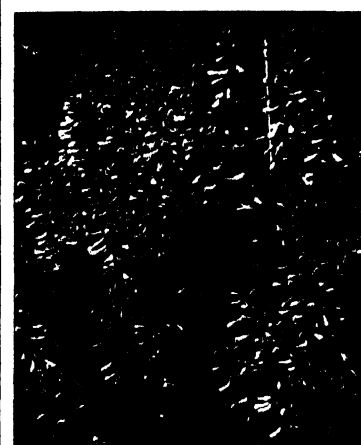
*I. gerardiana* see *I. heterantha*.  
*I. hebeptala*. Upright shrub with pinnate, mid-green leaves, 15–20cm (6–8in) long, each with 7–13 elliptic, elliptic-oblong, or rarely ovate leaflets, softly hairy beneath. In late summer



*Incarvillea arguta*



*Incarvillea mairei*



*Indigofera amblyantha*



*Indigofera dielsiana*

*Indigofera heterantha*

and early autumn, produces racemes, 7–20cm (3–8in) long, of pea-like, dark carmine-red flowers, 1.5cm (½in) across. ↑ 1.8m (6ft), ↓ 1m (3ft). Himalayas. \*\*\*

**I. heterantha** ■ ♀ syn. *I. gerardiana*. Spreading shrub with arching branches and pinnate, grey-green leaves, to 10cm (4in) long, with up to 21 obovate to oval leaflets. From early summer to early autumn, bears dense, erect racemes, to 15cm (6in) long, of pea-like, purple-pink flowers, 1.5cm (½in) across. ↑ 2–3m (6–10ft). N.W. Himalayas. \*\*\*

**I. kirilowii**. Spreading shrub or subshrub with upright shoots and pinnate, bright green leaves, to 15cm (6in) long, composed of up to 11 broadly ovate to almost diamond-shaped leaflets. In early and midsummer, produces pea-like, rose-pink flowers, to 2cm (¾in) across, in dense, upright racemes, to 13cm (5in) long. ↑ 75cm (30in), ↔ 1m (3ft). N. China, Korea, S. Japan. \*\*\*

**I. potaninii**. Spreading shrub with pinnate leaves, to 8cm (3in) long, with 5–9 elliptic-oblong, grey-green leaflets. Produces slender, upright racemes, to 13cm (5in) long, of small, pea-like pink flowers, to 1cm (½in) across, from summer to early autumn. ↑ 2m (6ft), ↔ 2.5m (8ft). S.W. China. \*\*\*

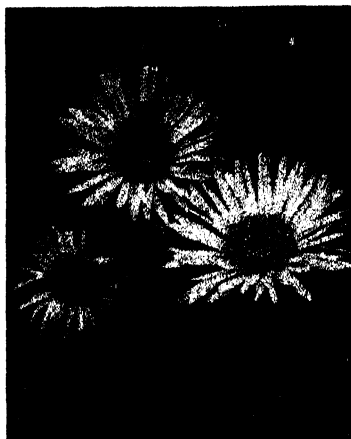
▷ **Inkberry** see *Ilex glabra*

## INULA

ASTERACEAE/COMPOSITAE

Genus of approximately 100 species of herbaceous perennials, some subshrubby, and a few annuals and biennials, from Europe and temperate and subtropical Africa and Asia. They are found in a wide range of habitats from dry, rocky, montane sites to moist, shady, lowland areas; most grow in well-drained, sunny places. They usually have large basal leaves and progressively smaller stem leaves, arranged alternately. The daisy-like flowerheads are flat, with numerous narrow yellow ray-florets and tubular disc-florets. They are solitary or borne in small panicles or corymbs.

Low-growing species, such as *I. ensifolia* 'Compacta', are suitable for a rock garden. Tall, robust species, such as *I. magnifica* and *I. racemosa*, are ideal for a wild garden. Grow *I. helenium* in a herb garden. Rhizomatous species may become invasive.

*Inula ensifolia*

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow most species in deep, fertile, moist but well-drained soil in full sun. *I. magnifica* will grow in boggy conditions, *I. helenium* tolerates partial shade, and *I. hookeri* prefers partial shade. Taller species may need support.

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide perennials in spring or autumn.

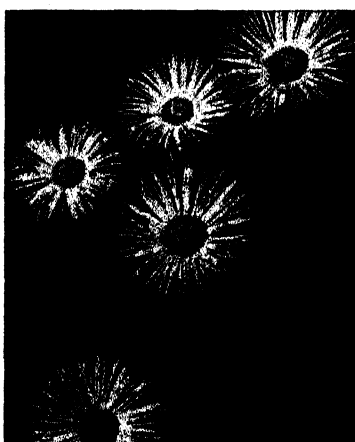
• **PESTS AND DISEASES** Powdery mildew may be a problem if growing conditions are too dry.

**I. afghanica** of gardens see *I. magnifica*.

**I. ensifolia** ■ Dense, bushy, slender-stemmed, rhizomatous perennial. Bears stalkless, linear-lance-shaped or lance-shaped, entire, mid-green leaves, to 9cm (3½in) long, with finely hairy margins. In mid- and late summer, abundant golden yellow flowerheads, 2–3cm (¾–1¼in) or more across, are produced singly or in small corymbs. ↑ 25–60cm (10–24in), ↔ 30cm (12in). Caucasus. \*\*\*. 'Compacta' is a dwarf cultivar with deep golden yellow flowerheads; suitable for a rock garden; ↑ to 15cm (6in).

**I. glandulosa** see *I. orientalis*.

**I. helenium** (Elecampane). Robust, rhizomatous perennial with stout, furrowed, downy stems bearing basal rosettes of ovate or ovate-elliptic, toothed, mid-green leaves, to 80cm (32in) long, densely woolly beneath and with wavy margins. Bright yellow flowerheads, to 8cm (3in) across, are produced singly or in lax corymbs in mid- and late summer. Roots are used

*Inula hookeri**Inula royleana*

medicinally as an expectorant. ↑ 0.9–2m (3–6ft), ↔ 90cm (36in). Europe to W. Asia. \*\*\*

**I. hookeri** ■ Clump-forming perennial with creeping roots and numerous willowy, softly hairy stems bearing ovate to oblong-lance-shaped, minutely toothed, hairy, mid-green leaves, 8–15cm (3–6in) long. Pale yellow flowerheads, 4–8cm (1½–3in) across, are borne singly or in clusters of 2 or 3, with narrow ray-florets, brownish yellow disc-florets, and broad, very hairy involucre bracts, from late summer to mid-autumn. ↑ 60–75cm (24–30in), ↔ 60cm (24in) or more. Himalayas. \*\*\*

**I. macrocephala** of gardens see *I. royleana*.

**I. magnifica**, syn. *I. afghanica* of gardens. Robust, clump-forming perennial bearing hairy stems, with dark purple streaks along their lengths, and elliptic-ovate, dark green leaves, to 25cm (10in) long, softly hairy beneath. In late summer, bears corymbs of 8–20 bright golden yellow flowerheads, to 15cm (6in) across. ↑ to 1.8m (6ft), ↔ 1m (3ft). E. Caucasus. \*\*\*

**I. oculis-christi**. Rhizomatous perennial with erect, hairy stems bearing inversely lance-shaped, entire or toothed, downy, mid-green leaves, to 15cm (6in) long. Corymbs of usually 3–5 bright golden yellow flowerheads, to 7cm (3in) across, with very downy involucre, are produced in mid- and late summer. ↑ to 50cm (20in), ↔ 60cm (24in). E. Europe, Turkey, Caucasus, N. Iraq, Iran. \*\*\*

**I. orientalis**, syn. *I. glandulosa*. Rhizomatous perennial producing erect stems, with yellowish brown glandular hairs, bearing ovate-elliptic or inversely lance-shaped, toothed, hairy, mid-green leaves, 12cm (5in) long. Solitary, orange-yellow flowerheads, 9cm (3½in) across, with very woolly buds and wavy ray-florets, are produced in summer. ↑ 60–90cm (24–36in), ↔ 60cm (24in). Caucasus. \*\*\*

**I. racemosa**. Robust, clump-forming perennial with red-marked stems and rough, elliptic-lance-shaped to lance-shaped, toothed, mid-green basal leaves, 45cm (18in) or more long, and deeply lobed at the bases. The progressively smaller stem leaves are densely woolly beneath and stalkless near each apex. From late summer to mid-autumn, bears long racemes of usually solitary, light yellow flowerheads, 3.5–6cm (1½–2½in) across, with narrow ray-florets and darker yellow disc-florets. Roots are used medicinally. ↑ to 2.5m (8ft), ↔ 1.5m (5ft). W. Himalayas. \*\*\*

**I. royleana** ■ syn. *I. macrocephala* of gardens. Upright, clump-forming perennial with dark green stems and ovate, prominently veined, slightly toothed, hairy, mid-green leaves, 25cm (10in) long, with winged stalks. Solitary, orange-yellow flowerheads, 10–12cm (4–5in) across, with slightly darker orange disc-florets, are borne from midsummer to early autumn, opening from black-brown buds. ↑ 45–60cm (18–24in), ↔ 45cm (18in). W. Himalayas. \*\*\*

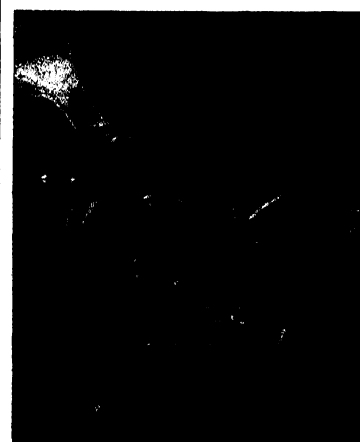
## IOCHROMA

SOLANACEAE

Genus of 20 species of evergreen or deciduous shrubs and small trees from moist forest areas, particularly clearings and margins, in tropical Central and South America. Leaves are alternate, simple, and entire. They are grown for their nodding to pendent, trumpet-shaped to tubular, purple, blue, red, white, or yellow flowers, produced in clusters or pairs. The fruits are pulpy berries; each one is enclosed by an enlarged calyx. In frost-prone areas, grow in a temperate greenhouse. In warmer climates, grow in a shrub border or as free-standing specimens.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright to moderate filtered light. During growth, water moderately and apply a balanced liquid fertilizer every month. Keep just moist in winter. Pinch young plants to encourage bushiness. Top-dress mature plants with fresh compost annually in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade, with shelter from cold, drying winds. Pruning group 9; group 12 for scandent shrubs.

*Iochroma cyanea*

after flowering; plants under glass may need restrictive pruning in late winter.

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root greenwood cuttings in late spring or semi-ripe cuttings in summer.

- **PESTS AND DISEASES** Red spider mites and whiteflies may be troublesome under glass.

***I. coccinea*** Lax shrub with downy stems and ovate to oblong, sharp-pointed, prominently veined, lustrous, rich green leaves, 8–13cm (3–5in) long. Clusters of up to 8 tubular scarlet flowers, 4–5cm (1½–2in) long, with light yellow throats, appear mainly during summer. ↑ to 3m (10ft), ↔ 1.5–2m (5–6ft). Central America. ☼ (min. 7°C/45°F)

***I. cyanea*** ■ syn. *I. tubulosa*. Erect to spreading shrub with downy shoots and narrowly ovate to oblong-lance-shaped or elliptic, softly hairy, grey green leaves, 8–15cm (3–6in) long. Umbel-like trusses of up to 20 tubular, deep purple-blue flowers, 5cm (2in) long, with partly reflexed petal tips, are produced mainly in summer. ↑ to 3m (10ft), ↔ 1.5–2m (5–6ft). Colombia, Ecuador, Peru. ☼ (min. 7°C/45°F)

***I. tubulosa*** see *I. cyanea*.

## IPHEION

ALLIACEAE/LILIACEAE

Genus of 10 species of small, bulbous perennials from upland meadows and rocky sites in South America. They are grown for their star-shaped, usually strongly honey-scented flowers borne in spring, singly or in pairs. The grass-like, basal leaves are linear-strap-shaped. Most parts smell of onions when crushed, particularly the leaves. They are useful in a rock garden and for underplanting herbaceous plants such as peonies or hostas. In areas of prolonged frost, grow in a cold greenhouse or alpine house.

- **HARDINESS** Frost hardy to frost tender. *I. uniflorum* is hardy to -10°C (14°F), but may be damaged if exposed to prolonged frost.

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added leaf mould and grit, in bright filtered or indirect light. During growth in spring and early summer, water moderately and apply a balanced liquid fertilizer monthly. Keep just moist while dormant. Outdoors, grow

in moderately fertile, humus-rich, moist but well-drained soil in full sun. Provide a protective mulch in winter where temperatures regularly fall below -10°C (14°F). Plant bulbs 8cm (3in) deep, 5cm (2in) apart, in autumn.

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide in summer when dormant.

- **PESTS AND DISEASES** Slugs and snails can be a problem.

***I. 'Rolf Fiedler'*** ♀ syn. *Tristagma* 'Rolf Fiedler'. Clump-forming, bulbous perennial with short, narrowly strap-shaped, blunt-tipped, light blue-green leaves, to 15cm (6in) long. In spring, produces solitary, occasionally 2, outward-facing, star-shaped, scented, vivid mid-blue flowers, 3cm (1¼in) across. ↑ 10–12cm (4–5in). ✱✱

***I. uniflorum***, syn. *Tristagma uniflorum*. Vigorous, clump-forming, bulbous perennial. In late autumn, produces semi-erect, narrowly strap-shaped, light blue-green leaves, to 25cm (10in) long. Flowers are solitary, upward-facing, star-shaped, scented, pale silvery blue, 4cm (1½in) across, frequently with darker midribs, produced mainly in spring. ↑ 15–20cm (6–8in). Argentina, Uruguay. ✱✱. 'Album' has pure white flowers. 'Froyle Mill' ♀ has dusky violet flowers. 'Wisley Blue' ■ ♀ has lilac-blue flowers.

## IPOMOEA syn. MINA, PHARBITIS

Morning glory

CONVOLVULACEAE

Genus of about 500 species of annuals and perennials, many of them trailers or twining climbers, and a few evergreen shrubs and trees, native to warm regions worldwide. They are found in a great diversity of habitats from open scrub to dense woodland, seashores and cliffs. Leaves are alternate, and may be simple and entire, or toothed, lobed, or more finely dissected. The funnel-shaped or tubular flowers are solitary or borne in axillary or terminal cymes, racemes, or panicles. Grow annuals in a sunny, sheltered site. Where temperatures drop below 7°C (45°F), grow perennial or shrubby species in a temperate or warm greenhouse. In warmer areas, train climbers over a pergola or arch, or use them as dense ground cover. Seeds are highly toxic if ingested.



*Ipomoea indica*

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2 or 3) in full light, with shade from the hottest sun. During growth, water freely, and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Support climbers and trailing species. Outdoors, grow in moderately fertile, well-drained soil in full sun. Shelter from cold, drying winds.

Pruning group 11 for climbing species, in spring.

- **PROPAGATION** Sow seed singly at 18°C (64°F) in spring. Chip seeds or soak for 24 hours before sowing. For perennials and subshrubs, root softwood cuttings in spring or summer, or semi-ripe cuttings in summer.

- **PESTS AND DISEASES** Susceptible to viruses and powdery mildew. Whiteflies and red spider mites may be a problem under glass.

***I. acuminata*** see *I. indica*.

***I. alba***, syn. *Calonyction aculeatum*, *I. bona-nox*, (Belle de nuit, Moonflower). Twining perennial, usually grown as an annual, with evergreen, ovate to rounded, sometimes 3-lobed, mid- to deep green leaves, 10–20cm (4–8in) long. Cymes of 1–8 wide-spreading, trumpet-shaped, white flowers, 12–14cm (5–5½in) across, tinted green outside, open at dusk from early summer to autumn. ↑ to 5m (15ft), to 20m (70ft) when grown as a perennial. Tropical regions worldwide. ☼ (min. 7°C/45°F). 'Giant White' has large white flowers, to 15cm (6in) across.

***I. bona-nox*** see *I. alba*.

***I. coccinea*** ■ syn. *Quamoclit coccinea* (Red morning glory, Star morning glory). Annual twining climber with entire or boldly toothed, ovate, mid- to deep green leaves, 7–14cm (3–5½in) long. Bears racemes of 3–8 scarlet flowers, to 2cm (¾in) across, with yellow throats, in summer. ↑ 2–4m (6–12ft). S.E. USA. ☼ (min. 7°C/45°F)

***I. hederacea***, syn. *Pharbitis hederacea*. Annual twining climber with slender, densely hairy stems and ovate to rounded, usually 3-lobed, mid- to deep green leaves, 5–12cm (2–5in) long, with tapering points. In summer, bears cymes of 2–5 funnel-shaped, blue, sometimes purple flowers, 2–3.5cm (¾–1½in) across, with white tubes and prominent, long-tailed, green sepals. Often confused with *I. nil*, which has very narrowly triangular sepals. ↑ 2–3m (6–10ft). S. USA to Argentina. ☼ (min. 7°C/45°F)

***I. imperialis*** see *I. nil*.

***I. indica*** ■ ♀ syn. *I. acuminata*, *I. learii* (Blue dawn flower). Vigorous, perennial climber, bearing evergreen, heart-shaped or 3-lobed, slender-pointed, mid-green leaves, 6–17cm (2½–7in) long. Bears abundant funnel-shaped, rich purple-blue to blue flowers, 6–8cm (2½–3½in) across, in cymes of 3–5, often maturing to purplish red, from late spring to autumn. ↑ 6m (20ft) or more. Tropical regions worldwide. ☼ (min. 7°C/45°F)

***I. learii*** see *I. indica*.

***I. lobata*** ■ syn. *I. versicolor*, *Quamoclit lobata* (Spanish flag). Perennial climber, grown as an annual, with crimson-flushed stems and stalks. Bears toothed, mid- to deep green leaves, to 10cm (4in) long, with 3 prominent, finger-like lobes and 2–4 smaller basal lobes. Dense, erect, one-sided racemes, to 30cm (12in) long, of slightly curved, narrow, tubular, scarlet flowers, 1.5–2cm (½–¾in) long, maturing to orange and yellow, then white, with very long stamens and styles, appear from summer to autumn, or throughout the year in warm climates. ↑ 2–5m (6–15ft). Mexico, Central to South America. ☼ (min. 10°C/50°F)

***I. x multifida*** (*I. coccinea* x *I. quamoclit*), syn. *I. x sloteri* (Cardinal climber). Slender, twining annual with broadly triangular-ovate, deeply and narrowly 3- to 7-lobed, mid-green leaves, 4–12cm (1½–5in) long, divided into 7–15 narrowly lance-shaped lobes. In summer, bears salverform crimson flowers, to 2.5cm (1in) across, with white throats. ↑ 1–2m (3–6ft). Garden origin. ☼ (min. 7°C/45°F)



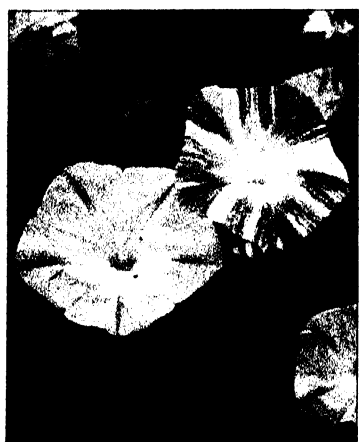
*Ipheion uniflorum* 'Wisley Blue'



*Ipomoea coccinea*



*Ipomoea lobata*

*Ipomoea purpurea**Ipomoea tricolor* 'Flying Saucers'

*I. nil*, syn. *I. imperialis*. Vigorous annual or, in tropical climates, woody-based, short-lived, perennial climber, with bristly yellow-hairy stems. Bears broadly ovate, usually entire, sometimes 3-lobed, mid-green leaves, 5–14cm (2–5½in) long. From summer to autumn, bears solitary, funnel-shaped, white-tubed flowers, 5cm (2in) across, with pale to deep blue, sometimes purple or red petal lobes. ↑ to 5m (15ft) or more. Tropical regions worldwide. ♀ (min. 7°C/45°F). 'Chocolate' has reddish chocolate-brown flowers, 8cm (3in) across. 'Early Call' produces white-tubed flowers with scarlet lobes, to 7cm (3in) across.

**Platycodon Series** cultivars have single and semi-double, red, purple, or white flowers. 'Scarlet Star' bears many cerise flowers with central white stars. 'Scarlett O'Hara' has bright red flowers.

*I. purpurea* □ syn. *Convolvulus purpureus*, *Pharbitis purpurea* (Common morning glory). Annual twining climber with slender, hairy, and bristly stems. Leaves are broadly ovate, entire or 3-lobed, mid-green, 4–10cm (1½–4in) long. Trumpet-shaped flowers, to 6cm (2½in) across, in pink, purple-blue, magenta, or white (or stripes of these colours on white), with white tubes, are borne in cymes of 3–7, or singly, mainly in summer. ↑ 2–3m (6–10ft). Probably Mexico. ♀ (min. 7°C/45°F).

*I. quamoclit*, syn. *Quamoclit pennata* (Star glory). Annual twining climber with hairless stems and elliptic to broadly ovate, deeply pinnatisect, deep green leaves, 3–9cm (1¼–3½in) long, composed of 9–19 pairs of linear lobes. Slender-tubed, scarlet, sometimes white

*Ipomoea tricolor* 'Heavenly Blue'

flowers, to 2cm (¾in) across, with 5 distinct and spreading lobes, are borne in cymes of 2–5, mainly in summer, or for most of the year in the tropics. ↑ 2–6m (6–20ft). Tropical South America. ♀ (min. 7°C/45°F).

*I. rubrocaerulea* see *I. tricolor*.

*I. x sloteri* see *I. x multifida*.

*I. tricolor*, syn. *I. rubrocaerulea* (Morning glory). Fast-growing, twining annual or short-lived perennial with ovate-heart-shaped, slender-tipped, light to mid-green leaves, 4–10cm (1½–4in) long. Funnel-shaped, bright sky-blue to purple flowers, to 8cm (3in) across, with white tubes, golden yellow inside at the bases, appear singly or in 3- to 5-flowered cymes in summer and throughout the year in the tropics. Tropical Central and South America. ↑ 3–4m (10–12ft). ♀ (min. 7°C/45°F).

'Crimson Rambler' has red flowers with white throats. 'Flying Saucers' □ has variably marbled, white and purple-blue flowers. 'Heavenly Blue' □ ♀ has rich azure flowers with white throats. 'Roman Candy' has cerise and white flowers and white-variegated leaves.

*I. tuberosa* see *Merremia tuberosa*.

*I. versicolor* see *I. lobata*.

## IRISINE

### AMARANTHACEAE

Genus of about 80 species of evergreen, erect or climbing perennials, annuals, and subshrubs from dry, open areas in South America and Australia. They are cultivated for their striking, colourful foliage and are often grown to provide contrast with flowering plants. The

*Iresine herbstii* 'Aureoreticulata'

leaves are opposite, simple, and entire. The insignificant white or green flowers are borne in terminal or axillary spikes. In frost-prone areas, grow as tender perennials for summer bedding schemes and overwinter in a warm greenhouse. In warmer climates, grow as edging in a bed or mixed border, in a window-box, or in a container on a patio.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from the hottest sun. During the growing season, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil, in full sun for best leaf colour. Pinch back young plants in spring to encourage bushiness. Cut back mature plants hard in early spring, or propagate each year to maintain bushy specimens, and plant out after all danger of frost has passed.

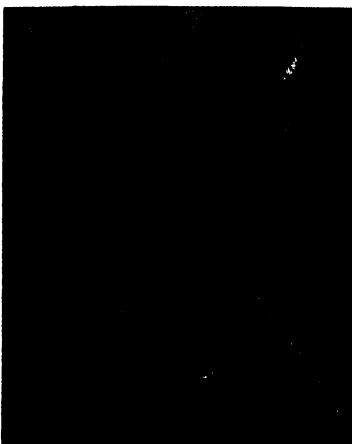
• **PROPAGATION** Take stem-tip cuttings at any time. In frost-prone areas, take stem-tip cuttings of bedding plants in late summer. Overwinter in a warm greenhouse and pinch out 2 or 3 times to produce strong stock plants, which will provide softwood cuttings in late winter and early spring.

• **PESTS AND DISEASES** Prone to powdery mildew. Susceptible to aphids and red spider mites, particularly under glass.

*I. herbstii* (Beefsteak plant). Erect, bushy annual or short-lived perennial with broadly ovate to rounded, waxy, variegated, mid-green, yellow, very deep red, or orange leaves, to 8cm (3in) long, often with vividly contrasting veins and golden hairs beneath, and with notches at the tips. Stems and branches are bright green, purple, or red, and almost translucent when young. ↑ to 1.5m (5ft), ↔ to 90cm (36in). Brazil. ♀ (min. 10°C/50°F). 'Aureoreticulata' □ has mid-green leaves with yellow veins. 'Brilliantissima' □ has rich crimson leaves. 'Wallisii' is dwarf, with purple-black leaves; ↑ to 60cm (24in), ↔ to 50cm (20in).

*I. lindenii* ♀ (Blood leaf). Erect, bushy, compact perennial with blood-red stems bearing ovate or oblong-lance-shaped, pointed, glossy, deep blood-red leaves, 5–10cm (2–4in) long, with prominent deep or light red veins. ↑↔ to 1m (3ft). Ecuador. ♀ (min. 10°C/50°F).

'Formosa' has yellow leaves with crimson veins.

*Iresine herbstii* 'Brilliantissima'

## IRIS

### IRIDACEAE

Genus of about 300 species of upright, rhizomatous or bulbous, sometimes fleshy-rooted perennials found in a wide range of habitats in the N. hemisphere. Irises are grown mainly for their colourful, often spectacular flowers.

A few are evergreen, but most are deciduous, dying back completely or to a fan of short leaves. Some are dormant in summer. The distinctive iris flowers are illustrated and described in the accompanying panel (see opposite). The seed pods are 3- to 6-angled, either ribbed or smooth, with large seeds.

Most irises flower from spring to summer. Some, mostly bearded hybrids, are "remontant", flowering again in the same year, but they need extra care if they are to succeed reliably in cool climates. Taller irises are suitable for a mixed or herbaceous border. Smaller species and cultivars, and those requiring very free-draining conditions, can be grown in a rock garden, raised bed, or trough. Those requiring a totally dry dormancy period should be grown in a bulb frame or alpine house. A few are not frost hardy and require glass protection. All parts may cause severe discomfort if ingested; contact with the sap may irritate skin.

Botanically, irises are divided into several subgenera and sections. In horticulture, these are often simplified as below and in the table opposite.

### Rhizomatous irises

These have rhizomes as rootstocks, close to or on the surface, or just below ground level, which produce linear to strap-shaped, sometimes curved leaves, often in basal fans. Each active rhizome produces several new growths every year and this spread can continue indefinitely. As a rough guide, in 3 years a small iris can attain a spread of 30cm (12in), and a tall one a spread of 60cm (24in). Rhizomatous irises fall into 3 main groups.

**Bearded irises** – also known as Pogon irises, these have stout, surface rhizomes, giving rise to fans of sword-shaped, usually broad leaves, and simple or branched stems. The flowers, produced in a large range of colours, have well-developed falls and standards, with a prominent "beard" of white or coloured hairs in the centre of each fall petal. Bearded hybrids are the most widely grown group in horticulture. They may be classified for garden use or exhibition according to the blooming season (early spring to early summer) and the height of the flower stem, as follows. Most bear multiple flowers per stem.

**Miniature dwarf bearded:** ↑ to 20cm (8in); flowers 4–8cm (1½–3in) across.

**Standard dwarf bearded:** ↑ 20–40cm (8–16in); flowers 5–7cm (2–3in) across.

**Intermediate bearded:** ↑ 40–70cm (16–28in); flowers 10–13cm (4–5in) across.

**Miniature tall bearded:** ↑ 40–65cm (16–26in) (zigzag stem); flowers 5–8cm (2–3in) across.

**Border bearded:** ↑ 40–70cm (16–28in); flowers 10–13cm (4–5in) across.

**Tall bearded:** ↑ 70cm (28in) or more; flowers 10–20cm (4–8in) across.

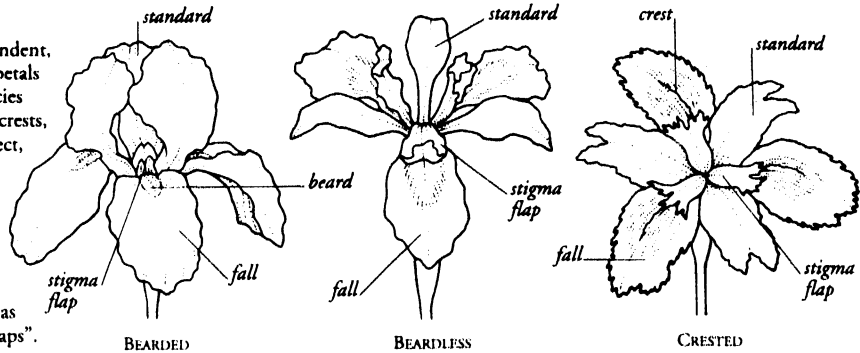


Aril irises are so called because of the white protrusion, or aril, on each seed. They become dormant in summer after flowering, and should be kept dry during this period. The main groups are the Oncocyclus and the closely related Regelia irises, and their cultivars and hybrids. Oncocyclus irises bear large, brightly coloured flowers with bearded falls. Regelia irises have bearded falls and standards. Regeliocyclus irises are hybrids between Oncocyclus and Regelia irises. Arilbred irises are hybrids between Oncocyclus or Regelia irises and other bearded irises.

Beardless irises (Limniris) – also have rhizomes but these are often just below ground. The fall petals on the flowers are smooth. Beardless irises include the following widely differing groups. Pacific Coast irises produce flowers in a large range of colours, most with attractive veining. Leaves are usually evergreen. Siberian irises bear blue, purple, white, yellow, or deep red flowers, and are suitable for an open border. Leaves are usually deciduous. Spuria irises produce flowers in a large range of colours, and have 6-ribbed seed pods with distinctive curved beaks. Laevigatae irises, also known as water irises, thrive in damp places. The group includes *I. laevigata* and *I. pseudacorus*, the common yellow flag iris of Europe. Stems are simple or branched, and bear blue, pink, red, purple, white, or yellow flowers. Also included in Laevigatae irises are the numerous cultivars of *I. ensata*, syn. *I. kaempferi*, known as Japanese irises, which flourish at the margins of ponds or streams, or in moist

IRIS FLOWERS

The flowers have 3 large, pendent, reflexed or spreading outer petals ("falls"), which in some species have conspicuous beards or crests, and 3 frequently smaller, erect, horizontal or sometimes pendent inner petals ("standards"). There are 3 stamens, and the style has 3 usually petal-like branches arching over the falls; these enclose the stigmas and are known as "stigma flaps".



borders. Japanese irises bear large, often flattened, sometimes double flowers, in shades of blue, white, purple, pink, sometimes yellow, or deep red, often in combination. Louisiana irises also thrive in damp conditions, often have zigzag stems, and bear flowers in a large range of colours. Unguiculares irises are markedly different from other beardless irises: they develop a mass of rhizomes above ground, are evergreen, and bloom from autumn to spring, producing blue, violet, lavender-pink, or white, almost stemless flowers with long perianth tubes.

Irises in the miscellaneous subgroups of the beardless irises not listed here are referred to in their entries simply as "rhizomatous, beardless irises".

Crested irises (Lophiris) – also known as Evansia irises, these spread freely by rhizomes, and produce relatively flat flowers in shades of blue, violet, or

white. They have a crest or ridge on each fall instead of a beard. Flowers and leaves, which are deciduous to evergreen, may be borne on bamboo-like stems, which vary greatly in height.

Bulbous irises

These have bulbs as storage organs; Juno irises also have fleshy roots. Leaves are deciduous, and either channelled or quadrangular to almost cylindrical in cross-section. Flowers are beardless and appear from late winter to midsummer. All are summer dormant. Bulbous irises fall into 3 groups. Reticulata (Hermodactyloides) irises have netted tunics that cover the bulbs, which produce 1 or 2 long, square-sectioned or cylindrical leaves. The leaf length at flowering is very variable; after flowering, the leaves lengthen to 30cm or more. Flowers are blue, white, or reddish violet. Juno (Scorpiris) irises

have bulbs with fleshy roots and flat or channelled leaves. The flowers have large, brightly coloured fall petals and very small standards. Some species, such as *I. bucharica*, are good rock garden plants; others, such as *I. magnifica*, do well in a sunny, open border. Xiphium irises include the Dutch, English, and Spanish groups, with channelled, linear leaves and blue, lavender-blue, yellow, or white flowers. The English irises prefer more moist soil. Xiphium irises are popular garden plants, widely used as cut flowers; most are easy to grow. Some N. African species are frost tender.

• **HARDINESS** Fully hardy to frost tender. Most irises are hardy, but some thrive only in specific conditions.

• **CULTIVATION** General cultivation advice for irises is outlined here; more specific group requirements are given in the table below. All irises are best

IRIS GROUP			HEIGHT cm/in	FLOWERS PER STEM	FLOWER SIZE cm/in	FLOWERING TIME	CULTIVATION REQUIREMENTS	
RHIZOMATOUS	BEARDED	ARIL	Species and cultivars	5–50 (2–20)	1 or multiple	2.5–20 (1–8)	mid-spring to early summer	Outdoors, grow in well-drained, fertile, neutral to slightly acid soil in full sun. Under glass, grow in deep containers in loam-based potting compost (J1 No.2) with added grit. Provide full light and low humidity. Ventilate freely whenever temperatures rise above freezing. Water moderately when in growth. Keep completely dry during dormancy.
			Oncocyclus	10–60 (4–24)	1	5–20 (2–8)	mid- and late spring	
			Regelia & Regeliocyclus	10–60 (4–24)	1 or 2	5–10 (2–4)	mid- and late spring	
			Arilbred	25–70 (10–28)	2	3 (1¼)	mid-spring to early summer	
	BEARDLESS	Pacific Coast	15–75 (6–30)	multiple	5–10 (2–4)	mid- and late spring	Most beardless irises prefer well-drained, neutral to slightly acid loam in full sun or partial shade. Grow Laevigatae (water irises) in moist to wet, deep, humus-rich, acid soil; they thrive at the margins of ponds or streams. Grow Louisiana irises in damp, humus-rich soil, preferably in areas with high summer temperatures. Grow Unguiculares irises in sharply drained, neutral to alkaline soil in full sun; they are ideal for the base of a sunny wall.	
		Siberian	30–150 (12–60)	multiple	7–13 (3–5)	mid- and late spring		
		Spuria	20–200 (8–72)	multiple	7–15 (3–6)	late spring and early summer		
		Laevigatae (water irises)	30–90 (12–36)	multiple	6–25 (2½–10)	late spring and early summer		
		Louisiana	40–120 (16–48)	multiple	7–20 (3–8)	mid-spring to early summer		
		Unguiculares	5–20 (2–8) (perianth tubes)	1	5–8 (2–3)	autumn to spring		
	CRESTED		5–100 (2–39)	multiple	3–10 (1¼–4)	mid- and late spring	Outdoors, grow in moist, humus-rich soil in full sun or partial shade. Under glass, grow in pans in loam-based potting compost (J1 No.2) with added grit and leaf mould. Provide bright filtered light and moderate humidity. Ventilate freely whenever temperatures rise above freezing. Water moderately when in growth. Keep just moist during dormancy.	
	BULBOUS	Reticulata		5–15 (2–6)	1 or 2	3–8 (1¼–3)	winter to early spring	Outdoors, grow in well-drained, neutral or slightly alkaline soil in full sun. Under glass, grow in deep containers in loam-based potting compost (J1 No.2) with added grit. Provide full light and low humidity. Ventilate freely whenever temperatures rise above freezing. Water moderately when in growth. Keep just moist during dormancy. When planting or transplanting, take care not to damage the fleshy roots of Juno irises.
Juno		5–45 (2–18)	multiple	5–10 (2–4)	early spring			
Xiphium		25–90 (10–36)	1, 2 or multiple	7–9 (3–3½)	mid-spring to midsummer			

*Iris bucharica*

planted in late summer and early autumn. Outdoors, grow in well-drained, moderately fertile, neutral or slightly acid or alkaline soil in full sun to light dappled shade. Most irises need long, hot summers to thrive and flower well. Grow irises that require protection from rain or frost under glass.

**Rhizomatous irises** – Bearded irises have surface rhizomes which should be partially exposed, or thinly covered with soil in hot climates. Plant rhizomes singly or in groups of 3 with the fans outermost, 15–30cm (6–12in) apart, depending on size. They must not be shaded by other plants; many do best in a border on their own. When planting, feed or top-dress with a low-nitrogen fertilizer, and again in early spring. Avoid applying high-nitrogen fertilizers to the surface or mulching with organic matter, which may encourage rhizome rot. After 3–5 years, when clumps become congested or lose vitality, divide and replant active rhizomes in fresh soil.

Beardless irises have rhizomes below the surface of the soil and will benefit from mulching in spring; otherwise follow the feeding instructions for bearded irises. Plant small divisions of beardless and crested rhizomes 8–30cm (3–12in) apart, depending on size.

**Bulbous irises** – Plant Xiphium and Juno bulbs 10–15cm (4–6in) apart, depending on the size. Plant Reticulata bulbs 5–10cm (2–4in) apart. Plant all bulbs at a depth twice the height of the bulb. After flowering, feed with a high-potash fertilizer to encourage large bulbs to form. Lift and separate bulbs in early autumn.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Lift rhizomes or divide clumps, or separate bulb offsets, and plant immediately in the flowering site, usually from midsummer to early autumn.

• **PESTS AND DISEASES** Slugs and snails damage leaves, flowers, bulbs, and rhizomes. Sawfly larvae may damage the leaves of some waterside irises. Many, especially the Oncocyclis irises, are susceptible to aphid-borne viral infection. Bearded irises are particularly prone to bacterial soft rot (which affects the rhizomes) and to leaf spot. Beardless irises, especially Siberians, may suffer from grey mould (*Botrytis*); thrips may eat their leaves. Ink spot fungus can kill Reticulata bulbs.

***I. acutiloba***. Rhizomatous, bearded Oncocyclis iris with narrow, sickle-shaped leaves, 5–20cm (2–8in) long. In late spring, each stem produces a solitary, brown-veined white flower, 5–7cm (2–3in) across, with pointed petals. Each fall petal has 2 dark brown or black spots and a purple-brown beard. †10–25cm (4–10in). Georgia, Azerbaijan, Armenia, Iran. \*\*\*

**subsp. *lineolata*** has only one spot on each fall.

***I. 'Adobe Sunset'*** ■ Rhizomatous, beardless Spuria iris with deep orange-yellow flowers, veined and bordered dark brown, borne in early summer. †1.5m (5ft). \*\*\*

***I. afghanica*** ■ Rhizomatous, bearded Regelia iris with curved leaves, 25cm (10in) long. In late spring, each unbranched stem produces 1 or 2

flowers, 8cm (3in) across, with pointed petals. Standards are pale yellow with green beards; falls are cream, veined purple-brown, with purple patches and dark brown beards. †15–40cm (6–16in). N.E. Afghanistan, Pakistan. \*\*\*

***I. albicans***. Rhizomatous, bearded iris with broad, lance-shaped, grey-green leaves, 45cm (18in) long. In late spring, each unbranched stem bears 1–3 fragrant white flowers, 9cm (3½in) across, with yellow-tipped white beards. †30–60cm (12–24in). Arabian Peninsula. \*\*\* **'Madonna'** has blue flowers.

***I. albomarginata***. Bulbous Juno iris with leaves to 15cm (6in) long. In late spring and early summer, bears 2–5 vivid blue flowers, to 5cm (2in) across, with a white central mark on each fall. †20–30cm (8–12in). C. Asia (Kazakhstan to Tajikistan). \*\*

***I. 'Ancilla'***. Rhizomatous, bearded Regeliocyclis iris flowering in mid- and late spring. Standards are white with soft blue veins; falls are netted grey-brown with deep purple patches and beards. †25cm (10in). \*\*\*

***I. 'Annabel Jane'*** ■ Very vigorous, rhizomatous, tall bearded iris. In late spring and early summer, bears flowers with pale lilac standards and mid-lilac falls with pale lilac beards. †1.2m (4ft). \*\*\*

***I. 'Ann Dasch'***. Rhizomatous, beardless Siberian iris. Bears mottled, light blue-purple flowers with solid, deeper blue-purple margins, and falls with small yellow marks, in mid- and late spring. †100cm (39in). \*\*\*

***I. 'Anniversary'*** ■ Rhizomatous, beardless Siberian iris. Bears white flowers with yellow hafts in mid- and late spring. †75cm (30in). \*\*\*

***I. aphylla***. Rhizomatous, bearded iris with broadly lance-shaped, grey-green leaves, to 15cm (6in) long, the outer ones curved, the others erect. In mid-spring, each branched stem produces 1–5 purple or blue-violet flowers, 6cm (2½in) across, with yellow-tipped white beards. †15–30cm (6–12in). C. and E. Europe to W. Russia, Ukraine, Moldavia, Caucasus. \*\*\*

***I. 'Apollo'*** ■ Bulbous Dutch Xiphium iris. In late spring and early summer, bears flowers with creamy white standards and primrose-yellow falls. †65cm (26in). \*\*\*

***I. 'Arctic Fancy'*** ♀ Rhizomatous, intermediate bearded iris. Bears white flowers with deep violet markings and blue beards in early spring. †50cm (20in). \*\*\*

***I. arenaria* see *I. humilis***.

***I. 'Arnold Sunrise'*** ■ ♀ Rhizomatous, beardless Pacific Coast iris. Bears white flowers with a light yellow-orange patch in the centre of each fall in early spring. †25cm (10in). \*\*\*

***I. aucheri***. Bulbous Juno iris with closely packed leaves, to 25cm (10in) long. In late winter or spring, bears 2 or 3 or more light to dark blue, violet, or white flowers, to 6cm (2½in) across, with a central yellow mark on each fall. †10–20cm (4–8in). S.E. Turkey, Iraq, Iran. \*\*\* (borderline)

***I. aurea* see *I. crocea***.

***I. 'Baby Blessed'***. Remontant, rhizomatous, standard dwarf bearded iris. Bears light yellow blooms, with a

small white spot and cream beard on each fall, in late spring and, in favourable conditions, again in early autumn. †25cm (10in). \*\*\*

***I. bakeriana***. Small, bulbous Reticulata iris with 8-ribbed, cylindrical leaves, 1–10cm (½–4in) long at flowering. In spring, bears solitary flowers with lilac standards and white falls with deep violet tips, heavily marked and veined deep violet. †5–7cm (2–3in). S.E. Turkey, Iraq, Iran. \*\*\*

***I. 'Banbury Beauty'*** ■ Rhizomatous, beardless Pacific Coast iris. Bears light lavender-blue flowers with a purple zone on each fall, in mid- and late spring. †55cm (22in). \*\*\*

***I. barnumae***. Rhizomatous, bearded Oncocyclis iris with curved, grey-green leaves, to 18cm (7in) long. In late spring, each stem produces one purple-violet flower, 8cm (3in) across, with a yellow beard. †10–30cm (4–12in). E. Turkey, Iraq. \*\*\* (borderline).

***I. urmiensis*** has bright yellow flowers with orange beards.

***I. 'Black Watch'***. Rhizomatous, intermediate bearded iris. Velvet-textured, very deep purple flowers with matching beards appear in mid- and late spring. †60cm (24in). \*\*\*

***I. 'Blue Ballerina'*** ♀ Rhizomatous, beardless Pacific Coast iris. In mid- and late spring, bears near-white flowers; each fall has a violet flash and black markings. †40cm (16in). \*\*\*

***I. 'Blue Diamond'***. Bulbous Dutch Xiphium iris. Bears deep violet flowers from mid-spring to midsummer. The falls are veined with darker violet and each has a lemon-yellow blotch. †65cm (26in). \*\*\*

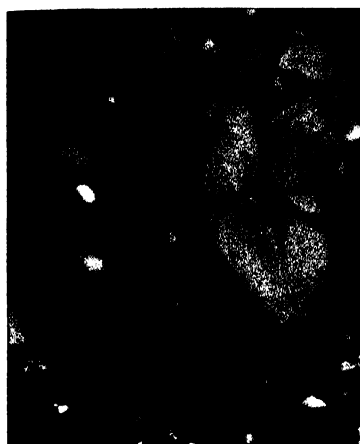
***I. 'Blue-eyed Brunette'*** ■ ♀ Rhizomatous, tall bearded iris. Brown flowers with a lilac blaze and gold beard on each fall are borne in early summer. †90cm (36in). \*\*\*

***I. 'Blue Magic'***. Bulbous Dutch Xiphium iris flowering from mid-spring to midsummer. Standards are pale violet; falls are deep violet. †65cm (26in). \*\*\*

***I. 'Blue Pools'***. Rhizomatous, standard dwarf bearded iris with grey-green leaves. In early spring, bears white flowers with a large, mid-blue spot on each fall. †30cm (12in). \*\*\*

***I. 'Bold Print'*** ■ Rhizomatous, intermediate bearded iris bearing white flowers in mid- and late spring. Standards have a purple border; falls are edged with purple stitching and have

*Iris chrysographes*

*Iris danfordiae*

white beards with bronze tips. †55cm (22in). \*\*\*

***I. brevicaulis***, syn. *I. foliosa*. Rhizomatous, beardless Louisiana iris with branched, zigzag stems and large leaves or bracts, to 45cm (18in) long, overtopping the flowers. In early summer, bears terminal and axillary, bright blue-violet flowers, 7–10cm (3–4in) across, with small, spreading standards and broad, ovate falls. †40–50cm (16–20in). USA (Mississippi valley). \*\*

***I. 'Broadleigh Rose'***. Rhizomatous, beardless Pacific Coast iris. Bears pink flowers in mid- and late spring. †40cm (16in). \*\*\*

***I. 'Bromyard'*** ■ Rhizomatous, standard dwarf bearded iris. In early spring, bears flowers with blue-grey standards, blue-purple and ochre falls, and blue-grey beards. †28cm (11in). \*\*\*

***I. 'Bronze Perfection'***. Bulbous Dutch Xiphium iris. Bronze-yellow flowers, stained violet on the standards, are borne from mid-spring to midsummer. †65cm (26in). \*\*\*

***I. 'Bronze Queen'***. Bulbous Dutch Xiphium iris. Brownish yellow flowers are borne from mid-spring to midsummer. †65cm (26in). \*\*\*

***I. 'Brown Lasso'*** ■ Rhizomatous, intermediate bearded iris flowering in spring. Standards are deep butterscotch-yellow; falls are light violet with brown edging and yellow beards. †55cm (22in). \*\*\*

***I. bucharica*** ■ Vigorous, bulbous Juno iris with glossy leaves, to 20cm (8in) long. Bears up to 6 flowers, 4–6cm (1½–2½in) across, in the upper leaf axils in spring. Flowers vary from golden yellow to white, with a yellow mark on each fall. The white and yellow form is more commonly grown commercially. †20–40cm (8–16in). N.E. Afghanistan, C. Asia. \*\*\*

***I. bulleyana*** ■ Rhizomatous, beardless Siberian iris with linear leaves, to 45cm (18in) long, glossy mid-green above, glaucous beneath. In early summer, hollow, unbranched stems bear 1 or 2 flowers, 6–8cm (2½–3in) across, with violet standards, and spreading white falls streaked violet. †35–45cm (14–18in). China (Sichuan, Yunnan). \*\*\*

***I. 'Butter and Sugar'*** ■ Rhizomatous, beardless Siberian iris flowering in mid- and late spring. Standards are white; falls are yellow; both have greenish yellow veins. †70cm (28in). \*\*\*

***I. 'Butter Pecan'***. Rhizomatous, intermediate bearded iris flowering in mid- and late spring. Standards are pecan-brown over yellow; falls are yellow stitched and bordered in deep pecan-brown, with yellow beards. †55cm (22in). \*\*\*

***I. 'Cambridge'***. Rhizomatous, beardless Siberian iris with narrow, straight leaves, flowering in mid- and late spring. Standards and falls are turquoise-blue, with white and yellow markings at the haft of the falls. †90cm (36in). \*\*\*

***I. 'Canyon Snow'***. Rhizomatous, beardless Pacific Coast iris. In mid- and late spring, bears white flowers with yellow patches. †45cm (18in). \*\*\*

***I. 'Carnaby'*** ■ Rhizomatous, tall bearded iris flowering in late spring and early summer. Standards are pink; falls are rose-pink and slightly ruffled with tangerine beards. †90cm (36in). \*\*\*

***I. caucasica***. Dwarf, bulbous Juno iris bearing sickle-shaped, grey-green leaves, 10–12cm (4–5in) long, with narrow white margins. From late winter to spring, produces up to 4 greenish yellow flowers, 4–6cm (1½–2½in) across. †15cm (6in). Caucasus, C. and N.E. Turkey, N.E. Iraq, N.W. Iran. \*\*

***I. chamaeiris*** see *I. lutescens*.

***I. 'Chance Beauty'***. Rhizomatous, beardless Laevigatae iris. In late spring, each stem bears 6–12 brown-veined, bright yellow flowers, 7–10cm (3–4in) across. †90cm (36in). \*\*\*

***I. chrysographes*** ■ Rhizomatous, beardless Siberian iris with flat, linear, grey-green leaves, 50cm (20in) long. In early summer, each unbranched stem bears 2 fragrant, dark red-violet flowers, 6–7cm (2½–3in) across, with gold streaks on the falls. †40–50cm (16–20in). China (Sichuan, Yunnan). \*\*\*

***I. 'Black Knight'*** has very dark violet flowers.

***I. 'Clairette'***. Bulbous Reticulata iris flowering in late winter. Bears pale blue flowers, 6cm (2½in) across, with deep violet falls, each with a white central mark. †10cm (4in). \*\*\*

***I. clarkei***. Rhizomatous, beardless Siberian iris with leaves 50cm (20in) long, and solid, branched stems. In late spring, produces violet, blue, or purple flowers, 8cm (3in) across, with a white patch on each fall. †60cm (24in). Himalayas: Nepal, India (Sikkim), Bhutan, Tibet. \*\*\*

***I. 'Clotho'***. Rhizomatous, bearded Regeliocyclis iris flowering in early summer. Standards are dark violet; falls are black-purple with black beards. †45cm (18in). \*\*\*

***I. 'Clyde Redmond'***. Rhizomatous, beardless Louisiana iris. In mid- and late spring, bears cornflower-blue flowers with yellow patches. †75cm (30in). \*\*\*

***I. colchica*** see *I. graminea*.

***I. confusa*** ■ Rhizomatous Crested iris with erect, bamboo-like stems, topped by fans of broad, evergreen leaves, 20–40cm (8–16in) long. In mid-spring, branching flower stems produce up to 30 short-lived blooms in succession. The flowers are white with yellow or purple spots around the yellow crests, 4–5cm (1½–2in) across. †1m (3ft) or more. China (Yunnan). \*\*

***I. 'Corn Harvest'***. Remontant, rhizomatous, tall bearded iris. Yellow flowers with ruffled falls and yellow

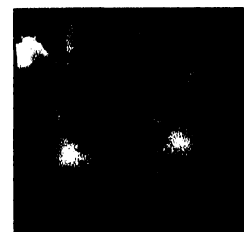
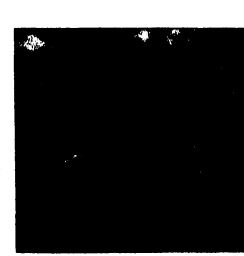
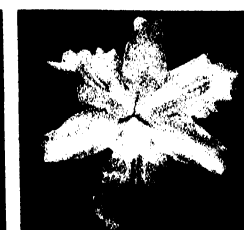
beards are borne in early summer and, in warm areas, again in late summer and early autumn. †75cm (30in). \*\*\*

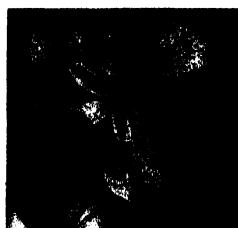
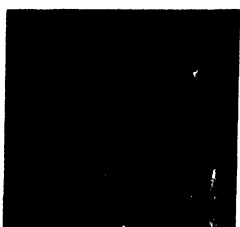
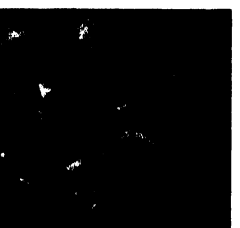
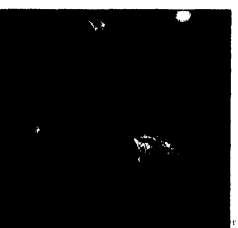
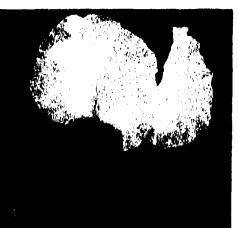
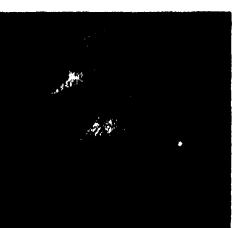
***I. cristata***. Rhizomatous Crested iris with fans of lance-shaped, bright green leaves, to 15cm (6in) long at flowering. Produces 1 or 2 stemless blooms, 3.5cm (1½in) across, on long perianth tubes, 5cm (2in) tall, in late spring. Petals are usually blue-lilac, each with a white patch, and a yellow or orange crest on each fall. †10cm (4in). E. USA. \*\*\*

***f. alba*** has white flowers.

***I. crocea***, syn. *I. aurea*. Vigorous, rhizomatous, beardless Spuria iris with erect leaves, 75cm (30in) long at flowering. In early summer, each branched stem bears up to 20 golden yellow blooms, 12–18cm (5–7in) across. †to 1.2m (4ft). India (Kashmir). \*\*\*

***I. 'Cup Race'***. Rhizomatous, tall bearded iris. Bears all-white flowers in late spring and early summer. †90cm (36in). \*\*\*

*Iris 'Adobe Sunset'**Iris afghanica**Iris 'Annabel Jane'**Iris 'Anniversary'**Iris 'Apollo'**Iris 'Arnold Sunrise'**Iris 'Banbury Beauty'**Iris 'Blue-eyed Brunette'**Iris 'Bold Print'**Iris 'Bromyard'**Iris 'Brown Lasso'**Iris bulleyana**Iris 'Butter and Sugar'**Iris 'Carnaby'**Iris confusa*

*Iris decora**Iris delavayi**Iris douglasiana**Iris* 'Early Light'*Iris ensata**Iris* 'Eyebright'*Iris foetidissima* var. *citrina**Iris forrestii**Iris* x *fulvala**Iris* 'George'*Iris* 'Gerald Darby'*Iris* 'Gingerbread Man'*Iris* 'Golden Harvest'*Iris* 'Golden Muffin'*Iris graminea**Iris histrioides* 'Major'*Iris hoogiana**Iris iberica**Iris japonica**Iris* 'Jasper Gem'*Iris* 'Joette'

flowers with dark blue-violet standards and black falls with violet beards, in mid- and late spring. †28cm (11in). \*\*\*

*I. decora* [ ] syn. *I. nepalensis*.

Rhizomatous, beardless iris with erect, linear, and markedly ribbed leaves, to 40cm (16in) long. In early summer, each branched or unbranched stem produces 1–3 short-lived, slightly flattened, lightly scented, lavender-blue or purple flowers, 5cm (2in) across, with an orange crest on each fall. †30cm (12in). Best raised from seed. Himalayas, India (Kashmir) to China (Sichuan, Yunnan). \*\*\*

*I. delavayi* [ ] Rhizomatous, beardless Siberian iris with grey-green leaves, 90cm (36in) long, and 3-branched flower stems. In summer, each branch produces 2 light to dark purple-blue flowers, 7–9cm (3–3½in) across, with white and yellow flecks on the rounded falls. † to 1.5m (5ft). China (S.W. Sichuan, Yunnan). \*\*\*

*I. 'Dorothea K. Williamson'*. Rhizomatous, beardless Louisiana iris with zigzag stems bearing violet flowers in midsummer. †45–80cm (18–32in). \*\*\*

*I. douglasiana* [ ] Vigorous, rhizomatous, beardless Pacific Coast iris bearing evergreen, stiff, glossy, dark green leaves, to 1m (3ft) long, often bright red at the bases. Red-purple, lavender-blue, blue, cream, or white flowers, 7–10cm (3–4in) across, are produced on branched stems, 2 or 3 per branch, in late spring and early summer. †15–70cm (6–28in). W. USA. \*\*\*

*I. 'Dreaming Yellow'*. Rhizomatous, beardless Siberian iris flowering in mid- and late spring. Produces flowers with white standards and slightly ruffled, creamy yellow falls. †80cm (32in). \*\*\*

*I. 'Dress Circle'*. Rhizomatous, beardless Spuria iris flowering from mid-spring to early summer. Standards are blue-violet with white veins; falls have yellow patches surrounded by white and violet edging. †90cm (36in). \*\*\*

*I. 'Dusky Challenger'*. Rhizomatous, tall bearded iris. Bears silky, ruffled, rich purple flowers with deep violet beards in late spring and early summer. †100cm (39in). \*\*\*

*I. dykesii*. Variable, rhizomatous, beardless Siberian iris with grey-green leaves, to 60cm (24in) long, partly enclosing each stem and overtopping the flowers. In early summer, each unbranched stem bears 2 deep purple-violet flowers, 7–9cm (3–3½in) across, with yellow or white veins on the falls. †60cm (24in). Probably a natural hybrid from China. \*\*\*

*I. 'Early Light'* [ ] ♀ Rhizomatous, tall bearded iris. In mid- and late spring, produces flowers with lemon-flushed cream standards, slightly darker falls, and yellow beards. †100cm (39in). \*\*\*

*I. 'Edith Wolford'*. Rhizomatous, tall bearded iris. Ruffled flowers with clear canary-yellow standards, blue-violet falls, and orange-tipped blue beards appear in mid- and late spring. †100cm (39in). \*\*\*

*I. 'Egret Snow'*. Rhizomatous, miniature dwarf bearded iris flowering in early spring. Produces ruffled, fragrant, pure white flowers; falls are

sometimes streaked azure, and have white beards. †15cm (6in). \*\*\*

*I. ensata* [ ] syn. *I. kaempferi*.

Rhizomatous, beardless *Laevigatae* (Japanese) iris with single, occasionally branched stems. Leaves are 20–60cm (8–24in) long, with prominent midribs. In midsummer, each stem bears 3 or 4 purple or red-purple flowers, 8–15cm (3–6in) across. Standards are erect and smaller than the falls. †90cm (36in). N. China, Japan, E. Russia. \*\*\*. 'Alba' has white flowers. 'Blue Peter' has mid-blue flowers. 'Moonlight Waves' bears white flowers with lime-green centres. 'Snowdrift' has double white flowers.

*I. extremorientalis* see *I. sanguinea*.

*I. 'Eyebright'* [ ] Rhizomatous, standard dwarf bearded iris. In early spring, bears bright yellow flowers; falls have deep brown lines and deep yellow beards. †30cm (12in). \*\*\*

*I. 'Feedback'*. Remontant, rhizomatous, tall bearded iris. Bears sweetly fragrant, violet blooms with yellow beards, in early summer and, in warm areas, again in early autumn. †90cm (36in). \*\*\*

*I. fernaldii*. Rhizomatous, beardless Pacific Coast iris with partly deciduous, slender, grey-green leaves, to 40cm (16in) long, tinged purple at the bases. Each unbranched stem produces 2 pale yellow flowers, 7–9cm (3–3½in) across, with a darker line down the centre of each fall, in late spring. †20–45cm (8–18in). W. USA. \*\*\*

*I. 'Flamenco'*. Rhizomatous, tall bearded iris. In mid- and late spring, produces flowers with gold standards suffused brown, and white to yellow falls with brown borders. †90cm (36in). \*\*\*

*I. flavissima* see *I. humilis*.

*I. florentina* see *I. germanica* 'Florentina'.

*I. foetidissima* (Stinking gladwyn, Stinking iris). Vigorous, rhizomatous, beardless iris with tufts of tough, evergreen, dark green leaves, to 75cm (30in) long, unpleasantly scented when crushed. In early summer, each branched stem bears up to 5 dull purple flowers, tinged with yellow, 5–7cm (2–3in) across. Large seed capsules split open in autumn, displaying scarlet, yellow, or rarely white seeds. †30–90cm (12–36in). S. and W. Europe, Azores, Canary Islands, N. Africa. \*\*\*

var. *citrina* [ ] has yellow flowers.

'Fructu-albo' has white-coated seeds.

'Variegata' has silver leaves with white variegations. Less susceptible to virus than the species, but flowers less freely.

*I. foliosa* see *I. brevicaulis*.

*I. formosana*. Rhizomatous Crested iris with erect fans of leaves, to 35cm (14in) long, borne on cane-like stems, 10cm (4in) high. Bears branched heads of flat, pale lilac flowers, to 8cm (3in) across, with yellow crests, in late spring. †10–20cm (4–8in). Taiwan. ☞ (min. 5°C/41°F)

*I. forrestii* [ ] Rhizomatous, beardless Siberian iris with linear leaves, to 25cm (10in) long, glossy, mid-green above, grey-green beneath. In early summer, each unbranched stem produces 1 or 2 scented, clear yellow flowers, 5–6cm (2–2½in) across, with brown lines on the falls. †35–40cm (14–16in). China (S. Sichuan, Yunnan), N. Burma. \*\*\*

*I. 'Frank Elder'*. Vigorous, bulbous Reticulata iris flowering in late winter. Bears well-rounded, sturdy flowers



Iris 'Harmony'

in a mixture of blue and yellow-green.  $\uparrow$  15cm (6in) at flowering. \*\*\*

**I. fulva**, syn. *I. cuprea*. Rhizomatous, beardless Louisiana iris with strap-shaped, bright green leaves, 30–70cm (12–28in) long, arching at the tips. Each slender, slightly zigzag stem bears 4–6 copper- or orange-red flowers, 6–7cm (2½–3in) across, in late spring; both falls and standards are pendent.  $\uparrow$  45–80cm (18–32in). USA (Mississippi valley). \*\*\*

**I. x fulvala**  $\square$  (*I. brevicaulis* x *I. fulva*). Robust, rhizomatous, beardless Louisiana iris. In early summer, bears purple-red flowers, 5–6cm (2–2½in) across.  $\uparrow$  45–80cm (18–32in). Garden origin. \*\*\*

**I. gatesii**. Rhizomatous, bearded Oncocyclus iris with straight, linear leaves, 10–25cm (4–10in) long. In late spring and early summer, each tall stem produces one large cream flower, 15–20cm (6–8in) across; petals may appear purple, brown, or cream depending on the degree of veining. Falls have yellow or purple beards.  $\uparrow$  45–60cm (18–24in). S.E. Turkey, N.E. Iraq. \*\*\* (borderline)

**I. 'Geisha Gown'**. Rhizomatous, beardless Laevigatae (Japanese) iris. In mid- and late spring, bears single, clear white flowers with deep pinkish purple veins.  $\uparrow$  90cm (36in). \*\*\*

**I. 'George'**  $\square$  Vigorous, bulbous Reticulata iris. Well-rounded, sturdy, rich purple flowers are borne in early spring.  $\uparrow$  12cm (5in). \*\*\*

**I. 'Gerald Darby'**  $\square$  Rhizomatous, beardless Laevigatae iris with arching leaves spotted purple at the bases, and

dark violet stems and spathes. Each unbranched stem produces up to 4 blue-violet flowers in late spring.  $\uparrow$  75cm (30in), sometimes to 1.8m (6ft). \*\*\*

**I. germanica**. Rhizomatous, bearded iris with fans of sometimes evergreen, grey-green leaves, 40cm (16in) long. In late spring, sparsely branched stems bear many blue-violet flowers, 10cm (4in) across, with yellow beards.  $\uparrow$  60–120cm (24–48in). Probably Mediterranean. \*\*\*. 'Amas' has deep purple falls and rounded, paler blue standards. 'Florentina', syn. *I. florentina* (Orris root), produces strongly scented white flowers.

**I. 'Giant Blue Butterfly'**. Rhizomatous, beardless Laevigatae (Japanese) iris. From mid-spring to early summer, bears double white and mid-blue flowers.  $\uparrow$  1.4m (4½ft). \*\*\*

**I. 'Gingerbread Man'**  $\square$  Rhizomatous, standard dwarf bearded iris. Bears deep brown flowers with blue-purple beards in mid- and late spring.  $\uparrow$  35cm (14in). \*\*\*

**I. 'Golden Harvest'**  $\square$  Bulbous Dutch Xiphium iris. From mid-spring to midsummer, bears rich golden yellow flowers.  $\uparrow$  to 70cm (28in). \*\*\*

**I. 'Golden Muffin'**  $\square$  Rhizomatous, intermediate bearded iris flowering in mid- and late spring. Standards are yellow; falls are deep amber, thinly margined in yellow, with yellow beards.  $\uparrow$  60cm (24in). \*\*\*

**I. 'Gordon'**. Bulbous Reticulata iris flowering in early spring. Bears bright blue flowers; falls are darker blue with an orange mark.  $\uparrow$  15cm (6in). \*\*\*

**I. gracilipes**. Rhizomatous Crested iris with grass-like leaves, to 30cm (12in) long. In late spring and early summer, each slender, branched stem bears several blue-lilac flowers, 3–4cm (1¼–1½in) across. Each fall has a violet-veined white patch and a yellow-tipped white crest.  $\uparrow$  10–15cm (4–6in). Japan, China. \*\*\*

**I. graeberiana**. Robust, bulbous Juno iris bearing glossy, bright green leaves, to 15cm (6in) long, with narrow white margins. In early spring, bears up to 6 blue flowers, 7cm (3in) or more across, with white and deeper blue markings.  $\uparrow$  20–40cm (8–16in). C. Asia (Kazakhstan to Tajikistan). \*\*\*

**I. graminea**  $\square$  syn. *I. colchica*. Rhizomatous, beardless Spuria iris with flat, linear, bright green leaves, to 30cm (12in) long. In late spring and early summer, bears 1 or 2 purple-violet

flowers, 7cm (3in) across, with a fruity fragrance, often hidden among the foliage. Falls have violet-veined white tips.  $\uparrow$  20–40cm (8–16in). N.E. Spain to W. Russia, N. and W. Caucasus. \*\*\*

**I. 'Green Halo'**. Rhizomatous, standard dwarf bearded iris. In early summer, bears pale olive-green flowers. Each fall has a deeper green "halo" and an olive-green beard.  $\uparrow$  30cm (12in). \*\*\*

**I. 'Harmony'**  $\square$  Bulbous Reticulata iris flowering in late winter. Bears royal-blue flowers with a yellow central mark on each fall.  $\uparrow$  10–15cm (4–6in) at flowering. \*\*\*

**I. histrio**. Small, bulbous Reticulata iris with erect, narrow, square-sectioned leaves, 1–10cm (½–4in) long at flowering. In late winter, bears usually solitary, pale blue and white flowers, 6–8cm (2½–3in) across, with deeper blue markings on the falls.  $\uparrow$  7cm (3in). S. Turkey, Syria, Lebanon. \*\*\*

**I. histrioides**. Bulbous Reticulata iris with erect, square-sectioned leaves, 1–10cm (½–4in) long at flowering. In early spring, bears 1 or 2 robust, mid-to dark blue flowers, 6–7cm (2½–3in) across. Each fall is usually spotted deeper blue in the centre with a yellow central ridge. Similar to *I. histrio* but more robust.  $\uparrow$  10–15cm (4–6in). Turkey. \*\*\*. 'Major'  $\square$   $\square$  is vigorous with deep blue flowers.

**I. 'Holden Clough'**. Rhizomatous, beardless Laevigatae iris with arching, often evergreen, grey-green leaves. In late spring, each branching stem bears 6–12 yellow flowers heavily veined purple, producing a rich brown appearance.  $\uparrow$  50–90cm (20–36in). \*\*\*

**I. hoogiana**  $\square$  Rhizomatous, bearded Regelia iris with erect, purple-tinged, mid-green leaves, to 50cm (20in) long. In early summer, each unbranched stem produces 2 or 3 fragrant, silky, pale to mid-blue flowers, 7–10cm (3–4in) across, with yellow beards.  $\uparrow$  40–60cm (16–24in). Tajikistan (Pamir Mountains). \*\*\*. **I. alba** bears white flowers, faintly overlaid with pale lavender-blue.

**I. humilis**, syn. *I. arenaria*, *I. flavissima*. Rhizomatous, bearded iris with erect, narrow leaves, to 15cm (6in) long. In mid-spring, each unbranched stem bears 1 or 2 scented yellow flowers, 3–4cm (1¼–1½in) across. Falls are horizontal, longer than the standards, and have orange beards.  $\uparrow$  10–25cm (4–10in). E. Europe to Mongolia. \*\*\*

**I. byrcana**. Bulbous Reticulata iris with square-sectioned leaves, 1–10cm (½–4in) long at flowering. In early spring, bears 1 or 2 flowers, 4–5cm (1½–2in) across, varying from usually clear pale to deep blue, or rarely violet.  $\uparrow$  7cm (3in). Iran. \*\*\*

**I. iberica**  $\square$  Rhizomatous, bearded Oncocyclus iris with strongly curved, narrow, grey-green leaves, 15cm (6in) long. In mid- and late spring, each stem produces a solitary, brown-veined, cream or white flower, to 7cm (3in) across. Falls are more heavily veined than the standards, and have black patches and brown-purple beards.  $\uparrow$  15–20cm (6–8in). Caucasus. \*\*\* (borderline). **subsp. elegantissima** is taller, with larger flowers, 10cm (4in) across;  $\uparrow$  20–30cm (8–12in). N.E. Turkey, N.W. Iran, Armenia.

**I. 'Immortality'**. Remontant, rhizomatous, tall bearded iris. Bears ruffled, pure white flowers in early summer and, in warm areas, again in late summer and autumn.  $\uparrow$  75cm (30in). \*\*\*

**I. 'Imperial Bronze'**. Rhizomatous, beardless Spuria iris flowering in mid- and late spring. Produces deep yellow flowers heavily veined brown, producing a deep bronze appearance.  $\uparrow$  100cm (39in). \*\*\*

**I. 'Indeed'**. Rhizomatous, intermediate bearded iris flowering in early spring. Standards are light lemon-yellow; falls are white, margined in lemon, with white beards.  $\uparrow$  55cm (22in). \*\*\*

**I. innominata**  $\square$  Rhizomatous, beardless Pacific Coast iris with evergreen, very narrow, deep green leaves, to 30cm (12in) long, purple at the bases. In early summer, each unbranched stem bears 1 or 2 rounded flowers, 7cm (3in) across, ranging from bright yellow to cream, and from purple to pale lavender-blue.  $\uparrow$  15–25cm (6–10in). USA (S.W. Oregon, N.W. California). \*\*\*

**I. japonica**  $\square$  Rhizomatous Crested iris, which spreads by surface rhizomes, with fans of strap-shaped, evergreen, glossy, dark green leaves, to 45cm (18in) long. In late spring, each branched stem bears 3 or 4 flattened and frilly, white or pale lavender-blue flowers, 4–5cm (1½–2in) across. Falls have purple patches and orange crests.  $\uparrow$  45cm (18in). C. China, Japan. \*\*\*. 'Aphrodite' see 'Variegata'. 'Ledger's Variety' is reputed to be hardier with larger flowers; this name is often incorrectly used for variants of the species. 'Variegata', syn. 'Aphrodite', has white- and green-striped foliage.

**I. 'Jasper Gem'**  $\square$  Rhizomatous, miniature dwarf bearded iris. Produces flowers with smoky brown-red standards and yellow-bearded, oxblood-red falls in early spring.  $\uparrow$  20cm (8in). \*\*\*

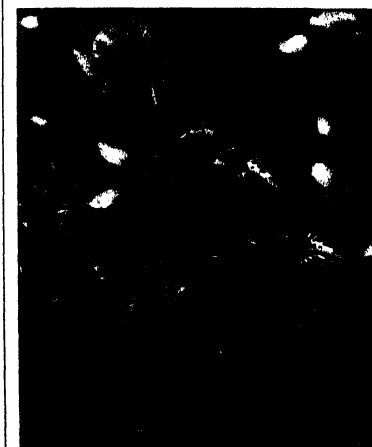
**I. 'Jennifer Rebecca'**. Remontant, rhizomatous, tall bearded iris. Ruffled and laced, rose-pink flowers, lighter around the tangerine beards, appear in early summer and, in warm areas, again in mid-autumn.  $\uparrow$  90cm (36in). \*\*\*

**I. 'Joette'**  $\square$  Rhizomatous, miniature tall bearded iris with slender, zigzag stems. Bears lavender flowers with light yellow beards in mid- and late spring.  $\uparrow$  45cm (18in). \*\*\*

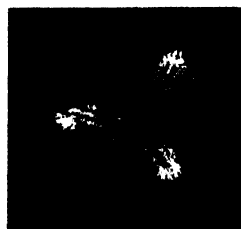
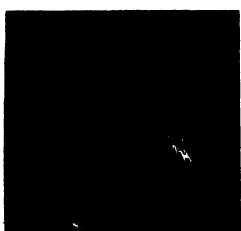
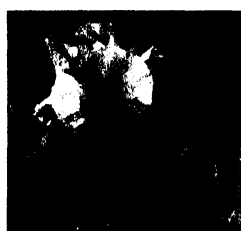
**I. 'Joyce'**  $\square$  Bulbous Reticulata iris bearing deep sky-blue flowers in early spring.  $\uparrow$  12cm (5in). \*\*\*



Iris innominata



Iris 'Joyce'

*Iris* 'Katharine Hodgkin'*Iris kerneriana**Iris lacustris**Iris* 'Lady Mohr'*Iris laevigata**Iris laevigata* 'Variegata'*Iris latifolia**Iris lutescens**Iris* 'Magic Man'*Iris magnifica**Iris* 'Marmalade Skies'*Iris missouriensis**Iris* 'Natascha'*Iris* 'Paradise Bird'*Iris* 'Peach Frost'*Iris prismatica**Iris* 'Professor Blaauw'*Iris pumila**Iris* 'Rain Dance'*Iris* 'Rare Edition'*Iris* 'Redwood Supreme'

*I. 'Just Jennifer'*. Rhizomatous, intermediate bearded iris. Produces ruffled white flowers with white-tipped yellow beards in early spring. †65cm (26in). \*\*\*

*I. kaempferi* see *I. ensata*.

*I. 'Katharine Hodgkin'* □ ♀ Very vigorous, bulbous Reticulata iris. In late winter, produces delicately patterned blue flowers with yellow and blue marks on the falls. †12cm (5in) at flowering. \*\*\*

*I. kerneriana* □ Rhizomatous, beardless Spuria iris with narrow, linear leaves, to 40cm (16in) long. Each erect stem bears 2–4 lemon-yellow flowers, 7–10cm (3–4in) across, in early summer. †30–50cm (12–20in). N. Turkey. \*\*\*

*I. korolkowii*. Rhizomatous, bearded Regelia iris with linear leaves, to 40cm (16in) long, tinged purple at the bases. In late spring and early summer, each unbranched stem produces 2 or 3 flowers, 8cm (3in) across, with erect standards and pointed falls. All petals are cream with dark maroon veining; beards are small and dark brown. †40–60cm (16–24in). N.E. Afghanistan, C. Asia. \*\*\*

*f. violacea* has violet petals and darker veins.

*I. lacustris* □ Rhizomatous Crested iris with fans of narrow leaves, to 10cm (4in) long. In late spring, bears small, purple-blue to sky-blue flowers, 2cm (¾in) across, with a gold crest and a white patch on each fall. Often confused with *I. cristata*, but has narrower leaves and much shorter perianth tubes. †5cm (2in). N. USA (Great Lakes area). \*\*\*

*I. 'Lady Mohr'* □ Rhizomatous, bearded Arilbred iris flowering in early spring. Standards are pearly white; falls are pale yellow, veined and spotted brownish purple around the chrome-yellow beards. †75cm (30in). \*\*\*

*I. 'Lady of Quality'* □ Rhizomatous, beardless Siberian iris flowering in early summer. Flowers have light blue-violet standards and lighter blue falls, margined with silver. †85cm (34in). \*\*\*

*I. 'Lady Vanessa'*. Rhizomatous, beardless Siberian iris flowering in mid- and late spring. Standards are light wine-red; falls are darker and ruffled. †90cm (36in). \*\*\*

*I. laevigata* □ ♀ Rhizomatous, beardless Laevigatae iris with broad leaves, to 40cm (16in) long. In early and midsummer, each unbranched stem bears 2–4 purple-blue flowers, 8–10cm (3–4in) across, the standards much shorter than the falls. Thrives in pond margins and other wet places. †80cm (32in). C. Russia to N. China, Korea, Japan. \*\*\*

*f. alba* bears white flowers. 'Mottled Beauty' has white flowers, with falls spotted pale blue. 'Rosea' has pink flowers. 'Variegata' □ has white- and green-striped leaves and paler purple-blue flowers.

*I. latifolia* □ ♀ syn. *I. xiphoides* (English iris). Bulbous Xiphium iris with narrowly lance-shaped leaves, to 65cm (26in) long. Bears 1 or 2 broad, blue, violet, or white flowers, 8–10cm (3–4in) across, in early summer. May be naturalized in grass. †25–60cm (10–24in). N. Spain. \*\*\*

'Aristocrat' has violet flowers, veined and marked deep violet. 'Duchess of

York' has purple flowers. 'Mont Blanc' has white flowers, tinged lilac. 'Queen of the Blues' has blue standards and purple-blue falls.

*I. 'Lavender Royal'*. Rhizomatous, beardless Pacific Coast iris. In early spring, bears lavender-blue flowers with darker markings. †25cm (10in). \*\*\*

*I. lazica*. Rhizomatous, beardless Unguicularis iris with arching fans of broad, evergreen, bright green leaves, to 30cm (12in) long. Scentless flowers, 6–8cm (2½–3in) across, are stemless, but have long perianth tubes, to 10cm (4in) tall, and are borne in early spring. Petals are lavender-blue; falls are white in the lower halves, spotted and veined lavender, each with a central yellow stripe. Unlike other Unguicularis, thrives in slight shade in moist soil. †15–25cm (6–10in). Black Sea coast, N. Turkey, S.W. Caucasus. \*\*\*

*I. 'Limeheart'*. Rhizomatous, beardless Siberian iris. Bears white flowers with green hafts in mid- and late spring. †100cm (39in). \*\*\*

*I. lortetii*. Rhizomatous, bearded Oncocyclis iris with straight, linear leaves, to 25cm (10in) long. In late spring, each stem produces a solitary white flower, 9cm (3½in) across. Standards have fine pink veins; each fall has pink or maroon spots, one large deep maroon mark, and a reddish brown beard. †30–50cm (12–20in). Lebanon. \*\*\*

*I. lutescens* □ syn. *I. chamaeiris*. Very variable, rhizomatous, bearded iris with nearly straight leaves, 30cm (12in) long. In early and mid-spring, each erect, often branched stem bears 1 or 2 violet, yellow, bicoloured, or rarely white flowers, 6–7cm (2½–3in) across, with yellow beards. †5–30cm (2–12in). N.E. Spain, S. France, Italy. \*\*\*

'Nancy Lindsay' is a dwarf cultivar with strongly scented yellow flowers.

*I. macrosiphon*. Rhizomatous, beardless Pacific Coast iris with linear, dull, grey-green leaves, to 30cm (12in) long. In late spring, bears violet, lavender,

*Iris* 'Lady of Quality'



*Iris orientalis*

or yellow to cream flowers, 3.5–9cm (1½–3½in) across, which may be almost stemless. Some forms are frost tender. † to 15–25cm (6–10in). USA (California). \*\*

***I. 'Magic Man'*** ■ Rhizomatous, tall bearded iris flowering from mid-spring to early summer. Standards are light purple-blue with darker midribs; falls are velvety purple with light blue edging and tangerine beards. † 100cm (39in). \*\*\*

***I. magnifica*** ■ Robust, bulbous Juno iris with arching, glossy, mid-green leaves, to 18cm (7in) long. In mid- and late spring, bears up to 7 pale lilac flowers, to 8cm (3in) across, with a pale yellow and white central area on each fall. † 30–60cm (12–24in). Mountains in C. Asia. \*\*\*. **f. *alba*** has white flowers.

***I. 'Marmalade Skies'*** ■ Vigorous, rhizomatous, intermediate bearded iris flowering in early spring. Standards are orange; falls are deeper orange with tan markings and mandarin-orange beards. † 70cm (28in). \*\*\*

***I. milesii*** Rhizomatous Crested iris with large, green, surface rhizomes and large fans of broad, pale green leaves, 30–60cm (12–24in) long. In early and midsummer, tall, branched stems produce many short-lived flowers, 6–8cm (2½–3in) across. Petals are lavender-pink mottled purple, with yellow crests. † 90cm (36in). Himalayas. \*\*\*

***I. missouriensis*** ■ syn. *I. tolmeiana*. Variable, rhizomatous, beardless iris with narrow leaves, to 50cm (20in) long, overtopping the flowers. In summer, each slender, branched stem bears 2–4 flowers, 6–7cm (2½–3in) across.

Standards are short, pale to deep blue or lilac-purple; falls are larger with deep purple veining. † 20–50cm (8–20in). W. and C. North America. \*\*\*

***I. 'Mohr Pretender'*** Rhizomatous, bearded Arilbred iris. In mid- and late spring, bears pale blue flowers with blue-tipped brown beards. † 85cm (34in). \*\*\*

***I. 'Natascha'*** ■ Delicate, bulbous Reticulata iris with leaves 35cm (14in) long at flowering. In early spring, bears very pale blue flowers, which appear grey-white. † 12cm (5in). \*\*\*

***I. nepalensis*** see *I. decora*.

***I. nicolai*** Small, bulbous Juno iris with leaves 25cm (10in) long, barely developed at flowering. In early spring, produces 1–3 whitish blue flowers,

*Iris pallida* 'Variegata'

5–6cm (2–2½in) across. Falls have rich violet tips and 2 violet stripes beside the orange crests. Similar in shape to, and possibly a colour form of, *I. rosenbachiana*. † 10cm (4in). N.E. Afghanistan, C. Asia. \*\*\*

***I. ochroleuca*** see *I. orientalis*.

***I. 'Orchid Flair'*** Rhizomatous, miniature dwarf bearded iris flowering in early spring. The petals are flesh-pink; falls have white beards. † 20cm (8in). \*\*\*

***I. orientalis*** ■ syn. *I. ochroleuca*.

Robust, rhizomatous, beardless Spuria iris with leaves to 90cm (36in), broadest at the bases, often present over winter.

In late spring, each strong stem, to 90cm (36in) long, usually with one branch, bears 3–5 flowers, 8–10cm (3–4in) across. Standards are white and erect; falls are white with yellow centres. † to 90cm (36in). N.E. Greece, W. Turkey. \*\*\* (borderline)

***I. orientalis* of gardens** see *I. sanguinea*.

***I. pallida***, syn. *I. pallida* var. *dalmatica*. Rhizomatous, bearded iris with sometimes evergreen, grey-green leaves, 20–60cm (8–24in) long, much shorter than the flower stems, and distinctive, very silvery, papery bracts. In late spring

and early summer, each branched stem produces 2–6 large, scented, soft blue flowers, 10cm (4in) across, with yellow beards. † to 1.2m (4ft). Croatia. \*\*\*

**'Argentea Variegata'** is less vigorous than the species, and has pale green leaves with silver-white stripes. **'Aurea Variegata'** see 'Variegata'. var.

***dalmatica*** see *I. pallida*. **'Variegata'** ■ syn. 'Aurea Variegata', has bright green leaves with light golden yellow stripes.

***I. 'Paradise Bird'*** ■ Rhizomatous, tall bearded iris. In mid- and late spring, bears purple flowers with paler purple falls and orange beards. † 85cm (33in). \*\*\*

***I. 'Pauline'*** Bulbous Reticulata iris flowering in early spring. Standards are purple; falls are darker purple with white centres. † 12cm (5in) at flowering. \*\*\*

***I. 'Peach Frost'*** ■ Rhizomatous, tall bearded iris. Bears ruffled flowers from mid-spring to early summer. Standards are peach-pink; falls are white with peach margins and tangerine beards. † 100cm (39in). \*\*\*

***I. persica*** Bulbous, dwarf Juno iris with linear leaves, to 10cm (4in) long, that elongate very little after flowering. From late winter to mid-spring, bears 1–4 flowers, 5–6cm (2–2½in) across. They vary from silvery grey to sand-yellow or pale green, with a darker, contrasting mark at the tip of each fall. † 10cm (4in). S. and S.E. Turkey, N. Syria, N.E. Iraq. \*\*\*

***I. prismatica*** ■ Rhizomatous, beardless iris with thin, wide-spreading rhizomes, forming large clumps of grass-like leaves, to 70cm (30in) long. In early and mid-summer, bears clusters of 2 or 3 violet-blue flowers, 5–7cm (2–3in) across, veined blue, on slender, angled stems. † 40–80cm (16–32in). North America (Nova Scotia to S. Carolina). \*\*\*

***I. 'Professor Blaauw'*** ■ Bulbous Dutch Xiphium iris flowering from mid-spring to midsummer. Bears violet-blue flowers with a yellow mark on each fall. † to 60cm (24in). \*\*\*

*Iris pseudacorus*

***I. 'Protégé'*** Rhizomatous, beardless Spuria iris. In early summer, bears flowers with mid-blue standards and blue-veined white falls. † 90cm (36in). \*\*\*

***I. pseudacorus*** ■ (Yellow flag). Extremely vigorous, rhizomatous, beardless Laevigatae iris with ribbed, grey-green leaves, 90cm (36in) long. In mid- and late summer, each branched stem bears 4–12 flowers, 7–10cm (3–4in) across. Petals are yellow with brown or violet markings and a darker yellow zone on each fall. Suitable for margins of large ponds, lakes, or other wet places. † 0.9–1.5m (3–5ft). Europe to W. Siberia, Caucasus, Turkey, Iran, N. Africa. \*\*\*. **'Alba'** has pale cream flowers. var. *bastardii* produces clear sulphur-yellow flowers. **'Golden Fleece'** has deep yellow blooms. **'Variegata'** has white- or yellowish white-striped foliage.

***I. pumila*** ■ (Dwarf bearded iris). Variable, rhizomatous, miniature dwarf bearded iris with grey-green leaves, to 15cm (6in) long. In mid-spring, unbranched stems bear usually solitary, scented, blue, purple, or yellow flowers, 5cm (2in) across, with yellow or blue beards. † 10–15cm (4–6in). E. Europe to Urals. \*\*\*. **'Atroviolacea'** bears purple flowers. **'Aurea'** has yellow blooms.

***I. purdyi*** Rhizomatous, beardless Pacific Coast iris with fans of evergreen, glossy, dark green leaves, to 35cm (14in) long, pink or red at the base, and with many short leaves on the unbranched flower stems. In late spring, each stem bears 2 lilac-tinted, pale cream flowers, 8cm (3in) across, with spreading petals, making the blooms appear flat. Falls are spotted purple-pink with dark pink margins. † 25–35cm (10–14in). USA (N. California). \*\*

***I. 'Purple Gem'*** Bulbous Reticulata iris bearing neat purple flowers in early spring. † 15cm (6in). \*\*\*

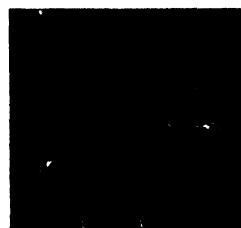
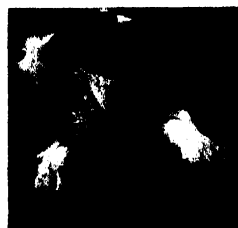
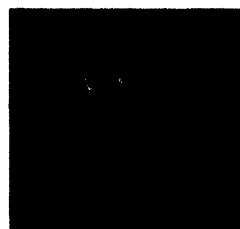
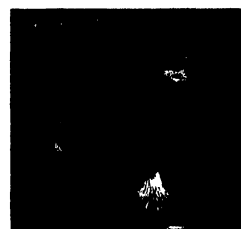
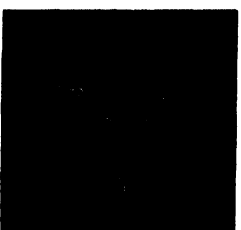
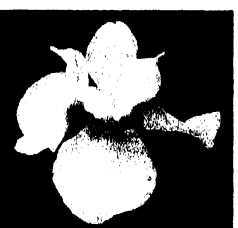
***I. 'Rain Dance'*** ■ Rhizomatous, standard dwarf bearded iris. Bears violet-blue flowers with matching beards in mid- and late spring. † 25cm (10in). \*\*\*

***I. 'Rare Edition'*** ■ Rhizomatous, intermediate bearded iris flowering in mid- and late spring. Standards are mulberry-purple, lightly speckled in white; falls are white with stitched purple margins and blue-white beards. † 60cm (24in). \*\*\*

***I. 'Raspberry Rimmed'*** Rhizomatous, beardless Laevigatae iris producing single flowers in mid- and late spring. Standards and falls are white with narrow, raspberry-red margins and a golden yellow patch on each fall. † 90cm (36in). \*\*\*

***I. 'Redwood Supreme'*** ■ Rhizomatous, beardless Spuria iris. Bears flowers with dark brown standards, and orange falls with dark brown margins, in mid- and late spring. † 100cm (39in). \*\*\*

***I. reticulata*** ♂ Bulbous Reticulata iris with square-sectioned leaves, 1–10cm (½–4in) long at flowering. In late winter and early spring, bears a solitary, fragrant flower, 6–8cm (2½–3in) across, varying from pale to deep violet-blue or reddish purple, with a yellow central ridge on each fall. Bulbs often split after blooming and may take some years to reach flowering size again. † 10–15cm (4–6in). Caucasus, N. and E. Turkey,

*Iris reticulata* 'Cantab'*Iris reticulata* 'J.S. Dijt'*Iris* 'Rippling Rose'*Iris* 'Ruffled Velvet'*Iris ruthenica**Iris sari**Iris setosa**Iris* 'Shirley Pope'*Iris* 'Sparkling Rose'*Iris* 'Sun Miracle'*Iris tectorum**Iris tenax**Iris* 'Toots'*Iris unguicularis* 'Mary Barnard'*Iris variegata**Iris versicolor**Iris warleyensis**Iris* 'White Swirl'*Iris* 'White Wedgwood'*Iris winogradowii**Iris* 'Wisley White'

N.E. Iraq, N. Iran. \*\*\*. 'Cantab' produces pale blue flowers with deeper blue falls, each with a yellow crest. 'J.S. Dijt' has reddish purple flowers with a central orange mark on each fall.

**I. 'Rippling Rose'** Rhizomatous, tall bearded iris. In mid- and late spring, bears ruffled white flowers with purple markings and lemon beards. †90cm (36in). \*\*\*

**I. rosenbachiana.** Small, bulbous Juno iris with glossy, mid-green leaves, eventually to 25cm (10in) long, only slightly developed at flowering. In late winter and early spring, bears solitary, rich purple flowers, 5–6cm (2–2½in) across, with a bright orange-yellow crest on each fall. †10cm (4in). C. Asia. \*\*\*

**I. 'Ruffled Velvet'** Rhizomatous, beardless Siberian iris. In early summer, bears flowers with velvety, red-purple standards and darker, ruffled falls. †55cm (22in). \*\*\*

**I. ruthenica** Rhizomatous, beardless iris with creeping, branched rhizomes and fans of grass-like, glossy, bright green leaves, to 30cm (12in) long. In late spring, each stem, 3–15cm (1¼–6in) tall, produces 1 or 2 fragrant flowers, 4cm (1½in) across. Erect standards are violet or lavender-blue; falls are white with dark violet markings. †to 20cm (8in). E. Europe to China, Korea. \*\*\*

**I. sanguinea.** syn. *I. extremorientalis*, *I. orientalis* of gardens. Rhizomatous, beardless Siberian iris with slightly glaucous, mid-green leaves, to 75cm (30in) long, as tall as or longer than the unbranched flower stems. In late spring and early summer, each stem bears 2 red-purple flowers, 5–8cm (2–3in) across, with small, erect standards, and falls with orange hafts. †to 90cm (36in). S.E. Russia, China, Korea, Japan. \*\*\*. 'Alba' has white flowers with some purple veining.

**I. sari** Rhizomatous, bearded Oncocyclus iris with narrow, curved or nearly straight leaves, 9cm (3½in) long. In late spring, each stem bears one ruffled, crimson-veined, cream flower, 7–10cm (3–4in) across. Each fall has a crimson or brown patch and yellow beard. †10–30cm (4–12in). C. and E. Turkey. \*\*

**I. 'Scribe'** Rhizomatous, miniature dwarf bearded iris. In early spring, bears white flowers with blue markings and blue beards. †15cm (6in). \*\*\*

**I. setosa** Very variable, rhizomatous, beardless iris with linear, mid-green leaves, to 50cm (20in) long, often red-tinted at the bases. In late spring and early summer, each stem bears 2–12 flowers, 5–9cm (2–3½in) across, with blue or purple-blue falls and bristle-like standards. †15–90cm (6–36in). E. Russia (including Sakhalin, Kurile Islands), N. Korea, Japan, Alaska (including Aleutian Islands), N.E. North America. \*\*\*. var. *arctica* is one of several dwarf variants. Each unbranched stem bears 2 purple flowers with white marks.

**I. 'Shelford Giant'** Rhizomatous, beardless Spuria iris flowering in early summer. Bears large, lemon-white flowers with a central yellow patch on each fall. †1.8m (6ft) or more. \*\*\*

**I. 'Shirley Pope'** Rhizomatous, beardless Siberian iris. In early summer,

bears dark red-purple flowers; falls are velvety with white patches. †85cm (34in). \*\*\*

**I. sibirica.** Rhizomatous, beardless Siberian iris with narrow, grass-like leaves, to 45cm (18in) long. In early summer, each branched stem bears up to 5 flowers, to 7cm (3in) across, well above the foliage. All petals are blue-violet; falls have dark veining, the background colour changing to white near the hafts. A parent of numerous cultivars. †50–120cm (20–48in). C. and E. Europe, N.E. Turkey, Russia. \*\*\*. f. *alba* bears white flowers.

**I. sisyrinchium** see *Cynandris sisyrinchium*.

**I. 'Sparkling Rose'** Rhizomatous, beardless Siberian iris. In mid- and late spring, bears pinkish mauve flowers. The base of each fall is yellow with purple veins. †100cm (39in). \*\*\*

**I. spuria.** Robust, very variable, rhizomatous, beardless Spuria iris with tough, broad leaves, 30cm (12in) long. In early and midsummer, each branched stem bears several blue, yellow, or white flowers, 6–8cm (2½–3in) across. †to 90cm (36in). S. Europe to C. Asia. \*\*\*

**I. 'Stepping Out'** Rhizomatous, tall bearded iris. Bears white flowers, with sharply patterned, blue-violet margins and pale blue beards, in mid- and late spring. †100cm (39in). \*\*\*

**I. stylosa** see *I. unguicularis*.

**I. 'Sun Miracle'** Rhizomatous, tall bearded iris. In early summer, bears canary-yellow flowers with yellow beards. †90cm (36in). \*\*\*

**I. 'Sunrise'** Bulbous Dutch Xiphium iris flowering from mid-spring to midsummer. Standards are lemon-yellow; falls are golden yellow, each with an orange mark. †60cm (24in). \*\*\*

**I. 'Superstition'** Rhizomatous, tall bearded iris. Bears dark purple-brown flowers with blue-black beards in early summer. †90cm (36in). \*\*\*

**I. susiana** (Mourning iris). Rhizomatous, bearded Oncocyclus iris with slightly curved leaves, 10–15cm (4–6in) long. In late spring, each stem bears a large, solitary flower, 10–15cm (4–6in) across. Petals are grey with deep purple veins, black patches, and purple beards. Very susceptible to virus. †30–40cm (12–16in). Probably Lebanon. \*\*

**I. tectorum** (Roof iris). Rhizomatous Crested iris with fans of broad, ribbed, glossy, dark green leaves, to 30cm (12in) long. In early summer, each occasionally branched stem bears 2 or 3 lilac flowers, 3–10cm (1¼–4in) across, with darker veins and a white crest on each fall. †25–40cm (10–16in). C., S. and S.W. China. \*\*\*. f. *alba* has white flowers with yellow veins on the crests and falls. 'Variegata' has green leaves with white stripes.

**I. tenax** Rhizomatous, beardless Pacific Coast iris with narrow, deep green leaves, to 30cm (12in) long, tinged red at the bases. From mid-spring to early summer, each stem bears 1 or 2 blue, lavender-blue, yellow, cream, or white flowers, 7–9cm (3–3½in) across. †20–35cm (8–14in). USA (Washington, Oregon). \*\*\*

**I. tenuis.** Creeping, rhizomatous Crested iris with narrow leaves, 30cm (12in) long. In late spring, each

branched stem bears one pale lilac flower, 3–4cm (1¼–1½in) across, with yellow crests. † to 30cm (12in). USA (Oregon). \*\*\*

**I. 'Theseus'**. Rhizomatous, bearded *Regeliocyclis* iris flowering in early spring. Petals are violet: standards have dark violet veins, and falls have ivory veins, dark violet markings, and purple-brown beards. † 45cm (18in). \*\*\*

**I. tingitana**. Robust, bulbous *Xiphium* iris with lance-shaped, silvery grey leaves, 45cm (18in) long, which appear in autumn and are prone to frost damage. In late winter and early spring, bears 1–3 pale to deep blue flowers, 8–12cm (3–5in) across. It is one parent of the Dutch irises. † 60cm (24in). Morocco, Algeria. \*\*

**I. tolmeiana** see *I. missouriensis*.

**I. 'Toots'** ■ Rhizomatous, standard dwarf bearded iris. In mid- and late spring, bears velvety, wine-red flowers with yellow beards. † 30cm (12in). \*\*\*

**I. tuberosa** see *Hermodactylus tuberosus*.

**I. unguicularis** ♀ syn. *I. stylata*.

Vigorous, rhizomatous, beardless *Unguicularis* iris with tough, grass-like, evergreen leaves, to 60cm (24in) long. Flowers are large, fragrant, 5–8cm

(2–3in) across, pale lavender to deep violet with contrasting veins, and a central band of yellow on the falls, and with perianth tubes 6–20cm (2½–8in) long. They are borne singly on very short stems arising from a branching rhizome in late winter and early spring, occasionally in late autumn. † 30cm (12in). Greece, W. and S. Turkey, W. Syria, Tunisia, Algeria. \*\*\*. 'Alba' bears creamy white flowers with a yellow central line on each fall; flowers are more frost tender than on blue forms. **subsp. cretensis** ■ is a dwarf variant. Standards are violet or lavender-blue; falls are white or yellow with violet veining at the bases and clear violet tips. † 10cm (4in). Greece (Peloponnese, Crete). \*\*\*. 'Mary Barnard' ■ bears



*Iris* 'Shelford Giant'



*Iris unguicularis* subsp. *cretensis*

bright violet flowers in midwinter. 'Walter Butt' has larger, strongly fragrant, pale lavender-blue, almost grey flowers, 8–10cm (3–4in) across; it is one of the earliest to bloom, sometimes in late autumn.

**I. 'Vanity'**. Rhizomatous, tall bearded iris. In early summer, bears pink flowers with light coral-pink beards. † 90cm (36in). \*\*\*

**I. variegata** ■ Rhizomatous, bearded iris with curved, strongly ribbed, deep green leaves, to 30cm (12in) long. In midsummer, each branched stem bears 3–6 pale yellow flowers, 5–7cm (2–3in) across. Falls have brown or violet veins and yellow beards. Many colour variants are known. † 20–45cm (8–20in). C. and E. Europe. \*\*\*

**I. verna**. Small, rhizomatous, beardless iris with fans of deep green leaves, to 6cm (2½in) long, which lengthen after flowering to 10–15cm (4–6in). In early spring, bears solitary, violet or blue flowers, 5cm (2in) across, with a narrow orange stripe on each fall. † 15cm (6in), to 4–6cm (1½–2½in) at flowering. S.E. USA. \*\*\*

**I. versicolor** ■ (Blue flag). Rhizomatous, beardless *Laevigatae* iris with erect or slightly arched leaves, 35–60cm (14–24in) long. In early and midsummer, each branched stem bears 3–5 violet, purple, or lavender-blue flowers, 6–8cm (2½–3in) across, with a white-veined purple area on each fall. † 20–80cm (8–32in). E. North America. \*\*\*. 'Kermesina' bears red-purple flowers.

**I. virginica** (Southern blue flag). Rhizomatous, beardless *Laevigatae* iris with soft leaves, 50cm (20in) long, arching at the tips. From late spring to summer, each usually unbranched stem bears up to 4 blue to lavender-blue flowers. Falls are spreading and have yellow patches; standards are small and erect. † 50–100cm (20–39in). S.E. USA (Virginia to Florida and E. Texas). \*\*\* (borderline)

**I. 'Virtue'**. Rhizomatous, intermediate bearded iris flowering in mid- and late spring. Standards are rich purple; falls are royal purple with a velvety texture, blue beards, and bronze throats. † 50cm (20in). \*\*\*

**I. warleyensis** ■ Vigorous, bulbous *Juno* iris with curved, glossy leaves, to 20cm (8in) long. In spring, bears up to 5 pale to deep violet or purplish blue flowers, 5–7cm (2–3in) across. Each narrow fall has a white rim, a toothed,

cream to yellow crest, and a deep violet patch at the tip. † 20–45cm (8–18in). C. Asia (Altai to Pamir Mountains). \*\*\*

**I. 'Warlsind'**. Bulbous *Juno* iris flowering in early spring. Standards are blue; falls are yellow with blue margins. † 30cm (12in). \*\*\*

**I. 'Wedgwood'**. Bulbous Dutch *Xiphium* iris. Clear blue flowers are borne from mid-spring to midsummer. † 60–70cm (24–28in). \*\*\*

**I. 'White Swirl'** ■ Rhizomatous, beardless Siberian iris. In early summer, bears pure white flowers, yellow at the bases, with rounded, flaring petals. † 100cm (39in). \*\*\*

**I. 'White Wedgwood'** ■ Bulbous Dutch *Xiphium* iris. Bears creamy white flowers with a yellow mark on each fall from mid-spring to midsummer. † 65cm (26in). \*\*\*

**I. 'Why Not?'**. Rhizomatous, intermediate bearded iris. Bears apricot flowers with orange beards in mid- and late spring. † 55cm (22in). \*\*\*

**I. winogradowii** ■ Bulbous *Reticulata* iris with erect, square-sectioned leaves, 1–10cm (½–4in) long at flowering. In early spring, bears solitary, primrose-yellow flowers, 6–7cm (2½–3in) across, spotted green on the falls. Unlike many other bulbous *Reticulata* irises, the bulbs do not split up after flowering. † 6–10cm (2½–4in). Caucasus. \*\*\*

**I. 'Wisley White'** ■ Rhizomatous, beardless Siberian iris. Bears white flowers with cream veining and bright yellow haft marks in early summer. † 100cm (39in). \*\*\*

**I. xiphioides** see *I. latifolia*.

**I. xiphium** (Spanish iris). Vigorous, bulbous *Xiphium* iris with lance-shaped leaves, 20–70cm (8–28in) long. In late spring and early summer, produces 2 pale to deep blue or violet, rarely yellow or white flowers, 12cm (5in) across, with an orange or yellow mark on each fall. It is one parent of the Dutch irises. † 40–60cm (16–24in). S. Europe, N. Africa. \*\*\*

#### ▷ *Iris*,

Dwarf bearded see *Iris pumila*

English see *Iris latifolia*

Mourning see *Iris susiana*

Roof see *Iris tectorum*

Spanish see *Iris xiphium*

Stinking see *Iris foetidissima*

Widow see *Hermodactylus tuberosus*

▷ *Ironbark* see *Eucalyptus*

Red see *E. sideroxylon*

White see *E. leucoxylon*

▷ *Ironweed* see *Vernonia*

▷ *Ironwood* see *Ostrya virginiana*

Catalina see *Lyonothamnus*

*floribundus*

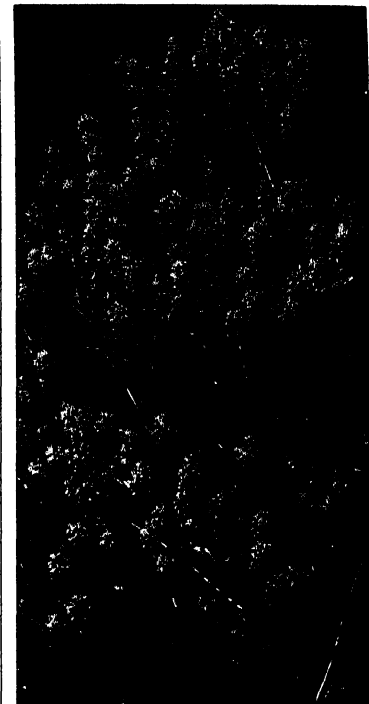
Lemon see *Backhousia citriodora*

Persian see *Parrotia persica*

## ISATIS

BRASSICACEAE/CRUCIFERAE

Genus of about 30 species of annuals, biennials, and perennials, growing on waste ground, rocky sites, or as weeds of cultivation, in dry places in C. and S. Europe, and in W. and C. Asia. They have ovate to ovate-oblong, entire or pinnately lobed, stalked basal leaves and smaller, arrow-shaped, stalkless stem leaves. Small, 4-petalled, usually yellow flowers are borne in loose racemes or panicles, and are attractive to bees. They



*Isatis tinctoria*

are ideal for a wild garden; *I. tinctoria* is suitable for a herb garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed in autumn in containers in a cold frame, or in spring at 13–18°C (55–64°F). Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**I. glauca**. Upright, clump-forming, almost hairless perennial with glaucous, blue-green leaves: the stalked basal leaves are lance-shaped, to 30cm (12in) long; the smaller, stalkless stem leaves are arrow-shaped, to 12cm (5in) long. Bears abundant 4-petalled yellow flowers, 6mm (¼in) across, in large panicles, 12–30cm (5–12in) across, in early summer. † 60–120cm (24–48in), ↔ 45cm (18in). Turkey, Iran. \*\*\*

**I. tinctoria** ■ (Woad). Tap-rooted, hairless or slightly hairy, short-lived perennial or biennial. Produces basal rosettes of oblong-lance-shaped, grey-green stalked leaves, to 10cm (4in) long, and leafy flowering stems bearing arrow-shaped, grey-green stalkless leaves, to 5cm (2in) long. Branched panicles, 3–8cm (1¼–3in) across, of 4-petalled yellow flowers, 8mm (⅓in) across, are borne in early summer. Self-seeds freely. Leaves produce a blue pigment when boiled or fermented with ammonia. † 60–120cm (24–48in), ↔ 45cm (18in). S. Europe. \*\*\*

▷ *Ismene* see *Hymenocallis*

*I. calathina* see *H. narcissiflora*

## ISOPLEXIS

SCROPHULARIACEAE

Genus of 3 species of evergreen subshrubs or shrubs, closely related to *Digitalis*, found in open places in laurel forest and tree heather forest, up to 1,500m (5000ft), in Madeira and the Canary Islands. They are cultivated for their tubular, 5-lobed, colourful flowers.

*Isoplexis canariensis*

which are borne in terminal racemes. Leaves are alternate, narrow, and simple, with toothed margins. Where temperatures fall below 5°C (41°F), grow in a temperate greenhouse or conservatory. In milder climates, grow in a shrub border, small courtyard garden, or as specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full or bright filtered light, with low to moderate humidity. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade. Shelter from cold, drying winds. Pruning group 9.

• **PROPAGATION** Sow seed at 18–24° (65–75°F) in spring. Root softwood cuttings in spring, or semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Whiteflies and red spider mites may be troublesome under glass.

**I. canariensis** ■ Erect, bushy shrub when young, spreading with age. Lance-shaped to narrowly ovate, sharply toothed, almost leathery, deep green leaves, to 15cm (6in) long, softly hairy beneath, are borne close together. Produces dense racemes, 30cm (12in) long, of tubular, bright orange-yellow, brownish orange, or yellow-brown flowers, to 3cm (1¼in) long, each with a 2-lobed upper lip, mainly in summer. ‡ to 1.5m (5ft), ↔ 1m (3ft). Canary Islands (Tenerife). ☼ (min. 5°C/41°F)

## ISOPOGON

Cone bush, Drumsticks

PROTEACEAE

Genus of more than 35 species of mainly small, evergreen shrubs from Australia, usually found in heathland, heath woodland and drought-prone forest, from sea level to sub-alpine zones. The alternate or spiralling, leathery leaves are usually pinnately or ternately divided, sometimes simple. They are grown for their firm, cone-like, spherical flowerheads, composed of many bracts and slender florets radiating outwards. Where temperatures regularly fall to 0°C (32°F), grow in a temperate greenhouse. In warm, dry climates grow in a shrub border. The larger species are unusual specimen plants.

• **HARDINESS** Half hardy to frost tender.

*Isopogon anemonifolius*

• **CULTIVATION** Under glass, grow in a mix of equal parts of loam-based potting compost (JI No.1), grit, and leaf mould or peat, in full or bright filtered light and low humidity. During the growing season, water sparingly and apply a half-strength, phosphate-free liquid fertilizer monthly. Keep just moist in winter. Outdoors, grow in neutral to acid, poor to moderately fertile soil in full sun, with shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** In spring, surface-sow seed at 19–24°C (66–75°F) and cover with a fine layer of vermiculite or grit; before sowing, soak seed for 24 hours. Root semi-ripe cuttings in late summer with bottom heat.

• **PESTS AND DISEASES** In moist, humid conditions, *Phytophthora* root rot may kill plants. Scale insects may be a problem under glass.

**I. anemonifolius** ■ (Broad-leaf drumsticks). Dense, rounded to spreading shrub with hairy, often red-tinted, young shoots. Mid-green leaves, to 10cm (4in) long, vary from simple to 2- or 3-lobed; each slender lobe is deeply cut at the tips into narrow segments. Bears abundant yellow and cream flowerheads, 4cm (1½in) across, each surrounded by a ruff of dissected leaves, from spring to midsummer. ‡ 0.6–2m (2–6ft), ↔ 1–2m (3–6ft). Australia (New South Wales). ☼ (min. 5°C/41°F)

**I. dubius** (Pin-cushion flower, Rose cone-flower). Small, erect to rounded shrub with often densely hairy shoots. Leaves are linear, prickly, bright to greyish green, 3–8cm (1¼–3in) long, deeply dissected 3–4 times into wide-spreading lobes. Produces solitary or clustered, rose-pink flowerheads, to 5cm (2in) across, from late winter to late spring or early summer. ‡ 0.8–1.5m (2½–5ft), ↔ 1–2m (3–6ft). Australia (Western Australia). ☼ (min. 7–10°C/45–50°F)

## ISOPYRUM

False rue anemone

RANUNCULACEAE

Genus of 30 species of spring-flowering, rhizomatous, tufted perennials, which grow wild in damp woodland in temperate regions of Europe. They have delicate, deeply divided, ternate to 3-ternate leaves and anemone-like, usually white flowers with 5 petal-like sepals; petals are tiny or absent. These

dainty plants are suitable for a peat bed, woodland garden, or rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, neutral to acid, moist but well-drained soil in partial shade. Shelter from cold, drying winds.

• **PROPAGATION** Sow seed as soon as ripe in containers in an open frame. Divide in autumn.

• **PESTS AND DISEASES** May be badly damaged by slugs and snails.

**I. thalictroides**. Clump-forming perennial with bluish green leaves, to 5cm (2in) long, each divided into 3 ovate, 3-lobed leaflets. Produces loose, open panicles, to 4cm (1½in) long, of nodding, anemone-like white flowers, to 2cm (¾in) across, from spring to early summer. ‡ 20cm (8in), ↔ 15cm (6in). W. and C. Europe. \*\*\*

▷ *Isotoma* see *Solenopsis*

**I. axillaris** see *S. axillaris*

## ITEA

ESCALLONIAACEAE/GROSSULARIACEAE

Genus of about 10 species of evergreen and deciduous shrubs and trees from woodlands and swamps in E. Asia and E. North America. They are cultivated for their holly-like leaves, attractive autumn colour, and their small, white, cream, or green-white flowers. Leaves are toothed and arranged alternately. The flowers are borne in axillary or terminal, catkin-like, many-flowered racemes or panicles. Grow evergreen species in a sheltered position in a shrub border; *I. ilicifolia* and *I. yunnanensis* are suitable for growing against a warm sunny wall; *I. virginica* prefers more moisture, and is best grown in a shrub or mixed border, or as a free-standing specimen.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow evergreen species in fertile, moist but well-drained soil in full sun. Shelter from cold, drying winds

*Itea ilicifolia*

and mulch young plants in winter.

Grow *I. virginica* in moist, slightly acid soil in partial shade. Provide support and tie in long shoots of wall-trained, evergreen species. Pruning group 9 for evergreens; group 2 for deciduous species; group 13 if wall-trained.

• **PROPAGATION** Sow seed as soon as ripe in containers in an open frame. Root greenwood cuttings in spring, or semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Trouble free.

**I. ilicifolia** ■ ♀ Erect then spreading, evergreen shrub with arching shoots and oval to elliptic, spiny-toothed, glossy, dark green leaves, to 10cm (4in) long. Small, greenish white flowers, 7mm (¼in) across, are borne in pendent, catkin-like racemes, to 30cm (12in) long, from midsummer to early autumn. ‡ 3–5m (10–15ft), ↔ 3m (10ft). W. China. \*\*

**I. virginica** (Sweetspire, Tassel-white). Upright then arching, deciduous shrub with narrowly elliptic to oblong, finely toothed, dark green leaves, to 10cm (4in) long, turning red to purple in autumn. Fragrant, creamy white flowers, 9mm (¾in) across, are borne in dense, erect racemes, to 15cm (6in) long, in summer. ‡ 1.5–3m (5–10ft), ↔ 1.5m (5ft). E. USA. \*\*\*

**I. yunnanensis**. Erect then spreading, evergreen shrub with arching shoots and narrowly elliptic, spiny-toothed, glossy, dark green leaves, to 10cm (4in) long. Small white flowers, to 6mm (¼in) across, are produced in pendent, catkin-like racemes, to 17cm (7in) long, in late summer and early autumn. ‡ 3–5m (10–15ft), ↔ 3m (10ft). China (Yunnan). \*\*

▷ **Ivory bells** see *Campanula alliariifolia*

▷ **Ivy** see *Hedera*

**Bird's foot** see *Hedera helix* 'Pedata'

**Boston** see *Parthenocissus*

*tricuspidata*

**Bullock's heart** see *Hedera colchica*

**Canary Island** see *Hedera canariensis*

**Cape** see *Senecio macroglossus*

**Clover-leaf** see *Hedera helix*

'Shamrock'

**Common** see *Hedera helix*

**Devil's** see *Epipremnum aureum*

**English** see *Hedera helix*

**German** see *Senecio mikanioides*

**Grape** see *Cissus rhombifolia*

**Ground** see *Glechoma*

**Irish** see *Hedera hibernica*

**Italian** see *Hedera helix* f. *poetarum*

**Japanese** see *Hedera rhombea*

**Natal** see *Senecio macroglossus*

**Nepal** see *Hedera nepalensis*

**North African** see *Hedera canariensis*

**Parlour** see *Senecio mikanioides*

**Persian** see *Hedera colchica*

**Poet's** see *Hedera helix* f. *poetarum*

**Purple-leaved** see *Hedera helix*

'Atropurpurea'

**Red flame** see *Hemigraphis alternata*

**Salt-and-pepper** see *Hedera helix*

'Minor Marmorata'

**Swedish** see *Plectranthus australis*

**Sweetheart** see *Hedera hibernica*

'Deltoides'

**Switch** see *Leucothoe fontanesiana*

**Variegated ground** see *Glechoma hederacea* 'Variegata'

▷ **Ivy of Uruguay** see *Cissus striata*

▷ **Ivy tree** see *Schefflera heptaphylla*



Ixia 'Mabel'

## IXIA

Corn lily

IRIDACEAE

Genus of 40–50 species of cormous perennials found in grassland and sandy, sometimes marshy slopes from low to high altitudes in South Africa. They are grown for their open, star-shaped, brightly coloured flowers, which often have conspicuous dark centres, and are borne on wiry stems from early spring to summer. Narrowly linear, usually mid-green leaves are produced from the base of the plant, with shorter leaves on the slender, wiry stems. A large range of cultivars has been developed, with narrow, often branched stems bearing lax or dense spikes of few to many flowers, 3–7cm (1¼–3in) across. In frost-prone areas, grow in a cool greenhouse, or at the front of a border for summer flowering. Elsewhere, grow in a container on a patio or at the base of a warm, sunny wall.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, plant corms 10–15cm (4–6in) deep, 5–8cm (2–3in) apart, in autumn. Grow in loam-based potting compost (J1 No.2) with added leaf mould and sharp sand in full light, with low to moderate humidity. Water sparingly until flower spikes appear, then water freely and apply a high potash liquid fertilizer every 2–3 weeks until foliage begins to die back. Lift corms in autumn and store in dry, frost-free conditions while dormant. Outdoors, grow in moderately fertile, well-drained soil in full sun.



Ixia paniculata

- **PROPAGATION** Sow seed when ripe in containers in a cold frame. Separate offsets when dormant in late summer.
- **PESTS AND DISEASES** Trouble free.

*I. 'Blauwe Vogel'* see *I. 'Blue Bird'*.

*I. 'Blue Bird'*, syn. 'Blauwe Vogel'. Cormous perennial producing white flowers with dark purple centres; each outer petal has a broad violet streak and a dark purple tip. †40cm (16in). \*

*I. 'Hogarth'*. Cormous perennial bearing creamy white flowers with purple centres. †40cm (16in). \*

*I. 'Hubert'*. Cormous perennial bearing brownish red flowers with black centres. †40cm (16in). \*

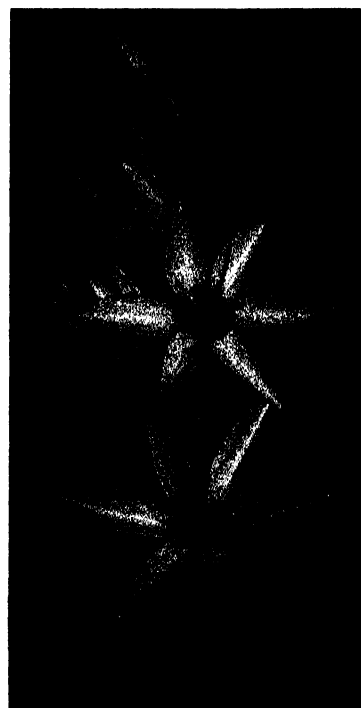
*I. 'Mabel'* ■ Cormous perennial bearing deep pink flowers, paler inside; the outer petals are brownish red. †40cm (16in). \*

*I. maculata*. Cormous perennial with erect, lance-shaped or awl-shaped, usually twisted leaves, 10–35cm (4–14in) long. From spring to early summer, bears spikes of few to many orange or yellow flowers, 6cm (2½in) across, with dark purple or black centres. †18–50cm (7–20in). South Africa (Western Cape). \*

*I. 'Marquette'*. Cormous perennial with purple-tipped yellow flowers with dark purple centres. †40cm (16in). \*

*I. monadelphica*. Cormous perennial with erect, lance-shaped or sword-shaped, twisted leaves, 8–28cm (3–11in) long. From spring to early summer, bears compact spikes of 4–12 white, blue, purple, pink, or white flowers, 4cm (1½in) across, each with a green or brown central mark usually edged with another colour. † to 30cm (12in). South Africa (Western Cape). \*

*I. paniculata* ■ syn. *Tritonia longiflora*. Cormous perennial with erect, lance-shaped or linear leaves, 15–60cm (6–24in) long. From spring to early summer, branched stems bear spikes of 5–18 pink-suffused, cream or pale yellow flowers, 4–7cm (1½–3in) across, often tinged pink or red on the outside.



Ixia viridiflora

†30–90cm (12–36in). South Africa (Western Cape). \*

*I. polystachya*. Cormous perennial with erect, grass-like leaves, 15–50cm (6–20in) long, and often branched stems. From spring to early summer, bears spikes or panicles of few to many, lightly fragrant, white, mauve, or blue flowers, 4–5cm (1½–2in) across, often with mauve or purple central marks. †30–90cm (12–36in). South Africa. \*

*I. 'Rose Emperor'*. Cormous perennial bearing spikes of pink flowers with dark carmine-red centres. †40cm (16in). \*

*I. 'Uranus'*. Cormous perennial bearing dark lemon-yellow flowers with dark red-black centres. †40cm (16in). \*

*I. 'Venus'*. Cormous perennial with large, dark-centred magenta flowers, 5–7cm (2–3in) across. †40cm (16in). \*

*I. viridiflora* ■ Cormous perennial with erect, linear leaves, 40–55cm (16–22in) long. From spring to early summer, bears spikes of 12 or more pale bluish green flowers, 5cm (2in) across, with conspicuous, red-rimmed, black centres. †30–60cm (12–24in). South Africa (Western Cape). \*

## IXIOLIRION

AMARYLLIDACEAE/IXIOLIRIACEAE

Genus of 4 species of bulbous perennials from roadsides and grassy places in S.W. and C. Asia. They are cultivated for their racemes or umbels of funnel-shaped, usually deep blue or violet flowers. Linear-lance-shaped leaves are in basal rosettes. They flower best after hot, dry dormant periods in summer. Grow at the base of a sunny wall, or in a raised bed, alpine house, or bulb frame.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Plant bulbs 15cm (6in) deep in autumn. Outdoors, grow in humus-rich, well-drained soil in full sun. Mulch to protect from winter wet. Under glass, grow in loam-based potting compost (J1 No.2) in full light. During growth, water freely. Keep just moist in autumn and winter, and completely dry when dormant in summer.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in autumn. Separate offsets after flowering.

• **PESTS AND DISEASES** Trouble free.

*I. montanum* see *I. tataricum*.

*I. pallasii* see *I. tataricum*.

*I. tataricum*, syn. *I. montanum*.

*I. pallasii*. Bulbous perennial with erect, linear-lance-shaped, basal leaves, to 60cm (24in) or more long. From spring to early summer, produces loose umbels of up to 10 funnel-shaped, blue or violet-blue flowers, 3–5cm (1¼–2in) long, with a darker central stripe on each petal. †24–40cm (10–16in), ↔ 5cm (2in). Israel, Lebanon, Syria, N. Iraq, N. and N.W. Iran, S.W. and C. Asia to Kashmir and Tien Shan. \* \* \*

## IXORA

RUBIACEAE

Genus of 400 species of evergreen shrubs and trees from tropical woodland and mountains up to 3,000m (10,000ft) worldwide. They are grown for their large, vibrantly coloured, scented, 4-petalled, salverform flowers, produced in terminal panicles or corymb-like cymes. The opposite, occasionally whorled

leaves are simple and entire. They grow best in warm, humid climates in a shrub border, or as free-standing specimens. Where temperatures drop below 15°C (69°F), grow as houseplants or in a warm greenhouse.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost with added leaf mould and grit in bright filtered or indirect light, with moderate to high humidity. Water freely during growth and sparingly in winter. Top-dress annually in spring with fresh compost and a balanced, slow-release fertilizer. Outdoors, grow in fertile, moist but well-drained soil, with shade from the hottest sun and shelter from strong winds. Pruning group 9; may need restrictive pruning under glass.

• **PROPAGATION** Root semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

*I. chinensis*. Bushy, rounded shrub with elliptic, ovate or obovate, semi-lustrous, mid- to deep green leaves, to 6cm (2½in) long. Produces dense, flattened corymb-like cymes, 5–10cm (2–4in) across, of red, orange, pink, or occasionally white flowers, 3.5cm (1½in) long, mainly in summer. †2m (6ft) or more, ↔ 1–2m (3–6ft). S. China, Taiwan. ☼ (min. 15°C/59°F)

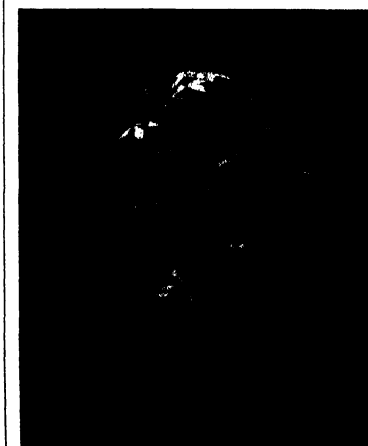
*I. coccinea* ■ (Flame of the woods, Jungle flame, Jungle geranium). Bushy, gently rounded shrub with oblong or obovate to elliptic, glossy, mid- to deep green leaves, 5–10cm (2–4in) long. Freely produces loose, corymb-like cymes, 5–12cm (2–5in) across, of red, orange, pink, or yellow flowers, 2.5–3.5cm (1–1½in) long, from late spring or early summer to autumn. †2.5m (8ft) or more, ↔ 1.5–2m (5–6ft). India, Sri Lanka. ☼ (min. 15°C/59°F).

'Angela Busman' is compact, with shrimp-pink blooms; †1.5m (5ft).

'Frances Perry' has large trusses of deep yellow flowers. 'Fraseri' produces bright salmon-pink flowers. 'Gillette's Yellow' has pale yellow flowers.

'Helen Dunaway' is tall, and freely produces deep orange blooms.

'Henry Morat' has fragrant pink flowers. 'Herrera's White' bears well-formed white flowers. *f. lutea* has yellow blooms. 'Orange King' is compact, and has glowing orange flowers; †1.5m (5ft). 'Superkings' is compact, with red flowers; †1m (3ft).



Ixora coccinea

J

## JABOROSA

SOLANACEAE

Genus of 20 species of perennials with basal, entire to pinnatifid leaves and axillary, 5- to 6-lobed, tubular or bell-shaped flowers, which are solitary or borne in few-flowered cymes. Most species occur in arid areas of South America. *J. integrifolia*, the only species commonly seen in cultivation, is suitable for a warm, dry site.

• **HARDINESS** Frost hardy to frost tender (*J. integrifolia* is hardy to -10°C/14°F).

• **CULTIVATION** Grow in moderately fertile, light, well-drained soil in a sunny, sheltered spot. *J. integrifolia* is invasive, so site where it will not swamp smaller plants. Provide a dry winter mulch in cold areas.

• **PROPAGATION** Divide, or sow seed at 13–16°C (55–61°F), in spring.

• **PESTS AND DISEASES** May be damaged by slugs and snails.

*J. integrifolia*. Rhizomatous, stemless perennial with basal clusters of oval to elliptic, fleshy, entire, dark green leaves, 20cm (8in) or more long. Bears solitary, tubular, night-scented, greenish white flowers, to 6cm (2½in) across, with star-shaped lobes, in summer. ‡ 15cm (6in), ↔ indefinite. S. Brazil, Uruguay, Argentina. \*\*

## JACARANDA

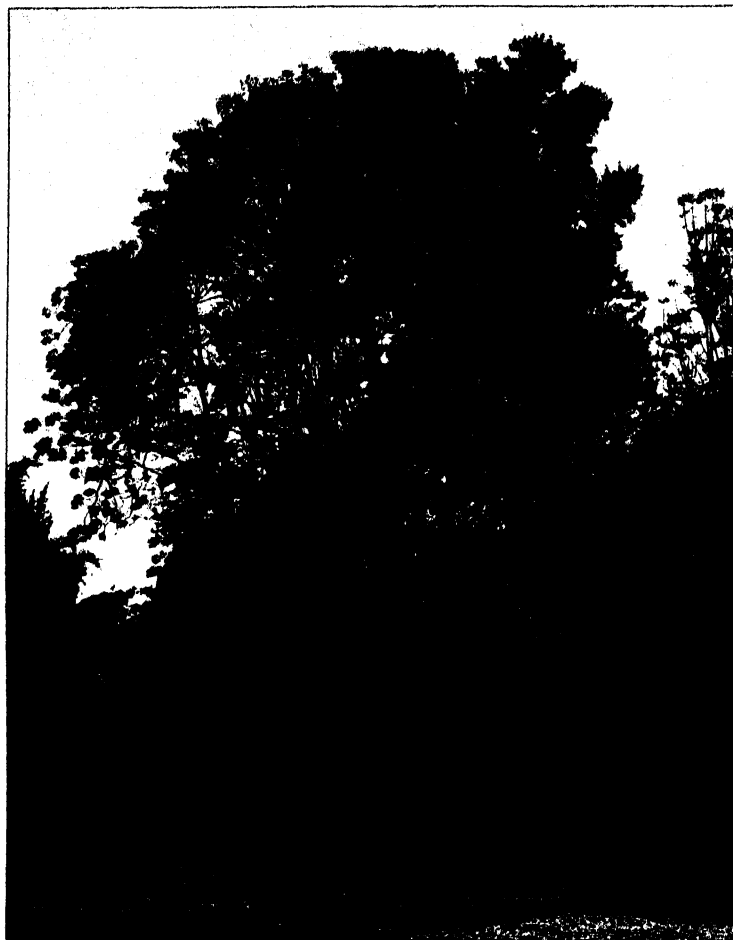
BIGNONIACEAE

Genus of 30–45 species of deciduous and evergreen trees from wet rainforests of tropical America. They have opposite, pinnate or 2-pinnate, often elegant, fern-like leaves and terminal panicles of tubular, narrowly bell-shaped, 5-lobed, foxglove-like flowers. In frost-prone areas, grow in a cool greenhouse, mainly as foliage plants, although some flowers may form on container-grown specimens, 2m (6ft) or more tall; young plants of *J. mimosifolia* are suitable for summer bedding. In warmer climates, jacarandas are popular as specimen plants and street trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, moist, but well-drained soil in full sun. Pruning group 1; plants under glass need restrictive pruning in late winter.

• **PROPAGATION** Sow seed at 16–21°C (61–70°F) in spring. Root semi-ripe cuttings with bottom heat in summer.



*Jacaranda mimosifolia*

• **PESTS AND DISEASES** Whiteflies and red spider mites may be troublesome under glass.

*J. acutifolia* of gardens see *J. mimosifolia*.

*J. mimosifolia* ☐ ♀ syn. *J. acutifolia* of gardens, *J. ovalifolia*, *J. ovatifolia*. Spreading, deciduous tree, with broad, 2-pinnate leaves, 25–45cm (10–18in) long, composed of many small, narrowly elliptic, softly hairy, bright mid-green leaflets. From spring to early summer, broadly pyramidal panicles, 20–30cm (8–12in) long, of white-throated, glowing purple-blue flowers, 3.5–5cm (1½–2in) long, are borne on leafless branches or with young foliage. The flowers are followed by woody, disc-shaped seed pods. ‡ to 15m (50ft), ↔ 7–10m (22–30ft). Bolivia, Argentina. ☼ (min. 5–7°C/41–45°F)

*J. ovalifolia* see *J. mimosifolia*.

*J. ovatifolia* see *J. mimosifolia*.

▷ **Jack-in-the-pulpit** see *Arisaema triphyllum*

▷ **Jacobinia carnea** see *Justicia carnea*

▷ **Jacobinia coccinea** see *Pachystachys coccinea*

▷ **Jacobinia pauciflora** see *Justicia rizzinii*

▷ **Jacobinia pobliana** see *Justicia carnea*

▷ **Jacobinia spicigera** see *Justicia spicigera*

▷ **Jacobinia suberecta** see *Dicliptera suberecta*

▷ **Jacobinia velutina** see *Justicia carnea*

▷ **Jacob's ladder** see *Polemonium P. caeruleum*

▷ **Jacob's rod** see *Asphodeline*

## JACQUEMONTIA

CONVOLVULACEAE

Genus of 120 species of evergreen perennials and shrubs, many of them scandent or twining climbers, closely related to *Ipomoea* and *Convolvulus*. Most are found in tropical woodland in Central and South America, with a few elsewhere in the tropics. They are grown for their funnel- to bell-shaped flowers, borne in cymes or panicles, and have alternate leaves, which are usually simple and entire, but may be toothed or lobed. Where temperatures drop below 13–16°C (55–61°F), grow in a warm greenhouse. In tropical areas, grow on a trellis, or allow to scramble through other, more vigorous shrubs; they are excellent for a coastal garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist, but well-drained soil in full sun. Pruning group 11, to restrict to available space.

• **PROPAGATION** Sow seed at 18°C (64°F) in spring. Root softwood cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

*J. pentantha*, syn. *J. violacea*. Fast-growing, twining climber, branching freely from the base, with heart-shaped to ovate, mid- to bright green leaves,

5cm (2in) long, which taper to a slender point. Long-stalked cymes of up to 12 funnel-shaped, white-eyed, violet-blue to blue flowers, 2–4cm (¾–1½in) wide, are produced mainly from summer to late autumn. ‡ 1.8–2.5m (6–8ft). Tropical America. ☼ (min. 13°C/55°F)

*J. violacea* see *J. pentantha*.

▷ **Jade plant** see *Crassula ovata*

**Silver** see *C. arborescens*

▷ **Jade tree** see *Crassula ovata*

## JAMESIA

HYDRANGEACEAE

Genus of one species of deciduous shrub from mountainous, rocky places in W. USA. It has papery bark and simple, toothed, rough-textured leaves, borne in opposite pairs. It is cultivated for its 5-petalled, star-shaped white flowers, produced in small, terminal panicles in late spring and early summer. It is suitable for a shrub border or large rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun. Pruning groups 1 or 2.

• **PROPAGATION** Take greenwood cuttings in early summer, or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*J. americana* (Cliffbush, Wax flower). Small, spreading, deciduous shrub with peeling, papery bark and ovate, toothed, rough-textured, velvety grey-green leaves, to 7cm (3in) long, sometimes turning red in autumn. Small panicles, to 6cm (2½in) long, of star-shaped, slightly fragrant white flowers, 1cm (½in) across, are produced in late spring and early summer. ‡ 1.5m (5ft), ↔ 2m (6ft). W. USA. \*\*\*

## JANCAEA

syn. JANKAEA

GESNERIACEAE

Genus of one species of evergreen, rosette-forming perennial, grown for its white-hairy, silver-green foliage and bell-shaped, pale lavender-blue flowers. Native to Greece, it grows on the shady cliffs of Mount Olympus. Grow in an alpine house, rock garden, or tufa.

• **HARDINESS** Fully hardy.

• **CULTIVATION** In an alpine house, grow in a mix of equal parts loam, leaf mould and sharp grit, with additional limestone chippings, in bright filtered light. Place a collar of grit at the neck of the plant. When in growth, water moderately, avoiding water on the foliage, and maintain a humid but well-ventilated atmosphere; water sparingly in winter. Outdoors, plant in a vertical cleft and give overhead protection in winter.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn; pot on when seedlings have formed small rosettes. Take leaf cuttings in spring.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*J. heldreichii* ☐ Evergreen perennial with neat rosettes of thick, corrugated, obovate, densely white-hairy, silver-green leaves, to 4cm (1½in) long. Clusters of 1–2, occasionally 3, broadly bell-shaped, pale lavender-blue flowers, 2cm (¾in) long, with 4, sometimes 5



*Jancaea heldreichii*

spreading lobes, are produced in late spring.  $\uparrow$  to 5cm (2in),  $\leftrightarrow$  to 10cm (4in). N.E. Greece. \*\*\*

▷ *Jancaea* see *Jancaea*

▷ *Japanese anemone* see *Anemone hupehensis* var. *japonica*, *A. x hybrida*

▷ *Japonica* see *Chaenomeles*, *C. japonica*

## JASIONE

Sheep's bit

CAMPANULACEAE

Genus of about 20 species of summer-flowering annuals, biennials, and perennials with alternate, simple leaves and terminal, scabious-like heads of usually blue flowers. Most species grow in dry, open grassland in temperate Europe and around the Mediterranean. Grow in a rock garden, at the front of a border, or in a wildflower garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, preferably sandy soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in autumn. Alternatively, divide in spring.

*Jasione laevis*

- **PESTS AND DISEASES** Slugs and snails may damage young growth in spring.

*J. amethystina* see *J. crispa* subsp. *amethystina*.

*J. crispa* subsp. *amethystina* syn. *J. amethystina*. Tufted perennial with basal rosettes of toothed, oblong to inversely lance-shaped leaves, to 2.5cm (1in) long. Dense, spiky, purplish blue flowerheads, to 2cm ( $\frac{3}{4}$ in) across, are produced throughout summer.  $\uparrow$  10cm (4in),  $\leftrightarrow$  to 15cm (6in). S. Spain. \*\*\*

*J. laevis*  $\square$  syn. *J. perennis* (Sheep's bit scabious, Shepherd's scabious). Densely tufted perennial with basal rosettes of entire, narrowly oblong to narrowly obovate or inversely lance-shaped leaves, to 10cm (4in) long. Spiky, almost spherical blue flowerheads, to 2.5–4cm (1–1 $\frac{1}{2}$ in) across, are produced on upright, unbranched stems in summer.  $\uparrow$  20–30cm (8–12in),  $\leftrightarrow$  to 20cm (8in). W. and S. Europe. \*\*\*

*J. perennis* see *J. laevis*.

▷ *Jasmine* see *Jasminum*

**Arabian** see *Jasminum sambac*

**Cape** see *Gardenia augusta*

**Carolina** see *Gelsemium*

*sempervirens*

**Chilean** see *Mandevilla laxa*

**Common** see *Jasminum officinale*

**Confederate** see *Trachelospermum jasminoides*

**Crepe** see *Tabernaemontana divaricata*

**False yellow** see *Gelsemium sempervirens*

**Italian** see *Solanum*

*seaforthianum*

**Madagascar** see *Stephanotis floribunda*

**Primrose** see *Jasminum mesnyi*

**Rock** see *Androsace*

**Star** see *Trachelospermum jasminoides*

**West Indian** see *Plumeria*, *P. alba*

**Winter** see *Jasminum nudiflorum*

**Yellow** see *Jasminum humile*

## JASMINUM

Jasmine, Jessamine

OLEACEAE

Genus of 200 or more species of deciduous and evergreen shrubs and climbers from woodland, scrub, and rocky places in tropical and temperate regions, mainly in Europe, Asia, and Africa. They are cultivated for their terminal or axillary, sometimes umbel- or panicle-like cymes of salverform, often fragrant flowers with broad or narrow, star-shaped segments, and for their opposite or alternate, simple to pinnate leaves (in some species reduced to only one leaflet). Most species have black berries. Climbing jasmines will twine over any suitable support, such as a trellis, fence, arch, or large shrub. Scandent, shrubby jasmines may be trained against a wall, and dwarf species are suitable for a rock garden. In cool areas, grow jasmines in a sheltered position; grow half-hardy species as houseplants in a conservatory or cool greenhouse, and tender species in a warm or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Outdoors, grow in fertile, well-drained soil in full sun or partial shade. Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, or full light with shade from hot sun. In growth, water freely and apply a low-nitrogen liquid fertilizer monthly; water sparingly in winter. Prune *J. mesnyi*, *J. nudiflorum*, and *J. humile* as for shrubs in pruning group 2. Thin old, flowered, and overcrowded shoots of *J. officinale* after flowering. Remaining species need little regular pruning, other than to thin overcrowded growth after flowering.

- **PROPAGATION** Take semi-ripe cuttings in summer, or layer in autumn.

- **PESTS AND DISEASES** Aphids and mealybugs may be a problem.

*J. angulare*  $\square$  syn. *J. capense*.

Scrambling to semi-twining, evergreen climber, usually freely branching when mature, with ridged or angled stems. Leaves are opposite, pinnate, and rich, deep green, with 3, sometimes 5, ovate to lance-shaped, lustrous leaflets, 2–4cm ( $\frac{3}{4}$ –1 $\frac{1}{2}$ in) long. Bears axillary cymes of 3 salverform, very sweetly scented flowers, to 3cm (1 $\frac{1}{4}$ in) across, greenish or pale pink then white, from late summer to autumn.  $\uparrow$  3–6m (10–20ft).

*Jasminum angulare**Jasminum humile*

South Africa (Northern Transvaal to Eastern Cape, Orange Free State). \* *J. azoricum*  $\square$  syn. *J. fluminense* of gardens. Evergreen, twining climber or sometimes semi-scrambler, branching moderately to freely, with opposite, pinnate, deep green leaves divided into 3 ovate to heart-shaped, wavy-margined leaflets, to 8cm (3in) long. Small, terminal cymes of 3 purple-tinted buds, opening to salverform, fragrant white flowers, to 2.5cm (1in) across, are produced mainly in late summer.  $\uparrow$  3–5m (10–15ft). Madeira. \*

*J. beesianum*. Twining, woody, evergreen climber, deciduous in cool areas, with opposite, simple, ovate to lance-shaped, dark green leaves, to 5cm (2in) long. Cymes of 3 small, salverform, fragrant, pinkish red flowers, 1cm ( $\frac{1}{2}$ in) across, are produced in early and mid-summer.  $\uparrow$  5m (15ft). S.W. China. \*\*

*J. capense* see *J. angulare*.

*J. dichotomum*. Bushy, evergreen scrambler or twining climber with whorls of thick, lustrous, mid-green leaves, each reduced to one ovate to elliptic, boldly veined leaflet, 5–10cm (2–4in) long, with an abrupt, sharp point. Produces loosely branched cymes of up to 60 salverform, sweetly scented white flowers, to 2cm ( $\frac{3}{4}$ in) across, opening from red-purple or red-tinted buds, intermittently all year round.  $\uparrow$  to 3m (10ft) or more. Tropical W., C., and E. Africa.  $\star$  (min. 10–13°C/50–55°F)

*J. fluminense* of gardens see *J. azoricum*.

*J. fruticans*. Dense, upright, evergreen or semi-evergreen shrub with alternate, pinnate, dark green leaves, each having 3 narrow-oblong or linear-obovate leaflets, to 2cm ( $\frac{3}{4}$ in) long. Terminal cymes of up to 5 small, salverform, slightly fragrant yellow flowers, 1.5cm ( $\frac{1}{2}$ in) across, are produced in summer.  $\uparrow$  to 1.5m (5ft). Portugal, North Africa to Jordan, Turkey to Turkmenistan. \*\*

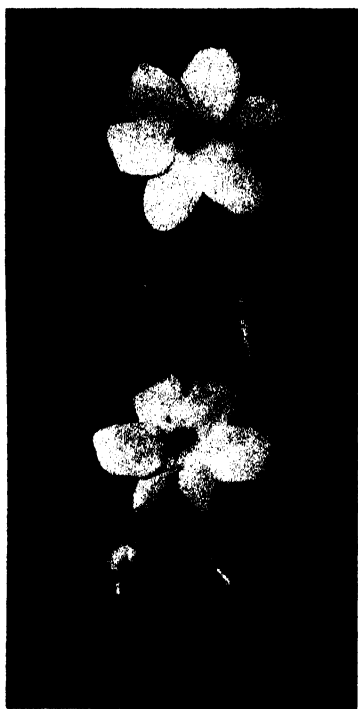
*J. grandiflorum* of gardens see

*J. officinale* f. *affine*.

*J. humile*  $\square$  (Yellow jasmine). Semi-evergreen or evergreen, erect or arching,

*Jasminum mesnyi*

bushy shrub with alternate, pinnate, bright green leaves composed of 5–9, occasionally 13, ovate to lance-shaped leaflets, to 5cm (2in) long. Cymes of usually 6, occasionally more, salverform, sometimes fragrant, bright yellow flowers, 1cm (½in) or more across, are produced from late spring to early autumn. ‡ 2.5m (8ft), sometimes to 4m (12ft), ↔ 3m (10ft). Afghanistan to Himalayas and S.W. China. \* \* \*. **'Revolutum'** ♀ syn. *J. reevesii* of gardens, is semi-evergreen, with stout shoots, larger leaves, with 5–7 long-pointed leaflets to 1cm (½in) long, and up to 12 large, fragrant flowers, to 2.5cm (1in) across. f. *wallichianum* has leaves with 7–13 leaflets and pendulous 3- to 5-flowered cymes; India, Nepal. *J. mesnyi* ♂ ♀ syn. *J. primulinum* (Primrose jasmine). Tall, open, slender-stemmed, evergreen shrub which acts like a climber when grown against a support. Opposite, pinnate, glossy, deep green leaves have 3 oblong to lance-shaped leaflets, 3–7cm (1¼–3in) long. Salverform, usually semi-double, bright yellow flowers, 3–4.5cm (1¼–1½in) across, are produced singly or in few-flowered clusters in spring and summer.

*Jasminum nudiflorum*

‡ to 3m (10ft) or more, ↔ 1–2m (3–6ft). S.W. China. \*

*J. nudiflorum* ♂ ♀ (Winter jasmine). Slender, deciduous shrub with arching to scandent green shoots and opposite, pinnate, dark green leaves, each divided into 3 oval-oblong leaflets, to 3cm (1¼in) long. Solitary, salverform, bright yellow flowers, 1–2cm (½–¾in) across, are produced in the leaf axils, before the leaves, in winter and early spring. ‡ to 3m (10ft). W. China. \* \* \*

*J. officinale* ♀ (Common jasmine). Vigorous, twining, woody, deciduous, occasionally semi-deciduous climber with opposite, pinnate, mid-green leaves composed of 5–9 elliptic leaflets, to 6cm (2½in) long, with long, sharp points. Terminal, umbel-like cymes of up to 5-flowered clusters of salverform, very fragrant white flowers, 2cm (¾in) across, are produced from summer to early autumn. ‡ 12m (40ft). Caucasus, N. Iran, Afghanistan, Himalayas, W. China. \* \* \*. f. *affine*, syn.

*J. grandiflorum* of gardens, has pink-tinged white flowers, to 4cm (1½in) across. **'Argenteovariegatum'** ♂ ♀ syn. **'Variegatum'**, has leaves which are grey-green with creamy white margins.

**'Aureovariegatum'** syn. **'Aureum'**, has leaves conspicuously marked yellow.

*J. parkeri*. Dwarf, dome-forming, evergreen shrub with slender, congested branches bearing alternate, pinnate, dark green leaves with 3–5 sharply pointed, ovate leaflets, to 1cm (½in) long.

Terminal or axillary, solitary or paired, salverform yellow flowers, to 1.5cm (½in) across, are produced in early summer, followed by greenish white

berries. ‡ to 30cm (12in), ↔ to 40cm (16in). India (Himachal Pradesh).

\* \* \* (borderline)

*J. polyanthum* ♂ ♀ Vigorous, twining, evergreen climber with opposite, pinnate, deep green leaves made up of 5–7 lance-shaped leaflets, the terminal ones largest, to 8cm (3in) long, with slender points. Bears an abundance of salverform, strongly fragrant, pink-budded white flowers, to 2cm (¾in) wide, in many-flowered, panicle-like cymes, to 10cm (4in) long. Flowers in late winter or early spring in a warm or temperate greenhouse; from spring to summer in warm climates. ‡ to 3m (10ft) or more. W. and S.W. China. \*

*J. primulinum* see *J. mesnyi*.

*J. reevesii* of gardens see *J. humile* **'Revolutum'**.

*J. rez.* Vigorous, twining, evergreen climber with opposite, dark green leaves, each reduced to one broadly ovate leaflet, 12–20cm (5–8in) long. Produces axillary cymes of 2 or 3 salverform, unscented white flowers, 5cm (2in) or more across, mainly in summer. ‡ 3m (10ft) or more. Thailand. ♂ (min. 13°C/55°F)

*J. sambac* (Arabian jasmine, Pikake). Evergreen, twining climber or scrambler with angular stems and bushy growth. Lustrous, dark green leaves, some in whorls of 3, others opposite, are reduced to one broadly ovate leaflet, to 8cm (3in) long. Produces small cymes of 3–12 salverform, strongly scented white flowers, 2.5cm (1in) across, fading to pink, mainly in summer, but often irregularly throughout the year. ‡ 2–3m (6–10ft). Probably tropical Asia.

*Jasminum officinale* **'Argenteovariegatum'***Jasminum polyanthum*

♂ (min. 13–15°C/55–59°F). **'Grand Duke of Tuscany'**, syn. **'Flore Pleno'**, bears double flowers resembling miniature gardenias.

*J. x stephanense* ♀ (*J. beesianum* x *J. officinale*). Vigorous, twining, woody, deciduous climber with opposite, dull green, sometimes cream-flushed leaves, which may be simple, ovate-lance-shaped, to 5cm (2in) long, or pinnate, with 5 ovate-elliptic leaflets to 5cm (2in) long. Loose cymes of 5 or 6 or more, salverform, fragrant, pale pink flowers, to 1cm (½in) across, appear in early and midsummer. S.W. China (Yunnan). ‡ 5m (15ft). \* \*

## JATROPHA

### EUPHORBIACEAE

Genus of about 170 species of succulent perennials and evergreen shrubs, rarely trees, from dry or semi-moist areas of South Africa, Madagascar, tropical North, Central, and South America, and the West Indies. Many are very succulent, often forming a caudex; other species have tuberous rootstocks. Leaves are alternate and simple, palmately lobed, or finely divided. In summer, diurnal flowers with prominent petals appear singly or in flat-topped cymes. In areas where temperatures drop below 10°C (50°F), grow in a warm greenhouse or conservatory; in warmer climates, plant in a shrub border or use as hedging. All parts contain a milky or watery latex, contact with which may irritate skin.

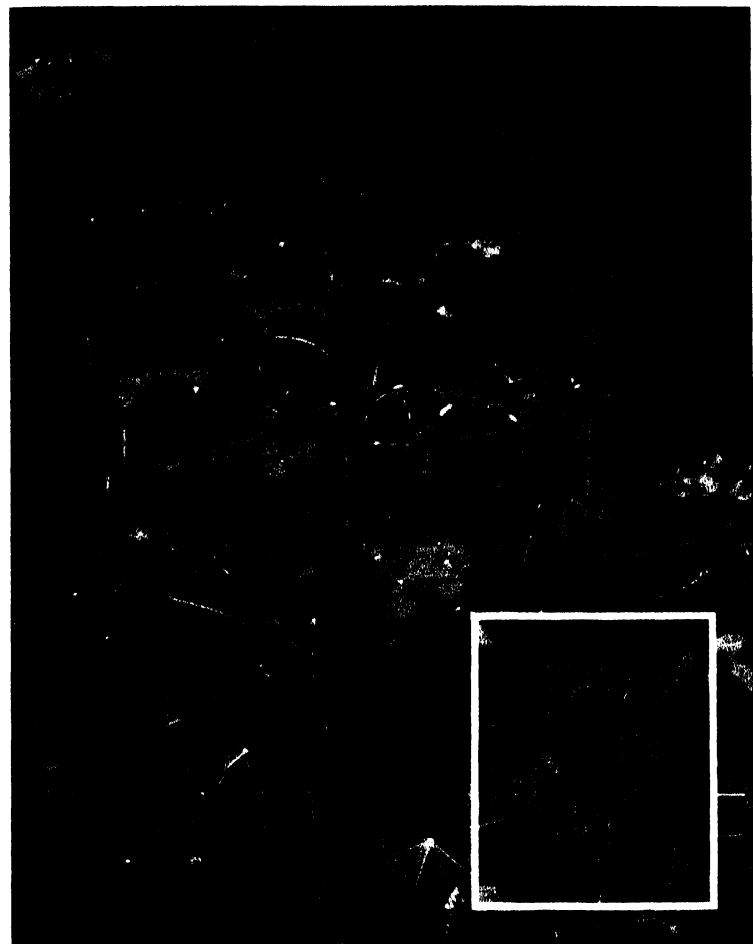
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts loam-based potting compost (J1 No.2), with 1 part each leaf mould and grit. Provide full light with shade from hot sun. In spring and summer, water moderately and apply a balanced liquid fertilizer monthly; keep completely dry in autumn and winter. Outdoors, grow in moderately fertile, humus-rich, gritty, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed in spring or summer at 24°C (75°F).

• **PESTS AND DISEASES** Vulnerable to mealybugs.

*J. multifida* (Coral plant). Tree-like, evergreen, semi-succulent shrub with rounded, 7- to 15-lobed, finely divided leaves, 4–8cm (1½–3in) across. Numerous long-stalked, small scarlet flowers, 5mm (¼in) across, are borne in



*Jatropha podagrica* (inset: flower detail)

terminal cymes in summer. † to 7m (22ft), ↔ 4m (12ft). Mexico to Brazil, West Indies. ☀ (min. 10°C/50°F)

**J. podagrica** ■ Free-branching, very fleshy, succulent perennial with a short, swollen, caudex-like grey trunk and grey stems covered with spine-like stipules. At the tips, produces rounded-ovate, 3- to 5-lobed, very tough leaves, 18–30cm (7–12in) across, dark green above, glaucous white beneath. Terminal, branched cymes of numerous unisexual, small, brilliant scarlet to coral-red flowers, 1cm (½in) across, are borne on long, green, sometimes red-tinted stalks in summer. † to 50cm (20in) or more, ↔ 25cm (10in). Central America, West Indies. ☀ (min. 10°C/50°F)

## JEFFERSONIA

syn. *PLAGIORHEGMA*

*Twin leaf*

BERBERIDACEAE

Genus of 2 species of perennials which grow wild in damp woods and forests in N.E. Asia and North America. They have rounded to kidney-shaped, 2-lobed leaves, and solitary, cup-shaped flowers, with 5–8 petals, borne on long, slender stalks, in late spring or early summer. They are excellent plants for a shaded rock garden or peat bed.

• **HARDINESS** Fully hardy.

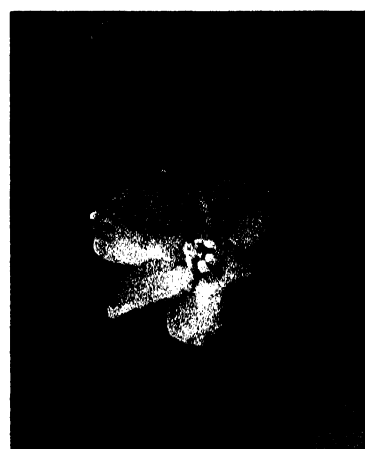
• **CULTIVATION** Grow in moist, humus-rich soil in partial or full shade. Top-dress with leaf mould or other humus-rich material in autumn.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide established plants in spring.

• **PESTS AND DISEASES** Prone to slugs and snails, especially in spring.

**J. diphylla** (Rheumatism root). Tuft-forming perennial with kidney-shaped, deeply cleft leaves, to 15cm (6in) across, pale grey-green above, and glaucous, pale green beneath. Bears solitary, cup-shaped white flowers, 2.5cm (1in) wide, on slender stalks in late spring or early summer. † 20cm (8in), often taller after flowering, ↔ to 15cm (6in). North America (Ontario to Tennessee). \*\*\*

**J. dubia** ■ syn. *Plagiorhegma dubia*. Delicate, tufted perennial with kidney-shaped or rounded, 2-lobed, blue-green leaves, to 10cm (4in) across, often purple-tinted, especially when unfolding. In late spring or early summer, bears solitary, cup-shaped,



*Jeffersonia dubia*

clear lavender-blue, occasionally white flowers, 3cm (1¼in) across, on slender, dark stalks. † 20cm (8in), ↔ to 15cm (6in). N.E. Asia. \*\*\*

▷ **Jerusalem cross** see *Lychnis chalcidonica*

▷ **Jerusalem thorn** see *Paliurus spinachristi*, *Parkinsonia aculeata*

▷ **Jessamine** see *Jasminum*

▷ **Willow-leaved** see *Cestrum parqui*

▷ **Jesuit's nut** see *Trapa natans*

▷ **Jewels of Opar** see *Talinum paniculatum*

▷ **Jew's mantle** see *Kerria*

▷ **Job's tears** see *Coix lacryma-jobi*

▷ **Joe Pye weed** see *Eupatorium purpureum*

▷ **Jonquil**,

**Campernelle** see *Narcissus x odorus*

**Rush-leaved** see *Narcissus assoanus*

**Wild** see *Narcissus jonquilla*

## JOVELLANA

SCROPHULARIACEAE

Genus of 6 species of herbaceous perennials and semi-evergreen subshrubs, found on streambanks and at forest margins in New Zealand and Chile. They have simple, toothed or lobed leaves, borne in opposite pairs, and showy, 2-lipped flowers. Grow in a sheltered border or against a wall. In areas prone to heavy frost, grow or overwinter in a cool greenhouse.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Under glass, grow in loamless potting compost in full light, with shade from hot sun and good ventilation. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Protect with a dry winter mulch in frost-prone areas. Pruning group 10, in early to mid-spring.

• **PROPAGATION** Take heel cuttings of sideshoots in late summer.

• **PESTS AND DISEASES** Trouble free.

**J. sinclairii**. Woody-based herbaceous perennial with upright shoots and ovate to ovate-oblong, double-toothed or lobed leaves, to 5cm (2in) long. Terminal panicles, 15cm (6in) long, of 2-lipped, purple-spotted, lilac to white flowers, 8mm (⅓in) across, are borne in summer. † 50cm (20in), ↔ 60cm (24in). New Zealand (North Island). \*\*\*

**J. violacea** ■ ♀ Upright, suckering, semi-evergreen subshrub with ovate,



*Jovellana violacea*

coarsely toothed or lobed, deep green leaves, 2–3cm (¾–1¼in) long. Bears panicles, 4–8cm (1½–3in) across, of 2-lipped, pale violet-purple flowers, to 1.5cm (½in) across, with purple spots within and yellow throats, in summer. † 60cm (24in), ↔ 1m (3ft). Chile. \*\*\*

## JOVIBARBA

CRASSULACEAE

Genus of 6 species of mat-forming, usually stoloniferous, evergreen perennials, very similar to *Sempervivum*, from the mountains of Europe. They are grown for their symmetrical rosettes of fleshy leaves and terminal cymes of small, 6-petalled, bell-shaped flowers, borne on leafy stems in summer. After flowering, the rosettes are replaced by numerous offsets. Easily cultivated, they are suitable for a rock garden, trough, wall, or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor, gritty, well-drained soil in full sun. Remove old rosettes after flowering. In an alpine house, grow in equal parts loam-based potting compost (JI No.1) and grit.

• **PROPAGATION** Root offsets in spring or early summer.

• **PESTS AND DISEASES** Trouble free.

**J. allionii** see *J. hirta* subsp. *allionii*.

**J. globifera** see *J. sobolifera*.

**J. globifera** subsp. *allionii* see *J. hirta* subsp. *allionii*.

**J. globifera** subsp. *hirta* see *J. hirta*.

**J. heuffelii**, syn. *Sempervivum patens*.

Evergreen perennial lacking stolons, with rosettes, 5–7cm (2–3in) across, of lance-shaped, finely hairy or glaucous leaves, to 8mm (⅓in) long, sometimes brown-tipped. Bears bell-shaped, pale yellow flowers in dense, flat cymes, to 5cm (2in) across, in summer. † to 20cm (8in), ↔ to 30cm (12in).

E. Carpathians, Balkans. \*\*\*

**J. hirta** ■ syn. *J. globifera* subsp.

*hirta*, *Sempervivum hirtum*. Evergreen perennial with lance-shaped to inversely



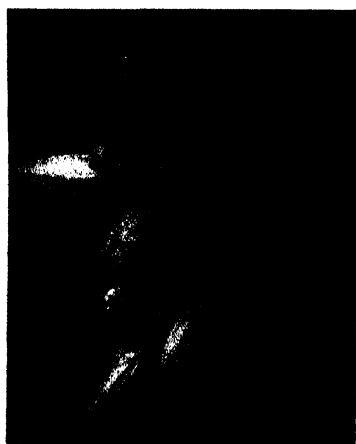
*Jovibarba hirta*

lance-shaped, hairy-margined leaves, to 1cm (½in) long, tipped brownish purple and often red-tinted, borne in rosettes 2.5–7cm (1–3in) across. Bears branching cymes, to 8cm (3in) across, of bell-shaped, pale yellowish brown flowers, in summer. † 15cm (6in), ↔ to 30cm (12in). C. and S.E. Europe. \*\*\*. **subsp. *allionii***, syn. *J. allionii*, *J. globifera* subsp. *allionii*, has smaller rosettes with glandular-hairy, red-tipped leaves; S.W. and S.E. Alps. ***J. sobolifera***, syn. *J. globifera*, *Sempervivum soboliferum* (Hen and chickens houseleek). Evergreen perennial with rosettes, 2.5–5cm (1–2in) across, of obovate to oblong, glossy, bright green leaves, to 1cm (½in) long, with fringed margins, and tips that flush red with age. In summer, produces bell-shaped, greenish yellow flowers in cymes to 7cm (3in) across. † 20cm (8in), ↔ to 30cm (12in). S.W., C., and S.E. Europe, N.W. and C. Russia. \*\*\*

## JUANULLOA

SOLANACEAE

Genus of 10 species of epiphytic and terrestrial, scandent, evergreen shrubs from the rainforests of Central America to Peru. They are grown for their 5-lobed, tubular flowers, each with a bell-shaped, deeply ridged calyx, borne in short racemes or panicles. Leaves are alternate, simple, entire, and leathery. Where temperatures fall below about 13°C (55°F), grow in a warm or temperate greenhouse. In tropical or subtropical climates, use to clothe an arch or pillar, or train through a tree. • **HARDINESS** Frost tender. • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, and moderate to low humidity. In spring and summer, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist, but well-drained soil in full sun with some midday shade. Pruning group 9, with restrictive pruning under glass; tip-prune young plants to encourage branching. • **PROPAGATION** Sow seed at 18°C (64°F) in spring. Root semi-ripe cuttings with bottom heat in spring or summer. • **PESTS AND DISEASES** Susceptible to red spider mites and mealybugs.



Juanullosa mexicana

*J. aurantiaca* see *J. mexicana*.

***J. mexicana*** ■ syn. *J. aurantiaca*.

Epiphytic shrub, becoming scandent with age, with elliptic to oblong, mid-to deep green leaves, 8–20cm (3–8in) long, usually densely woolly beneath. Produces short racemes of semi-pendent, tubular, bright orange or orange-yellow flowers, 4–5cm (1½–2in) long, with paler calyces, mainly in summer. † to 2m (6ft) or more, ↔ 60–100cm (24–39in). S. Mexico to Colombia, Peru. ☀ (min. 13°C/55°F)

## JUBAEA

Chilean wine palm

ARECACEAE/PALMAE

Genus of one species of single-stemmed palm from the warm-temperate coastal valleys of Chile. Spreading to arching, pinnate leaves form a dense, terminal, rounded head, and 3-petalled flowers appear in panicles between them. In areas prone to severe frost, grow as a houseplant, or in a cool greenhouse or conservatory. In warm, dry regions, grow as a majestic specimen or avenue palm. • **HARDINESS** Frost hardy. • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, moist, but well-drained soil in full sun. • **PROPAGATION** Sow seed at 25°C (77°F) in spring; germination may take 3–6 months. • **PESTS AND DISEASES** Red spider mites and scale insects may be troublesome under glass.

***J. chilensis*** ■ ♀ syn. *J. spectabilis* (Coquito palm, Honey palm). Slow-growing palm with a robust, erect, scarred and cracked grey trunk, occasionally swollen in the middle. Pinnate, oblong-ovate leaves, to 5m (15ft) long, are formed of many linear, rigid, folded, yellow-green to deep green leaflets. Small, bowl-shaped, dull purple or maroon and yellow flowers are produced in panicles to 1.5m (5ft) long, in summer; they are followed by woody, ovoid yellow fruit, to 5cm (2in) long. † to 25m (80ft), ↔ to 9m (28ft). Chile. \*\*

***J. spectabilis*** see *J. chilensis*.

▷ **Judas tree** see *Cercis siliquastrum*



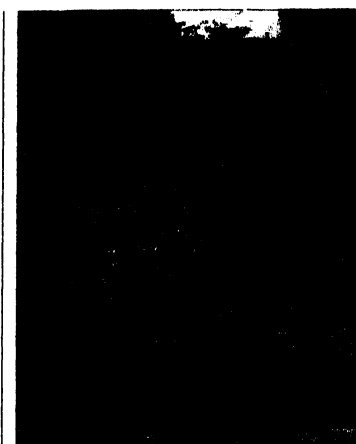
Jubaea chilensis

## JUGLANS

Walnut

JUGLANDACEAE

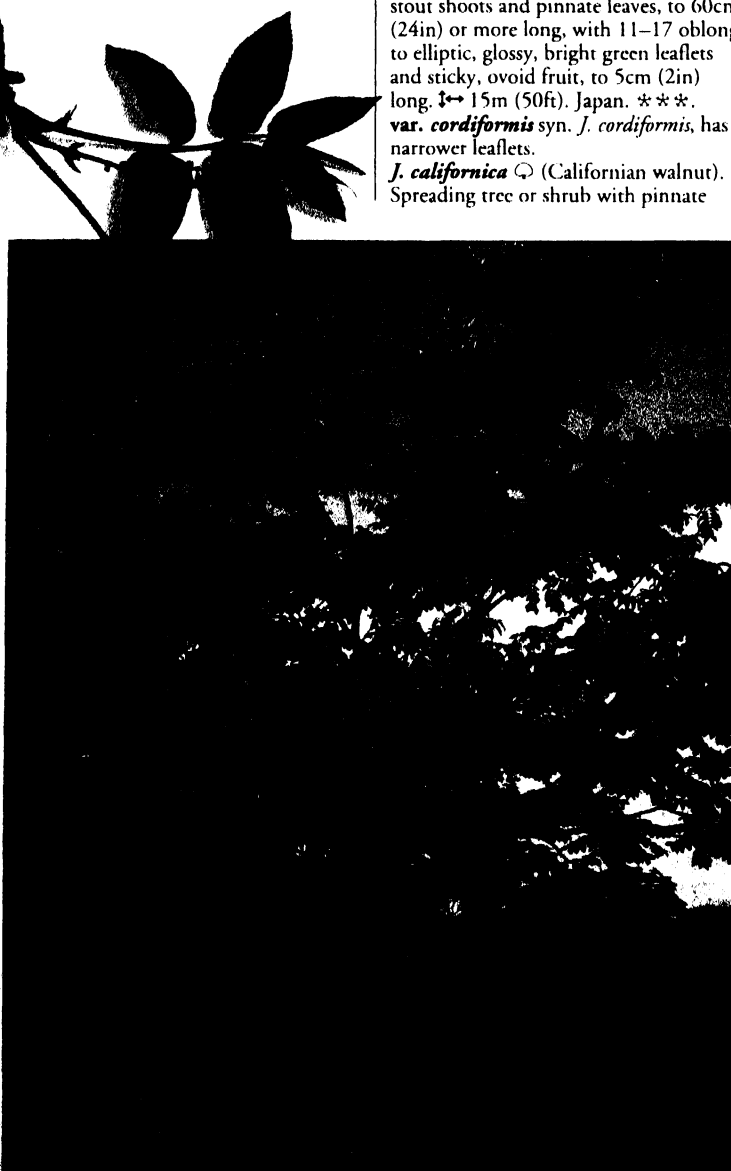
Genus of about 15 species of deciduous trees, sometimes shrubs, occurring in woodland in S.E. Europe, Asia, North America, and N. South America. They have furrowed bark and alternate, pinnate leaves, usually with toothed leaflets. Greenish yellow male and female flowers are borne separately on the same plant in late spring and early summer: males in pendulous catkins and females inconspicuous. Fruits are ovoid or spherical, initially green, ripening to brown, and contain edible nuts with hard, thin or thick, furrowed shells. Cultivated for their habit, foliage, and fruit, walnuts are fine specimen trees. • **HARDINESS** Fully hardy to frost hardy. Late frosts may cause damage. • **CULTIVATION** Grow in deep, fertile, well-drained soil, preferably in full sun. In frost-prone areas, provide a sheltered, very sunny site. Plant out as seedlings or young grafted plants when no more than 30–60cm (12–24in) tall. Pruning group 1; formative pruning and removal of damaged branches should be carried out in late summer to prevent bleeding.



Juglans nigra

• **PROPAGATION** Sow seed in a seedbed as soon as ripe, or stratify and then sow in spring. Named cultivars of *J. regia* and *J. nigra* are usually grafted on to seedling stocks. • **PESTS AND DISEASES** Aphids, walnut blister mites, honey fungus, coral spot, and leaf spot may be a problem.

***J. ailantifolia*** ■ ♀ syn. *J. sieboldiana* (Japanese walnut). Spreading tree with stout shoots and pinnate leaves, to 60cm (24in) or more long, with 11–17 oblong to elliptic, glossy, bright green leaflets and sticky, ovoid fruit, to 5cm (2in) long. †↔ 15m (50ft). Japan. \*\*\*. **var. *cordiformis*** syn. *J. cordiformis*, has narrower leaflets. ***J. californica*** ♀ (Californian walnut). Spreading tree or shrub with pinnate



Juglans ailantifolia (inset: leaf and flower detail)

*Juglans regia*

leaves, to 20cm (8in) long, with 11–15 oblong-lance-shaped leaflets and spherical fruit, to 1.5cm (½in) long.  $\pm$  10m (30ft). USA (S. California). \*\*\*

*J. cinerea* ♀ (Butternut). Vigorous, spreading tree with pinnate leaves, to 50cm (20in) long, with 7–19 oblong-lance-shaped, aromatic, bright green leaflets. Grown for its sweet, edible nuts, contained within large, clustered, ovoid fruit, to 6cm (2½in) long.  $\pm$  25m (80ft),  $\pm$  20m (70ft). E. North America. \*\*\*  
*J. cordiformis* see *J. ailantifolia* var. *cordiformis*.

*J. mandshurica* ♀ (Manchurian walnut). Spreading, suckering tree with stout shoots and pinnate leaves, to 60cm (24in) or more long, with 9–17 oblong, glossy leaflets and sticky, ovoid fruit, to 5cm (2in) long.  $\pm$  20m (70ft). N.E. China, Korea. \*\*\*

*J. microcarpa* ♀ syn. *J. rupestris* (Texan walnut). Bushy-headed, spreading tree or shrub with pinnate, aromatic leaves, to 30cm (12in) long, with 15–23 slender, glossy leaflets, yellow in autumn, and small, spherical fruit, to 2.5cm (1in) long.  $\pm$  10m (30ft). S.W. USA, N. Mexico. \*\*\*

*J. nigra* ♂ ♀ (Black walnut). Vigorous, spreading tree with pinnate, aromatic leaves, to 60cm (24in) long, consisting of 11–23 ovate-oblong, glossy, dark green leaflets. Grown for its edible nuts, contained within spherical fruit, to 5cm (2in) long.  $\pm$  30m (100ft),  $\pm$  20m (70ft). E. USA. \*\*\*

*J. regia* ♂ ♀ (Common walnut). Spreading tree with pinnate, aromatic leaves, to 30cm (12in) or more long, consisting of 5–9 elliptic to ovate, entire or serrate, glossy leaflets, bronze-purple when young. Grown for its edible nuts, contained within spherical fruit, to 5cm (2in) long.  $\pm$  30m (100ft),  $\pm$  15m (50ft). S.E. Europe to Himalayas, S.W. China, C. Russia. \*\*\*

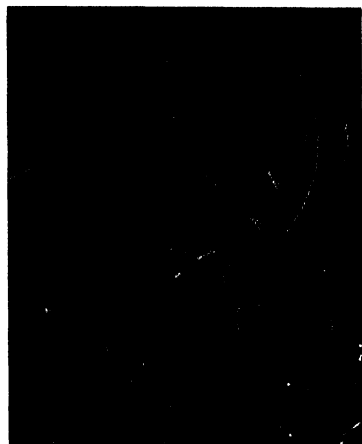
*J. rupestris* see *J. microcarpa*.  
*J. sieboldiana* see *J. ailantifolia*.

## JUNCUS

Rush

JUNCACEAE

Genus of about 300 species of grass-like, hairless, evergreen or deciduous, rhizomatous perennials, widely distributed throughout the world, but mostly occurring in cool-temperate regions, particularly in heavy, wet, acid soil. The stems are cylindrical, nodeless,

*Juncus effusus* 'Spiralis'

and usually solid, and the leaves, when present, are small and narrow, often reduced to basal sheaths. Unlike grasses and sedges, rushes produce small green or brown flowers with 6 tepals, borne in cymes in midsummer. Ornamental forms include cultivars with twisted or variegated stems. Rushes are suitable for a pond side or bog garden, but some will also thrive in moist garden soil.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in permanently moist, acid soil in sun or partial shade. *J. effusus* and *J. inflexus* may also be grown in up to 8cm (3in) of water or in boggy soil. *J. inflexus* thrives in heavy, alkaline soil.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring, or divide from mid-spring to early summer.
- **PESTS AND DISEASES** Trouble free.

*J. articulatus* (Jointed rush). Variable, tufted or creeping perennial with slender rhizomes and cylindrical stems bearing alternate, flat, often curved or semi-prostrate, faintly jointed, deep green leaves, 80cm (32in) long. Compound cymes of 5–20 clusters of dark brown flowers, 3mm (¼in) long, are produced from summer to early autumn.  $\pm$  to 80cm (32in),  $\pm$  to 60cm (24in). W. and S. Europe, Asia, North America. \*\*\*  
*J. effusus* 'Spiralis' ♂ syn. *J. effusus* f. *spiralis*, *Scirpus lacustris* 'Spiralis' (Corkscrew rush). Densely tufted, leafless perennial with spiralled, shiny, dark green stems, giving a corkscrew effect and forming a rather tangled mass. Small brown flowers, to 3mm (¼in) long, are produced in loose cymes, to 5cm (2in) long, along the stems throughout summer.  $\pm$  45cm (18in),  $\pm$  60cm (24in). \*\*\*  
*J. inflexus* 'Afro'. Densely tufted, leafless perennial, similar to *J. effusus* 'Spiralis', but with spiralled, matt, blue-green stems, and brown flowers, to 4mm (¼in) long, produced in small, loose cymes towards the ends of the stems, from late spring to midsummer.  $\pm$  60cm (24in). \*\*\*

▷ **Juneberry** see *Amelanchier*  
 ▷ **Jungle flame** see *Ixora coccinea*

▷ **Juniper** see *Juniperus*  
*Alligator* see *J. deppeana*  
*Ashe* see *J. ashei*  
*Bonin Island* see *J. procumbens*  
*Chinese* see *J. chinensis*  
*Coffin* see *J. recurva* var. *coxii*  
*Common* see *J. communis*

▷ **Juniper cont.**

*Creeping* see *J. horizontalis*  
*Flaky* see *J. squamata*  
*Himalayan weeping* see *J. recurva*  
*Rocky Mountain* see *J. scopulorum*  
*Sargent* see *J. sargentii*  
*Shore* see *J. conferta*  
*Syrian* see *J. drupacea*  
*Temple* see *J. rigida*

## JUNIPERUS syn. SABINA

Juniper

CUPRESSACEAE

Genus of 50–60 species of evergreen, coniferous shrubs and tall trees from dry forests and hillsides throughout the N. hemisphere. Juvenile leaves are usually needle-like or narrowly wedge-shaped, and 0.5–1.5cm (¼–½in) long. Adult leaves are usually scale-like and overlapping, either lying flat along the shoots or spreading, and 2–6mm (⅛–¼in) long. In most cases, male and female cones are borne on separate plants: male cones are spherical to ovoid, yellow, and to 5mm (¼in) across; females develop into usually spherical, fleshy, berry-like fruits, 4–10mm (⅛–½in) across, with 1–10 seeds, and are persistent, generally ripening over 2 to 3 years. Junipers tolerate a wide range of soils and conditions, and are useful for hot, sunny sites. Use as specimen plants: the smallest species in a rock garden and the prostrate species as ground cover. Contact with the foliage may aggravate skin allergies.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any well-drained soil, including dry, chalky, or sandy soils, preferably in full sun or in light dappled shade. Junipers need little, if any, pruning.
- **PROPAGATION** Remove seed from flesh as soon as ripe and sow in containers in a cold frame; germination may take up to 5 years. Root ripewood cuttings in early autumn.
- **PESTS AND DISEASES** Prone to twig blight, aphids, scale insects, webber moth caterpillars, and honey fungus.

*J. ashei* ♀ (Ashe juniper). Shrub or spreading tree with an irregular crown, light, ash-grey bark, peeling in strips, and triangular-ovate, scale-like, glaucous, blue-grey leaves in pairs or threes. Produces bluish black fruit with soft, resinous, juicy pulp.  $\pm$  to 6m (20ft). S.E. USA. \*\*\* (borderline)  
*J. chinensis* ♂ (Chinese juniper). Ovoid-conical tree to spreading shrub with brown bark, peeling in long strips, and dark green foliage. Narrowly wedge-shaped juvenile leaves have long, sharp points and are borne in pairs or threes; diamond-shaped, scale-like adult leaves are mainly in 4 ranks, lying flat along the stems. Foliage is pungently scented. Bears violet to brown fruit, marked with the outlines of scales.  $\pm$  to 20m (70ft),  $\pm$  to 6m (20ft). China, Mongolia, Japan. \*\*\*  
*'Aurea'* ♀ is a columnar tree with golden yellow leaves, and produces numerous cones in mid-spring;  $\pm$  to 11m (35ft),  $\pm$  5m (15ft).  
*'Blaauw'* ♀ syn. *J. x pfitzeriana* 'Blaauw', is a dense, upright shrub with spreading, long-pointed, diamond-shaped, blue-grey leaves;  $\pm$  1.2m (4ft),  $\pm$  1m (3ft).  
*'Blue Alps'* is a vigorous, spreading shrub with shoots arching at

*Juniperus chinensis* 'Obelisk'

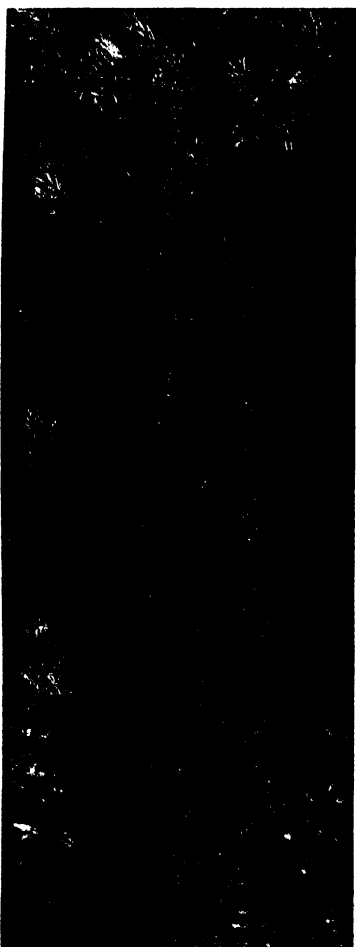
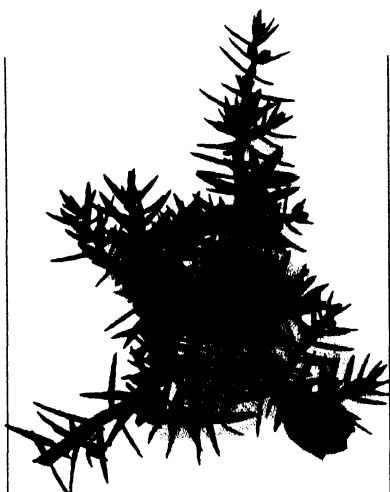
the tips, and silver-blue juvenile leaves, to 1.5cm (½in) long;  $\pm$  to 4m (12ft),  $\pm$  3m (10ft).  
*'Kaizuka'* ♀ is a spreading shrub with dense, irregular growth, bright green leaves, and many glaucous berries;  $\pm$  6m (20ft),  $\pm$  3–4m (10–12ft).  
*'Keteleeri'* ♂ is a narrowly conical, dense, regular tree with diamond-shaped, scale-like, dark grey-green leaves;  $\pm$  to 10m (30ft),  $\pm$  2m (6ft).  
*'Kuriwao Gold'* is a rounded shrub with bright gold leaves; requires a site in full sun;  $\pm$  2m (6ft).  
*'Mordigan Gold'*, syn. 'Mordigan Aurea', is a spreading, golden yellow shrub with branches rising at an angle of 30°;  $\pm$  to 1.5m (5ft),  $\pm$  2.5m (8ft).  
*'Obelisk'* ♂ ♀ is a slender, erect shrub with long, glaucous, bluish green juvenile leaves, to 1.5cm (½in) long;  $\pm$  to 2.5m (8ft),  $\pm$  60cm (24in).  
*'Robusta Green'* see *J. virginiana* 'Robusta Green'.  
*'Stricta'* is a narrowly conical shrub with a pointed tip, and soft, blue-green leaves;  $\pm$  2.5m (8ft),  $\pm$  60cm (24in).

*J. communis* ♂ (Common juniper). Spreading shrub to small, ovoid or columnar tree. Linear, sharply pointed leaves, deep green to blue-green, with single, glaucous white bands on the inner faces, are borne in threes. Ovoid or spherical fruit, green when first produced, ripen to glaucous blue then black over 3 years.  $\pm$  0.5–6m (1½–20ft) or more,  $\pm$  1–6m (3–20ft). N. hemisphere. \*\*\*  
*'Compressa'* ♂ ♀ is a dwarf, spindle-shaped shrub, which grows very slowly, at 2–3cm (¾–1¼in) per year. Suitable for growing in a trough;  $\pm$  to 80cm (32in),  $\pm$  45cm (18in).  
 var. *depressa* is prostrate, with

*Juniperus communis* 'Compressa'

*Juniperus communis* 'Depressa Aurea'

upturned shoot tips and leaves with narrow white bands; ↑ to 60cm (24in), ↔ 1.5m (5ft). North America, Greenland. '**Depressa Aurea**' is a spreading shrub with semi-erect branches, and golden yellow leaves in late spring, becoming bronze and almost green over winter; ↑ 60cm (24in), ↔ 1.5m (5ft). '**Hibernica**' is a spindle-shaped, columnar shrub, similar to 'Compressa' but more vigorous, growing 20cm (8in) per year; ↑ 3–5m (10–15ft), ↔ 30cm (12in). '**Prostrata**' is a very vigorous, prostrate, mat-forming shrub with green foliage; ↑ 20–30cm (8–12in), ↔ 1.5–2m (5–6ft). '**Sentinel**' is an upright, spindle-shaped shrub, similar to 'Compressa' but more vigorous; ↑ to 1.5m (5ft), ↔ to 60cm (24in).

*Juniperus communis* 'Hibernica'*Juniperus drupacea*

*J. conferta* (Shore juniper). Prostrate shrub with dense, sharply pointed, needle-like, bright green or grey-green leaves, borne in groups of 3. The black fruit have a glaucous bloom. ↑ to 30cm (12in), ↔ indefinite. Japan, Russia (Sakhalin). \*\*\*. '**Blue Pacific**' is a trailing, prostrate shrub with blue-green leaves; ↑ to 30cm (12in), ↔ to 2m (6ft). *J. deppeana* (Alligator juniper). Broadly conical tree with thick, grooved, grey bark divided up into small, square scales, and needle-like, oval-diamond-shaped, blue-green leaves, to 6mm (¼in) long, lying flat along the branches. Spherical to broadly ellipsoid, red-brown fruit, 1cm (½in) across, are produced in summer, ripening in the second year. ↑ to 20m (70ft), ↔ to 4m (12ft). S.W. USA, Mexico. \*. '**Silver Spire**' is a narrowly columnar shrub or tree with ash-grey bark and bright silver foliage. Juvenile leaves are borne in whorls of 2 or 3; diamond-shaped adult leaves lie flat along the stems in 4 ranks. Bears reddish brown fruit with dry, fibrous pulp; ↑ to 10m (30ft), rarely 20m (70ft), ↔ 3–5m (10–15ft). *J. drupacea* (Syrian juniper). Usually columnar tree with orange-brown bark peeling in strips. Narrowly wedge-shaped leaves, 1–2.5cm (½–1in) long, with long, sharp points, are grey-green with 2 white bands, and borne in whorls of 3. Produces ovoid or spherical green fruit maturing to dark blue, then brown, 2–2.5cm (¾–1in) across. ↑ to 15m (50ft), ↔ to 3m (10ft). S. Greece, Turkey, Syria. \*\*\*. '**Grey Owl**' syn. *J. virginiana* 'Grey Owl'. Large, spreading shrub with

*Juniperus x pfitzeriana* 'Aurea'*Juniperus x pfitzeriana* 'Blue and Gold'

horizontal branches and arching, oval-diamond-shaped, scale-like, soft, silver-grey leaves. Bears ovoid, glaucous, brownish violet fruit which ripen in the first autumn. ↑ 2–3m (6–10ft), ↔ 3–4m (10–12ft). \*\*\*. *J. 'Hetzi'* see *J. virginiana* 'Hetzi'. *J. horizontalis* (Creeping juniper). Prostrate, creeping shrub with grey-green foliage. Needle-like juvenile leaves, with long, sharp points, are borne in pairs or in threes; elliptic, scale-like adult leaves, each with a prominent gland on the back, lie flat along the shoots in 4 rows. Bears ovoid, dark blue fruit. ↑ to 30cm (12in), ↔ indefinite. North America. \*\*\*. '**Bar Harbor**' has grey-green leaves which become mauve-purple in winter. '**Douglasii**' has a flat, mat-like habit with ascending side branches and glaucous, bright green leaves, purple-bronzed in winter. '**Emerald Spreader**' is a very flat shrub with emerald-green juvenile leaves. '**Turquoise Spreader**' is a flat shrub with greenish blue juvenile leaves. '**Wiltonii**' is persistently glaucous with bright blue leaves; it is excellent ground cover. '**Winter Blue**' has bright blue leaves and a less spreading habit. *J. x media* see *J. x pfitzeriana*. *J. x media* 'Hetzi' see *J. virginiana* 'Hetzi'. *J. x pfitzeriana* (syn. *J. chinensis* x *J. sabina*) syn. *J. x media*. Spreading, male shrub with branches ascending at an angle of 45°, gradually forming a flat-topped bush with tiered foliage. Diamond-shaped, scale-like, grey-green leaves, with free tips, lie flat along the shoots. The spherical fruit are initially

*Juniperus procumbens**Juniperus recurva*

dark purple, becoming paler later. ↑ 1.2m (4ft), ↔ 3m (10ft). Garden origin. \*\*\*. '**Armstrongii**' has soft, yellow-green leaves; ↑ to 1m (3ft). '**Aurea**' has golden yellow leaves which become yellowish green over winter; ↑ 90cm (36in), ↔ 2m (6ft). '**Blaauw**' see *J. chinensis* 'Blaauw'. '**Blue and Gold**' has patches of blue-green foliage intermingled with bright yellow; ↑ 1.5m (5ft), ↔ 2–3m (6–10ft). '**Glaucia**' has prickly, silver to greyish blue leaves; ↑ 90cm (36in), ↔ 2m (6ft). '**Gold Coast**' is compact, with deep chrome-yellow leaves which retain their colour in winter; ↑ to 1m (3ft). '**Golden Saucer**', has bright golden yellow leaves, especially in winter; ↑ 1–1.5m (3–5ft), ↔ 30cm (12in). *J. procumbens* (Bonin Island juniper). Spreading, procumbent shrub with mostly linear, needle-like, sharply pointed, yellow-green leaves in threes. Bears brown or black fruit. ↑ to 75cm (30in), ↔ to 2m (6ft). S. Japan. \*\*\*. *J. recurva* (Himalayan weeping juniper). Conical or broadly columnar tree with smooth, orange-brown bark, which peels in strips and is fissured in old trees. Narrowly wedge-shaped, grey-green leaves, 4–7mm (¼–¼in) long, produced in threes and pointing forwards along the shoots, are borne in pendulous sprays. Produces spherical or ovoid, greenish brown to black fruit, each with a single seed. ↑ to 10m (30ft), ↔ to 5m (15ft). Himalayas to W. China. \*\*\*. var. *coxii* (Coffin juniper) has longer and more widely spaced, rich, dark green leaves, 6–8mm (¼–¼in) long. N. Burma. '**Densa**', syn.

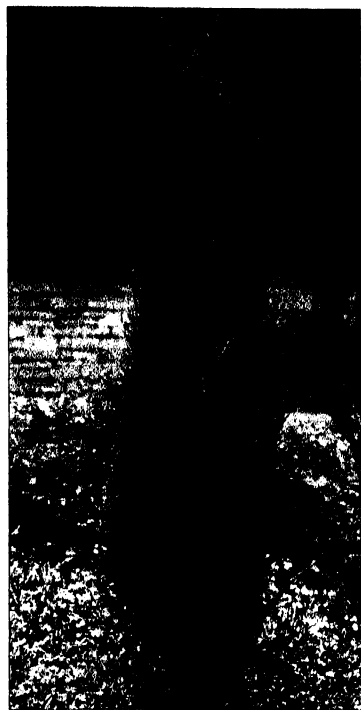


*Juniperus rigida*

'Nana', is a dwarf, conical, low-growing, spreading shrub with ascending branch tips and dark green leaves;  $\uparrow$  60cm (24in),  $\leftrightarrow$  1.2m (4ft). 'Nana' see 'Densa'.

*J. rigida*  $\square$   $\odot$  (Temple juniper). Spreading tree or large shrub with peeling brown to yellow-brown bark and an open crown of pendulous branches bearing groups of 3 needle-like, sharply pointed, bright green leaves, glaucous on the inner face, and 1.5–2.5cm ( $\frac{1}{2}$ –1in) long. Bears purplish black fruit.  $\uparrow$  to 8m (25ft) or more,  $\leftrightarrow$  to 6m (20ft). N. China, Korea, Japan. \*\*\*

*J. sabina* (Savin). Spreading, occasionally erect shrub with flaking, red-brown bark and slender, 4-sided shoots. Mainly adult leaves, borne in pairs lying flat along the stems, are ovate, scale-like, and dark green to grey-green, each with a small gland on the back, and a foetid smell when crushed. Flattened, spherical fruit, bluish black with white blooms, ripen over the first winter.  $\uparrow$  2–5m (6–15ft),  $\leftrightarrow$  to 6m (20ft). C. Europe to N. China. \*\*\*. 'Blue Donau', syn. 'Blue Danube', is very hardy, with shoots erect at the tips and light greyish blue leaves;  $\uparrow$  60cm (24in),  $\leftrightarrow$  2m (6ft). 'Blue Danube' see 'Blaue Donau'. 'Cupressifolia' has a compact and horizontal habit with blue-green leaves;  $\uparrow$  60cm (24in),  $\leftrightarrow$  1.5m (5ft). 'Mas' is an upright shrub with dark green leaves;  $\uparrow$  6m (20ft),  $\leftrightarrow$  to 1m (3ft). var. *tamariscifolia*  $\square$  is low-growing, with horizontal tiers of spreading, short, sharply pointed, mainly juvenile, bright green or bluish

*Juniperus scopulorum* 'Skyrocket'

green leaves borne in pairs or threes;  $\uparrow$  to 1–2m (3–6ft),  $\leftrightarrow$  1.5–2m (5–6ft).

*J. sargentii* (Sargent juniper). Creeping shrub with prostrate, flexuous stems, short branchlets, and mostly ovate, camphor-scented, scale-like, bluish green leaves. Other, dark blue-green leaves are paired and lie flat to the branches. Juvenile leaves are needle-like, in whorls of 3. Bears dark blue or black fruit.  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  indefinite. N.E. China, N.E. Asia, Japan, Russia (Sakhalin, Kurile Islands). \*\*\*

*J. scopulorum*  $\odot$  (Rocky Mountain juniper). Rounded or spreading tree or shrub with red-brown bark, furrowed into strips or square flakes. Paired, ovate, sharply pointed, scale-like, yellow-green to dark green leaves lie flat to the branches. Bears blue-black fruit.  $\uparrow$  to 15m (50ft),  $\leftrightarrow$  to 6m (20ft). USA (Rocky Mountains). \*\*\*. 'Blue Heaven'  $\square$  is a shrub of conical habit and blue-green leaves;  $\uparrow$  2m (6ft),  $\leftrightarrow$  to 60cm (24in). 'Skyrocket'  $\square$   $\odot$  syn.

*J. virginiana* 'Skyrocket', is a narrow, pencil-shaped tree with glaucous, grey-green leaves;  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  50–60cm (20–24in). 'Springbank'  $\odot$  is a narrow, conical tree with pendent branch tips

*Juniperus squamata* 'Blue Star'

and intensely silver-blue leaves;  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  to 60cm (24in). 'Table Top' is a spreading shrub with blue leaves and many berries;  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  5m (15ft). 'Wichita Blue'  $\odot$  is a broadly conical tree with bright blue-grey leaves;  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  80cm (32in).

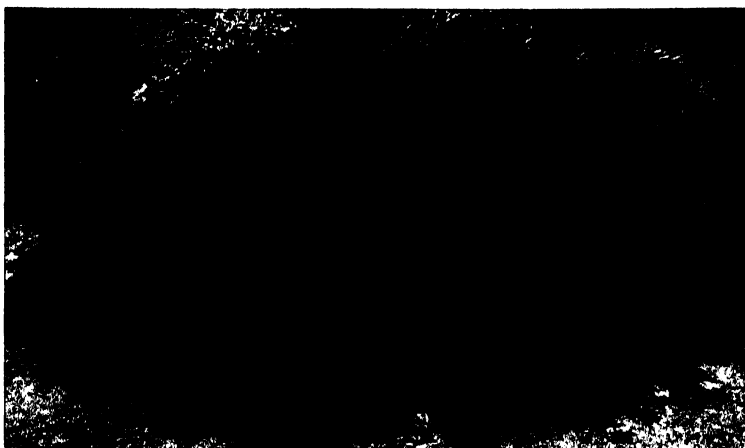
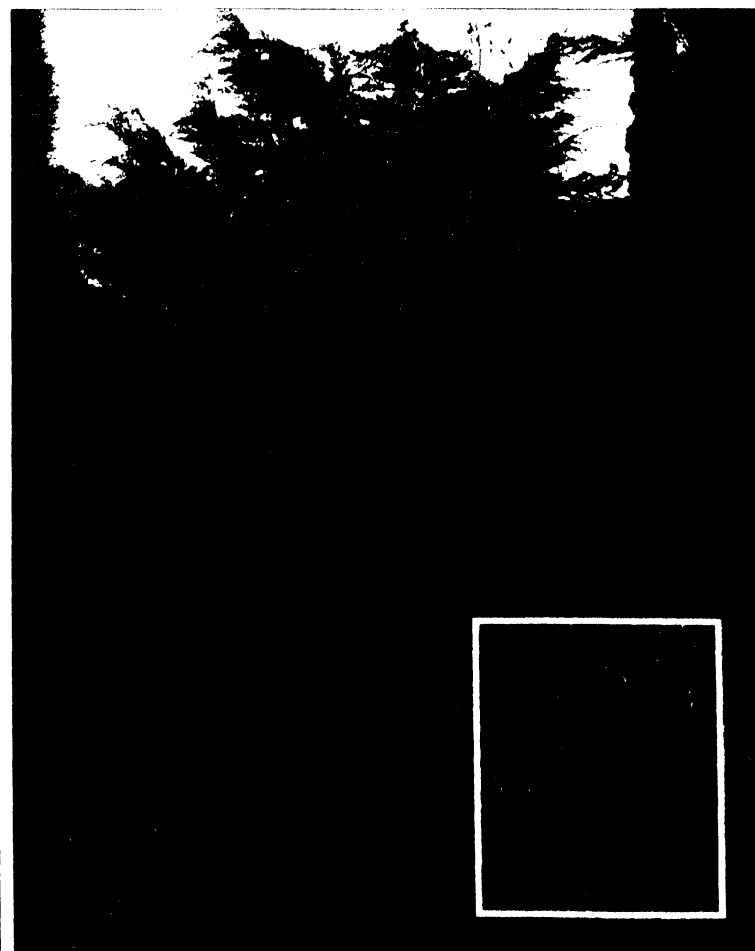
*J. squamata*  $\odot$  (Flaky juniper). Prostrate shrub, spreading bush, or small upright tree with flaky, rusty brown bark.

Spreading, narrowly wedge-shaped, sharply pointed, entirely juvenile leaves, dark grey-green to silvery blue-green, each with a bright blue-white band, are borne in whorls of 3. Bears ovoid, glossy black fruit.  $\uparrow$  to 10m (30ft),  $\leftrightarrow$  1–8m (3–25ft). Mountains of N.E. Afghanistan, Himalayas, W. and C. China. \*\*\*. 'Blue Star'  $\square$   $\square$  is a compact, rounded bush, with silvery

blue leaves;  $\uparrow$  to 40cm (16in),  $\leftrightarrow$  to 1m (3ft). 'Chinese Silver' is a spreading shrub with vivid silver-blue and silver leaves;  $\uparrow$  to 6m (20ft). 'Holger'  $\square$  is a spreading shrub with sulphur-yellow new growth contrasting with steel-blue older leaves;  $\uparrow$  to 2m (6ft). 'Meyeri'  $\square$  is a spreading shrub with arching and nodding shoot tips and glaucous blue leaves. Dead foliage often persists, marring its appearance;  $\uparrow$  4–10m (12–30ft),  $\leftrightarrow$  6–8m (20–25ft).

*J. virginiana*  $\odot$  (Pencil cedar). Conical to columnar tree with a conical crown, spreading branches, and brown bark with narrow, spiral ridges, peeling in shreds. Both the narrowly wedge-shaped, sharply pointed juvenile leaves and the diamond-shaped, scale-like adult leaves are grey-green, borne in pairs on the same shoots, and lie flat along the branches. Ovoid, very glaucous, brown-violet fruit ripen in the first autumn.  $\uparrow$  15–30m (50–100ft),  $\leftrightarrow$  5–8m (15–25ft). E. USA (Maine to Texas). \*\*\*. 'Burkii'  $\odot$  is a dense, upright tree with blue-grey leaves which become purple-tinged over winter;  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  1m (3ft).

'Grey Owl' see *J. 'Grey Owl'*. 'Hetzii', syn. 'Hetz', *J. 'Hetz'*, *J. x media* 'Hetzii', is an open shrub with tiers of spreading, blue-green leaves on ascending branches. Produces spherical, blue-purple to brown fruit;  $\uparrow$  4–5m (12–15ft),  $\leftrightarrow$  to 3–5m (10–15ft). 'Robusta Green'  $\odot$  syn. *J. chinensis* 'Robusta Green', is a narrow, columnar tree with blue-green leaves;  $\uparrow$  to 3m (10ft),  $\leftrightarrow$  60cm (24in). 'Skyrocket' see *J. scopulorum* 'Skyrocket'.

*Juniperus sabina* var. *tamariscifolia**Juniperus squamata* 'Meyeri' (inset: leaf detail)

- ▷ **Jupiter's distaff** see *Salvia glutinosa*  
 ▷ *Jussiaea longifolia* see *Ludwigia longifolia*  
 ▷ *Jussiaea repens* see *Ludwigia peploides*

## JUSTICIA syn. BELOPERONE, DREJERELLA, DUVERNOIA, LIBONIA

### ACANTHACEAE

Genus of about 420 species of evergreen perennials, shrubs, and subshrubs from a wide range of habitats in tropical and subtropical regions worldwide and from temperate North America. The opposite, usually simple leaves are ovate to elliptic and often boldly veined.

Justicias are grown mainly for their slender, tubular flowers, which have narrow, arching lips and are produced, with conspicuous bracts, in terminal or axillary spikes, cymes, or panicles. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse, or as houseplants. In milder climates, plant in a mixed border.

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow in draught-free conditions in loam-based potting compost (J1 No.2 or 3) with bright filtered light, or full light with shade from hot sun. Provide high humidity, although *J. brandegeana* and *J. rizzinii* tolerate lower humidity. In the growing season, water freely and apply a balanced liquid fertilizer every 4 weeks; keep just moist in winter. Pot on in spring. Outdoors, grow in fertile, moist, but well-drained soil in partial shade. Pruning group 9; tip-prune young plants to promote bushiness. Plants under glass need hard restrictive



*Justicia brandegeana*

pruning in late winter or early spring; most are best replaced when they become leggy.

- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root softwood cuttings in late spring, or semi-ripe cuttings in summer, both with bottom heat.
- **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

*J. adhatoda* ■ syn. *Adhatoda duvernoia*, *Duvernoia adhatodoides*. Usually erect and sparsely branched, evergreen shrub, spreading with age unless regularly pruned, with ovate-elliptic, mid- to deep green leaves, 10–20cm (4–8in) long. Terminal and axillary spikes, 5cm (2in) or more long, of tubular-bell-shaped, 2-lipped white flowers, 3cm (1¼in) long, appear mainly in summer. The lower



*Justicia brandegeana* 'Chartreuse'

lips of the flowers are veined red or rose-purple. ‡ 2–3m (6–10ft), ↔ 1–1.5m (3–5ft). India, Sri Lanka. ☀ (min. 7°C/45°F)

*J. brandegeana* ■ ♀ syn. *Beloperone guttata*, *Drejerella guttata*, *J. guttata* (False hop, Shrimp bush, Shrimp plant). Moderately bushy, soft, evergreen shrub, of rounded habit if regularly tip-pruned, with downy stems and ovate or elliptic leaves, 2.5–8cm (1–3in) long, lustrous mid-green above, downy beneath. Elongated, hop-like, arching to pendent, terminal and axillary spikes, 10cm (4in) or more long, with overlapping, shrimp-pink bracts and slender, tongue-like white flowers, 3cm (1¼in) long, are borne throughout the year. The lower lips of the flowers are marked with purple or red. ‡ to 1m (3ft), ↔ 60–90cm (24–36in). Mexico. ☀ (min. 7°C/45°F). 'Chartreuse' ■ has bright, lime-green bracts. var. *lutea* see 'Yellow Queen'. 'Yellow Queen', syn. var. *lutea*, has glowing yellow bracts.

*J. carnea* ■ syn. *Jacobinia carnea*, *J. pobliana*, *J. velutina*, *Justicia pobliana* (Brazilian plume, Flamingo plant, King's crown). Erect, sparsely branched, evergreen shrub with robust, 4-angled or 4-ridged stems, and oblong to ovate, mid-green leaves, to 25cm (10in) long, sometimes with short, velvety hairs. Dense, terminal and axillary spikes, 10–15cm (4–6in) long, of overlapping green bracts, largely obscured by tubular, 2-lipped, pink to rose- or purple-pink flowers, 5cm (2in) long, are produced during summer and autumn ‡ to 2m (6ft), ↔ to 1m (3ft). N. South America. ☀ (min. 7°C/45°F)



*Justicia carnea*



*Justicia rizzinii*

*J. coccinea* see *Pachystachys coccinea*.  
*J. floribunda* see *J. rizzinii*.

*J. ghiesbreghtiana* of gardens see *J. spicigera*.

*J. guttata* see *J. brandegeana*.

*J. pauciflora* see *J. rizzinii*.

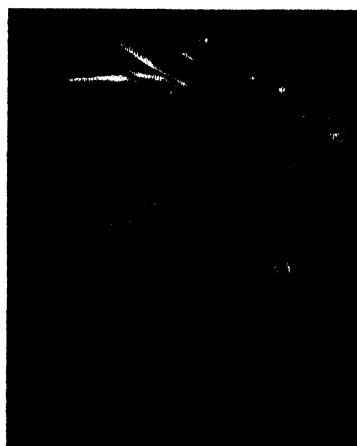
*J. pobliana* see *J. carnea*.

*J. rizzinii* ■ ♀ syn. *Jacobinia pauciflora*, *Justicia floribunda*, *J. pauciflora*, *Libonia floribunda*. Dwarf, soft, evergreen shrub of rounded habit, with downy stems bearing oblong to broadly obovate, mid-green leaves, to 2cm (¾in) long. One of each pair of leaves is smaller than the other. Small, nodding axillary spikes, 3cm (1¼in) wide, of tubular, yellow and scarlet flowers, 2cm (¾in) long, are produced from autumn to late spring. ‡ 30–60cm (12–24in). Brazil. ☀ (min. 7°C/45°F)

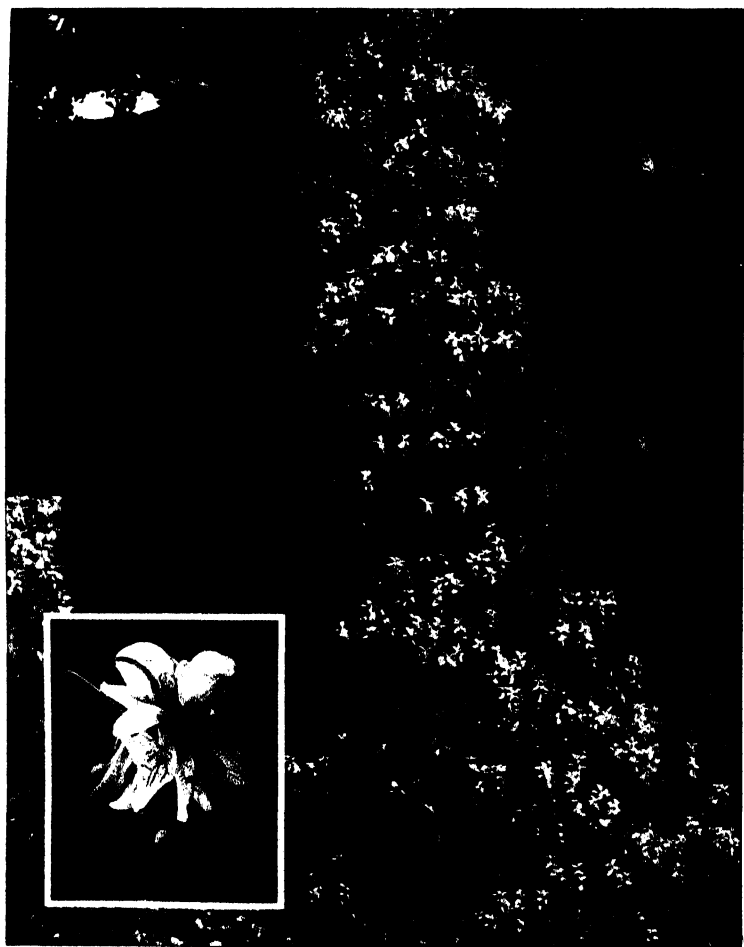
*J. spicigera* ■ syn. *Jacobinia spicigera*, *Justicia ghiesbreghtiana* of gardens. Freely branching, rounded, pubescent, evergreen shrub, with 4-angled stems and oblong-lance-shaped to ovate, arching, sometimes shallowly toothed, matt green leaves, 8–17cm (3–7in) long. Tubular, crimson to orange flowers, 3–4cm (1¼–1½in) long, are borne in small, forking, one-sided, terminal and axillary spikes, to 12cm (5in) long, from autumn to spring. The lower lips of the flowers are recurved or coiled. ‡ 1–1.8m (3–6ft), ↔ 75–120cm (2½–4ft). Mexico, Central America to Colombia. ☀ (min. 7°C/45°F)

*J. suberecta* see *Dicliptera suberecta*.

▷ **Justicia, Red** see *Megaskepasma erythrochlamys*



*Justicia spicigera*



*Justicia adhatoda* (inset: flower detail)

# K

## KADSURA

SCHISANDRACEAE

Genus of about 20 species of woody, twining, evergreen climbers from forest in E. and S.E. Asia. They are grown for their fleshy fruits and attractive, simple, glossy leaves, arranged alternately.

Solitary, cup-shaped flowers are usually produced in the leaf axils; both male and female flowers, borne on separate plants, are required to produce the fruits.

*K. japonica*, the only species commonly cultivated, is best grown in a sheltered position where it can be trained against a wall or pillar, or through a large shrub.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Pruning group 12, in winter.

• **PROPAGATION** Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*K. japonica*. Vigorous, evergreen climber with twining shoots and elliptic to ovate-lance-shaped, slightly toothed, glossy, dark green leaves, to 10cm (4in) long. Small, solitary, cup-shaped, yellowish white flowers, 2cm (¾in) across, are produced from summer to autumn, followed on female plants by red, blackberry-like fruit, 3cm (1¼in) across. ↑ 4m (12ft). China, Korea, Taiwan, Japan. \* \*. 'Variegata' has leaves that are broadly margined with creamy yellow and tinged pink, becoming creamy white in winter.

## KAEMPFERIA

ZINGIBERACEAE

Genus of about 40 species of aromatic, rhizomatous perennials growing wild in the forests of tropical Asia. The leaves are simple and either 2-ranked on short stems or in basal clusters. White, pink, or lilac, 3-petalled flowers, each with a deeply 2-lobed lip, are borne in terminal spikes on short, leafy or scaly stems and are often fragrant. In frost-prone areas, grow in a warm greenhouse; in tropical and subtropical regions, use outdoors as ground cover.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in bright filtered light. During the growing season, maintain moderate humidity and water freely, applying a balanced liquid fertilizer every 2–3 weeks. Keep completely dry in winter when dormant. Outdoors, grow in well-drained, humus-rich soil in partial shade.

• **PROPAGATION** Sow seed at 20°C (68°F) as soon as ripe, or divide rhizomes in spring.

• **PESTS AND DISEASES** Trouble free.



*Kaempferia pulchra*

*K. pulchra* ■ Low-growing, rhizomatous perennial with broadly elliptic, dark green leaves, about 15cm (6in) long, sometimes with silver markings. In summer, produces short spikes, to 5cm (2in) long, of 3-petalled, lilac or lilac-pink flowers, 4cm (1½in) across, amid the foliage. ↑ 15cm (6in), ↔ 30cm (12in). Thailand, Malaysia. ☼ (min. 10°C/50°F)

*K. roscoeana* (Dwarf ginger lily, Peacock lily). Low-growing, rhizomatous perennial with usually 2 rounded leaves, 10cm (4in) across, deep green with lighter green markings above, mid-green, tinged red beneath. From summer to autumn, bears short spikes, 5cm (2in) long, of 3-petalled white flowers, 2.5–5cm (1–2in) across, amid the foliage. ↑ 15cm (6in), ↔ 20cm (8in). Burma. ☼ (min. 10°C/50°F)

*K. rotunda* (Resurrection lily). Erect, rhizomatous perennial with lance-shaped leaves, to 40cm (16in) long, with long, sharp points, silver-green and unmarked above, purple beneath. In summer, produces spikes, 8cm (3in) long, of up to 6 lilac-lipped, 3-petalled white flowers, 5cm (2in) across, above the foliage. ↑ 15cm (6in), ↔ 45cm (18in). S.E. Asia. ☼ (min. 10°C/50°F)

▷ **Kaffirboom**,

Cape see *Erythrina caffra*

Transvaal see *Erythrina lysistemon*

▷ **Kaffir bread** see *Encephalartos caffer*

▷ **Kaki** see *Diospyros kaki*

## KALANCHOE

syn. BRYOPHYLLUM

CRASSULACEAE

Genus of about 130 species of annual, biennial, and perennial succulents, shrubs, climbers, and small trees, occurring in semi-desert or shady areas of Saudi Arabia, Yemen (including Socotra), C. Africa, South Africa, Madagascar, Asia, Australia, and tropical America. Some are tree-like or shrubby, others are more spreading in habit. All have fleshy stems bearing simple to 2-pinnatisect, rarely pinnate, toothed or scalloped, fleshy leaves, arranged in opposite pairs, rarely alternate or whorled. Diurnal, showy, bell-shaped, urn-shaped, or tubular, 4-lobed flowers, often swollen in the middle or at the bases, are borne in terminal, occasionally lateral, cyme-like or corymb-like panicles. Where temperatures drop below 12°C (54°F), grow as houseplants



*Kalanchoe beharensis*

or in a temperate or warm greenhouse; some spreading species are particularly effective in a hanging basket. In warmer climates, grow outdoors in a shrub border or in beds.

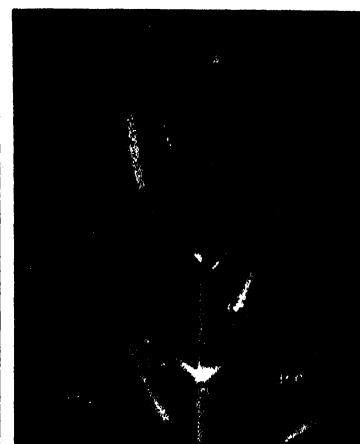
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) with additional grit, in bright filtered light. During the growing season, water moderately and apply a balanced liquid fertilizer 3 or 4 times; keep just moist in winter. Outdoors, grow in well-drained, humus-rich, moderately fertile soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Remove offsets and plantlets from leaves or inflorescences, or take stem cuttings, in spring or summer.

• **PESTS AND DISEASES** Susceptible to mealybugs, aphids, downy mildew, and leaf spot.

*K. beharensis* ■ Bushy, often tree-like, perennial succulent with broadly triangular to lance-shaped, slightly toothed, long-stalked leaves, to 35cm (14in) long, usually concave and brown above, convex and silvery beneath, and



*Kalanchoe daigremontiana*

covered with minute, fine, silver or golden hairs. In late winter, mature plants bear many lateral, cyme-like panicles of urn-shaped, green-yellow flowers, 7mm (¼in) long, which are violet-veined inside. ↑ 1m (3ft) or more. Madagascar. ☼ (min. 10°C/50°F)

*K. blossfeldiana* ■ Bushy, perennial succulent with oval to oblong-ovate, softly toothed, glossy, dark green leaves, 8cm (3in) long, on long stalks. Tubular scarlet flowers, 1.5cm (½in) long, are produced in early spring, mostly in crowded, corymb-like panicles. ↑ to 40cm (16in). Madagascar. ☼ (min. 12°C/54°F). Many hybrids have been developed, with flowers in white, yellow, pink, and other shades.

*K. daigremontiana* ■ syn. *Bryophyllum daigremontianum* (Mexican hat plant). Erect, perennial succulent with lance-shaped leaves, 15–20cm (6–8in) long, usually spotted reddish brown, that produce adventitious plantlets on the toothed margins. Pendent, broadly tubular, greyish violet flowers, to 2cm (¾in) long, are produced in cyme-like panicles in winter. ↑ 1m (3ft), ↔ 30cm (12in). S.W. Madagascar. ☼ (min. 10°C/50°F)



*Kalanchoe blossfeldiana*

K

*Kalanchoe fedtschenkoi* 'Variegata'

***K. delagoensis*** syn. *Bryophyllum tubiflorum*, *K. tubiflora*. Erect, sparsely branched, perennial succulent with almost cylindrical leaves, to 15cm (6in) long, grey-green, spotted reddish brown; leaves have notched tips that produce adventitious plantlets. In late winter and early spring, produces cyme-like panicles of pendent, tubular-bell-shaped, purple-grey to pale orange-yellow flowers, to 2cm (¾in) or more long. † 1m (3ft) or more, ↔ 30cm (12in) or more. Madagascar. ☼ (min. 10°C/50°F)

***K. eriophylla***. Bushy, perennial succulent with slender stems covered with white hairs, except at the bases. Bears ovate-oblong, very thick, white-woolly, mid-green leaves, 3cm (1¼in) long. Young leaves may have red tips. In spring, bears narrowly bell-shaped, blue-violet flowers, 6cm (2½in) long, in more or less erect, corymb-like panicles. †→ 20cm (8in). Madagascar. ☼ (min. 15°C/59°F)

***K. fedtschenkoi***. Upright to decumbent, perennial succulent bearing hairless, obovate to oblong, blue-green leaves, 1–6cm (½–2½in) long, each with 2–8 prominent teeth. Pendent, bell-shaped, dull red or purple flowers, to 2cm (¾in) long, are produced in small, loose, corymb-like panicles in summer. † 50cm (20in), ↔ 25cm (10in). Madagascar. ☼ (min. 12°C/54°F). 'Variegata' is bushy or semi-erect, with scalloped leaves margined creamy white and often flushed pink and mottled yellow; †→ 50cm (20in).

***K. grandiflora***. Erect, perennial succulent with ovate to obovate, weakly scalloped, glaucous, mid-green leaves, 4–10cm (1½–4in) long. Tubular, bright yellow flowers, 1cm (½in) long, are borne in compact, cyme-like panicles in summer. † 80cm (32in), ↔ 40cm (16in). S. India. ☼ (min. 10°C/50°F)

***K. jongmansii***. Bushy, woody-stemmed, spreading, perennial succulent with oblong to linear-elliptic, mid-green leaves, to 4.5cm (1¾in) long, rounded above, with entire or partly scalloped margins. In early spring, produces cyme-like panicles of bell-shaped, more or less erect yellow flowers, 3cm (1¼in) long. †→ 30cm (12in). Madagascar. ☼ (min. 12°C/54°F)

***K. laciniata***, syn. *K. schweinfurthii*. Erect, perennial succulent with pinnatisect, occasionally pinnate, hairless, mid-green leaves, to 20cm (8in) long, each with 3–5 entire or lobed, ovate to elliptic segments. In summer,

bears corymb-like panicles of tubular, greenish white to pale orange flowers, 0.8–1.5cm (⅜–½in) long. † 1.2m (4ft), ↔ 60cm (24in). Namibia to Ethiopia, S. India, Thailand. ☼ (min. 10°C/50°F)

***K. manginii***. Semi-erect then pendent, free-branching, perennial succulent with obovate to ovate-spoon-shaped, entire or notched, mid-green leaves, 3cm (1¼in) long, minutely hairy when young. In spring, bears few-flowered, cyme-like panicles of tubular, urn-shaped, bright red flowers, 2–3cm (¾–1¼in) or more long. †→ 30cm (12in). Madagascar. ☼ (min. 12°C/54°F)

***K. marmorata*** syn. *K. somaliensis*. Erect or decumbent, perennial succulent, branching from the base, bearing obovate, toothed, grey-frosted leaves, 6–20cm (2½–8in) long, with large, purple-brown marks. In spring, bears cyme-like panicles of narrowly tubular, erect, white, sometimes pink- or yellow-tinged flowers, 6–8cm (2½–3in) long. †→ to 40cm (16in). Sudan to Zaire, Ethiopia, Somalia. ☼ (min. 12°C/54°F)

***K. pinnata***. Bushy, erect, perennial succulent with ovate, toothed, red-tinged, greyish green leaves, to 20cm (8in) long, which later produce adventitious, marginal plantlets. The lower leaves are simple, the upper ones pinnate, each with 3–5 scalloped, hairless leaflets. Pendent, tubular to bell-shaped, red-tinted, greenish white flowers, to 3.5cm (1½in) long, are produced in cyme-like panicles in late summer. † to 1m (3ft) or more, ↔ to 45cm (18in). Widespread in the tropics. ☼ (min. 12°C/54°F)

***K. pubescens***. Bushy, erect, perennial succulent with hairy stems that are sometimes glandular. Mid-green leaves, to 4cm (1½in) or more long, are ovate-lance-shaped, toothed, and minutely hairy. Cyme-like panicles of pendent, bell-shaped, triangular-lobed, yellow to red flowers, 5mm (¼in) long, are borne in spring. Small, adventitious plantlets form abundantly in the flower clusters

*Kalanchoe* 'Tessa'

as the flowers fade. † 1m (3ft.), ↔ 45cm (18in). N., C., and E. Madagascar. ☼ (min. 12°C/54°F)

***K. pumila*** ♀ Semi-pendent, spreading, succulent subshrub with ovate to obovate, chalky, white-frosted, mid-green leaves, to 3.5cm (1½in) long, narrowing towards the bases, and with toothed margins at the tips. Urn-shaped flowers, 1cm (½in) long, pink with purple lines, are borne in few-flowered, corymb-like panicles in spring. † 20cm (8in), ↔ to 45cm (18in). Madagascar. ☼ (min. 12°C/54°F)

***K. schweinfurthii*** see *K. laciniata*.

***K. somaliensis*** see *K. marmorata*.

***K. 'Tessa'*** ♂ ♀ Pendent, perennial succulent bearing narrowly oval, mid-green leaves, 3cm (1¼in) long, with red margins. In late winter and early spring, produces cyme-like panicles of pendent, tubular, orange-red flowers, 2cm (¾in) long. † 30cm (12in), ↔ 60cm (24in). ☼ (min. 12°C/54°F)

***K. thyrsiflora***. Bushy, white-frosted, perennial succulent, increasing by offsets. It is densely covered with oval to inversely lance-shaped, red-margined, pale green leaves, 10–15cm (4–6in) long, with blunt, rounded tips and leaf pairs united at the bases. In spring, bears cyme-like panicles of erect to spreading, tubular to urn-shaped, fragrant yellow flowers, 1–2cm (½–¾in) long. † 60cm (24in), ↔ 30cm (12in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 12°C/54°F)

***K. tomentosa*** ♀ Erect, densely white-felted, perennial succulent with thick, oblong, entire grey leaves, 2–9cm (¾–3½in) long, coarsely toothed at the tips, grooved above, and often finely margined reddish brown with furry silver hairs. Bell-shaped, green-yellow flowers, 1.5cm (½in) long, with red glandular hairs and lobes tinged purple, are borne in cyme-like panicles in early spring. † to 1m (3ft), ↔ 20cm (8in). Madagascar. ☼ (min. 12°C/54°F)

***K. tubiflora*** see *K. delagoensis*.

***K. uniflora*** syn. *Bryophyllum uniflorum*. Prostrate, perennial succulent with rounded, mid-green leaves, 4–15mm (¼–½in) long, convex on both sides, and with a few uneven, rounded teeth. Pendent, urn-shaped, red to purple flowers, 1–2cm (½–¾in) long, are borne in few-flowered, corymb-like panicles in summer. † 15cm (6in), ↔ 60cm (24in). Madagascar. ☼ (min. 10°C/50°F)

***K. 'Wendy'*** ♂ ♀ Pendent to semi-erect, perennial succulent with ovate to

*Kalanchoe* 'Wendy'

oblong-ovate, slightly scalloped, glossy, mid-green leaves, to 7cm (3in) long. Corymb-like panicles of bell-shaped, orange- to yellow-tipped, purple-red flowers, 3cm (1¼in) long, are borne in late winter and early spring. †→ 30cm (12in). ☼ (min. 10°C/50°F)

## KALMIA

### ERICACEAE

Genus of 7 species of evergreen shrubs found in woodland, swamps, and meadows in North America and Cuba. They have leathery leaves, which may be alternate, in opposite pairs, or in whorls, and showy, bowl-, cup-, or saucer-shaped flowers borne in corymbs or racemes. They are useful for a shrub border or woodland garden; the dwarf species and cultivars are suitable for a peat or heather garden. All parts may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, humus-rich, acid soil in partial shade, or in sun where soils remain reliably moist. Mulch annually in spring with leaf mould or pine needles. Pruning group 8. *K. angustifolia* tolerates hard pruning; renovate all other species over several seasons.

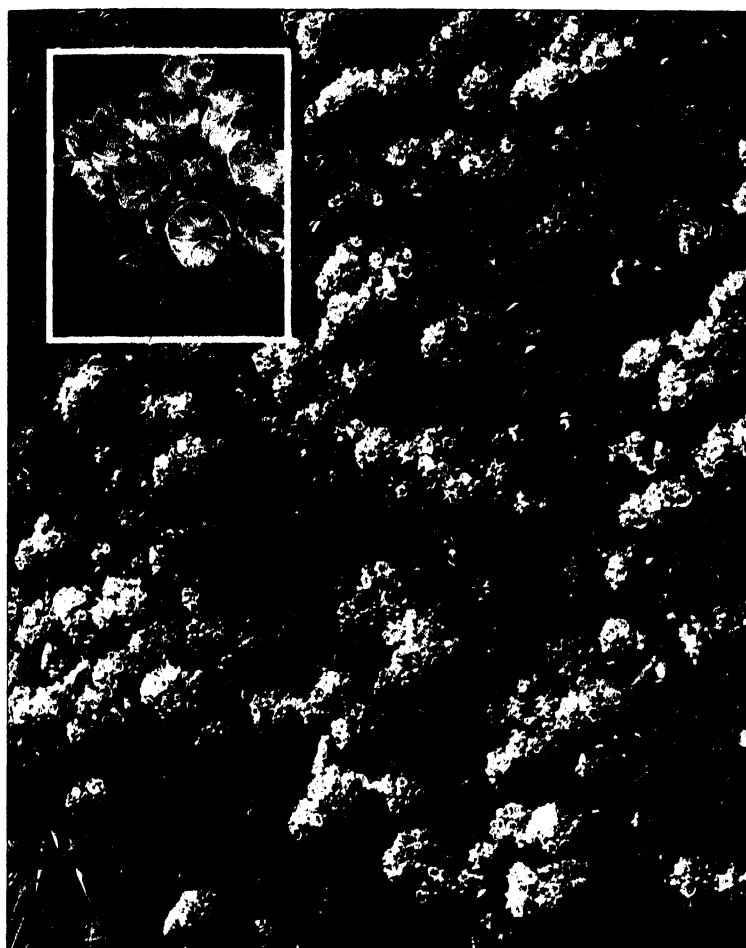
• **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring. Take greenwood cuttings in late spring and semi-ripe cuttings in midsummer. Layer in late summer.

• **PESTS AND DISEASES** Trouble free.

***K. angustifolia*** ♂ (Sheep laurel). Mound-forming shrub with oblong to elliptic, dark green leaves, to 6cm (2½in) long, in opposite pairs or whorls of 3. Small, bowl- or cup-shaped, pale to deep red, occasionally white flowers, to 1cm (½in) across, are produced in corymbs, 5cm (2in) across, in early summer. † 60cm (24in), ↔ 1.5m (5ft). E. North America. \*\*\*. f. *rubra* has deep red flowers.

***K. latifolia*** ♂ ♀ (Calico bush, Mountain laurel). Dense, bushy shrub with alternate, oval to elliptic-lance-shaped, glossy, dark green leaves, to 12cm (5in) long. From late spring to midsummer, large corymbs, 8–10cm (3–4in) or more across, of bowl- or cup-shaped, pale to deep pink, or occasionally white flowers, 2–2.5cm (¾–1in) across, are produced from distinctively crimped, often dark pink or red buds. May take several years to

*Kalmia angustifolia*



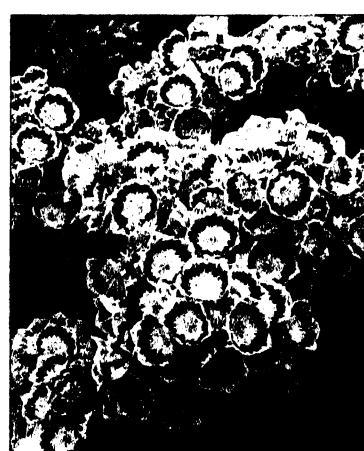
*Kalmia latifolia* (inset: flower detail)

recover from hard pruning.  $\pm$  3m (10ft). E. USA. \*\*\*. **'Bullseye'** has white flowers heavily banded red-purple within. **'Carousel'** has white flowers conspicuously banded red and intricately patterned red or white within. **'Clementine Churchill'** has rich pink flowers opening from dark pink buds. **'Elf'** is compact, with small leaves, 3cm (1 1/4in) long, and white flowers opening from pale pink buds;  $\pm$  1m (3ft). **'Freckles'** has pale pink flowers ringed with small, red-purple spots just inside the rim. **f. fuscata** has a conspicuous deep maroon, purple, or cinnamon ring inside each of the white flowers. **f. myrsifolia** is dense, with small leaves, to 5cm (2in) long, and pale pink flowers;  $\pm$  1.2m (4ft) or more. **'Nipmuck'** has pale green

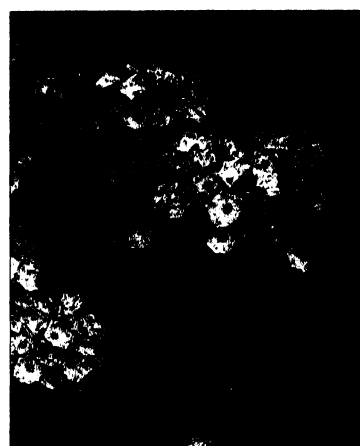


*Kalmia latifolia* 'Clementine Churchill'

leaves and nearly white flowers opening from dark red buds. **'Olympic Fire'** has wavy-margined leaves and large pink flowers, 2.5cm (1in) across, opening from red buds. **'Ostbo Red'** has pale pink flowers opening from bright red buds. **'Shooting Star'** has unusual white flowers, each deeply cut into 5 lobes that reflex after the blooms open. **'Silver Dollar'** has very large white flowers, to 4cm (1 1/2in) long. **K. microphylla**, syn. *K. polifolia* var. *microphylla* (Western laurel). Sparsely branched, dwarf shrub with opposite, leathery, flat, ovate to oval leaves, 0.6–3.5cm (1/4–1 1/2in) long. Bears terminal racemes of saucer-shaped, pink to rose-purple flowers, to 3cm (1 1/4in) across, in late spring and early summer.  $\pm$  to 15cm (6in), occasionally



*Kalmia latifolia* f. *fuscata*



*Kalmia latifolia* 'Ostbo Red'



*Kalmia polifolia*

to 60cm (24in) in very wet, boggy conditions,  $\pm$  15–30cm (6–12in). USA (Alaska to California). \*\*\* **K. polifolia** (Eastern bog laurel). Small, sparsely branched shrub with linear to oblong, glossy, dark green leaves, to 4cm (1 1/2in) long, in opposite pairs or whorls of 3, with rolled-back margins and glandular hairs beneath. Bears racemes, 2.5–4cm (1–1 1/2in) across, of up to 12 saucer-shaped, purple-pink flowers, 1–2cm (1/2–3/4in) across, in mid- and late spring. Requires moist soil.  $\pm$  60cm (24in),  $\pm$  90cm (36in). Canada, N.E. USA. \*\*\*. var. *microphylla* see *K. microphylla*.

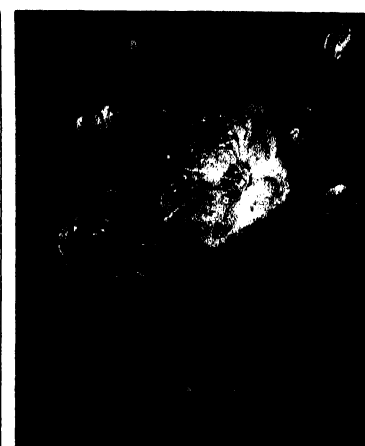
## KALMIOPSIS

ERICACEAE

Genus of one species of evergreen shrub from Oregon, USA, where it grows on rocky ledges on mountain cliffs. It has simple leaves, arranged alternately, and is cultivated for its terminal racemes of small, cup-shaped flowers. Suitable for a cool position in a peat garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich, lime-free soil in full sun (provided that the soil remains cool and moist) or in partial shade. Pruning group 8.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring, or take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**K. leachiana** ♀ Dwarf, evergreen shrub with oval to obovate, bright deep green leaves, to 3cm (1 1/4in) long, glandular



*Kalmiopsis leachiana* 'La Piniec'

beneath. Cup-shaped, rose-red to purple-pink flowers, to 2cm (3/4in) across, are produced in terminal racemes, 2.5–5cm (1–2in) long, from early to late spring.  $\pm$  30cm (12in). USA (Oregon). \*\*\*. **'La Piniec'** has glossy, dark green leaves, to 2cm (3/4in) long. **'Umpqua Valley'** is compact, vigorous, and free-flowering.

## KALOPANAX

ARALIACEAE

Genus of one species of deciduous tree from forest in E. Asia. It has a spreading habit and large, variably shaped, palmately lobed leaves, which are arranged alternately and vary from hairless to very hairy beneath. Large, terminal, umbel-like panicles of usually white, 4- or 5-petalled flowers, are borne in late summer, and are followed by spherical, blue-black fruit. It is a fine specimen tree.

- **HARDINESS** Fully hardy, but young growth may be damaged by late frosts.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade, preferably sheltered by other trees and shrubs. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or take greenwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

**K. pictus** see *K. septemlobus*.  
**K. ricinifolius** see *K. septemlobus*.  
**K. septemlobus** (syn. *Acanthopanax ricinifolius*, *Eleutherococcus pictus*, *Kalopanax pictus*, *K. ricinifolius*). Spreading, deciduous tree with spines



*Kalopanax septemlobus*

on the trunk and shoots, and variably shaped, shallowly to deeply 5- to 7-lobed, dark green leaves, to 35cm (14in) or more across, which vary from hairless to very hairy beneath. Large, umbel-like panicles, 20–30cm (8–12in) long, of small, 4- or 5-petalled white flowers, 2mm (1/16in) across, are borne in late summer, followed by spherical, blue-black fruit, 4mm (1/8in) across.  $\pm$  10m (30ft). China, Korea, Russia (S. Kurile Islands, Sakhalin), Japan (Ryukyu Islands). \*\*\* *var. magnificus* has ovate leaves that are shallowly lobed and densely hairy on the lower leaf sides; W. China. *var. maximowiczii* is similar to *var. magnificus*, but has deeply lobed, lance-shaped leaves.

- ▷ **Kangaroo paw** see *Anigozanthos*
- Black** see *Macropidia fuliginosa*
- Green** see *Anigozanthos viridis*
- Little** see *Anigozanthos bicolor*
- Mangles'** see *Anigozanthos manglesii*
- Yellow** see *Anigozanthos pulcherrimus*
- ▷ **Kangaroo thorn** see *Acacia paradoxa*
- ▷ **Kangaroo vine** see *Cissus antarctica*
- ▷ **Kansas feather** see *Liatris pycnostachya*
- ▷ **Kapok** see *Ceiba pentandra*
- ▷ **Karaka** see *Corynocarpus laevigatus*
- ▷ **Karo** see *Pittosporum crassifolium*
- ▷ **Kassod tree** see *Senna siamea*
- ▷ **Katsura tree** see *Cercidiphyllum japonicum*
- ▷ **Kawaka** see *Libocedrus plumosa*

## KELSEYA

### ROSACEAE

Genus of one species of evergreen, cushion-forming subshrub found in rock crevices and scree in the Rocky Mountains, USA. Cultivated for its neat rosettes of silvery green foliage, it also has solitary, star-shaped flowers, produced in early summer. It resents winter wet, and is best grown in an alpine house, although it may be grown outdoors in a scree bed, trough, or vertical rock crevice.

- **HARDINESS** Fully hardy.
- **CULTIVATION** In an alpine house, grow in a mix of 3 parts grit and 1 part each of loam and leaf mould. Outdoors, grow in very gritty, humus-rich, moist but sharply drained, preferably alkaline soil, in full sun; provide overhead protection from rain in winter.
- **PROPAGATION** Sow seed in containers in an open frame in autumn, or take soft-tip cuttings in spring.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass, and to grey mould (*Botrytis*) in damp conditions.

**K. uniflora.** Slow-growing, cushion-forming subshrub with tight rosettes of overlapping, ovate, leathery, dark green leaves, to 3mm (1/8in) long, clothed in silky silver hairs. Solitary, stemless, star-shaped, white or pink-flushed flowers, 8mm (1/8in) across, are produced from pink buds just above the leaf rosettes in early summer. Does not always flower freely.  $\pm$  to 8cm (3in),  $\pm$  to 15cm (6in). USA (Rocky Mountains). \*\*\*

- ▷ **Kenaf** see *Hibiscus cannabinus*

## KENNEDIA syn. KENNEDYA

### Coral pea

#### LEGUMINOSAE/PAPILIONACEAE

Genus of 16 species of herbaceous and woody-stemmed climbing and trailing perennials from a variety of habitats, including rainforest, open forest, shrubland, heathland, and semi-desert, in Australia and New Guinea. They are grown for their long-keeled, pea-like flowers, produced singly, in pairs, umbels, or racemes in the leaf axils.

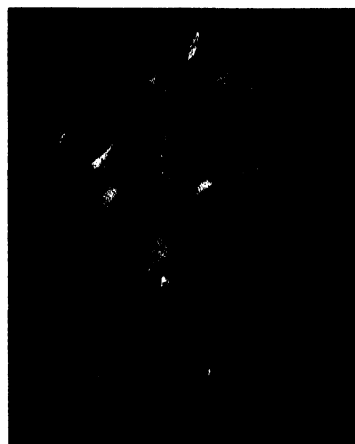
The leaves, arranged alternately, each have 3 leaflets and a pair of distinctive stipules at the base of the stalk. In frost-prone areas, grow in a cool or temperate greenhouse. In milder regions, train over a pergola or arch. The trailers are also good as ground cover on a bank or between shrubs.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Provide support for the climbing stems. Outdoors, grow in fertile, moist, but well-drained soil in partial shade. Pruning group 12, after flowering or in late winter.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring, ideally after soaking in freshly boiled water for 12 hours.
- **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

**K. coccinea** (Common coral vine). Woody-stemmed, twining climber or trailer, with leaves 3–10cm (1 1/4–4in) long, each divided into 3 broadly oblong to linear-wedge-shaped, occasionally lobed, slightly leathery, deep green leaflets. From spring to early summer, produces axillary and terminal, umbel-like racemes, 10cm (4in) long, of 4–20 coral-red flowers, 1.5cm (1/2in) wide, the standard petals marked with yellow and purple-margined at the bases, opening from buds covered with soft red hairs. Tolerates coastal sites and alkaline soil.  $\pm$  2m (6ft). Australia (Western Australia).  $\hat{\text{H}}$  (min. 5–7°C/41–45°F)

**K. macrophylla.** Woody-stemmed, twining climber or trailer with leaves to 15cm (6in) long, each divided into 3 broadly obovate-rounded, dark green leaflets, mid-green beneath and heart-shaped at the bases. In summer, pea-like, reddish brown or red flowers, to 2cm (1in) long, the standard petals reflexed and boldly splashed yellow, are produced in loose axillary racemes, 8–13cm (3–5in) or more long. Thrives in poor sandy soil; tolerates coastal sites.  $\pm$  to 5m (15ft). Australia (Western Australia). \*

**K. nigricans** (Black coral pea). Vigorous, woody, twining climber with leaves 5–15cm (2–6in) long, each divided into 3 ovate, leathery, rich green leaflets, heart-shaped at the bases. From late winter to late spring or early summer, produces one-sided, axillary racemes, 15cm (6in) long, of elongated, velvety, purple-black flowers, to 3cm (1 1/4in) long, the standard petals reflexed and boldly splashed yellow. Thrives in poor sandy soil; tolerates coastal sites.



*Kennedia rubicunda*

$\pm$  4–6m (12–20ft). Australia (Western Australia).  $\hat{\text{H}}$  (min. 5–7°C/41–45°F)

**K. prostrata** (Running postman, Scarlet runner). Prostrate to mat-forming trailer, with numerous, often sparsely branched, densely softly hairy stems radiating from a woody rootstock. The leaves, to 10cm (4in) long, are each composed of 3 ovate-rounded to rounded, wavy-margined, bright green leaflets. From spring to summer, sometimes also in autumn, scarlet flowers, to 2.5cm (1in) long, the standard petals each with a small, greenish yellow mark at the base, are borne in loose racemes, to 8cm (3in) long,  $\pm$  to 1.5m (5ft). Australia (Western Australia).  $\hat{\text{H}}$  (min. 5°C/41°F)

**K. rubicunda**  $\square$  (Dusky coral pea). Twining climber or mat-forming perennial with slender, hairy stems, becoming dense and tangled with age. The leaves, to 16cm (6in) long, are each composed of 3 ovate, hairy, mid-green leaflets. From spring to summer, dark red flowers, 3–4cm (1 1/4–1 1/2in) long, with pointed keel petals and swept-back standards marked pale tan at the bases, are produced in loose, axillary racemes, to 8cm (3in) long.  $\pm$  to 3m (10ft) or

more. Australia (New South Wales, Victoria).  $\hat{\text{H}}$  (min. 5–7°C/41–45°F)

- ▷ *Kennedyia* see *Kennedia*
- ▷ *Kentia acuminata* see *Carpentaria acuminata*
- ▷ *Kentia canterburyana* see *Hedyscepe canterburyana*
- ▷ *Kentia forsteriana* see *Howea forsteriana*
- ▷ *Kentia joannis* see *Veitchia joannis*
- ▷ *Kerosene bush* see *Ozothamnus ledifolius*

## KERRIA

### Jew's mantle

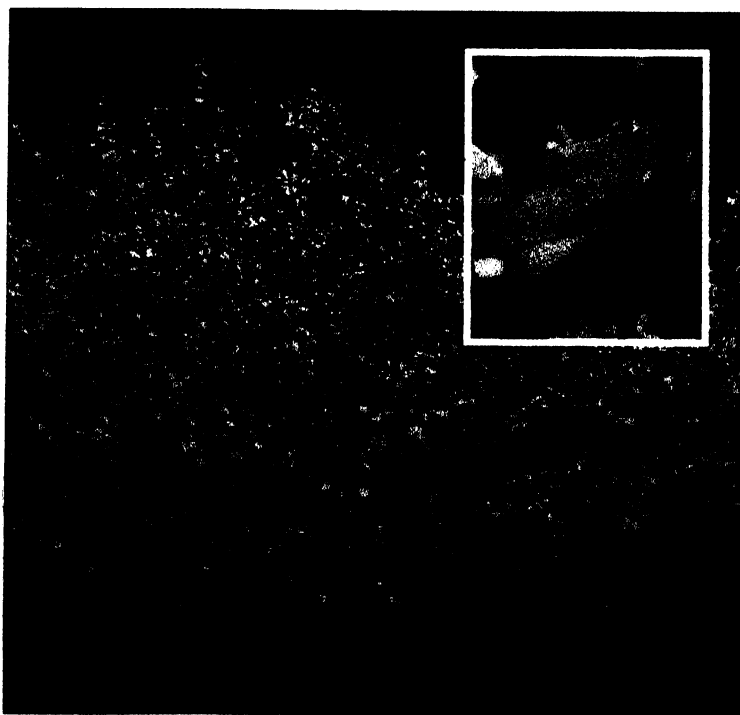
#### ROSACEAE

Genus of one species of deciduous shrub, found in thickets and woodland in China and Japan. It has alternate, simple leaves, and solitary, cup- or saucer-shaped yellow flowers. Kerrias are grown for their foliage and flowers, and are suitable for a shrub border or an open position in a woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun or partial shade. Pruning group 3.
- **PROPAGATION** Take greenwood cuttings in summer. Divide in autumn.
- **PESTS AND DISEASES** Trouble free.

**K. japonica.** Suckering shrub with arching green shoots and ovate, pointed, sharply toothed, bright green leaves, to 10cm (4in) long. In mid- and late spring, produces solitary, single or double, golden yellow flowers, 3–5cm (1 1/4–2in) across.  $\pm$  2m (6ft),  $\pm$  2.5m (8ft). China, Japan. \*\*\*

**'Golden Guinea'**  $\square$   $\hat{\text{H}}$  has very large, single flowers, 5–6cm (2–2 1/2in) across. **'Picta'**, syn. 'Variegata', has grey-green leaves margined creamy white;  $\pm$  1.5m (5ft),  $\pm$  2m (6ft). **'Pleniflora'**  $\hat{\text{H}}$  is very vigorous and upright, with large, pompon-like, double flowers, 3cm (1 1/4in) across;  $\pm$  to 3m (10ft). **'Variegata'** see 'Picta'.



*Kerria japonica* 'Golden Guinea' (inset: flower detail)



## KIGELIA

Sausage tree

BIGNONIACEAE

Genus of one species of variable, evergreen tree from tropical woodland and more open areas in Africa. It has large, pinnate leaves, borne in opposite pairs, and loose, pendent panicles, 1–2m (3–6ft) long, of open, trumpet-shaped flowers, followed by long, woody pods. Where temperatures drop below 16°C (61°F), grow in a warm greenhouse, mainly for its foliage, although flowers may form on specimens reaching 3m (10ft) or more high. In tropical areas, it is an attractive specimen or shade tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light but screened from the hottest summer sun, at least during the early years. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 1; plants under glass need restrictive pruning in late winter or after flowering.

• **PROPAGATION** Sow seed at 21–23°C (70–73°F) in spring.

• **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be troublesome under glass.

**K. pinnata** ■□ Rounded to broadly columnar, usually freely branching tree with robust stems. Bears pinnate leaves, to 50cm (20in) long, each composed of 7–11 oblong to obovate, leathery, mid-to deep green leaflets, sometimes notched at the tips. Loose, pendent panicles of bat-pollinated flowers, each 10cm (4in) across, are produced in summer. Yellowish green in bud, they open to rich brownish red at night, when they have an unpleasant smell that is attractive to bats. The cylindrical, woody fruit, to 35–60cm (14–24in) or



Kigelia pinnata

more long, may weigh 5–7kg (11–15lb), and are pale brown when ripe. They remain on the thickened flowering stems for many months. ‡15m (50ft) or more, ↔ 5–10m (15–30ft). Tropical Africa. ☀ (min. 16°C/61°F)

▷ **Kilmarnock willow** see *Salix caprea* 'Kilmarnock'

▷ **Kindling bark, Broad-leaved** see *Eucalyptus dalrympleana*

▷ **Kingcup** see *Caltha*, *C. palustris*

▷ **King protea** see *Protea cynaroides*

▷ **King's crown** see *Justicia carnea*

▷ **King's mantle** see *Thunbergia erecta*

▷ **King's spear** see *Asphodeline lutea*

▷ **Kinnikinnick** see *Arctostaphylos uva-ursi*

## KIRENGESHOMA

HYDRANGEACEAE

Genus of 2 species of clump-forming perennials, with short rhizomes, from woodland in Korea and Japan. They have broadly tubular, waxy, pale or bright yellow flowers, borne on slender stalks in nodding, terminal cymes above pairs of elegant, sycamore-like leaves. They are suitable for a shady border, peat bed, or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, lime-free soil, enriched with leaf mould, in partial shade sheltered from wind.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring (germination may be slow and erratic). Divide as growth begins in spring, taking care not to damage tender young shoots.

• **PESTS AND DISEASES** Slugs and snails may attack young growth and leaves.

**K. palmata** ■♀ Clump-forming perennial with short rhizomes and arching, smooth, reddish purple stems. These bear broadly ovate, palmately lobed, slightly hairy, pale green leaves, 10–20cm (4–8in) long, becoming smaller, simple, and almost stalkless towards the stem tips. Nodding, terminal cymes of 3 broadly tubular, pale yellow flowers, to 3.5cm (1½in) long, with slightly recurved lobes and fleshy petals that overlap at the bases, are borne in late summer and early autumn. ‡60–120cm (24–48in), ↔ 75cm (30in). Japan. \*\*\*

▷ **Kiss-me-over-the-garden-gate** see *Persicaria orientalis*



Kirengeshoma palmata



Kitaibela vitifolia

## KITAIBELA syn. KITAIABELIA

MALVACEAE

Genus of two species of imposing, often short-lived herbaceous perennials found in damp meadows and scrub from Slovenia to Macedonia. They have palmately lobed, vine-like leaves and showy, mallow-like flowers, produced singly or in axillary cymes. They are suitable for a wild or meadow garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in deep, moderately fertile, moist but well-drained soil in full sun or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Root basal or softwood cuttings in spring.

• **PESTS AND DISEASES** Trouble free.

**K. vitifolia** ■ Clump-forming, woody-based, softly white-hairy perennial with erect stems bearing 5- to 7-lobed, coarsely toothed leaves, to 17cm (7in) long. Mallow-like, open cup-shaped, 5-petalled, white to rose-red flowers, 4.5cm (1¾in) across, are produced singly or in few-flowered, axillary cymes from midsummer to early autumn. ‡ to 2.5m (8ft), ↔ 5m (15ft). Slovenia to Macedonia. \*\*\*

▷ **Kitaibelia** see *Kitaibela*

▷ **Kiwi fruit** see *Actinidia deliciosa*

▷ **Klapperbos** see *Nymania capensis*

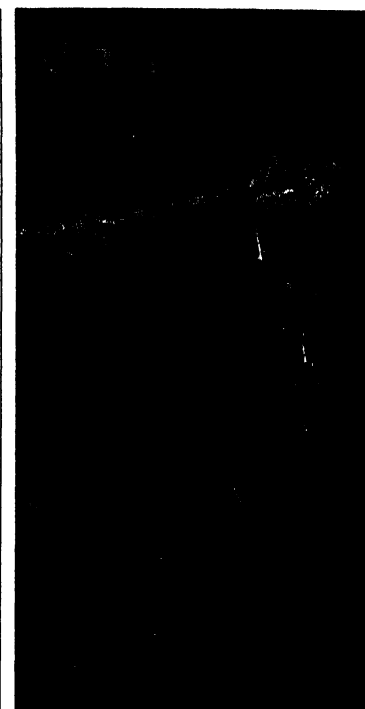
## KLEINIA

ASTERACEAE/COMPOSITAE

Genus of 40 species of succulent perennials, closely related to *Senecio*, from lowlands and mountains in tropical Africa, N.W. Africa, the Canary Islands, southern Africa, Madagascar, and the Arabian Peninsula. Many species have tuberous roots and prostrate to upright, cylindrical to angular stems, with flat or cylindrical, succulent, usually entire leaves. Colourful, thistle-like flowerheads appear singly or in branched, terminal or axillary corymbs in summer. Where temperatures drop below 10°C (50°F), grow as houseplants or in a warm greenhouse. In warmer climates, grow in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts leaf mould and 1 part each loam and gritty sand, in full light. In growth, water moderately and apply a



Kleinia stapeliiformis

balanced liquid fertilizer 2 or 3 times. Keep dry when dormant. Outdoors, grow in sharply drained, gritty, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 20°C (68°F), or take cuttings, in spring or summer.

• **PESTS AND DISEASES** Susceptible to scale insects.

**K. repens** see *Senecio serpens*.

**K. rowleyana** see *Senecio rowleyanus*.

**K. stapeliiformis** ■ syn. *Senecio stapeliiformis*. Erect succulent branching from the base, with new shoots growing underground at first. Thick, fleshy, 5- to 7-angled branches, glaucous green with purple staining, bear very slender, oblong, thread-like, fleshy, grey-green leaves, often flushed purple with dark green lines along their lengths. The leaves, 5mm (¼in) long, become thorny as they age. Solitary, thistle-like, red or orange-red flowerheads, to 4cm (1½in) long, are produced in summer. ‡20–30cm (8–12in). E. South Africa (KwaZulu/Natal). ☀ (min. 10°C/50°F)

▷ **Knapweed** see *Centaurea*

## KNAUTIA

DIPSACACEAE

Genus of 40 or more species of scabious-like annuals and perennials from limestone grassland, scrub, and woodland in Europe, Caucasus, Russia (Siberia), and N. Africa. They have overwintering rosettes of simple to pinnatifid basal leaves, and opposite pairs of stem leaves, which are usually deeply pinnatifid, although the uppermost leaves may be simple. Tall stems bear cup-shaped involucre of bracts, with bristly hairs or teeth, surrounding dense, bluish lilac or reddish purple flowerheads. The flowers have unequally lobed corollas and stamens protruding in "pincushion" style. They are attractive to bees. Grow in a herbaceous border, cottage garden, or wild garden.

K

*Knautia macedonica*

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, preferably alkaline soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in spring, or take basal cuttings in spring.
- **PESTS AND DISEASES** Prone to aphids.

**K. arvensis**, syn. *Scabiosa arvensis* (Field scabious). Clump-forming, deeply tap-rooted perennial with erect but often lax, hairless stems, the lower parts bristly. Produces simple to pinnatifid, hairy, dull green leaves, 5–25cm (2–10in) long, simple or pinnatifid higher up the stem. Flat-topped, bluish lilac flowerheads, 3–4cm (1¼–1½in) across, with softly bristly, involucre bracts, are borne from midsummer to early autumn. ‡ to 1.5m (5ft), ↔ 30cm (12in). Europe, Caucasus, Iran to C. Asia, Russia (Siberia). \*\*\*

**K. macedonica** ■ syn. *Scabiosa rumelica*. Clump-forming perennial with slender, branched stems, pinnatifid basal leaves, 8cm (3in) long, each with a large, terminal lobe, and simple or pinnatifid stem leaves, 2–15cm (¾–6in) long. Numerous long-lasting, purple-red flowerheads, 1.5–3cm (½–1¼in) across, with softly bristly, involucre bracts, are produced in mid- and late summer. ‡ 60–80cm (24–32in), ↔ 45cm (18in). C. Balkans into Romania. \*\*\*

## KNIGHTIA

PROTEACEAE

Genus of 3 species of evergreen trees or shrubs from lowland to low mountain forest, one from New Zealand, 2 from New Caledonia. The leathery, entire or toothed leaves are arranged alternately and vary in shape with age: young plants have long, thin leaves; adults have shorter, thicker ones. Tubular flowers, with 4 petal-like tepals that roll up like springs, are borne in dense racemes. In frost-prone areas, grow in a cool or temperate greenhouse. In milder climates, use as a specimen tree.

- **HARDINESS** Frost tender; may survive short periods around 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun and with good ventilation. During the growing season, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, well-drained,

neutral to acid soil, in full sun or partial shade, with shelter from cold winds.

Pruning group 1.

- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings with bottom heat in summer (rooting may be slow).

- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**K. excelsa** ♀ (New Zealand honeysuckle, Rewarewa). Tall, usually columnar tree, with many short, lateral branches. Adult leaves are narrowly oblong to obovate-oblong, 10–15cm (4–6in) long, blunt-toothed and stiff. From spring to summer, produces few to many tubular red flowers, 2.5–4cm (1–1½in) long, in racemes 10cm (4in) long, covered with short, velvety, red-brown hairs, followed by narrow seed pods, which split open down one side only. ‡ to 30m (100ft), ↔ 7–10m (22–30ft). New Zealand. ☀ (min. 3–7°C/37–45°F)

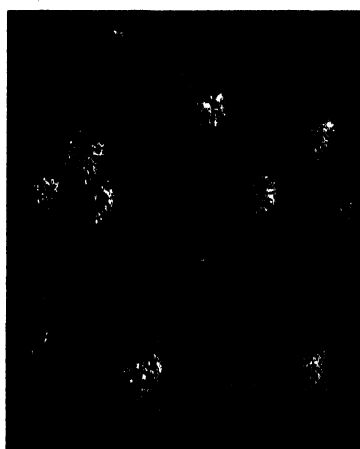
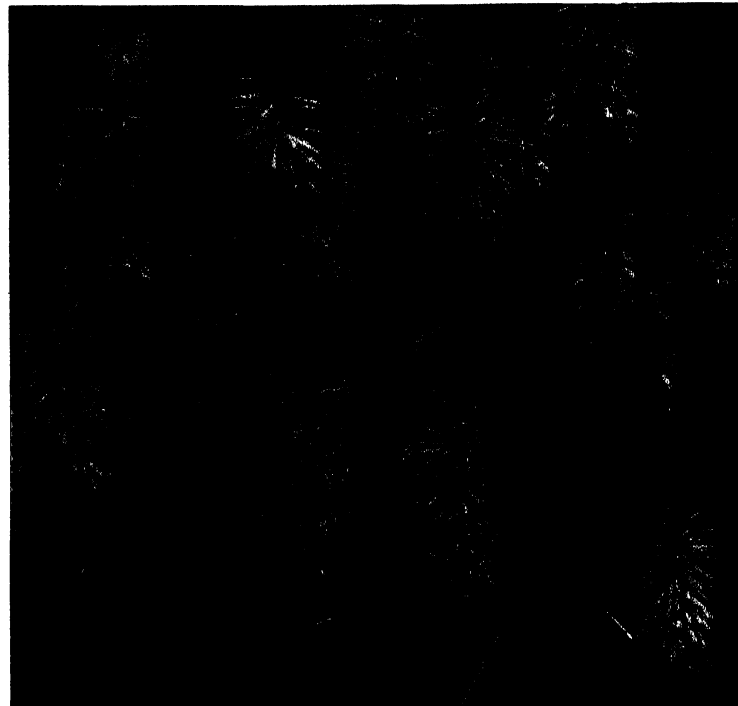
## KNIPHOFIA

Red hot poker, Torch lily

ASPHODELACEAE/LILIACEAE

Genus of about 70 species of evergreen or deciduous, rhizomatous perennials from mountainous or upland areas, often in moist places in rough grass or along streamsides, in southern and tropical Africa. Most are clump-forming, with arching, tufted, linear to strap-shaped, light to mid-green or blue-green leaves. In deciduous species and hybrids these leaves are usually thin, grass-like, and 10–100cm (4–39in) long; in evergreens, they are broader, keeled or strap-shaped, and to 1.5m (5ft) long. Erect, usually dense, spike-like racemes, 5–40cm (2–16in) long, of numerous pendent, occasionally erect, tubular or cylindrical flowers, 0.3–5cm (⅛–2in) long, are borne well above the foliage. They are attractive to bees. The flowers are red, orange, yellow, white, or greenish white; some open red, then turn to yellow, bearing striking, 2-coloured racemes. Numerous cultivars have been raised, ranging in size from dwarf plants, 50cm (20in) high, to tall plants, to 1.8m (6ft) high. Grow in a herbaceous border; in frost-prone areas, grow tender species in a cool or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in deep, fertile, humus-rich, moist but well-drained, preferably sandy soil, in full sun or

*Kniphofia 'Atlanta'**Kniphofia 'Bees' Sunset'*

partial shade. Mulch young plants with straw or leaves for the first winter.

- **PROPAGATION** Sow seed in containers in a cold frame in spring (although cultivars seldom come true from seed). Divide established clumps in late spring. Stimulate offshoots from slow-growing, woody-based, evergreen red hot pokers by cutting off crowns; leave offshoots in place to develop for 2 years before separating from parent plants, or use new shoots as basal cuttings.

- **PESTS AND DISEASES** Thrips may cause mottling of the foliage. Violet root rot may be a problem.

**K. 'Ada'**. Deciduous perennial with tawny orange-yellow flowers borne in late summer and early autumn. ‡ 90cm (36in), ↔ 60cm (24in). \*\*\*

**K. 'Atlanta'** ■ Evergreen perennial with grey-green leaves, and orange-red flowers, fading to pale yellow, borne in late spring and early summer. ‡ 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**K. 'Bees' Lemon'**. Deciduous perennial with toothed leaves, and lemon-yellow flowers, green in bud, borne in late summer and early autumn. ‡ 90cm (36in), ↔ 60cm (24in). \*\*\*

**K. 'Bees' Sunset'** ■ ♀ Deciduous perennial with toothed leaves, and soft yellowish orange flowers borne from early to late summer. ‡ 90cm (36in), ↔ 60cm (24in). \*\*\*

**K. 'Border Ballet'**. Deciduous perennial with cream to pink flowers borne in late summer and early autumn. ‡ 60cm (24in). \*\*\*

**K. 'Bressingham Comet'**. Deciduous perennial with red-tipped orange flowers, yellow at the bases, borne in early and mid-autumn. ‡ 45cm (18in), ↔ 22cm (9in). \*\*\*

**K. 'Buttercup'** ♀ Deciduous perennial with green buds, opening to clear yellow flowers in early summer. ‡ 75cm (30in). \*\*\*

**K. caulescens** ■ ♀ Evergreen perennial with short, thick, woody-based stems and arching, linear, keeled, finely

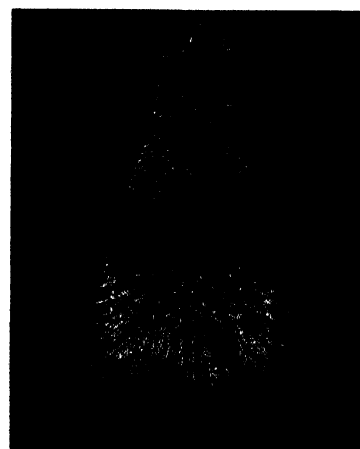
toothed, glaucous leaves, to 1m (3ft) long, purple at the bases. Coral-red flowers, 2.5cm (1in) long, fading to pale yellow, with protruding stamens, are borne in short, oblong-cylindrical racemes from late summer to mid-autumn. ‡ to 1.2m (4ft), ↔ 60cm (24in). South Africa (N. Eastern Cape, Orange Free State, KwaZulu/Natal), Lesotho. \*\*\*

**K. 'C.M. Prichard' of gardens** see *K. rooperi*.

**K. 'Corallina'**. Deciduous perennial with deep green leaves, and coral-red flowers borne in early summer. ‡ 90cm (36in), ↔ 60cm (24in). \*\*\*

**K. 'Early Buttercup'**. Deciduous perennial with yellow flowers borne in late spring and early summer. ‡ 90cm (36in), ↔ 60cm (24in). \*\*\*

**K. ensifolia**. Robust, evergreen perennial forming clumps of arching, narrowly elliptic, finely toothed, glaucous leaves, to 1.5m (5ft) long. Bears greenish white flowers, 1.5–2cm (½–¾in) long, often red in bud, in dense, cylindrical racemes from late summer to mid-autumn. ‡ 1.2m (4ft) or more, ↔ 60cm (24in). South Africa (Western Cape, Eastern Cape,

*Kniphofia caulescens*

*Kniphofia* 'Erecta'

KwaZulu/Natal, Eastern Transvaal, Northern Transvaal). \*\*\*

**K. 'Erecta'** ■ Deciduous perennial with bright coral-red flowers, turning upwards after opening, borne in late summer and early autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

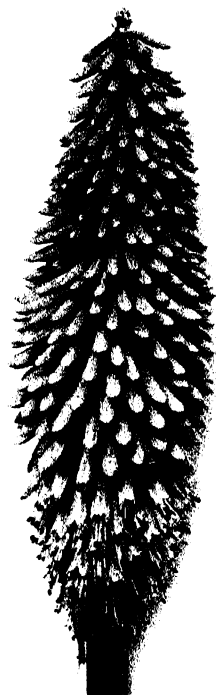
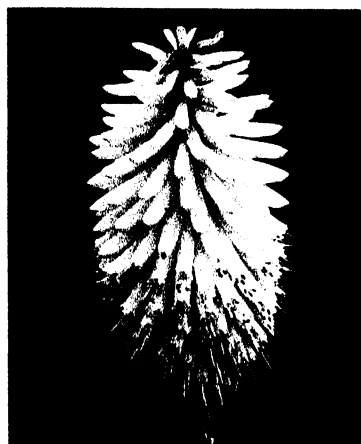
**K. 'Fiery Fred'**. Deciduous perennial with orange-red flowers borne from early to late summer. † to 1.2m (4ft), ↔ 60cm (24in). \*\*\*

**K. galpinii of gardens** see *K. triangularis*.

**K. 'Goldelse'**. Deciduous perennial with grass-like leaves, and yellow flowers borne in racemes in early summer.

†75cm (30in), ↔ 30cm (12in). \*\*\*

**K. 'Green Jade'** ■ Robust, evergreen perennial with keeled leaves, and green

*Kniphofia* 'Green Jade'*Kniphofia* 'Ice Queen'

flowers, becoming cream and then white, borne in racemes in late summer and early autumn. † to 1.5m (5ft), ↔ 60–75cm (24–30in). \*\*\*

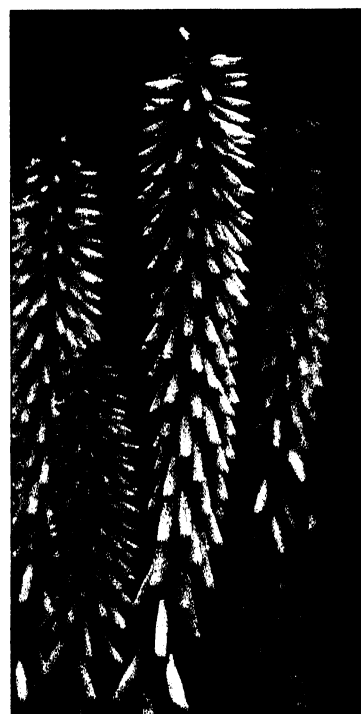
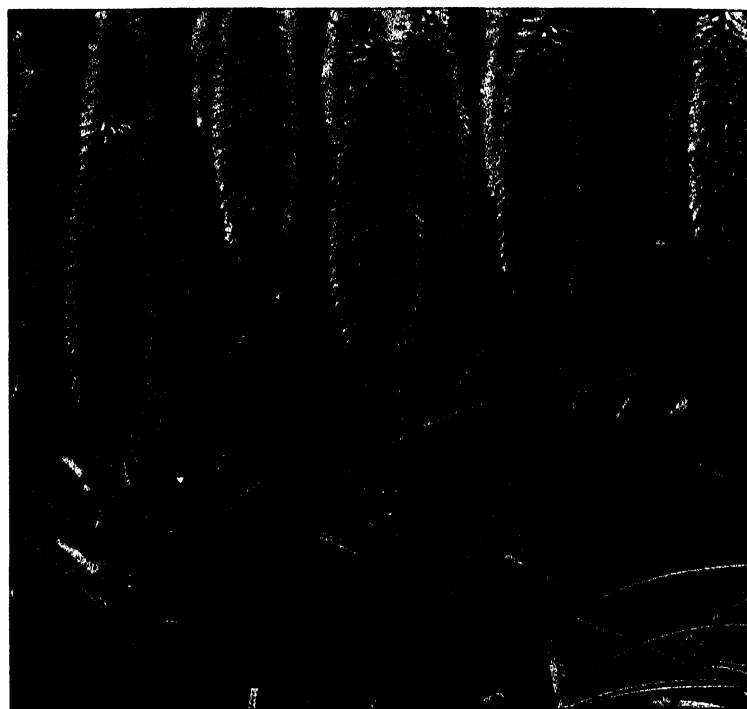
**K. hirsuta**. Evergreen perennial with linear, spreading, hairy, dark green leaves, 40–60cm (16–24in) long, red at the bases. Pinkish red flowers, 2–3cm (¾–1¼in) long, becoming yellow, are produced in conical racemes in mid-spring. †40cm (16in), ↔ 45cm (18in). Lesotho. \*\*\*

**K. 'Ice Queen'** ■ Robust, deciduous perennial bearing green-budded flowers opening to pale primrose yellow, fading to ivory, in early and mid-autumn. † to 1.5m (5ft), ↔ 75cm (30in). \*\*\*

**K. 'Jenny Bloom'**. Deciduous perennial with pink flowers, shading to cream and coral-pink, borne from late summer to mid-autumn. †1m (3ft), ↔ 30cm (12in). \*\*\*

**K. 'Limelight'**. Deciduous perennial with grass-like foliage, and canary-yellow flowers, greenish yellow in bud, borne in early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**K. 'Little Maid'** ■ ♀ Deciduous perennial with grass-like leaves, and racemes of flowers, pale green in bud,

*Kniphofia* 'Little Maid'*Kniphofia* 'Percy's Pride'

opening to buff-tinted pale yellow and ageing to ivory, borne in late summer and early autumn. †60cm (24in), ↔ 45cm (18in). \*\*\*

**K. macowanii** see *K. triangularis*.

**K. 'Maid of Orleans'**. Deciduous perennial bearing long-lasting flowers, pale primrose in bud, opening to deeper yellow, and maturing to ivory, borne in mid- and late summer. † to 1.2m (4ft), ↔ 45cm (18in). \*\*\*

**K. 'Mount Etna'**. Deciduous perennial with broad racemes of pale greenish yellow flowers, scarlet in bud, borne in late summer and early autumn. † to 1.2m (4ft), ↔ 90cm (36in). \*\*\*

**K. nelsonii** see *K. triangularis*.

**K. northiae**. Evergreen perennial forming thick-stemmed, solitary plants,

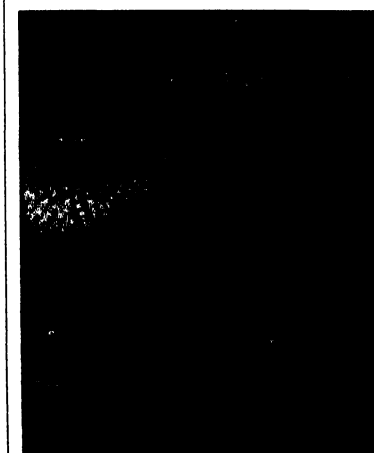
*Kniphofia* 'Prince Igor'

not clumps, with arching, linear, broad, unkeeled, glaucous leaves, to 1.5m (5ft) long. Pale yellow flowers, 2.5–3cm (1–1¼in) long, opening from red buds, are produced in oblong, very dense racemes from early to late summer. †1.5m (5ft), ↔ 90cm (36in). South Africa (Eastern Cape, KwaZulu/Natal), Lesotho. \*\*\*

**K. 'Percy's Pride'** ■ Deciduous perennial with keeled leaves, and canary-yellow flowers, green-tinted yellow in bud, opening to cream, borne in late summer and early autumn. †1.2m (4ft), ↔ 60cm (24in). \*\*\*

**K. 'Prince Igor'** ■ Deciduous perennial with glowing, deep orange-red flowers borne in racemes in early and mid-autumn. †1.8m (6ft), ↔ 90cm (36in). \*\*\*

**K. rooperi** ■ syn. *K. 'C.M. Prichard'* of gardens. Robust, evergreen perennial with arching, broad, linear, acutely pointed, deeply keeled, dark green leaves. Orange-red flowers, 3.5–4.5cm (1½–1¾in) long, becoming orange-yellow, are borne in broadly ellipsoid, shiny racemes from early to late autumn. †1.2m (4ft), ↔ 60cm (24in). South Africa (Eastern Cape). \*\*\*

*Kniphofia rooperi*



*Kniphofia* 'Royal Standard'

K

**K. 'Royal Standard'** ■ ♀ Deciduous perennial with bright yellow flowers, scarlet in bud, borne on stout stems in mid- and late summer. †90–100cm (36–39in), ↔ 60cm (24in). \*\*\*

**K. 'Samuel's Sensation'** ♀ Deciduous perennial with bright scarlet flowers, tinged with yellow as they fade, borne in racemes in late summer and early autumn. †1.5m (5ft), ↔ 60–75cm (24–30in). \*\*\*

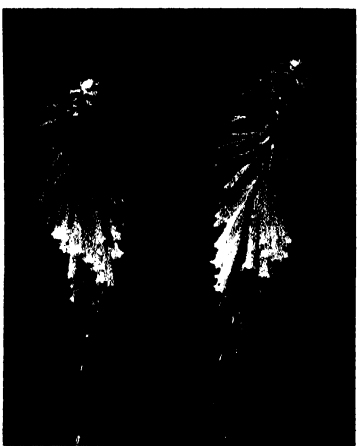
**K. 'Shining Sceptre'**. Deciduous perennial with clear yellow flowers, becoming ivory, borne in midsummer. †1.2m (4ft), ↔ 60cm (24in). \*\*\*

**K. snowdenii** of gardens see *K. thompsonii* var. *snowdenii*.

**K. 'Strawberries and Cream'** ■ Deciduous perennial with cream flowers, coral-pink in bud, borne in late summer and early autumn. †60cm (24in), ↔ 30cm (12in). \*\*\*

**K. 'Sunningdale Yellow'** ♀ Deciduous perennial with long-lasting racemes of yellow flowers produced in mid- and late summer. †90cm (36in), ↔ 45cm (18in). \*\*\*

**K. thompsonii** var. *snowdenii*, syn. *K. snowdenii* of gardens. Gently spreading, deciduous, rhizomatous



*Kniphofia* 'Strawberries and Cream'



*Kniphofia triangularis*

perennial forming tufts of upright, linear leaves, to 60cm (24in) long. From midsummer to late autumn, produces a succession of few-flowered, open racemes of curved, yellowish orange or coral-pink flowers, to 3.5cm (1½in) long. †to 90cm (36in), ↔ 45cm (18in). Uganda, Kenya. \*\*

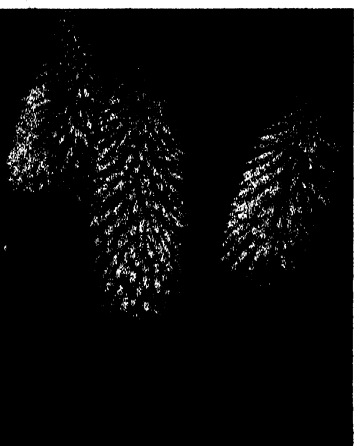
**K. triangularis** ■ ♀ syn. *K. galpinii* of gardens, *K. macowanii*, *K. nelsonii*. Variable, deciduous perennial with arching, linear, grass-like leaves. Wiry stems, freely borne in moist conditions, produce dense racemes of reddish orange flowers, 2.5–3.5cm (1–1½in) long, becoming slightly yellower around the mouths, in early and mid-autumn. †60–90cm (24–36in), ↔ 45cm (18in). South Africa (Eastern Cape, Orange Free State, KwaZulu/Natal), Lesotho. \*\*\*

**K. uvaria**. Evergreen perennial with lax, linear, keeled, finely toothed, coarse leaves, to 60cm (24in) long. Flowers, 3–4cm (1¼–1½in) long, red in bud, opening to orange, and fading to yellow, are borne in slender, oblong-ovoid racemes in early autumn. †1.2m (4ft), ↔ 60cm (24in). South Africa (S. Western Cape). \*\*\*

**'Nobilis'** ♀ has longer racemes of rich orange-red flowers, borne from midsummer to early autumn. †1.5–2m (5–6ft), ↔ 1m (3ft).

**K. 'Wrexham Buttercup'** ■ Deciduous perennial with clear, bright yellow flowers, borne in dense racemes in midsummer. †1.2m (4ft), ↔ 60cm (24in). \*\*\*

▷ *Kochia trichophylla* see *Bassia scoparia* f. *trichophylla*



*Kniphofia* 'Wrexham Buttercup'

## KOELERIA

GRAMINEAE/POACEAE

Genus of about 30 species of annual and perennial grasses from chalky and sandy grassland in N. and S. temperate zones and in tropical Africa. Several species are cultivated for their ornamental leaves and narrow panicles of silvery green or blue-green spikelets. They are suitable for a rock garden or the front of a border, either individually or in groups.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in medium to light, not too fertile, well-drained soil in full sun or light dappled shade. Koelerias thrive in alkaline and shallow, chalky soil. Cut back flowering stems either before seeding or in autumn.

• **PROPAGATION** Sow seed *in situ* in spring or autumn, or divide from mid-spring to early summer.

• **PESTS AND DISEASES** *Verticillium* wilt may be a problem.

**K. glauca** (Glaucous hair grass).

Densely tufted, semi-evergreen, perennial grass, forming a compact mound of narrowly linear, glaucous grey-green leaves, to 20cm (8in) long, with inrolled margins. In early and midsummer, produces numerous erect stems bearing cylindrical panicles, to 10cm (4in) long, of shining, silver-green spikelets, which age to buff. †to 40cm (16in) or more, ↔ 30cm (12in). W. and C. Europe to Russia (Siberia). \*\*\*

## KOELREUTERIA

SAPINDACEAE

Genus of 3 species of deciduous trees or shrubs from dry valley woodlands in China, Korea, and Taiwan. They have alternate, pinnate to 2-pinnate leaves, and large, pyramidal panicles, 10–35cm (4–14in) long, of shallowly bowl-shaped flowers, followed by unusual, inflated fruit capsules. They are fine specimen trees, flowering best in areas with hot summers.

• **HARDINESS** Fully hardy to frost hardy, provided the wood has been well ripened in summer.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun. Pruning group 1; prune only to remove damaged or dead wood when dormant in winter.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take root cuttings in late winter.

• **PESTS AND DISEASES** Trouble free.

**K. bipinnata** ♀ Spreading tree with large, 2-pinnate, mid-green leaves, to 50cm (20in) long, comprising numerous oval-oblong, finely toothed leaflets. Red-spotted yellow flowers, 1cm (½in) across, are produced in large panicles, to 30cm (12in) long, from summer to autumn, followed by bladder-like fruit capsules, to 5cm (2in) long, red-brown when ripe. †10m (30ft), ↔ 8m (25ft). S.W. China. \*\*

**K. paniculata** ■ ♀ (Golden-rain tree, Pride of India). Spreading tree with pinnate leaves, to 45cm (18in) long, each consisting of 7–15 or more, ovate-oblong, scalloped leaflets. Emerging leaves are pink-red, becoming mid-green, and turning butter-yellow in autumn. Small yellow flowers, 1cm



*Koelreuteria paniculata*

(½in) across, are produced in large, pyramidal panicles, to 30cm (12in) long, in mid- and late summer; they are followed by bladder-like, pink- or red-flushed fruit capsules, to 5cm (2in) long. †to 10m (30ft) or more. China, Korea. \*\*\*

var. *apiculata* has 2-pinnate leaves and light yellow flowers.

## KOHLERIA

GESNERIACEAE

Genus of about 50 species of usually erect, rhizomatous perennials and subshrubs from rainforest of tropical regions of North America, Central America, and South America. They are grown for their foxglove-like flowers, which are bell-shaped or tubular, flaring out into 5 rounded lobes, usually produced from the leaf axils singly, in pairs, or in pendent, umbel-like racemes. Elliptic-lance-shaped to ovate leaves, opposite or in whorls of 3, are usually dark green, sometimes with silver markings, and have toothed or scalloped margins. All parts are hairy, including the flowers. In frost-prone climates, grow taller species in a warm greenhouse or conservatory; use compact species and cultivars as houseplants. In humid, tropical areas, grow in shaded sites in beds or borders.

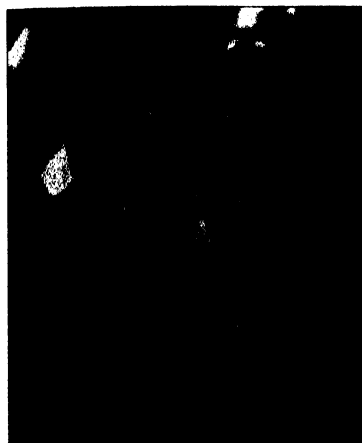
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, start into growth at 21°C (70°F) in early spring. Grow in loamless potting compost in bright filtered light, with high humidity. Using soft water, water moderately at first, then freely when in full growth. When flower buds appear, apply a high potash fertilizer every 2 weeks. In autumn, remove dying top growth and keep almost completely dry. Outdoors, grow in moist, well-drained, humus-rich soil in partial shade.

• **PROPAGATION** Divide in early spring.

• **PESTS AND DISEASES** The growing tips may be infested by aphids. Rhizome rot may occur in winter if conditions are too moist, or in spring if replanted rhizomes are slow to start into growth.

**K. amabilis**. Erect to prostrate, rhizomatous perennial with ovate, scalloped leaves, 10cm (4in) long, veined silver and purple-brown. In summer, bell-shaped, deep pink flowers, 2.5cm (1in) long, with purple and brick-red bars and stripes on the lobes and throats, are borne singly or in few-flowered, umbel-like racemes. May need



*Kohleria digitaliflora*

support.  $\pm$  60cm (24in). Colombia.  $\ominus$  (min. 15°C/59°F)

***K. bogotensis***. Erect, rhizomatous perennial with ovate, toothed, velvety, dark green leaves, 8cm (3in) long, marked paler green or white above. Bell-shaped, red-and-yellow flowers, 2.5cm (1in) long, with mouths spotted red, are borne singly or in pairs, from autumn to early winter.  $\pm$  60cm (24in),  $\pm$  45cm (18in). Colombia.  $\ominus$  (min. 15°C/59°F)

***K. 'Connecticut Belle'***. Erect, compact, rhizomatous perennial with lance-shaped, toothed leaves, 7cm (3in) long, red beneath. Bell-shaped flowers, 2.5cm (1in) long, with bright red tubes, purple upper lobes, and purple-spotted, bright pink lower lobes, are produced singly or in pairs in summer.  $\pm$  40cm (16in),  $\pm$  20cm (8in).  $\ominus$  (min. 15°C/59°F)

***K. digitaliflora***  $\square$   $\nabla$  Erect to spreading, rhizomatous perennial with lance-shaped, elliptic-lance-shaped to ovate, scalloped leaves, 20cm (8in) long, marked paler green. From summer to autumn, produces umbel-like racemes of up to 6, occasionally solitary, tubular, purple-pink flowers, 2.5–3cm (1–1½in) long, white on the inside of the tubes, and with lobes spotted with dark, purplish green.  $\pm$  60cm (24in),  $\pm$  40cm (16in). Colombia.  $\ominus$  (min. 15°C/59°F)

***K. eriantha***  $\square$   $\nabla$  Robust, bushy, rhizomatous perennial with ovate to ovate-lance-shaped, scalloped leaves, 7–13cm (3–5in) long. The leaves have prominent red hairs on the margins, and undersides that are paler and red-veined. In summer, produces tubular, orange-red flowers, 2.5cm (1in) long, with yellow-spotted lower lobes, either



*Kohleria eriantha*

singly or in umbel-like racemes.  $\pm$  to 1.2m (4ft),  $\pm$  30cm (12in) or more. Colombia.  $\ominus$  (min. 15°C/59°F)

▷ **Kohuhu** see *Pittosporum tenuifolium*

## KOLKWITZIA

Beauty bush

CAPRIFOLIACEAE

Genus of one species of deciduous shrub from rocky, mountainous areas of Hubei, China. It has simple leaves, borne in opposite pairs, and is cultivated for its profusion of bell-shaped flowers borne in dense corymbs. Good for a shrub border or as a specimen plant.

• **HARDINESS** Fully hardy, but foliage may be damaged by late frosts.

• **CULTIVATION** Grow in fertile, well-drained soil, preferably in full sun, although some shade is tolerated. Pruning group 2.

• **PROPAGATION** Take greenwood cuttings in late spring or early summer, or remove suckers in spring.

• **PESTS AND DISEASES** Trouble free.

***K. amabilis***. Deciduous, suckering shrub with long, arching shoots and broadly ovate, tapered, dark green leaves, to 7cm (3in) long. Masses of bell-shaped, pale to deep pink flowers, to 1.5cm (½in) across, with yellow-flushed throats, are produced in terminal corymbs, 5–8cm (2–3in) across, in late spring and early summer.  $\pm$  3m (10ft),  $\pm$  4m (12ft). China (Hubei). \*\*\*. **'Pink Cloud'**  $\square$   $\nabla$  has bright, deep pink flowers.

▷ **Korokio** see *Corokia buddlejoides*

▷ **Korolkowia sewerzowii** see *Fritillaria sewerzowii*

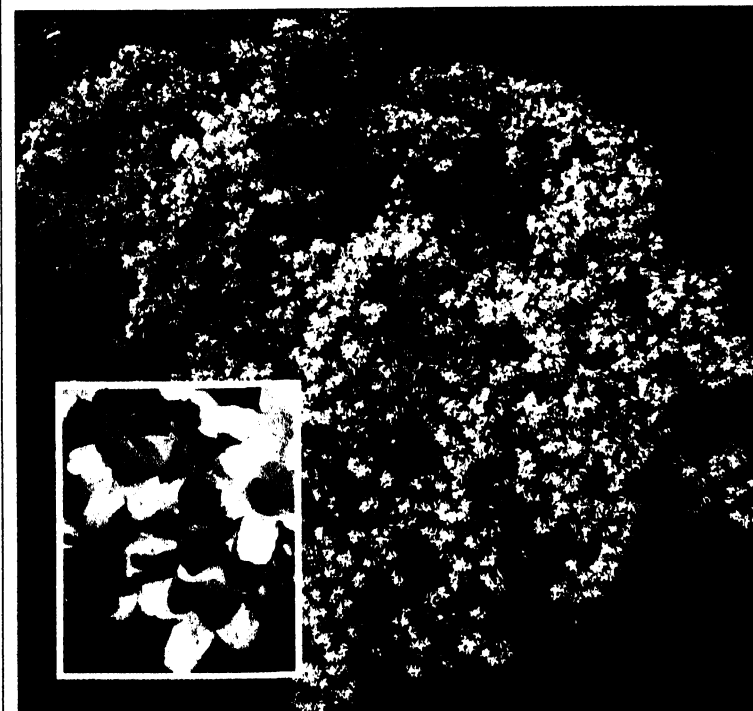
▷ **Kowhai** see *Sophora tetraptera*

▷ **Krauss's spikemoss** see *Selaginella kraussiana*

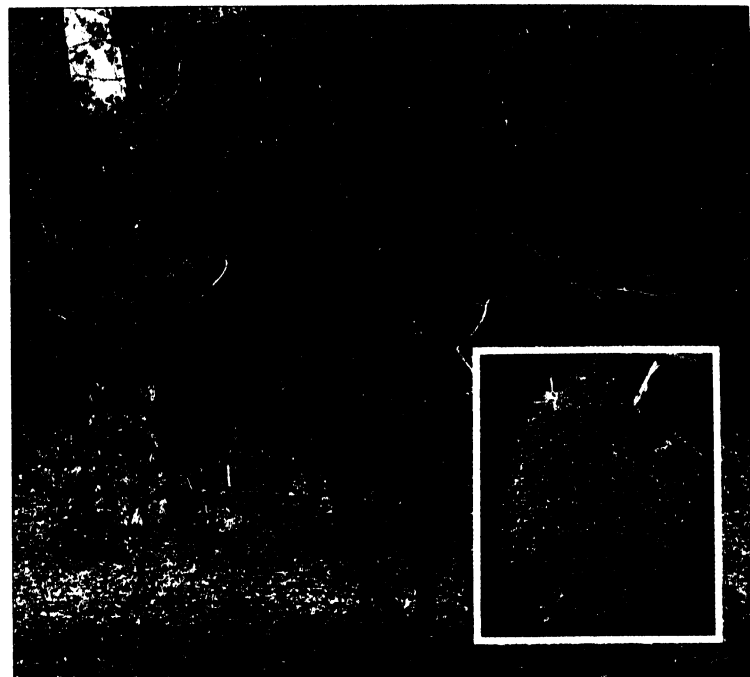
▷ **Kris plant** see *Alocasia sanderiana*

▷ **Kudzu vine** see *Pueraria lobata*

▷ **Kumquat** see *Fortunella*  
**Round** see *F. japonica*



*Kolkwitzia amabilis* 'Pink Cloud' (inset: flower detail)



*Kunzea baxteri* (inset: flower detail)

## KUNZEA

MYRTACEAE

Genus of 25 species of evergreen shrubs and small trees from sands or sandy loam areas of mostly coastal habitats in Australia. They have small, often crowded, simple, entire, leathery leaves, and bear terminal "bottlebrush" spikes or heads of flowers. Each flower is composed of 5 small petals and a crown of conspicuous stamens, which in some species give the flowerheads their main colour. Where temperatures drop below 5°C (41°F), grow in a cool greenhouse, moving plants in containers outdoors during the warmer summer months. In milder climates, grow at the base of a house wall or in a shrub border.

• **HARDINESS** Frost tender; *K. baxteri* and *K. capitata* may survive short spells around 0°C (32°F).

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, with good ventilation. In growth, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in moderately fertile, neutral to acid, well-drained, sandy soil in full sun; shelter from strong and dry winds. Pruning group 1; under glass, may need restrictive pruning after flowering.

• **PROPAGATION** Surface-sow seed at 16°C (61°F) in spring, or root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

***K. baxteri***  $\square$  Freely branching shrub, erect at first then spreading to a domed or rounded outline. Bears narrowly oblong, spreading, mid- to deep green leaves, 2cm (¾in) long, with white margins. Scarlet flowers, 2.5cm (1in) across, with long red stamens and yellow anthers, are produced in many short, dense spikes, to 10cm (4in) long, from spring to early summer. Thrives in seaside gardens.  $\pm$  1–2m (3–6ft) or more. Australia (Western Australia).  $\ominus$  (min. 5°C/41°F)

***K. capitata***. Bushy, rounded, freely branching shrub, erect at first but soon spreading, with upright, narrowly obovate to elliptic, mid-green leaves, 5–10mm (¼–½in) long, with arching tips. From spring to early summer, bears many small, rounded heads, 2cm (¾in) across, of deep mauve-pink flowers, 1cm (½in) long, with long stamens of the same colour tipped with cream anthers.  $\pm$  1–1.5m (3–5ft). Australia (New South Wales, Queensland).  $\ominus$  (min. 5°C/41°F)

▷ **Kurrajong** see *Brachychiton*,  
*B. discolor*, *B. populneus*

**Flame** see *B. acerifolius*

▷ **Kusamaki** see *Podocarpus macrophyllus*

▷ **Kyo-Chiku** see *Dendrocalamus giganteus*

K

# L

## LABLAB *syn. DOLICHOS*

### LEGUMINOSAE/PAPILIONACEAE

Genus of one species of short-lived, herbaceous, perennial climber found in scrub in tropical Africa. Twining stems bear alternate, 3-palmate leaves and short, axillary racemes of fragrant, pea-like flowers. *L. purpureus* is extensively cultivated in Asia and North Africa for its edible fruit pods. In frost-prone areas, grow as a tender annual, or in a cool or temperate greenhouse. In warmer areas, train over a pergola or wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in full light. When in growth, water freely and apply a balanced liquid fertilizer every 10–14 days until flowering; water sparingly in winter. Outdoors, grow in any well-drained soil in full sun (for the best crop of beans, water and fertilize as for plants under glass). Provide support of netting or trellis. Pruning group 11, in spring.

• **PROPAGATION** In cool climates, sow seed at 19–24°C (66–75°F) in spring. In

warm climates, sow *in situ* when warm enough (19–24°C/66–75°F).

• **PESTS AND DISEASES** Trouble free.

*L. purpureus* ☐ *syn. Dolichos lablab, D. niger, D. purpureus* (Egyptian bean, Indian bean). Fast-growing, twining, perennial climber producing 3-palmate, mid- to dark green leaves, composed of ovate to triangular leaflets, 10–15cm (4–6in) long. Bears fragrant, purple or white flowers, 1–2.5cm (½–1in) long, in racemes 20–40cm (8–16in) long, mainly in summer and autumn. Edible green pods, 10–15cm (4–6in) long, are often flushed purple, and contain 3–6 white to buff, reddish brown, brown, or black beans. ‡ 2–6m (6–20ft). Tropical Africa. ☼ (min. 7°C/45°F)

## + LABURNOCYTISUS

### LEGUMINOSAE/PAPILIONACEAE

Deciduous tree, a graft hybrid, grown for its colourful, pea-like flowers borne in late spring and early summer. The leaves are alternate and 3-palmate. An ideal specimen tree, + *L. adamii* is also effective planted in small groups.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 1; remove any suckers that arise from the rootstock.

• **PROPAGATION** Graft on to *Laburnum* seedlings in winter.

• **PESTS AND DISEASES** Trouble free.

+ *L. adamii* ☐☐ (*Chamaecytisus purpureus* + *Laburnum anagyroides*). Spreading, deciduous tree with 3-



+ *Laburnocytisus adamii*

palmate, dark green leaves, consisting of oval leaflets, to 6cm (2½in) long. Pea-like flowers occur in 3 colours, each borne in separate racemes in late spring and early summer: 2 are single colours, yellow and purple, true to each parent; the third is purple-pink with a yellow flush. ‡ 8m (25ft), ↔ 6m (20ft). Garden origin. \*\*\*

## LABURNUM

Golden rain

### LEGUMINOSAE/PAPILIONACEAE

Genus of 2 species of deciduous trees from woodland and thickets in the mountains of S. central Europe, S.E. Europe, and W. Asia. They are grown for their profuse, pendent, usually axillary racemes of pea-like yellow flowers, produced in late spring and early summer. The leaves are alternate and 3-palmate. Useful in a small garden as specimen trees or to form a pergola. All parts are highly toxic if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Pruning group 1.

• **PROPAGATION** Sow seed (species only) in containers in a cold frame in autumn. Graft in late winter, or bud in summer.

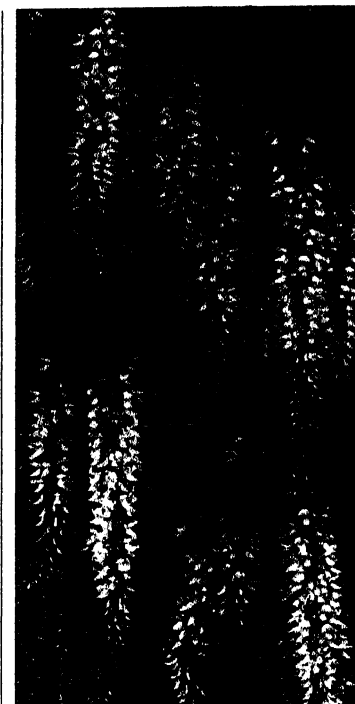
• **PESTS AND DISEASES** Black fly, leaf miners, honey fungus, powdery mildew, and silver leaf may be troublesome.

*L. alpinum* ☐ (Scotch laburnum). Spreading tree with almost hairless, glossy, dark green leaves, consisting of 3 elliptic-ovate leaflets, to 8cm (3in) long. In late spring and early summer, bright yellow flowers are produced in slender racemes, 15–40cm (6–16in) long. ‡ 8m (25ft). S. central Europe, Italy, W. Balkans. \*\*\*. 'Pendulum' has weeping branches; ‡ 2m (6ft).

*L. anagyroides* ☐ *syn. L. vulgare* (Common laburnum). Spreading tree with hairy, grey-green young shoots, and dark green leaves composed of 3 elliptic-ovate leaflets, to 8cm (3in) long, hairy beneath. In late spring and early summer, produces bright yellow flowers in dense racemes, 10–30cm (4–12in) long. ‡ 8m (25ft). E. France to Italy, S. central Europe, Slovenia, Croatia. \*\*\*

*L. vulgare* see *L. anagyroides*.

*L. x watereri* ☐ (*L. alpinum* x *L. anagyroides*). Spreading tree with virtually hairless young shoots, and dark green leaves composed of 3 elliptic-



*Laburnum x watereri* 'Vossii'

obovate leaflets, to 8cm (3in) long. Produces yellow flowers in dense racemes, to 50cm (20in) long, in late spring and early summer. ‡ 8m (25ft). Garden origin (also occurs in the wild where parents grow together). \*\*\*. 'Vossii' ☐☐ has hairy young shoots, and bears racemes, to 60cm (24in) long, of golden yellow flowers.

▷ **Laburnum,**

**Common** see *Laburnum anagyroides*

**Dalmatian** see *Petteria ramentacea*

**East African** see *Calpurnia aurea*

**Evergreen** see *Piptanthus nepalensis*

**Indian** see *Cassia fistula*

**Natal** see *Calpurnia aurea*

**Scotch** see *Laburnum alpinum*

## LACCOSPADIX

### ARECACEAE/PALMAE

Genus of one species of single- or cluster-stemmed palm from rainforest in N.E. Australia. Arching, pinnate leaves are borne in a terminal cluster and die *in situ*, forming a skirt-like mass below the living crown. Spikes of bowl-shaped, 3-petalled flowers are borne between the leaves. In frost-prone areas, grow in a temperate or warm greenhouse; in warmer areas, grow as a specimen tree.

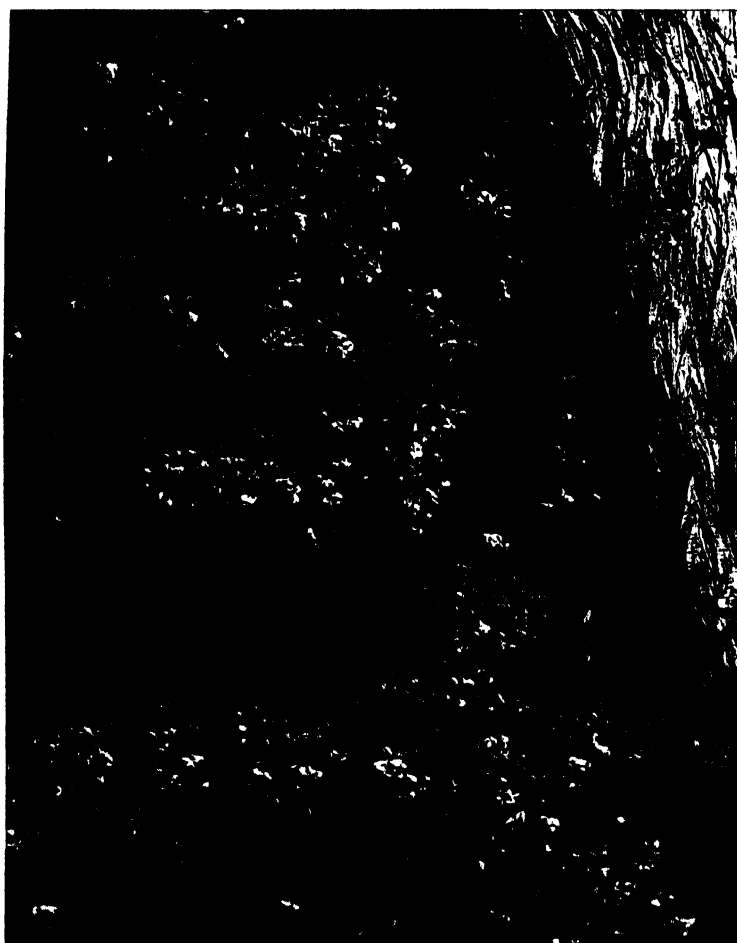
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*L. australasica* ♀ Slow-growing palm, usually with a single stem but sometimes with small clusters of stems, ringed with conspicuous leaf scars. Long-stalked, pinnate leaves, 2–3m (6–10ft) long,



*Lablab purpureus*



consist of many narrowly linear-lance-shaped, sparsely scaly, mid- to deep green leaflets. Yellow flowers are borne in spikes, 1m (3ft) or more long, usually in summer. ‡ 6m (20ft) occasionally more, ↔ 3–5m (10–15ft). Australia (Queensland). ☀ (min. 13°C/55°F)

▷ **Lace-bark** see *Hoheria populnea*

▷ **Lacebark, Queensland** see *Brachychiton discolor*

▷ **Lace plant** see *Aponogeton madagascariensis*

## LACHENALIA

Cape Cowslip

HYACINTHACEAE/LILIACEAE

Genus of 90 species of bulbous perennials from grassland or rocky sites, on often seasonally moist ground, in South Africa. They are grown for their spikes or racemes of showy, tubular, bell-shaped, or cylindrical flowers, borne on often mottled stems from autumn to spring. Leaves are basal, very variably shaped, and frequently attractively spotted. In frost-prone areas, grow in a cool greenhouse or a conservatory. In frost-free areas, grow in a rock garden or in an open site among low shrubs.

• **HARDINESS** Half hardy.

• **CULTIVATION** Plant bulbs 10cm (4in) deep. Under glass, grow in loam-based potting compost (J1 No.2) in full light. Water moderately until in full growth, then water freely, adding a balanced liquid fertilizer every 10–14 days. Reduce watering as the leaves fade, then keep dry until fresh growth starts in autumn. Outdoors, grow in light, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe, or remove bulblets in summer or autumn just before replanting or repotting.

• **PESTS AND DISEASES** Trouble free.

*L. aloides* ☐ syn. *L. tricolor*. Bulbous perennial with semi-erect, broadly lance- to strap-shaped, purple-spotted, slightly



*Lachenalia aloides* 'Nelsonii'

glaucous, mid-green leaves, 20cm (8in) long. In winter or early spring, produces racemes of up to 20 pendent, tubular yellow flowers, 2–3.5cm (1–1½in) long, that shade to scarlet at the tips.

‡ 15–28cm (6–11in), ↔ 5cm (2in). South Africa (Western Cape). \*

'Nelsonii' ☐ has golden yellow flowers and unspotted leaves. 'Pearsonii' is

robust, with semi-erect, strap-shaped, mid-green leaves, to 25cm (10in) long, mottled with brown, and produces apricot flowers, to 3cm (1¼in) long, with the inner tepals tipped red to maroon; ‡ 30–40cm (12–16in). var. *quadricolor* ♂ has reddish orange buds opening to reddish orange-based, yellow-and-green flowers, with purple-maroon tips to the inner segments.

*L. angustifolia* see *L. contaminata*.

*L. bulbifera*, syn. *L. pendula*. Robust, bulbous perennial with semi-erect, ovate, lance-shaped, or strap-shaped, mid-green leaves, to 30cm (12in) long, usually heavily spotted brown-purple. In winter or spring, produces loose racemes of few to many pendent, cylindrical, red or orange flowers, 3–4cm (1¼–1½in) long, with green and purple tips. ‡ 30cm (12in), ↔ 5cm (2in). South Africa (Western Cape). \*

*L. contaminata*, syn. *L. angustifolia*. Bulbous perennial with erect or semi-erect, narrow, grass-like, unmarked, mid- to deep green leaves, to 20cm (8in) long. In spring, bears racemes or spikes of few to many, open bell-shaped, slightly scented white flowers, 5–8mm (¼–⅜in) long, with maroon tips and stripes, held at right-angles to the stems. ‡ 6–25cm (2½–10in), ↔ 5cm (2in). South Africa (Western Cape). \*

*L. glaucina* see *L. orchioides* var. *glaucina*.

*L. glaucina* var. *pallida* see *L. orchioides*.

*L. mutabilis*. Bulbous perennial with usually one semi-erect, lance-shaped, sometimes glaucous, mid-green leaf, to 20cm (8in) long, occasionally faintly spotted maroon. In winter or spring, produces dense spikes of up to 25 horizontal, stalkless, urn- to bell-shaped flowers, 1cm (½in) long, pale blue and white, with dark yellow inner tepals and dark tips, or rarely entirely greenish white. ‡ 10–45cm (4–18in), ↔ 5cm (2in). South Africa (Northern Cape, Western Cape). \*

*L. orchioides*, syn. *L. glaucina* var. *pallida*. Bulbous perennial with 1 or 2 semi-erect, lance- or strap-shaped, mid-

green leaves, to 28cm (11in) long, sometimes spotted brown. In late winter or spring, produces dense spikes of many semi-erect, oblong-cylindrical, fragrant, white, greenish yellow, or creamy yellow flowers, 1cm (½in) long, with flared tepals, fading to dull red as they mature. ‡ 15–40cm (6–16in), ↔ 5cm (2in). South Africa (Western Cape). \*

var. *glaucina*, syn. *L. glaucina*, has blue- or purple-shaded flowers with a fainter scent.

*L. pendula* see *L. bulbifera*.

*L. rubida*. Bulbous perennial with semi-erect, lance- to strap-shaped, mid- to deep green leaves, to 14cm (5½in) long, mottled deep purple. In autumn or early winter, produces racemes of few to many pendent, cylindrical, bright pink or ruby-red flowers, 2–3cm (¾–1¼in) long, shading to purple at the tips.

‡ 6–25cm (2½–10in), ↔ 5cm (2in). South Africa (Western Cape, Eastern Cape). \*

*L. tricolor* see *L. aloides*.

*L. unicolor*. Very variable, bulbous perennial with lance- to strap-shaped, pale to dark green leaves, to 15cm (6in) long, usually with maroon warts above. In spring, bears racemes of many oblong-bell-shaped flowers, 5–8mm (¼–⅜in) long, that vary from cream with green tips, to pink, lilac-pink, magenta, blue, or purple, with darker tips. ‡ 8–30cm (3–12in), ↔ 5cm (2in). South Africa (Western Cape). \*

▷ *Lactuca alpina* see *Cicerbita alpina*

▷ *Lactuca plumieri* see *Cicerbita plumieri*

▷ *Ladies' tresses, Nodding* see *Spiranthes cernua*

▷ *Lad's love* see *Artemisia abrotanum*

▷ *Lady of the night* see *Brunfelsia americana*

▷ *Lady palm* see *Rhapis*

▷ *Lady's mantle* see *Alchemilla alpina* see *A. alpina*

▷ *Lady's slipper orchid* see *Cypripedium*, *C. calceolus*

▷ *Lady's smock* see *Cardamine pratensis*

## LAELIA

ORCHIDACEAE

Genus of about 50 species of evergreen, epiphytic or terrestrial orchids occurring in coastal regions up to altitudes of 2,600m (8,300ft), often in oak woodland, from Mexico and Central America to Brazil and Argentina. They have robust or slender, elongated pseudobulbs, each bearing 1 or 2 (sometimes 3) semi-rigid, narrowly oval, club-shaped, oblong, strap-shaped, or linear leaves. Brightly coloured flowers are usually produced in racemes from the apex of the pseudobulb. Many intergeneric hybrids derived from crosses with *Cattleya* and other related genera are also available.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow large species in epiphytic orchid compost in a slatted basket, and small ones epiphytically on a slab of bark. In summer, provide moist, shady conditions; water freely, adding fertilizer at every third watering, and mist once or twice daily. In winter, provide full light and water sparingly. See also p.46.

• **PROPAGATION** Divide when the plants overflow their containers. Remove



*Laelia anceps*

backbulbs of the Mexican species and pot up each one separately.

• **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be troublesome.

*L. anceps* ☐ Epiphytic orchid with ovate-oblong pseudobulbs, each with 1, or occasionally 2, lance-shaped, leathery leaves, 15cm (6in) long. In winter, produces racemes, to 60cm (24in) long, of 2–5 light rose-pink flowers, 6cm (2½in) across, with reddish purple lips and yellow throats with purple veining. ‡ 45–60cm (18–24in), ↔ 30cm (12in). C. Mexico. ☀ (min. 10°C/50°F; max. 30°C/86°F)

*L. autumnalis*. Epiphytic orchid with ovate-oblong pseudobulbs, each with 2 or 3 oblong to lance-shaped, leathery leaves, 12–20cm (5–8in) long. In winter, bears long-stemmed racemes, 30–100cm (12–39in) long, of 4–10 rose-pink flowers, 6cm (2½in) across, with rose-purple lips. ‡ 30–100cm (12–39in), ↔ 30cm (12in). Mexico. ☀ (min. 10°C/50°F; max. 30°C/86°F)

*L. cinnabarina* ☐ Epiphytic orchid with cylindrical, stem-like pseudobulbs, each with 1 or 2 linear to oblong, dark green leaves, 10–25cm (4–10in) long. Racemes, to 40cm (16in) long, of 5–15 brilliant cinnabar-red flowers, 4.5cm (1¾in) across, are produced in winter. ‡ 40cm (16in), ↔ 15cm (6in). S.E. Brazil. ☀ (min. 13°C/55°F; max. 30°C/86°F)

*L. crispata*. Epiphytic orchid with slender pseudobulbs, each with one oblong to strap-shaped, leathery leaf, 18cm (7in) long. In summer, bears racemes,



*Laelia cinnabarina*



*Lachenalia aloides*

10–25cm (4–10in) long, of 2 or 3 white flowers, 10cm (4in) across, with deep magenta veining on frilly lips. ‡40cm (16in), ↔30cm (12in). S. Brazil. ☼ (min. 13°C/55°F; max. 30°C/86°F)

**L. flava.** Epiphytic orchid with cylindrical, stem-like pseudobulbs, each with one lance-shaped to oblong, dark green leaf, 8–15cm (3–6in) long. In spring, bears upright racemes, 30–45cm (12–18in) long, of 5–10 yellow flowers, 3–4.5cm (1¼–1¾in) across. ‡30–45cm (12–18in), ↔15cm (6in). S.E. Brazil. ☼ (min. 13°C/55°F; max. 30°C/86°F)

**L. majalis** *sec L. speciosa.*

**L. pumila.** Epiphytic orchid with ovoid pseudobulbs, each with one linear to oblong leaf, 8–12cm (3–5in) long. In autumn, lilac-rose flowers, 6cm (2½in) across, with rose-purple on the lips, are borne singly, or rarely in twos, on stems 4–10cm (1½–4in) tall, at the apex of each pseudobulb. ‡20cm (8in), ↔23cm (9in). S.E. Brazil. ☼ (min. 13°C/55°F; max. 30°C/86°F)

**L. purpurata** ♀ Epiphytic orchid with slender pseudobulbs, each with one oblong, leathery leaf, 20–30cm (8–12in) long. In early summer, bears racemes, to 30cm (12in) long, of 2–7 white flowers, 15cm (6in) across, with purple in the lip centres. ‡45cm (18in), ↔30cm (12in). Brazil. ☼ (min. 13°C/55°F; max. 30°C/86°F)

**L. speciosa.** *syn. L. majalis.* Epiphytic orchid with stout, ovoid pseudobulbs, each with one oblong to lance-shaped, stiff leaf, 10–15cm (4–6in) long. In early summer, pale rose-lilac to rich magenta flowers, 9cm (3½in) across, are borne singly or in twos, on slender stems, 10–20cm (4–8in) tall, from the apex of each pseudobulb. ‡15–20cm (6–8in). C. Mexico. ☼ (min. 10°C/50°F; max. 30°C/86°F)

## X LAELIOCATTLEYA

ORCHIDACEAE

Bigeneric hybrid genus of evergreen orchids, derived from crosses between *Laelia* and *Cattleya*. Racemes of large, showy flowers, in a range of bright colours, are borne at the tips of the pseudobulbs, above the foliage. They mostly produce a single, lance-shaped, leathery leaf, but may also bear 2 on each elongated pseudobulb, depending on the parentage of the hybrid. Often referred to colloquially as cattleyas.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in a slatted basket. In summer, provide high humidity and bright filtered light; water freely, adding fertilizer at every third

watering, and mist once or twice daily. In winter, provide full light and water more sparingly. See also p.46.

• **PROPAGATION** Divide when the plants overflow their containers, or remove backbulbs and pot up separately.

• **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be troublesome.

× **L. Rojo 'Mont Millais'** (*Cattleya aurantiaca* × *Laelia milleri*). Evergreen orchid with cylindrical pseudobulbs and 1 or 2 ovate leaves, 10cm (4in) long. Bears slender, deep cinnabar-red flowers, 6cm (2½in) across, in short racemes in winter. ‡30cm (12in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

× **L. Trick or Treat 'Orange Princess'** ☼ (× *L. Icarus* × × *L. Chit Chat*). Evergreen orchid with cylindrical pseudobulbs and 2 narrowly oval leaves, 10cm (4in) long. Produces star-shaped, bright orange flowers, 4cm (1½in) across, in short racemes in spring. ‡30cm (12in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

## LAGAROSIPHON

Curly water thyme

HYDROCHARITACEAE

Genus of 9 species of semi-evergreen, submerged aquatic perennials occurring in still or slow-moving water in Africa. Used extensively as oxygenators in aquaria and in outdoor pools, they form dense, submerged masses of branched stems that support numerous linear-lance-shaped, recurved, often spirally arranged leaves and very small, white or pink flowers. In frost-prone climates, grow half-hardy species in a cold-water aquarium.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** In an aquarium, admit full light, but do not provide additional heat; plants tend to become leggy in temperatures above 20°C (68°F). In an outdoor pond, grow in a submerged basket of loamy soil in full sun. Cut back regularly to restrict spread, and remove dead stems to prevent them from decomposing in the water.

• **PROPAGATION** Take stem-tip cuttings in spring or summer.

• **PESTS AND DISEASES** Trouble free.

**L. major** ☼ *syn. Elodea crispata* of gardens. Submerged aquatic perennial with branched, fragile stems, to 1m (3ft) long, covered in linear to lance-shaped,

recurved, dark green leaves, 0.6–2.5cm (¼–1in) long. Tubular, pink-tinged green flowers, 3mm (¼in) long, develop inside translucent spathes in summer.

↔ indefinite. Southern Africa. \* \* \*

## LAGENOPHORA

ASTERACEAE/COMPOSITAE

Genus of about 15 species of low-growing, herbaceous perennials found mostly in open sites in scrub, grassland, and at forest margins, from lowland to subalpine altitudes, in Asia, Australasia, and Central and South America. They are cultivated for their solitary, daisy-like, white to purple flowerheads, borne over long periods in summer. The mostly basal leaves are oblong to broadly ovate, and may be entire or toothed to pinnatifid. Grow in a rock garden, on a sunny bank, or at the front of a border.

• **HARDINESS** Hardy to about -10°C (14°F).

• **CULTIVATION** Grow in well-drained soil in full sun. Propagate regularly, as they are often short-lived.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.

• **PESTS AND DISEASES** Slugs and snails may be a problem.

**L. pinnatifida.** Mat-forming herbaceous perennial with rosettes of obovate to oblong, pinnatifid, sometimes toothed or further lobed, hairy, bronze-tinted, mid-green leaves, to 6cm (2½in) long. In summer, bears solitary, off-white flowerheads, to 1.5cm (½in) across, on stems 5–10cm (2–4in) long, sometimes to 25cm (10in) long. ‡ to 10cm (4in), ↔ to 15cm (6in). Mountain grassland in New Zealand. \* \*

## LAGERSTROEMIA

LYTHRACEAE

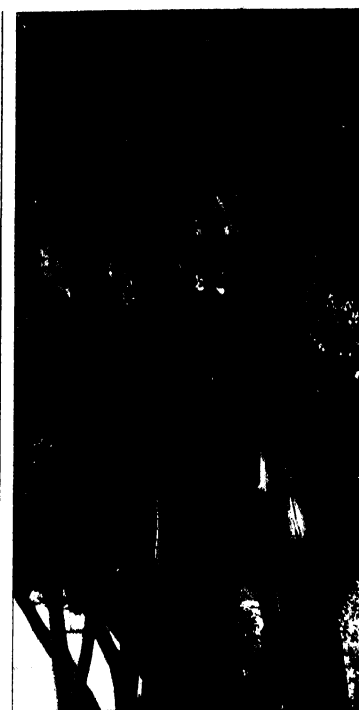
Genus of approximately 50 species of deciduous or evergreen shrubs and trees occurring in deciduous woodland, often near rivers, in warm-temperate and tropical regions from Asia to Australia. They are cultivated for their conical, brightly coloured panicles of flowers, with characteristic crinkled petals, and their often peeling bark. The leaves vary greatly in shape within the genus, but are usually opposite. In frost-prone areas, grow against a warm, sunny wall, or overwinter in a cool or temperate greenhouse. In warmer climates, grow as specimens, in group plantings, or as a hedge or screen.

• **HARDINESS** Half hardy, or frost hardy in areas with very hot summers where the wood can ripen fully.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. During the growing season, water freely and apply a balanced liquid fertilizer every 6–8 weeks; water sparingly at other times. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1; will withstand hard pruning if renovation is required.

• **PROPAGATION** Sow seed at 10–13°C (50–55°F) in spring. Root softwood cuttings in late spring, or semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Mealybugs, red spider mites, and whiteflies may be a problem under glass.



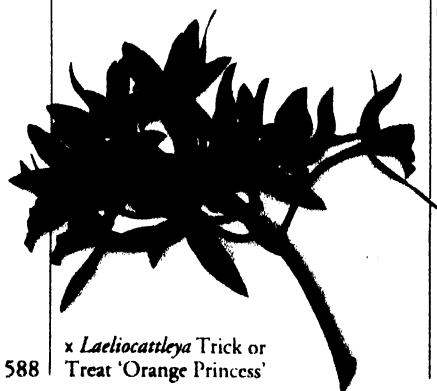
*Lagerstroemia fauriei*

**L. fauriei** ☼☼ Upright, many-stemmed, deciduous tree with peeling, red-brown bark and oblong, dark green leaves, to 10cm (4in) long. In summer, white flowers, 1cm (½in) across, are produced in panicles 5–10cm (2–4in) long. ‡8m (25ft). Japan. \* \*

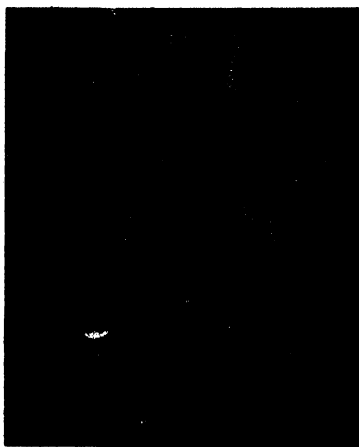
**L. indica** ♀☼ (Crepe flower, Crepe myrtle). Upright, deciduous tree or large shrub with peeling, grey-and-brown bark and obovate to oblong, dark green leaves, to 8cm (3in) long, bronze when young. From summer to autumn, white, pink, red, or purple flowers, 2–2.5cm (¾–1in) across, are produced in panicles to 20cm (8in) long. ‡8m (25ft). China. \* \*. Some of the following are thought to be hybrids of *L. indica* and *L. fauriei*. 'Catawba' produces purple flowers and orange-red autumn leaves; ‡ to 2m (6ft); \*. 'Dallas Red' is particularly hardy and fast-growing, and produces dark red flowers. 'Lavender Dwarf' is a spreading shrub, bearing a profusion of light lavender-purple flowers; ‡ to 2m (6ft); \*. 'Miami' ☼ is of hybrid origin, and bears dark pink flowers from midsummer to early autumn; ‡5m (15ft), ↔2.5m (8ft). 'Natchez' ☼ is a vigorous hybrid with



*Lagerstroemia indica* 'Miami'



× *Laeliocattleya* Trick or Treat 'Orange Princess'

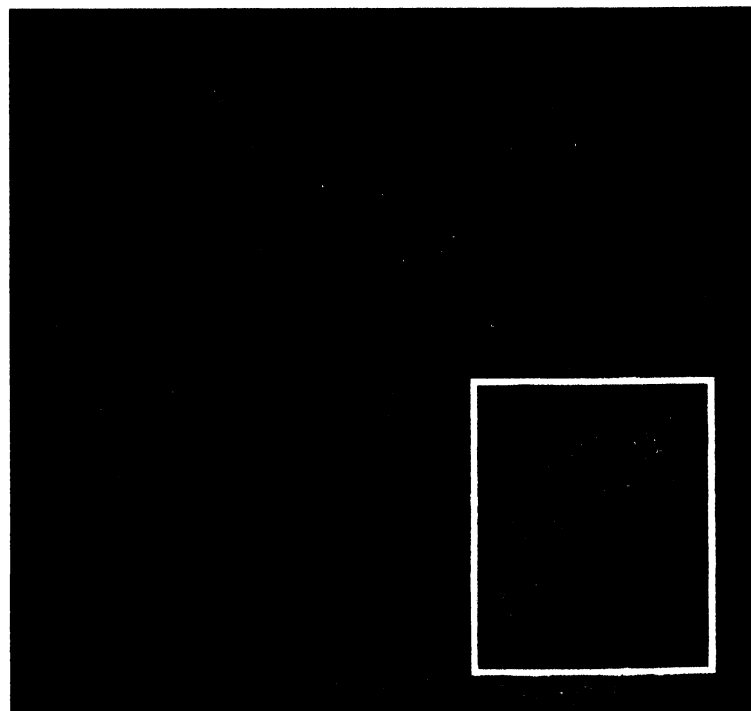


*Lagarosiphon major*



*Lagerstroemia indica* 'Natchez'

white flowers;  $\pm$  to 2m (6ft); \*. 'Near East' produces pale pink flowers;  $\pm$  to 5m (15ft). 'Seminole'  $\square$  is compact, and produces mid-pink flowers from mid-summer to early autumn;  $\pm$  2.2–2.5m (7–8ft),  $\leftrightarrow$  6–7m (20–22ft). 'Sioux' is of hybrid origin, with very large pink flowers, 5cm (2in) across;  $\pm$  to 2.5m (8ft); \*. 'Tuskegee' is a hybrid with spreading branches; it bears large panicles, to 35cm (14in) long, of dark pink flowers;  $\pm$  to 5m (15ft). 'White Dwarf' is a low mound-forming shrub, and freely bears white blooms;  $\pm$  1m (3ft); \*. 'Wichita' is vase-shaped, sometimes forming a small tree; it bears lavender-blue flowers from summer to late autumn;  $\pm$  to 3.5m (11ft); \*. *L. speciosa*  $\square$  (Giant crepe myrtle, Pride of India, Queen's crepe myrtle). Spreading, freely branching, evergreen tree with peeling, light brown bark. Ovate to elliptic-oblong leaves, 8–20cm (3–8in) long, are grey-green above, sepia-flushed beneath. From spring to autumn, produces erect, open panicles, to 40cm (16in) long, of many pink, mauve, purple, or white flowers, to 5cm (3in) wide;  $\pm$  10–24m (30–78ft),  $\leftrightarrow$  5–10m (15–30ft). Tropical Asia. \*



*Lagerstroemia indica* 'Seminole' (inset: flower detail)

## LAGUNARIA

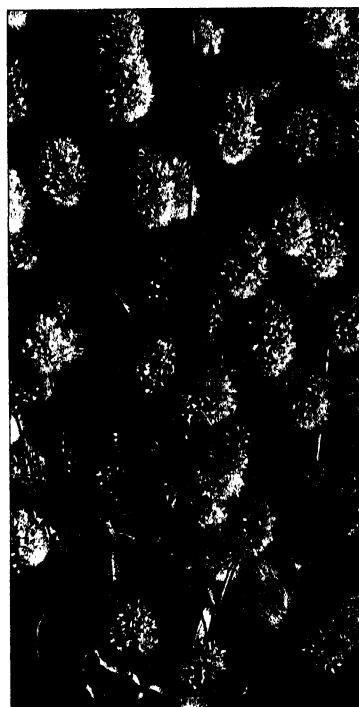
Norfolk Island hibiscus

MALVACEAE

Genus, allied to *Hibiscus*, of one species of evergreen tree from coastal woodland in E. Australia. It is grown for its habit, its alternate, simple, entire, leathery leaves, and its solitary, 5-petalled, hibiscus-like flowers, produced from the upper leaf axils. In frost-prone areas, grow in a cool greenhouse. In warmer areas, grow as a specimen tree, or as a windbreak in a coastal garden. Contact with the seeds may irritate skin.

- **HARDINESS** Frost tender; may survive short periods just below 0°C (32°F) if the wood is well ripened in summer.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in full growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly at other times. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring, or root greenwood cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Scale insects may be a problem under glass.

*L. patersonii*  $\triangle$  (Cow itch tree, Queensland pyramid tree). Pyramidal to columnar tree, loosely branched when young, denser when mature, with ovate to broadly lance-shaped, blunt-tipped leaves, 5–10cm (2–4in) long, matt, almost olive-green above, densely whitish grey-scaled beneath. Bears a succession of cup- to trumpet-shaped, pink to rose-pink flowers, 4–6cm (1½–2½in) across, mainly in summer, followed by ovoid seed capsules, 2.5cm (1in) long. More than one plant is needed to produce seed.  $\pm$  to 15m (50ft),  $\leftrightarrow$  8–12m (25–40ft). E. Australia (including Lord Howe Island, Norfolk Island).  $\odot$  (min. 3–5°C/37–41°F)



*Lagurus ovatus*

## LAGURUS

Hare's tail

GRAMINEAE/POACEAE

Genus of one species of annual grass occurring on maritime sands on the Mediterranean coast of S. Europe and, more rarely, on dry wasteland inland. Valued for the effect of its ornamental flowerheads in summer, it is effective in groups in a herbaceous or mixed border. The flowerheads are also useful in fresh or dried arrangements; pick them before fully mature for drying.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, ideally sandy, moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed *in situ* in spring, or in containers in a cold frame in autumn.
- **PESTS AND DISEASES** Trouble free.

*L. ovatus*  $\square$  (Hare's tail). Tufted grass with arching, linear to narrowly lance-shaped, flat, pale green leaves, to 20cm (8in) long. Throughout summer, bears dense, ovoid to oblong-cylindrical, spike-like panicles, to 6cm (2½in) long, of softly hairy, often purple-tinged, pale green spikelets, which mature to pale creamy buff.  $\pm$  to 50cm (20in),  $\leftrightarrow$  30cm (12in). Mediterranean. \*\*\*. 'Nanus' is much more compact;  $\pm$  to 12cm (5in).

## LAMARCKIA

GRAMINEAE/POACEAE

Genus of one species of annual grass occurring in open habitats in the Mediterranean region. It has twisted, linear leaves and one-sided panicles of attractively coloured spikelets. Grow in a herbaceous, mixed, or annual border for its distinctive inflorescences, which are useful in both fresh and dried flower arrangements.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, sandy, well-drained soil in full sun.



*Lamarchia aurea*

- **PROPAGATION** Make successional sowings *in situ* from early to late spring. Alternatively, sow in containers in a cold frame in late spring and transfer to the flowering site, to replace earlier sown plants after they have flowered. Plants from early sowings are usually past their best by midsummer.
- **PESTS AND DISEASES** Trouble free.

*L. aurea*  $\square$  (Golden top, Toothbrush grass). Loosely tufted grass with wiry stems and flat, twisted, broadly linear, pale green leaves, to 12cm (5in) long. From mid-spring to summer, produces one-sided, oblong panicles, to 7cm (3in) long, of densely packed, downswep, bristled spikelets, shimmering golden yellow or whitish green, becoming silvery, and often purple flushed when mature.  $\pm$  30cm (12in),  $\leftrightarrow$  25cm (10in). Mediterranean. \*\*\*

## LAMBERTIA

PROTEACEAE

Genus of 9 or 10 species of evergreen shrubs found on sandy or gravelly soils in heathland and woodland in Australia. They are cultivated for their slender, tubular flowers, which are solitary or borne in terminal clusters of 2–7, and surrounded by often colourful bracts; each flower has 4 narrow tepals that roll back like watch springs on opening. Leaves are usually narrow, simple, and entire, and are borne in pairs or whorls of 3. In frost-prone areas, grow in a cool or temperate greenhouse. In warmer climates, grow outdoors in a border.

- **HARDINESS** Generally frost tender; *L. formosa* may survive short periods near 0°C (32°F), provided the wood has been well ripened in summer.
- **CULTIVATION** Under glass, grow in a mix of 1 part loam and 3 parts each grit (or perlite) and peat, in full light. From spring to summer, water freely and apply a phosphate-free liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in poor to moderately fertile, sharply drained, neutral to acid soil in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 18°C (64°F) in spring, ideally singly in small containers. Root softwood cuttings in spring, or semi-ripe cuttings with bottom heat in summer; rooting may be slow and unreliable.
- **PESTS AND DISEASES** *Phytophthora* root rot may be a problem in moist soil.

*Lambertia formosa*

**L. formosa** ■ (Mountain devil). Erect shrub of open habit, spreading with age, and growing from a thickened, underground rootstock. Linear, sharp-tipped leaves, to 5cm (2in) long, usually borne in whorls of 3, are glossy, mid- to deep green above, white downy beneath. Bears clusters of up to 7 red flowers, 3–5cm (1¼–2in) long, surrounded by narrow, spreading, pink-flushed green bracts, some shorter than the flowers, some much longer, mainly from spring to summer, but often at other times of year. † to 2m (6ft), ↔ to 1.5m (5ft). Australia (New South Wales). \* (borderline)

- ▷ **Lambs' ears** see *Stachys byzantina*
- ▷ **Lambs' lugs** see *Stachys byzantina*
- ▷ **Lambs' tails** see *Stachys byzantina*
- ▷ **Lambs' tongues** see *Stachys byzantina*
- ▷ **Lamiastrum** see *Lamium*
- ▷ **L. galeobdolon** see *L. galeobdolon*

## LAMIUM

syn. GALEOBDOLOM, LAMIASTRUM  
Dead nettle

LABIATAE/LAMIACEAE

Genus of about 50 species of annuals and usually rhizomatous perennials, occurring in habitats ranging from dry, open scrub to moist woodland, from Europe to Asia, and widespread in the Mediterranean and N. Africa. They have square stems and opposite, mainly ovate or kidney-shaped, coarsely toothed, wrinkled leaves, sometimes with coloured markings. The 2-lipped flowers are solitary, or borne in whorls in dense, leafy, spike-like inflorescences ("spikes").

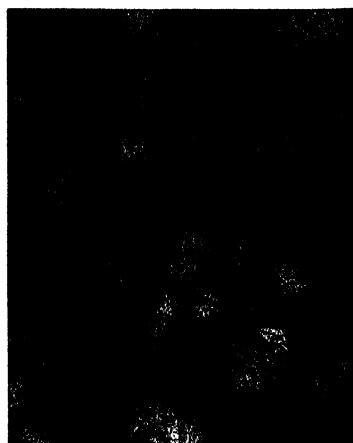
*Lamium galeobdolon* 'Hermann's Pride'*Lamium maculatum*

mainly from late spring to summer. Grown mainly for their foliage, they provide good ground cover among shrubs or robust perennials. The larger species can be very invasive in moist, moderately fertile soils, but are less vigorous in poor soils; they may also be used in a border or in light woodland. Grow smaller, non-invasive species in a scree bed, rock garden, or alpine house. • **HARDINESS** Fully hardy.

• **CULTIVATION** Grow the vigorous, ground-covering species in moist but well-drained soil in deep or partial shade. Site away from other small plants, and dig out rhizomes when necessary to confine spread. Grow *L. armenum* and *L. garganicum* subsp. *striatum* in sharply drained soil in full sun or partial shade. Protect *L. armenum* from excessive winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide in autumn or early spring. For small species, take stem-tip cuttings of non-flowering shoots in early summer. • **PESTS AND DISEASES** Foliage may be damaged by slugs and snails.

**L. armenum**. Slow-growing, non-invasive, mat-forming or tufted perennial with obovate to diamond-shaped, scalloped, sometimes palmately lobed, mid-green leaves, 1cm (½in) long. In summer, produces solitary, long-tubed and hooded, pale pink to white flowers, to 5cm (2in) long, from the upper leaf axils. † 5cm (2in), ↔ to 10cm (4in). Turkey (Anatolia). \*\*\*  
**L. galeobdolon**, syn. *Galeobdolon luteum*, *Lamiastrum galeobdolon* (Yellow

*Lamium maculatum* f. *album**Lamium maculatum* 'Beacon Silver'

archangel). Very invasive, rhizomatous and often stoloniferous perennial with erect or creeping stems bearing very broadly ovate or diamond-shaped, sometimes heart-shaped, toothed, mid-green leaves, to 6cm (2½in) long, often marked silver. Spikes of whorled, brown-spotted yellow flowers, to 2cm (¾in) long, are produced in summer. † 60cm (24in), ↔ indefinite. Europe to W. Asia. \*\*\*. The following cultivars are less invasive, but still require careful siting. 'Hermann's Pride' ■ forms a dense mat of small, ovate, heavily silver-streaked leaves, 3cm (1¼in) long. 'Silver Angel' is more prostrate, with silver leaves; † to 50cm (20in).

**L. garganicum**. Mat- to clump-forming perennial with upright stems that bear heart-shaped, broadly ovate, toothed, mid-green leaves, to 7cm (3in) long. Produces upright spikes of whorled, pale pink flowers, to 3cm (1¼in) long, from the upper leaf axils in early summer. † 45cm (18in), ↔ 50cm (20in). Italy, Greece to Turkey and Iraq. \*\*\*. 'Golden Carpet' has mid-green leaves variegated with gold, and produces pink-and-white striped flowers. subsp. *striatum* is compact, with abundant spikes of pink flowers, heavily spotted and streaked dark purple; † to 15cm (6in), ↔ to 20cm (8in).

**L. maculatum** ■ Low-growing, rhizomatous and stoloniferous perennial with prostrate and ascending stems bearing triangular-ovate, toothed, matt, mid-green leaves, 2–8cm (¾–3in) long, heart-shaped at the bases, and often mottled or zoned silvery white or pink. In summer, bears spikes of whorled, red-

*Lamium orvala*

purple, sometimes white or pink flowers, to 2cm (¾in) long. Excellent ground cover. † 20cm (8in), ↔ 1m (3ft). Europe and North Africa to W. Asia. \*\*\*.

f. **album** ■ is mat-forming, with matt, mid-green leaves, zoned silvery white; it produces white flowers from mid-spring to midsummer; † 15cm (6in), ↔ 60cm (24in); Europe. 'Aureum', syn. 'Gold Leaf', has yellow leaves with paler white centres, and produces pink flowers. 'Beacon Silver' ■ has silver leaves, narrowly margined green, and bears clear pale pink flowers. 'Cannon's Gold' has gold leaves and purple flowers. 'Gold Leaf' see 'Aureum'. 'Red Nancy' has silver leaves with narrow, mid-green margins, and bears purplish red flowers. 'Sterling Silver' has silver leaves and purple flowers. 'White Nancy' ♀ produces pure white flowers above silver leaves that are narrowly margined green; † to 15cm (6in), ↔ to 1m (3ft) or more.

**L. orvala** ■ Non-invasive, clump-forming perennial with broadly ovate to triangular, toothed, softly hairy, dark green leaves, 10–15cm (4–6in) long. Produces spikes of whorled, pinkish purple flowers, 3–4cm (1¼–1½in) long, from late spring to summer. † to 60cm (24in), usually less, ↔ 30cm (12in). Central S. Europe. \*\*\*. f. **album** bears white flowers.

## LAMPRANTHUS

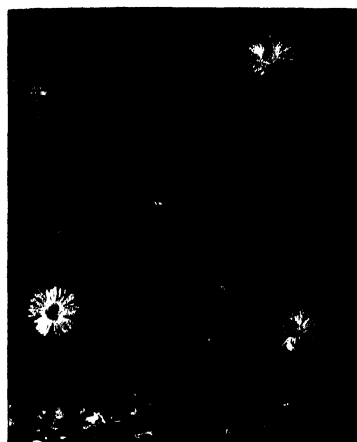
AIZOACEAE

Genus of 180 or more species of erect or prostrate, perennial succulents from semi-desert areas of South Africa, especially the coastal belt. The opposite, cylindrical or 3-angled leaves often redden in full sun. Daisy-like flowers are profusely borne from summer to early autumn. In frost-prone areas, grow in a temperate greenhouse; they may also be used for summer bedding, especially in arid conditions. In warmer areas, grow in a desert garden or in a border with other succulents.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From late spring to late summer, water moderately and apply low-nitrogen fertilizer every 4–6 weeks; water very sparingly at other times. Outdoors, grow in poor, sharply drained soil in full sun. In frost-prone climates, lift in autumn and overwinter under glass. See also pp.48–49.

*Lampranthus aurantiacus*

*Lampranthus deltooides*

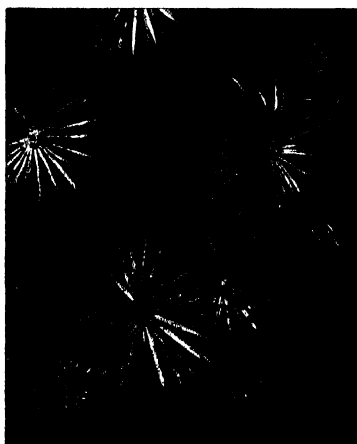
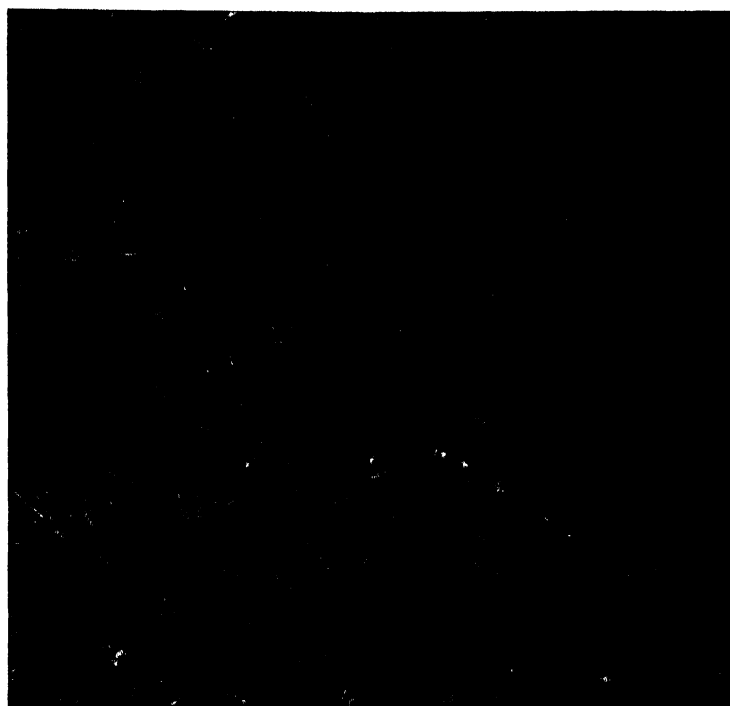
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root sections of stem in spring and summer.
- **PESTS AND DISEASES** Susceptible to mealybugs and, in flower, greenfly.

**L. aurantiacus** ■ Spreading, shrubby, sparsely branched succulent with semi-cylindrical, tapering, minutely spotted, grey-frosted, mid-green leaves, 2–3cm (¾–1¼in) long. Orange flowers, 4–5cm (1½–2in) across, open in full sun from summer to early autumn. ↑ to 45cm (18in), ↔ indefinite. South Africa (Western Cape, Eastern Cape). ☼ (min. 7°C/45°F)

**L. deltooides** ■ syn. *Oscularia deltooides*. Spreading succulent with a mass of short stems bearing 3-angled, toothed, bluish grey leaves, 1cm (½in) long. From summer to early autumn, produces sometimes fragrant, pink to red flowers, 1.5–2cm (½–¾in) across. ↑ to 30cm (12in), ↔ indefinite. South Africa (Western Cape). ☼ (min. 7°C/45°F)

**L. falcatus**. Spreading, prostrate succulent with a mass of slender, tangled stems and 3-angled, curved, spotted, greyish green leaves, 6mm (¼in) long. Fragrant, purplish pink flowers, to 1.5cm (½in) across, are borne from summer to early autumn. ↑ to 30cm (12in), ↔ indefinite. South Africa (Western Cape). ☼ (min. 7°C/45°F)

**L. haworthii** ■ Trailing or semi-erect, freely branching succulent with semi-cylindrical, tapering, densely grey-frosted, pale green leaves, 2.5–4cm (1–1½in) long. Bright purplish pink flowers, to 7cm (3in) across, are borne from summer to early autumn. ↑ to

*Lampranthus haworthii**Lampranthus purpureus*

50cm (20in), ↔ indefinite. South Africa (Western Cape, Eastern Cape). ☼ (min. 7°C/45°F)

**L. purpureus** ■ Trailing or semi-erect succulent with slender stems and branches bearing rounded, rough, bluish green leaves, to 3.5cm (1½in) long, shortly tapered at the tips. From summer to early autumn, produces pinkish purple flowers, to 3cm (1¼in) across. ↑ to 40cm (16in), ↔ indefinite. South Africa (Western Cape). ☼ (min. 7°C/45°F)

**L. roseus**, syn. *Mesembryanthemum multiradiatum*. Creeping or semi-erect succulent with 3-angled, mid-green to glaucous, grey-green leaves, 3cm (1¼in) long, covered with prominent, translucent dots. Bears pale rose-pink flowers, 4cm (1½in) across, from summer to early autumn. ↑ to 50cm (20in), ↔ indefinite. South Africa (Western Cape, Eastern Cape). ☼ (min. 7°C/45°F)

**L. spectabilis** ■ Variable, spreading, prostrate succulent with narrowly 3-angled to cylindrical, keeled, mid-green leaves, 5–8cm (2–3in) long, partly tinged red. Produces reddish purple or, occasionally, white flowers, 5–7cm

*Lampranthus spectabilis*

(2–3in) across, from summer to early autumn. ↑ to 30cm (12in), ↔ indefinite. South Africa (Western Cape). ☼ (min. 7°C/45°F)

▷ **Lancewood** see *Pseudopanax crassifolius*  
**Toothed** see *P. ferox*

## LANTANA

### VERBENACEAE

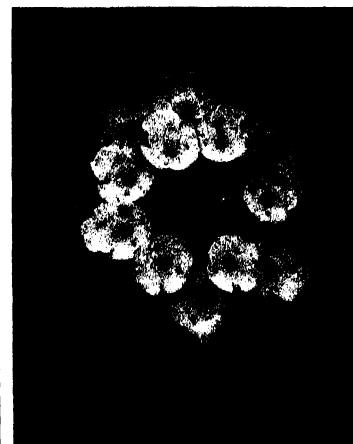
Genus of 150 species of evergreen shrubs and perennials from tropical North, Central, and South America, and South Africa, usually occurring in pine woodland and on disturbed ground. They are grown for their small, 5-lobed, salverform flowers, grouped tightly into rounded, flattened, or domed, terminal heads. Leaves are simple and toothed, often wrinkled, and borne in opposite pairs or whorls of 3. In frost-prone areas, grow in a temperate greenhouse, or use as summer bedding. In warmer areas, grow in a border; low, spreading species are good ground cover on a bank or between shrubs. All parts may cause severe discomfort if ingested, and contact with foliage may irritate skin.

*Lantana camara* 'Radiation'

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. During the growing season, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 9; may need restrictive pruning in late winter under glass.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring, or root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Whiteflies, red spider mites, and powdery mildew may be troublesome under glass.

**L. aculeata f. varia** see *L. camara f. varia*.

**L. camara cultivars.** Variable, often prickly-stemmed shrubs with ovate, finely wrinkled, slightly toothed, deep green leaves, 5–10cm (2–4in) long. Flowerheads 2.5–5cm (1–2in) across, in colours ranging from white to yellow and salmon-pink to red or purple, are borne from late spring to late autumn. ↑ to 1–2m (3–6ft). ☼ (min. 10°C/50°F). **'Cream Carpet'** is low and spreading, with creamy white flowers; ↑ 30cm (12in), ↔ 75cm (30in). **'Fabiola'** bears bicoloured, salmon-pink and yellow flowers. **'Feston Rose'** ■ has bicoloured, pink and yellow flowers. **'Goldmine'** see 'Mine d'Or'. **'Mine d'Or'**, syn. 'Goldmine', produces golden yellow flowers. **'Radiation'** ■ bears bicoloured, orange and red flowers. **'Schloss Ortenburg'** bears bicoloured, brick-red and orange-yellow flowers. **'Snow White'** ■ bears white flowers.

*Lantana camara* 'Feston Rose'*Lantana camara* 'Snow White'

*Lantana montevidensis*

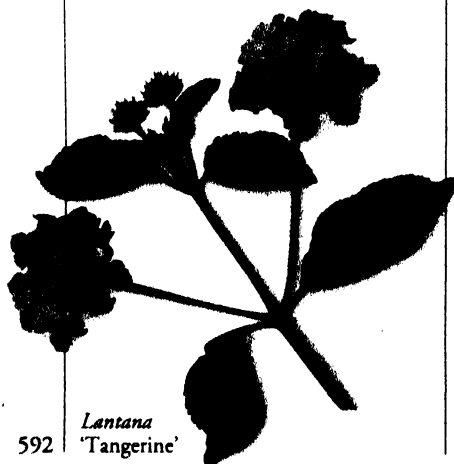
'Spreading Sunset' produces orange-yellow flowers that take on reddish pink tints with age. *f. varia*, syn. *L. aculeata* *f. varia*, bears yellow flowers turning purple on the outside, orange inside.

*L. delicatissima* see *L. montevidensis*.

*L. montevidensis* [ ] syn. *L. delicatissima*, *L. sellowiana*. Spreading shrub, often forming a dense mat, with slender, flexible stems, usually covered with coarse, short hairs. Ovate to oblong or lance-shaped, coarsely toothed, mid-to deep green leaves are 2.5–3.5cm (1–1½in) long. Bears long-stalked, domed flowerheads, 2–3cm (¾–1¼in) wide, of yellow-eyed, lilac-pink to violet flowers, to 1cm (½in) across, mainly in summer. ‡ 20–100cm (8–39in), ↔ 60–120cm (2–4ft). Tropical South America. ☉ (min. 10°C/50°F)

*L. sellowiana* see *L. montevidensis*.

*L. 'Tangerine'* [ ] Low, spreading, often prickly stemmed shrub, probably a cultivar of *L. camara*, with ovate to ovate-oblong, finely wrinkled, slightly toothed, deep green leaves, 5–10cm (2–4in) long. Bears orange flowerheads, 2.5–5cm (1–2in) across, from late spring to late autumn. ‡ 1–2m (3–6ft). ☉ (min. 10°C/50°F)

*Lantana 'Tangerine'*

*L. tiliifolia*. Coarsely hairy shrub with broadly ovate to elliptic or rounded, wrinkled, scalloped or toothed, mid-green leaves, 10cm (4in) long. Yellow or orange flowers, to 1cm (½in) across, ageing to brick red, are produced in short-stalked, domed flowerheads, to 6cm (2½in) wide, mainly in summer. ‡ 1.5m (5ft). Brazil. ☉ (min. 10°C/50°F)

▷ **Lantern,**

**Chinese** see *Physalis alkekengi*

**Japanese** see *Hibiscus schizopetalus*, *Physalis alkekengi*

▷ **Lanterns, Chinese** see *Nymania capensis*

▷ **Lantern tree** see *Crinodendron hookerianum*

## LAPAGERIA

LILIACEAE/PHILESIACEAE

Genus of one species of woody, twining, evergreen climber occurring in moist forest habitats in Chile. It is grown for its very showy, pendent, oblong-bell-shaped flowers. The leaves are alternate and ovate. In frost-prone climates, grow in a cool greenhouse; elsewhere, it is best grown against a shady wall.

• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost with added sharp sand, in bright filtered light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained, neutral to acid soil in partial shade. In frost-prone areas, shelter from cold, drying winds and protect with a dry mulch in winter. Provide support. Pruning group 11, after flowering, but best left unpruned.

• **PROPAGATION** Sow seed that has been soaked in water for 48 hours, at 13–18°C (55–64°F) in spring. Take semi-ripe cuttings in late summer, or layer in autumn.

• **PESTS AND DISEASES** Aphids, mealybugs, scale insects, and thrips may be a problem, particularly under glass.

*L. rosea* [ ] ♀ (Chilean bellflower). Twining climber, spreading slowly by suckers, with ovate, dark green leaves, to 12cm (5in) long. From summer to late autumn, oblong-bell-shaped, fleshy, pink to red flowers, to 9cm (3½in) long, are borne singly or in twos or threes in the upper leaf axils. ‡ 5m (15ft). Chile.

*Lapageria rosea**Lapageria rosea*  
var. *albiflora*

\*\* (borderline). var. *albiflora* [ ] bears white flowers. 'Nash Court' has soft pink flowers with deeper mottling.

▷ *Lapeirousia cruenta* see *Anomatheca laxa*

▷ *Lapeirousia laxa* see *Anomatheca laxa*

▷ **Larch** see *Larix*

**Dunkeld** see *Larix x marschlinsii*

**European** see *Larix decidua*

**Golden** see *Pseudolarix amabilis*

**Hybrid** see *Larix x marschlinsii*

**Japanese** see *Larix kaempferi*

**Siberian** see *Larix sibirica*

**Western** see *Larix occidentalis*

## LARDIZABALA

LARDIZABALACEAE

Genus of 2 species of monoecious, woody, twining, evergreen climbers from woodland in Chile. They are grown mainly for their ternate to 3-ternate, dark green leaves and striking flowers with 6 fleshy tepals. Train on a pergola or trellis, or against a wall.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun or partial shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame in spring, or take semi-ripe cuttings in late summer or autumn.

• **PESTS AND DISEASES** Trouble free.

*L. bitemata*. Monoecious, sometimes dioecious climber. Ternate to 3-ternate, dark green leaves are composed of up to 9 ovate, rigid leaflets, 5–10cm (2–4in) long. From late autumn to winter, bears reflexed, 6-tepalled, purple-brown and white flowers, 2–2.5cm (¾–1in) across. Male flowers are borne in pendent racemes, 8–10cm (3–4in) long; female flowers are borne singly from the leaf axils. Edible, sausage-shaped purple berries are 5–8cm (2–3in) long. ‡ 3–4m (10–12ft). Chile. \*\*

## LARIX

**Larch**

PINACEAE

Genus of 10–14 species of upright, deciduous, monoecious, coniferous trees from coniferous forests of the N. hemisphere. They have attractive young foliage and normally brilliant, yellow to red autumn colour. The needle-shaped leaves are borne in loose spirals on the

*Larix decidua*

long shoots, and near-whorls on the short shoots. Terminal, erect, cylindrical or ovoid to conical, usually purple female cones are produced in spring, and turn woody and brown in the first season, usually persisting on the tree. Male cones are spherical to ovoid, and pink or yellow. Larches are useful as specimen trees, and are tolerant of a wide range of conditions.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any deep, well-drained soil in full sun.

• **PROPAGATION** Sow seed in a seedbed in early spring, graft in winter, or root semi-ripe cuttings in summer under mist; cuttings are difficult to root.

• **PESTS AND DISEASES** Honey fungus and adelgids may be a problem. Canker may cause dieback.

*L. decidua* [ ] ♀ △ syn. *L. europaea* (European larch). Conical, coniferous tree, often with a large, spreading crown when old, and with smooth, scaly grey bark, ridged on old trees. Linear, soft, pale green leaves, to 3.5cm (1½in) long, are borne on hairless shoots, which are straw-yellow during the first winter. Cylindrical to conical female cones, to

*Larix occidentalis*



3.5cm (1½in) long, have 40–50 scales, and protruding bracts. †30m (100ft) or more, ↔ 4–6m (12–20ft). Mountains of continental Europe. \*\*\*. 'Corley' is a dwarf, spreading or rounded shrub. Suitable for a rock garden; †↔ 1m (3ft).

*L. x eurolepis* see *L. x marschlinii*.

*L. europaea* see *L. decidua*.

*L. kaempferi* ♀ ♂ syn. *L. leptolepis* (Japanese larch). Conical, coniferous tree with fissured and scaly, rust-brown to grey bark. Very similar to *L. decidua*, but with purplish red winter shoots covered in a waxy bloom. Hairless shoots bear linear, grey-green or bluish green leaves, to 4cm (1½in) long. Conical female cones, to 3cm (1¼in) long, have reflexed scales and concealed bracts. †30m (100ft) or more, ↔ 4–6m (12–20ft). Japan. \*\*\*. 'Blue Haze' has brighter foliage.

*L. leptolepis* see *L. kaempferi*.

*L. x marschlinii* ♂ (♂ *L. decidua* x *L. kaempferi*) syn. *L. x eurolepis* (Dunkeld larch, Hybrid larch). Fast-growing, conical, coniferous tree with bloomed, slightly hairy yellow shoots, and linear, grey-green leaves, to 4cm (1½in) long. Conical female cones, to 3cm (1¼in) long, have slightly reflexed scales and only a few visible bract scales. † to 30m (100ft), ↔ to 6m (20ft). Garden origin. \*\*\*

*L. occidentalis* ♂ ♂ (Western larch). Coniferous tree with a narrowly conical crown and scaly, red-brown to brown bark, becoming furrowed and fissured with age. Pointed, linear, blue-green to grey-green leaves, 2.5–4cm (1–1½in) long, each with 2 white bands beneath, are held on stout, orange-brown shoots, which are hairy when young. Female cones, 2.5–4.5cm (1–1½in) long, are cylindrical to ovoid, with protruding bracts. † to 25m (80ft) or more, ↔ to 5m (15ft). W. North America. \*\*\*

*L. sibirica* ♂ syn. *L. russica* (Siberian larch). Conical, coniferous tree with scaly, rust-brown bark and bright yellow or yellowish grey shoots, which are hairy when young. Narrowly linear leaves, 2–4cm (¾–1½in) long, are bright green, each with 2 white bands beneath. Ovoid female cones, 3–4cm (1¼–1½in) long, have hairy scales. †10–30m (30–100ft), ↔ to 5m (15ft). N.E. Europe to Russia (Siberia) and China. \*\*\*

*L. russica* see *L. sibirica*.

▷ **Larkspur** see *Consolida*, *C. ajacis*

## LATANIA

*Latan palm*

ARECACEAE/PALMAE

Genus of 3 species of single-stemmed palms from seasonally dry areas, often near the coast, in the Mascarene Islands. Fan-shaped, grey- to light green leaves are borne in terminal clusters, with bowl-shaped, 3-petalled flowers borne on separate male and female panicles between them. Where temperatures fall below 16°C (61°F), grow in a warm greenhouse; in warmer climates, grow as specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added leaf mould and sharp sand, in full light with shade from the hottest sun. In growth, water freely and apply a balanced liquid fertilizer monthly; water



*Latania lontaroides*

sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 27°C

(81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*L. loddigesii* ♀ Small to medium-sized palm with blue-green leaf-blades, to 1.5m (5ft) across, deeply divided into many narrow lobes. Bears pale green or greenish white flowers in panicles to 1.5m (5ft) long, usually in summer. †10–16m (30–52ft), ↔ 3–3.5m (10–11ft). Mascarene Islands

(Mauritius). ☞ (min. 16°C/61°F)

*L. lontaroides* ♂ ♀ Small to medium-sized palm with deeply lobed, grey-green leaf-blades, to 1.5m (5ft) across, with red-purple-flushed bases and leaf-stalks. Greenish white to cream flowers are borne in panicles to 1.5m (5ft) long, usually in summer. †10–16m (30–52ft), ↔ 3–3.5m (10–11ft). Mascarene Islands (Réunion). ☞ (min. 16°C/61°F)

*L. versaffeltii* ♀ Small to medium-sized palm with yellow-margined, light green leaf-blades, to 1.2m (4ft) across, deeply divided into many slender lobes. Bears greenish white to cream flowers, usually in summer; male panicles are up to 3m (10ft) long, females to 1.7m (5½ft) long. †12–16m (40–52ft), ↔ 4m (12ft). Mascarene Islands (Rodrigues). ☞ (min. 16°C/61°F)

▷ **Latan palm** see *Latania*

## LATHRAEA

SCROPHULARIACEAE

Genus of 7 species of leafless, mainly subterranean, parasitic perennials from damp woodland in temperate Europe and Asia. Branching rhizomes bear usually rounded, scale-like, fleshy, ivory to mauve leaves. They are cultivated for their unusual, tubular, 2-lipped, white to mauve flowers, borne in raceme-like inflorescences at ground level in spring.



*Lathraea clandestina*

Grow at the base of a host tree or shrub. *L. clandestina* is parasitic on willow (*Salix*), poplar (*Populus*), and alder (*Alnus*). Other species parasitize other trees and are usually host-specific.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained soil in partial shade. Mulch with leaf mould in autumn.

• **PROPAGATION** Scatter seed at the base of a suitable host plant as soon as ripe.

• **PESTS AND DISEASES** Trouble free.

*L. clandestina* ♂ (Purple toothwort).

Parasitic, rhizomatous perennial with opposite, kidney-shaped, stem-clasping, scale-like white leaves, 5mm (¼in) long. Racemes of 4–8 tubular, 2-lipped mauve flowers, to 3cm (1¼in) long, are borne just above the ground in early and mid-spring. †2cm (¾in), ↔ indefinite. W. Europe. \*\*\*

## LATHYRUS

Everlasting pea

LEGUMINOSAE/PAPILIONACEAE

Genus of 150 species of annuals and herbaceous or evergreen perennials from sunny, sandy or shingle banks, grassy slopes, wasteland, or open woodland in N. temperate regions, N. and E. Africa, and temperate South America. They are grown for their showy, pea-like, often scented flowers, in many colours, which are produced from the leaf axils, either singly or in racemes. Stems are usually winged, and bear alternate, pinnate leaves. Many are climbers (with tendrils); others are clump-forming. The climbers are useful for growing through shrubs or over a bank. Sweet peas (*L. odoratus*) are suitable for a trellis or arch, or an annual border for cut flowers and exhibition. Clump-forming species and cultivars are suitable for a rock garden, woodland garden, or herbaceous border. Seeds may cause mild stomach upset if ingested.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, humus-rich, well-drained soil in full sun or light dappled shade. Climbers need support. For the best flowers from *L. odoratus*, incorporate well-rotted organic matter in the season before planting, and apply a balanced liquid fertilizer every 2 weeks while in growth. Dead-head regularly. Sweet peas are usually grown on cane pyramids or trellis. Long-stemmed, exhibition-quality blooms are grown as cordons in beds prepared in autumn. Bush sweet peas are dwarf, largely self-

supporting, non-climbing cultivars.

• **PROPAGATION** Soak seed and sow in containers in a cold frame in early spring; seed of annuals may also be sown *in situ* in mid-spring. Sweet peas may also be sown in autumn: pre-soak or chip seed and sow *in situ* in mild areas, or in containers in a cold frame where frosts are severe. Divide perennials in early spring, although they sometimes resent disturbance.

• **PESTS AND DISEASES** Aphids, slugs, snails, and thrips may be troublesome. *L. odoratus* may suffer from powdery mildew, *Fusarium* wilt, foot rot, root rot, and viruses.

*L. aureus*, syn. *L. luteus* of gardens, *L. vernus* var. *aurantiacus*, *Orobis aureus*.

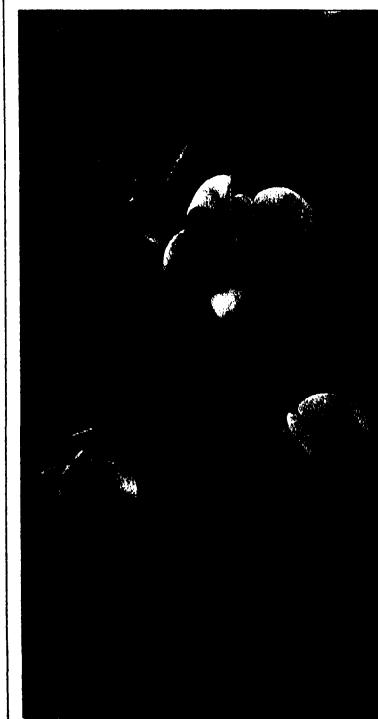
Clump-forming herbaceous perennial with upright, unwinged stems, and dark green leaves divided into 3–5 pairs of elliptic leaflets, 3.5–5cm (1½–2in) long. Bears one-sided racemes of 8–25 yellow-orange flowers, 1.5–2cm (½–¾in) long, from late spring to early summer. † to 60cm (24in), ↔ 30cm (12in). Ukraine (Crimea), Caucasus, N. Turkey. \*\*\*

*L. chloranthus*. Erect or scrambling, sparsely branched, annual climber with slender, winged stems, and mid-green leaves composed of one pair of elliptic leaflets, 2–6cm (¾–2½in) long.

Sulphur- to bright yellow flowers, 1.5–2.5cm (½–1in) long, are produced singly or in pairs in summer. † to 70cm (28in), sometimes more. C. and E. Turkey, N. Iraq, Iran, Armenia. \*

*L. gmelinii*, syn. *L. luteus*. Clump-forming herbaceous perennial, similar to *L. aureus*, with upright, unwinged stems, and mid-green leaves divided into 3–6 pairs of oval leaflets, to 10cm (4in) long. Produces one-sided racemes of 4–15 brown-striped, orange-yellow flowers, 2.5–3cm (1–1¼in) long, from late spring to midsummer. † to 90cm (36in), ↔ 30cm (12in). C. and S. Urals, Mountains of C. Asia. \*\*\*

*L. grandiflorus* ♂ (Everlasting pea). Herbaceous, perennial climber,



*Lathyrus grandiflorus*

*Lathyrus latifolius*

spreading by suckers, with unwinged stems. Mid-green leaves usually consist of one pair of ovate to elliptic leaflets, to 5cm (2in) long. Racemes of 1 or 2 (sometimes up to 4) pink-purple and red flowers, to 3cm (1¼in) long, are produced in summer. ‡ 1.5m (5ft). Italy (including Sicily), Slovenia to Albania, Bulgaria. \*\*\*

**L. latifolius** ■ ♀ (Everlasting pea, Perennial pea). Herbaceous, perennial climber with winged stems. Blue-green leaves consist of one pair of oblong-elliptic leaflets, 8–11cm (3–4½in) long, with 2 broad stipules. Racemes of 6–11 pink to purple flowers, 1.5–3cm (½–1¼in) long, are produced from summer to early autumn. ‡ 2m (6ft) or more. S. Europe. \*\*\*. **'Blushing Bride'** produces pink-flushed white flowers. **'White Pearl'** ♀ bears pure white flowers.

**L. linifolius** var. **montanus**, syn. **L. montanus** (Bitter vetch). Tufted herbaceous perennial with upright, winged stems, and blue-green leaves divided into 1–4 pairs of oval to linear leaflets, to 5cm (2in) long. From spring to early summer, produces long-stalked racemes of 2–6 reddish purple flowers, 1.5cm (½in) long. Suitable for a wild-flower garden. ‡ 30–40cm (12–16in), ↔ 20–40cm (8–16in). W. and C. Europe, Asia. \*\*\*

**L. luteus** sec **L. gmelinii**.

**L. luteus** of gardens sec **L. aureus**.

**L. magellanicus** of gardens sec **L. nervosus**.

**L. montanus** sec **L. linifolius** var. **montanus**.

**L. nervosus** ■ syn. **L. magellanicus** of gardens (Lord Anson's blue pea). Herbaceous, perennial climber with unwinged stems. Prominently veined, leathery, grey-green leaves consist of one pair of ovate leaflets, to 4cm (1½in) long, with prominent stipules. Long-stalked racemes of 3 fragrant, purplish blue flowers, to 2cm (¾in) long, are produced in summer. ‡ 5m (15ft). South America. \*\*

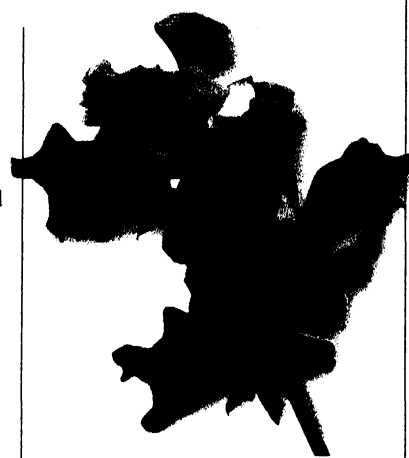
**L. odoratus** ♀ (Sweet pea). Annual climber with winged stems, and mid-to dark green leaves consisting of one pair of ovate-elliptic leaflets, 5–6cm (2–2½in) long. From summer to early autumn, produces racemes of 2–4 fragrant flowers, to 3.5cm (1½in) long, with wine-red standard petals and purple wings and keels. ‡ to 2m (6ft). Italy (including Sicily). \*\*\*. Many cultivars have been developed. "Old-

*Lathyrus nervosus*

fashioned", sweet peas were the earliest, selected mainly for their scent and intense colours; they have prominent stipules, and produce racemes of up to 4 small, highly scented flowers in single or mixed shades of white, red, pink, and blue. They are suitable for growing as a bush and for cutting. ‡ 2–2.5m (6–8ft). Newer developments, of which by far the most widely grown are the Spencer cultivars, have led to greater variety in the colour of the blooms, which occur in most colours except yellow. Spencer cultivars are vigorous, with prominent stipules, and bear racemes of 4 or 5 variably scented flowers, which may be single colours, bicoloured, picotee, or variably marked in contrasting colours, with upright standards and spreading wing petals, both waved. They are

excellent for cut flowers. ‡ 2–2.5m (6–8ft), much more as cordons.

Cultivars of **Bijou Group** ■ are bushy, with prominent stipules; they bear racemes of up to 4 slightly scented flowers, to 3.5cm (1½in) long, with small, wavy petals, in shades of pink, blue, red, or white. Require only limited support. ‡ to 45cm (18in). Cultivars of **Continental Group** are semi-climbing and vigorous, with prominent stipules, and bear racemes of up to 5 flowers in shades of red, blue, pink, or white, with flat standards and slightly waved, spreading wing petals. Suitable as a bush and for cutting. Require support. ‡ 1–1.1m (3–3½ft). **Early Multiflora** cultivars are vigorous, with prominent stipules, and bear racemes of 5–8 waved, lightly scented flowers in deep rose-pink, salmon-pink, lavender-blue, mid-blue, scarlet, or white. Suitable as a bush and ideal for cutting. Best in a cool greenhouse. ‡ 2–2.5m (6–8ft). **Explorer Group** ♀ cultivars have prominent stipules, and produce racemes of up to 4 waved flowers in mid-blue, navy blue, crimson, scarlet, rose-pink, light pink, purple, or white. Dead-head to prolong flowering. Grow as a bush, for cut flowers, or as ground cover if sown in autumn and pinched out twice. ‡ 60cm (24in), ↔ to 1m (3ft). Cultivars of **Galaxy Group** are vigorous, with prominent stipules, and bear racemes of up to 8 waved flowers in rose-pink, salmon-pink, scarlet, white, or lavender-blue. Grow as a bush (with support); ideal for cutting. ‡ 2–2.5m (6–8ft). **'Jayne Amanda'** ■ ♀ (Spencer cultivar) bears racemes of usually 4,

*Lathyrus odoratus* Bijou Group*Lathyrus odoratus* 'Jayne Amanda'

rarely 5, rose-pink flowers. Suitable as a cordon or bush. Cultivars of **Jet Set Group** are bushy, with prominent stipules, and bear racemes of up to 5 flowers in shades of red, blue, pink, and white; the upright standards and spreading wing petals are both slightly waved. Grow as a bush, or in rows for cutting (with support). ‡ 1–1.2 (3–4ft). Cultivars of **Knee-hi Group** are bushy, with prominent stipules, and bear racemes of up to 4 flowers in shades of red, blue, pink, and white, with the upright standards and spreading wing petals both slightly waved. Suitable as a bush with support. ‡ to 1m (3ft). **'Lady Fairbairn'** (Spencer cultivar) produces racemes of usually 4 lilac-pink flowers. Suitable as a cordon or bush. ‡ 2–2.5m (6–8ft). **'Mrs. Bernard Jones'** ♀ (Spencer cultivar) bears racemes of usually 4, occasionally 5, white-flushed, almond-pink flowers. Suitable as a cordon or bush. **Multiflora** cultivars are vigorous, with prominent stipules, and bear racemes of 5–8 waved, lightly scented flowers in mid-blue, lavender-blue, deep rose-pink, salmon-pink, scarlet, or white. Suitable as a bush and for cutting. Best in a cool greenhouse. ‡ 2–2.5m (6–8ft). **'Noel Sutton'** ■ ♀ (Spencer cultivar) produces racemes of 4, sometimes 5, heavily scented, mid-blue flowers, tinged mauve. Grow as a cordon or bush. **'Pink Cupid'** has prominent stipules, and bears racemes of 3–6 small, plain, strongly scented flowers, with pink standards and whitish pink wing petals. Ideal for growing in a tub, trough, or hanging basket. ‡ 15cm (6in), ↔ 45cm (18in). **'Quito'** (Old-

*Lathyrus odoratus* 'Noel Sutton'

*Lathyrus odoratus* 'White Supreme'

fashioned) has prominent stipules, and bears racemes of up to 4 small, plain, strongly scented flowers, with maroon standards and variously coloured wing petals. **Snoopea Group** cultivars lack tendrils, have prominent stipules, and bear racemes of up to 4 waved flowers in shades of red, blue, pink, and white. Dead-head to prolong flowering. Grow as a bush, or as ground cover if sown in autumn and pinched out twice. ‡ 60cm (24in), ↔ to 1m (3ft). Cultivars of **Supersnoop Group** are similar to Snoopea Group, but slightly stronger-growing. 'White Supreme' ♀ (Spencer cultivar) is vigorous, and bears racemes of usually 4, rarely 5, lightly scented white flowers. Grow as a cordon or bush; ideal for cutting.

**L. pratensis** (Common vetchling, Meadow vetchling). Variable, herbaceous, perennial climber with un-winged stems. Bluish green leaves are composed of one pair of linear-lance-shaped to elliptic leaflets, to 4cm (1½in) long. From late spring to summer, bears long-stalked racemes of 2–12 yellow flowers, to 1.5cm (½in) long. Suitable for a wildflower garden. ‡ 70–120cm (28–48in), ↔ to 2m (6ft). Europe, N. Africa to W. Asia. \*\*\*

**L. pubescens** ♀ Herbaceous, perennial climber with unwinged stems. Mid- to dark green leaves are composed of 1 pair (sometimes 2) of elliptic to lance-shaped leaflets, to 8cm (3in) long, with prominent stipules. In summer, bears long-stalked racemes of 6–16 pale to deep lilac-blue flowers, 0.8–1.5cm (⅓–½in) long. ‡ 3m (10ft). Chile, Argentina. \*\*

*Lathyrus pubescens**Lathyrus vernus*

**L. rotundifolius** (Persian everlasting pea). Herbaceous, perennial climber with winged stems. Mid-green leaves consist of one pair of ovate to elliptic leaflets, 3–4.5cm (1¼–1¾in) long. Small racemes of 4–11 dark purplish pink to brownish red flowers, 1.5–2cm (½–¾in) long, are produced in summer. ‡ 1m (3ft). Ukraine (Crimea), Caucasus, E. Turkey, Iraq, Iran. \*\*\*

**L. sativus** (Chickling pea). Scrambling, annual climber with angular, winged stems, and mid-green leaves divided into 2 or 3 pairs of narrowly elliptic, pointed leaflets, 4–6cm (1½–2½in) long. In summer, produces solitary, dainty blue flowers, to 1.5cm (½in) long, that fade to white and sometimes have pink veins. Largely grown for animal fodder, but suitable for a mixed or herbaceous border. ‡ to 1m (3ft), ↔ to 45cm (18in). C. and S. Europe, N. Africa, S.W. Asia. \*\*\*

**L. sylvestris** (Perennial pea). Herbaceous, perennial climber with winged stems. Mid-green leaves consist of one pair of slender, linear-elliptic leaflets, 5–15cm (2–6in) long, with one pair of narrow stipules. Long-stalked racemes of 3–8 pink flowers, to 2cm (¾in) long, with purplish pink wing petals, are produced from summer to early autumn. ‡ 2m (6ft). Europe, N.W. Africa, Caucasus. \*\*\*

**L. tingitanus**. Herbaceous, perennial climber with slender, winged stems, and mid- to deep green leaves divided into one pair of narrowly elliptic to oblong-elliptic or linear-elliptic leaflets, 4–8cm (1½–3in) long. Pale pink or crimson-magenta flowers, 2–3cm (¾–1¼in)

*Lathyrus vernus* 'Alboreus'

long, are produced singly or in twos or threes, in summer. ‡ to 1.5m (5ft). Spain, Portugal, Azores, Canary Islands, Morocco, Algeria, Sardinia. \*\*

**L. vernus** ♀ syn. *Orobis vernus* (Spring vetchling). Dense, clump-forming herbaceous perennial with un-winged, upright stems, and mid- to dark green leaves divided into 2–4 pairs of ovate to elliptic, sharp-pointed leaflets, 3–8cm (1¼–3in) long. In spring, bears one-sided racemes of 3–6 purplish blue flowers, to 2cm (¾in) long, that become almost greenish blue. ‡ 20–45cm (8–18in), ↔ 45cm (18in). Continental Europe, Turkey, Caucasus, Russia (Siberia). \*\*\*. 'Alboreus' ♀ bears pink-and-white flowers. **f. albus** bears white flowers. **var. aurantiacus** see *L. aureus*.

▷ **Lattice leaf plant** see *Aponogeton madagascariensis*

▷ **Laudanum** see *Cistus ladanifer*

▷ **Laurel** see *Prunus laurocerasus*, *P. lusitanica*

**Alexandrian** see *Danae racemosa*

**Bay** see *Laurus nobilis*

**California** see *Umbellularia californica*

**Cherry** see *Prunus laurocerasus*

**Diamond-leaved** see *Pittosporum rhombifolium*

**Eastern bog** see *Kalmia polifolia*

**Indian** see *Ficus microcarpa*

**Mountain** see *Kalmia latifolia*

**Portugal** see *Prunus lusitanica*

**Sheep** see *Kalmia angustifolia*

**Sierra** see *Leucothoe davisiae*

**Spotted** see *Aucuba japonica*

**Spurge** see *Daphne laureola*

**Tasmanian** see *Anopterus glandulosus*

**Western** see *Kalmia microphylla*

## LAURELIA

ATHEROSPERMATACEAE /  
MONIMIACEAE

Genus of 3 species of evergreen shrubs and trees occurring in forest and on streambanks in New Zealand, Chile, and Argentina. They are cultivated for their opposite, elliptic, entire or toothed, leathery, aromatic leaves. In summer, inconspicuous, often dioecious flowers are borne in axillary panicles or racemes. Grow in a shrub border, in a woodland garden, or against a warm, sunny wall.

• **HARDINESS** Fully hardy to frost hardy.  
• **CULTIVATION** Grow in moist but well-drained, moderately fertile soil in full sun or partial shade, in a site that is sheltered from cold, drying winds. Pruning group 1.

• **PROPAGATION** Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**L. sempervirens** ♀ syn. *L. serrata* of gardens. Dense, conical shrub or tree with narrowly elliptic to elliptic, very aromatic, bright green leaves, to 10cm (4in) long, with toothed margins, except near the bases. Axillary panicles of tiny, cup-shaped green flowers are produced in early summer. ‡ 15m (50ft), ↔ 10m (30ft), usually less. Chile, Argentina. \*\*\* (borderline)

**L. serrata** of gardens see *L. sempervirens*.

▷ **Laurentia axillaris** see *Solenopsis axillaris*

## LAURUS

LAURACEAE

Genus of 2 species of evergreen shrubs and trees from woodland, scrub, and rocky places in the Azores, the Canary Islands, and the Mediterranean. They are valued for their aromatic, alternate, ovate leaves. Small, greenish yellow male and female flowers are borne on separate plants. In areas with prolonged frosts, grow in a container and move into a cool greenhouse during winter and early spring. In warmer areas, grow as specimen trees, in a woodland garden, against a warm, sunny wall, or as a windbreak. They are effective in a container in a patio, as they tolerate clipping well.

• **HARDINESS** Frost hardy. Foliage may be damaged by strong, cold winds.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade, sheltered from cold, drying winds. Pruning group 1; clip topiary specimens twice during summer.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or take semi-ripe cuttings in summer.

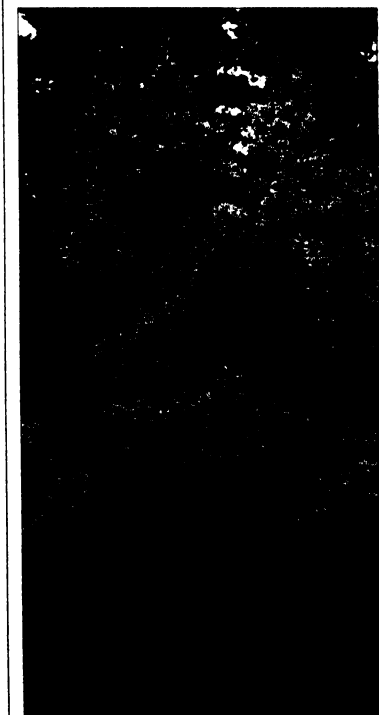
• **PESTS AND DISEASES** Bay sucker, scale insects, tortrix moth caterpillars, powdery mildew, and leaf spot may be troublesome.

**L. nobilis** ♀ ♂ (Bay laurel, Sweet bay).

Conical tree or large shrub with aromatic, narrowly ovate, glossy, dark green leaves, to 10cm (4in) long. In spring, bears clusters of greenish yellow flowers, 5mm (¼in) across, followed on female plants by broadly ovoid black berries, to 1.5cm (½in) long. Leaves are often used as a flavouring in cooking. Contact with foliage may aggravate skin allergies. ‡ 12m (40ft), ↔ 10m (30ft). Mediterranean. \*\*\*. 'Aurea' ♀ has golden yellow foliage.

▷ **Laurustinus** see *Viburnum tinus*

▷ **Lavandin** see *Lavandula x intermedia*

*Laurus nobilis* 'Aurea'

## LAVANDULA

Lavender

LABIATAE/LAMIACEAE

Genus of about 25 species of aromatic, evergreen shrubs and subshrubs occurring in dry, sunny, exposed, rocky habitats from the Canary Islands, the Mediterranean, and N.E. Africa to S.W. Asia and India. The leaves are opposite, and may be simple and entire, or toothed to pinnatifid, pinnate, or 2-pinnate, with the margins usually rolled under. They are cultivated for their mainly long-stalked spikes of fragrant, tubular, 2-lipped flowers, which, in many species, have a very high nectar content, making them particularly attractive to bees. In warm areas, lavenders are suitable for a variety of situations, from a shrub border to a rock garden, and are useful for edging and as a low hedge. In frost-prone climates, the half-hardy species should be grown at the base of a warm, sunny wall, or in a container which can be overwintered in a cool greenhouse or conservatory. The leaves and flowerheads are often dried for use in sachets or pot-pourri. If grown for drying, cut the flowerheads before they are fully open.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Pruning group 10, in early or mid-spring.

• **PROPAGATION** Sow seed in containers in a cold frame in spring, or take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Froghoppers, honey fungus, and grey mould (*Botrytis*) may be troublesome.

**L. angustifolia** (Lavender). Compact, bushy shrub with linear, grey-green leaves, to 5cm (2in) long. In mid- and late summer, long, unbranched stalks produce fragrant, pale to deep purple flowers in dense spikes, to 8cm (3in) long.  $\uparrow$  1m (3ft),  $\leftrightarrow$  1.2m (4ft). W. Mediterranean. \*\*\*. **'Hidcote'**  $\square$   $\varnothing$  is more compact, and produces silvery grey leaves and dark purple flowers;  $\uparrow$  60cm (24in),  $\leftrightarrow$  75cm (30in). **'Jean Davis'** produces pale pink flowers. **'Loddon Pink'**  $\square$  is more compact, and produces soft pink flowers;  $\uparrow$  45cm (18in),  $\leftrightarrow$  60cm (24in). **'Munstead'** produces blue-purple flowers;  $\uparrow$  45cm (18in),  $\leftrightarrow$  60cm (24in). **'Nana Alba'** is very compact, and produces spikes of white



Lavandula angustifolia 'Loddon Pink'

flowers;  $\uparrow$  30cm (12in). **'Twickel Purple'**  $\square$   $\varnothing$  has narrowly oblong leaves, to 5cm (2in) long, and bears purple flowers in midsummer;  $\uparrow$  60cm (24in),  $\leftrightarrow$  1m (3ft).

**L. dentata**  $\square$  Spreading, bushy shrub with linear-oblong, scalloped, dark green leaves, to 4cm (1½in) long. In mid- and late summer, long, unbranched stalks produce dense spikes, to 5cm (2in) long, of slightly fragrant, purple-blue flowers, tipped with purple bracts.  $\uparrow$  1m (3ft),  $\leftrightarrow$  1.5m (5ft). Atlantic islands, W. Mediterranean, Arabian Peninsula. \*\*

**L. x intermedia** (*L. angustifolia* x *L. latifolia*) (English lavender, Lavandin). Rounded shrub with branching stems bearing oblong to lance-shaped to almost spoon-shaped, aromatic, grey-green leaves, 4–6cm (1½–2½in) long, covered in fine, silvery grey hairs. In summer, light blue to violet flowers are produced in spikes 10–20cm (4–8in) long.  $\uparrow$  30–50cm (12–20in). Garden origin. \*\*\*. **'Grappenhall'** has narrowly oblong leaves, to 6cm (2½in) long, and bears spikes, to 7cm (3in) long, of slightly fragrant, blue-purple flowers;  $\uparrow$  1m (3ft),  $\leftrightarrow$  1.5m (5ft); \*. **'Seal'** bears pale purple flowers.



Lavandula angustifolia 'Twickel Purple'



Lavandula dentata

**L. lanata**  $\varnothing$  Rounded, bushy shrub with linear to inversely lance-shaped, densely white-woolly leaves, to 5cm (2in) long. Dense spikes, to 10cm (4in) long, of fragrant, dark purple flowers are produced on long, unbranched stalks in late summer.  $\uparrow$  75cm (30in),  $\leftrightarrow$  90cm (36in). S. Spain. \*\*

**L. latifolia** (Spike lavender). Upright, bushy shrub or subshrub with slender, elliptic or spoon-shaped to oblong-lance-shaped, grey-green leaves, to 6cm (2½in) long. In mid- and late summer, long, branched stalks produce fragrant, mauve-blue flowers in narrow, branching spikes, to 20cm (8in) long.  $\uparrow$  1m (3ft),  $\leftrightarrow$  1.2m (4ft). W. Mediterranean. \*\*

**L. pinnata**. Spreading, bushy shrub with pinnate, white-hairy, grey-green leaves, to 8cm (3in) long, consisting of numerous, oblong leaflets. In late summer, long, unbranched stalks bear fragrant, blue-purple flowers in spikes to 9cm (3½in) long.  $\uparrow$  1m (3ft). Canary Islands. \*\*

**L. stoechas**  $\square$   $\varnothing$  (French lavender). Compact, bushy shrub with linear, grey-green leaves, to 4cm (1½in) long. Dense, ovoid-oblong spikes, to 3cm (1¼in) long, of fragrant, dark purple flowers, topped by conspicuous, purple bracts, are borne on very short, unbranched stalks from late spring to summer.  $\uparrow$  60cm (24in). Mediterranean. \*\*\* (borderline).

**subsp. pedunculata**  $\varnothing$  has flower spikes borne on long stalks well above the foliage; Portugal, Spain.

**L. viridis**. Upright, bushy shrub with oblong, pale green leaves, to 5cm (2in)



Lavandula stoechas

long. In mid- and late summer, small white flowers emerge from short-stemmed, unbranched, dense spikes, 2–3cm (¾–1¼in) long, each with a cluster of green bracts at the tip.  $\uparrow$  60cm (24in),  $\leftrightarrow$  75cm (30in). Portugal, Spain, Madeira. \*\*

## LAVATERA

Mallow

MALVACEAE

Genus of approximately 25 species of annuals, biennials, herbaceous, semi-evergreen, or evergreen perennials, and deciduous, semi-evergreen, or evergreen subshrubs and shrubs. They have a wide distribution, occurring from the Azores, Canary Islands, W. Europe, and the Mediterranean to C. Asia, Russia (E. Siberia), Australia, and California, USA, and usually grow in dry, rocky places, often near coasts. They are cultivated for their showy, 5-petalled, saucer- or funnel-shaped flowers (similar to those of *Malva*), borne singly or in racemes, mainly in summer. Leaves are alternate, variably shaped, long-stalked, and usually palmately lobed. The annual, biennial, and short-lived perennial species are suitable for a herbaceous border or for summer bedding; shrubby lavateras are best grown in a shrub border or, in areas prone to severe frost, against a warm, sunny wall.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in ideally light, moderately fertile, well-drained soil in full sun. Shelter from cold, drying winds in frost-prone areas. Pruning group 6.

• **PROPAGATION** Sow seed of annuals *in situ* in mid- to late spring, or under glass in mid-spring. Sow seed of biennials in a cold frame in midsummer. Take softwood and greenwood cuttings of perennials in spring, and of subshrubs and shrubs in early summer. Propagate regularly as shrubs and perennials are often short-lived.

• **PESTS AND DISEASES** Prone to stem rot, rust, and soil-borne fungal diseases.



Lavatera arborea 'Variegata'

*Lavatera* 'Barnsley'

*L. arborea* (Tree mallow). Tree-like, woody-stemmed annual, biennial, or short-lived, evergreen perennial with stout stems and rounded, palmately 5- to 7-lobed, mid-green leaves, to 20cm (8in) long. Racemes of 2-7 funnel-shaped, purple-pink flowers, to 6cm (2½in) across, with darker veins, are profusely borne throughout summer. May be grown as a windbreak in a coastal garden. ‡ 3m (10ft), ↔ 1.5m (5ft). W. Europe, Mediterranean. \*\*.

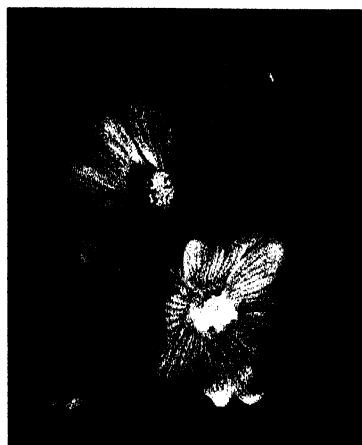
*'Variegata'* ■ has conspicuous white markings on the leaves.

*L. assurgentiflora*. Deciduous or semi-evergreen shrub with twisted shoots and palmately 5- to 7-lobed, mid-green leaves, to 15cm (6in) long, with heart-shaped bases and white-hairy lower surfaces. In midsummer, produces funnel-shaped, dark cerise-pink flowers, to 8cm (3in) across, with darker veins, singly or in racemes of 2-4. A good windbreak in coastal gardens. ‡ 2m (6ft), ↔ 1.5m (5ft). USA (California, Santa Catalina Islands). \*\*.

*L. 'Barnsley'* ■ Vigorous, semi-evergreen subshrub with palmately 3- to 5-lobed, grey-green leaves, to 12cm (5in) long. Throughout summer, bears profuse racemes of open funnel-shaped, red-eyed white flowers, to 7cm (3in) across, ageing to soft pink, with deeply notched petals. ‡ 2m (6ft). \*\*\*.

*L. bicolor* see *L. maritima*.

*L. 'Bredon Springs'* ■ Vigorous, semi-evergreen subshrub with palmately 3- to 5-lobed, grey-green leaves, to 12cm (5in) long. Funnel-shaped, mauve-flushed, dusky pink flowers, to 7cm (3in) across, are borne in profuse

*Lavatera* 'Bredon Springs'*Lavatera cachemiriana*

racemes throughout summer. ‡ 2m (6ft). \*\*\*.

*L. 'Bressingham Pink'*. Upright, shrubby, semi-evergreen perennial with rounded-heart-shaped, shallowly lobed, hairy, pale grey-green leaves, 9cm (3½in) long. From midsummer to early autumn, produces racemes of many saucer-shaped, pale pink flowers, 5-10cm (2-4in) across. ‡ 1.8m (6ft), ↔ 1.2m (4ft). \*\*\*.

*L. 'Burgundy Wine'*. Vigorous, semi-evergreen subshrub with palmately 3- to 5-lobed, grey-green leaves, to 12cm (5in) long. Profuse racemes of funnel-shaped, rich dark pink flowers, to 7cm (3in) across, with darker veins, are produced throughout summer. ‡ 2m (6ft). \*\*\*.

*L. cachemiriana* ■ syn. *L. cachemirica*. Annual, or short-lived, woody-based, semi-evergreen perennial, with rounded to heart-shaped, palmately 3- to 5-lobed, blunt-toothed leaves, 7-16cm (3-6in) long, mid-green above, downy beneath. Racemes of many open funnel-shaped, silky-textured, clear rose-pink flowers, to 8cm (3in) across, are borne in summer. ‡ to 2.5m (8ft), ↔ to 1.2m (4ft). India (Kashmir). \*\*\*.

*Lavatera* 'Kew Rose'*Lavatera trimestris* 'Mont Blanc'

*L. cachemirica* see *L. cachemiriana*.

*L. 'Candy Floss'*. Vigorous, semi-evergreen subshrub with palmately 3- to 5-lobed, grey-green leaves, to 12cm (5in) long. Profuse racemes of funnel-shaped, pale pink flowers, to 7cm (3in) across, are borne throughout summer. ‡ 2m (6ft). \*\*.

*L. 'Kew Rose'* ■ Vigorous, semi-evergreen subshrub with purplish green shoots and palmately 3- to 5-lobed, grey-green leaves, to 12cm (5in) long. Profuse racemes of funnel-shaped, bright pink flowers, to 7cm (3in) across, with darker veins, are borne throughout summer. ‡ 2m (6ft). \*\*.

*L. maritima* ♀ syn. *L. bicolor*, *L. maritima* var. *bicolor*. Upright, shrubby, evergreen perennial that bears almost rounded, shallowly lobed, toothed, hairy, grey-green leaves, to 6cm (2½in) long. From late summer to mid-autumn, produces solitary, axillary, saucer-shaped, pink, lilac-pink, or white flowers, 4-8cm (1½-3in) across, with magenta veins, each petal notched and with a magenta basal mark. ‡ 1.5m (5ft), ↔ 1m (3ft). W. Mediterranean. \*\*.

var. *bicolor* see *L. maritima*.

*L. mauritanica*. Downy annual with rounded to heart-shaped, shallowly 5- to 7-lobed, toothed, mid-green leaves, 3-5cm (1¼-2in) long. Racemes of many funnel-shaped purple flowers, to 3cm (1¼in) across, are produced in summer. ‡ 80cm (32in), ↔ to 30cm (12in). Algeria, Morocco. \*\*.

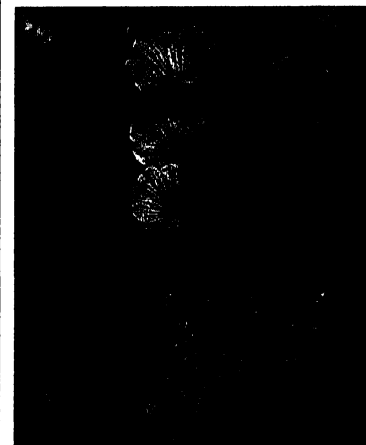
*L. olbia* 'Rosea' see *L. 'Rosea'*.

*L. 'Peppermint Ice'* see *L. thuringiaca* 'Ice Cool'.

*L. 'Rosea'* ♀ syn. *L. olbia* 'Rosea'. Vigorous, semi-evergreen subshrub with palmately 3- to 5-lobed, grey-green leaves, to 12cm (5in) long. Produces racemes of many funnel-shaped, dark pink flowers, to 7cm (3in) across, throughout summer. ‡ 2m (6ft). \*\*\*.

*L. 'Shorty'*. Semi-erect, semi-evergreen perennial with heart-shaped, lobed, hairy, pale green leaves, 5-8cm (2-3in) long. Racemes of many saucer-shaped, white or rose-pink flowers, to 5cm (2in) across, are produced from midsummer to early autumn. ‡ to 1m (3ft). \*\*\*.

*L. thuringiaca* (Tree lavatera). Upright herbaceous perennial with finely grey-hairy stems. Mid-green leaves, 9cm (3½in) long, are rounded with heart-shaped bases; basal leaves are unlobed, stem leaves are palmately 3- to 5-lobed. In summer, bears open funnel-shaped,

*Lavatera trimestris* 'Pink Beauty'*Lavatera trimestris* 'Silver Cup'

long-stalked, purple-pink flowers, to 8cm (3in) across, either singly in the leaf axils or in loose racemes. ‡ to 2m (6ft), ↔ 1.8m (6ft). C. and S.E. Europe.

\*\*\*. *'Ice Cool'*, syn. *L. 'Peppermint Ice'*, produces pure white flowers; ‡ 1.5m (5ft).

*L. trimestris* cultivars. Softly hairy annuals bearing rounded, shallowly 3-, 5-, or 7-lobed, mid- to dark green leaves, 3-6cm (1¼-2½in) long, with heart-shaped bases. Open funnel-shaped, pink, reddish pink, or white flowers, 7-10cm (3-4in) across, are produced singly from the upper leaf axils in summer. They provide good cut flowers. ‡ to 1.2m (4ft), ↔ to 45cm (18in). Mediterranean. \*\*\*.

*'Loveliness'* produces deep rose-pink flowers; ‡ 0.9-1.2m (3-4ft). *'Mont Blanc'* ■ is compact, with very dark green foliage and white flowers; ‡ 50cm (20in). *'Pink Beauty'* ■ bears purple-centred, very pale pink flowers, with purple veining; ‡ to 60cm (24in). *'Ruby Regis'* bears deep reddish pink flowers; ‡ to 60cm (24in). *'Silver Cup'* ■ produces bright rose-pink flowers, to 12cm (5in) across, with darker veining; ‡ to 75cm (30in).

▷ *Lavatera*, Tree see *Lavatera thuringiaca*

▷ *Lavender* see *Lavandula*, *L. angustifolia*

Cotton see *Santolina chamaecyparissus*

English see *Lavandula x intermedia*

French see *Lavandula stoechas*

Sea see *Limonium*, *L. latifolium*

Spike see *Lavandula latifolia*

## LAWSONIA

Henna tree, Mignonette tree

LYTHRACEAE

Genus of one species of evergreen shrub or small tree occurring in tropical forest from N. Africa to S.W. Asia and N. Australia. It has opposite, simple, entire leaves and large, terminal panicles of small, 4-petaled, fragrant flowers. In areas where temperatures drop below 13°C (55°F), grow *L. inermis* in a temperate or warm greenhouse. In warmer areas, plant in a shrub border or grow as a hedge. Widely cultivated in the tropics and subtropics, it is a source of the orange-red dye henna.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added sharp sand, in full light. When in full growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass. Clip hedges in early summer.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Take softwood cuttings in spring or hardwood cuttings in autumn.
- **PESTS AND DISEASES** Whiteflies and red spider mites may be troublesome under glass.

*L. alba* see *L. inermis*.

*L. inermis* ♀ syn. *L. alba*. Often spiny, large shrub, or sometimes small tree, with an open habit. Elliptic to narrowly obovate or broadly lance-shaped, slender-pointed, mid- to dark green leaves are 2–5cm (¾–2in) long. Many tiny, fragrant flowers, with 4 crumpled, clawed, broadly ovate or spoon-shaped, white, pink, or cinnabar-red petals, are borne in pyramidal panicles, 20–40cm (8–16in) long, mainly in summer. ‡ 3–6m (10–20ft), ↔ 2–4m (6–12ft). N. Africa to S.W. Asia, N. Australia. ☉ (min. 13°C/55°F)

## LAYIA

ASTERACEAE/COMPOSITAE

Genus of 15 species of erect to spreading, well-branched annuals, usually found in moist, grassy meadows, but also on sandy and gravelly soils in woodland or in stream washes, in W. USA. They are cultivated for their daisy-like, single, terminal flowerheads, which are composed of white, yellow, or white-tipped yellow ray-florets (each 3-toothed at the tip), and yellow disc-florets, and are profusely borne, mainly in summer. The alternate leaves are narrowly linear to oblong, and entire to finely divided or pinnatifid. Grow in a hot, dry, herbaceous or mixed border or bed, or on a bank. They provide long-lasting cut flowers.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in moist but well-drained, ideally light, sandy, moderately fertile to poor soil in full sun. Very fertile soil encourages lax growth.
- **PROPAGATION** Sow seed *in situ* in early spring or autumn. In frost-prone areas, protect autumn sowings with cloches.
- **PESTS AND DISEASES** Trouble free.

*L. elegans* see *L. platyglossa*.

*L. platyglossa*, syn. *L. elegans* (Tidy tips). Almost succulent-stemmed annual with usually linear to narrowly lance-shaped, toothed to pinnatifid, softly hairy, grey-green leaves, to 3cm (1¼in) long. From summer to autumn, bears flowerheads, to 5cm (2in) across, with white-tipped yellow ray-florets and deep golden yellow disc-florets. ‡ 30–45cm (12–18in), ↔ 24–30cm (10–12in). USA (California). \*\*\*

▷ **Leadwort** see *Plumbago*

**Cape** see *P. auriculata*

**Scarlet** see *P. indica*

▷ **Leatherleaf** see *Chamaedaphne calyculata*

▷ **Leatherwood** see *Cyrilla racemiflora*, *Dirca palustris*

▷ **Lechenaultia** see *Leschenaultia*

## LEDEBOURIA

HYACINTHACEAE/LILIACEAE

Genus of 16 species of semi-evergreen or evergreen, bulbous perennials occurring in seasonally dry, open areas or river valleys in South Africa. They are cultivated for their attractively marked leaves and their racemes of small, bell- or urn-shaped flowers, reminiscent of lily-of-the-valley (*Convallaria*); the flowers are produced in spring or summer. In areas where temperatures drop below 7°C (45°F), they are best grown in a conservatory or cool greenhouse. In warmer areas, grow in open sites in a rock or desert garden.

- **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Plant bulbs with the necks above soil level. Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. When in full growth, water freely and apply a high-potash fertilizer every 4 weeks; keep just moist in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed under glass in spring or autumn. Remove offsets in spring.

- **PESTS AND DISEASES** Trouble free.

*L. cooperi*, syn. *Scilla adlamii*, *S. cooperi*. Very variable, semi-evergreen,

bulbous perennial producing semi-erect, ovate to ovate-oblong or linear, mid- to dark green, basal leaves, 5–25cm (2–10in) long, with bold purple stripes. In summer, bears racemes of up to 50 bell-shaped, purple-pink flowers, 6mm

(¼in) long, tipped or striped green. ‡ 5–10cm (2–4in), ↔ 5cm (2in). South Africa. \*

*L. socialis* ♀ syn. *Scilla socialis*.

*S. violacea*. Evergreen, bulbous perennial bearing erect, broadly lance-shaped, fleshy, pale silvery green, basal leaves, to 10cm (4in) long, with large, dark green marks above, purple beneath. Racemes of up to 25 bell-shaped, purplish green flowers, 5mm (¼in) long, are produced in late spring or summer. ‡ 5–10cm (2–4in), ↔ 5cm (2in). South Africa (Northern Cape, Western Cape). \*

## X LEDODENDRON

ERICACEAE

Bigeneric hybrid genus of one evergreen shrub, a cross between *Rhododendron trichostomum* and *Ledum glandulosum* var. *columbianum*, with characteristics intermediate between those of its parents. It is grown for its lance-shaped, dark green leaves and large, terminal corymbs of tubular flowers. Grow in a woodland garden, or at the front of a shrub border or peat bank; associates well with dwarf rhododendrons.

- **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist but well-drained, acid soil in partial shade. Dead-head after flowering. Pinch out the stem tips on young plants to encourage a bushy habit. Pruning group 8.

• **PROPAGATION** Take semi-ripe cuttings in early summer.

- **PESTS AND DISEASES** Trouble free.

x *L. 'Arctic Tern'* ♀ syn. *Rhododendron 'Arctic Tern'*. Upright to spreading shrub with lance-shaped, hairy, dark green leaves, to 5cm (2in) long. Bears rounded corymbs of tubular, 5-lobed, pure white flowers, to 2cm (¾in) long, in late spring and early summer. ‡ to 60cm (24in). \*\*\*

## LEDUM

ERICACEAE

Genus of approximately 4 species of evergreen shrubs widely distributed in bogs, marshes, and moist, often coniferous woodland in cool-temperate regions of the N. hemisphere. They are cultivated for their compact habit, aromatic leaves (which are alternate, and may be linear, ovate, oval, or oblong), and their dense, terminal, umbel-like corymbs of small, 5-petaled white



*Ledum groenlandicum*

flowers, produced in spring or early summer. Suitable for a cool position in a heather garden or peat bed.

- **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist but well-drained, acid to neutral soil in full sun or partial shade. Pruning group 8.

• **PROPAGATION** Surface-sow seed in containers under glass in spring or autumn. Take semi-ripe cuttings in late summer. Layer in autumn.

- **PESTS AND DISEASES** Trouble free.

*L. glandulosum*. Bushy, rounded shrub with smooth shoots and ovate to oval leaves, to 5cm (2in) long, deeply veined and dark green above, white scaly beneath. In late spring, produces white flowers, to 1.5cm (½in) across, in rounded, terminal corymbs, 5cm (2in) across. ‡ 90cm (36in), ↔ 1.2m (4ft). W. North America. \*\*\*

*L. groenlandicum* ♀ (Labrador tea). Bushy, rounded shrub with rusty-woolly shoots and narrowly oval to elliptic-oblong leaves, to 5cm (2in) long, dark green above, densely rusty-felted beneath, with recurved margins. White flowers, 1–2cm (½–¾in) across, are borne in rounded, terminal corymbs, 5cm (2in) across, in late spring. ‡ 90cm (36in), ↔ 1.2m (4ft). Greenland, North America (Alaska, Canada south to N. USA). \*\*\*

*L. palustre* (Marsh ledum). Bushy, erect to spreading, usually rounded shrub with rusty-hairy shoots and narrowly oblong to linear leaves, 1–5cm (½–2in) long, dark green above, rusty-hairy beneath, with recurved margins. In late spring, bears white flowers, to 1.5cm (½in) across, in rounded, terminal corymbs, 5cm (2in) across. ‡ 0.3–1.2m (1–4ft), ↔ to 75cm (30in). N. Europe, N. Asia, North America. \*\*\*

f. *decumbens* is more or less mat-forming, with linear leaves, to 2cm (¾in) long; ‡ 20cm (8in), ↔ 1m (3ft).

▷ **Ledum, Marsh** see *Ledum palustre*



*Ledebouria socialis*



## LEEAE

## LEEACEAE

Genus of about 40 species of evergreen shrubs and small trees found in humid forest in tropical Africa, Madagascar, and from India to Malaysia. The alternate or opposite, often velvety leaves are simple to 3-pinnate, and are often flushed red to bronze when young. Small flowers, with tubular bases and 5, sometimes only 4, petal lobes, are borne in flattened, axillary or terminal cymes. Where temperatures drop below 16°C (61°F), grow mainly for their foliage, as houseplants or in a warm greenhouse. In warmer areas, they are distinctive specimens for a small lawn, and are also useful for hedging.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light and moderate humidity. When in full growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in partial or dappled shade. Pruning group 9; need restrictive pruning under glass. Prune hedges in spring.
- **PROPAGATION** Sow seed at 18°C (64°F) in spring, take semi-ripe cuttings in summer, or air layer in spring or early autumn.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*L. coccinea* (West Indian holly). Open shrub, becoming denser with age, bearing 2- or 3-pinnate leaves, to 60cm (24in) long, with numerous, oblong-lance-shaped to elliptic or obovate, slender-pointed, toothed leaflets, bronzed when young, maturing to glossy, deep green. Even when young, bears terminal cymes, 8–12cm (3–5in) across, of rounded scarlet buds opening to small pink flowers with yellow anthers, mainly in summer. ‡ 1.5–2.5m (5–8ft), ↔ 1–1.5m (3–5ft). Burma. ♀ (min. 16°C/61°F)

▷ **Leek, Roundheaded** see *Allium sphaerocephalon*

## LEGOUSIA

## CAMPANULACEAE

Genus of about 15 species of small, erect or spreading, unbranched or bushy annuals occurring on arable or stony ground in N. Africa, from Spain to Greece, and in the Caucasus, Turkey, Cyprus, Syria, Iraq, and Iran. They have ovate, oblong, or lance-shaped, wavy-margined, light to mid-green leaves, and produce small, 5-lobed, saucer- to bell-shaped flowers, singly or in delicate panicles or corymbs. Suitable for an annual border or wildflower garden. They provide unusual cut flowers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed *in situ* in autumn or mid-spring.
- **PESTS AND DISEASES** Trouble free.

*L. speculum-veneris*, syn. *Specularia speculum-veneris* (Venus's looking glass). Erect, bushy annual with oblong to

inversely lance-shaped, toothed leaves, 1.5–5cm (½–2in) long. From early summer to autumn, saucer-shaped, white-centred, violet-blue, occasionally white or pale purple flowers, to 2cm (¾in) across, with prominent, reflexed sepals, are profusely borne, either singly or in corymbs of 2 or 3, at the tips of branching stems. ‡ to 30cm (12in), ↔ 10cm (4in). C. and S. Europe, N. Africa, Cyprus, W. Syria, N. Iraq, Caucasus. \*\*\*

## LEIOPHYLLUM

## ERICACEAE

Genus of one species of upright to mat-forming, evergreen shrub from acid woodland in E. USA. It is grown for its glossy foliage and abundance of star-shaped white flowers borne in terminal, umbel-like corymbs. Grow in a peat bed, shrub border, or woodland garden. It may spread widely by suckers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, acid soil in partial or deep shade. In frost-prone areas, protect from cold, drying winds. Pruning group 8.
- **PROPAGATION** Surface-sow seed in containers outdoors in spring, take softwood cuttings in early summer, or pot up rooted suckers in spring.
- **PESTS AND DISEASES** Trouble free.

*L. buxifolium* ♂♀ (Sand myrtle). Bushy, usually suckering shrub with upright and spreading stems. Oblong or ovate, glossy, dark green leaves, to 1cm (½in) long, are tinted bronze in winter.



*Leiophyllum buxifolium* (inset: flower detail)

In late spring and early summer, bears pink-budded white flowers, 6mm (¼in) across, in dense corymbs, to 2.5cm (1in) across. ‡ 30–60cm (12–24in), ↔ 60cm (24in) or more. USA (New Jersey to Florida). \*\*\*. 'Nanum' is compact, with pink flowers; ‡ 5–10cm (2–4in), ↔ 30cm (12in) or more.

## LEIPOLDTIA

## AIZOACEAE

Genus of about 20 species of erect or prostrate, shrubby, perennial succulents from periodically very dry areas of Namibia and South Africa. Leaves are opposite, often laterally compressed, thicker than wide, and often marked with raised spots. Daisy-like, pink or reddish purple flowers are borne singly or in cymes of 2–5 in summer, followed by ovoid green capsules with rough, papillose seeds. In frost-prone areas, they are best grown in a bowl garden or a warm greenhouse. In frost-free climates, they are effective in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. When in full growth, water sparingly and apply low-nitrogen fertilizer every 4–6 weeks; keep dry when dormant. Outdoors, grow in poor, sharply drained soil in full sun. Protect from winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or take cuttings of stem sections in late spring.
- **PESTS AND DISEASES** Vulnerable to greenfly and other aphids while flowering.

*L. weigangiana*. Erect, perennial succulent with woody stems, 3mm (¼in) thick, and yellowish white bark. Boat-shaped, 3-angled, spotted, bluish green leaves are 1.5cm (½in) long by 5mm (¼in) thick. Produces solitary, violet to pink flowers, 2cm (¾in) across, in summer. ‡ to 50cm (20in), ↔ 25cm (10in). Namibia. ♀ (min. 10°C/50°F)

- ▷ *Lemaireocereus euphorbioides* see *Neobuxbaumia euphorbioides*
- ▷ *Lemaireocereus thurberi* see *Stenocereus thurberi*

## LEMOGLOSSUM

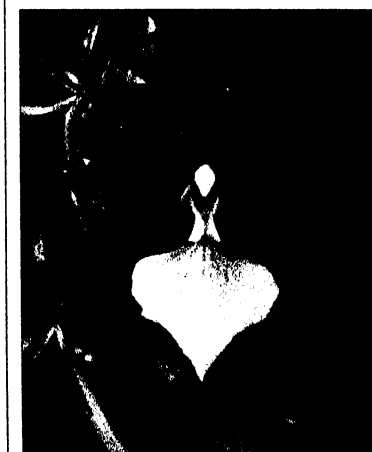
## ORCHIDACEAE

Genus of about 14 species of evergreen, mostly epiphytic, rhizomatous orchids (often included within the genus *Odontoglossum*) occurring in humid forests at altitudes of 1,300–3,000m (4,300–10,000ft) in Mexico and Central and South America. They have broadly ovoid to oblong-ovoid, clustered pseudobulbs, each producing up to 3 linear, lance-shaped, ovate, or elliptic leaves. Flowers are produced in racemes from the bases of the pseudobulbs.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow in fine-grade epiphytic orchid compost in a container that constricts the roots. In summer, provide high humidity and bright filtered light, water freely, apply fertilizer at every third watering, and mist once or twice daily. In winter, provide full light and water sparingly. See also p.46.
- **PROPAGATION** Divide when the plants fill and overflow their containers.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*L. bictoniense* ♂♀ syn. *Odontoglossum bictoniense*. Epiphytic orchid with ovoid, compressed pseudobulbs, each with 2 or 3 elliptic-oblong to linear leaves, 10–45cm (4–18in) long. Light green flowers, 2.5cm (1in) across, heavily barred with brown, with heart-shaped, white or pink lips, are borne in tall, upright racemes from winter to spring. ‡ 60cm (24in), ↔ 30cm (12in). Mexico, Guatemala, El Salvador. ♀ (min. 10°C/50°F; max. 24°C/75°F)

*L. cervantesii*, syn. *Odontoglossum cervantesii*. Epiphytic orchid with ovoid pseudobulbs, each with one ovate-lance-shaped to elliptic-oblong leaf, 4–30cm (1½–12in) long. From winter to spring,



*Lemoglossum bictoniense*



*Lemboglossum rossii*

bears short, arching racemes of white to pink flowers, 4–6cm (1½–2½in) across, with narrow, central red spots and bands. ↗ 15cm (6in). S. Mexico, Guatemala. ☼ (min. 10°C/50°F; max. 24°C/75°F)

**L. cordatum**, syn. *Odontoglossum cordatum*. Epiphytic orchid with oblong, compressed, furrowed pseudobulbs, each with one narrowly elliptic, leathery leaf, 9–30cm (3½–12in) long. Brown-marked, green, white, or yellow flowers, to 6cm (2½in) across, are borne in erect racemes in late summer. ↗ 20cm (8in), ↗ 15cm (6in). Central America, Venezuela. ☼ (min. 10°C/50°F; max. 24°C/75°F)

**L. rossii** ☐ syn. *Odontoglossum rossii*. Epiphytic orchid with ovoid pseudobulbs, each with one elliptic or elliptic-lance-shaped leaf, 5–20cm (2–8in) long. White, pink, or sometimes yellow flowers, 5–7cm (2–3in) across, with brown to pink-brown bars or spots on the sepals and petal bases, are borne in short, arching racemes from late winter to spring. ↗ 15cm (6in). Mexico, Guatemala, Honduras, Nicaragua. ☼ (min. 10°C/50°F; max. 24°C/75°F)

**L. stellatum**, syn. *Odontoglossum stellatum*. Epiphytic orchid with narrowly oblong pseudobulbs, each with one ovate to elliptic or inversely lance-shaped leaf, 6–15cm (2½–6in) long. From winter to spring, produces short, arching racemes of yellowish white flowers, 4cm (1½in) across, barred with brown (or sometimes entirely brown), with large, pink or white lips spotted deep pink. ↗ 15cm (6in). Mexico, Guatemala, El Salvador. ☼ (min. 10°C/50°F; max. 24°C/75°F)

▷ *Lembotropsis nigricans* see *Cytisus nigricans*

▷ *Lemon* see *Citrus limon*  
Meyer's see *C. limon* 'Meyer'

▷ *Lemon balm* see *Melissa officinalis*

▷ *Lemon verbena* see *Aloysia triphylla*

▷ *Lemonwood* see *Pittosporum eugenoides*

## LENOPHYLLUM

CRASSULACEAE

Genus of about 6 species of clustering, perennial succulents from low-lying, often scrub or woodland areas of California, Texas, and New Mexico, USA, and Mexico. Very variably shaped, fleshy leaves are borne mainly in opposite pairs, forming loose, basal rosettes. Sparsely leafy flowering stems produce small, 5-petalled flowers, borne singly or in terminal racemes or panicles, from summer to winter. In areas where temperatures drop below 5°C (41°F), they may be grown outdoors in summer, but need to be protected in a temperate greenhouse at other times. In warmer climates, grow permanently outdoors in a shrub border or a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to late summer, water freely and apply a balanced liquid fertilizer every 6–8 weeks. Water moderately in autumn and keep just moist in winter. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or divide offsets, in spring or early summer. Root leaf cuttings in summer.

• **PESTS AND DISEASES** Prone to greenfly while flowering.

**L. guttatum**. Rosetted, perennial succulent with ovate-elliptic to diamond-shaped, blunt-tipped, grey-green leaves, 2–3.5cm (¾–1½in) long, with purple-black spots, the upper surfaces broadly grooved. Cup-shaped, thick-sepal, pale yellow flowers, to 1cm (½in) across, later tinged red, are produced in open, sparsely branched panicles from summer to autumn. ↗ 10–12cm (4–5in). N.E. Mexico. ☼ (min. 5°C/41°F)

**L. texanum**. Perennial succulent with loose rosettes of very thick, lance-shaped to ovate, mid-green leaves, 1.5–3cm (½–1¼in) long. Cup-shaped, fleshy, primrose-yellow flowers, 6–8mm (¼–⅓in) across, with red-tipped petals, are borne in few-branched panicles from late summer to early winter. ↗ to 10cm (4in), ↗ to 20cm (8in). USA (Texas), N.E. Mexico. ☼ (min. 5°C/41°F)

▷ *Lenten rose* see *Helleborus orientalis*

▷ *Lentisc* see *Pistacia lentiscus*

## LEONOTIS

LABIATAE/LAMIACEAE

Genus of about 30 species of aromatic annuals, perennials, and evergreen to semi-evergreen subshrubs and shrubs (deciduous in cold climates) from upland grassland and rocky areas, mainly in South Africa, with one species widely distributed in tropical regions. They have square stems and opposite, lance-shaped to ovate leaves, and are cultivated for their showy whorls of 2-lipped flowers produced in terminal, leafy, raceme-like inflorescences. In frost-prone climates, they may be treated as tender perennials and grown in a cool greenhouse, or planted

outdoors once there is little risk of frost. In warmer areas, grow outdoors in a border or against a warm wall.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in full growth, water freely and apply a balanced liquid fertilizer every 6–8 weeks; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 10, in spring, if grown permanently outdoors; if grown under glass or as tender perennials, cut to ground level in early spring.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or take greenwood cuttings in late spring or summer.

• **PESTS AND DISEASES** Susceptible to grey mould (*Botrytis*), red spider mites, and whiteflies under glass.

**L. leonurus** ☐ (Lion's ear). Upright, semi-evergreen or deciduous shrub or subshrub with lance-shaped to inversely lance-shaped, entire or scalloped, mid-to deep green leaves, 6–12cm (2½–5in) long. From autumn to early winter, produces whorls of tubular, 2-lipped, orange-red to scarlet flowers, 6cm (2½in) long. ↗ 2m (6ft) or more, ↗ 1m (3ft) or more. South Africa (except PWV and North West province). \*

'Harrismith White' bears white flowers.

**L. ocymifolia**. Woody-based, herbaceous perennial with ovate, toothed or scalloped, mid-green leaves, to 8cm (3in) long, with very hairy undersides. From late summer to autumn, produces dense whorls of tubular, 2-lipped, velvety-haired orange



*Leonotis leonurus*

flowers, to 4cm (1½in) long, with the upper lip twice as long as the lower. ↗ to 3m (10ft), ↗ 1m (3ft). South Africa (except for Orange Free State, PWV, and North West province). \*

## LEONTICE

BERBERIDACEAE

Genus of 3 species of tuberous perennials occurring on dry hillsides in N. Africa, the E. Mediterranean, the Middle East, and S.W. and C. Asia. They are cultivated for their large, axillary or terminal racemes or panicles of small, cup-shaped flowers held above 3-palmate or pinnate leaves. Grow in an alpine house or bulb frame.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant tubers 20cm (8in) deep in autumn. Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in full light. When in growth, water moderately and apply a low-nitrogen fertilizer every 6–8 weeks; keep dry when dormant. Outdoors, grow in any well-drained soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.

• **PESTS AND DISEASES** Trouble free.

**L. leontopetalum**. Tuberous perennial with grey-green, basal leaves, to 25cm (10in) wide, each usually divided into 3 broadly obovate leaflets. From spring to early summer, produces panicles of cup-shaped yellow flowers, to 1.5cm (½in) across, which open flat. ↗ 20–80cm (8–32in), ↗ 15cm (6in). N. Africa, E. Mediterranean to Iran. \*\*

## LEONTOPODIUM

Edelweiss

ASTERACEAE/COMPOSITAE

Genus of approximately 35 species of perennials found in grassland and stony habitats in the mountains of Europe and Asia. They have simple, entire, hairy, mainly basal leaves. Upright stems bear compact, terminal cymes of small flowerheads consisting only of yellowish white disc-florets, surrounded by leaf-like, usually white-felted bracts. Easily grown, most species are suitable for a rock garden, raised bed, or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in sharply drained, neutral to alkaline soil in full sun. Protect from excessive winter wet. In an alpine house, grow in loam-based potting compost (J1 No.1) with added grit or sharp sand.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide in early spring, although divisions are slow to establish.

• **PESTS AND DISEASES** Susceptible to slugs and snails outdoors, and to aphids and red spider mites under glass.

**L. alpsiodorum** see *L. haplophyllodes*.

**L. alpinum** ☐ (Edelweiss). Clump-forming perennial with linear to oblong-lance-shaped, grey-green, basal leaves, to 4cm (1½in) long. In spring or early summer, bears conspicuous heads of yellowish white flowers surrounded by stars of flannel-textured, grey-white bracts, 3–10cm (1¼–4in) across. ↗ 20cm (8in) ↗ 10cm (4in). Mountains of Europe. \*\*\*. *subsp. nivale*, syn. *L. nivale*, has densely white-hairy leaves,

*Leontopodium alpinum*

and bears woolly, pure white flower-heads and bracts, on short stems: ♂ to 15cm (6in); C. Apennines, mountains of Bulgaria and former Yugoslavia.

***L. haplophyloides***, syn. *L. alysiodorum*. Upright, clump-forming or tufted perennial with linear-lance-shaped, lemon-scented, hairy, grey-green leaves, 5–7cm (2–3in) long, spotted black beneath. In early summer, bears yellowish white flowers surrounded by stars of many white-hairy, grey-green bracts, 5cm (2in) across. More tolerant of winter wet than *L. alpinum*. ♂ 30cm (12in), ♀ to 20cm (8in). Mountains of C. and S.W. China. \*\*\*

***L. nivale*** see *L. alpinum* subsp. *nivale*.

***L. stracheyi***. Mound-forming perennial with ovate-lance-shaped to linear leaves, to 4.5cm (1¾in) long, sparsely grey-hairy above, grey-downy beneath. In spring, bears short-stemmed heads of glistening, yellowish white flowers surrounded by many white-felted bracts, to 6cm (2½in) across. ♂ to 50cm (20in), ♀ to 30cm (12in). Himalayas, Mountains of India (Uttar Pradesh) to S.W. China. \*\*\*

▷ **Leopard's bane** see *Doronicum*

▷ **Leopoldia comosa** see *Muscari comosum*

▷ **Lepachys columnifera** see *Ratibida columnifera*

▷ **Lepachys pinnata** see *Ratibida pinnata*

## LEPIDOZAMIA

ZAMIACEAE

Genus of 2 species of palm-like, dioecious cycads from slopes, gullies, and rainforest in E. Australia. The erect trunks are clad in old leaf bases, with the pinnate, light or deep green leaves borne in terminal whorls. Narrow, cone-like, green to brown, male or female flower-heads ("cones") are borne in the centres of the leaf rosettes. In frost-prone climates, grow in a temperate or warm greenhouse or as houseplants. In frost-free climates, grow as specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of equal parts garden compost, loam, and coarse bark, with added slow-release fertilizer, grit, and charcoal, in bright filtered light. Water moderately when in growth, sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun or partial shade.

*Lepidozamia hopei*

• **PROPAGATION** Sow seed at 24°C (75°F) in spring.

• **PESTS AND DISEASES** Red spider mites, mealybugs, and scale insects may be troublesome under glass.

***L. hopei*** ♂ ♀ Medium-sized to tall cycad with ascending to arching, pinnate, light green leaves, to 3m (10ft) long, each consisting of many lance-shaped, curved, lustrous leaflets. Green to brown flowering cones are borne usually in summer: the ovoid females to 60cm (24in) long, the cylindrical males to 80cm (32in) long. ♂ to 20m (70ft), ♀ to 6m (20ft). Australia (N.E. Queensland). ☼ (min. 13–15°C/ 55–59°F)

***L. peroffskyana*** ♀ Medium-sized to tall cycad with pinnate, deep green leaves, to 3m (10ft) long, composed of linear to lance-shaped, lustrous leaflets, each with a yellow basal gland. Green to brown flowering cones are borne in summer: the ovoid females to 60cm (24in) long, the cylindrical males to 80cm (32in) long. ♂ to 20m (70ft), ♀ to 6m (20ft). Australia (Queensland, New South Wales). ☼ (min. 13–15°C/ 55–59°F)

## LEPTINELLA

ASTERACEAE/COMPOSITAE

Genus of approximately 30 species of annuals and creeping, tufted, or mat-forming perennials from subalpine grassland and rocky areas in Australasia and South America. They form low carpets of pinnatifid, pinnatisect, or pinnate, often aromatic leaves, and bear solitary, button-like flowerheads on short stalks from late spring to summer.

*Leptinella atrata*

Effective as low ground cover and tolerant of some treading, they are suitable for paving crevices or gravel gardens, but are mostly too invasive for a rock garden. *L. atrata* is suitable for a scree bed or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, sharply drained soil in full sun.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

***L. atrata*** ♂ syn. *Cotula atrata*.

Creeping, tufted perennial with fern-like, broadly elliptic, 2-pinnatifid, purple-tinged, grey-green leaves, to 8cm (3in) long. In late spring and early summer, bears hemispherical, purplish black flowerheads, to 1.5cm (½in) across, with yellow anthers that become prominent as the flowers mature. ♂ to 15cm (6in), ♀ to 20cm (8in). New Zealand. \*\*\*. **subsp. *luteola*** has less deeply divided leaves, and bears conical flowerheads with dark red-brown centres and very prominent, creamy white stigmas.

***L. pectinata***. Tufted or mat-forming perennial with narrowly oblong, hairy or hairless, sometimes toothed, pinnatifid to pinnate leaves, 4cm (1½in) long, with linear to lance-shaped leaflets or lobes. White or pale yellow-red flowerheads, to 8mm (¾in) across, are produced in late spring and early summer. ♂ to 15cm (6in), ♀ to 45cm (18in). New Zealand. \*\*\*

## LEPTOSPERMUM

Tea tree

MYRTACEAE

Genus of about 80 species of evergreen shrubs and trees occurring in rainforest and semi-arid areas mainly in Australia, but also from S.E. Asia to New Zealand. They are cultivated for their usually aromatic, neat foliage and their small, sometimes profusely borne flowers. The variably shaped leaves are alternate, entire, and hairless to densely silky-hairy. The flowers are produced from the leaf axils, either singly or in clusters of 2 or 3, and are shallowly cup-shaped to star-shaped, each with 5 white, red, or pink, clawed, usually broadly ovate petals. In frost-prone areas, grow hardy species against a warm, sunny wall, and half-hardy and frost-tender species in a cool greenhouse or conservatory. A few

are also suitable for an alpine house. In warmer areas, grow in a shrub border.

• **HARDINESS** Fully hardy (borderline) to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light or bright filtered light. When in active growth, water freely and apply a balanced liquid fertilizer every 4 weeks; water sparingly in winter.

Outdoors, grow in moderately fertile, well-drained soil in full sun or partial shade. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in autumn or spring, or root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

***L. flavescens*** see *L. polygalifolium*.

***L. grandiflorum***, syn. *L. rodwayanum*. Upright shrub with white-hairy stems and ovate to elliptic, aromatic, silky-hairy, grey-green leaves, to 1.5cm (½in) long. Solitary, saucer-shaped, white or, rarely, pale pink flowers, to 2cm (¾in) across, are produced in mid- and late summer. ♂ 4m (12ft), ♀ 2m (6ft). Australia (Tasmania). \*\*

***L. humifusum*** see *L. rupestre*.

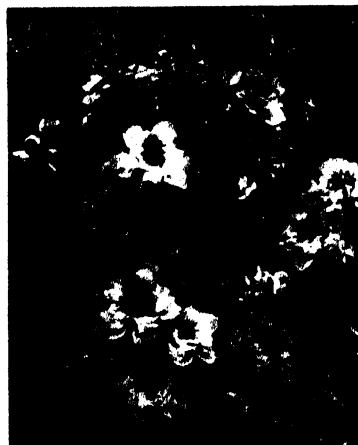
***L. lanigerum*** ♂ ♀ syn. *L. pubescens* (Woolly tea tree). Freely branching, erect shrub or tree with softly hairy and often red-flushed green stems. Crowded, more or less spreading, obovate-oblong to oval, aromatic leaves, 0.5–1.5cm (¼–½in) long, often have recurved points, and are usually grey silky-hairy, at least beneath. From late spring to summer, bears solitary, shallowly cup-

*Leptospermum lanigerum*

*Leptospermum rupestre*

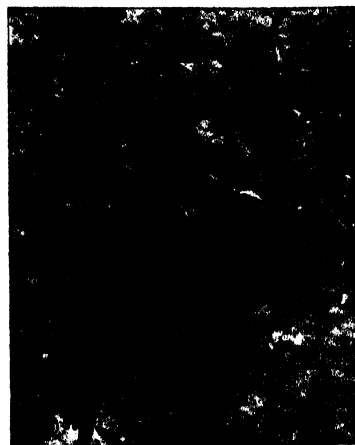
shaped white flowers, to 1.5cm (½in) across, with prominent red-brown calyces. ‡ 3–5m (10–15ft), ↔ 1.5–3m (5–10ft). Australia (New South Wales, Victoria, Tasmania). \*\*

**L. polygalifolium** ♀ syn. *L. flavescens*. Erect to spreading, freely branching shrub or tree. Crowded, spreading or occasionally reflexed, mid- to deep green leaves, 0.5–2cm (¼–¾in) long, are linear to inversely lance-shaped-elliptic, with conspicuous oil glands, and sometimes lightly aromatic. From late spring to summer, bears a profusion of solitary, cup-shaped, white or cream, sometimes green- or pink-tinted flowers, 1cm (½in) across. ‡ 2–7m (6–22ft), ↔ 1–3m (3–10ft). Australia (Queensland, New South Wales, Lord Howe Island). \* **L. prostratum** see *L. rupestre*.

*Leptospermum scoparium* 'Gaiety Girl'

**L. pubescens** see *L. lanigerum*.  
**L. rodwayanum** see *L. grandiflorum*.  
**L. rupestre** ♂♀ syn. *L. humifusum*, *L. prostratum*, *L. scoparium* var. *prostratum*. Prostrate shrub, sometimes mounded and bushy, with dense foliage. Broadly to narrowly elliptic or obovate, glossy, deep green leaves, 0.7–2cm (¼–¾in) long, are spreading and aromatic. Star-shaped white flowers, to 1cm (½in) across, are borne singly or in pairs from late spring to summer. ‡ 0.3–1.5m (1–5ft), ↔ 0.9–1.5m (3–5ft). Australia (Tasmania). \*\* (borderline)

**L. scoparium** ♂ (Manuka, New Zealand tea tree). Compact shrub, rarely tree-like, with arching shoots and ascending to widely spreading, elliptic, broadly lance-shaped, or inversely lance-

*Leptospermum scoparium* 'Kiwi'

shaped, aromatic, mid- to dark green leaves, 0.7–2cm (¼–¾in) long, often silver-hairy when young. Solitary, shallowly cup- to saucer-shaped, white or pink-tinged white flowers, 1.5cm (½in) across, are profusely borne in late spring and early summer. ‡ 3m (10ft). S.E. Australia, New Zealand. \* **'Apple Blossom'** has white flowers overlaid with pink; \*\* **'Gaiety Girl'** ♂ bears semi-double flowers, deep pink outside, paler within; \*\* **'Huia'** is compact, with dark pink flowers. Suitable for a rock garden or alpine house; ‡ 30cm (12in), ↔ 45cm (18in). **'Keatleyi'** ♀ has pale pink flowers, 2.5cm (1in) across. **'Kiwi'** ♂♀ has purple-tinged young foliage and dark crimson flowers. Suitable for a rock garden or alpine house; ‡ 1m (3ft). **'Nicholsii'** ♀ has purple-tinged foliage and crimson flowers. **'Pink Cascade'** has a weeping habit, and produces pink flowers; \*\*. **var. prostratum** see *L. rupestre*. **'Red Damask'** ♀ has dark green leaves, and bears double, dark red flowers. **'Snow Flurry'** has double white flowers.

## LESCHENAULTIA

syn. LECHENAULTIA

GOODENIACEAE

Genus of about 20 species of evergreen shrubs, subshrubs, and perennials from semi-arid or arid areas of Australia. The usually linear leaves are entire, stalkless, and alternate or spiralling on the wiry stems. The showy, terminal flowers are solitary or borne in corymbs; they each have 5 free, often centrally "winged", white, yellow to red, or blue petals, 2

*Leschenaultia formosa*

small and 3 large, which form a basal tube. In frost-prone areas, grow in a cool or temperate greenhouse. In frost-free climates, grow in a shrub border or as ground cover.

• **HARDINESS** Frost tender, although *L. biloba* and *L. formosa* may survive temperatures near to 0°C (32°F) if kept almost dry.

• **CULTIVATION** Under glass, grow in a mix of 1 part loam-based potting compost (J1 No.1) and 3 parts each grit (or perlite) and peat, in full light with shade from hot sun and with good ventilation. In active growth, water moderately and apply a phosphate-free liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in sharply drained soil that is low in nitrates and phosphates, in full sun with some mid-day shade. Pruning group 8 for shrubs.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or root softwood cuttings in spring with bottom heat.

• **PESTS AND DISEASES** Under glass, red spider mites may be troublesome, and poor ventilation in winter will encourage grey mould (*Botrytis*).

**L. biloba**. Open shrub with linear, soft, mid-green to grey-green leaves, 1cm (½in) long. Bright blue, sometimes white flowers, 3cm (1¼in) across, are borne in leafy corymbs, to 8cm (3in) across, in late spring and early summer. Each petal lobe is roughly the shape of a fish-tail, the "tail fins" having sharp to blunt points. ‡ 30–60cm (12–24in). Australia (open eucalyptus forest in Western Australia). ♂ (min. 5–7°C/41–45°F)

**L. floribunda**. Erect, shrubby, woody-based perennial or short-lived shrub with alternate, narrowly oblong to linear, mid-green leaves, 3–8mm (¼–¾in) long. Blue or white flowers, 1.5cm (½in) across, are borne in loose corymbs, to 10cm (4in) across, from late spring to midsummer. ‡ 45cm (18in), ↔ 35cm (14in). Australia (coastal plains of Western Australia). ♂ (min. 5–7°C/41–45°F)

**L. formosa** ♂ Suckering, many-branched, spreading shrub with linear, blunt-tipped or pointed, light to grey-green leaves, to 1cm (½in) long. In late spring and early summer, produces solitary flowers, 2cm (¾in) across, in shades of bright red, orange, or orange-yellow. Usually short-lived, especially under glass. ‡ 30–60cm (12–24in). Australia (dry heathland in acid, quartzite sand in Western Australia). ♂ (min. 5–7°C/41–45°F)

## LESPEDeza

Bush clover

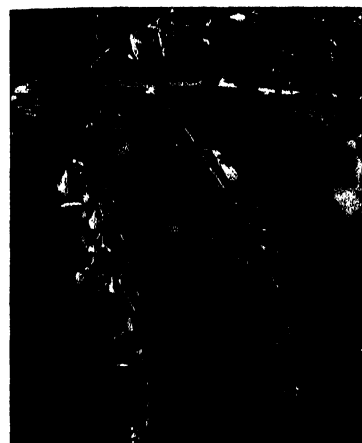
LEGUMINOSAE/PAPILIONACEAE

Genus of about 40 species of annuals, perennials, and deciduous subshrubs and shrubs found in meadows, grassland, and rocky places in E. Asia, Australia, and North America. They are cultivated for their small, pea-like flowers, profusely borne in axillary or terminal racemes. Leaves are alternate and 3-palmate. Excellent late-flowering plants for a mixed or shrub border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, moderately fertile, well-drained soil in full sun. Pruning group 6 for shrubs;

*Leptospermum scoparium*


*Lespedeza thunbergii*

treat as perennials in very cold areas, where shrubby species may be cut to the ground by frost in winter.

• **PROPAGATION** Sow seed in containers outdoors in spring, or take greenwood cuttings in early summer. *L. thunbergii* may also be divided in spring.

• **PESTS AND DISEASES** Trouble free.

**L. bicolor.** Upright shrub with arching shoots and 3-palmate, mid- to dark green leaves consisting of broadly oval to obovate leaflets, to 5cm (2in) long. In mid- and late summer, purple-pink flowers, to 1cm (½in) long, are borne in slender racemes, 5–12cm (2–5in) or more long, from the upper leaf axils. †↔ 2m (6ft). E. Asia. \*\*\*

**L. thunbergii** [ ] ♀ Woody-based perennial or subshrub with long, arching shoots and 3-palmate, blue-green leaves consisting of oval or oval-lance-shaped leaflets, to 5cm (2in) long. In early autumn, purple-pink flowers, to 1.5cm (½in) long, are profusely borne in pendent, terminal racemes, to 15cm (6in) long. †↔ 2m (6ft), ↔ 3m (10ft). N. China, Japan. \*\*\*

▷ **Lettuce, Water** see *Pistia*, *P. stratiotes*

## LEUCADENDRON

PROTEACEAE

Genus of 80 species of small, dioecious, evergreen shrubs and trees from varied habitats, ranging from sea plains to mountain slopes in dry or moist sites, in South Africa. They are grown mainly for their dense, cone-like, terminal clusters of small, tubular flowers, surrounded by large, leaf-like, often coloured or tinted bracts. Leaves are alternate or spiralling, stalkless, entire, leathery, and variably shaped. Both male and female plants are needed for fruiting cones to develop. Where temperatures fall below 5°C (41°F), grow in a cool or temperate greenhouse, although they seldom bear flowers or fruits in the former. In warm, dry areas, grow in a courtyard garden or against a sunny wall; the larger species are spectacular specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 1 part lime-free (ericaceous) potting compost and 3 parts each grit (or perlite) and peat, in full light and low humidity. During the growing season, water moderately and apply magnesium sulphate and urea at half the recommended strength in spring and

autumn; water sparingly in winter. Outdoors, grow in poor, well-drained, neutral to acid soil in full sun. May become chlorotic in magnesium-deficient soil. Pruning group 1.

• **PROPAGATION** Stratify seed below 5°C (41°F), then sow at 13–16°C (55–61°F) in a mix of equal parts peat and grit in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**L. argenteum** △ (Silver tree). Erect, pyramidal to columnar tree with robust stems densely covered with lance-shaped, sharp-pointed, brilliant, silvery-hairy leaves, 10–15cm (4–6in) long. From spring to summer, bears spherical flowerheads, to 4cm (1½in) across, yellowish green on male trees, greenish silver on females, surrounded by leaf-like but broader and more lustrous bracts, to 2cm (¾in) long. The silvery cones often persist on the tree for several years. †6–10m (20–30ft), ↔ 2–4m (6–12ft). South Africa (Cape Peninsula). ♀ (min. 5–7°C/41–45°F)

**L. discolor.** Erect, open shrub with grooved, often purple-red stems and inversely lance-shaped, rigid, leathery, densely short-hairy, greyish green leaves, 2.5–4cm (1–1½in) long, often tipped and margined purple. From spring to early summer, bears ovoid to spherical flowerheads, 3cm (1¼in) across, purple-red to red on male shrubs, whitish green on females, surrounded by ivory to creamy white bracts, 4–5cm (1½–2in) long, with purple-red tips or margins (usually more boldly coloured in males).


*Leucadendron* 'Safari Sunset' (inset: flowerhead detail)

Cones are brown. †1.5–2.5m (5–8ft), ↔ 1–2m (3–6ft). South Africa

(Northern Cape, Western Cape, Eastern Cape). ♀ (min. 5–7°C/41–45°F)

**L. 'Safari Sunset'** [ ] Vigorous, erect, freely branching shrub with narrowly oblong leaves, to 9cm (3½in) long, deep green flushed purple-red, more colourful when young. From summer to autumn, produces ovoid, sterile, yellowish green female flowerheads, 4cm (1½in) across, surrounded by light red bracts, 10–20cm (4–8in) long, maturing to purple-red and fading to golden yellow. † to 2.5m (8ft), ↔ to 1.8m (6ft) or more. ♀ (min. 5–7°C/41–45°F)

**L. tinctorum.** Spreading, freely branching shrub with robust stems, bent towards their bases, and oblong, dark green leaves, 8cm (3in) long, increasing in size towards the stem tips. From spring to summer, bears ovoid, greenish yellow flowerheads, to 3cm (1¼in) across, surrounded by glossy yellow bracts, 8cm (3in) long, which reflex after the flowers have faded. Cones have a sweet, spicy aroma. †↔ to 1.2m (4ft). South Africa (Northern Cape, Western Cape, Eastern Cape). ♀ (min. 5–7°C/41–45°F)

## LEUCANTHEMELLA

ASTERACEAE/COMPOSITAE

Genus of 2 species of hairy perennials found in wet meadows or marshy places, one species in S.E. Europe, the other in E. Asia. They have tall stems, which bear numerous alternate, lance-shaped to broadly elliptic or oblong, entire to sharply toothed leaves. They are grown mainly for their chrysanthemum-like


*Leucanthemella serotina*

flowerheads, borne singly or in 2- to 8-flowered corymbs in autumn. Grow in a mixed or herbaceous border. Also good for cutting.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any reliably moist soil in full sun or partial shade.

• **PROPAGATION** Divide, or take basal cuttings, in spring.

• **PESTS AND DISEASES** Susceptible to slugs; thrips may damage leaves.

**L. serotina** [ ] ♀ syn. *Chrysanthemum serotinum*, *C. uliginosum*. Strong-growing, erect perennial with simple, lance-shaped to broadly elliptic or oblong, toothed leaves, 6–12cm (2½–5in) long. From early to late autumn, white flowerheads, to 7cm (3in) across, with greenish yellow centres, are borne singly or in lax corymbs of 2–8. † to 1.5m (5ft), ↔ 90cm (36in). S.E. Europe. \*\*\*

## LEUCANTHEMOPSIS

ASTERACEAE/COMPOSITAE

Genus of 6 species of dwarf, tufted, clump- or mat-forming perennials from mountain habitats in Europe and North Africa. They are grown for their solitary, daisy-like, white or yellow flowerheads, borne in summer. The leaves are pinnatisect, pinnatifid, or palmately lobed. Frequently short-lived, they are suitable for a rock garden, scree bed, or alpine house.

• **HARDINESS** Fully hardy (borderline).

• **CULTIVATION** Grow in any sharply drained soil in full sun. In an alpine house, grow in equal parts loam, leaf mould, and grit.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide, or take basal cuttings, in spring.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

**L. alpina**, syn. *Chrysanthemum alpinum* (Alpine chrysanthemum). Mat-forming, rhizomatous perennial with variable, ovate to spoon-shaped, pinnatisect, deeply pinnatifid, or palmately lobed, silvery grey leaves, to 4cm (1½in) long. In mid- and late summer, produces short-stemmed flowerheads, to 4cm (1½in) across, with white ray-florets, sometimes turning pink with age, and orange-yellow disc-florets. Best grown in a scree bed. †10cm (4in), ↔ to 20cm (8in). Pyrenees, Alps, Apennines, Carpathians. \*\*\*



*Leucanthemopsis pectinata*

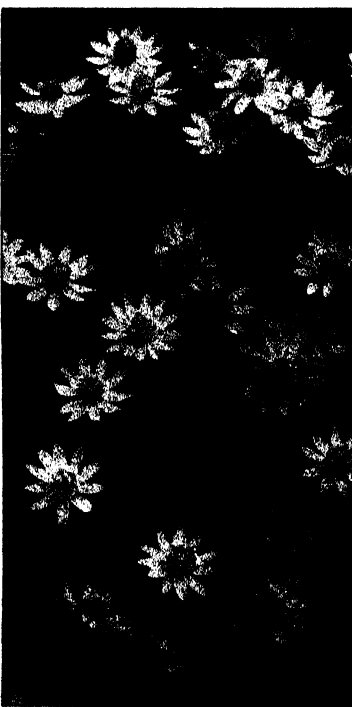
**L. pectinata** [ ] syn. *Chrysanthemum pectinata*, *L. radicans*, *Pyrethrum radicans*. Densely tufted perennial, spreading by runners, with pinnatifid, grey-green to silvery green leaves, 7–14cm (3–6in) long, with 5–9 lobes. In summer, bears flowerheads to 2cm (¾in) across, with yellow-orange disc-florets, and golden yellow ray-florets that turn orange-red. ‡ 15cm (6in), ↔ 30cm (12in). Spain (Sierra Nevada). \*\*\* (borderline)

**L. radicans** sec *L. pectinata*.

## LEUCANTHEMUM

ASTERACEAE/COMPOSITAE

Genus of 26 species of annuals and perennials from rocky alpine slopes and moist meadows, grassland, and wasteland in Europe and temperate Asia. They have alternate, entire, deeply pinnatifid, toothed, scalloped, or lobed leaves, and solitary, daisy-like, terminal flowerheads, which are usually white with yellow disc-florets. Grow alpine species in a scree bed or rock garden, taller perennials in a wild garden. Some hybrids and cultivars are useful in a herbaceous border and for cut flowers.

*Leucanthemum paludosum* 'Show Star'

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or partial shade. Alpine species need sharply drained soil in full sun. Many of the taller plants need support.
- **PROPAGATION** Sow seed of annuals *in situ* in spring. Sow seed of perennials in containers in a cold frame in autumn or spring. Divide perennials in early spring or late summer.
- **PESTS AND DISEASES** Aphids, slugs, earwigs, chrysanthemum eelworm, and leaf spots may be troublesome.

**L. atratum**, syn. *Chrysanthemum atratum*. Variable, clump- or mat-forming perennial with spoon-shaped, scalloped or lobed, dark green basal leaves, to 5cm (2in) long, and shorter, oblong to linear, deeply toothed to pinnatifid stem leaves, with toothed tips. In summer, upright stems bear solitary flowerheads, to 5cm (2in) across, with yellow disc-florets and white ray-florets. ‡↔ to 30cm (12in). Alps, Apennines, mountains of Slovenia, Bosnia & Herzegovina, and Yugoslavia (Serbia and Montenegro). \*\*\*

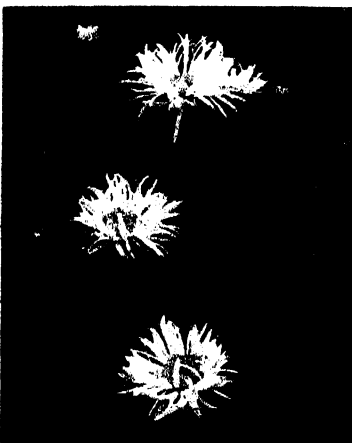
**L. hosmariense** sec *Rhodanthemum hosmariense*.

**L. paludosum**, syn. *Chrysanthemum paludosum*. Hairless, bushy annual with obovate, spoon-shaped, grey-green basal leaves, to 12cm (5in) long, and shorter, oblong-wedge-shaped stem leaves; all leaves are toothed to pinnatifid. In summer, produces solitary flowerheads, 2–3cm (¾–1¼in) across, with yellow or yellowish white ray-florets and deeper yellow disc-florets. ‡ 5–15cm (2–6in),

*Leucanthemum x superbum* 'Cobham Gold'*Leucanthemum x superbum* 'Horace Read'

↔ 20cm (8in). S. Portugal, S. and S.E. Spain, Balearic Islands. \*\*\*. **'Show Star'** [ ] has wavy-margined, toothed, mid-green leaves and bright yellow flowerheads.

**L. x superbum** (*L. lacustre* x *L. maximum*) syn. *Chrysanthemum maximum* of gardens, *C. x superbum* (Shasta daisy). Robust, clump-forming perennial with inversely lance-shaped, toothed, glossy, almost fleshy, dark green basal leaves, to 30cm (12in) long, and shorter, lance-shaped, stalkless stem leaves. From early summer to early autumn, bears solitary, single or double white flowerheads, 10–12cm (4–5in) across, with yellow disc-florets, paler in the double-flowered forms. Good for cutting. ‡ 90cm (36in), ↔ 60cm (24in). Garden origin. \*\*\*. **'Aglia'** ♀ produces fringed, semi-double flowerheads; ‡ 60cm (24in). **'Bishopstone'** has feathery, single flowerheads with narrow, cut ray-florets. **'Cobham Gold'** [ ] has double flowerheads; ‡ 60cm (24in). **'Esther Read'** has double, pure white flowerheads; ‡↔ 50–60cm (20–24in). **'Everest'** see 'Mount Everest'. **'Fiona Coghill'** has double flowerheads. **'Horace Read'** [ ] has double white flowerheads with incurved disc-florets; ‡ 60cm (24in). **'Little Silver Princess'** see 'Silberprinzesschen'. **'Mount Everest'**, syn. 'Everest', bears single flowerheads, to 10cm (4in) across. **'Phyllis Smith'** [ ] has single flowerheads with twisted, recurved ray-florets. **'Silberprinzesschen'**, syn. 'Little Silver Princess', has single flowerheads; ‡↔ 30cm (12in). **'Snowcap'** very freely bears single flowerheads, to 10cm (4in)

*Leucanthemum x superbum* 'Phyllis Smith'*Leucanthemum x superbum* 'Wirral Pride'

across; ‡↔ 45cm (18in). **'Snow Lady'** is a fast-growing, erect, bushy perennial usually grown as an annual, with oval to lance-shaped, deeply toothed leaves; produces single white flowerheads in summer; ‡ 25–45cm (10–18in), ↔ 30cm (12in). **'T.E. Killin'** ♀ has double flowerheads, to 10cm (4in) across, with yellow anemone centres. **'Wirral Pride'** [ ] has double flowerheads with anemone centres; ↔ 75cm (30in). **'Wirral Supreme'** ♀ has dense, double flowerheads with slightly shorter centre ray-florets; ↔ 75cm (30in).

**L. vulgare**, syn. *Chrysanthemum leucanthemum* (Marguerite, Ox-eye daisy). Extremely variable, rhizomatous perennial with obovate-spoon-shaped, toothed, smooth, dark green basal leaves, 2–10cm (¾–4in) long, and shorter, sometimes pinnatifid stem leaves. Solitary flowerheads, 2.5–5cm (1–2in) across, with bright yellow disc-florets and white ray-florets, are borne in late spring and early summer. ‡ 30–90cm (12–36in), ↔ 60cm (24in). Most of Europe, temperate Asia. \*\*\*

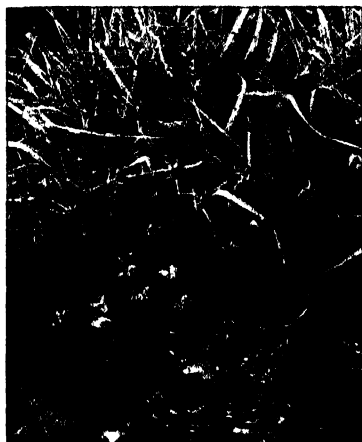
## LEUCHTENBERGIA

CACTACEAE

Genus of one species of perennial cactus with a thick, forked, tuberous rootstock, sometimes branching from the base, from hilly regions in central N. Mexico. The plant is covered with narrowly triangular, spirally arranged tubercles, each tipped by an areole bearing papery, twisted spines. The areoles on young tubercles produce fragrant flowers by day from summer to autumn. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse; in warmer climates, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From mid-spring to early autumn, water moderately and apply a balanced liquid fertilizer every 6–8 weeks; keep



*Leuchtenbergia principis*

completely dry from mid-autumn to early spring. Outdoors, grow in moderately fertile, sharply drained, ideally alkaline soil, in full sun. Protect from winter wet. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.

• **PESTS AND DISEASES** Susceptible to scale insects when in growth.

**L. principis** ■ Simple or branching cactus with a thick, cylindrical, fleshy root, appearing woody when mature, and spherical to short cylindrical stems. Narrowly triangular, glaucous, bluish green tubercles, 10–12cm (4–5in) long, cover the stems. Large grey areoles bear 8–14 radial spines, to 5cm (2in) long, and 1 or 2 centrals, to 15cm (6in) long. From summer to autumn, bears funnel-shaped, bright yellow flowers, to 8cm (3in) long. ‡30–60cm (12–24in), ↔30cm (12in). Central N. Mexico. ☉ (min. 10°C/50°F)

## LEUCOCORYNE

ALLIACEAE/LILIACEAE

Genus of 12 species of garlic-scented, bulbous perennials from dry scrub and rocky hillsides in Chile. They are grown for their umbels of large, open funnel-shaped, scented, blue, white, or purple flowers, borne in spring. Each bulb produces 2–5 linear, often channelled, basal leaves, smelling of garlic. In frost-prone areas, grow in a cool greenhouse; in warmer areas, grow in a rock garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Plant bulbs 10cm (4in) deep. Under glass, grow in loam-based

*Leucocoryne ixioideae*

potting compost (J1 No.2) with added sharp sand, in full light with good ventilation. When in growth, water moderately and apply a balanced liquid fertilizer monthly when in leaf. Reduce water after flowering and keep almost dry when dormant in summer. Pot on every 2 years in autumn. Outdoors, grow in moderately fertile, sharply drained soil in full sun.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe, or remove offsets in autumn before repotting.

• **PESTS AND DISEASES** Trouble free.

**L. ixioideae** ■ (Glory of the sun).

Bulbous perennial with narrow, grass-like, basal leaves, to 45cm (18in) long, which wither as the flowers open. In spring, produces umbels of up to 12 outward-facing, open funnel-shaped, scented flowers, 2cm (¾in) across, white with purple veins, or lilac-blue with white throats. ‡45cm (18in), ↔8cm (3in). Chile. ☉ (min. 5–7°C/41–45°F)

**L. purpurea**. Bulbous perennial with narrow, grass-like, basal leaves, to 30cm (12in) long, which wither as the flowers open. In spring, produces umbels of 2–7 open funnel-shaped, scented, pale lilac flowers, 2.5cm (1in) across, with broad, red-purple centres. ‡45cm (18in), ↔8cm (3in). Chile. ☉ (min. 5–7°C/41–45°F)

## LEUCOGENES

New Zealand edelweiss

ASTERACEAE/COMPOSITAE

Genus of 3 or 4 species of dwarf, hummock-, mat-, or clump-forming perennials from scree or rocky, fell-fields in the mountains of New Zealand. They have obovate-wedge-shaped or linear to lance-shaped, closely overlapping, intensely silver-hairy leaves and, in summer, bear small, flat yellow flowerheads surrounded by collars of white-woolly bracts. Effective in a peat bed, rock garden, or alpine house, but difficult to grow in dry climates.

• **HARDINESS** Hardy to -10°C (14°F), possibly more.

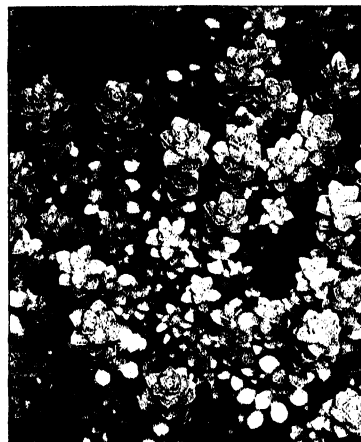
• **CULTIVATION** Grow in gritty, humus-rich, moist but sharply drained soil in full sun. They grow best in cool, moist climates and resent a dry atmosphere in summer. Protect from winter wet. In an alpine house, grow in a mix of equal parts loam, leaf mould, and coarse sand.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Take stem-tip cuttings in late summer.

• **PESTS AND DISEASES** Susceptible to red spider mites under glass; may be damaged by slugs and snails outdoors.

**L. grandiceps** ■ Mat-forming perennial with closely overlapping, obovate-wedge-shaped, silver-downy leaves, to 1cm (½in) long, that obscure the stems. In early summer, bears yellow flowerheads, 0.9–1.5cm (¾–½in) across, near the shoot tips, each surrounded by a collar, 1cm (½in) across, of densely white-woolly bracts. ‡10–15cm (4–6in). New Zealand (South Island). \*\*\* (borderline)

**L. leontopodium**, syn. *Raoulia leontopodium*. Hummock-forming perennial with linear to lance-shaped-oblong leaves, to 2cm (¾in) long, clothed in yellowish or greyish silver or

*Leucogenes grandiceps*

silvery white down. In early summer, produces yellow flowerheads, to 2.5cm (1in) across, near the shoot tips, each surrounded by a collar, to 1.5cm (½in) across, of white-woolly bracts. ‡10–15cm (4–6in). New Zealand. \*\*\* (borderline)

## LEUCOJUM

Snowflake

AMARYLLIDACEAE

Genus of about 10 species of mainly spring- or autumn-flowering, bulbous perennials from a variety of habitats, including woodland, shaded hillsides, wet sites, dunes, rocky grassland, and scrub, from W. Europe to the Middle East and N. Africa. They are related and similar to snowdrops (*Galanthus*), with usually 1 or 2, occasionally up to 8 flowers per stem, but the nodding or pendent, bell-shaped, usually white, sometimes pink flowers have 6 equal segments. Leaves are basal and strap-shaped to linear, or occasionally narrowly cylindrical. Small species are suitable for a rock garden, alpine house, or bulb frame, while larger species such as *L. aestivum* and *L. vernum* are excellent in a border, near water, or naturalized in grass.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Plant dry bulbs 8–10cm (3–4in) deep in autumn. Grow in any moist but well-drained soil in full sun, apart from *L. aestivum* and *L. vernum*, which need reliably moist, humus-rich soil. In an alpine house, grow in equal parts loam, leaf mould, and sharp sand.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or remove offsets once the leaves have died down.

• **PESTS AND DISEASES** Prone to slugs and narcissus bulb fly.

**L. aestivum** (Summer snowflake).

Robust, bulbous perennial with erect, strap-shaped, glossy, dark green leaves, to 40cm (16in) long. In spring, leafless stems bear up to 8 bell-shaped, faintly chocolate-scented white flowers, 2cm (¾in) long, with green tips. ‡45–60cm (18–24in), ↔8cm (3in). Ireland, UK, Belgium, France, C. and E. Europe, N. Turkey, Ukraine (Crimea), Caucasus, N. and N.W. Iran. \*\*\*. 'Gravetye Giant' ■ ♀ is more robust; ‡90cm (36in), especially when grown near water.

**L. autumnale** ■ ♀ Slender, bulbous perennial with erect, narrow, grass-like

*Leucojum aestivum* 'Gravetye Giant'

leaves, to 16cm (6in) long, produced with or just after the flowers. In late summer and early autumn, each bulb produces up to 4 leafless stems, each bearing 2–4 bell-shaped white flowers, 1cm (½in) long, with red-tinged bases. ‡10–15cm (4–6in), ↔5cm (2in). S.W. Europe, N. Africa. \*\*\*

**L. hiemale** see *L. nicaense*.

**L. nicaense** ♀ syn. *L. hiemale*. Bulbous perennial with 2–4 almost prostrate, curled, narrowly linear leaves, to 30cm (12in) long. In early spring, leafless stems produce 1 or 2 bell-shaped, waxy white flowers, 1cm (½in) long. Survives outside in a sunny, sheltered site, but is best grown in an alpine house. ‡10cm (4in), ↔5cm (2in). S.E. France. \*\*

**L. roseum**. Bulbous perennial with leafless stems bearing 1 or 2 bell-shaped, pale pink flowers, 1cm (½in) long, in late summer or autumn. Erect, thread-like, narrowly linear leaves, to 10cm (4in) long, appear just after the flowers. Best in an alpine house, especially in areas that experience prolonged frost. ‡10cm (4in), ↔5cm (2in). Corsica, Sardinia. \*\*

**L. trichophyllum**. Bulbous perennial with 3 linear leaves, 5–20cm (2–8in)

*Leucojum autumnale*



*Leucojum vernum* var. *vagneri*

long, that appear before or with the flowers. From winter to spring, slender, leafless stems bear 2–4 bell-shaped white flowers, to 2cm (¾in) long, sometimes flushed pink or purple. Best in an alpine house. † 10–30cm (4–12in), ↔ 5cm (2in). S. Portugal, S.W. Spain, Morocco. \*\*\*

***L. valentinum***. Bulbous perennial with narrowly linear, grey-green leaves, to 25cm (10in) long, produced after the flowers. In autumn, leafless stems bear 1–3 bell-shaped white flowers, 1cm (½in) long. † 15cm (6in), ↔ 3–5cm (1¼–2in). C. Spain, N.W. Greece, Ionian Islands. \*\*\* (borderline)

***L. vernum*** ♀ (Spring snowflake). Bulbous perennial with erect, strap-shaped, glossy, dark green leaves, to 25cm (10in) long. In early spring, produces stout, leafless stems with usually 1, occasionally 2, bell-shaped, green-tipped white flowers, 2.5cm (1in) long. † 20–30cm (8–12in), ↔ 8cm (3in). S. and E. Europe. \*\*\*. **var. *carpathicum*** produces 1 or 2 flowers per stem, each with yellow-tipped tepals. **var. *vagneri*** ♂ is robust, and flowers in late winter and early spring, bearing 2 flowers per stem; † 20cm (8in).

## LEUCOPHYTA

syn. *Calocephalus*  
Cushion bush

ASTERACEAE/COMPOSITAE

Genus of 18 species of annuals and evergreen perennials and small shrubs from rocky coastal habitats, often exposed to salt spray, in Australia. They are cultivated for their alternate, very narrow, entire, often white-woolly leaves and spherical, rayless flowerheads, which are clustered into terminal corymbs. In frost-prone climates, grow in a cool greenhouse, or as summer bedding or edging foliage plants. In warmer climates, they are useful for adding a silver edging to a shrub border.

• **HARDINESS** Frost tender; may withstand short periods down to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) with added grit, in full light. Pot on or top-dress in spring, or plant outside in early summer. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in sharply drained, moderately fertile soil in full sun. Pinch out stem tips of young plants to promote bushiness. Pruning group 10, in spring.

• **PROPAGATION** Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Prone to grey mould (*Botrytis*) in damp conditions.

***L. brownii*** ♂ syn. *Calocephalus brownii*. Bushy shrub with intricately branched, slender, silvery white-downy stems. Scale-like, silvery grey leaves, 5mm (¼in) long, are pressed closely against the stems, so that the bush appears leafless. In summer, produces small, rounded, terminal corymbs of creamy white, rarely purple flowerheads, 1cm (½in) across. † 40–75cm (16–30in), ↔ 40–90cm (16–36in). Australia (Western Australia to New South Wales, Tasmania). ☞ (min. 5–7°C/41–45°F)



*Leucophyta brownii*

## LEUCOPOGON

EPACRIDACEAE

Genus of about 150 species of erect or spreading, evergreen shrubs and small trees from heathland and forest in S. Asia and Australasia. They have variably shaped, entire leaves, and bear tubular flowers, with reflexed lobes, either singly or in spikes, followed by small, fleshy, berry-like fruits. Grow in a rock garden. In frost-prone areas, grow tender species in a cool greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in humus-rich, moist but well-drained, acid soil in full sun or partial shade. Pruning group 8 or 9.

• **PROPAGATION** Sow seed in containers outdoors as soon as ripe, or take greenwood cuttings in early summer.

• **PESTS AND DISEASES** Trouble free.

***L. colensoi*** see *Cyathodes colensoi*.

***L. fraseri***, syn. *Cyathodes fraseri*.

Creeping subshrub with densely overlapping, heath-like, obovate, short-stalked, glossy, dark green leaves, 5–10mm (¼–½in) long, often tinted red in autumn, with bristles on the tips and margins. Bears axillary, solitary, 5-lobed, fragrant white flowers, 5–10mm (¼–½in) across, towards the tips of upright shoots in summer. In autumn, produces edible, sweet-tasting, spherical, fleshy, pale orange fruit, 6–9mm (¼–⅜in) across. † 10–15cm (4–6in), ↔ to 30cm (12in). New Zealand. \*\*\*

## X LEUCORAULIA

ASTERACEAE/COMPOSITAE

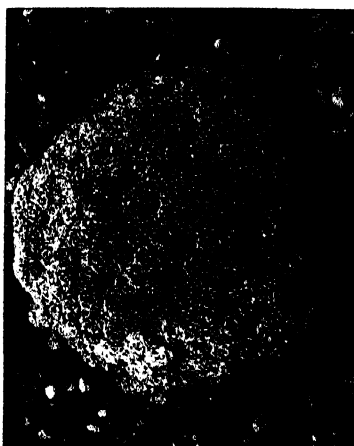
Bigenic hybrid genus between *Leucogenes leontopodium* and *Raoulia rubra*, from the Tararua mountains of New Zealand. Grown for its cushions of silvery, rosetted foliage, it is best grown in a scree bed or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in gritty, sharply drained soil in full sun. Protect from winter wet. Under glass, grow in a mix of equal parts loam, leaf mould, and grit; top-dress with grit. Water freely from spring to summer; resents a hot, dry atmosphere in summer, so mist in hot weather. Keep just moist in winter.

• **PROPAGATION** Detach individual rosettes and root as cuttings in spring.

• **PESTS AND DISEASES** Susceptible to mildew, especially in dry conditions.



x *Leucoraoulia loganii*

x ***L. loganii*** ♂ syn. *Raoulia x loganii*. Dense, cushion-forming perennial with neat, symmetrical, almost columnar rosettes of tiny, overlapping, densely hairy, silvery white leaves, to 2mm (⅛in) long. Produces insignificant pink flowerheads in summer in the wild, but very seldom in cultivation. † 8cm (3in), ↔ 10cm (4in). New Zealand. \*\*\*

## LEUCOSPERMUM

Pincushion

PROTEACEAE

Genus of 47 species of evergreen shrubs and small trees from varied habitats, including scrub, subtropical coastal dune forest, evergreen temperate forest, and mountain slopes, in Zimbabwe and South Africa. The alternate, leathery, simple, entire or toothed leaves may be linear to elliptic, inversely lance-shaped, oval, ovate, obovate, oblong, or spoon-shaped. Dense, cone-like, clustered or solitary, terminal flowerheads are borne on short axillary shoots and have very prominent, red, orange, pink, yellow, or white styles. Where temperatures fall below 5°C (41°F), grow in a cool or temperate greenhouse. In warmer, dry areas, plant in a shrub border. The larger species are good specimen plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 1 part loam-based potting compost (J1 No.1) and 3 parts each grit (or perlite) and peat, in full light. In active growth, water moderately and apply magnesium sulphate and urea at half the recommended strength in spring and autumn; water sparingly in winter, never allowing the compost to dry out. Outdoors, grow in well-drained, neutral to acid soil, with low levels of phosphates and nitrates, in full sun. Magnesium deficiency may lead to chlorosis. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Stratify ripe seed below 5°C (41°F), then sow at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

***L. catherinae*** (Catherine's pincushion). Densely bushy, erect shrub with a short, stout trunk. Crowded, inversely lance-shaped to elliptic, stalked, hairless leaves, 9–14cm (3½–5½in) long, each with 3 or 4 teeth at the tip, are usually mid- to deep green, tinted yellow or grey, with often red-flushed tips and margins. From spring to early summer, bears solitary, conical flowerheads, 10–15cm (4–6in) across, with erect, then arching styles that are light orange, tipped gold. † 2.5m (8ft). South Africa (Western Cape). ☞ (min. 5°C/41°F)

***L. cordifolium*** ♂ syn. *L. nutans*. Rounded, spreading shrub with ovate to oblong, entire, stalkless, mid-green leaves, to 8cm (3in) long, heart-shaped at the bases, sometimes with 3–6 teeth at the tips, and initially downy, later almost smooth. From early spring to midsummer, horizontal to downward-arching stems, which bend sharply upwards at their tips, produce solitary, spherical flowerheads, 10–12cm (4–5in) wide, with numerous forward-arching, usually orange, but also crimson or

*Leucospermum cordifolium*

yellow styles. ↑ to 2m (6ft), ↔ 1.5–3.5m (5–11ft). South Africa (Northern Cape, Western Cape, Eastern Cape, on acid soils). ☼ (min. 5°C/41°F)

*L. nutans* see *L. cordifolium*.

*L. reflexum*. Rounded, moderately open shrub, thickening with age. Oblong-elliptic to inversely lance-shaped, hairy, grey-green leaves, 2–6cm (¾–2½in) long, sometimes have 2 or 3 teeth at the tips. From early spring to early summer, erect shoots produce solitary or paired, ovoid to spherical flowerheads, 4.5–6cm (1¾–2½in) across, composed of initially outward- and upward-curving orange styles, which are later strongly reflexed and deep crimson. ↑ to 3m (10ft), ↔ 2–4m (6–12ft). South Africa (Cedar Berg mountains in Western Cape). ☼ (min. 5°C/41°F)

## LEUCOTHOE

ERICACEAE

Genus of about 50 species of deciduous, semi-evergreen, or evergreen shrubs from woodland, thickets, swamps, and streambanks in Madagascar, the Himalayas, E. Asia, and North and South America. They are cultivated for their handsome leaves, which are alternate, very variably shaped, simple, often glossy, and dark green, and for their cylindrical to urn-shaped, usually white flowers, borne in terminal or axillary racemes or panicles. Effective in a peat bed or acid woodland garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in humus-rich, reliably moist, acid soil in deep or partial shade. Pruning group 1.

*Leucothoe fontanesiana* 'Rainbow'*Leucothoe fontanesiana* 'Scarletta'

- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings with bottom heat in summer. Divide suckering species in spring.
- **PESTS AND DISEASES** Trouble free.

*L. catesbaei* of gardens see *L. fontanesiana*.

*L. davisiae* (Sierra laurel). Upright, suckering, evergreen shrub with ovate-oblong, glossy, dark green leaves, to 8cm (3in) long. Urn-shaped white flowers, 5mm (¼in) long, are produced in erect, axillary racemes, 5–15cm (2–6in) long, in early summer. ↑ 1m (3ft), ↔ 1.5m (5ft). USA (California, Oregon). \*\*\*

*L. fontanesiana* ♀ syn. *L. catesbaei* of gardens, *L. walteri* (Switch ivy). Upright, evergreen shrub with arching branches and oblong-lance-shaped to ovate-lance-shaped, toothed, leathery, hairless leaves, 6–16cm (2½–6in) long, dark green and glossy above, paler below. In spring, produces almost cylindrical white flowers, 5mm (¼in) long, in axillary racemes, 4–6cm (1½–2½in) long. ↑ 1–2m (3–6ft), ↔ 3m (10ft). S.E. USA. \*\*\*

'Rainbow' is thicket-forming, with lance-shaped, dark green leaves, heavily mottled cream and pink. Flowers are produced in late spring; ↑ 1.5m (5ft), ↔ 2m (6ft).

'Rollissonii' ♀ has narrowly elliptic-lance-shaped leaves, to 10cm (4in) long.

'Scarletta' has dark red-purple young foliage, which turns dark green, then bronze in winter.

*L. keiskei*. Clump-forming, evergreen shrub with upright to prostrate shoots and narrowly ovate to ovate-lance-shaped, slenderly tapered, glossy, dark green leaves, to 9cm (3½in) long, red when young. Urn-shaped white flowers, to 1cm (½in) long, are borne in nodding racemes, to 5cm (2in) long, at or near the ends of young shoots in midsummer. Suitable for a peat bed. ↑ 60cm (24in). Japan. \*\*\*

*L. racemosa* (Fetter bush, Sweetbells). Bushy, suckering, deciduous or semi-evergreen shrub with upright shoots and oblong to ovate or elliptic, pointed, glossy, dark green leaves, to 6cm (2½in) long. In early summer, urn-shaped white flowers, 6mm (¼in) long, are profusely borne in upright to spreading, usually terminal racemes, to 10cm (4in) long. ↑ 1.5m (5ft). E. USA. \*\*\*

*L. walteri* see *L. fontanesiana*.

▷ *Leussea centauroides* see *Centaurea* 'Pulchra Major'

## LEVISTICUM

Lovage

APIACEAE/UMBELLIFERAE

Genus of one species of hairless perennial occurring in mountain regions in the E. Mediterranean. It has 2- or 3-pinnate, dark green leaves, and umbels of star-shaped flowers produced in mid-summer. The strongly celery-scented roots and shoots are used as a vegetable or in salads, and the seeds for flavouring. Suitable for a herb garden. Contact with the foliage may cause photodermatitis.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Tolerant of most soils, but best in deep, moderately fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed in a seedbed as soon as ripe, or divide in early spring.
- **PESTS AND DISEASES** Leaf miners may be troublesome.

*L. officinale*. Robust perennial with stout, hollow, finely ribbed stems and 2- or 3-pinnate, triangular to diamond-shaped, dark green leaves, to 70cm (28in) long, with ovate, toothed leaflets. Star-shaped, greenish yellow flowers are borne in umbels, to 15cm (6in) across, in midsummer, followed by ovoid, slightly winged green fruit. ↑ 2m (6ft), ↔ 1m (3ft). E. Mediterranean. \*\*\*

## LEWISIA

PORTULACACEAE

Genus of approximately 20 species of deciduous or evergreen perennials from W. North America, with fleshy rootstocks, and rosettes or tufts of fleshy leaves that vary greatly in shape. The deciduous species occur in open, stony meadows or grassland, and die down after flowering; evergreens are more commonly found in partial shade among rocks or in crevices. The funnel-shaped to open funnel-shaped flowers, each with 5–9, sometimes up to 19 petals, are produced in shades of pink,

magenta, purple, orange, yellow, or white. They are usually borne in cymes or panicles, occasionally singly or in racemes or corymbs, in spring and summer, often over long periods. Grow in an alpine house or rock garden, or in the crevices of a retaining wall.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, sharply drained, neutral to acid soil: deciduous species and hybrids in full sun, evergreens in light shade. Protect all from winter wet; protect deciduous lewisias from rain in summer, when dormant. In an alpine house, grow in equal parts loam, leaf mould, and sharp sand.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or remove offsets (evergreen species only) in early summer. Seed of *L. Coryledon* Hybrids does not come true to colour, and many species hybridize freely in cultivation.
- **PESTS AND DISEASES** Susceptible to aphids under glass, and to slugs and snails outdoors. Prone to neck rot in wet conditions.

*L. brachycalyx* ♂ Dwarf, tufted, deciduous perennial with a basal rosette of inversely lance-shaped, dark green leaves, 3–8cm (1¼–3in) long. In late spring and early summer, numerous solitary, funnel-shaped, white, sometimes pale pink flowers, 2.5–5cm (1–2in) across, are borne on scapes to 6cm (2½in) long. ↑ to 8cm (3in). USA (S. California, Arizona). \*\*\*

*L. columbiana*. Variable, evergreen perennial with compact, symmetrical or irregular rosettes of inversely lance-shaped or linear, dark green leaves, 2–10cm (¾–4in) long. From spring to summer, bears panicles of many open funnel-shaped, usually deep magenta-pink flowers, to 2.5cm (1in) across, sometimes pale pink with darker veins. ↑ to 15cm (6in). Canada (British Columbia), USA (Oregon). \*\*\*

*L. coryledon* ♀ Evergreen perennial with flat rosettes of spoon-shaped or

*Lewisia brachycalyx*

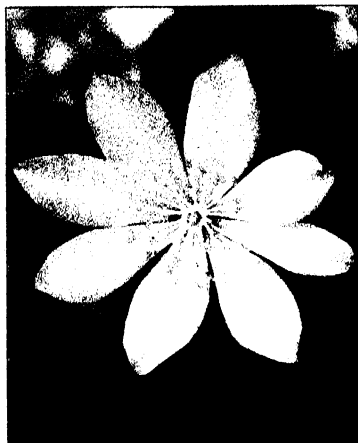


Lewisia Cotyledon Hybrids

inversely lance-shaped or obovate, slightly glaucous, dark green leaves, 3–14cm (1¼–5½in) long. From spring to summer, produces compact panicles of many open funnel-shaped, paler and darker striped, usually pinkish purple, sometimes white, cream, yellow, or apricot flowers, to 2.5cm (1in) across. ‡30cm (12in), ↔ to 25cm (10in). USA (N.W. California). \*\*\*. *f. alba* has pure white flowers. *var. bowellii* has leaves with wavy, toothed margins, and pale pink flowers with darker veining. **L. Cotyledon Hybrids** ■ Clump-forming, evergreen perennials that produce rosettes of thick, variably shaped, mid- to dark green leaves, 3–14cm (1¼–5½in) long, with toothed or wavy margins. From late spring to summer, funnel-shaped flowers, 2–4cm (¾–1½in) across, in a range of bright colours, including shades of pink, deep magenta, yellow, and orange, are borne in compact panicles. ‡15–30cm (6–12in), ↔ 20–40cm (8–16in). \*\*\*. **L. 'George Henley'** ■ Clump-forming, evergreen perennial with rosettes of narrowly spoon-shaped, fleshy, dark green leaves, to 8cm (3in) long. From late spring to late summer, produces many-flowered cymes of funnel-shaped, purplish pink flowers, to 2.5cm (1in) across, with magenta veining. ‡10cm (4in) or more, ↔ 10cm (4in). \*\*\*. **L. longipetala**, syn. *L. pygmaea* subsp. *longipetala*. Deciduous perennial with basal tufts of narrowly linear or linear-inversely lance-shaped, dark green leaves, 2–5cm (¾–2in) long. In late spring or early summer, produces several scapes, 3–6cm (1¼–2½in) long, bearing



Lewisia 'George Henley'



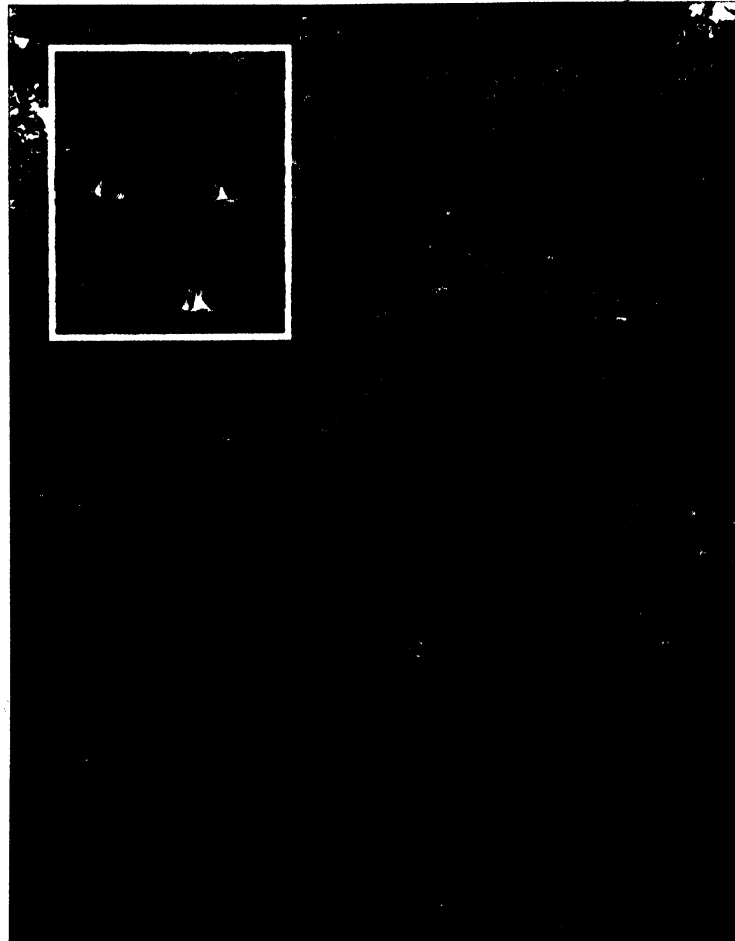
Lewisia tweedyi

cymes of 1–3 open funnel-shaped, star-like, pure white or pink-flushed white flowers, 2.5–4cm (1–1½in) across, with red-tinted sepals. Similar to, but easier to grow than *L. brachycalyx*. ‡↔ to 10cm (4in). USA (California). \*\*\*. **L. nevadensis**. Deciduous perennial with loose, basal rosettes of narrowly linear, suberect, dark green leaves, 4–15cm (1½–6in) long. From late spring to summer, bears solitary, broadly funnel-shaped, star-like, white, rarely pink flowers, to 3.5cm (1½in) across, on scapes 10–15cm (4–6in) long. ‡↔ to 10cm (4in). W. USA. \*\*\*. **L. pygmaea**. Deciduous perennial with tufts of linear or linear-inversely lance-shaped, erect, dark green leaves, 3–9cm (1¼–3½in) long. In summer, prostrate or semi-erect scapes, 1–6cm (½–2½in) long, bear cymes of 1–7 funnel-shaped, deep purplish pink, occasionally white or pale pink flowers, 1.5–2cm (½–¾in) across. ‡↔ to 8cm (3in). Canada, USA (Alaska to New Mexico). \*\*\*. **subsp. longipetala** see *L. longipetala*. **L. rediviva** (Bitterroot). Deciduous perennial with tufts of linear or club-shaped, dark green leaves, 1.5–5cm (½–2in) long, dying back rapidly at or after flowering. From early spring to summer, bears several solitary, broadly funnel-shaped, pink or white flowers, 5cm (2in) across, with 12–19 narrow petals, on scapes 1–3cm (½–1¼in) long. ‡5cm (2in), ↔ 10cm (4in). Canada (British Columbia), USA (California, Nevada, Utah). \*\*\*. **L. tweedyi** ■ ♀ Rosette-forming, evergreen perennial with broad, inversely lance-shaped or obovate, purple-tinted, mid-green leaves, to 10cm (4in) long. From spring to early summer, scapes, 10–20cm (4–8in) long, bear open funnel-shaped, white to peach-pink flowers, to 6cm (2½in) across, singly or in cymes of up to 4. ‡20cm (8in), ↔ 30cm (12in). N.W. USA. \*\*\*. *f. alba* has pure white to ivory flowers.

## LEYCESTERIA

### CAPRIFOLIACEAE

Genus of about 6 species of suckering, deciduous shrubs, with hollow, cane-like stems, from cliffs and mountain woodland in India, the Himalayas, China, and Burma. They are cultivated for their terminal or axillary racemes or spikes of whorled, tubular, 5-lobed flowers; *L. formosa* also has long-persistent, claret-red bracts below the blooms. The leaves



Leycesteria formosa (inset: flower detail)

are opposite, narrowly ovate to ovate, and long-pointed, with entire or toothed margins. Grow in a woodland garden or shrub border. In frost-prone areas, grow half-hardy species in a cool greenhouse.

- **HARDINESS** Fully hardy (borderline) to half hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun or partial shade. Protect from cold, drying winds and mulch deeply in autumn where frosts are severe. Pruning group 3 or 6.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or take softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**L. crocothyrus**. Upright shrub with arching shoots and ovate, tapered leaves, to 15cm (6in) long. Golden yellow flowers, to 2cm (¾in) long, with wide-spreading lobes, are produced in arching, terminal racemes, 12–17cm (5–7in) long, from late spring to late summer, followed by small, spherical green berries. ‡↔ 2m (6ft). India (Assam), N. Burma. \*\*.

**L. formosa** ■ (Himalayan honeysuckle). Upright, thicket-forming shrub with attractive, bamboo-like, blue-green first-year shoots, and ovate, tapered, dark green leaves, to 17cm (7in) long. Pendent spikes, to 10cm (4in) long, of white flowers among dark purple-red bracts, are borne terminally or from the upper leaf axils, from summer to early autumn. Flowers are followed by spherical, red-purple berries. ‡↔ 2m (6ft). Himalayas, W. China. \*\*\* (borderline)

## LEYMUS

### GRAMINEAE/POACEAE

Genus of approximately 40 species of rhizomatous, perennial grasses, formerly included in *Elymus*. They occur mainly in grassland in N. temperate regions, with one species from Argentina. They have linear, flat or rolled, stiff, glaucous leaves, and bear narrowly linear racemes of usually paired, sometimes solitary spikelets in summer. The ornamental species are grown for the architectural value of their blue-green leaves; although invasive, they are also suitable for a mixed or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile but not heavy, well-drained soil in full sun. Cut down dead growth in autumn.
- **PROPAGATION** Divide from mid-spring to early autumn.
- **PESTS AND DISEASES** Trouble free.

**L. arenarius** ■ syn. *Elymus arenarius*. Densely tufted grass with long rhizomes, forming loose, spreading clumps of arching, broadly linear, flat, pale blue-grey leaves, to 60cm (24in) long. Throughout summer, stiff, erect stems bear spike-like racemes, to 35cm (14in) long, of paired, blue-grey, then buff spikelets. ‡ to 1.5cm (5ft), ↔ indefinite. N. and W. Europe, Eurasia. \*\*\*. **L. giganteus** see *L. racemosus*. **L. racemosus**, syn. *Elymus racemosus*, *L. giganteus*. Rhizomatous grass with arching, broadly linear, flat, blue-green leaves, to 30cm (12in) long, rough

*Leymus arenarius*

textured above, smooth beneath. Throughout summer, stiff, upright stems produce spike-like racemes, to 35cm (14in) long, of flattened, softly hairy, initially bluish green, later buff spikelets, in clusters of 6. † to 1.2m (4ft), ↔ 75cm (30in) or more. N. Europe, Eurasia. \*\*\*. 'Glaucus' is less invasive, and has erect or arching, clear, pale blue-green leaves; † 75cm (30in).

▷ **Liana** see *Semele androgyna*

## LIATRIS

Blazing star, Gayfeather

ASTERACEAE/COMPOSITAE

Genus of approximately 40 species of perennials with tuber- or corm-like, swollen, flattened stems. They occur mainly in prairie or open woodland, on dry, stony ground (although *L. spicata* grows in damper sites), in E. and C. North America. Linear to ovate-lance-shaped leaves are borne in basal tufts, and arranged alternately on the stiff stems. The numerous button-like flowerheads, produced in corymb-like spikes or racemes, are composed of dense clusters of tubular, pinkish purple

*Liatris spicata**Liatris spicata* 'Kobold'

or white disc-florets, and are unusual in that they open from the top of the inflorescence downwards. Suitable for a mixed or herbaceous border, and also good for cutting. The flowerheads are attractive to bees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, moderately fertile, moist but well-drained soil in full sun; *L. spicata* needs reliably moist soil. Liable to rot in wet winters in heavy soils.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring.
- **PESTS AND DISEASES** Susceptible to slugs, snails, and mice (which eat the rootstocks).

*L. callilepis* of gardens see *L. spicata*.

*L. pycnostachya* (Kansas feather). Perennial with densely clustered, linear basal leaves, 10–30cm (4–12in) long, which reduce in size up the robust, hairy stems. Bears dense spikes, 45cm (18in) long, of bright purple flowerheads, 1cm (½in) across, from midsummer to early autumn. † to 1.5m (5ft), ↔ 45cm (18in). C. and S.E. USA. \*\*\*. *L. scariosa*. Perennial with densely clustered, lance-shaped to narrowly ovate or obovate, rough basal leaves, to 25cm (10in) long, reducing in size and inversely lance-shaped on the robust, hairy stems. Similar to *L. pycnostachya*, but with less dense spikes, 45cm (18in) long, of reddish purple flowerheads, 2.5cm (1in) across, in early autumn. † 0.6–1.2m (2–4ft), ↔ 45cm (18in). N.E. and S.E. USA. \*\*\*. 'September Glory' has deep purple flowerheads; † 1.3m (4½ft).

*L. spicata* □ syn. *L. callilepis* of gardens (Gayfeather). Perennial with hairless stems and linear or linear-lance-shaped basal leaves, 30–40cm (12–16in) long; stem leaves are smaller and linear. Long-lasting, pink-purple or white flowerheads, to 1cm (½in) across, are borne in dense spikes, 45–70cm (18–28in) long, in late summer and early autumn.

† to 1.5m (5ft), ↔ 45cm (18in). E. and S. USA. \*\*\*. 'Blue Bird' has blue-purple flowerheads. 'Floristan Weiss' has white flowerheads; † to 90cm (36in). 'Goblin' see 'Kobold'. 'Kobold' □ syn. 'Goblin', produces deep purple flowerheads; † 40–50cm (16–20in). 'Snow Queen' produces white flowerheads; † 75cm (30in).

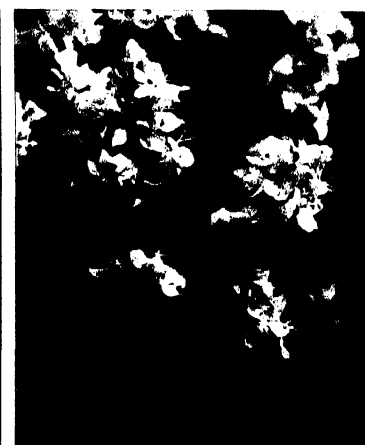
## LIBERTIA

IRIDACEAE

Genus of 20 species of fibrous-rooted, clump-forming, rhizomatous, evergreen perennials occurring in moist, grassy areas and scrub in New Caledonia, New Zealand, and temperate North and South America. They have linear, leathery, 2-ranked, overlapping, mainly basal leaves; leaves on the stiff flowering stems are sparse and smaller. They are cultivated for their saucer-shaped, white or blue flowers, each usually with 3 small outer tepals, 3 broad inner tepals, and sheathing bracts, produced in panicles and followed by glossy, light brown seed heads. Grow the larger libertias in a herbaceous or mixed border, or in a gravel garden; the smaller species are suitable for a rock garden.

- **HARDINESS** Fully hardy (borderline) to frost hardy. *L. ixioideis* may survive to -10°C (14°F).
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun. In frost-prone areas, protect in winter with a dry mulch.
- **PROPAGATION** Sow seed in containers outdoors as soon as ripe, or divide in spring.
- **PESTS AND DISEASES** Trouble free.

*L. caerulea*. Clump-forming, rhizomatous perennial with linear, rigid, leathery leaves, 30–45cm (12–18in) long. In late spring, flowering stems bear 1 or 2 short leaves, and terminal, short-branched panicles consisting of umbel-like clusters of many pale blue flowers,

*Libertia grandiflora*

1cm (½in) across. † to 60cm (24in), ↔ 30cm (12in). Chile. \*\*

*L. chilensis* see *L. formosa*.

*L. formosa*, syn. *L. chilensis*.

Rhizomatous perennial forming large clumps of linear, stiff, leathery, deep green leaves, 15–45cm (6–18in) long. Dense panicles composed of umbel-like clusters of 3–8 white or pale yellow-white flowers, 3.5cm (1½in) across, are borne in long succession from late spring to midsummer. † 90cm (36in), ↔ 60cm (24in). Chile. \*\*\* (borderline)

*L. grandiflora* □ Rhizomatous perennial forming dense clumps of linear, leathery leaves, 30–75cm (12–30in) long. In late spring and early summer, bears long panicles composed of dense, umbel-like clusters of 3–6 white flowers, 3cm (1¼in) across, the outer tepals with olive or bronze keels. † to 90cm (36in), ↔ 60cm (24in). New Zealand. \*\*\* (borderline)

*L. ixioideis*. Rhizomatous perennial, similar to *L. grandiflora*, forming dense clumps of linear, leathery leaves, 20–30cm (8–12in) long. Leaves of some variants turn orange-brown in winter. In late spring and early summer, produces dense panicles composed of umbel-like clusters of usually 2–10 white flowers, 7–8mm (¼–⅜in) across, the outer tepals tinted brown or green. † to 60cm (24in). New Zealand (including Chatham Island). \*\*

## LIBOCEDRUS

CUPRESSACEAE

Genus of 6 species of conical, monoecious, evergreen, coniferous trees and shrubs from forest in New Zealand, New Caledonia, and South America. In the past, species of *Austrocedrus* and *Calocedrus* were included in the genus *Libocedrus*. The linear juvenile leaves and usually scale-like adult leaves are arranged in sets of 2 pairs, one on either side of the shoot (spreading pair), and one above and below (facial pair), forming 4 rows. Female cones are solitary, ovoid, and usually 4-scaled, with 2 pairs of enlarged, bract-like leaves at the bases; male cones are small, oblong, and borne at the tips of short shoots. Grow as specimen trees. In frost-prone areas, grow half-hardy species in a sheltered site or in a cool greenhouse.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in any deep, moist but well-drained soil in full sun.

*L. uvifera* tolerates and often prefers a wet site or copious water supply. In frost-prone climates, shelter from cold, drying winds.

• **PROPAGATION** Sow seed in containers in a cold frame in spring, or take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*L. bidwillii* ♂ Conical, coniferous tree at lower elevations, reduced to a shrub at altitudes above 1,000m (3,200ft). It has fibrous bark and scale-like, glossy, yellow-green adult leaves, to 2mm (1/16in) long, lying flat along the shoots. Ovoid female cones, 1cm (1/2in) long, have a green terminal spine on each scale. ‡ to 15m (50ft), ↔ to 3m (10ft). New Zealand. \*\*

*L. chilensis* see *Austrocedrus chilensis*.

*L. decurrens* see *Calocedrus decurrens*.

*L. plumosa* ♂ (Kawaka). Conical, coniferous tree with fibrous bark and unequal pairs of scale-like, glossy, bright green adult leaves; the spreading pair, 3–5mm (1/8–1/4in) long, is larger than the facial pair. Ovoid female cones are 1–2cm (1/2–3/4in) long. ‡ to 15m (50ft), ↔ to 3m (10ft). New Zealand. \*\*

*L. uvifera* ♂ syn. *Pilgerodendron uviferum*. Slow-growing, conical, coniferous shrub or small tree with thin bark, peeling in strips. Green shoots bear narrowly wedge-shaped leaves, to 5mm (1/4in) long, with fine, tapered points, whitish green on the inner side, dark green on the outer. Ovoid female cones are 1cm (1/2in) long. ‡ to 6m (20ft), ↔ to 2m (6ft). S. Chile, S. Argentina (Andes and Tierra del Fuego). \*\*\* (borderline)

▷ *Libonia* see *Justicia*

*L. floribunda* see *J. rizzinii*

## LICUALA

ARECACEAE/PALMAE

Genus of approximately 100 species of single- or cluster-stemmed palms found in rainforest and swamps, in low-lying areas from S.E. Asia to Malaysia, the New Hebrides, and Australia. Rounded, fan-like or palmately lobed leaves are arranged spirally along the upper parts of the stems; fibrous leaf bases remain on the stems after the leaves have withered. Spikes of cup-shaped, 3-petalled flowers are produced from the leaf axils. Where temperatures fall below 15–16°C (59–61°F), grow in a warm greenhouse. In warmer areas, grow the shrubby, suckering species in a border or in plantings against a wall, and the larger, single-stemmed species as lawn specimens or in a courtyard garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3), with added peat or leaf mould and sharp sand, in bright filtered light and high humidity. When in growth, water freely and apply a balanced liquid fertilizer monthly. Mist twice a day in summer. Water moderately in winter. Pot on or top-dress in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in partial shade.

• **PROPAGATION** In spring, sow seed at 24°C (75°F), or remove suckers.

• **PESTS AND DISEASES** Red spider mites and mealybugs may be troublesome under glass.



*Licuala grandis*

*L. grandis* ♂ Small palm with a single, slender, erect trunk clad in fibrous leaf bases. Long-stalked, rounded leaf-blades, 1m (3ft) across, are glossy, mid- to pale green with notched margins, and are occasionally divided into 3 broadly wedge-shaped to rounded, wavy-margined segments. Green to greenish white flowers, 1cm (1/2in) across, are borne in pendent spikes, longer than the leaves, usually in summer. Flowers are followed by spherical, glossy red fruit. ‡ to 3m (10ft), ↔ 1.5–2.5m (5–8ft). New Hebrides.

⊕ (min. 15–16°C/59–61°F)

*L. muelleri* see *L. ramsayi*.

*L. ramsayi* ♀ syn. *L. muelleri*. Medium-sized palm with a single, erect stem, the upper part clad with fibrous leaf bases, the lower part smooth. Long, spiny leaf-stalks bear rounded leaf-blades, to 1m (3ft) across, divided into many wedge-shaped, radiating, rich green segments, some of which may be joined at the tips. Cream flowers, 1cm (1/2in) across, are borne in spikes, as long as, or longer than the leaves, usually in summer, and are followed by spherical, orange-red fruit. ‡ to 12m (40ft), ↔ 3–5m (10–15ft). Australia (N.E. Queensland). ⊕ (min. 15–16°C/59–61°F)

*L. spinosa* ♂ Small, cluster-stemmed palm forming clumps of cane-like stems. These bear spirals of leaves, and are clad with fibrous leaf bases in the upper parts. Long, spiny-stalked, rounded leaf-blades, to 1.5m (5ft) across, are divided into 12–20 narrow, deep green, wedge-shaped segments with squared-off tips. Greenish white flowers, 1cm (1/2in) across, are borne in branched spikes, to

2m (6ft) long, mainly in summer, followed by ovoid red fruit. ‡↔ to 5m (15ft). Thailand, Malaysian peninsula, Indonesia, Philippines. ⊕ (min. 15–16°C/59–61°F)

▷ **Lignum, Climbing** see *Muehlenbeckia adpressa*

## LIGULARIA

ASTERACEAE/COMPOSITAE

Genus of about 150 species of large, robust, often coarse perennials, mostly from C. and E. Asia, with a few from Europe, found in moist or wet grassland, open, wet scrub and woodland, by mountain streams, and in ditches. They have, ovate-oblong or elliptic to kidney-shaped or rounded, sometimes



*Ligularia* 'Gregynog Gold'



*Ligularia przewalskii*

palmately lobed, often toothed basal leaves, borne on long leaf-stalks, and smaller, alternate stem leaves. Erect stems bear terminal corymbs or racemes of few to many, showy, daisy-like, yellow or orange flowerheads, with yellow or brown disc-florets. Grow in a mixed or herbaceous border, or naturalize in moist soil; they are also imposing waterside plants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, deep, reliably moist soil, in full sun with some midday shade. Shelter from strong winds.

• **PROPAGATION** Sow seed of species in containers outdoors in autumn or spring, or divide species and cultivars in spring or after flowering. When seed-raised, *L. dentata* 'Desdemona' and *L. dentata* 'Othello' will often produce similar seedlings.

• **PESTS AND DISEASES** Slugs and snails may damage emerging leaves in spring.

*L. clivorum* see *L. dentata*.

*L. dentata*, syn. *L. clivorum*, *Senecio clivorum* (Golden groundsel). Clump-forming perennial with kidney-shaped to rounded, toothed, mid-green leaves, to 30cm (12in) long, deeply heart-shaped at the bases; the basal leaves have red leaf-stalks. Flat corymbs of many red-stalked, brown-centred, orange-yellow flowerheads, 10cm (4in) across, are borne from midsummer to early autumn. ‡ 1–1.5m (3–5ft), ↔ 1m (3ft). China, Japan. \*\*\*. 'Desdemona' ♀ has deep orange flowerheads and rounded, brownish green leaves that are deep maroon-purple beneath; ‡ 1m (3ft).



'Othello' is similar to 'Desdemona', but with deep purplish green leaves, purple-red beneath; † 1m (3ft).

**L. 'Gregynog Gold'** ☐ ♀ Clump-forming perennial with rounded, toothed leaves, to 35cm (14in) long, heart-shaped at the bases. In late summer and early autumn, bears tall, pyramidal racemes of many brown-centred, golden orange flowerheads, to 10cm (4in) across. † to 1.8m (6ft), ↔ 1m (3ft). \*\*\*

**L. bodgsonii**. Clump-forming perennial with kidney-shaped, toothed leaves, to 12cm (5in) across, heart-shaped at the bases. In mid- and late summer, bears corymbs of many yellow-orange flowerheads, 5cm (2in) across, with reddish brown centres, on stems often marked purple towards the bases. † 90cm (36in), ↔ 60cm (24in). Japan. \*\*\*

**L. przewalskii** ☐ syn. *Senecio przewalskii*. Clump-forming perennial with palmately lobed leaves, to 30cm (12in) long, deeply cut and irregularly lobed and toothed. In mid- and late summer, dark purple-green stems bear slender, dense racemes of yellow flowerheads, 2cm (¾in) across. † to 2m (6ft), ↔ 1m (3ft). N. China. \*\*\*

**L. stenoccephala**. Clump-forming perennial with triangular, pointed, toothed leaves, to 35cm (14in) long, with heart-shaped bases. In early and late summer, tall, slender racemes of numerous yellow flowerheads, to 4cm (1½in) across, with orange-yellow centres, are borne on black-green stems. † 1.5m (5ft), ↔ 1m (3ft). N. China, Taiwan, Japan. \*\*\*. **'The Rocket'** ♀, of hybrid origin, has tall black flower stems and boldly toothed leaves; † 1.8m (6ft). **'Weihestephana'**, of hybrid origin, has golden yellow flowerheads, 6–7cm (2½–3in) across; † 1.8m (6ft).

**L. tangutica** see *Senecio tanguticus*.

**L. tussilaginea** see *Farfugium japonicum*.

**L. veitchiana**. Clump-forming perennial bearing triangular to heart-shaped leaves, 30–35cm (12–14in) long, with wavy, toothed margins. Pyramidal racemes of numerous brown-centred yellow flowerheads, to 7cm (3in) across, are borne in mid- and late summer, followed by conspicuous, fluffy, purple-brown fruit. † 1.8m (6ft), ↔ 1.2m (4ft). W. China. \*\*\*

## LIGUSTRUM

Privet

OLEACEAE

Genus of about 50 species of deciduous, semi-evergreen, or evergreen shrubs and trees found in woodland and thickets in Europe, N. Africa, the Himalayas, S.W. and E. Asia, and Australia. They bear opposite, variably shaped, often glossy leaves, and terminal panicles of small, tubular, 4-lobed, unpleasantly scented white flowers, followed by spherical or ovoid fruit. Grown for their foliage and flowers, they are good for a shrub border or as specimen plants; most species may be used for hedging. All parts may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy to frost hardy.  
• **CULTIVATION** Grow in any well-drained soil in full sun or partial shade; variegated privets colour better in sun. Pruning group 1; clip hedges twice in summer.



*Ligustrum japonicum* 'Rotundifolium'

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Take semi-ripe cuttings in summer or hardwood cuttings in winter.

• **PESTS AND DISEASES** Susceptible to aphids, leaf spots, scale insects, leaf miners, thrips, honey fungus, and wilt.

**L. amurense** (Amur privet). Dense, upright, deciduous or semi-evergreen shrub with elliptic, mid-green leaves, to 5cm (2in) long. White flowers are produced in panicles, 4–5cm (1½–2in) long, in late spring and early summer, followed by small, ovoid black fruit. Useful for hedging. † 5m (15ft). N. China. \*\*\*

**L. chenaultii** ♀ Vigorous, broadly conical, semi-evergreen tree with lance-



*Ligustrum lucidum*



*Ligustrum lucidum* 'Excelsum Superbum'

shaped, occasionally notched, dark green leaves, 15cm (6in) or more long. White flowers are borne in panicles, 15–18cm (6–7in) long, in midsummer, followed by small, spherical black fruit. † 10m (30ft), ↔ 8m (25ft). S.W. China. \*\*\*

**L. delavayanum**. Compact, spreading, evergreen shrub with ovate, oval, or oblong, dark green leaves, to 3cm (1¼in) long. White flowers are produced in panicles, to 5cm (2in) long, in early summer, followed by spherical to ovoid, blue-black fruit. Useful for hedging. † 2m (6ft), ↔ 3m (10ft). W. China (Sichuan, Yunnan). \*\*\*

**L. x ibolium** (*L. obtusifolium* x *L. ovalifolium*). Upright, deciduous to semi-evergreen shrub with oval, glossy, mid-green leaves, to 6cm (2½in) long. White flowers are produced in panicles, 5–8cm (2–3in) long, in midsummer. Useful for hedging. † 3m (10ft). Garden origin. \*\*\*

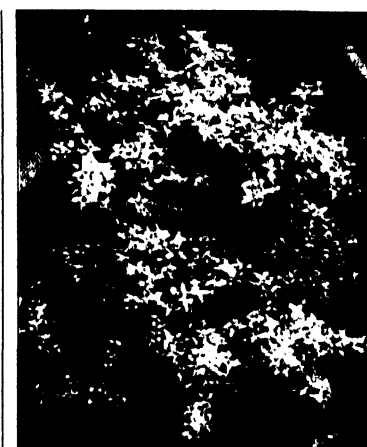
**L. japonicum** (Japanese privet). Upright, dense, evergreen shrub with ovate, glossy, very dark green leaves, to 10cm (4in) long. White flowers are produced in panicles, to 15cm (6in) long, from midsummer to early autumn, and are followed by ovoid-oblong black fruit. † 3m (10ft), ↔ 2.5m (8ft). N. China, Korea, Japan. \*\*\*

**'Rotundifolium'** ☐ is slow-growing and stiffly branched, with rounded, very leathery leaves, to 6cm (2½in) long; † 1.5m (5ft), ↔ 1m (3ft).

**L. lucidum** ☐ ♀ (Chinese privet). Conical, evergreen tree or shrub with ovate or oval, tapered, glossy, dark green leaves, to 15cm (6in) long. White flowers are produced in panicles, to 20cm (8in) long, in late summer and early autumn, followed by ovoid-oblong, blue-black fruit. † 10m (30ft). China, Korea, Japan. \*\*\*. **'Excelsum Superbum'** ☐ ♀ has yellow-margined, bright green leaves. **'Tricolor'** has narrow, green and grey-green leaves with white margins (pink when young).

**L. obtusifolium**. Graceful, spreading, deciduous shrub with oval, dark green leaves, to 5cm (2in) long, often tinged purple in autumn. White flowers are produced in nodding panicles, to 5cm (2in) long, in midsummer, followed by spherical, blue-black fruit. Useful for hedging. † 3m (10ft), ↔ 4m (12ft). Japan. \*\*\*

**L. ovalifolium**. Vigorous, upright, evergreen or semi-evergreen shrub with oval, rich green leaves, to 6cm (2½in)



*Ligustrum sinense*

long. White flowers are borne in dense panicles, to 10cm (4in) long, in midsummer, followed by spherical, shiny black fruit. Useful for hedging. † 4m (12ft). Japan. \*\*\*. **'Argentum'** has leaves margined creamy white.

**'Aureum'** ♀ syn. **'Aureomarginatum'** (Golden privet), has leaves with broad, bright yellow margins.

**L. quiboui** ♀ Upright then rounded, deciduous shrub with slender, arching branches and narrowly oval to obovate, glossy, mid-green leaves, to 5cm (2in) long. Fragrant white flowers are produced in open panicles, 20cm (8in) or more long, in late summer and early autumn, followed by ovoid, glossy, black-purple fruit. Useful for hedging. † 5m (15ft). China. \*\*\*

**L. sinense** ☐ Vigorous, bushy, tree-like, deciduous or semi-evergreen shrub with arching branches and elliptic-oblong or lance-shaped, pale green leaves, to 7cm (3in) long. White flowers are profusely borne in panicles, to 10cm (4in) long, in midsummer, and are followed by spherical, purple-black fruit. Useful for hedging. † 4m (12ft). China. \*\*\*. **'Variegatum'** has white-margined, pale green leaves. **'Wimbei'** is compact and slow-growing, with upright leaves, to 1cm (½in) long. Rarely flowers; † 1.5m (5ft), ↔ 1.2m (4ft).

**L. 'Vicaryi'**. Dense, bushy, semi-evergreen shrub with broadly oval, golden yellow leaves, to 9cm (3½in) long. White flowers are produced in panicles, to 7cm (3in) long, in midsummer, followed by spherical, blue-black fruit. † 3m (10ft). \*\*\*

**L. vulgare** (Common privet). Bushy, deciduous or semi-evergreen shrub with narrowly oval to lance-shaped, dark green leaves, to 6cm (2½in) long. White flowers are produced in panicles, to 5cm (2in) long, in early and midsummer, followed by spherical to ovoid black fruit. Useful for hedging. † 3m (10ft). Europe, N. Africa, S.W. Asia. \*\*\*. **'Aureum'** has golden yellow foliage; † 2m (6ft).

▷ **Lilac** see *Syringa*

**California** see *Ceanothus*

**Common** see *Syringa vulgaris*

**Himalayan** see *Syringa emodi*

**Persian** see *Melia azedarach*, *Syringa x persica*

**Rouen** see *Syringa x chinensis*

**St. Vincent** see *Solanum seaforthianum*

## LILIUM

Lily

LILIACEAE

Genus of approximately 100 species of bulbous perennials, mainly from wooded habitats and scrub in Europe, Asia south to the Philippines, and North America; there are also innumerable garden hybrids. The bulbs are composed of overlapping, fleshy scales and are sometimes rhizomatous. The stems are unbranched and usually erect; in some lilies, roots develop on the stems just above the bulb. Numerous elliptic to lance-shaped or linear, glossy, mid- to dark green leaves are arranged in whorls or spirals, or are scattered alternately up the stems. Lilies are often tall-growing, attaining a height of up to 3m (10ft), but do not spread (therefore only height measurements are given in the entries below).

The showy, sometimes very fragrant flowers are solitary or borne in racemes, panicles, or umbels, and are followed by 3-parted capsules containing flat, papery seeds. The flowers may be upward-facing, horizontal or outward-facing, nodding, or pendent. They may be cup- to bowl- or bell-shaped, trumpet-shaped, funnel-shaped, turkscap (in which the blooms have strongly reflexed tepals), or occasionally star-shaped; each with 6 stamens and 6 tepals (see panel above). The tepals, occurring in most colours except blue, may be plain or marked with lines, spots, or papillae. Three categories of flower size – small, medium, and large – are used in the descriptions below. For turkscap, bowl-, cup-, and star-shaped flowers: small is up to 5cm (2in) across; medium is 5–7cm (2–3in) across; large is over 7cm (3in) across. For trumpet- and funnel-shaped flowers: small is up to 7cm (3in) long; medium is 7–10cm (3–4in) long; large is over 10cm (4in) long.

Lilies may be grown in many sites, including woodland and wild gardens and among shrubs or herbaceous plants. They are often grown for exhibition and provide excellent cut flowers. A few are suitable for a rock garden. Many also grow well in a large container on a patio. In frost-prone climates, grow half-hardy lilies in a cool greenhouse.

Lilies are classified into 9 divisions:

**Division 1 (Asiatic hybrids)**

These lilies are derived from various Asiatic species, including *L. bulbiferum*, *L. cernuum*, *L. concolor*, *L. davidii*, *L. lancifolium*, and *L. maculatum*. The flowers are borne in racemes or umbels, and are usually unscented. The leaves are narrowly ovate and arranged alternately. There are 3 subdivisions: 1a) upward-facing flowers; 1b) outward-facing flowers; 1c) pendent flowers.

**Division 2 (Martagon hybrids)**

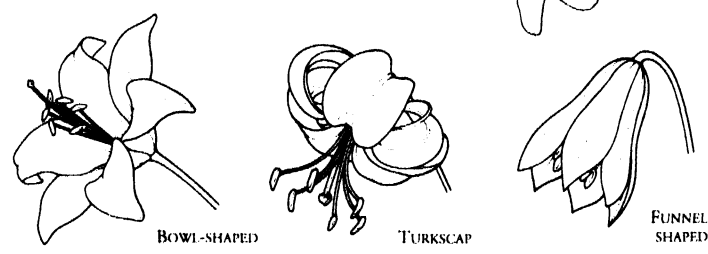
Derived primarily from *L. hansonii* and *L. martagon*, these lilies produce racemes of turkscap, sometimes scented flowers, and have whorls of elliptic leaves.

**Division 3 (Candidum hybrids)**

Derived from *L. candidum* and other European species, except *L. martagon*, these lilies produce sometimes scented, mostly turkscap flowers, singly or in umbels or racemes. Leaves are elliptic, and spirally arranged or scattered.

## LILY FLOWERS

Lilies are valued for their very showy, often fragrant flowers. The 6 plain or strikingly marked tepals are variably curved, giving rise to the different shapes shown here, and to forms intermediate between them.

**Division 4 (American hybrids)**

Derived from American species, these lilies bear racemes of sometimes scented, mostly turkscap, but occasionally funnel-shaped flowers, and have whorls of lance-shaped to elliptic leaves.

**Division 5 (Longiflorum hybrids)**

Derived from *L. formosanum* and *L. longiflorum*, these lilies bear racemes or umbels of large, often sweetly scented, trumpet- or funnel-shaped flowers, sometimes only 2 or 3 per stem. Leaves are linear to narrowly lance-shaped, and scattered.

**Division 6 (Trumpet and Aurelian hybrids)**

Derived from Asiatic species, including *L. regale*, *L. henryi*, and *L. sargentiae*, these lilies bear racemes or umbels of usually scented flowers. Leaves are elliptic to linear, and alternate or spirally arranged. There are 4 subdivisions: 6a) trumpet-shaped flowers; 6b) bowl-shaped flowers; 6c) very shallowly bowl-shaped flowers, some almost flat; 6d) distinctly recurved flowers.

**Division 7 (Oriental hybrids)**

These lilies are derived from E. Asian species, such as *L. auratum*, *L. japonicum*, and *L. speciosum*, as well as their hybrids with *L. henryi*. Flowers are borne in racemes or panicles, and are often scented. Leaves are lance-shaped and alternate. There are 4 subdivisions: 7a) trumpet-shaped flowers; 7b) bowl-shaped flowers; 7c) flat or very shallowly bowl-shaped flowers; 7d) turkscap or variously recurved flowers.

**Division 8. Other hybrids.****Division 9. All true species.**

• **HARDINESS** Fully hardy to half hardy, but young growth may be damaged by frost.

• **CULTIVATION** Grow in well-drained soil enriched with leaf mould or well-rotted organic matter. Most prefer acid to neutral soil, but some are lime-tolerant or prefer alkaline soils. The majority like a position in full sun, with the base of the plant in shade; a few prefer partial shade in light, open woodland. They do not thrive in deep shade. Under glass, grow in loam-based potting compost (J1 No.2), with added grit and leaf mould, in full light with shade from hot sun. In active growth, water freely and apply a high-potash liquid fertilizer every 2 weeks. Keep moist in winter. Plant most bulbs (which should be plump) in autumn, at a depth of 2–3 times their height, and with a distance between them equivalent

to 3 times the diameter of the bulb; plant bulbs of stem-rooting lilies at a depth of at least 3 times the bulb height. Plant *L. candidum* and *L. x testaceum* very close to the soil surface; they also tolerate drier soil than other lilies.

• **PROPAGATION** Sow seed as soon as ripe; sow seed of hardy lilies in containers in a cold frame, and of half-hardy lilies at 13–18°C (55–64°F). Remove scales, offsets, or bulblets from dormant bulbs as soon as the foliage dies down, or detach stem bulbils (where these are produced) in late summer.

• **PESTS AND DISEASES** Lily beetle, aphids, slugs, thrips, leatherjackets, and wireworms, as well as small mammals such as rabbits and voles, may be a problem. Various fungi can infect lilies either below or above ground. Grey mould (*Botrytis*) is sometimes a problem, especially in a wet, cool spring. Viruses may be troublesome, although some cultivars are virus-tolerant and grow well despite infection.

**L. 'African Queen'** ■ Vigorous Division 6a lily with erect stems. In mid- and late summer, large, fragrant, outward-facing to nodding, trumpet-shaped flowers, brownish purple

outside, yellow or orange-apricot inside, are borne in pyramid-shaped racemes. † 1.5–2m (5–6ft). \*\*

**L. amabile.** Delicate Division 9 lily with slender, downy stems bearing scattered, linear leaves, 9cm (3½in) long, on the upper half of the stem only. In early and midsummer, produces racemes of up to 10 small, unpleasantly scented, turkscap red flowers, 2.5–3cm (1–1¼in) across, with recurved tepals, to 6cm (2½in) long; they have dark purple or black spots and reddish brown anthers. Grow in acid or alkaline soil. † 40–90cm (16–36in). Korea. \*\*\*

**var. luteum** produces yellow flowers.

**L. 'Amber Gold'.** Division 1c lily bearing racemes, in early and midsummer, of medium-sized, unscented, turkscap, bright orange-yellow flowers, spotted maroon in the centres and with reddish brown anthers. † 1.2–1.5m (4–5ft). \*\*\*

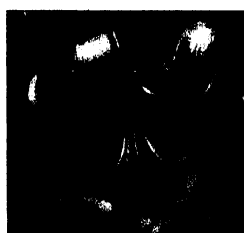
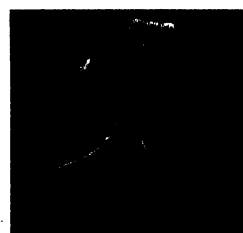
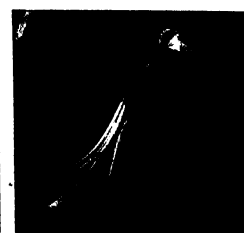
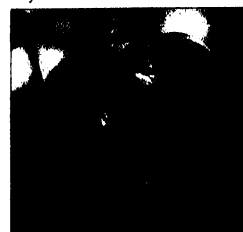
**L. 'Angela North'** ■ Clump-forming, moderately vigorous Division 1c lily. In midsummer, bears racemes of medium-sized, faintly scented, turkscap, deep wine-red flowers, with some darker spotting. † 70–120cm (28–48in). \*\*\*

**L. 'Ariadne'** ■ Elegant Division 1c lily with slender stems. In midsummer, produces racemes of small, scented, turkscap, pale orange flowers, flushed purple towards the tips of the tepals. † 0.8–1.4m (2¾–4½ft). \*\*\*

**L. auratum** (Golden-rayed lily). Vigorous Division 9 lily with stiff stems bearing scattered, lance-shaped, deep green leaves, 22cm (9in) long. In late summer and early autumn, produces racemes of usually up to 12, sometimes up to 30, sweetly fragrant, open bowl-shaped flowers, to 30cm (12in) across; the white tepals are recurved towards the tips, have a prominent central gold band, and are often crimson-speckled. Susceptible to virus. † 0.6–1.5m (2–5ft). Japan. \*\*\*. **'Crimson Beauty'** produces flowers with a crimson band along the centre of each tepal; † to 1m (3ft). **'Golden Ray'** produces large



*Lilium bulbiferum* var. *croceum*

*Lilium* 'African Queen'*Lilium* 'Angela North'*Lilium* 'Ariadne'*Lilium auratum* var. *platyphyllum**Lilium* Bellingham Hybrids*Lilium* 'Black Beauty'*Lilium* 'Bright Star'*Lilium* 'Bronwen North'*Lilium canadense**Lilium candidum**Lilium chalcidonicum**Lilium* 'Connecticut King'

flowers, to 35cm (14in) across, with a deep yellow band along each tepal; † to 2m (6ft). **var. *platyphyllum*** [ ] ♀ has broadly lance-shaped leaves, and bears flowers with a yellow band along each tepal but few spots; † to 1.5m (5ft). **L. 'Barbara North'** ♀ Sturdy, clump-forming Division 1c lily. In mid-summer, produces racemes of medium-sized, slightly scented, broad, turkscap, mid-pink flowers, with paler throats and a scattering of small, dark red spots. † 70–120cm (28–48in). \*\*\*

**L. Bellingham Hybrids** [ ] ♀ (*L. humboldtii* × *L. pardalinum* × *L. parryi*). Vigorous Division 4 lilies with rhizomatous bulbs. In early and mid-summer, bear racemes of medium-sized, unscented, turkscap flowers, ranging from yellow to orange and red, spotted with brown or deep red. They increase rapidly but require acid soil and partial shade. † 1.8–2.2m (6–7ft). \*\*\*

**L. 'Black Beauty'** [ ] Vigorous Division 7d lily. In midsummer, bears racemes of medium-sized, scented, turkscap, dark blackish red flowers, with green centres and white tepal margins. † 1.4–2m (4½–6ft). \*\*\*

**L. 'Black Dragon'**. Division 6a lily bearing stout racemes of large, scented, outward-facing, trumpet-shaped flowers, dark purplish red outside, white within, in early summer. † 1.5m (5ft). \*\*\*

**L. 'Black Magic'**. Vigorous Division 6a lily bearing racemes of large, fragrant, trumpet-shaped flowers in mid- and late summer; opening from maroon buds, they are glistening white inside, reddish black outside. † 1.5–2m (5–6ft). \*\*\*

**L. 'Bright Star'** [ ] Division 6d lily bearing racemes of large, scented, outward-facing, ivory-white flowers in mid- and late summer; spreading tepals are recurved at the tips and each has an orange central band, producing a star-like effect. Lime-tolerant. † 1–1.5m (3–5ft). \*\*\*

**L. 'Bronwen North'** [ ] Division 1c lily bearing racemes of medium-sized, slightly scented, turkscap, pale mauve-pink flowers, the throats pale pink with purple spots and lines, in early summer. † 80–100cm (32–39in). \*\*\*

**L. 'Brushmarks'**. Division 1a lily producing racemes of large, upward-facing, cup-shaped orange flowers, with deep red marks and green throats, in early summer. † to 1m (3ft). \*\*\*

**L. *bulbiferum*** (Orange lily). Vigorous, clump-forming Division 9 lily producing scattered, narrowly to broadly lance-shaped leaves, 5–15cm (2–6in) long, with marginal hairs; bulbils are borne in the upper leaf axils. In early and midsummer, bears usually 1- to 5-flowered umbels (sometimes many-flowered, dense racemes) of unscented, erect, bowl-shaped, bright orange-red flowers, 10–15cm (4–6in) across; the tepals are broad, with black or maroon spots and darker bases and tips. Grows well in acid or alkaline soil. † 40–150cm (16–60in). S. Europe. \*\*\* **var. *croceum*** [ ] ♀ has orange flowers and does not produce bulbils.

**L. *canadense*** [ ] (Meadow lily). Division 9 lily with rhizomatous bulbs and whorls of lance-shaped to inversely lance-shaped leaves, 15cm (6in) long, each with 5–7 parallel veins. In mid- and late summer, produces umbels, or occasionally racemes, of up to 30 faintly scented, narrowly to broadly trumpet-shaped yellow flowers, 5–8cm (2–3in) long, with recurved tips and maroon spots in the centres. † 1–1.6m (3–5½ft). E. North America. \*\*\* **var. *coccineum***. syn. var. *rubrum*, bears bright red flowers with yellow throats. **var. *editorum*** has broader leaves and red flowers. **var. *rubrum*** see var. *coccineum*.

**L. *candidum*** [ ] ♀ (Madonna lily). Division 9 lily with broad, inversely lance-shaped, shiny, bright green basal leaves, 22cm (9in) long, appearing in autumn. Stiffly erect stems bear smaller, scattered or spirally arranged, often somewhat twisted, lance-shaped leaves, to 8cm (3in) long. In midsummer, produces a raceme of 5–20 sweetly fragrant, broadly trumpet-shaped, pure white flowers, 5–8cm (2–3in) long, with yellowish bases and bright yellow anthers. Produces overwintering basal leaves (the only lily with this character). Requires neutral to alkaline soil. † 1–1.8m (3–6ft). S.E. Europe to E. Mediterranean. \*\*\*

**L. *carniolicum*** see *L. pyrenaicum* subsp. *carniolicum*.

**L. 'Casa Blanca'** ♀ Division 7b lily, derived from *L. auratum*, with stout, stiff stems. In mid- and late summer, large, sweetly fragrant, bowl-shaped, pure white flowers, with widely spreading tepals that are recurved near

the tips, are produced in umbels; they have white papillae near the bases inside, and orange-red anthers. † 1–1.2m (3–4ft). \*\*\*

**L. *cernuum*** (Nodding lily). Small, stem-rooting Division 9 lily. Scattered, linear leaves, 8–18cm (3–7in) long, are mostly concentrated in the middle third of the slender stem. In early and mid-summer, bears racemes of usually up to 6 (occasionally up to 15) fragrant, turkscap, pale lilac, pink, or purple flowers, 3–5cm (1¼–2in) across. Lime-tolerant, but prefers moist, peaty soil. † 40–60cm (16–24in). Russia (N.E. Siberia) to Korea. \*\*\*

**L. *chalcidonicum*** [ ] ♀ syn. *L. heldreichii* (Scarlet turkscap lily). Relatively small, stem-rooting Division 9 lily with spirally arranged, lance-shaped, deep green leaves, 12cm (5in) long, with silver-hairy margins; the lower leaves are spreading, the upper ones erect. In midsummer, produces racemes of up to 12 small, unpleasantly scented, turkscap, sealing-wax-red flowers, 8cm (3in) across, unspotted, but with self-coloured papillae at the bases. Grow in any soil, in full sun or partial shade. † 0.6–1.5m (2–5ft). N. Greece, Albania. \*\*\*

**L. 'Cherrywood'**. Division 4 lily producing racemes of medium-sized, unscented, turkscap, deep red or orange-red flowers, with orange throats speckled magenta-brown, in midsummer. Suitable for full sun or partial shade. † to 2m (6ft). \*\*\*

**L. 'Chinook'**. Moderately vigorous Division 1a lily. In early and mid-summer, bears umbels of medium-sized, unscented, bowl-shaped, pale apricot-buff flowers. † 1–1.2m (3–4ft). \*\*\*

**L. 'Citronella'** [ ] Vigorous, clump-forming Division 1c lily. In mid-summer, bears racemes or panicles of medium-sized, turkscap, bright yellow to lemon-yellow flowers, speckled with faint black or reddish spots inside. † 1.2–1.5m (4–5ft). \*\*\*

**L. *concolor*** (Morning star lily). Stem-rooting Division 9 lily with reddish green stems bearing scattered, linear to linear-lance-shaped leaves, to 9cm (3½in) long, slightly hairy on the margins and beneath. In early and mid-summer, produces racemes or umbels of up to 10 fragrant, upward-facing, star-shaped, glossy scarlet flowers,

3–4cm (1¼–1½in) across. † 30–90cm (12–36in). W. China. \*\*\*

**L. 'Connecticut Beauty'**. Moderately vigorous Division 1a lily. In early and midsummer, bears umbels of medium-sized, slightly scented, bowl-shaped yellow flowers, darker along the centre of each tepal and with some darker spotting. † 60–100cm (24–39in). \*\*\*

**L. 'Connecticut King'** [ ] Vigorous, clump-forming Division 1a lily. In early and midsummer, produces racemes of medium-sized, unscented, long-lasting, star-shaped, rich deep yellow flowers, paling slightly towards the tips of the spreading, somewhat recurved tepals. † 1m (3ft). \*\*\*

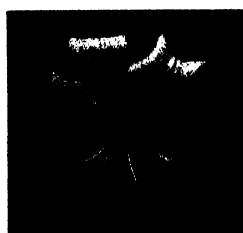
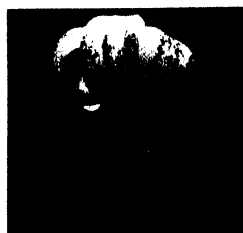
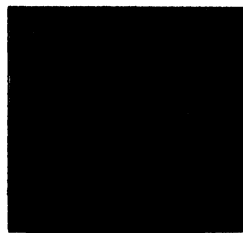
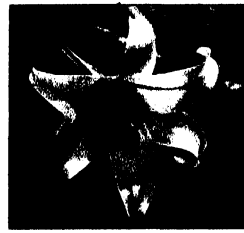
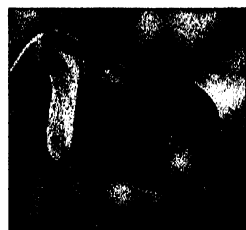
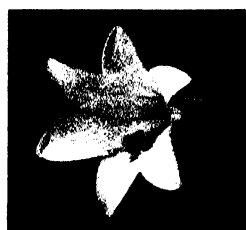
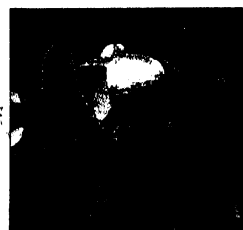
**L. 'Connecticut Yankee'**. Elegant Division 1c lily bearing racemes of medium-sized, unscented, turkscap, rich orange-red flowers, with a few darker spots within, in midsummer. † 1.2–2m (4–6ft). \*\*\*

**L. *cordatum*** see *Cardiocrinum cordatum*.

**L. 'Corsage'**. Vigorous Division 1b lily producing racemes of medium-sized, unscented, shallow, star-shaped flowers in midsummer; they are pale pink with white centres, the spreading, recurved tepals flushed cream and yellow outside, finely dotted maroon inside. † 1.2m (4ft). \*\*\*

**L. 'Côte d'Azur'**. Early-flowering Division 1a lily. In early and mid-

*Lilium* 'Citronella'

*Lilium x dalhansonii**Lilium davidii* var.  
*willmottiae**Lilium duchartrei**Lilium* 'Enchantment'*Lilium* 'Fire King'*Lilium formosanum*  
var. *pricei**Lilium grayi**Lilium* 'Green Dragon'*Lilium hansonii**Lilium henryi**Lilium* 'Lady Bowes Lyon'*Lilium lancifolium**Lilium longiflorum**Lilium mackliniae**Lilium* 'Marie North'*Lilium martagon**Lilium martagon* var. *album**Lilium medeoloides*

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summer, bears umbels of medium-sized, unscented, bowl-shaped, deep pink flowers, with paler centres and tepals recurved towards the tips. †70–100cm (28–39in). \*\*\*

***L. x dalhansonii*** (L. *martagon* var. *cattaniae* x *L. hansonii*). Division 8 lily bearing whorls of inversely lance-shaped leaves, 15–18cm (6–7in) long. In early summer, bears racemes of numerous small, unpleasantly scented, turkscap, maroon flowers, 3–5cm (1¼–2in) across, spotted and suffused orange in the centres. †1–1.5m (3–5ft). Garden origin. \*\*\*

***L. dauricum***. Stem-rooting Division 9 lily with rhizomatous bulbs and brown-spotted green stems. Lance-shaped to linear, hairy-margined leaves, 5cm (2in) long, are scattered, but with the uppermost in a whorl below the flowers. In early and midsummer, produces umbels of up to 6 medium-sized, unscented, upward-facing, bowl-shaped, deep orange-scarlet flowers, to 10cm (4in) across, with yellowish orange centres, brownish red or purple spots, and hairy stalks. Best in acid soil, in full sun or partial shade. †50–70cm (20–28in). N.E. Asia. \*\*\*

***L. davidii***. Division 9 lily, sometimes rhizomatous, with brown-spotted green stems bearing scattered, linear, finely toothed, dark green leaves, 6–10cm (2½–4in) long, hairy beneath. In summer, produces racemes of 10–20 unscented, long-stalked, turkscap, vermilion-red flowers, to 8cm (3in) across, with purple-black spots. †1–1.2m (3–4ft). W. China. \*\*\*

var. ***willmottiae*** has rhizomatous bulbs, tall, arching stems with broader leaves, and up to 40 flowers per raceme; †to 2m (6ft). China.

***L. 'Destiny'***. Vigorous, clump-forming Division 1a lily. In early summer, bears umbels of medium-sized, unscented,

bowl-shaped yellow flowers, with brown spots and tepals recurved towards the tips. †1–1.2m (3–4ft). \*\*\*

***L. duchartrei*** Stem-rooting Division 9 lily with rhizomatous bulbs and ribbed, brown-flushed green stems bearing scattered, lance-shaped, stalkless leaves, to 10cm (4in) long, with rough margins. In summer, bears umbels of up to 12 scented, long-stalked, nodding, turkscap white flowers, 6–8cm (2½–3in) across, deep purple-spotted inside, and purple-flushed, ageing to red outside. †60–100cm (24–39in). China (Gansu, Sichuan, Yunnan). \*\*\*

***L. 'Enchantment'*** Very vigorous, clump-forming Division 1a lily. In early summer, produces umbels of medium-sized, unscented, cup-shaped, rich bright orange flowers with black spots inside. Easy to grow and good for cutting. †60–100cm (24–39in). \*\*\*

***L. 'Festival'***. Early-flowering Division 1a lily producing racemes of medium-sized, unscented, shallowly cup-shaped flowers, with spreading tepals, in early and midsummer. Flowers are pale orange, each with a deep red central star, brown spots, and tepals with red tips and margins; they are often flushed purple-brown on the outside. †1m (3ft). \*\*\*

***L. 'Fire King'*** Vigorous Division 1b lily. In midsummer, produces racemes of large, unscented, shallowly funnel-shaped, bright reddish orange flowers, spotted purple inside and with recurved tepal tips. Excellent in a container. †1–1.2m (3–4ft). \*\*\*

***L. formosanum***. Elegant, stem-rooting Division 9 lily with rhizomatous bulbs, and green stems that are purplish brown towards the bases. Numerous dark green, linear to narrowly oblong-lance-shaped leaves, 8–20cm (3–8in) long, are scattered, and sparse towards the stem tops. Slender, very fragrant, trumpet-

shaped white flowers, 12–20cm (5–8in) long, flushed reddish purple outside, and with flared and somewhat recurved tepal tips, are borne singly, in pairs, or in umbels of up to 10, in late summer and early autumn. Requires moist, acid soil. Suitable for a conservatory.

†0.6–1.5m (2–5ft). Taiwan. \*\* var. ***pricei*** produces solitary or clusters of up to 3 flowers, which are more strongly flushed purple on the outside, and borne earlier in the summer; †10–30cm (4–12in).

***L. giganteum*** see *Cardiocrinum giganteum*.

***L. Golden Clarion Group***. Vigorous, variable Division 6a lilies producing large, scented, trumpet-shaped, golden yellow or orange-brown flowers, often flushed red outside, in short racemes in midsummer. †1.5–2m (5–6ft). \*\*\*

***L. Golden Splendor Group*** Vigorous, variable Division 6a lilies. In midsummer, strong, sturdy stems produce umbels of large, scented, outward-facing, shallowly trumpet-shaped, almost bowl-shaped flowers, in shades of yellow with dark burgundy-red bands outside. †1.2–2m (4–6ft). \*\*\*

*Lilium* Golden Splendor Group

**L. grayi** ■ Division 9 lily with rhizomatous bulbs. Stems bear whorls of lance-shaped to oblong-lance-shaped leaves, 5–10cm (2–4in) long. In mid-summer, produces tiered umbels of up to 12 scented, tubular-funnel-shaped, nodding flowers, 6cm (2½in) long, red outside, paler inside, with yellowish centres and purple spots. Requires moist, acid soil. †1–1.7m (3–5½ft). E. USA. \*\*\*

**L. 'Green Dragon'** ■ Stout Division 6a lily, derived from the Olympic Hybrids. In midsummer, bears short racemes of large, fragrant, trumpet-shaped white flowers flushed greenish brown outside and stained yellow in the centres. †1.5–2.2m (5–7ft). \*\*\*

**L. hansonii** ■ Vigorous, early-flowering, stem-rooting Division 9 lily. Inversely lance-shaped to elliptic, pale green leaves, to 18cm (7in) long, are borne in dense whorls of 12–20. In early summer, produces racemes of up to 12 small, fragrant, nodding, turkscap, brilliant orange-yellow flowers, 3–4cm (1¼–1½in) across, with thick, recurved tepals spotted purplish brown near the bases. Grow in well-drained soil in partial shade. †1–1.5m (3–5ft). Russia (E. Siberia), Korea, Japan. \*\*\*

**L. heldreichii** see *L. chalcidonicum*.

**L. henryi** ■ Vigorous, stem-rooting, clump-forming Division 9 lily with purple-marked green stems. Ovate-lance-shaped to lance-shaped leaves, 8–15cm (3–6in) long, are scattered; the lower leaves have short stalks, the upper ones are crowded below the flowers. In late summer, produces racemes of up to 10 (occasionally up to 20) faintly scented, turkscap, deep orange flowers, 6–8cm (2½–3in) across, spotted black, with deep red anthers. Easy to grow in neutral to alkaline soil in partial shade. †1–3m (3–10ft). C. China. \*\*\*

**L. 'Hornback's Gold'** ■ Division 1c lily bearing few-flowered umbels of large, unscented, cup-shaped, pale yellow flowers with light brown spotting, in midsummer. †1–1.2m (3–4ft). \*\*\*

**L. 'Imperial Gold'** ■ Division 7c lily bearing racemes, in late summer, of large, fragrant, star-shaped, glistening white flowers, each tepal with recurved tips and a yellow stripe down the centre. †1.8–2m (6ft). \*\*\*

**L. 'Imperial Silver'** ■ Division 7c lily with the stems often spotted red. In late summer, produces racemes of large, fragrant, broad, shallowly bowl-shaped white flowers, with wide-spreading, burgundy-spotted tepals with recurved tips, and orange-red anthers. †1.5–2m (5–6ft). \*\*\*

**L. 'Jetfire'** ■ Early-flowering Division 1a lily bearing umbels of medium-sized, unscented, cup-shaped, rich orange flowers with yellow centres, in early and midsummer. †80–120cm (32–48in). \*\*\*

**L. 'Journey's End'** ■ Stout Division 7d lily producing racemes of large, unscented, broad, turkscap flowers in late summer; the spreading tepals are deep pink, with maroon spots and white margins and tips. †1–2m (3–6ft). \*\*\*

**L. 'Joy'**, syn. *L. 'Le Rêve'*. Division 7b lily bearing racemes of medium-sized, unscented, bowl-shaped, reddish purple flowers with maroon spotting towards the centres, in midsummer. †60–80cm (24–32in). \*\*\*



*Lilium 'Journey's End'*

**L. 'Karen North'** ■ Elegant Division 1c lily producing lax racemes of medium-sized, unscented, turkscap, orange-pink flowers with deep pink spots, in midsummer. †1–1.4m (3–4½ft). \*\*\*

**L. 'King Pete'** ■ Vigorous, clump-forming Division 1b lily. In mid-summer, produces umbels of medium-sized, unscented, broad, bowl-shaped cream flowers, marked and spotted orange and with orange-red anthers. Long-lasting in flower and good for cutting. †90cm (3ft). \*\*\*

**L. 'Lady Bowes Lyon'** ■ Division 1c lily bearing racemes of medium-sized, unscented, turkscap, vivid red flowers spotted black, in midsummer. †1–1.2m (3–4ft). \*\*\*

**L. 'Lake Tahoe'** ■ Division 4 lily bearing racemes of medium-sized, unscented, turkscap flowers in midsummer; the red, pink-spotted tepals have gold bands towards their white bases. †1.6–2m (5½–6ft). \*\*\*

**L. lancifolium** ■ syn. *L. tigrinum* (Tiger lily). Robust, stem-rooting, clump-forming Division 9 lily with dark purple, often white-hairy stems. Scattered, narrowly lance-shaped leaves, 12–20cm (5–8in) long, have rough margins; the upper ones produce dark purplish black bulbils in the axils. Up to 40 unscented, nodding, turkscap, orange-red flowers, 12cm (5in) across, with dark purple spots and papillae, are produced in racemes in late summer and early autumn. Prefers moist, acid soil, but tolerates some lime. †0.6–1.5m (2–5ft). E. China, Korea, Japan. \*\*\*

**var. flaviflorum** produces yellow flowers; Japan. **'Flore Pleno'** bears double flowers with 24–36 tepals and no stamens. **var. splendens** is exceptionally vigorous, with up to 25 large, black-spotted, deep orange-red flowers on downy stems. **'Yellow Tiger'** is a selection from *var. flaviflorum*, with purple-spotted, bright yellow flowers.

**L. 'Le Rêve'** see *L. 'Joy'*.

**L. 'Limelight'** ■ Moderately robust Division 6a lily. In midsummer, bears short racemes of large, fragrant, slightly pendent, trumpet-shaped, lime-yellow flowers that are flushed with green, especially outside. †1–2m (3–6ft). \*\*\*

**L. longiflorum** ■ (Easter lily). Vigorous, stem-rooting Division 9 lily with scattered, lance-shaped to oblong-lance-shaped, shiny, deep green leaves, to 18cm (7in) long. In midsummer,

bears short racemes of 1–6 very fragrant, trumpet-shaped, horizontally placed, pure white flowers, to 18cm (7in) long, with yellow anthers. Widely grown for cut flowers; excellent in a container.

Lime-tolerant. Grow in partial shade.

†40–100cm (16–39in). S. Japan, Taiwan. \* **'Casa Rosa'** bears white flowers, flushed rose-pink. **'White American'** produces white flowers with green tips and deep yellow anthers.

**L. mackliniae** ■ Small, stem-rooting Division 9 lily with slender green stems, sometimes tinged purple, and linear-lance-shaped to narrowly elliptic, deep green leaves, 3–6cm (1¼–2½in) long, scattered or whorled near the tops of the stems. In early and midsummer, bears racemes of up to 6 unscented, semi-pendent, bowl-shaped, purple-flushed, rose-pink flowers, 5cm (2in) across, with purple anthers. †30–60cm (12–24in). N.E. India (Assam). \*\*\*

**L. maculatum**, syn. *L. thunbergianum*. Short, stem-rooting Division 9 lily with ribbed stems and scattered, elliptic to lance-shaped leaves, 5–10cm (2–4in) long. In early and midsummer, produces umbels of faintly scented, bowl-shaped, orange, red, or yellow flowers, 8–10cm (3–4in) across, with varying amounts of darker spotting. Prefers neutral to alkaline soil. †50–60cm (20–24in). Japan. \*\*\* **var. flavum** produces yellow flowers.

**L. 'Magic Pink'** ■ Clump-forming Division 7b lily. In midsummer, produces short racemes of large, slightly scented, half-nodding, bowl-shaped, soft pink flowers, with a darker centre to each tepal. †1.2m (4ft). \*\*\*

**L. 'Marhan'** ■ Stout Division 2 lily producing racemes, in early summer, of medium-sized, unpleasantly scented, turkscap, orange flowers, with reddish brown spotting. †1.5–2m (5–6ft). \*\*\*

**L. 'Marie North'** ■ Clump-forming Division 1c lily producing racemes of medium-sized, slightly scented, turkscap flowers in midsummer; dark pink in

bud, the flowers open white, suffused pinkish mauve with some deeper speckling in the centres. Bulbils are sometimes produced. †80–120cm (32–48in). \*\*\*

**L. martagon** ■ (Common turkscap lily). Vigorous, clump-forming, stem-rooting Division 9 lily producing stiff, purple- or red-flushed green stems.

Elliptic to inversely lance-shaped leaves, to 16cm (6in) long, often hairy on the undersides, are mostly borne in dense whorls. In early and midsummer, produces narrow racemes of up to 50 small, somewhat unpleasant-smelling, pendent or nodding, glossy, turkscap, pink to purplish red flowers, to 5cm (2in) across, with some darker coloured spotting or flecking. Grow in almost any well-drained soil in full sun or partial shade. †0.9–2m (3–6ft). Europe to Mongolia. \*\*\* **var. album** ■ *var. alba* has bright green stems bearing small, pure white flowers, to 4cm (1½in) across.

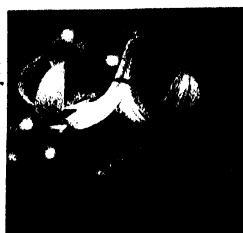
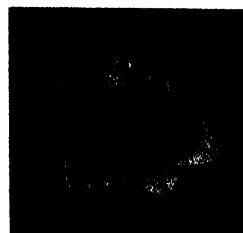
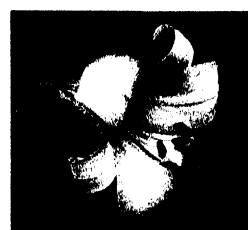
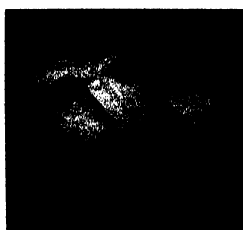
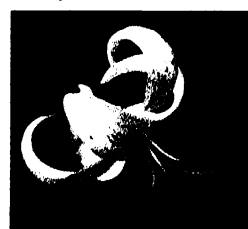
**var. cattanae** ■ syn. *var. dalmaticum*, has hairy stems and buds, and produces deep maroon flowers. **var. dalmaticum** see *var. cattanae*. **'Inshriach Ivory'** bears ivory-white flowers. **'Inshriach Rose'** has stout stems bearing deep rose-purple flowers with darker spots.

**L. 'Maxwill'** ■ Striking Division 1c lily. In midsummer, stout stems produce racemes of small, unscented, turkscap, black-spotted, brilliant orange-red flowers, with strongly recurved tepals. †1.5–2.2m (5–7ft). \*\*\*

**L. medeoloides** ■ Stem-rooting Division 9 lily with hollow green stems and stalkless, lance-shaped leaves, 12cm (5in) long, mostly in 1 or 2 whorls on the lower parts of the stems, with a few scattered in the upper parts. In mid-summer, produces short racemes or umbels of up to 10 unscented, turkscap, orange-red to apricot flowers, 4.5cm (1¾in) across, with darker spots and purple anthers. Requires acid soil and partial shade. †40–75cm (16–30in). Russia (E. Siberia), N. China, Korea, Japan. \*\*\*



*Lilium 'Magic Pink'*

*Lilium monadelphum**Lilium* 'Mont Blanc'*Lilium nepalense**Lilium oxypetalum**Lilium pardalinum**Lilium* 'Peggy North'*Lilium* Pink Perfection Group*Lilium pomponium**Lilium pyrenaicum**Lilium pyrenaicum* subsp. *carniolicum* var. *albanicum**Lilium* 'Red Night'*Lilium regale**Lilium* 'Rosemary North'*Lilium rubellum**Lilium speciosum* var. *rubrum**Lilium* 'Star Gazer'*Lilium* 'Sun Ray'*Lilium tsingtauense*

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***L. monadelphum*** [♂] syn. *L. szovitsianum*. Stout, clump-forming, sparsely stem-rooting Division 9 lily with stiff stems and scattered, lance-shaped to inversely lance-shaped or ovate, bright green leaves, to 14cm (5½in) long. In early summer, bears racemes of up to 30 large, nodding, fragrant, broadly trumpet-shaped yellow flowers, to 10cm (4in) across, flecked and spotted maroon or purple inside, flushed purplish brown outside. Tepals are moderately to prominently recurved. Lime-tolerant. Thrives in fairly heavy soil, and survives in drier, sunnier conditions than most lilies. †1–1.5m (3–5ft). N.E. Turkey, Caucasus. \*\*\*  
***L. 'Mont Blanc'*** [♂] Short Division 1a lily producing umbels of large, unscented, wide, bowl-shaped white flowers, slightly brown-spotted in the centres, in early and midsummer. †60–70cm (24–28in). \*\*\*  
***L. 'Montreux'***. Short Division 1a lily bearing umbels, in midsummer, of medium-sized, unscented, cup-shaped

*Lilium nanum*

pink flowers, with brown dots in the centres and buff-yellow anthers. †80–100cm (32–39in). \*\*\*  
***L. nanum*** [♂] syn. *Nomocharis nana*. Small Division 9 lily with slender stems and scattered, linear leaves, to 12cm (5in) long. Bears solitary, scented, bell-shaped, pale pink to rose-purple flowers, 1–4cm (½–1½in) long, often with darker markings or spots, in early summer. Requires cool, moist, acid soil and partial shade. †6–30cm (2½–12in). Himalayas, W. China. \*\*\*. var. *flavidum* bears pale yellow flowers.  
***L. nepalense*** [♂] Stem-rooting Division 9 lily with rhizomatous bulbs, erect or arching, smooth stems, and scattered, lance-shaped to oblong-lance-shaped, deep green leaves, to 15cm (6in) long. In early and midsummer, produces unscented or unpleasantly scented, funnel-shaped, yellow, greenish yellow, or greenish white flowers, singly or occasionally in groups of 2 or 3 in the upper leaf axils. The tepals later reflex, and are either flecked and spotted reddish purple, or are entirely reddish purple or maroon in the centres. Needs cool, acid soil and partial shade. †60–100cm (24–39in). N. India to Nepal and Bhutan (Himalayas). \*  
***L. Olympic Hybrids***. Vigorous Division 6a lilies. A group of hybrids derived from various Asiatic species, including *L. brownii*, *L. leucanthum*, and *L. sargentiae*. In mid- and late summer, they bear racemes of up to 15 large, sweetly fragrant, trumpet-shaped flowers, ranging from white, greenish white, cream, and yellow, to pink and purple, often yellow in the throats. Tepals are flushed pink or purplish red on the outside. †1.2–2m (4–6ft). \*\*\*  
***L. 'Omega'***. Division 7d lily with short stems producing short racemes, in late summer, of large, rose-pink flowers, with yellowish centres and sparse red

spotting; the tepals are spreading and slightly recurved. †60–80cm (24–32in). \*\*\*

***L. oxypetalum*** [♂] syn. *Nomocharis oxypetala*. Small Division 9 lily with slender stems and scattered, linear to linear-lance-shaped leaves, to 7cm (3in) long, sometimes whorled below the flowers. In early summer, each slender stem produces 1 or 2 small, unscented, semi-pendent, shallowly bowl-shaped yellow flowers, to 5cm (2in) across, usually with some purple dots in the centres. Needs cool, moist, acid soil and partial shade. †20–30cm (8–12in). N.W. Himalayas. \*\*\*. var. *insigne* produces purple flowers.

***L. 'Pan'***. Delicate Division 1c lily bearing racemes of small, pleasantly scented, turkscap white flowers in midsummer. †1–1.2m (3–4ft). \*\*\*  
***L. pardalinum*** [♂] (Panther lily) Vigorous, clump-forming, rhizomatous Division 9 lily. Strong stems bear dense whorls of elliptic to inversely lance-shaped, dull deep green leaves, to 18cm (7in) long. In midsummer, produces racemes of up to 10 unscented, nodding, turkscap, orange-red to crimson flowers, 9cm (3½in) across, paler towards the bases and with large maroon spots (some encircled with yellow). Prefers moist soil in full sun or partial shade; lime-tolerant, but not in dry soil. †1.5–2.5m (5–8ft). W. USA. \*\*\*. var. *giganteum* ♀ is particularly vigorous, with as many as 30 flowers per stem; they are crimson, and yellow towards the bases with crimson spots; †to 3m (10ft).

***L. 'Peggy North'*** [♂] Moderately vigorous, clump-forming Division 1c lily. In midsummer, bears racemes of medium-sized, faintly scented, turkscap, orange flowers, finely speckled dark brown. †1.2–1.5m (4–5ft). \*\*\*  
***L. Pink Perfection Group*** [♂] Division 6a lilies with stout stems. In

midsummer, bear short racemes or umbels of large, scented, slightly nodding, trumpet-shaped flowers, which are deep purplish red or purple-pink, with bright orange anthers. †1.5–2m (5–6ft). \*\*\*

***L. 'Pirate'***. Division 1a lily with slender stems bearing umbels of medium-sized, unscented, star-shaped, orange-red flowers in early summer. †1–1.2m (3–4ft). \*\*\*

***L. pomponium*** [♂] Slender, stem-rooting Division 9 lily with green stems that are spotted purple on the lower halves. Scattered, linear leaves, to 15cm (6in) long, have silver-hairy margins. In early and midsummer, bears racemes of up to 6 (rarely up to 10) unpleasantly scented, pendent, turkscap, sealing-wax-red flowers, 5cm (2in) across, generally with black spots and streaks in the throats. Prefers alkaline soil in full sun or partial shade. †1m (3ft). French and Italian Alps. \*\*\*

***L. ponticum*** see *L. pyrenaicum* subsp. *ponticum*.

*Lilium* 'Sterling Star'



**L. pumilum** ♀ syn. *L. tenuifolium*. Stem-rooting Division 9 lily with slender stems bearing numerous scattered, linear leaves, to 10cm (4in) long. In early summer, bears racemes of up to 30 fragrant, nodding to pendent, turkscap, scarlet flowers, 5cm (2in) across, unspotted or with a few black spots in the centres. Requires acid soil and full sun or partial shade. †15–45cm (6–18in). Russia (Siberia) to Mongolia, N. China, and N. Korea. \*\*\*

**L. pyrenaicum** ♂♀ Stem-rooting, clump-forming Division 9 lily with green stems, sometimes spotted purple, and numerous scattered, linear to linear-lance-shaped, bright green leaves, 15cm (6in) long, often with silver-hairy margins. In early and midsummer, bears racemes of up to 12 unpleasant-smelling, pendent, turkscap, yellow or greenish yellow flowers, 5cm (2in) across, flecked and spotted dark maroon in the throats. Needs neutral to alkaline soil and full sun or partial shade. †30–100cm (12–39in). Pyrenees. \*\*\*. **subsp. carniolicum**, syn. *L. carniolicum*, has leaves with densely downy veins on the undersides, and produces orange or red flowers, spotted purple-brown; † to 1.2m (4ft); Alps, former Yugoslavia.

**subsp. carniolicum var. albanicum** ♂ has leaves that are hairless beneath, and bears plain yellow flowers; † rarely more than 40cm (16in); N. Greece, Albania. **subsp. ponticum**, syn. *L. ponticum*, bears leaves 3–8cm (1¼–3in) long, with hairs beneath, and deep yellow flowers, flecked and spotted reddish brown or purple; † to 90cm (36in); N.E. Turkey. **var. rubrum** bears orange-red flowers.

**L. 'Red Night'** ♂ syn. *L. 'Roter Cardinal'*. Division 1a lily. In early and midsummer, produces umbels of medium-sized, unscented, cup-shaped red flowers, lighter on the tepal lobes, spotted black in the centres. †70–100cm (28–39in). \*\*\*

**L. regale** ♂♀ (Regal lily). Vigorous, stem-rooting Division 9 lily with erect or arching, purple-flushed, grey-green stems and numerous scattered, linear, shiny, deep green leaves, 5–13cm (2–5in) long. In midsummer, produces umbels of up to 25, very fragrant, broadly trumpet-shaped white flowers, 12–15cm (5–6in) long, flushed purple or purple-brown outside, with yellow centres and gold anthers. Grow in most well-drained soils, except very alkaline; prefers full sun. †0.6–2m (2–6ft). W. China. \*\*\*. **var. album** bears almost pure white flowers with orange anthers.

**L. 'Rosemary North'** ♂♀ Division 1c lily producing racemes, in early and midsummer, of medium-sized, slightly scented, turkscap ochre flowers with a few dark ochre spots on the outside. †90–100cm (36–39in). \*\*\*

**L. 'Roter Cardinal'** see *L. 'Red Night'*.

**L. rubellum** ♂ Stem-rooting Division 9 lily with scattered, narrowly elliptic or narrowly ovate to lance-shaped leaves, 10cm (4in) long. In early summer, up to 9, but usually 1–4, fragrant, funnel-shaped pink flowers, 8cm (3in) long, often spotted maroon in the centres, are borne from the upper leaf axils. Requires moist, acid soil and partial shade. †30–80cm (12–32in). Japan. \*\*\*

**L. 'Shuksan'**. Stem-rooting Division 4 lily with stout stems bearing racemes, in midsummer, of medium-sized, slightly



*Lilium superbum*

scented, turkscap, orange-yellow flowers, with large black or reddish brown spots. Good in partial shade, especially in acid soil. †1.4–2m (4½–6ft). \*\*\*

**L. speciosum** ♀ Vigorous, stem-rooting Division 9 lily with erect to ascending, purple-flushed green stems. Short-stalked leaves, to 18cm (7in) long, are scattered and broadly lance-shaped to almost ovate. In late summer and early autumn, produces racemes of usually up to 12, sometimes more, large, fragrant, pendent or outward-facing, turkscap, pale pink or white flowers, to 18cm (7in) across, flushed deeper pink in the centres, and with papillae and pink or crimson spots. Needs moist, acid soil and partial shade. †1–1.7m (3–5½ft). E. China, Japan, Taiwan. \*\*\*. **var. album** produces white flowers and purple stems. 'Grand Commander' has red-spotted, lilac-purple flowers with white-margined tepals. **var. roseum** has rose-pink flowers and green stems. **var. rubrum** produces purple-brown stems and deep carmine-red flowers. 'Uchida' bears crimson-red flowers with delicate, darker red spotting.

**L. 'Star Gazer'** ♂ Vigorous Division 7d lily bearing racemes, in midsummer, of large, unscented, star-shaped red flowers with spreading tepals, recurved at the tips and marked with darker spots. Good in a container and for forcing. †1–1.5m (3–5ft). \*\*\*

**L. 'Sterling Star'** ♂ Vigorous Division 1a lily. In early and midsummer, bears short racemes of large, faintly scented, cup-shaped, off-white flowers, flushed cream and speckled brown. †1–1.2m (3–4ft). \*\*\*

**L. 'Sun Ray'** ♂ Division 1a lily bearing umbels of medium-sized, unscented, bowl-shaped yellow flowers, with a sparse scattering of brown dots, in early and midsummer. †1m (3ft). \*\*\*

**L. superbum** ♂♀ (American turkscap lily). Vigorous, stem-rooting Division 9 lily with rhizomatous bulbs, purple-mottled green stems, and linear-lance-shaped to elliptic leaves, 3.5–11cm

(1½–4½in) long, mostly produced in dense whorls. In late summer and early autumn, bears long racemes of up to 40 unscented, pendent, turkscap flowers, to 7cm (3in) across; tepals are red-flushed orange, with maroon spots, and green towards the bases. Prefers moist, acid soil, and full sun or partial shade. †1.5–3m (5–10ft). E. USA. \*\*\*

**L. szovitsianum** see *L. monadelphum*.

**L. tenuifolium** see *L. pumilum*.

**L. x testaceum** ♂♀ (*L. candidum* x *L. chalcedonicum*) (Nankeen lily). Division 3 lily with alternate, somewhat twisted, lance-shaped leaves. In early and midsummer, produces racemes of up to 12 scented, nodding, turkscap, pale apricot-orange flowers, to 8cm (3in) across, with faint red markings in the centres and red anthers. Lime-tolerant; grow in full sun or partial shade. †1–1.5m (3–5ft). Garden origin. \*\*\*

**L. thunbergianum** see *L. maculatum*.

**L. tigrinum** see *L. lancifolium*.

**L. 'Trance'**. Relatively short Division 7b lily. In early and midsummer, bears racemes of medium-sized, unscented, outward-facing, bowl-shaped pink flowers, with pale spots in the centres; tepals are dark pink along the centres,



*Lilium x testaceum*

fading to almost white at the margins. †60–100cm (24–39in). \*\*\*

**L. tsingtauense** ♂ Stem-rooting Division 9 lily with hollow stems and inversely lance-shaped, hairless leaves, to 13cm (5in) long, mostly in 2 whorls. In midsummer, bears loose umbels of up to 15 unscented, upright, shallowly trumpet-shaped, maroon-spotted, orange or orange-red flowers, 5–8cm (2–3in) across, with narrow tepals. Lime-tolerant, but best in moist, acid soil in full sun or partial shade. †70–100cm (28–39in). E. China, Korea. \*\*\*

**L. wallichianum**. Stem-rooting Division 9 lily with stiff green stems that are tinged purple and bear scattered, linear to lance-shaped, deep green leaves, to 25cm (10in) long. In autumn, bears umbels of up to 4 large, horizontal, very fragrant, trumpet-shaped, white or cream flowers, tinged yellow or green, to 20cm (8in) across. Prefers moist, acid soil. †1–2m (3–6ft). Himalayas. \*

**L. wigginsii**. Stem-rooting Division 9 lily with hairless stems and linear-lance-shaped leaves, to 22cm (9in) long, that are scattered and in 2–4 whorls roughly halfway up the stems. In midsummer, produces few-flowered racemes of unscented, pendent, turkscap, deep yellow flowers, 7cm (3in) across, with purple spots. Needs moist, acid soil and partial shade. †0.9–1.2m (3–4ft). W. USA. \*\*\*

**L. 'Yellow Blaze'**. Moderately vigorous Division 1a lily producing umbels of medium-sized, unscented, bowl-shaped, bright yellow flowers with red-brown spots, in mid- and late summer. †1.2–1.5m (4–5ft). \*\*\*

▷ **Lillipilly** see *Acmena smithii*

▷ **Lily** see *Lilium*

**African blue** see *Agapanthus*

**Amazon** see *Eucharis x grandiflora*

**American trout** see *Erythronium revolutum*

**American turkscap** see *Lilium superbum*

**Arum** see *Zantedeschia*, *Z. aethiopica*

**Atamasco** see *Zephyranthes atamasco*

**Aztec** see *Sprekelia formosissima*

**Belladonna** see *Amaryllis belladonna*

**Blackberry** see *Belamcanda chinensis*

**Blood** see *Haemanthus*, *Scadoxus*

**Common turkscap** see *Lilium martagon*

**Corn** see *Clintonia borealis*, *Isia*

**Desert** see *Hesperocallis undulata*

**Dwarf ginger** see *Kaempferia rooseana*

**Easter** see *Lilium longiflorum*

**Fire** see *Cyrtanthus*

**Florida swamp** see *Crinum americanum*

**Foxtail** see *Eremurus*

**Garland** see *Hedychium*

**Giant** see *Cardiocrinum*

**Ginger** see *Alpinia*, *Hedychium*

**Glory** see *Gloriosa*

**Golden-rayed** see *Lilium auratum*

**Golden spider** see *Lycoris aurea*

**Guernsey** see *Nerine sarniensis*

**Impala** see *Adenium*

**Jaburan** see *Ophiopogon jaburan*

**Jacobean** see *Sprekelia formosissima*

**Japanese pond** see *Nuphar japonica*

**Kaffir** see *Schizostylis*

**Lent** see *Narcissus pseudonarcissus*

**Leopard** see *Belamcanda chinensis*

**Madonna** see *Lilium candidum*

**May** see *Malianthemum*

# Lily cont.

- Meadow see *Lilium canadense*
- Mexican see *Hippeastrum reginae*
- Morning star see *Lilium concolor*
- Mount Cook see *Ranunculus lyallii*
- Nankeen see *Lilium x testaceum*
- Nodding see *Lilium cernuum*
- Orange see *Lilium bulbiferum*
- Painted wood see *Trillium undulatum*
- Panther see *Lilium pardalinum*
- Paradise see *Paradisea*
- Peace see *Spathiphyllum*, *S. wallisii*
- Peacock see *Kaempferia rooseana*
- Peruvian see *Alstroemeria*
- Pineapple see *Eucomis*
- Pink porcelain see *Alpinia zerumbet*
- Plantain see *Hosta*
- Pyjama see *Crinum macowanii*
- Queen see *Curcuma petiolata*, *Phaederanassa*
- Red spider see *Lycoris radiata*
- Regal see *Lilium regale*
- Resurrection see *Kaempferia rotunda*, *Lycoris squamigera*
- St. Bernard's see *Anthericum liliago*
- St. Bruno's see *Paradisea*
- St. Joseph's see *Hippeastrum vitatum*
- Scarborough see *Cyrtanthus elatus*
- Scarlet turkscap see *Lilium chalcidonicum*
- Sea see *Pancratium*
- Snowdon see *Lloydia serotina*
- Spear see *Doryanthes*
- Spider see *Hymenocallis*
- Tiger see *Lilium lancifolium*
- Toad see *Tricyrtis*
- Torch see *Kniphofia*
- Trout see *Erythronium*
- Voodoo see *Sauromatum venosum*
- Water see *Nymphaea*
- Wood see *Trillium*
- Yellow pond see *Nuphar*, *N. lutea*
- Lily-of-the-valley see *Convallaria*
- False see *Maianthemum bifolium*
- Wild see *Pyrola rotundifolia*
- Lily of the valley tree see *Clethra arborea*
- Lily tree see *Magnolia denudata*
- Lilyturf see *Liriope*, *Ophiopogon*
- White *Ophiopogon jaburan*
- Lime see *Tilia*
- American see *T. americana*
- Common see *T. x europaea*
- European white see *T. tomentosa*
- Japanese see *T. japonica*
- Large-leaved see *T. platyphyllos*
- Mongolian see *T. mongolica*
- Pendulous silver see *T. 'Petiolaris'*
- Red-rwigged see *T. platyphyllos*
- 'Rubra'
- Silver see *T. tomentosa*
- Small-leaved see *T. cordata*
- Limnanthemum *nymphoides* see *Nymphoides peltata*
- Limnanthemum *peltatum* see *Nymphoides peltata*

## LIMNANTHES

Poached egg plant

LIMNANTHACEAE

Genus of about 17 species of low-growing annuals from moist habitats in W. USA. They have 2-pinnatifid, bright green leaves, and produce cup-shaped, 5-petalled flowers from summer to autumn. *L. douglasii*, the only species usually cultivated, is suitable for a rock garden and as path edging. It self-seeds freely. The nectar-rich flowers are attractive to bees and hoverflies.



Limnanthes douglasii

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed *in situ* in spring or autumn. Protect autumn sowings in frost-prone areas.
- **PESTS AND DISEASES** Trouble free.

**L. douglasii** [V] (Poached egg plant). Slender-stemmed, erect to spreading annual with 2-pinnatifid, finely toothed, fleshy, glossy, bright yellow-green leaves, 5–12cm (2–5in) long. Bears numerous shallowly cup-shaped, fragrant, yellow-centred white flowers, to 2.5cm (1in) across, from summer to autumn. 1–2 to 15cm (6in) or more. USA (California, Oregon). \*\*\*

## LIMNOCHARIS

LIMNOCHARITACEAE

Genus of 2 species of evergreen and deciduous aquatic annuals and perennials, found in the shallow margins of tropical pools in S.E. Asia, South America, and the West Indies. They produce rosettes of lance-shaped to ovate leaves, and umbels of saucer-shaped yellow flowers. In areas where temperatures fall below 10°C (50°F), grow in an indoor pool. In mild, temperate areas, use for temporary summer planting around an outdoor pool; in warmer climates grow permanently outdoors. They self-seed freely, the stems that bear the seed capsules bending over to water level, where each throws up another shoot.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in baskets of heavy loam at the margins of a pool, in slightly acid water, at 20–25°C (68–77°F), in bright filtered light. Outdoors, grow in deep, acid, permanently wet soil in full sun. See also pp.52–53.
- **PROPAGATION** Scatter seed on the water surface as soon as ripe. Divide in summer.
- **PESTS AND DISEASES** Trouble free.

**L. flava**. Evergreen, marginal aquatic perennial with upright, long-stalked, lance-shaped to ovate leaves, to 20cm (8in) long, with heart-shaped bases. Umbels of 2–12 saucer-shaped yellow flowers, 2.5cm (1in) across, with off-white margins, are produced several times during summer. 1–2 to 60cm (24in). Tropical South America, West Indies. (min. 10°C/50°F)

## LIMONIUM

Sea lavender, Statice

PLUMBAGINACEAE

Genus of 150 species of annuals, biennials, and deciduous and evergreen perennials and subshrubs from coasts, salt marshes, and deserts worldwide. Simple, entire or pinnatifid, tapering leaves, often appearing almost stalkless, are mostly borne in basal rosettes. Spikelets composed of small, stalkless, papery flowers and bracts are borne in more or less one-sided, corymb-like panicles in summer and autumn; the calyces are tubular, the corollas have 5 lobed petals joined only at the bases. The calyces are usually a different colour from the corollas, and persist after the petals have fallen. Long-flowering plants, they are suitable for a sunny herbaceous or annual border, and for naturalizing in a gravel garden. They are also good for cutting and drying. The larger perennials grow well in coastal sites; the dwarf species are effective in a trough or rock garden, the less hardy ones being suitable for an alpine house.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow in preferably sandy, well-drained soil in full sun. Large perennials tolerate dry, stony soil. Protect dwarf species from winter wet. In an alpine house, grow in a mix of equal parts loam-based potting compost (J1 No.1) and grit.
- **PROPAGATION** Sow seed in early spring; sow perennials in containers outdoors and annuals at 13–18°C (55–64°F). Divide perennials in spring.
- **PESTS AND DISEASES** Susceptible to powdery mildew.

**L. aureum 'Supernova'**. Erect perennial, often grown as an annual, with narrowly spoon- to lance-shaped, mostly basal, grey-green leaves, 1–5cm (½–2in) long, tapering gradually to leaf-stalks. In summer, stiff, branched stems bear panicles of small, terminal spikelets,

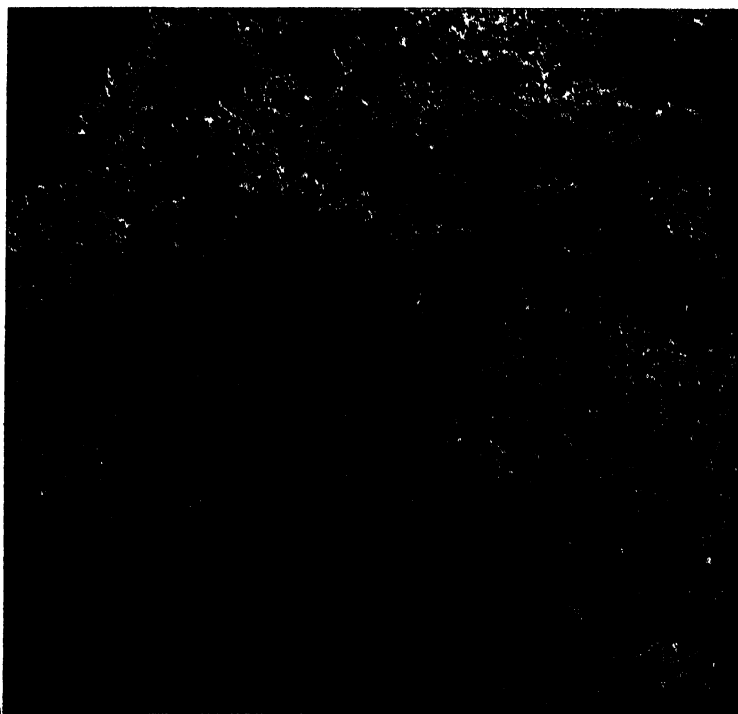


Limonium sinuatum California Series 'Iceberg'

each with tiny, funnel-shaped, orange-yellow flowers, to 5mm (¼in) long, enclosed in hairy white, papery calyces. Good for cut flowers. 1 to 30cm (12in), 1 to 23cm (9in). \*\*\*

**L. bellidifolium**, syn. *L. reticulata*, *Statice bellidifolia*. Compact, dome-forming, evergreen, woody-based perennial with spoon-shaped, dark green leaves, to 5cm (2in) long. Open panicles of dense spikelets that consist of tiny, trumpet-shaped, pale violet or blue-violet flowers, 5mm (¼in) long, with white, papery calyces, are borne on wiry, branched stems in early summer. Suitable for a rock garden, trough, or alpine house. 1 to 15cm (6in). Coasts from E. England to the Mediterranean and the Black Sea. \*\*\*

**L. latifolium** [V] syn. *L. platyphyllum* (Sea lavender). Rosette-forming perennial with elliptic to spoon-shaped, mid- to dark green leaves, usually to 30cm (12in) long, occasionally to 60cm (24in). In late summer, branched, wiry stems bear panicles of spikelets that consist of shortly tubular, deep lavender-blue flowers, 6mm (¼in) long, with white calyces. 1 to 60cm (24in) or more,



Limonium latifolium



*Limonium sinuatum* Forever Series  
'Forever Gold'

↔ 45cm (18in). E. Bulgaria to S.E. Russia. \*\*\*. 'Blue Cloud' produces mauve flowers, 7mm (¼in) across. 'Violetta' produces deep violet flowers. *L. minutum*, syn. *Statice minuta*. Woody-based, evergreen perennial with cushion-like rosettes of spoon-shaped, dark green leaves, to 1cm (½in) long, with incurved margins. In early summer, short, slightly woody, branched stems bear panicles of spikelets with 1–4 tiny purple flowers, 5mm (¼in) long. † 10cm (4in), ↔ 15cm (6in). S.E. France. \*\*\*. *L. platyphyllum* see *L. latifolium*. *L. reticulata* see *L. bellidifolium*. *L. sinuatum* (Statice). Erect, densely hairy perennial, usually grown as an annual, with basal rosettes of oblong to lance-shaped, deeply lobed, wavy-

margined, dark green leaves, 15cm (6in) long. In summer and early autumn, stiff, branched, winged, slightly leafy, bright green stems bear panicles of clustered spikelets that consist of tiny, funnel-shaped, pink, white, or blue flowers, 0.9–1.5cm (⅜–½in) long, enclosed in hairy, white or pale violet calyces. Good for cut flowers. † to 40cm (16in), ↔ 30cm (12in). Mediterranean. \*\*\*. 'Art Shades' bears flowers in orange, salmon-pink, yellow, rose-pink, red, carmine-red, blue, creamy white, or lavender-blue. **California Series** cultivars have 9 strongly toned colour forms, each coming true from seed, ranging from rich, deep purple to the clear white flowers of 'Iceberg' □. Cultivars of **Forever Series** bear large, tightly packed flower spikes in a mixture of 6 or 7 colours, including blue, pink, and yellow; 'Forever Gold' □ has yellow flowers; † to 60cm (24in). **Fortress Series** □ cultivars are freely branched, and bear flowers in about 6 vivid shades, including bright blues, pastels, and unusual apricot-yellows; † to 60cm (24in). Cultivars of **Pacific Series** have flowers in deep rose-pink, apricot, yellow, sky blue, white, deep blue, or lavender blue. Cultivars of **Petite Bouquet Series** are very dwarf, with tightly bunched spikelets in blue, purple, deep salmon-pink, pure white, creamy white, lemon-yellow, or golden yellow; † to 30cm (12in). **Sunburst Series** cultivars have flowers in warm colours, including orange-peach, apricot-yellow, and rose-red; good for cutting; † to 75cm (30in). *L. spicatum* see *Psylliostachys spicata*.



*Limonium sinuatum* Fortress Series

*L. suworowii* see *Psylliostachys suworowii*.

*L. tataricum* see *Goniolimon tataricum*.

*L. tetragonum*. Erect biennial with basal rosettes of narrowly spoon-shaped to oblong, leathery leaves, 8–15cm (3–6in) long. In autumn, stiff, branched stems bear panicles of small, terminal spikelets that consist of tiny, funnel-shaped pink flowers, 4–6mm (⅛–¼in) long, with white-hairy calyces. Good for cut flowers. † 45cm (18in), ↔ 30cm (12in). China, Korea, Japan. \*\*\*. 'Confetti' ♀ has lemon-yellow flowers. 'Stardust' ♀ is very tolerant of adverse weather, and bears up to 30 flowering stems per plant; † to 60cm (24in).

## LINANTHUS

POLEMONIACEAE

Genus of about 35 species of annuals and perennials, usually found in sandy and gravelly sites in grassland or scrub in W. USA, Mexico, and Chile. They have branched stems with alternate or opposite leaves, which are sometimes simple, but usually pinnately or palmately lobed, or fully divided, with linear segments. Bell- or funnel-shaped, white, blue, lilac, pink, or yellow flowers are borne singly or in loose cymes or dense heads, from spring to summer. Grow the perennial species in a rock garden; the annuals are suitable for an annual border or a wild garden. • **HARDINESS** Fully hardy to frost hardy. The perennials are hardy to -8°C (18°F). • **CULTIVATION** Grow in any light, well-drained soil in full sun. • **PROPAGATION** Sow seed *in situ*; perennial species in autumn, annuals in spring. Take stem-tip cuttings of *L. nuttallii* in early summer. • **PESTS AND DISEASES** Trouble free.

*L. dianthiflorus* (Ground pink). Erect, slender, branching, downy annual with mostly opposite, narrowly linear leaves, 1–2cm (½–¾in) long. Funnel-shaped then spreading, yellow-throated, white, pink, or lilac-blue flowers, to 2.5cm (1in) across, the petals lobed, toothed, and spotted at the bases, are borne singly or in short, few-flowered, leafy cymes from spring to summer. † 5–12cm (2–5in), ↔ 5cm (2in). USA (S. California) to Mexico (Baja California). \*\*\*.

*L. grandiflorus* (Mountain phlox). Erect, slender, branching, downy to almost smooth annual with alternate or opposite, palmately lobed leaves, to 10cm (4in) long, with 5–11 linear lobes, 1–3cm (½–1¼in) long. From spring to summer, bears dense heads of funnel-shaped then spreading, lavender-pink, lilac, or white flowers, to 3cm (1¼in) across, the petals lobed, toothed, and flecked with white. Good for cut flowers. † 30–50cm (12–20in), ↔ to 23cm (9in). USA (S. California). \*\*\*.

*L. nuttallii*. Compact, bushy perennial with opposite, palmately lobed, pale green leaves, to 8cm (3in) long, with 5–9 pointed, linear lobes, to 1.5cm (½in) long, on densely branched stems. In early summer, bears abundant cymes of funnel-shaped to salverform white flowers, to 1.5cm (½in) across, with spreading lobes. † to 15cm (6in), ↔ to 20cm (8in). USA (Washington State to California). \*\*.

## LINARIA

Toadflax

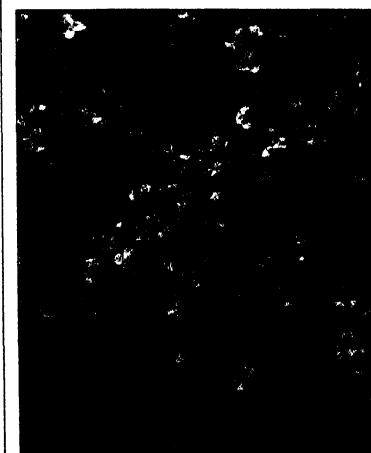
SCROPHULARIACEAE

Genus of approximately 100 species of annuals, biennials, and herbaceous perennials from dry, sunny habitats, including scree, in temperate regions of the N. hemisphere, especially the Mediterranean. They have erect, sometimes trailing, branched stems, with simple, ovate or linear to lance-shaped, stalkless, often grey-green leaves, the lower ones usually whorled or opposite, the upper more or less alternate. They are grown for their irregular, 2-lipped, spurred, white, pink, red, purple, orange, or yellow flowers, resembling snapdragons (*Antirrhinum*), which are borne in terminal racemes from spring to autumn. The taller toadflaxes are useful for a herbaceous border, or for naturalizing in stony soil or a gravel garden. The smaller, alpine species are suitable for a rock garden, scree bed, or wall crevice. In frost-prone areas, grow half-hardy species in a cool greenhouse. • **HARDINESS** Fully hardy to half hardy. • **CULTIVATION** Grow in moderately fertile, light, well-drained, preferably sandy soil, in full sun. • **PROPAGATION** Sow seed of annuals *in situ* in early spring; they self-seed freely. Sow seed of perennials in containers in a cold frame in early spring and plant out with care. Divide perennials, or take basal softwood cuttings, in spring. • **PESTS AND DISEASES** Aphids and powdery mildew may be a problem.

*L. alpina* □ (Alpine toadflax). Trailing, short-lived perennial with linear-lance-shaped, blue-green leaves, 0.5–1.5cm (¼–½in) long, the lower leaves whorled, the upper ones alternate. Throughout summer, produces 3- to 15-flowered racemes of 2-lipped, bicoloured, violet and deep yellow flowers, 1.5–2.5cm (½–1in) long, sometimes entirely violet, pink, or yellowish white, with spurs 8–10mm (⅜–½in) long. † 8cm (3in), ↔ to 15cm (6in). C. and S. Europe. \*\*\*.

*L. dalmatica* see *L. genistifolia* subsp. *dalmatica*.

*L. x dominii* (*L. purpurea* x *L. repens*). Erect to spreading, branching perennial with opposite, simple, linear or linear-lance-shaped, mid-green leaves, 1–5cm (½–2in) long, the upper leaves sometimes whorled. From early summer to



*Linaria alpina*

L

mid-autumn, produces branching flowerheads of tubular, 2-lipped, pale lilac to purplish violet flowers, 0.8–1.5cm (3/8–1/2in) long, with spurs to 5mm (1/4in) long. ‡ to 1m (3ft), ↔ 60cm (2ft). Europe. \*\*\*

***L. genistifolia***. Upright, branching perennial with alternate, semi-erect, linear to ovate, pointed, mid-green leaves, 9–18cm (3 1/2–7in) long. From early to late summer, bears racemes of 2-lipped, lemon-yellow to orange flowers, 1.5–2cm (1/2–3/4in) long, with spurs to 2.5cm (1in) long. ‡ 1m (3ft), ↔ 60cm (24in). Italy to Russia, Turkey. \*\*\*.

**subsp. *dalmatica*** ■ syn. *L. dalmatica*, has shorter, ovate to lance-shaped, glaucous leaves and yellow flowers, 2–5cm (3/4–2in) long, in loose racemes; S. Italy, Balkan Peninsula, Romania.

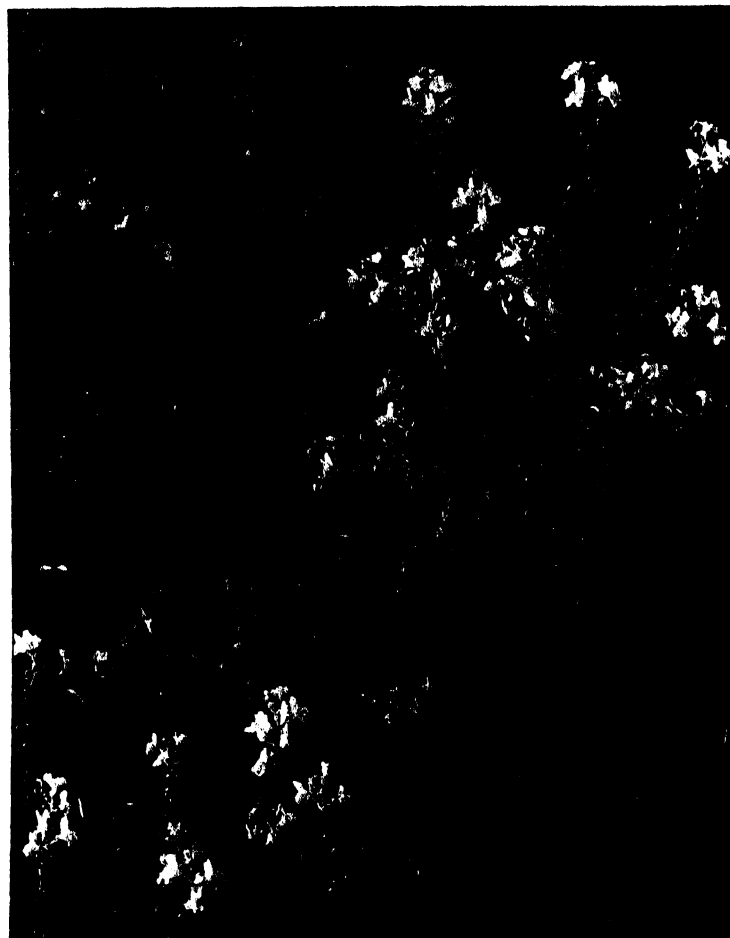
***L. glareosum*** see *Chaenorhinum glareosum*.

***L. maroccana***. Erect, sticky-hairy annual with alternate, narrowly linear, light green leaves, to 4cm (1 1/2in) long. In summer, bears slender, slightly lax racemes of tiny, 2-lipped, violet-purple, occasionally pink or white flowers, to 1.5cm (1/2in) long, the lower lips marked orange to yellow, paler at the centres. ‡ 23–45cm (9–18in), ↔ to 15cm (6in). Morocco. \*\*\*. **'Fairy Bouquet'** freely produces flowers, to 2cm (3/4in) long, in yellow, rose-pink, salmon-pink, orange, carmine, lavender, and white; ‡ to 23cm (9in). **'Northern Lights'** ■ occurs in the same colours as 'Fairy Bouquet' but is long-flowering; ‡ to 60cm (24in).

**'White Pearl'** has pure white flowers, to 2cm (3/4in) long; ‡ to 23cm (9in).

***L. purpurea***. Erect, slender perennial with linear, mid-green leaves, 2–6cm (3/4–2 1/2in) long, the lower whorled, the upper alternate. From early summer to early autumn, 2-lipped, violet-purple flowers, 1.5cm (1/2in) long, with curved spurs to 5mm (1/4in) long, are borne in long, slender, dense racemes. Self-seeds freely. ‡ to 90cm (36in), ↔ 30cm (12in). S. Europe. \*\*\*. **'Canon J. Went'** ■ syn. 'Canon Went', bears pale pink flowers. Self-seeds true if isolated from the species. **'Springdale White'**, syn. 'Radcliffe Innocence', has white flowers.

***L. reticulata*** (Purple-net toadflax). Erect annual with whorls of linear, blue-green leaves, to 1cm (1/2in) long, deeply channelled at the centres. In late spring and summer, bears short, dense, tapering racemes of 2-lipped, downy, deep purple flowers, to 1.5cm (1/2in) long, finely veined yellow, each with a large, purple-



*Linaria maroccana* 'Northern Lights'

veined, copper-orange or yellow mark on the lower lip, and a spur 5–8mm (1/4–3/8in) long. Often confused with *L. aeruginea* in gardens. ‡ 0.6–1.2m (2–4ft), ↔ to 23cm (9in). N. Africa. \*\*\*.

**'Aureo-purpurea'** has dark, rich purple flowers, each with a purple-veined, orange or yellow mark on the lower lip. **'Crown Jewels'** has maroon-red, orange, red, or golden yellow flowers; ‡ to 23cm (9in). **'Flamenco'** has purple, maroon-red, red, golden yellow, or orange, often bicoloured flowers, covered in a fine network of dark purple veins; good for cut flowers.

***L. triornithophora***. Erect perennial bearing whorls of lance-shaped to ovate-lance-shaped, mid-green leaves, 2.5–8cm (1–3in) long. From early or midsummer to early autumn, produces

loose racemes of 2-lipped, purple-and-yellow flowers, 5–8cm (2–3in) long, usually in whorls of 3, with brownish purple spurs, 1.5–2.5cm (1/2–1in) long. ‡ 90cm (36in) or more, ↔ 60cm (24in). N. and C. Portugal, W. Spain. \*\*

***L. tristis* 'Toubkal'**. Mound-forming perennial with decumbent stems bearing linear to oblong-lance-shaped, blue-green leaves, 1–4cm (1/2–1 1/2in) long, the lower leaves in whorls, the upper alternate. In summer, produces racemes of 2-lipped, yellow-green flowers, 2.5cm (1in) long, each with a brown-purple mark on the lower lip and a spur 1cm (1/2in) long. Self-sterile. ‡ 8cm (3in), ↔ to 15cm (6in). \*\*\*

***L. vulgaris*** (Toadflax). Erect perennial, spreading by runners, with stiff, branched or unbranched stems bearing linear to narrowly elliptic, pale green leaves, 2–6cm (3/4–2 1/2in) long. From late spring to mid-autumn, bears pale yellow flowers, to 4.5cm (1 3/4in) long, with spurs 1cm (1/2in) long, in dense racemes. Self-seeds freely. ‡ 30–90cm (12–36in), ↔ 30cm (12in). Europe (except extreme north and much of Mediterranean). \*\*\*

## LINDEL OFIA

BORAGINACEAE

Genus of about 12 species of clump-forming, hairy perennials, sometimes with short rhizomes, found on dry, stony slopes or in scrub from C. Asia to the Himalayas. They have lance-shaped, long-stalked basal leaves and alternate, ovate to oblong-lance-shaped, stalkless stem leaves. From spring to autumn,

tubular, 2-lipped, brilliant blue to purple flowers, with 5 spreading lobes, are borne in terminal or axillary, one-sided cymes. Suitable for a sunny herbaceous border or gravel garden, or for naturalizing on a dry bank.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed in containers outdoors in early spring, or divide in spring.

• **PESTS AND DISEASES** Powdery mildew may be a problem.

***L. anchusiflora*** of gardens see *L. longiflora*.

***L. longiflora***, syn. *Cynoglossum longiflorum*, *L. anchusiflora* of gardens, *L. spectabilis*. Clump-forming, branched perennial with short rhizomes and long-stalked, lance-shaped, mid-green basal leaves, 7–25cm (3–10in) long; stem leaves are shorter, and clasp the stems. In late spring and early summer, bears deep blue, sometimes purple flowers, to 1.5cm (1/2in) long, with protruding stamens, in one-sided, terminal cymes. ‡↔ 60cm (24in). W. Himalayas. \*\*\*. **'Hartington White'** has grey-green leaves and white flowers; ‡↔ to 30cm (12in).

***L. spectabilis*** see *L. longiflora*.

▷ **Linden** see *Tilia*

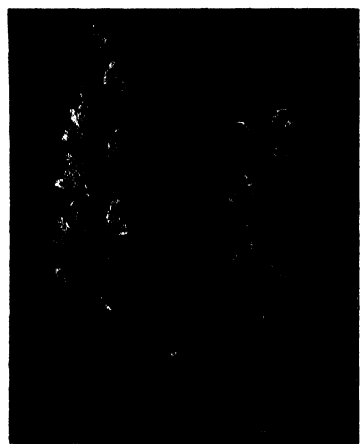
## LINDERA

LAURACEAE

Genus of about 80 species of deciduous and evergreen, dioecious trees and shrubs occurring in woodland and on riverbanks in E. Asia and North America. They are cultivated for their aromatic, alternate, entire or 3-lobed leaves, which often colour well in autumn on deciduous species, and for their star-shaped flowers, which are borne in axillary umbels, rarely singly, early in the year. Grow in a woodland garden. In frost-prone areas, grow half-



*Lindera benzoin*



*Linaria genistifolia* subsp. *dalmatica*



*Linaria purpurea* 'Canon J. Went'

hardy species in a cool greenhouse or against a warm wall. Male and female plants need to be planted together in order to bear fruits.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in fertile, moist but well-drained, acid soil in partial shade. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take greenwood cuttings in early summer.

• **PESTS AND DISEASES** Trouble free.

*L. benzoin* ■ (Spice bush). Rounded, deciduous shrub with upright branches and obovate, aromatic, bright green leaves, to 12cm (5in) long, turning yellow in autumn. Umbels of tiny, star-shaped, greenish yellow flowers, 4mm (1/8in) across, are borne in mid-spring, followed by ovoid red berries on female plants. 1-3m (10ft). S.E. Canada, E. USA. \*\*\*

*L. obtusiloba* ♀♂ Spreading, deciduous shrub or small tree with ovate to rounded, entire or 3-lobed, aromatic, glossy, dark green leaves, to 12cm (5in) long. Bears umbels of tiny, star-shaped, dark yellow flowers, 3mm (1/8in) across, in early and mid-spring, before the leaves, followed by spherical, glossy, red-brown berries on female plants. 1-6m (20ft). China, Korea, Japan. \*\*\*

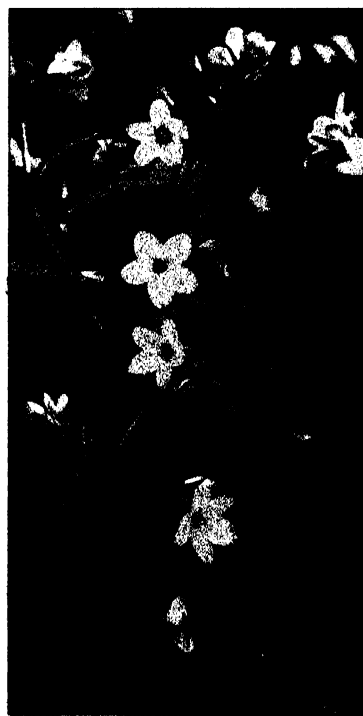
## LINDHEIMERA

Star daisy

ASTERACEAE/COMPOSITAE

Genus of 1, possibly 2 species of erect, branched, roughly hairy annuals from dry, limestone prairies in Texas, USA. They are grown for their small, daisy-like yellow flowerheads, profusely borne in lax, long-stalked corymbs. They have alternate, ovate-lance-shaped, entire to coarsely pinnatifid leaves, which are smaller and finer on the flowering stems. Persistent bright green, bract-like leaves surround the seed heads. Grow in an informal mixed or annual border.

• **HARDINESS** Fully hardy.



*Lindheimera texana*

• **CULTIVATION** Grow in moderately fertile, light, well-drained soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame in early spring, or *in situ* in mid-spring.

• **PESTS AND DISEASES** Trouble free.

*L. texana* ■ (Star daisy). Tall, erect annual with branching red stems. Bears ovate-lance-shaped, pinnatifid, often toothed basal leaves, 4cm (1 1/2in) long, and smaller, entire leaves on the upper stems and flower-stalks. Lax corymbs of broad-petalled, yellow-centred, golden yellow to creamy yellow flowerheads, to 2.5cm (1in) across, are borne in late spring and summer. 1 to 60cm (24in), 1-30cm (12in). USA (Texas). \*\*\*

▷ **Ling** see *Calluna*, *C. vulgaris*

## LINNAEA

Twin-flower

CAPRIFOLIACEAE

Genus of one species of slender, prostrate, mat-forming, evergreen shrub, with stems that root where they touch the soil. It is native to woodland, heaths, and tundra in N. Eurasia and North America. Cultivated for its neat foliage and bell-shaped flowers, it is suitable for ground cover in a peat bed, woodland garden, or large rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, reliably moist, acid soil in partial shade.

• **PROPAGATION** Sow seed in containers outdoors in autumn. Take softwood cuttings in early summer. Remove rooted runners between autumn and spring and pot up until established.

• **PESTS AND DISEASES** Trouble free.

*L. borealis*. Prostrate, mat-forming shrub with opposite, oval to rounded, scalloped leaves, to 1.5cm (1/2in) long, glossy, dark green above, buff to pale green beneath. In summer, pairs of nodding, narrowly bell- or funnel-shaped, pale pink flowers, to 1cm (1/2in) long, are produced on stalks, 5cm (2in) long, from the tips of leafy side shoots. 1 to 8cm (3in), 1-1m (3ft) or more. N. Eurasia, North America. \*\*\*

**var. americana** ■ has rounded, lobed, mid-green leaves, 2.5cm (1in) long, and bears funnel-shaped, white or pale pink flowers, to 1cm (1/2in) long, in late spring; 10cm (4in), 1-30cm (12in); North America.



*Linnaea borealis* var. *americana*

## LINOSPADIX

ARECACEAE/PALMAE

Genus of about 11 species of slender, single- or cluster-stemmed palms from rainforest and upland or coastal sands in New Guinea and Australia. Pinnate leaves are loosely clustered at the tops of the stems, and axillary, 3-petalled flowers are borne in slim, erect spikes. Where temperatures drop below 13°C (55°F), grow in a warm greenhouse. In tropical areas, grow as specimen plants;

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. Pot on or top-dress in spring. In growth, water freely and apply a balanced liquid fertilizer every month. Water moderately in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained, acid soil in partial shade.

• **PROPAGATION** Sow seed at 24°C (75°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*L. monostachya* ♀ (Walking stick palm). Small palm with a slender, erect stem and spreading to arching, pinnate, lustrous, mid- to deep green leaves, to 1m (3ft) long, with irregularly shaped leaflets. Greenish yellow flowers are borne in initially erect, then pendent, catkin-like spikes, to 1m (3ft) long, from spring to summer. 2-3m (6-10ft), 1-2m (3-6ft). Australia (Queensland, New South Wales). ☀ (min. 13-15°C/55-59°F)

## LINUM

Flax

LINACEAE

Genus of about 200 species of annuals, biennials, and semi-evergreen, evergreen, and deciduous perennials, shrubs, and subshrubs, mainly from grassland, scrub, and dry slopes in temperate areas of the N. hemisphere. They are cultivated for their terminal or axillary racemes, panicles, cymes, or corymbs of colourful, 5-petalled, funnel- to saucer-shaped flowers, which are usually blue, yellow, or white, sometimes pink or red, and are borne over long periods. The simple, mainly alternate, sometimes opposite leaves are usually hairless, and deciduous unless otherwise stated. The smaller species are suitable for a rock garden, the larger ones for a border. Grow annuals in an annual border or as fillers in a herbaceous border.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in light, moderately fertile, humus-rich, well-drained soil (sharply drained for alpine) in full sun. Protect from winter wet.

• **PROPAGATION** Sow seed in spring or autumn: sow annuals *in situ*, perennials and shrubs in containers in a cold frame. Take stem-tip cuttings of perennials in early summer, and semi-ripe cuttings of subshrubs and shrubs in summer.

• **PESTS AND DISEASES** Susceptible to slugs, snails, and occasionally aphids.

*L. arboreum* ■♀ Dwarf, evergreen shrub with elliptic or spoon-shaped, thick, glaucous, bluish green leaves, 2-4cm (3/4-1 1/2in) long, often in



*Linum arboreum*

crowded rosettes. Compact, few-flowered, terminal cymes of funnel-shaped, deep yellow flowers, 2-3cm (3/4-1 1/4in) across, are produced in succession in late spring and summer. 1-30cm (12in). Greece (S. Aegean to Crete), W. Turkey. \*\*

*L. capitatum*. Sturdy, rhizomatous perennial, sometimes confused with *L. flavum*, with rosettes of oblong-spoon-shaped basal leaves, and lance-shaped stem leaves, all dark green and 2-3.5cm (3/4-1 1/2in) long. During summer, produces compact, terminal cymes of upward-facing, funnel-shaped yellow flowers, to 2.5cm (1in) across. 1-40cm (16in), 1-25cm (10in). Balkan Peninsula, S. Italy. \*\*\*

*L. flavum* (Golden flax. Yellow flax). Upright, woody-based perennial with spoon- to lance-shaped, dark green leaves, 2-3.5cm (3/4-1 1/2in) long. Bears dense, many-branched, terminal cymes of upward-facing, funnel-shaped, golden yellow flowers, to 2.5cm (1in) across, which open in sunshine in summer. 1-30cm (12in), 1-20cm (8in). C. and S. Europe. \*\*\*. 'Compactum' ■ is more compact, and produces bright yellow flowers; 1-15cm (6in).



*Linum flavum* 'Compactum'

*Linum grandiflorum* 'Rubrum'

**L. 'Gemmell's Hybrid'** ♀ Semi-evergreen, dome-forming perennial that has a woody rootstock and bears ovate, glaucous, bluish green leaves, to 5cm (2in) long. Short-stalked, broadly funnel-shaped, chrome-yellow flowers, 3cm (1¼in) across, are profusely borne in terminal cymes over long periods in summer. † 15cm (6in), ↔ to 20cm (8in). \*\*

**L. grandiflorum** ♀ (Flowering flax). Erect, slender, basally branching, slightly downy annual with narrowly lance-shaped to ovate-lance-shaped, grey-green leaves, to 3cm (1¼in) long. Bears saucer-shaped, clear rose-pink flowers, in loose, terminal panicles in summer. † 40–75cm (16–30in), ↔ 15cm (6in). N. Africa. \*\*\*. **'Bright Eyes'** produces ivory-white flowers, to 5cm (2in) across, with brownish red eyes; † to 45cm (18in). **'Caeruleum'** produces blue-purple flowers. **'Rubrum'** produces brilliant crimson-red flowers; † to 45cm (18in).

**L. narbonense** ■ Clump-forming, short-lived perennial with wiry stems that bear erect, narrowly lance-shaped, pointed, glaucous, mid-green leaves, to 2cm (¾in) long. Few-flowered, terminal cymes of saucer-shaped, white-eyed, rich blue flowers, 3–4cm (1¼–1½in) across, individually fading by afternoon, are produced continuously in early and mid-summer. † 30–60cm (12–24in), ↔ 45cm (18in). W. and C. Mediterranean. \*\*\* (borderline)

**L. perenne** (Perennial flax). Variable, clump-forming perennial, similar to *L. narbonense*, with slender stems

*Linum narbonense*

bearing narrow, linear to lance-shaped, glaucous, bluish green leaves, to 2.5cm (1in) long. Terminal panicles of wide, funnel-shaped, clear blue flowers, 2–3cm (¾–1¼in) across, individually fading by afternoon, are produced continuously in early and midsummer. † 10–60cm (4–24in), ↔ 30cm (12in). Europe to C. Asia. \*\*\*. **'Blau Saphir'**, syn. 'Blue Sapphire', produces sky-blue flowers; † to 30cm (12in).

**L. salsoloides** see *L. suffruticosum* subsp. *salsoloides*.

**L. suffruticosum** subsp. *salsoloides*, syn. *L. salsoloides*. Low-cushion-forming, woody-based perennial with branching stems bearing narrowly linear, greyish green leaves, to 4.5cm (1¾in) long. Loose, terminal cymes of saucer-shaped, pearl-white flowers, 3cm (1¼in) across, sometimes faintly veined purple, are produced in succession during summer. † 10cm (4in), ↔ to 15cm (6in). Spain to N. Italy. \*\*

▷ **Lion's ear** see *Leonotis leonurus*

▷ **Lippia citriodora** see *Aloysia triphylla*

▷ **Lipstick plant** see *Aeschynanthus pulcher*

▷ **Lipstick tree** see *Bixa orellana*

▷ **Lipstick vine** see *Aeschynanthus lobbianus*

## LIQUIDAMBAR

HAMAMELIDACEAE

Genus of 4 species of deciduous, monoecious trees occurring in moist woodland in E. and S.W. Asia, North America, and Mexico. They are cultivated particularly for their attractive foliage, which colours well in autumn, and for their upright but open habit.

The maple-like leaves are alternate and palmately 3- to 7-lobed. Inconspicuous, yellow-green flowers are produced in rounded heads in late spring; the female flowers are followed by spiky, spherical fruit clusters. Liquidambars are excellent as part of a woodland planting, or as specimen trees isolated in grass.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moderately fertile, preferably acid or neutral, moist but well-drained soil, in full sun for best autumn colour, or partial shade. Lime-tolerant, given a good depth of soil. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take greenwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*Liquidambar orientalis**Liquidambar styraciflua* 'Golden Treasure'

**L. formosana** △ syn. *L. formosana* var. *monticola*. Broadly conical tree with palmately 3-lobed leaves, to 12cm (5in) across, purple when young, turning dark green, then orange, red, and purple in autumn. Plants from China grown as var. *monticola* are considered to be harder than those from Taiwan. † 12m (40ft), ↔ 10m (30ft). China, Taiwan. \*\* var. *monticola* see *L. formosana*.

**L. orientalis** ■ (Oriental sweet gum). Small, slow-growing, bushy tree with palmately 5-lobed, mid-green leaves, to 7–10cm (3–4in) across, turning yellow and orange in autumn. † 6m (20ft), ↔ 4m (12ft). S.W. Asia. \*\*\* (borderline)

**L. styraciflua** △ (Sweet gum). Broadly conical tree with young shoots often

with corky wings. Palmately 5- or 7-lobed, glossy, mid-green leaves, to 15cm (6in) across, turn orange, red, and purple in autumn. † 25m (80ft), ↔ 12m (40ft). E. USA, Mexico. \*\*\*.

**'Burgundy'** has dark red-purple autumn colour. **'Golden Treasure'** ■ is slow-growing, with mid-green leaves margined dark yellow, becoming yellow-margined red-purple in autumn; † 10m (30ft), ↔ 6m (20ft). **'Lane Roberts'** ♀ has dark blackish red leaves over a long period in autumn. **'Moonbeam'** is slow-growing, with creamy yellow leaves turning red, yellow, and purple in autumn; † 10m (30ft), ↔ 6m (20ft). **'Palo Alto'** has orange-red autumn colour. **'Variegata'** has leaves striped and mottled yellow; † 15m (50ft), ↔ 8m (25ft). **'Worplesdon'** ■ ♀ has deeply lobed leaves turning purple then orange-yellow in autumn.

▷ **Liquorice** see *Glycyrrhiza glabra*

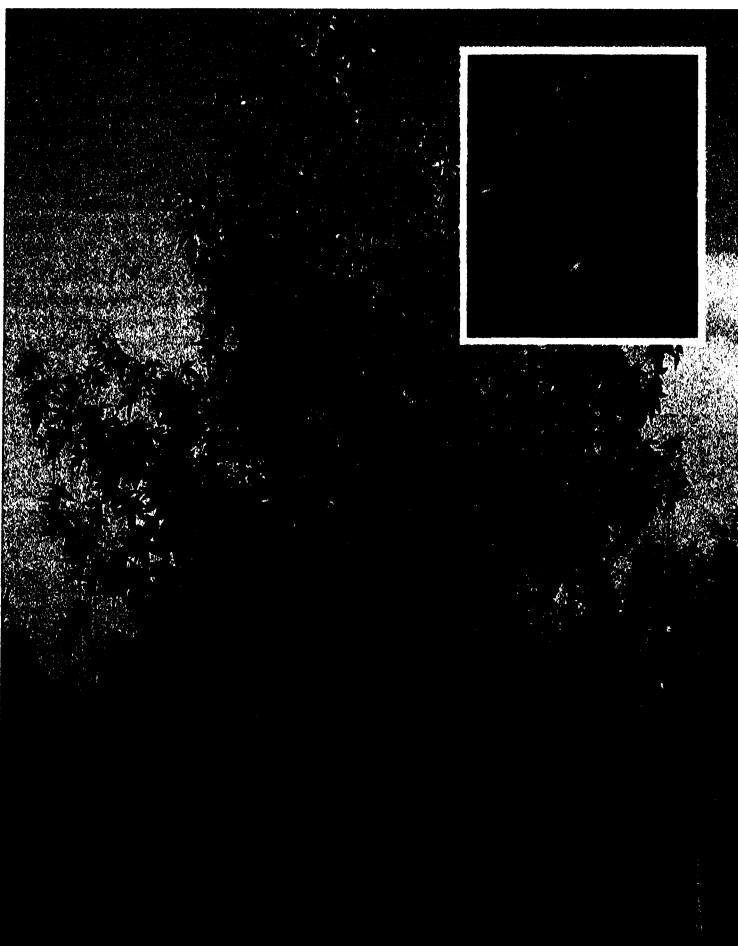
## LIRIODENDRON

Tulip tree

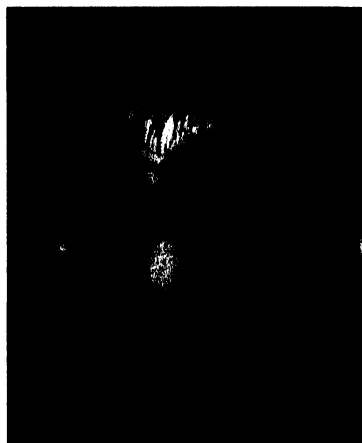
MAGNOLIACEAE

Genus of 2 species of deciduous trees from woodland in China, Vietnam, and North America. They are cultivated for their stately habit and curiously shaped, alternate leaves, which colour well in autumn. The solitary, cup-shaped flowers, inconspicuous from a distance, add interest in summer, but are not produced on young plants; they are followed by cone-like fruits. Excellent grown as specimen trees.

• **HARDINESS** Fully hardy.

*Liquidambar styraciflua* 'Worplesdon' (inset: leaf detail)



*Liriodendron tulipifera*

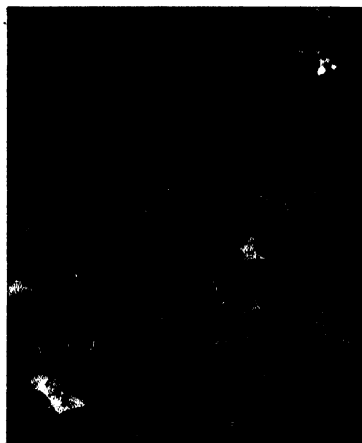
- **CULTIVATION** Grow in moderately fertile, preferably slightly acid, moist but well-drained soil in full sun or partial shade. Pruning group 1.
- **PROPAGATION** Sow seed (of species only) in containers in a cold frame in autumn. Graft in early spring, or bud in late summer.
- **PESTS AND DISEASES** Leaf spot and *Verticillium* wilt may be a problem.

*L. chinense* ♀ (Chinese tulip tree). Vigorous, broadly columnar, deciduous tree with saddle-shaped, dark green leaves, to 15cm (6in) long, turning yellow in autumn; the leaves are more or less square, and indistinctly lobed at the tips, hollowed at the bases, with a pointed lobe at each side. Cup-shaped green flowers, 4cm (1½in) long, with yellow veins, are produced in midsummer. †25m (80ft), ↔ 12m (40ft). China, Vietnam. \*\*\*

*L. tulipifera* ♂ ♀ (Tulip tree). Vigorous, broadly columnar to conical, deciduous tree with saddle-shaped, dark green leaves, to 15cm (6in) long, that turn yellow in autumn; the leaves are more or less square, and lobed at the tips, hollowed at the bases, with a pointed lobe at each side. Cup-shaped, pale green flowers, 6cm (2½in) long, orange-banded at the bases, are borne in midsummer. †30m (100ft), ↔ 15m (50ft). E. North America. \*\*\*

'*Aureomarginatum*' ♂ ♀ has leaves with broad, golden yellow margins; †20m (70ft), ↔ 10m (30ft).

'*Fastigiatum*' ♀ is narrowly conical, with upright branches; †20m (70ft), ↔ 8m (25ft).

*Liriodendron tulipifera* 'Aureomarginatum'

## LIRIOPE

*Lilyturf*

CONVALLARIACEAE/LILIACEAE

Genus of 5 or 6 species of tufted, rhizomatous and tuberous, evergreen and semi-evergreen perennials, found in usually acid woodland habitats in China, Vietnam, Taiwan, and Japan. They have arching, linear, grass-like, radical leaves, forming dense clumps or mats. Small, ovoid to spherical flowers, opening only slightly, are clustered in short, dense spikes or racemes, and are followed by black berries. Grow in a border or as ground cover.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, moderately fertile, preferably acid, moist but well-drained soil in partial or full shade, sheltered from cold, drying winds. Tolerant of drought.
- **PROPAGATION** Sow seed in containers outdoors, or divide, both in spring.
- **PESTS AND DISEASES** Young growth is susceptible to slug damage.

*L. exiliflora* 'Ariaka-janshige', syn. *L. exiliflora* 'Silvery Sunproof'. Clump-forming, evergreen, rhizomatous perennial with linear, mid-green leaves, to 40cm (16in) long, striped white and gold. Lax racemes of pale violet-purple flowers, to 6mm (¼in) across, are borne on violet-brown stems in late summer. †22–30cm (9–12in), ↔ 30cm (12in). \*\*\*

*L. exiliflora* 'Silvery Sunproof' see *L. exiliflora* 'Ariaka-janshige'.

*L. graminifolia* var. *densiflora* see *L. muscari*.

*L. muscari* ♂ ♀ syn. *L. graminifolia* var. *densiflora*, *L. platyphylla*. Stout, tufted, evergreen, tuberous perennial with dense clumps of linear to strap-shaped, dark green leaves, 25–45cm (10–18in) long. From early to late autumn, purple-green stems bear dense spikes of bright violet-mauve flowers, 5–8mm (¼–½in) across. †30cm (12in), ↔ 45cm (18in). China,

*Liriope muscari*

Taiwan, Japan. \*\*\*. 'John Burch' has gold-variegated foliage, and bears tall spikes of large flowers. 'Majestic' has narrower leaves, and produces tall, sometimes fused and flattened spikes of rich lavender-blue flowers. 'Monroe White' produces numerous green-stalked racemes of white flowers, to 9mm (¾in) across. Requires full shade.

*L. platyphylla* see *L. muscari*.

*L. spicata*, syn. *Ophiopogon spicatus*. Rhizomatous, semi-evergreen perennial forming a dense mat of grassy, dark green leaves, 20–40cm (8–16in) long, with tiny marginal teeth. Violet-brown stems bear racemes of pale violet to white flowers, 7–8mm (¼–½in) across, in late summer. †25cm (10in), ↔ 45cm (18in). China, Vietnam, Japan. \*\*\*

▷ *Lisianthus* see *Eustoma*

*L. russellianus* see *E. grandiflorum*

## LITHOCARPUS

FAGACEAE

Genus of about 300 species of oak-like, evergreen trees and shrubs from forest and mountain slopes, mainly in E. and S.E. Asia, with one species in the W. USA. Leaves are alternate, leathery, and mostly entire, but occasionally toothed. Cylindrical male and female flowers (either unisexual or bisexual) are borne in erect spikes at or near the ends of the branches, and are followed by clusters of acorns, usually closely packed on the spikes. Cultivated for their handsome foliage, they are effective both as specimen trees and in an open site in a woodland garden.

*Lithocarpus henryi* (inset: leaf detail)

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, acid to neutral, moist but well-drained soil in full sun or partial shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn.
- **PESTS AND DISEASES** Trouble free.

*L. densiflorus* ♂ (Tanbark oak). Spreading, evergreen tree with oblong, toothed, prominently veined, leathery, dark green leaves, to 12cm (5in) long, downy at first, becoming hairless and glossy with age. In summer, produces tiny, cylindrical white flowers in upright spikes, to 10cm (4in) long, sometimes followed by solitary or paired acorns, to 2.5cm (1in) long, in autumn. †↔ 10m (30ft). USA (Oregon, California). \*\*\*

*L. henryi* ♂ ♀ Slow-growing, broadly conical, evergreen tree with narrowly oblong to elliptic-oblong, tapered, entire, leathery leaves, to 25cm (10in) long, pale green at first, later dark green. Tiny white flowers are borne in upright spikes, to 15cm (6in) long, in autumn or winter. Bears clustered acorns, to 2.5cm (1in) long, in upright spikes in winter. †↔ 10m (30ft). China. \*\*

## LITHODORA

BORAGINACEAE

Genus of about 7 species of low-growing, spreading or upright, evergreen shrubs and subshrubs, found in scrub, thickets, and woodland margins, and on mountains, from S.W. Europe to S. Greece, Turkey, and Algeria. They are cultivated for their 5-lobed, funnel-shaped, blue or white flowers, produced in leafy, terminal cymes, mainly in summer. Leaves are linear, lance-shaped, elliptic, or obovate, and hairy. The hardiest species are ideal for an open position in a rock garden or raised bed. Where temperatures fall below -5°C (23°F), grow frost-hardy species in an alpine house.

- **HARDINESS** Fully hardy to frost hardy; *L. zabnii* is hardy to at least -7°C (20°F).
- **CULTIVATION** Grow most species in well-drained, ideally alkaline to neutral soil, in full sun; *L. diffusa* 'Heavenly Blue' needs acid, humus-rich soil. In an alpine house, grow in a mix of equal parts loam, leaf mould, and sharp sand. Pruning group 8; or 10, after flowering.
- **PROPAGATION** Take semi-ripe cuttings in summer. Remove rooted suckers of *L. oleifolia* in spring.
- **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

**L. diffusa** 'Heavenly Blue' [V] syn. *Lithospermum diffusum* 'Heavenly Blue'. Prostrate, spreading, many-branched, evergreen shrub with elliptic to narrowly oblong, deep green leaves, 1–3.5cm (½–1½in) long, hairy above and beneath. Bears a profusion of deep azure-blue flowers, 1cm (½in) across, in terminal cymes over long periods in late spring and summer. ↑ 15cm (6in), ↔ to 60cm (24in) or more. \*\*\*

**L. graminifolia** see *Moltkia suffruticosa*.

**L. x intermedia** see *Moltkia x intermedia*.

**L. oleifolia** [V] syn. *Lithospermum oleifolium*. Semi-upright, loosely

*Lithodora oleifolia*

branched, suckering, evergreen shrub with obovate to oblong, dull, dark green leaves, 1cm (½in) long, silky-hairy beneath. Bears loose, terminal cymes of 3–7 sky-blue flowers, 9mm (⅜in) across, opening from pink-tinted buds in early summer. ↑ 20cm (8in), ↔ 30cm (12in) or more. E. Pyrenees. \*\*\*

**L. rosmarinifolia**, syn. *Lithospermum rosmarinifolium*. Domed, tufted, evergreen subshrub with upright, branching stems and lance-shaped to linear, dark green leaves, 2.5–6cm (1–2½in) long, grey-bristly beneath. Produces loose, open, terminal cymes of gentian-blue flowers, 2cm (¾in) across, in summer. ↑ 30cm (12in), ↔ 40cm (16in). S. Italy, Algeria. \*\*

**L. zabnii**, syn. *Lithospermum zabnii*. Upright, many-branched, evergreen shrub with linear or narrowly oblong, leathery, dark grey-green leaves, to 4cm (1½in) long, grey-bristly beneath. Produces few-flowered, terminal cymes of blue or white flowers, 1.5cm (½in) across, in succession during summer, then intermittently until mid-autumn. ↑ 30cm (12in), ↔ 40cm (16in). S. Greece. \*\*

## LITHOPHRAGMA

Woodland star

SAXIFRAGACEAE

Genus of about 9 species of rosette-forming perennials from woodland in W. North America. They have fibrous rootstocks with basal bulbils, and kidney-shaped to rounded, palmately 3- to 5-lobed leaves, the lobes often toothed or further lobed. Simple or

*Lithophragma parviflora*

branched, upright stems bear racemes of small, campion-like, 5-petalled flowers in late spring. Grow in a peat bed, woodland garden, or rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, sharply drained soil in partial or deep shade.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Divide, or separate bulbils, in spring or autumn.
- **PESTS AND DISEASES** New growth may be eaten by slugs in spring.

**L. parviflora** [V] (Prairie star). Clump-forming perennial producing basal bulbils and rounded, palmately 3- to 5-lobed, hairy, dark green, basal leaves, 1–3cm (½–1¼in) long. In late spring, unbranched stems produce open racemes of 4–14 nodding, white or pale pink flowers, 3cm (1¼in) across, with 3-lobed petals. ↑ 15cm (6in), ↔ to 30cm (12in). USA (California). \*\*\*

## LITHOPS

Living stones, Stone plant

AIZOACEAE

Genus of about 40 species of dwarf, almost stemless, succulent perennials occurring among rocks and pebbles in semi-desert regions of Namibia and South Africa. They have thick, soft rootstocks that produce usually inversely cone-shaped "bodies", each composed of a pair of very fleshy leaves, 2–3cm (¾–1¼in) across, with a fissure usually running along much of their lengths. On the upper surface of each leaf is a window-like, translucent panel of dots, lines, or patches. Solitary, occasionally 2 or 3, daisy-like flowers, usually 2–3cm (¾–1¼in) across, sometimes larger, emerge from each fissure, mainly from midsummer to mid-autumn. They are followed by small, ovoid, fleshy capsules, containing tiny seeds. In areas where temperatures drop below 12°C (54°F), grow in a warm greenhouse or as houseplants; in warmer climates, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost with added leaf mould, in full light. From early summer to late autumn, water freely and apply a half-strength balanced liquid fertilizer monthly. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or early summer, or remove offsets in early summer.
- **PESTS AND DISEASES** Susceptible to aphids and mealybugs when flowering.

**L. aucampiae**. Clump-forming succulent with pairs of reddish to sandy brown or ochre leaves forming inversely cone-shaped bodies, with darker marks on the flat upper surfaces. Yellow flowers are produced from late summer to mid-autumn. ↑ 3cm (1¼in), ↔ to 10cm (4in). South Africa (Northern Cape, Northern Transvaal, Eastern Transvaal). ☼ (min. 12°C/54°F)

**L. bella** see *L. karasmontana* subsp. *bella*.

**L. dinteri** [V] Clustering succulent with pairs of reddish or greyish yellow leaves forming inversely cone-shaped bodies with convex upper surfaces. Each leaf has a conspicuous panel with 5–15 red spots. Bears yellow flowers from late summer to mid-autumn. ↑ 3cm (1¼in), ↔ 10cm (4in). Namibia, South Africa (Northern Cape, Western Cape). ☼ (min. 12°C/54°F)

**L. dorotheae** [V] Clustering succulent with pairs of unequally sized, beige or buff leaves forming inversely cone-shaped bodies with almost flat or convex upper surfaces. Each leaf has a translucent grey-green or olive panel marked with red lines and dots. Yellow flowers are produced in late summer. ↑ 2–3cm (¾–1¼in), ↔ 10cm (4in). South Africa (Northern Cape). ☼ (min. 12°C/54°F)

**L. hookeri** see *L. turbiniformis*.

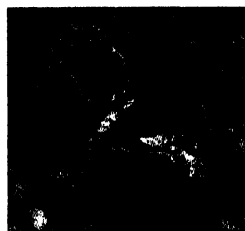
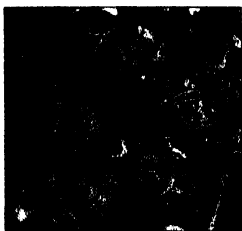
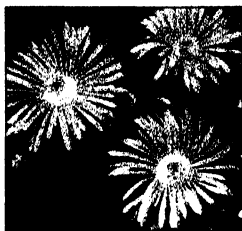
**L. insularis**. Solitary or clump-forming succulent with pairs of greenish brown leaves united into ovoid bodies with flat to concave upper surfaces. Each leaf has a translucent, dark green panel pitted with large red dots or lines. Bears yellow flowers, to 4cm (1½in) across, from late summer to mid-autumn. ↑ 1.5cm (½in), ↔ 3–8cm (1¼–3in) or more. South Africa (Western Cape, Eastern Cape). ☼ (min. 12°C/54°F)

**L. julii**. Variable, clump-forming succulent producing pairs of faintly red-tinted, whitish grey to dark grey leaves; they form spherical bodies with flat to slightly concave, furrowed upper surfaces and brown-marked fissures. Each leaf has dark brown to pale green panels with broad markings and red dots. White flowers are borne from late summer to mid-autumn. ↑ 3cm (1¼in), ↔ indefinite. Namibia, South Africa (Northern Cape, Western Cape). ☼ (min. 12°C/54°F)

**L. karasmontana** [V] Variable, clump-forming succulent with pairs of pale red-brown leaves forming inversely cone-shaped bodies, with dark brown markings and wrinkles on the flat to convex upper surfaces. White flowers, 2.5–4cm (1–1½in) across, are borne from late summer to mid-autumn. ↑ to 4cm (1½in), ↔ indefinite. Namibia, South Africa (Northern Cape, Western Cape). ☼ (min. 12°C/54°F). **subsp. bella**, syn. *L. bella*, has yellowish brown leaves, with dull olive-green marks on the convex, uneven upper surfaces; ↑ to 3cm (1¼in).

**L. kuisibensis** see *L. schwantesii*.

**L. lesliei**. Clump-forming succulent with pairs of grey-green to buff to pale terracotta leaves, that form inversely cone-shaped bodies with convex upper

*Lithops dinteri**Lithops dorotheae**Lithops karasmontana**Lithops leslei* var. *hornii**Lithops pseudotruncatella*  
var. *pulmonuncula**Lithops schwantesii*

surfaces. Each leaf has a pale to dark olive-green panel, with transparent dots. Yellow, rarely white flowers are borne from late summer to mid-autumn.  $\uparrow$  to 1.5cm ( $\frac{1}{2}$ in),  $\leftrightarrow$  to 4cm ( $1\frac{1}{2}$ in). South Africa (Northern Cape, Orange Free State, Northern Transvaal, Eastern Transvaal).  $\bullet$  (min. 12°C/54°F). var. **hornii**  $\blacksquare$  has light to dark brown or greenish brown leaves, the upper surfaces with tiny panels and irregular channels of opaque, dark greyish brown to reddish brown. Flowers are yellow and up to 4cm ( $1\frac{1}{2}$ in) across.  $\uparrow$  to 3.5cm ( $1\frac{1}{2}$ in),  $\leftrightarrow$  4cm ( $1\frac{1}{2}$ in). South Africa (Northern Cape). var. **rubrobrunnea**

has reddish brown bodies, with greenish brown panels on flat to slightly convex upper surfaces.  $\uparrow$  3cm ( $1\frac{1}{4}$ in),  $\leftrightarrow$  6–8cm ( $2\frac{1}{2}$ –3in). South Africa (Northern Transvaal, Eastern Transvaal).

**L. marmorata**  $\blacksquare$  Mainly solitary succulent with a pair of pale grey or beige, sometimes grey-green or lilac leaves forming an inversely cone-shaped body, with greyish green lines on the slightly convex, deeply fissured upper surface. Scented white flowers are produced from late summer to mid-autumn.  $\uparrow$  3cm ( $1\frac{1}{4}$ in),  $\leftrightarrow$  5cm (2in) or more. South Africa (Northern Cape).  $\bullet$  (min. 12°C/54°F)

*Lithops marmorata*

**L. optica**. Mat-forming succulent with pairs of sometimes uneven, greyish purple to grey-green leaves forming ovoid bodies, with convex, deeply fissured upper surfaces and greenish white panels. From late summer to mid-autumn, bears white, often pink-tipped flowers.  $\uparrow$  3cm ( $1\frac{1}{4}$ in),  $\leftrightarrow$  indefinite. Namibia, South Africa (Northern Cape, Western Cape).  $\bullet$  (min. 12°C/54°F)

**L. otzeniana**. Clump-forming succulent. Pairs of greyish violet leaves form inversely cone-shaped bodies, with pale green to violet panels on the convex, deep-fissured upper surfaces. From late summer to mid-autumn, bears bright yellow flowers, 2cm ( $\frac{3}{4}$ in) across.  $\uparrow$  3cm ( $1\frac{1}{4}$ in),  $\leftrightarrow$  indefinite. South Africa (Northern Cape).  $\bullet$  (min. 12°C/54°F)

**L. pseudotruncatella** var.

**pulmonuncula**  $\blacksquare$  Usually solitary succulent producing a pair of unequal, brownish grey leaves that form an inversely cone-shaped body, with an indistinct panel lined and dotted with brownish green. From late summer to mid-autumn, produces golden yellow flowers, to 3.5cm ( $1\frac{1}{2}$ in) across.  $\uparrow$  to 3cm ( $1\frac{1}{4}$ in). Namibia, South Africa (Northern Cape, Western Cape).  $\bullet$  (min. 12°C/54°F)

**L. schwantesii**  $\blacksquare$  syn. *L. kuibisensis*, *L. schwantesii* var. *kuibisensis*. Very variable, mat-forming succulent with pairs of leaves forming inversely cone-shaped bodies, varying from light to dark grey, to yellowish green, orange, or reddish brown, with pink margins and dark green or pinkish red dots on the flat to slightly convex, often blue-tinged upper surfaces. Bright yellow flowers are borne from late summer to mid-autumn. The "type" of the species (pictured) has silvery blue-grey bodies, with red or blue-grey marks on the flat upper surfaces.  $\uparrow$  4cm ( $1\frac{1}{2}$ in),  $\leftrightarrow$  15cm (6in). Namibia, South Africa (Northern Cape, Western Cape).  $\bullet$  (min. 12°C/54°F). var. **kuibisensis** see *L. schwantesii*. **L. turbiniformis**, syn. *L. hookeri*. Variable, clump-forming succulent with pairs of brown, buff, or grey leaves forming ovoid bodies with warty, flat or convex upper surfaces, each with a deeply grooved, rich brown panel. Red-tipped, straw-coloured flowers, 3–4.5cm ( $1\frac{1}{4}$ – $1\frac{1}{2}$ in) across, are borne from late summer to mid-autumn.  $\uparrow$  to 2.5cm (1in),  $\leftrightarrow$  15cm (6in) or more. South Africa (Northern Cape, Eastern Cape).  $\bullet$  (min. 12°C/54°F)

**L. vallis-mariae**. Clump-forming succulent with pairs of yellowish green to bluish white leaves forming inversely cone-shaped bodies, with slightly convex or flat upper surfaces marked with a network of grey lines or dots. Produces yellow flowers, 2.5–3.5cm ( $1$ – $1\frac{1}{2}$ in) across, in summer.  $\uparrow$  to 2–4cm ( $\frac{3}{4}$ – $1\frac{1}{2}$ in),  $\leftrightarrow$  5–10cm (2–4in). Namibia.  $\bullet$  (min. 12°C/54°F)

$\triangleright$  **Lithospermum diffusum** 'Heavenly Blue' see *Lithodora diffusa* 'Heavenly Blue'

$\triangleright$  **Lithospermum doerfleri** see *Moltkia doerfleri*

$\triangleright$  **Lithospermum graminifolium** see *Moltkia suffruticosa*

$\triangleright$  **Lithospermum oleifolium** see *Lithodora oleifolia*

$\triangleright$  **Lithospermum purpureocaeruleum** see *Buglossoides purpureocaerulea*

- $\triangleright$  **Lithospermum rosmarinifolium** see *Lithodora rosmarinifolia*
- $\triangleright$  **Lithospermum zabnii** see *Lithodora zabnii*
- $\triangleright$  **Litocarpus cordifolia** see *Aptenia cordifolia*
- $\triangleright$  **Litsea glauca** see *Neolitsea sericea*
- $\triangleright$  **Little pickles** see *Othonna capensis*

## LITTONIA

### LILIACEAE

Genus of 8 species of tuberous, perennial, tendrill climbers occurring in scrub and sandy, often coastal areas in Senegal, South Africa, and the Arabian Peninsula. They are cultivated for their pendent, bell-shaped flowers, which are borne in summer. Ovate-lance-shaped to linear leaves are alternate or opposite on the upper parts of the stems, and often almost whorled on the lower parts; they taper to tendrils at the tips. In frost-prone areas, grow in a temperate greenhouse or conservatory. In warmer areas, grow among low shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Plant tubers 10–15cm (4–6in) deep in autumn or early spring. Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in full light. As growth begins, water freely, then apply a half-strength balanced liquid fertilizer every 3–4 weeks. Reduce watering as the leaves fade, then keep just moist in winter. The brittle rubers resent disturbance, so pot on only when necessary. Outdoors, grow in moderately fertile, humus-rich, well-drained soil in full sun. Stems require support.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring, or divide tubers with care when dormant.

• **PESTS AND DISEASES** Trouble free.

**L. modesta**  $\blacksquare$  Tuberous tendrill climber with slender stems bearing whorled or alternate, linear to ovate-lance-shaped, mid-green leaves, to 15cm (6in) long, with tendrils at their tips. Pendent, bell-shaped orange flowers, to 5cm (2in) long, are produced singly from the leaf axils in summer.  $\uparrow$  1–2m (3–6ft). South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal, Orange Free State).  $\bullet$  (min. 8°C/46°F)

$\triangleright$  **Living baseball** see *Euphorbia obesa*

$\triangleright$  **Living granite** see *Pleiospilos*

$\triangleright$  **Living rock** see *Ariocarpus fissuratus*

$\triangleright$  **Living stones** see *Lithops*

*Littonia modesta*

## LIVISTONA

ARECACEAE/PALMAE

Genus of about 28 species of single-stemmed palms, found in habitats ranging from streambanks and swamps to woodland, rainforest, and inland gorges, in the warmer parts of Asia and Australasia. Fan-shaped leaves are borne in often dense, terminal heads, and bowl-shaped, 3-petalled flowers are produced in panicles between them. In frost-prone climates, grow in a cool or warm greenhouse, or as houseplants. In warmer regions, they are suitable for growing as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full or bright indirect light. In the growing season, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed at 23°C (73°F) in spring.
- **PESTS AND DISEASES** Red spider mites and scale insects may be troublesome under glass.

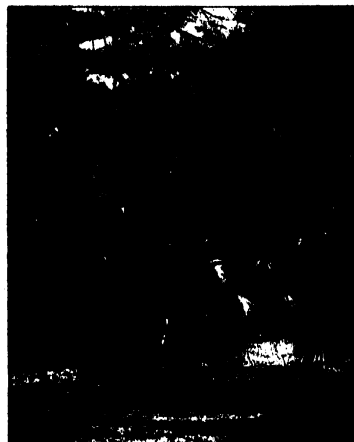
*L. australis* ♂♀ (Australian fan palm, Cabbage palm). Large palm with an erect, robust trunk that is initially covered with a skirt of dead leaves and rough or almost prickly fibres. Long, spiny leaf-stalks support longer, lustrous, deep green blades, to 1.7m (5½ft) long, divided for two-thirds of their length into many linear lobes, often arching at

the tips. From spring to summer, cream flowers are produced in panicles as long as, or shorter than the leaves; they are followed by spherical, brownish red to black fruit, 2cm (¾in) across. † to 25m (80ft), ↔ to 5m (15ft). Coastal forest in E. Australia. ☉ (min. 3–5°C/37–41°F)

*L. chinensis* ♂♀ (Chinese fan palm). Medium-sized palm with an erect, robust trunk swollen at the base, the upper part covered with fibrous leaf bases, at least at first. Glossy, rich green leaves, to 2m (6ft) long, with shorter, spiny leaf-stalks, are divided for up to two-thirds of their length into many linear, pendent segments. Cream flowers are borne in panicles to 1m (3ft) or more long, usually in summer, followed by ovoid to spherical, glossy, blue-green to grey-pink fruit, 2–2.5cm (¾–1in) across. † to 12m (40ft), ↔ to 5m (15ft). S. Japan (including Ryukyu and Bonin Islands) to S. Taiwan. ☉ (min. 3–5°C/37–41°F)

*L. mariae* ♀ (Red fan palm). Tall palm with a slim trunk, swollen at the base, and bearing old leaf bases, at least in the upper part. Spiny leaf-stalks, 2m (6ft) long, support prominently ribbed blades, 2m (6ft) long, divided to about half their length into linear, pendent lobes, initially flushed red to bronze-red, maturing to bluish green. In spring and summer, bears cream to pale yellow flowers in erect panicles, shorter than the leaves, followed by spherical, glossy black fruit, 2cm (¾in) across. † to 30m (100ft), ↔ to 8m (25ft). C. Australia. ☉ (min. 13–15°C/55–59°F)

*L. rotundifolia* ♀ Medium-sized to large palm with a slim trunk bearing

*Livistona chinensis*

prominent leaf scars. Spiny leaf-stalks, 2m (6ft) long, support shorter, rounded, lustrous, deep green blades, divided for about two-thirds of their length into many linear, rigid, shallowly notched lobes. Cream flowers are produced in panicles shorter than the leaves, usually in summer, and are followed by spherical, scarlet fruit, 2cm (¾in) across, which ripen to black. † to 25m (80ft), ↔ to 8m (25ft). Philippines, Malaysia (Sabah), Indonesia (Sulawesi, Moluccas). ☉ (min. 13–15°C/55–59°F)

▷ **Lizard plant** see *Tetrastigma voinierianum*

▷ **Lizard tail** see *Crassula muscosa*

## LLOYDIA

LILIACEAE

Genus of approximately 12 species of bulbous perennials from damp upland meadows and screes in temperate and arctic areas of the N. hemisphere. They have narrowly linear leaves and solitary or paired, bell-shaped flowers borne in spring or summer. Grow in an alpine house, bulb frame, or open rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Plant bulbs 7cm (3in) deep in autumn. Grow in poor, peaty, humus-rich, moist but sharply drained soil in partial shade. In an alpine house use a mix of 1 part loam, 1 part leaf mould or peat, and 2 parts grit.
- **PROPAGATION** Sow seed in containers in an open frame in spring.
- **PESTS AND DISEASES** Trouble free.

*L. graeca* see *Gagea graeca*.

*L. serotina* (Snowdon lily). Bulbous perennial with erect, thread-like leaves, to 20cm (8in) long. In late spring and early summer, upright stems bear solitary or paired, upward-facing, bell-shaped white flowers, to 1.5cm (½in) long, with purple-red veins and pale yellow bases. † 5–15cm (2–6in), ↔ 5cm (2in). Arctic and European mountains, Himalayas, S.W. China. \*\*\*

## LOASA

LOASACEAE

Genus of about 100 species of usually bushy, occasionally spreading or twining annuals, biennials, perennials, and subshrubs from open habitats, often by roads or on gravelly slopes, in Mexico and temperate South America. They have opposite or alternate, entire to

palmately lobed, sometimes 3-palmate leaves, and bear nodding, yellow, white, or red flowers singly or in racemes. Each flower has 5 boat-shaped petals, which are inflated in appearance, and nectar scales banded in contrasting colours. Some species are covered in stinging hairs. Best in containers on a patio; grow alpine species in an alpine house.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Grow in fertile, reliably moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in mid-spring or *in situ* in late spring.
- **PESTS AND DISEASES** Trouble free.

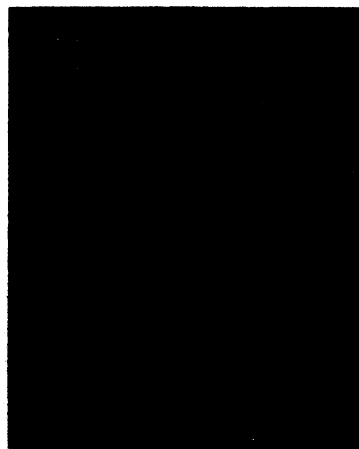
*L. triphylla* var. *volcanica*. Erect, bushy to loosely twining, densely glandular-hairy annual, with shallowly to deeply 3- to 5-lobed, coarsely toothed leaves, 7–15cm (3–6in) across, becoming less lobed on the upper parts of the stems. In summer, bears open, leafy racemes of nodding, hooded white flowers, to 5cm (2in) across, each with golden yellow nectar scales, crossbanded red and white, that form a central disc with concentric rings. Covered in stinging hairs. † 60–90cm (24–36in), ↔ to 30cm (12in). Ecuador. \*\*\*

▷ *Lobelia macdougallii* see *Nopalxochia macdougallii*

## LOBELIA

CAMPANULACEAE/LOBELIACEAE

Genus of about 370 species of annuals, perennials (including some aquatics), and shrubs, found in tropical and temperate areas worldwide, especially in North, Central, and South America. Their habitats range from marshes, wet meadows, and riverbanks, to woodland, well-drained hilly and mountainous slopes, and deserts. Valued for their often brightly coloured flowers, lobelias vary enormously, but all have simple, alternate, often stalkless leaves and 2-lipped, tubular flowers, each with 5 lobes, the upper 2 lobes often erect, the lower 3 often spreading and fan-like; the calyx tubes are sometimes swollen. The flowers are usually borne in terminal racemes or panicles, but may also be solitary. The popular Bowden Hybrids, sometimes grouped under *L. x speciosa*, are perennials with ovate-lance-shaped, pointed leaves, 10–15cm (4–6in) long, which are sometimes red-purple with matching stems. Their flowers,

*Lobelia* 'Bees' Flame'

L

626 *Livistona australis*



Lobelia 'Cherry Ripe'

2.5–3.5cm (1–1½in) across, are borne in terminal racemes, 15–20cm (6–8in) long, from midsummer to early autumn.

Perennials are effective beside water, or in a mixed border. Annuals are suitable for edging, or for a hanging basket or window-box. Aquatic species are useful in a wildlife pool. The shrubby and tree-like species are seldom grown. Contact with the milky sap may irritate skin.

• **HARDINESS** Fully hardy to frost tender. *L. tupa* is hardy to -10°C (14°F).

• **CULTIVATION** Grow in deep, fertile, reliably moist soil in full sun or partial shade. To improve the flowering performance of annuals, apply a balanced liquid fertilizer every 2 weeks in spring and early summer, then a nitrogen-free fertilizer every 2 weeks from midsummer onwards. In frost-prone areas, protect half-hardy perennials with a dry winter mulch. Grow aquatics in baskets of acid soil at the margins of a pool or stream.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F): sow seed of annuals in late winter, of perennials as soon as ripe. Divide border perennials in spring, aquatics in summer. Take bud cuttings of *L. cardinalis* in midsummer.



Lobelia erinus 'Crystal Palace'

• **PESTS AND DISEASES** Susceptible to slugs and leaf blotch, the latter especially on *L. siphilitica*. Crowns may rot in damp, mild conditions. *L. splendens* may be affected by viruses.

*L. angulata* see *Pratia angulata*.

*L. 'Bees' Flame'* ■ Clump-forming, slightly hairy perennial with reddish purple stems and linear-lance-shaped, reddish purple leaves, to 15cm (6in) long. In mid- and late summer,

produces racemes, to 45cm (18in) long, of tubular, 2-lipped, bright crimson flowers, 3.5–4.5cm (1½–1¾in) across. †75cm (30in), ↔ 30cm (12in). \*\*\*

*L. 'Brightness'*. Bowden Hybrid with mid-green leaves, and blood-red flowers produced from midsummer to early autumn. †90cm (36in), ↔ 30cm (12in). \*\*\*

*L. cardinalis* ♀ (Cardinal flower). Short-lived, clump-forming perennial, with short rhizomes, often reddish purple stems, and narrowly ovate to oblong-lance-shaped, toothed, often glossy, bronze-tinged, bright green leaves, to 10cm (4in) long. In summer and early autumn, bears racemes, 35cm (14in) long, of tubular, 2-lipped,



Lobelia erinus 'Lilac Fountain'

brilliant scarlet-red flowers, 5cm (2in) long, with reddish purple bracts. †90cm (36in), ↔ 30cm (12in). E. Canada (New Brunswick) to USA (Michigan to Florida to Texas). \*\*\* *f. alba* has white flowers. *f. rosea* has pink flowers.

*L. 'Cherry Ripe'* ■ Bowden Hybrid with mid-green leaves, often suffused maroon. Bears tubular, 2-lipped, cherry-red flowers in mid- and late summer. †90cm (36in), ↔ 30cm (12in). \*\*\*

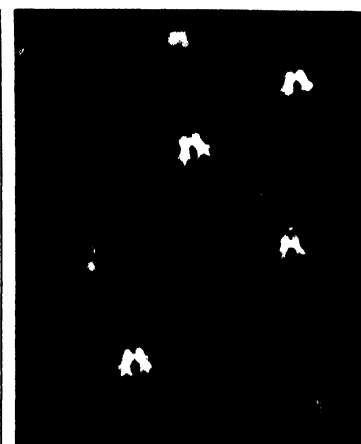
*L. 'Dark Crusader'*. Bowden Hybrid with maroon stems and leaves. Bears tubular, 2-lipped, velvety, deep red flowers in mid- and late summer. †60–90cm (24–36in), ↔ 30cm (12in). \*\*\*

*L. dortmanna* (Water lobelia). Partly submerged aquatic perennial producing hollow, almost leafless stems and a mat of rosette-forming, oblong, dark green leaves, 3–7cm (1¼–3in) long. Pendent, tubular, 2-lipped, pale blue to pale violet flowers, to 2cm (¾in) long, are borne in loose racemes, 5cm (2in) long, above the water in summer. †60cm (24in), ↔ 30cm (12in). W. Europe, North America. \*\*\*

*L. erinus* cultivars. Low-growing, bushy, or trailing perennials, grown as annuals, with tiny, ovate to narrowly linear, or linear-obovate, toothed, mid- to dark green or bronze-flushed leaves, 1.5cm (½in) long. From summer to autumn, they bear small, loose racemes, 5cm (2in) long, of tubular, 2-lipped, blue, violet, white, pink, red, or purple flowers, to 1cm (½in) across, with white or yellow eyes and broad, fan-shaped lower lips. †10–23cm (4–9in), ↔ 10–15cm (4–6in). \*.

Cultivars of **Cascade Series** ■ are trailing, with carmine-red, violet-blue, blue, pink, or white flowers; †15cm (6in). 'Cobalt Blue' is compact, with very early, intensely mid-blue flowers; † to 12cm (5in). 'Crystal Palace' ■ ♀ is compact, and has dark blue flowers and dark green foliage; † to 10cm (4in). 'Lilac Fountain' ■ is trailing, and profusely bears lilac-pink flowers; †15cm (6in).

**Moon Series** cultivars are early-flowering, with white, blue-and-white, or deep blue flowers. 'Mrs. Clibran' ♀ is compact, with brilliant blue, white-eyed flowers; †10–15cm (4–6in). Cultivars of **Palace Series** have neat, blue to dark blue or white flowers, some with white eyes; † to 12cm (5in). Cultivars of **Regatta Series** are trailing, and bear blue, pink, crimson, or white flowers over a very long season. They



Lobelia erinus 'Sapphire'

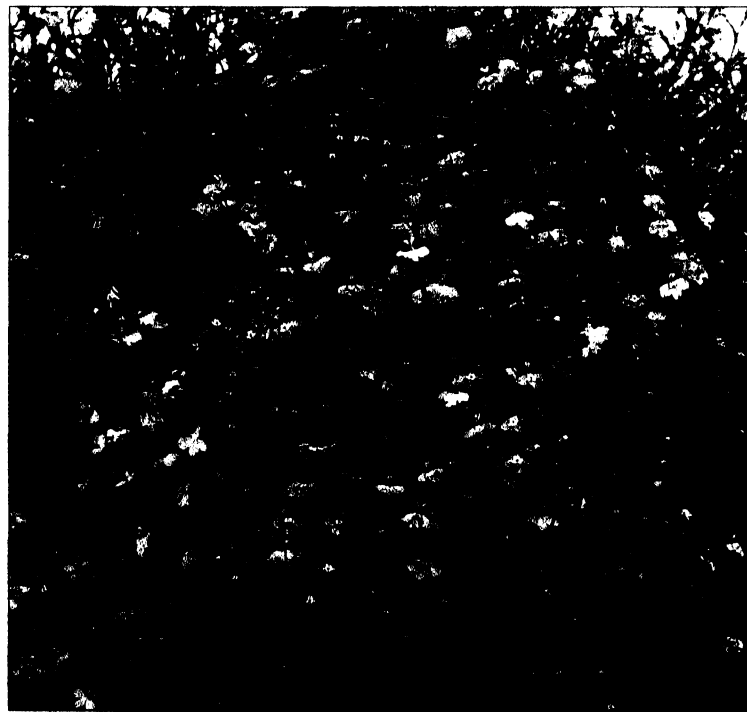
bloom early; † to 20cm (8in). **Riviera Series** cultivars bear very early flowers in lilac-blue, sky-blue, or a mottled blue with picotee margins; †10–15cm (4–6in). 'Rosamund' is compact, and produces white-eyed, cherry-red flowers; †10–15cm (4–6in). 'Sapphire' ■ is trailing, with bright blue, white-eyed flowers; † to 15cm (6in).

*L. fulgens* see *L. splendens*.

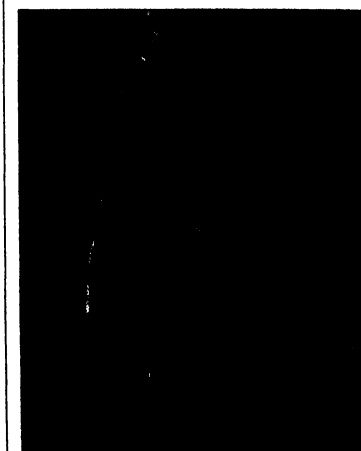
*L. x gerardii* 'Vedrariensis' ■ Clump-forming perennial with short rhizomes and basal rosettes of broadly lance-shaped to elliptic, dark green leaves, to 10cm (4in) long, often suffused red.

Throughout summer, stout stems bear many-flowered racemes, to 45cm (18in) long, of tubular, 2-lipped, violet-purple flowers, 2–3.5cm (¾–1½in) across. †75–120cm (30–48in), ↔ 30cm (12in). \*\*\*

*L. 'Illumination'*. Clump-forming perennial with short rhizomes, downy, dark red stems, and linear-lance-shaped, dark green leaves, to 15cm (6in) long. In summer, bears tubular, 2-lipped scarlet flowers, 2.5–3cm (1–1¼in) across, in one-sided racemes, to 35cm (14in) long. †90cm (36in), ↔ 30cm (12in). \* \* *L. laxiflora*. Spreading, hairy, sub-shrubby, rhizomatous perennial with arching, red-tinted stems bearing linear-lance-shaped to elliptic, finely toothed, light green leaves, to 8cm (3in) long, with long, sharp points. In late spring and summer, bears semi-pendent, tubular, 2-lipped, red and yellow flowers, 4cm (1½in) long, usually singly, from the upper leaf axils. † to 90cm (36in), ↔ 2m (6ft) or more. Mexico, Central America. \* \* (borderline).



Lobelia erinus Cascade Series



Lobelia x gerardii 'Vedrariensis'

*Lobelia laxiflora* var. *angustifolia*

**var. angustifolia** ■ bears linear leaves, to 7cm (3in) long; † to 60cm (24in), ↔ 45cm (18in); USA (Arizona).

**L. paludosa** (Swamp lobelia). Marginal aquatic perennial bearing inversely lance-shaped, bright mid-green leaves, 15–22cm (6–9in) long. In summer, produces tubular, 2-lipped, pale blue flowers, to 1.5cm (½in) long, in racemes to 30cm (12in) long. † 30–120cm (12–48in), ↔ 90cm (36in). USA (Georgia, Florida). \*\*\*

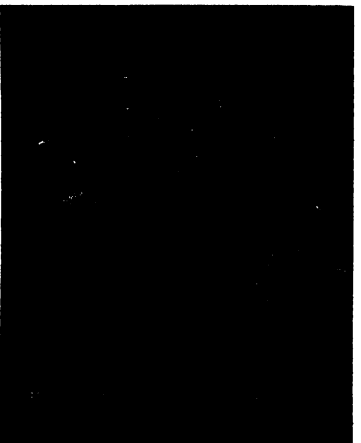
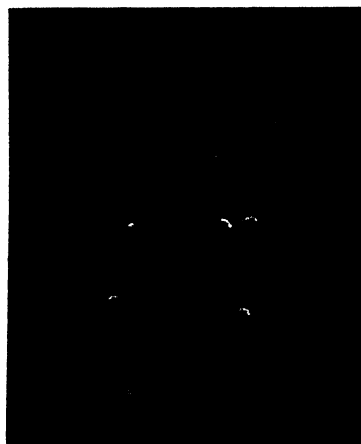
**L. pedunculata** see *Pratia pedunculata*.

**L. perpusilla** see *Pratia perpusilla*.

**L. 'Queen Victoria'** ♀ Clump-forming, short-lived perennial with deep purple-red stems and lance-shaped, deep purple-red leaves, 10–15cm (4–6in) long. From late summer to mid-autumn, bears tubular, 2-lipped scarlet flowers, 2.5–3.5cm (1–1½in) long, in slightly one-sided racemes, to 45cm (18in) long. † 90cm (36in), ↔ 30cm (12in). \*\*\*

**L. richardsonii**. Bushy then trailing, evergreen perennial with pendent shoots clothed with narrowly elliptic, sparsely toothed, mid- to dark green leaves, to 5cm (2in) long. In summer and autumn, bears numerous long-stalked, tubular, 2-lipped, white-throated, bright lilac-blue flowers, to 2cm (¾in) long, singly in the leaf axils. † 10cm (4in), ↔ 30cm (12in). Origin unknown. \*

**L. siphilitica** (Blue cardinal flower). Clump-forming perennial with erect, leafy stems and ovate, oblong, or broadly lance-shaped, irregularly toothed, softly hairy, light green leaves, 10–15cm (4–6in) long. From late summer to mid-autumn, long-lasting, tubular, 2-lipped, bright blue flowers, 2.5–3.5cm

*Lobelia tupa**Lobelia* 'Will Scarlet'

(1–1½in) across, with leafy green bracts, are borne in dense racemes, 10–50cm (4–20in) long. † 60–120cm (24–48in), ↔ 30cm (12in). E. USA. \*\*\*. **f. albiflora** bears white flowers.

**L. x speciosa** cultivars. Clump-forming, slightly hairy perennials, often grown as annuals or biennials, with basal rosettes of oval to oblong-obovate, pointed, mid-green to red-flushed or ruby-red leaves, to 12cm (5in) long. From summer to autumn, they bear tubular, 2-lipped, red, pink, or mauve-blue flowers, 3–4cm (1¼–1½in) across, in erect, dense, leafy racemes, to 35cm (14in) long. † 1.2m (4ft), ↔ 30cm (12in). \*\*\*. **Compliment Series** cultivars have dark green foliage and long-stemmed, loose racemes of scarlet, deep red, or blue-purple flowers; † 75cm (30in) or more, ↔ to 23cm (9in).

Cultivars of **Fan Series** have bronze-green or dark green leaves and compact, dense racemes, branching at the bases, of narrow-petalled flowers, to 2.5cm (1in) long, in pink, deep carmine-pink, scarlet, or deep red; † 50–60cm (20–24in), ↔ to 23cm (9in).

**L. splendens**, syn. *L. fulgens* (Scarlet lobelia). Clump-forming, rhizomatous perennial with narrowly lance-shaped to linear-lance-shaped, mid-green leaves, to 15cm (6in) long, sometimes flushed red-purple, on downy, dark red stems. In late summer, bears tubular, 2-lipped scarlet flowers, 2–4cm (¾–1½in) long, in one-sided racemes, to 40cm (16in) long. † 90cm (36in), ↔ 30cm (12in). USA (California, Texas), Mexico. \*\* (borderline)

**L. tupa** ■ Robust, upright, clump-forming perennial with red-purple stems and ovate-lance-shaped to lance-shaped, downy, light grey-green leaves, to 30cm (12in) long. Narrowly tubular, 2-lipped, brick-red to orange-red flowers, 6cm (2½in) long, with red-purple calyces, are borne in racemes, to 45cm (18in) long, from mid- or late summer to mid-autumn. † to 2m (6ft), ↔ 90cm (36in). Chile. \*\*

**L. 'Will Scarlet'** ■ Bowden Hybrid with mid-green leaves, suffused maroon and tubular, 2-lipped, bright blood-red flowers, borne from midsummer to early autumn. † 90cm (36in), ↔ 30cm (12in). \*\*\*

▷ **Lobelia**,

**Scarlet** see *Lobelia splendens*

**Swamp** see *Lobelia paludosa*

**Water** see *Lobelia dortmanna*

▷ **Lobivia bachenbergii** see *Echinopsis bachenbergii*

▷ **Lobivia caespitosa** see *Echinopsis maximiliana*

▷ **Lobivia cinnabarina** see *Echinopsis cinnabarina*

▷ **Lobivia ferox** see *Echinopsis ferox*

▷ **Lobivia pentlandii** see *Echinopsis pentlandii*

▷ **Lobivia silvestrii** see *Echinopsis chamaecereus*

▷ **Loblolly bay** see *Gordonia lasianthus*

▷ **Lobster claw** see *Clanthus puniceus*, *Vriesea carinata*

## LOBULARIA

Sweet Alison, Sweet alyssum

BRASSICACEAE/CRUCIFERAE

Genus of 5 species of low, mound-forming or spreading, hairy annuals and perennials from seashores, disturbed ground, and stony slopes in the Canary Islands and Mediterranean. They have narrow, linear-lance-shaped to oblong, light to mid-green leaves. In summer and early autumn, they produce cross-shaped, 4-petalled, often scented white flowers in compact, sometimes corymb-like, terminal racemes that elongate in fruit. Grown for their flowers, they are useful for the edges of a gravel drive or to fill paving cracks, and are very tolerant of maritime conditions. *L. maritima* cultivars are particularly good summer bedding plants.

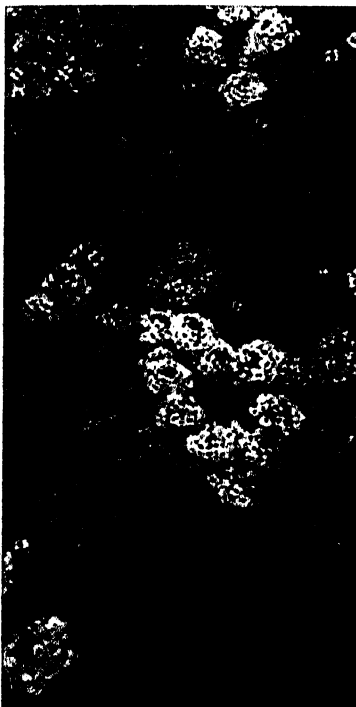
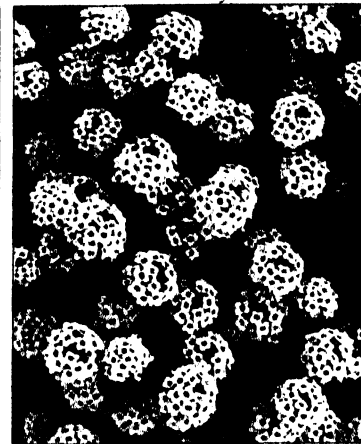
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, moderately fertile, well-drained soil in full sun. Clip over after the first flush of bloom to encourage further flowering.

• **PROPAGATION** Sow seed *in situ* in late spring.

• **PESTS AND DISEASES** Downy mildew, slugs, flea beetles, clubroot, and white blister may be troublesome.

**L. maritima**, syn. *Alyssum maritimum*. Freely branching, usually compact, low-growing annual or short-lived perennial with linear-lance-shaped, slightly hairy,

*Lobularia maritima* Easter Bonnet Series*Lobularia maritima* 'Little Dorrit'

grey-green leaves, 3cm (1¼in) long. In summer, produces tiny, cross-shaped, slightly cupped, scented, white, occasionally pale purple-pink flowers in rounded, corymb-like racemes, 2.5–8cm (1–3in) across. † 5–30cm (2–12in), ↔ 20–30cm (8–12in). Mediterranean, Canary Islands. \*\*\*. **Alice Series** cultivars are compact, and bear white, purple, or rose-pink flowers; † 8cm (3in). **'Carpet of Snow'** is loosely branched and ground-hugging, with white flowers; † to 10cm (4in). Cultivars of **Easter Bonnet Series** ■ are very compact, bearing early, white, reddish purple, or pink flowers; † 8–10cm (3–4in). **'Little Dorrit'** ■ is loosely branched and spreading, with white flowers; † to 10cm (4in). **'Navy Blue'** is very compact, with deep purple flowers; † to 10cm (4in). **'New Purple'** is very compact and long-flowering, with purple flowers, shading to a lighter tone at the petal margins; † to 10cm (4in). **'Rosario'** is vigorous and compact, with rose-pink flowers; † 10cm (4in). **'Snowcloth'** is spreading, with white flowers. **'Snow Crystals'** ■ is mound-forming and compact, and bears white flowers; † to 25cm (10in). **'Wonderland Rose'** is less densely branched and more compact than 'Snowcloth', and bears rose-pink flowers; † to 15cm (6in).

▷ **Locust** see *Robinia pseudoacacia*

**Black** see *Robinia pseudoacacia*

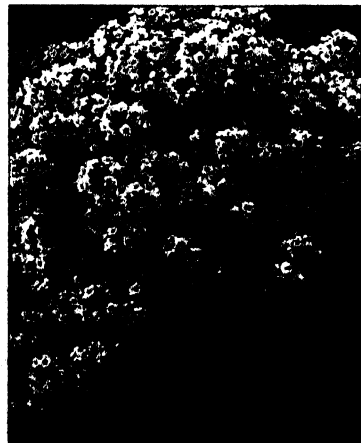
**Bristly** see *Robinia hispida*

**Caspian** see *Gleditsia caspica*

**Honey** see *Gleditsia triacanthos*

**New Mexico** see *Robinia*

*neomexicana*

*Lobularia maritima* 'Snow Crystals'



## LODOICEA

*Coco-de-mer, Double coconut*

ARECACEAE/PALMAE

Genus of one rare species of single-stemmed, dioecious palm found in wooded valleys in the Seychelles. It produces terminal clusters of fan-shaped leaves, and spikes of 3-petalled flowers between the lower leaves, followed by very large, coconut-like fruit. In frost-prone climates, grow in a warm greenhouse. In tropical climates, grow as a specimen plant.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added leaf mould, in full light. In the growing season, water freely and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 24°C (75°F) in spring, half-buried in damp sand, in containers at least 1m (3ft) deep to allow room for the roots to develop.
- **PESTS AND DISEASES** Trouble free.

*L. maldivica* ♀ syn. *L. seychellarum*. Large palm with a columnar trunk that is slightly swollen at the base and ringed with old leaf scars. Robust leaf-stalks, 3–4m (10–12ft) long, support fan-shaped blades, to 7m (22ft) long, glossy, rich green above, matt and densely woolly beneath, and divided for up to one-third of their length into many narrow, often pendent lobes. Green flowers are borne in spikes, to 2m (6ft) long, at intervals throughout the year, followed on female trees by heavy, woody, broadly heart-shaped, green then brown fruit, to 50cm (20in) across, which take 6 years to mature. ↓ to 30m (100ft), ↔ 15–20m (50–70ft). Seychelles. ☉ (min. 20°C/68°F)

*L. seychellarum* see *L. maldivica*.

## LOISELEURIA

*Alpine azalea, Trailing azalea*

ERICACEAE

Genus of one species of mat-forming, evergreen shrub from high alpine and subarctic regions in Europe, Japan, and North America. Cultivated for its foliage and flowers, it is suitable for a rock garden, peat bed, or alpine house, but is difficult to grow in dry climates.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, acid soil in full sun. In an alpine house, use a mix of 4 parts peat or leaf mould and 1 part sharp sand.
- **PROPAGATION** Root softwood cuttings in early summer, or semi-ripe cuttings in midsummer. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

*L. procumbens*. Prostrate shrub forming tight mats of crowded, oval to oblong, glossy, dark green leaves, to 1cm (½in) long. Terminal, upturned, broadly cup-shaped, rose-pink to white flowers, 6mm (¼in) across, are borne singly or in small umbels in early summer. ↓ 8cm (3in), ↔ to 30cm (12in). Europe, Japan, North America. \*\*\*

▷ **Lollipop plant** see *Pachystachys lusea*

## LOMANDRA

*Mat rush*

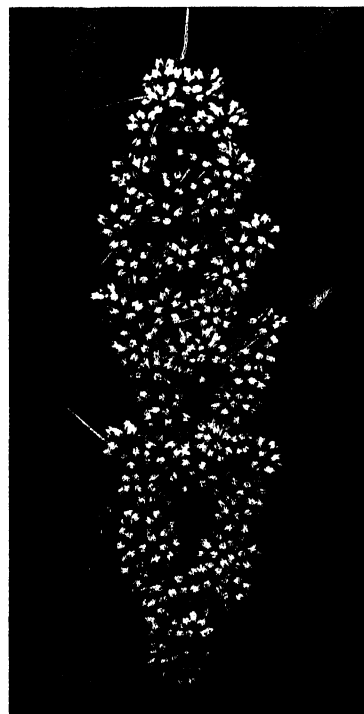
LOMANDRACEAE

Genus of over 50 species of tuft- or tussock-forming, rhizomatous perennials found in a wide range of habitats in Australia, Papua New Guinea, and New Caledonia. They have linear, flat or cylindrical, hairy or hairless leaves. The male and female flowers, borne in spikes, racemes, or panicles, are often inconspicuous and not long-lasting. Some species are aromatic, others have an overpowering smell. Grow for mass planting or as individual accent plants. In damp, frost-prone areas, grow in a cool greenhouse or conservatory.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Outdoors, grow in any well-drained soil in full sun, or in partial shade in very hot regions. Rejuvenate old clumps by burning off the foliage. Under glass, grow in well-drained loam-based potting compost (J1 No.2) in full light. Water moderately during the growing season, sparingly in winter.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

*L. glauca* (Pale mat rush). Tussock-forming perennial with linear, mainly flat, mid-green leaves, 8–20cm (3–8in) long. In summer, bears cylindrical or tubular, purple-flushed yellow flowers, 5mm (¼in) long; the male flowers clustered in spikes 10–15cm (4–6in) long, the female flowers borne in spherical heads 1.5cm (½in) across. ↓ 20cm (8in), ↔ 35cm (14in). Australia (New South Wales). \*\*

*L. longifolia* ♂ (Spiny-headed mat rush). Dense, tussock-forming perennial with linear, flat or nearly flat, yellow-green to dark green leaves, 1m (3ft) long. In summer, cylindrical, often fragrant, yellow or cream, male and female flowers, 4mm (¼in) long, are



*Lomandra longifolia*

borne in racemes or panicles 30–90cm (12–36in) long. ↓ 1m (3ft), ↔ 2m (6ft). Australia (E. South Australia, New South Wales, E. Tasmania). \*\*

▷ *Lomaria gibba* see *Blechnum gibbum*

## LOMATIA

PROTEACEAE

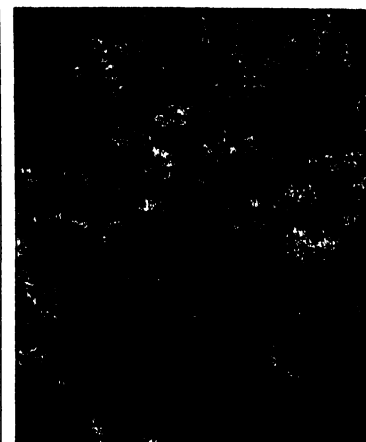
Genus of about 12 species of evergreen trees and shrubs from moist woodland in Australasia and South America. They have opposite or alternate, entire to pinnatifid, or pinnate to 3-pinnate leaves, and racemes of initially tubular, later star-shaped flowers, with 4 narrow, twisted lobes and prominent, curved styles. Grow in a woodland garden or shrub border.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in poor to moderately fertile, moist but well-drained, acid to neutral soil in full sun or partial shade. Shelter from cold winds in frost-prone areas. Pruning group 1.
- **PROPAGATION** Take softwood cuttings in early summer, or semi-ripe cuttings in midsummer.
- **PESTS AND DISEASES** Trouble free.

*L. ferruginea* ♂ Upright, bushy shrub or small tree with felted brown shoots and oblong to oval, 2-pinnate, dark green leaves, to 50cm (20in) long, the ovate-lance-shaped leaflets sometimes deeply lobed and fawn-felted beneath. In midsummer, bears yellow-and-red flowers, 1.5cm (½in) long, in axillary racemes to 5cm (2in) long. ↓ 10m (30ft), ↔ 5m (15ft). Chile, Argentina. \*\*



*Lomatia ferruginea* (inset: flower detail)



*Lomatia silaifolia*

*L. silaifolia* ♂ Bushy shrub with upright branches bearing 2- or 3-pinnate, dark green leaves, to 30cm (12in) long, composed of lance-shaped leaflets with margins rolled under. In mid- and late summer, bears fragrant, creamy white flowers, 1.5cm (½in) long, in erect racemes or panicles, to 30cm (12in) long. ↓ 2m (6ft). S.E. Australia. \*\*

*L. tinctoria*. Small, bushy, often suckering shrub with ovate to triangular, pinnate or 2-pinnate (rarely simple), dark green leaves, to 8cm (3in) long, deeply and finely cut into linear-lance-shaped leaflets. Fragrant, creamy white flowers, 1cm (½in) long, are borne in racemes to 10cm (4in) or more long, in midsummer. ↓ 1m (3ft), ↔ 1.5m (5ft). Australia (Tasmania). \*\*

## LOMATIUM

APIACEAE/UMBELLIFERAE

Genus of approximately 60 species of tap-rooted herbaceous perennials from open areas and rock crevices in W. North America. Cultivated for their foliage and flowers, they have finely divided, pinnate to 4-pinnate, fern-like leaves, and produce compound umbels of tiny, yellow, green, purple, or white flowers in spring and summer. Suitable for a rock garden or raised bed.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, sharply drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.
- **PESTS AND DISEASES** Trouble free.

***L. dissectum***. Low-growing perennial with triangular, 2- to 4-pinnate, fresh mid-green leaves, to 15–35cm (6–14in) long, composed of oblong leaflets. Bright yellow or purple flowers are borne in rounded, compound umbels, 3–13cm (1¼–5in) across, very early in spring, as the leaves develop. ‡ 15cm (6in) in flower, to 40cm (16in) or more later, ↔ to 20cm (8in). USA (Rocky Mountains). \*\*\*

## LOMATOPHYLLUM

ALOEACEAE/LILIACEAE

Genus of about 11 species of mainly stemless, succulent perennials occurring on low, hilly terrain in Madagascar and Mauritius. They have fleshy leaves forming loose rosettes, similar to those of many *Aloe* species, and bear racemes or panicles of diurnal, bell-shaped or tubular flowers in summer. Where temperatures drop below 12°C (54°F), grow as houseplants or in a warm greenhouse; in warmer climates, grow in a shrub border or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added leaf mould and grit, in full light. From early spring to early autumn, water freely and apply a half-strength balanced liquid fertilizer every 6–8 weeks. Keep barely moist at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or detach offsets, in spring.
- **PESTS AND DISEASES** Susceptible to scale insects.

***L. citreum*** see *L. occidentale* var. *citreum*.

***L. occidentale***. Stemless or short-stemmed, succulent perennial forming rosettes of 15–20 stiff, spreading, lance-shaped, mid-green leaves, 80–100cm (32–39in) long, with recurved, toothed or sparsely spiny margins. In summer, produces dense panicles of 50 or more tubular, deep pink flowers, 2–3cm (¾–1¼in) long. ‡ to 1m (3ft), ↔ to 1.5m (5ft). W. Madagascar. ☉ (min. 12°C/54°F). var. *citreum*, syn. *L. citreum*, has a short stem, dark green leaves, 30cm (12in) long, and yellowish green flowers; ‡ 45–50cm (18–20in), ↔ 60cm (24in).

▷ **London pride** see *Saxifraga x urbium*

## LONICERA

Honeysuckle

CAPRIFOLIACEAE

Genus of about 180 species of deciduous and evergreen shrubs and twining climbers, widely distributed in the N. hemisphere, where they grow in varied habitats ranging from woodland and thickets to rocky places. They are cultivated mainly for their tubular or funnel- to bell-shaped, often fragrant flowers, which are usually 2-lipped or have 5 small, spreading lobes. The leaves are borne in opposite pairs and are usually simple. Honeysuckles may be grown in a variety of situations: train climbers on a wall or fence, or into a large shrub or small tree; grow shrubs in a shrub border, or use for hedging or ground cover. In frost-prone climates, grow half-hardy species in a cool greenhouse. The berries may cause mild stomach upset if ingested.

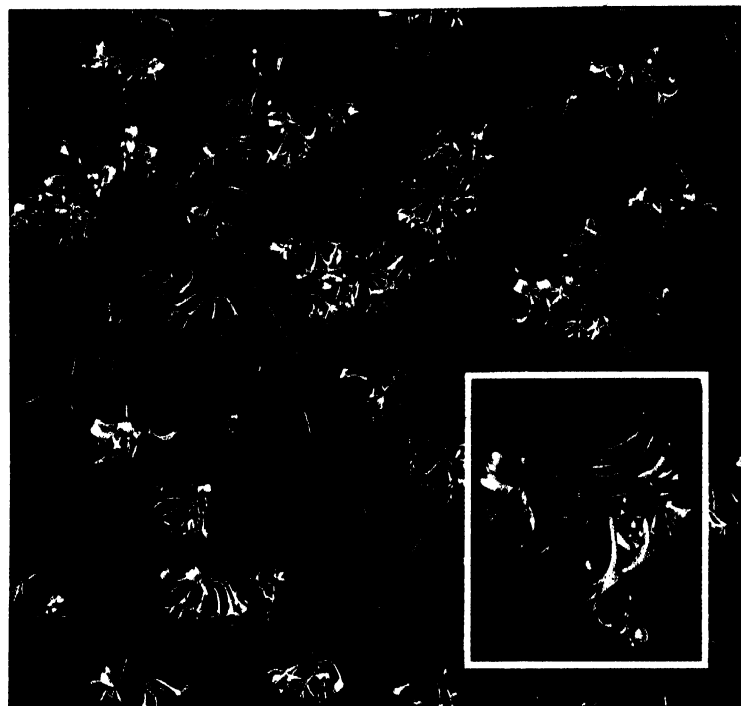
- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow shrubs in any well-drained soil in full sun or partial shade; grow climbers in fertile, humus-rich, moist but well-drained soil. All will tolerate full sun, but are less prone to aphids in partial shade. Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pruning group 2 for shrubs; group 11 for climbers (those flowering on the previous year's shoots, such as *L. periclymenum*, are best pruned back to strong young growth immediately after flowering each year). Trim hedges twice during summer.
- **PROPAGATION** Sow seed of hardy species in containers in a cold frame as soon as ripe; sow *L. hildebrandiana* at 13–18°C (55–64°F) in spring. Take semi-ripe cuttings of evergreens in summer, and greenwood or hardwood cuttings of deciduous honeysuckles in summer or autumn respectively.
- **PESTS AND DISEASES** Aphids may be a problem, particularly on some climbers.

***L. x americana*** ♂♀ Vigorous, woody, deciduous, twining climber with paired, oval, dark green leaves, to 8cm (3in) long, the upper pairs united. Large whorls of tubular, 2-lipped, very fragrant yellow flowers, to 5cm (2in) long, strongly flushed red-purple, are borne in the leaf axils in summer and early autumn, followed by red berries. ‡ 7m (22ft). Garden origin. \*\*\*

***L. x bella***. Upright, deciduous shrub with paired, ovate, pointed, mid-green leaves, to 5cm (2in) long. Axillary pairs of tubular, 5-lobed, pink or red flowers, 1.5–3cm (½–1¼in) long, becoming yellow, are produced in summer, and are followed by red berries. ‡ 2.5m (8ft), ↔ 3m (10ft). Garden origin. \*\*\*

***'Atrorosea'*** bears dark pink flowers with paler margins, in late spring. ***'Candida'*** bears white flowers.

***L. x brownii*** (*L. hirsuta* x *L. sempervirens*) (Scarlet trumpet honeysuckle). Deciduous or semi-evergreen, twining climber with paired, ovate, blue-green leaves, to 8cm (3in) long. Bears terminal whorls of tubular, 2-lipped, slightly fragrant, orange to red flowers, 3.5cm (1½in) long, in summer,



*Lonicera x americana* (inset: flower detail)

sometimes followed by red berries. ‡ 4m (12ft). Garden origin. \*\*\*

***'Dropmore Scarlet'*** ♂ bears long, trumpet-shaped, bright scarlet flowers over a long period. ***'Fuchsoides'*** has orange-scarlet flowers.

***L. caprifolium*** ♀ (Italian honeysuckle). Woody, deciduous, twining climber with paired, oval to obovate, grey-green leaves, to 10cm (4in) long, the upper pairs united. Whorls of tubular, 2-lipped, very fragrant, pink-flushed, creamy white to yellow flowers, to 5cm (2in) long, are borne from the leaf axils in summer, and are followed by orange-red berries. ‡ 6m (20ft). Europe, W. Asia. \*\*\*. ***'Praecox'*** bears creamy white flowers in late spring; they are often tinted light red, and turn yellow.

***L. chaetocarpa***. Upright, deciduous shrub with bristly shoots and paired, ovate to oblong, bristly, mid-green leaves, to 8cm (3in) long. In early summer, paired, sometimes solitary, funnel-shaped, 5-lobed, primrose-yellow flowers, to 3cm (1¼in) long, with large, leafy, pale green bracts, are borne in the leaf axils; the berries are red and cupped by the persistent, now red-tinted bracts. ‡↔ 2m (6ft). W. China. \*\*\*

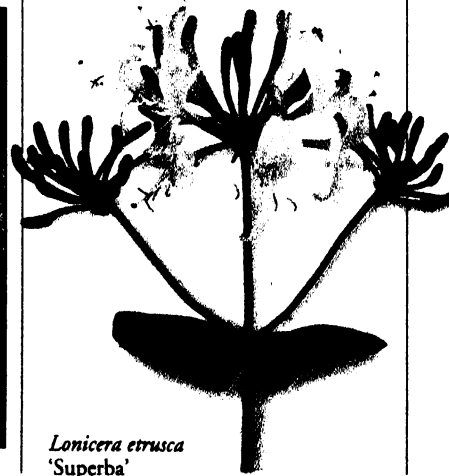


*Lonicera x brownii* 'Dropmore Scarlet'

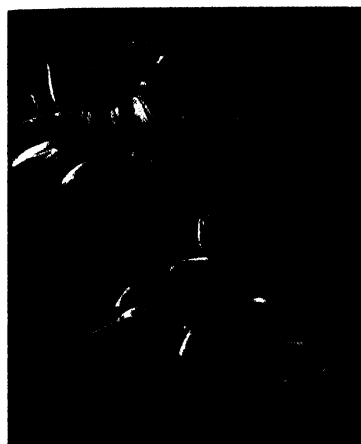
***L. etrusca*** (Etruscan honeysuckle).

Vigorous, woody, twining, deciduous or semi-evergreen climber with paired, oval or obovate, mid-green leaves, to 10cm (4in) long, blue-green beneath, the upper pairs united. Tubular, 2-lipped, fragrant yellow flowers, 5cm (2in) long, flushed red and darkening with age, are produced in terminal and axillary whorls from midsummer to autumn, and are followed by red berries. Grows best in full sun. ‡ 4m (12ft). Mediterranean. \*\*\* (borderline). ***'Donald Waterer'*** produces flowers that are red outside, becoming orange-yellow, and white inside. ***'Superba'*** ♂ is vigorous, and produces large clusters of cream flowers that turn orange.

***L. fragrantissima***. Bushy, spreading, deciduous or semi-evergreen shrub with paired, oval leaves, to 7cm (3in) long, dull, dark green above, blue-green beneath, with bristly margins when young. Tubular, 2-lipped, very fragrant, creamy white flowers, 1cm (½in) long, are produced in pairs from the leaf axils in winter and early spring, but are often sparsely produced unless grown against a wall. Berries are dull red. ‡ 2m (6ft), ↔ 3m (10ft). China. \*\*\*



*Lonicera etrusca* 'Superba'



*Lonicera x heckrottii*

*L. giraldii*. Evergreen, twining climber with densely hairy shoots and paired, narrowly oblong, velvet-textured, dark green leaves, to 8cm (3in) long, with long, sharp points and heart-shaped bases. Dense, terminal whorls of tubular, 2-lipped, purple-red flowers, to 2cm (¾in) long, with yellow stamens, are produced in early and midsummer, followed by white-frosted, purple-black berries. ‡5m (15ft). China. \*\*\*

*L. 'Gold Flame'* see *L. x heckrottii* 'Gold Flame'.

*L. x heckrottii* (L. x americana x L. sempervirens). Deciduous or semi-evergreen, twining climber with paired, oblong to oval or elliptic, dark green leaves, to 6cm (2½in) long, blue-green beneath, with the upper pairs united. Tubular, 2-lipped, fragrant flowers, 4cm (1½in) long, pink outside, orange-yellow inside, are borne in terminal whorls during summer, and are sometimes followed by red berries. ‡5m (15ft). Garden origin. \*\*\*. 'Gold Flame', syn. *L. 'Gold Flame'*, is more vigorous, with brighter coloured flowers.

*L. henryi*. Vigorous, woody, evergreen, twining climber with paired, oblong-lance-shaped to oblong-ovate, tapered, glossy, dark green leaves, to 10cm (4in) long. Terminal or axillary whorls of tubular, 2-lipped, yellow-throated, purplish red flowers, to 2cm (¾in) long, are produced in early and midsummer, followed by purple-black berries. ‡10m (30ft). W. China. \*\*\* (borderline)

*L. hildebrandiana* (Giant Burmese honeysuckle). Very vigorous, evergreen or semi-evergreen, twining climber with paired, broadly ovate or oval, dark green

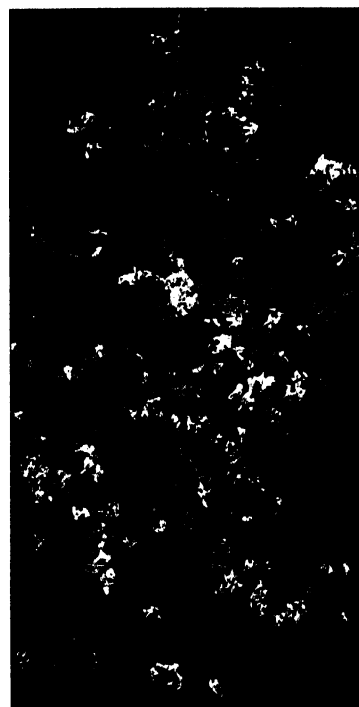
leaves, to 15cm (6in) long. Tubular, 2-lipped, very fragrant, creamy white flowers, to 8–15cm (3–6in) long, ageing to orange, are borne in pairs in terminal and axillary racemes in summer, and are followed by red berries. ‡10m (30ft) or more. China, S.E. Asia. \*

*L. involucrata* (Twinberry). Dense, bushy, deciduous shrub with stout shoots and paired, ovate to oblong or lance-shaped, bright mid-green leaves, to 12cm (5in) long. Tubular, dark yellow, often red-suffused flowers, 1cm (½in) long, each with 5 short lobes, are borne in pairs from the leaf axils in late spring; they are surrounded by large green bracts that soon turn red, and are followed by glossy black berries. ‡2m (6ft), ↔3m (10ft). W. North America, Mexico. \*\*\*

*L. japonica* (Japanese honeysuckle). Vigorous, woody, evergreen or semi-evergreen, twining climber with paired, broadly elliptic to ovate, sometimes deeply lobed, dark green leaves, to 8cm (3in) long. Tubular, 2-lipped, very fragrant, often purple-flushed, white flowers, to 4cm (1½in) long, ageing to yellow, are borne in pairs from the leaf axils over a long period from spring to late summer, followed by blue-black berries. ‡10m (30ft). E. Asia. \*\*\*.

*'Aureoreticulata'* has leaves attractively veined yellow; ‡6m (20ft); \*. *'Dart's World'* is a particularly hardy evergreen cultivar of bushy, spreading habit, with dark green leaves and very fragrant, strongly red-flushed white flowers that turn yellow. *'Halliana'* (♀) is very vigorous, with pure white flowers that age to dark yellow. var. *repens* has purple-tinged foliage, and produces white flowers heavily flushed red-purple. var. *repens* 'Red Coral' see 'Superba'. 'Superba', syn. var. *repens* 'Red Coral', has mid-green leaves, 5cm (2in) long, and bears scarlet flowers, 4–5cm (1½–2in) long.

*L. korolkowii* (♂) Open, spreading, deciduous shrub with arching shoots and paired, ovate or oval leaves, to 3cm (1¼in) long, with long, sharp points, glaucous pale green above, glaucous blue-green beneath. In early summer, bears tubular, 2-lipped, pale rose-pink flowers, 1.5cm (½in) long, in pairs along the shoots, followed by bright red berries. ‡3m (10ft), ↔5m (15ft). Mountains of C. Asia, Afghanistan, Pakistan. \*\*\*. var. *zabelii*, syn. *L. tatarica* 'Zabelii', bears bright pink flowers.



*Lonicera korolkowii*

*L. ledebourii* (♂) Dense, bushy, deciduous shrub with stout shoots and paired, ovate-oblong, dark green leaves, to 12cm (5in) long. Funnel-shaped, 5-lobed, red-flushed, deep orange-yellow flowers, to 2cm (¾in) long, each with 2 large, persistent red bracts, are borne from the leaf axils in late spring and early summer, followed by glossy black berries. ‡3m (10ft), ↔4m (12ft). USA (California). \*\*\*

*L. maackii*. Vigorous, upright, often tree-like, deciduous shrub with paired, oval-lance-shaped, tapered, dark green leaves, to 8cm (3in) long. Tubular, 2-lipped, fragrant white flowers, to 2cm (¾in) long, ageing to yellow, are borne in axillary pairs along the shoots in early summer, followed by dark red berries. ‡5m (15ft). China, Korea, Japan. \*\*\*

*L. morrowii*. Spreading, deciduous shrub with arching branches and paired, oblong or ovate to elliptic, dull mid-green leaves, to 6cm (2½in) long, purple-tinged when young. Pairs of tubular, creamy white flowers, 1.5cm (½in) long, ageing to yellow, each with 5 short lobes, are borne along the shoots in late spring and early summer,



*Lonicera periclymenum* 'Graham Thomas'

followed by red berries. ‡2m (6ft), ↔3m (10ft). Japan. \*\*\*

*L. nitida*. Bushy, evergreen shrub with paired, ovate to broadly ovate leaves, to 1cm (½in) long, glossy, dark green above, lighter beneath. Produces pairs of tubular, creamy white flowers, to 1cm (½in) long, from the leaf axils in spring, followed by glossy, blue-purple berries. Good for hedging. ‡to 3.5m (11ft), ↔3m (10ft). S.W. China. \*\*\*.

*'Baggesen's Gold'* (♀) has long, arching shoots and ovate, bright yellow leaves; ‡1.5m (5ft). *'Ernest Wilson'* is vigorous and spreading, with tiny, ovate, dark green leaves, 3–6mm (¼–¼in) long; ‡2m (6ft). *'Yunnan'* is broad and upright, with larger leaves, 2cm (¾in) long, and with abundant flowers and berries; ‡2m (6ft).

*L. periclymenum* (Common honeysuckle, Woodbine). Vigorous, woody, deciduous, twining climber with paired, ovate, oval, or obovate, mid-green leaves, to 6cm (2½in) long, glaucous beneath. Terminal whorls of tubular, 2-lipped, very fragrant, white to yellow, often red-flushed flowers, to 5cm (2in) long, are borne in mid- and late summer, followed by bright red berries. ‡7m (22ft). Europe, North Africa, Turkey, Caucasus. \*\*\*. *'Belgica'* (♀) (Early Dutch honeysuckle) produces white flowers that turn yellow, and are richly streaked red outside. *'Graham Thomas'* (♂) has white flowers turning yellow, borne over a long period. *'Serotina'* (♂) (Late Dutch honeysuckle) produces creamy white flowers streaked dark red-purple.



*Lonicera hildebrandiana*



*Lonicera japonica* 'Halliana'



*Lonicera ledebourii*



*Lonicera periclymenum* 'Serotina'

**L. pileata.** Dense, spreading, evergreen shrub with paired, ovate-oblong to oblong-lance-shaped, glossy, dark green leaves, to 3cm (1¼in) long. Funnel-shaped, 5-lobed, creamy white flowers, to 8mm (⅜in) long, are produced in pairs from the leaf axils in late spring, followed by violet-purple berries. Good ground cover. ‡60cm (24in), ↔2.5m (8ft). China. \*\*\*

**L. x purpusii 'Winter Beauty' ♀** Rounded, deciduous or semi-evergreen shrub with red-purple shoots and paired, ovate, dark green leaves, to 8cm (3in) long. Tubular, 2-lipped, very fragrant white flowers, 2cm (¾in) long, with conspicuous yellow anthers, are produced in small, axillary clusters in winter and early spring. Berries are rarely produced. ‡2m (6ft), ↔2.5m (8ft). \*\*\*

**L. rupicola var. syringantha** see *L. syringantha*.

**L. sempervirens** □ ♀ (Coral honeysuckle, Trumpet honeysuckle). Woody, deciduous or evergreen, twining climber with paired, oval or obovate leaves, to 7cm (3in) long, dark green above, blue-green beneath, the upper pairs united. Tubular flowers, to 5cm (2in) long, with 2 short lips, rich scarlet-orange outside, yellowish orange inside, are produced in terminal whorls in summer and autumn, and are followed by bright red berries. ‡4m (12ft). E. and S. USA. \*\*\* (borderline). **f. sulphurea** produces yellow flowers.

**L. standishii.** Upright, deciduous or semi-evergreen shrub with paired, oblong-lance-shaped, bristly, dark green leaves, to 10cm (4in) long, with long, slender points. Tubular, 2-lipped, fragrant, creamy white flowers, 3cm (1¼in) long, sometimes tinged very pale pink, are produced in axillary pairs along the shoots from late autumn to



*Lonicera x tellmanniana*

early spring, followed by red berries. ‡2m (6ft). China. \*\*\*

**L. syringantha**, syn. *L. rupicola* var. *syringantha*. Graceful, rounded, deciduous shrub with oblong-ovate, grey-green leaves, to 2.5cm (1in) long, usually paired, sometimes in threes. Small, tubular-bell-shaped, 5-lobed, very fragrant, lilac-pink flowers, to 1cm (½in) across, are produced in pairs from the leaf axils in late spring and early summer, followed by red berries. ‡2-3m (6-10ft), ↔2m (6ft). W. China, Tibet. \*\*\*

**L. tatarica** □ Upright, bushy, deciduous shrub with paired, oblong-ovate to lance-shaped, dark green leaves, to 6cm (2½in) long, glaucous beneath. Axillary pairs of tubular, 5-lobed, white to pink or red flowers, to 2.5cm (1in) long, are profusely borne along the shoots in late spring and early summer, followed by scarlet to yellow-orange berries. ‡4m (12ft), ↔2.5m (8ft). S. Russia to C. Asia. \*\*\*. **'Arnold Pink'** produces dark rose-pink flowers. **'Hack's Red'** bears very dark purplish red flowers. **'Zabelii'** see *L. korolkowii* var. *zabelii*.

**L. x tellmanniana** □ ♀ (*L. sempervirens* 'Superba' x *L. tragophylla*). Woody, deciduous, twining climber with paired, elliptic-ovate to oblong, deep green leaves, to 10cm (4in) long, blue-white beneath, the upper pairs united. Terminal whorls of tubular, 2-lipped, bright copper-orange flowers, to 5cm (2in) long, are produced from late spring to midsummer. ‡5m (15ft). Garden origin. \*\*\*

**L. tragophylla** ♀ Woody, deciduous, twining climber with paired, oval to oblong, mid-green leaves, to 12cm (5in) long, blue-white beneath, the upper pairs united. Long-tubed, 2-lipped, bright yellow or orange-yellow flowers, to 8cm (3in) long, red-tinted above, are produced in large, terminal whorls in mid- and late summer, followed by red berries. ‡6m (20ft). C. China. \*\*\*

**L. x xylstoides 'Clavey's Dwarf'.** Slow-growing, dense, upright, rounded, deciduous shrub with paired, oval to obovate, grey-green leaves, to 6cm (2½in) long. Pairs of small, tubular, 2-lipped white flowers, 1cm (½in) long, are produced from the leaf axils in late spring and early summer, followed by red berries. Suitable for hedging. ‡1.5m (5ft), ↔1m (3ft). \*\*\*

**L. xylstium** □ (Fly honeysuckle). Dense, bushy, deciduous shrub with



*Lonicera xylstium*

paired, ovate to obovate or oblong, grey-green leaves, to 6cm (2½in) long. Tubular, 2-lipped, creamy white flowers, to 1cm (½in) long, are produced in pairs along the shoots in late spring and early summer, followed by showy red, rarely yellow berries. ‡3m (10ft). Europe, Caucasus, Russia (Siberia). \*\*\*

▷ **Looking glass plant** see *Coprosma repens*

▷ **Loosestrife** see *Lysimachia*, *Lythrum*

**Purple** see *Lythrum salicaria*

**Yellow** see *Lysimachia vulgaris*

▷ **Lophocereus** see *Pachycereus*

**L. schottii** see *P. schottii*

## LOPHOMYRTUS

### MYRTACEAE

Genus of 2 species of evergreen shrubs or small trees, closely related to the genus *Myrtus*, occurring in coastal and lowland forest in New Zealand. They are cultivated for their flowers, foliage, and fruits. The leaves are opposite, simple, and leathery. In summer, 4-petalled flowers, each with a boss of prominent stamens, are borne singly

from all the upper leaf axils, followed by many-seeded, purple-black to red berries. In frost-prone areas, grow in a cool greenhouse or against a warm wall. In milder areas, plant in a shrub border.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in partial shade.

Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13-18°C (55-64°F) as soon as ripe. Root semi-ripe cuttings, with heels, in summer with bottom heat.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

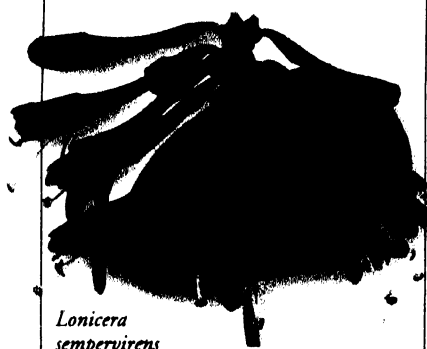
**L. bullata** □ syn. *Myrtus bullata*.

Rounded, moderately bushy or open, large shrub or small tree with downy stems. Broadly ovate to rounded leaves, 1.5-3cm (½-1¼in) long, sometimes more, are strongly puckered or blistered between the veins, and bronze- to red-tinted when young, maturing to glossy, dark green. In summer, produces open cup-shaped white flowers, 1cm (½in) wide, usually followed by broadly ovoid, deep black-red berries, 7-10mm (¼-½in) long. ‡3-8m (10-25ft), ↔1-3m (3-10ft). New Zealand. \*

**L. x ralphii** □ (*L. bullata* x *L. obcordata*). Large, rounded, vigorous shrub or small tree, of open habit.

Broadly oblong-ovate, dark green leaves, usually 1.5-2.5cm (½-1in) long, are flat or slightly blistered between the veins. Mature plants produce open cup-shaped white flowers, 1cm (½in) wide, in summer, followed by dark black-red berries, 4-8mm (¼-⅜in) long. ‡2-5m (6-15ft), ↔1.5-2.5m (5-8ft). Garden origin. \*\* (borderline). **'Gloriosa'** see **'Variegata'**. **'Indian Chief'** has rounded, lustrous, reddish green leaves, to 1cm

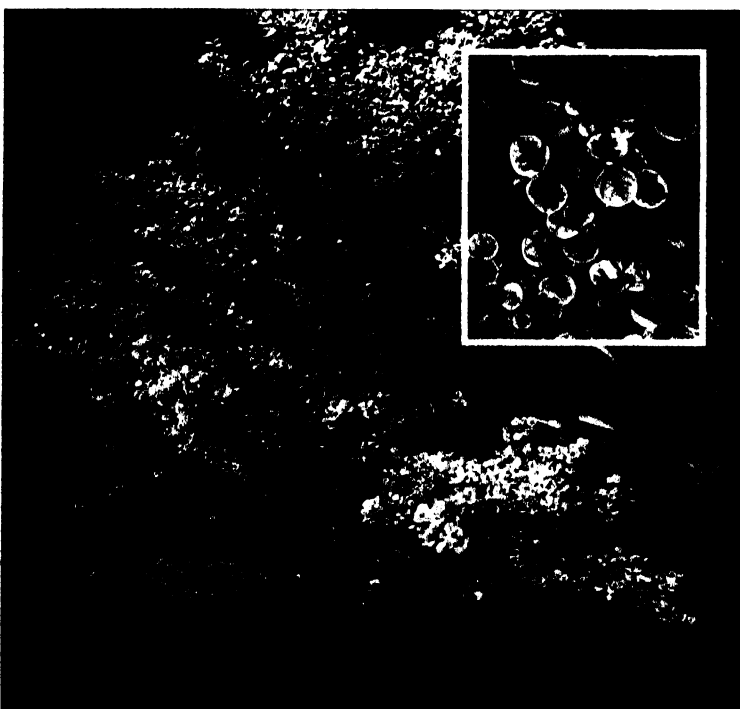
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*Lonicera sempervirens*



*Lonicera tatarica*



*Lophomyrtus x ralphii* 'Variegata' (inset: leaf detail)

(½in) long. 'Kathryn' has blistered leaves, flushed rich purple. 'Purpurea' has slightly blistered, bronze-purple to deep purple-red leaves. 'Sundae', syn. 'Tricolor', has almost flat, rich green and yellow-variegated leaves, with pink or bronze-red overtones, especially in sunny sites. 'Tricolor' see 'Sundae'. 'Variegata' [ ] syn. 'Gloriosa', *Myrtus bullata* 'Gloriosa', *Myrtus x ralphii* 'Variegata', has rounded, lustrous, deep green leaves, barely 1cm (½in) long, with creamy yellow variegation.

## LOPHOPHORA

CACTACEAE

Genus of 2 species of variable, perennial cacti occurring in semi-arid areas of S. Texas (USA), and N. and E. Mexico. They have thick, tuberous rootstocks, and flattened-spherical stems that may become more cylindrical with age. Areoles bear a few weak spines when young, later just a few white hairs. Diurnal, solitary, bell-shaped flowers are produced at the tips of the stems and last 2–3 days. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse or as houseplants; in warmer climates, plant outdoors in a desert garden, preferably on sloping ground.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost with added limestone chippings, in full light. From mid-spring to late summer, water freely and apply a balanced liquid fertilizer every 6–8 weeks. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained, alkaline soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

*L. echinata* see *L. williamsii*.

*L. lutea* see *L. williamsii*.

*L. williamsii* [ ] syn. *L. echinata*, *L. lutea* (Dumpling cactus). Variable cactus, sometimes solitary, but usually forming large groups. Dark blue-green stems, 5–8cm (2–3in) thick, each have 4–14 low ribs, divided by narrow furrows, with prominent tubercles and white-woolly areoles. Bell-shaped, pink to carmine-red flowers, to 2.5cm (1in) across, sometimes with paler margins, are borne at the crowns from spring to autumn. ‡ to 5cm (2in), ↔ to 30cm (12in), in groups. USA (S. Texas), N. and N.E. Mexico. ☉ (min. 10°C/50°F)



*Lophophora williamsii*



*Lophospermum erubescens*

## LOPHOSPERMUM

SCROPHULARIACEAE

Genus of 8 species of deciduous and evergreen, perennial climbers and shrubs from rocky slopes in North and Central America. They have entire or toothed, triangular to rounded leaves, and bear solitary, axillary, tubular to funnel- or trumpet-shaped, white to purple flowers. In temperate areas, grow in a cool greenhouse. In warmer areas, grow through a shrub or small tree.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, ideally sandy, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*L. erubescens* [ ] ♀ syn. *Asarina erubescens*, *Maurandya erubescens* (Creeping gloxinia). Scandent, evergreen, perennial climber (deciduous in cool areas), often grown as an annual, with soft, woody-based stems and triangular, toothed, downy, grey-green leaves, to 7cm (3in) long, with twining leaf-stalks. Bears trumpet-shaped, rose-pink flowers, 7cm (3in) long, in summer and autumn. ‡ 3m (10ft) or more. Mexico. ☉ (min. 3–5°C/27–41°F)

## LOPHOSTEMON

MYRTACEAE

Genus of 4–6 species of evergreen trees or tall shrubs, closely related to *Tristania* and *Eucalyptus*. They occur in heavy, moist soil, frequently in rainforest or along the borders of streams, in N. and E. Australia and S. New Guinea. Leaves are simple, usually entire, and borne



*Lophostemon confertus* (inset: flower detail)

alternately or in whorls, often more densely towards the stem tips. The flowers have 5 spreading petals and many stamens fused into 5 separate bundles, and are produced in axillary cymes; they are followed by small, woody, cup- or top-shaped, 3-celled seed capsules. In frost-prone areas, grow as foliage plants in a cool or warm greenhouse; flowers are likely to form only on plants 2–3m (6–10ft) tall. In milder areas, lophostemons are good specimen and shade trees, and are effective as a windbreak or hedge.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost with added sharp sand, in full or bright filtered light. During the growing season, water freely and apply a half-strength, balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in poor to moderately fertile, neutral to acid, moist but well-drained soil in full sun or partial shade. Pruning group 1; trim hedges in late summer.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings in summer with bottom heat.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*L. confertus* [ ] □ syn. *Tristania conferta* (Brush box). Bushy, round-headed tree with lance-shaped to ovate, smooth, bright green leaves, 7–15cm (3–6in) long, usually in whorls of 3–5. Bears cymes of 3–7 star-shaped white flowers, 2.5–4cm (1–1½in) across, in spring and summer, followed by top-shaped seed capsules, 1.5cm (½in) across. ‡ 10–15m (30–50ft), or to 40m (130ft) in moist, warm climates, ↔ 3–10m (10–30ft) or more. Australia (Queensland, New South Wales). \* \* 'Perth Gold' has bright green leaves, strongly variegated yellow.

▷ **Loquat** see *Eriobotrya japonica*

▷ **Lords and ladies** see *Arum*

## LOROPETALUM

HAMAMELIDACEAE

Genus of 1, possibly up to 3 species of rounded, evergreen shrubs or small trees found in woodland in the Himalayas, China, and Japan. The alternate leaves are ovate or oval, mid-green and rough above, paler beneath. Clusters of fragrant, spider-like white flowers, with 4 narrow, strap-shaped petals, are borne in terminal cymes in late winter and early spring. Grow in a woodland garden or shrub border.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in partial shade. Pruning group 8.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Root semi-ripe cuttings in summer with bottom heat.
- **PESTS AND DISEASES** Trouble free.

*L. chinense*. Bushy shrub with ovate or oval leaves, 2.5–6cm (1–2½in) long. In late winter or early spring, bears sweetly scented, spider-like white flowers, 2cm (¾in) across, in small, crowded cymes of 3–6. ‡ 2m (6ft). China, Burma, Japan. \* \* (borderline)

## LOTUS

syn. DORYCNIUM

LEGUMINOSAE/PAPILIONACEAE

Diverse genus of about 150 species of annuals, short-lived perennials, and deciduous, semi-evergreen, or evergreen subshrubs, found throughout most of the world, some in pasture, others in dryish, rocky areas. The alternate leaves are simple, palmate, or pinnate. Pea-like flowers, in a range of colours, occur either singly from the leaf axils or in terminal or axillary clusters. Suitable for a variety of sites, including a wild garden, rock garden, or shrub border; trailing species are useful for a hanging basket. In frost-prone areas, grow tender species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in full light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 9 for shrubs (although most do not need pruning); may need restrictive pruning under glass.
- **PROPAGATION** Sow seed of hardy species in containers outdoors in spring or autumn. Sow seed of half-hardy and frost-tender species at 19–24°C (66–75°F) in spring. Take semi-ripe cuttings of shrubs in summer.
- **PESTS AND DISEASES** Mealybugs, aphids, and red spider mites may be a problem under glass.

**L. berthelotii** ♂ ♀ (Coral gem, Parrot's beak, Pelican's beak). Prostrate or trailing, evergreen subshrub with long stems densely clothed with palmate, silver-grey leaves, each with 3–5 linear leaflets, 1–2cm (½–¾in) long. In spring and early summer, freely bears solitary or paired, orange-red to scarlet, black-centred flowers, 3–4cm (1¼–1½in) long, resembling lobster claws. ‡ 20cm (8in), ↔ indefinite. Canary Islands, Cape Verde Islands. \* (borderline)

**L. corniculatus 'Plenus'** (Double bird's foot trefoil). Spreading perennial with upright or prostrate stems bearing pinnate, mid- to bluish green leaves, each with 5 obovate to rounded leaflets, 0.5–1.5cm (¼–½in) long, the upper 3 separated from the lower 2 by a short stalk. In spring and early summer, produces axillary, umbel-like racemes of 3–8 pea-like, double yellow flowers, 1.5cm (½in) long, orange in bud, and often reddening with age. Less vigorous than the species. Suitable for a rock garden. ‡ 20–30cm (8–12in), ↔ to 30cm (12in) or more. \*\*\*

**L. hirsutus** ♂ syn. *Dorycnium hirsutum* (Hairy canary clover). Rounded to spreading, evergreen or semi-evergreen,



*Lotus hirsutus*

silver-hairy subshrub with pinnate, densely hairy, grey-green leaves, each consisting of 5 elliptic to narrowly obovate leaflets, to 2cm (¾in) long. In summer and early autumn, produces axillary and terminal umbels of 4–10 pea-like, pink-flushed, creamy white flowers, 2cm (¾in) long, followed by reddish brown seed pods. Dislikes wet soil in winter. ‡ to 60cm (24in), ↔ to 1m (3ft). S. Portugal, Mediterranean. \*\*\* (borderline)

**L. jacobaeus**. Erect perennial with grey-hairy, sometimes pendent stems. Bears pinnate, mid-green leaves, each composed of 5 linear to narrowly obovate leaflets, 4cm (1½in) long, the upper 3 separated from the lower 2 by a short stalk. Pea-like, chocolate- to purple-brown flowers, to 1.5cm (½in) long, with brown-streaked yellow standard petals, are borne in axillary clusters of up to 6, on stalks longer than the leaves, from spring to autumn, but mainly in summer. ‡ 90cm (36in), ↔ 50cm (20in). Cape Verde Islands. \*

**L. maculatus** ♀ Trailing perennial, similar to *L. berthelotii*, with palmate, mid-green leaves, each consisting of 3–5 linear leaflets, 1–2cm (½–¾in) long. In spring and early summer, red- or orange-tipped yellow flowers, 2.5cm (1in) long and shaped like lobster claws, are borne singly or in clusters of 2–5 from the leaf axils. ‡ 20cm (8in), ↔ indefinite. Canary Islands (Tenerife). ♂ (min. 5°C/41°F)

**L. mascaensis** of gardens see *L. sessilifolius*.

**L. sessilifolius**, syn. *L. mascaensis* of gardens. Low-growing, spreading, shrubby perennial with stalkless, 5-palmate, silver-grey leaves, each with oblong-lance-shaped leaflets, 5–10mm (¼–½in) long. Pea-like, vivid yellow flowers, 7mm (¼in) long, are borne in terminal and axillary clusters of 3–5 for several weeks in spring. ‡ to 60cm (24in), ↔ to 1.5m (5ft). Canary Islands. ♂ (min. 5°C/41°F)

- ▷ *Lotus* see *Nelumbo*
- American see *Nelumbo lutea*
- Blue see *Nymphaea caerulea*
- Sacred see *Nelumbo nucifera*
- ▷ *Loveage* see *Levisticum*
- ▷ *Love-in-a-mist* see *Nigella, N. damascena*
- ▷ *Love-in-a-puff* see *Cardiospermum halicacabum*
- ▷ *Love-in-idleness* see *Viola tricolor*
- ▷ *Love-lies-bleeding* see *Amaranthus caudatus*
- ▷ *Lucerne* see *Medicago sativa*



*Lotus berthelotii*

## LUCULIA

### RUBIACEAE

Genus of 5 species of deciduous and evergreen shrubs and small trees from E. Asia, found mostly in upland scrub and woodland and forest margins. They have large, prominently veined leaves, borne in opposite pairs, and terminal panicles or corymbs of salverform, waxy, fragrant flowers with 5 spreading lobes. In frost-prone climates, grow in a cool or temperate greenhouse. In milder climates, grow in a shrub border.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In spring, pot on or top-dress, and water moderately as growth begins. From summer to autumn, mist daily and water freely, applying a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 8 or group 9; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root greenwood cuttings in summer with bottom heat.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be troublesome under glass.

**L. grandifolia** ♂ Erect to spreading, bushy, deciduous, large shrub or small tree. Ovate to elliptic, mid-green leaves, 20–35cm (8–14in) long, have red to brownish red stalks, veins, and margins, colouring richly in autumn. In summer, salverform, fragrant, greenish white to pure white flowers, 6–7cm (2½–3in) long, are borne in corymbs 10–20cm (4–8in) wide. ‡ 4–6m (12–20ft), ↔ 2–4m (6–12ft). Bhutan. ♂ (min. 5–7°C/41–45°F)

**L. gratissima** ♀ Erect then spreading, semi-evergreen or evergreen, large shrub or sometimes small tree, with downy, red-flushed green stems. Lance-shaped to ovate-oblong, long-pointed, prominently veined, mid- to deep green leaves are 10–20cm (4–8in) long, and downy beneath. Salverform, fragrant pink flowers, 2.5–4cm (1–1½in) long, with very slender tubes, are produced in corymbs, 10–20cm (4–8in) wide, from autumn to winter. ‡ 3–6m (10–20ft), ↔ 1.5–3m (5–10ft). Himalayas. ♂ (min. 7–10°C/45–50°F)

## LUDWIGIA

### ONAGRACEAE

Genus of 75 species of marginal and submerged aquatic perennials, occurring throughout the world, but mainly in warmer regions of North America. They have usually alternate, rarely opposite, simple, mainly stalkless leaves, borne on horizontal or upright, often floating stems. Small, sometimes showy, yellow or white flowers are produced singly from the leaf axils or in terminal clusters. In warm-temperate areas, grow at the margins of a wildlife pool. In cooler climates, grow tender species in an indoor pool or aquarium; *L. peploides* is particularly effective in an aquarium, where it may develop vertical, spongy, white, respiratory roots.

- **HARDINESS** Frost hardy to frost tender.



*Ludwigia peploides*

- **CULTIVATION** Grow in mud at the margins of a pool, in baskets of heavy loam in water 15–30cm (6–12in) deep, or in fertile soil in a bog garden, in full sun or dappled shade. In an aquarium, grow in bunches in an inert medium, at about 20°C (68°F), in full light. See also pp.52–53.
- **PROPAGATION** Divide in early spring. Take softwood cuttings in spring.
- **PESTS AND DISEASES** Trouble free.

**L. longifolia**, syn. *Jussiaea longifolia*. Upright, marginal aquatic perennial with narrowly winged stems sparsely covered with lance-shaped, mid-green leaves, 10–20cm (4–8in) long. Bears solitary, bell-shaped, pale yellow flowers, 3–5cm (1¼–2in) across, from the upper leaf axils in summer. ‡ 2m (6ft), ↔ 1m (3ft). Brazil to Argentina. ♂ (min. 13°C/55°F)

**L. palustris** (Water purslane). Marginal aquatic perennial with weak stems: either floating, to 50cm (20in) long, in water; or branched, creeping, and mat-forming on mud. Lance-shaped to elliptic-ovate leaves, 2–5cm (¾–2in) long, shiny, bright green above, dark olive-green to red-purple beneath, have long, sharp points. Axillary, paired, bell-shaped, yellowish green flowers, 2mm (¼in) across, are borne in summer. ‡ 50cm (20in), ↔ indefinite. Europe, Asia, North and South America. \*\*\*

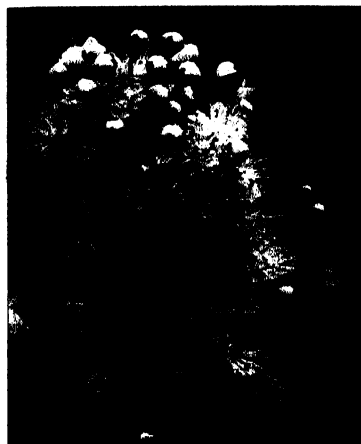
**L. peploides** ♂ syn. *Jussiaea repens*. Scrambling, marginal aquatic perennial with horizontal shoots, to 60cm (24in) long, that root at the nodes or float. Elliptic, mid-green leaves, to 6cm (2½in) long, occasionally have vertical, spongy respiratory roots. In summer, bears axillary, solitary, cup-shaped, bright golden yellow flowers, 5cm (2in) across, with darker yellow spots at the bases. ‡ 60cm (24in), ↔ indefinite. North and South America. \*

## LUMA

### MYRTACEAE

Genus of 4 species of evergreen shrubs and small trees from woodland in Chile and Argentina. They are mainly grown for their aromatic, leathery leaves, borne in opposite pairs, and their axillary, 4- or 5-petalled, cup-shaped white flowers; *L. apiculata* is also grown for its peeling bark. Grow as lawn specimens or in a small group; in frost-prone areas, grow in a sheltered border or against a wall. They may also be used for hedging.



*Luma apiculata*

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, ideally humus-rich, well-drained soil in full sun or partial shade. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. *L. apiculata* may self-seed. Take semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*L. apiculata* [☐] ♀♂ syn. *Myrtus luma*. Vigorous, upright, bushy shrub or tree with peeling, cinnamon-brown and creamy white bark, and broadly elliptic, aromatic, glossy, dark green leaves, to 2.5cm (1in) long. Cup-shaped, 5-petalled white flowers, 2cm (¾in) long, are produced singly or in few-flowered cymes from midsummer to mid-autumn, followed by spherical purple berries. ↑→ 10–15m (30–50ft) or more. Chile, Argentina. \*\*\*. 'Glanleam Gold' is less vigorous, and has leaves with creamy yellow margins, pink-tinged when young; ↑→ 3m (10ft). *L. chequen* [☐] ♀♂ syn. *Myrtus chequen*. Upright shrub or small tree with broadly elliptic or broadly ovate, wavy-margined, aromatic, dark green leaves, to 2.5cm (1in) long. Cup-shaped, 4- or 5-petalled white flowers, 1.5cm (½in) across, are produced singly or in 3-flowered cymes in late summer and early autumn, followed by spherical black berries. ↑ 6m (20ft), ↔ 5m (15ft). Chile. \*\*

## LUNARIA

Honesty, Satin flower

CRUCIFERAE

Genus of 3 species of erect, branching annuals, biennials, and perennials occurring on disturbed ground and in uncultivated fields in Europe and W. Asia. They have alternate, ovate to triangular-heart-shaped, toothed leaves, and bear tall, open, terminal racemes of many 4-petalled, cross-shaped, violet-blue to white flowers in late spring and summer. Valued for their flowers, they may be naturalized in a shrub border, in woodland, or in a wild garden, where they self-seed. *L. annua* and *L. rediviva* have translucent seed pods that are excellent for dried flower arrangements.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed in a seedbed: *L. rediviva* in spring, *L. annua* in early summer. Divide *L. rediviva* in spring.

*Lunaria annua* 'Munstead Purple'

- **PESTS AND DISEASES** Clubroot, white blister, and viruses may cause problems.

*L. annua*, syn. *L. biennis* (Honesty, Satin flower). Annual or biennial with ovate to heart-shaped, coarsely toothed, light to mid-green leaves, to 15cm (6in) long. In late spring and summer, cross-shaped, white to light purple flowers, to 1cm (½in) across, are borne in broad, leafy racemes, to 18cm (7in) long. Flat seed pods, 2.5–8cm (1–3in) long, are rounded and silvery. ↑ to 90cm (36in), ↔ to 30cm (12in). Europe. \*\*\*. 'Alba Variegata' has leaves variegated and margined creamy white, and white flowers. var. *albiflora* ♀ bears white flowers. 'Munstead Purple' [☐] has deep reddish purple flowers. 'Variegata' [☐] has leaves variegated and margined

*Lunaria annua* 'Variegata'*Lunaria rediviva*

creamy white, and produces purple or red-purple flowers.

*L. biennis* see *L. annua*.

*L. rediviva* [☐] (Perennial honesty). Clump-forming perennial with triangular-heart-shaped, finely toothed, dark green leaves, to 20cm (8in) long. Leafy stems bear loose racemes, to 18cm (7in) long, of fragrant, lilac-white flowers, 2.5cm (1in) across, in late spring and early summer, followed by flat, elliptic seed pods, to 5–8cm (2–3in) long, ripening to beige. ↑ 60–90cm (24–36in), ↔ 30cm (12in). Europe, Russia (W. Siberia). \*\*\*

▷ **Lungwort** see *Pulmonaria*

▷ **Lupin** see *Lupinus*

**Carolina** see *Thermopsis villosa*

**Tree** see *Lupinus arboreus*

## LUPINUS

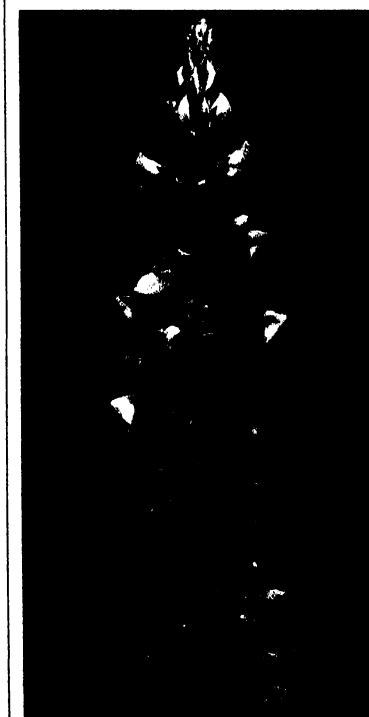
Lupin

LEGUMINOSAE/PAPILIONACEAE

Genus of about 200 species of annuals, perennials, and semi-evergreen and evergreen subshrubs or shrubs, mostly from the Mediterranean, North Africa, and North, Central, and South America; they are found in dry, hilly grassland and open woodland, on coastal sands or cliffs, and on riverbanks. Most have short-stemmed, palmate, often softly hairy, mid-green, mainly basal leaves, with lance-shaped leaflets; some alpinas have silvery green leaves. Long, terminal racemes or spikes of pea-like flowers in many colours, including bicolours, are borne mainly in summer. There are numerous hybrid perennials (including the popular Russell lupins), which form dense clumps of palmate leaves and bear colourful flowers, 2.5cm (1in) long, in racemes or spikes 20–60cm (8–24in) long. Grow larger lupins in a border or wild garden, smaller species in a rock garden or scree bed; where winters are wet, grow the densely silver-hairy species in an alpine house. The seeds may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in moderately fertile, light and slightly acid, well-drained, sandy soil in full sun or partial shade. In an alpine house, grow in equal parts loam, leaf mould, and grit.
- **PROPAGATION** Sow seed in spring or autumn: for annuals and larger species, nick or soak for 24 hours and sow in a seedbed; for alpinas and smaller species, sow in containers in a cold frame. Will self-seed. Take basal cuttings of cultivars in mid-spring.
- **PESTS AND DISEASES** Fungal and bacterial rot, gall, mildew, leaf spot, virus, and slugs may be a problem.

*L. albilfrons* [☐] Erect to semi-erect, evergreen subshrub with 7- to 10-palmate, silver silky-hairy leaves,

*Lupinus albilfrons*

composed of inversely lance-shaped to spoon-shaped leaflets, to 3cm (1¼in) long. In summer, pea-like, pale blue to red-purple flowers, 0.9–1.5cm (¾–½in) across, with white-marked wing petals, are borne in racemes 10–30cm (4–12in) long. † to 75cm (30in) or more. USA (California). \*\* (hardy to -7°C/20°F, but needs excellent drainage and full sun). *var. collinus* is lower-growing and much more compact; † to 10cm (4in).

**L. arboreus** [Tree lupin]. Bushy, vigorous, evergreen or semi-evergreen shrub or subshrub, with silky shoots and 5- to 12-palmate, grey-green leaves, composed of obovate-oblong leaflets, to 6cm (2½in) long, silky-hairy beneath. Bears pea-like, fragrant, yellow, or rarely blue flowers, to 1.5cm (½in) long, in dense to lax, upright racemes, to 30cm (12in) long, in late spring and summer. † to 2m (6ft). USA (California). \*\*\*

**'Mauve Queen'** has lilac flowers. **'Snow Queen'** has white flowers.

**L. 'Band of Nobles'**. Clump-forming perennial bearing racemes of flowers in white, yellow, pink, red, blue, or bicolours (usually white or yellow in combination with another colour), in early and midsummer. † to 1.5m (5ft), † to 75cm (30in). \*\*\*

**L. 'Beryl, Viscountess Cowdray'** [Clump-forming perennial bearing dense racemes of bicoloured, rich pink and red flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. 'Blushing Bride'**. Clump-forming perennial bearing dense racemes of pink-tinged, ivory-white flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. breweri**. Tufted, mat-forming, short-lived, woody-based perennial with 7- to 10-palmate, densely silky-hairy, silver-green leaves, consisting of inversely lance-shaped leaflets, to 2cm (¾in) long. In summer, bears dense racemes, to 5cm (2in) long, of pea-like, white-throated, violet-blue flowers, 6–9mm (¼–¾in) long. † 10cm (4in), † to 20cm (8in). Stony meadows in W. USA. \*\*\*



*Lupinus* 'Beryl, Viscountess Cowdray'

**L. 'Catherine of York'**. Clump-forming perennial bearing racemes of bicoloured, pure salmon-orange and yellow flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. 'Chandelier'** [Clump-forming perennial producing racemes of bright yellow flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. cruckshankii** see *L. mutabilis*.

**L. 'Lady Fayre'**. Clump-forming perennial bearing racemes of deep rose-pink flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. lepidus var. lobbii**, syn. *L. lyallii*. Semi-prostrate to mat-forming, short-lived perennial with 5- to 7-palmate, silky-hairy, silver-green leaves, consisting of inversely lance-shaped leaflets, to 1cm (½in) long. Pea-like, bright blue flowers, 1cm (½in) long, the standard petals each with a white spot, are borne in dense racemes, to 5cm (2in) long, in late summer. † 10cm (4in), † to 20cm (8in). USA (Washington State to California). \*\*\*

**L. luteus 'Yellow Javelin'**. Erect, bushy annual with densely hairy stems and 7- to 11-palmate leaves, each with obovate-oblong, round-tipped, softly hairy, mid-



*Lupinus* 'Chandelier'

green leaflets, 3–6cm (1¼–2½in) long. In summer, bears pea-like, bright golden yellow flowers, to 2cm (¾in) long, in tall racemes, to 25cm (10in) long. † to 60cm (24in), † to 30cm (12in). \*\*\*

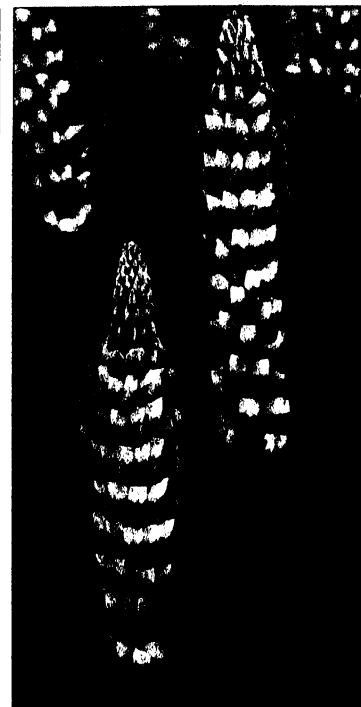
**L. lyallii** see *L. lepidus* var. *lobbii*.

**L. 'Moonraker'**. Clump-forming perennial bearing racemes of lemon-yellow flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. mutabilis**, syn. *L. cruckshankii*. Erect, bushy annual, with 7- to 9-palmate leaves, each with inversely lance-shaped to spoon-shaped, round-tipped, blue-green leaflets, to 5–6cm (2–2½in) long, softly hairy beneath. In summer, bears racemes, 10–20cm (4–8in) long, of pea-like flowers, 2–3cm (¾–1¼in) long, with pale purple-blue keel petals, yellow standard petals, and deep blue wing petals. † 1–1.1m (3–3½ft), † to 45–60cm (18–24in). \*\*

**L. 'My Castle'**. Clump-forming perennial bearing racemes of deep rose-pink flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. nanus 'Pixie Delight'** [Erect, single-stemmed to bushy annual with 5- to 7-palmate leaves, composed of linear-lance-shaped, pointed, softly hairy, mid-



*Lupinus* 'The Chatelaine'

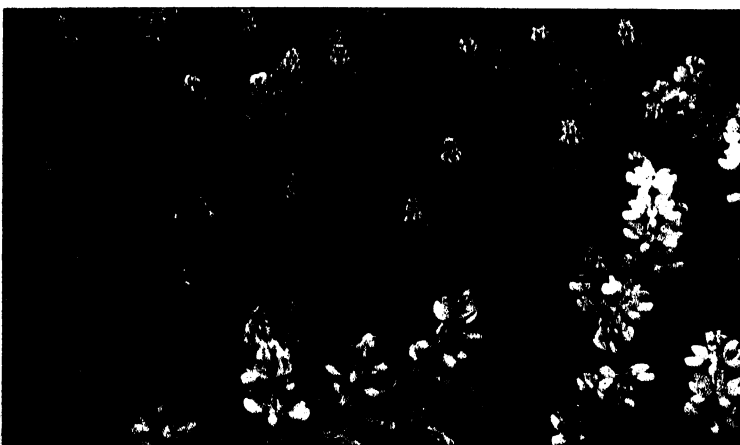
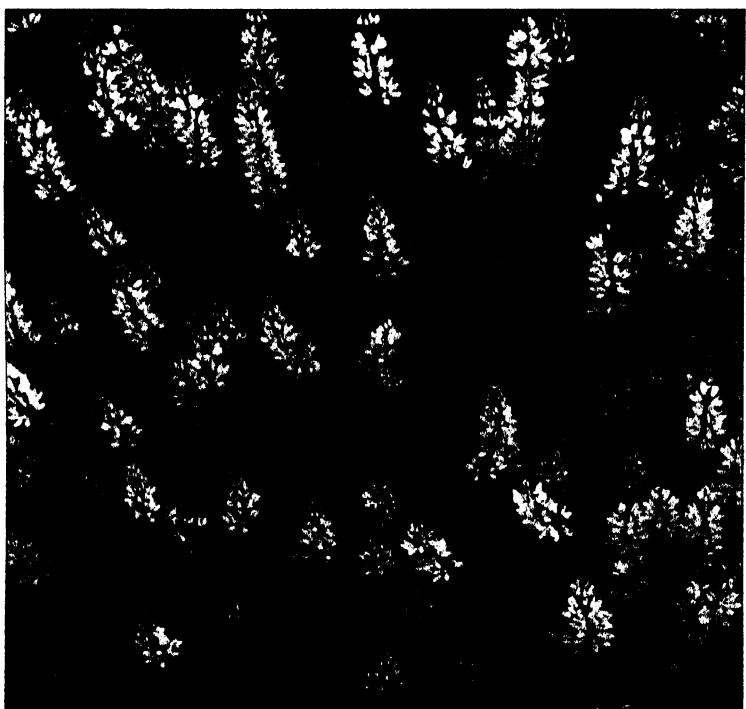
green leaflets, to 3cm (1¼in) long. In summer, bears racemes, to 20cm (8in) long, of pea-like, pink, blue, lavender-blue, white, or bicoloured flowers, 1.5cm (½in) across, the standard petals often with purple-dotted white marks or yellow spots. † 50cm (20in), † to 23cm (9in). \*\*\*

**L. 'Noble Maiden'**. Clump-forming perennial bearing racemes of creamy white flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. texensis** (Texas bluebonnet). Erect to spreading, bushy annual with softly hairy stems and 5-palmate, mid-green leaves, each with lance-shaped, pointed leaflets, to 3cm (1¼in) long, hairy beneath and on the margins. Compact, crowded racemes, to 8cm (3in) long, of pea-like, deep blue to blue-purple flowers, 1cm (½in) across, are produced in summer. † 25–30cm (10–12in), † to 23cm (9in). USA (Texas). \*\*\*

**L. 'The Chatelaine'** [Clump-forming perennial producing racemes of bicoloured, pink and white flowers in early and midsummer. † 90cm (36in), † to 75cm (30in). \*\*\*

**L. 'The Governor'**. Clump-forming perennial producing racemes of



*Lupinus nanus* 'Pixie Delight'

*Lupinus* 'The Page'

bicoloured, deep blue and white flowers in early and midsummer. †90cm (36in), ↔75cm (30in). \*\*\*

**L. 'The Page'** □ Clump-forming perennial producing racemes of rich carmine-red flowers in early and midsummer. †90cm (36in), ↔75cm (30in). \*\*\*

**L. 'Thundercloud'**. Clump-forming perennial producing racemes of deep violet-blue flowers in early and midsummer. †90cm (36in), ↔75cm (30in). \*\*\*

## LUZULA

Woodrush

JUNCACEAE

Genus of approximately 80 species of mostly evergreen, tufted, grass-like perennials (rarely annuals), sometimes with short rhizomes or stolons. Wood-rushes are widely distributed on heaths and moors, in fens and bogs, and in scrub, woodland, and mountain grass-land throughout the temperate regions of the world. Broadly linear basal and stem leaves are flat or grooved along their lengths, and have fringes of zigzagged white hairs at the margins, which distinguish them from rushes (*Juncus*). Tiny flowers are produced in terminal, panicle-, corymb-, or cyme-like clusters, in spring or summer. Valued for their shade tolerance, wood-rushes provide useful ground cover in damp shade, either in a mixed border or in a woodland garden. *L. ulophylla* is also suitable for a trough or rock garden.

• **HARDINESS** Most are fully hardy; *L. ulophylla* is hardy to -8°C (18°F) for short periods.

• **CULTIVATION** Grow in poor to moderately fertile, humus-rich, moist but well-drained soil in partial or deep shade (or in full sun where the soil is reliably moist). *L. nivea* prefers full sun.

• **PROPAGATION** Sow seed in containers outdoors in spring or autumn. Divide between mid-spring and early summer.

• **PESTS AND DISEASES** Trouble free.

*Luzula nivea*

*L. maxima* see *L. sylvatica*.

**L. nivea** □ (Snowy woodrush). Slowly spreading, loosely tufted, evergreen perennial forming loose clumps of flat, linear, deep green basal leaves, to 30cm (12in) long; stem leaves are to 20cm (8in) long. In early and midsummer, bears lax panicles, to 5cm (2in) long, of shiny, pure white flowers in tight clusters of up to 20. May be dried. † to 60cm (24in), ↔45cm (18in). Spain, France, Italy, Slovenia, C. Europe. \*\*\*

**L. sylvatica**, syn. *L. maxima* (Greater woodrush). Densely tufted, tussock-forming, evergreen perennial with linear, channelled, glossy, dark green leaves, to 30cm (12in) long. Groups of 2–5 small, chestnut-brown flowers are produced in open panicles, to 8cm (3in) long, from mid-spring to early summer. † to 70–80cm (28–32in), ↔45cm (18in). S., W., and C. Europe, S.W. Asia. \*\*\*. The following cultivars provide useful, dense ground cover.

**'Aurea'** □ syn. *L. maxima* 'Aurea', has broad leaves that are bright, shiny yellow in winter, yellow-green in summer.

**'Aureomarginata'** see 'Marginata'.

**'Marginata'**, syn. 'Aureomarginata', has

*Luzula sylvatica* 'Aurea'

a dense habit, rich green leaves with neat cream margins, and pendent, brown and gold spikelets.

**L. ulophylla**. Dwarf, densely tufted, evergreen perennial forming a low mound of linear, deep green leaves, to 3–7cm (1¼–3in) long, V-shaped in cross-section, with conspicuous silvery hairs beneath and on the margins. In early summer, very dark brown flowers, the tepals with white membranous margins, are produced in short, stubby clusters, to 2cm (¾in) long. † to 15cm (6in), ↔30cm (12in). New Zealand. \*\*

## LYCASTE

ORCHIDACEAE

Genus of about 45 species of deciduous, epiphytic or terrestrial orchids found in cloud forest at altitudes of 600–2,200m (2,000–7,700ft) in Mexico, Central and South America, and the West Indies. They produce robust, ovoid or ellipsoid, compressed pseudobulbs, and a number of broad, lance-shaped to oblong-elliptic, often soft, folded leaves. Large, waxy, fragrant flowers, produced singly on leafless stems from the bases, are typically triangular in shape, with the sepals framing the smaller, cupped petals and 3-lobed lips.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in containers of crushed bark or loamless potting compost, or grow epiphytically on bark slabs. In summer, provide high humidity and water freely (keeping the foliage dry); apply a balanced liquid fertilizer at every third watering. In winter, provide bright filtered light and keep dry. See also p.46.

• **PROPAGATION** Divide when plants overflow their containers, or remove and pot up backbulbs.

• **PESTS AND DISEASES** Red spider mites, aphids, whiteflies, and mealybugs may be troublesome.

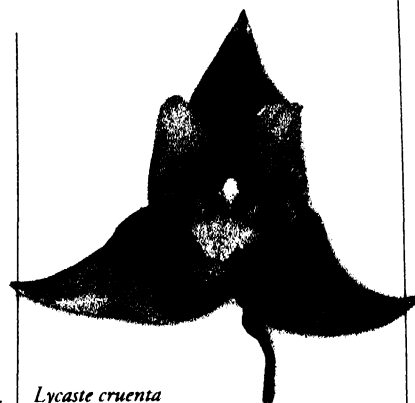
**L. aromatica**. Epiphytic orchid with lance-shaped leaves, to 30–40cm (12–16in) long. Cinnamon-scented flowers, 4–6cm (1½–2½in) across, with deep golden to orange-yellow petals, yellowish green sepals, and lips with orange dots, are produced in abundance from spring to summer. †↔30cm (12in). Mexico, Guatemala, Belize, Honduras. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

**L. brevispatha**, syn. *L. candida*.

Epiphytic orchid with lance-shaped leaves, to 50cm (20in) long. From winter to spring, produces an abundance of flowers, to 10cm (4in) across, with light green sepals with reddish brown spots, brown-spotted white petals, and white lips suffused and spotted pink. †↔30cm (12in). Guatemala, Nicaragua, Costa Rica, Panama. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

**L. candida** see *L. brevispatha*.

**L. cruenta** □ Epiphytic orchid with lance-shaped leaves, to 35cm (18in) long. From spring to summer, produces an abundance of faintly cinnamon-scented flowers, to 7cm (3in) across, with greenish yellow sepals, yellowish orange petals with red spots near the bases, and orange lips with red spots and red triangular patches at the bases. †↔45cm (18in). Mexico, Guatemala.

*Lycaste cruenta*

El Salvador, Costa Rica. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

**L. deppei** □ Epiphytic orchid with lance-shaped leaves, 30–50cm (12–20in) long. From spring to summer, produces abundant flowers, 9cm (3½in) across, with green sepals spotted red-brown, white petals flecked red-brown at the bases, and red-spotted, deep yellow lips, striped and dotted red at the bases.

†↔30cm (12in). Mexico, Guatemala. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

**L. gigantea** see *L. longipetala*.

**L. longipetala**, syn. *L. gigantea*.

Epiphytic orchid with lance-shaped leaves, to 60cm (24in) long. In summer, bears large, fleshy flowers, to 16cm (6in) across, with pale green sepals suffused brown, darker green petals, and red-brown lips with light orange margins; the flowers do not open fully. †↔45cm (18in). Venezuela, Colombia, Ecuador, Peru. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

**L. skinneri**, syn. *L. virginalis*. Epiphytic orchid with lance-shaped leaves, 50–60cm (20–24in) long. From winter to spring, produces flowers 12–15cm (5–6in) across, with cream sepals shaded lavender-pink to pink, reddish purple petals, and pink lips sometimes mottled purple. †↔30cm (12in). Mexico, Guatemala, Honduras, El Salvador. ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

**L. virginalis** see *L. skinneri*.

**L. Wyldfire** (*L. Balliae* × *L. Wyld Court*). Robust, epiphytic orchid with lance-shaped leaves, 40cm (16in) long. In spring, produces an abundance of deep wine-red flowers, 12cm (5in) across, with darker lips. †↔45cm (18in). ☼ (min. 11–12°C/52–54°F; max. 30°C/86°F)

*Lycaste deppei*

**LYCHNIS** syn. *VISCARIA*

Campion, Catchfly

CARYOPHYLLACEAE

Genus of 15–20 species of biennials and perennials found in sites ranging from damp meadows and woodland to alpine habitats, in N. temperate and arctic regions. They have erect, usually branched stems, and simple, often hairy leaves borne in opposite pairs. The 5-petalled, salverform to tubular or star-shaped flowers occur in scarlet, purple, pink, or white, and are either solitary or borne in terminal cymes or occasionally panicles. Grow the larger perennials in a sunny border or a wild garden, the smaller, alpine species in a rock garden, and the biennials in an annual or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moderately fertile, well-drained soil in full sun or partial shade. *L. chalcadonica*, *L. x haageana*, and *L. viscaria* prefer moist, fertile soil; grey-leaved species produce their best leaf colour in dry soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring; *L. x haageana* will flower the same year and may be treated as an annual. Divide or take basal cuttings in early spring.
- **PESTS AND DISEASES** Slugs may be a problem, especially on less woolly species.

**L. alpina** ■ (Alpine champion, Alpine catchfly). Dwarf, tufted perennial with rosettes of oblong-lance-shaped to elliptic-lance-shaped, dark green leaves,

*Lychnis alpina**Lychnis chalcadonica*

to 4cm (1½in) long. In summer, bears dense, rounded, terminal cymes of 6–20 salverform, purplish pink flowers, to 2cm (¾in) across, with frilled, 2-lobed petals. 1–1.5m (6in). Mountains of N. hemisphere, subarctic regions. \*\*\* **L. x arkwrightii 'Vesuvius'** ■ Short-lived, clump-forming perennial with ovate-lance-shaped, hairy, dark brownish green leaves, 8cm (3in) long. In early and midsummer, bears terminal cymes of 5–10 star-shaped, orange-scarlet flowers, 3–4cm (1¼–1½in) across, with notched petals. 1.45cm (18in), 30cm (12in). \*\*\*

**L. chalcadonica** ■ (Jerusalem cross, Maltese cross). Erect, stiff perennial with ovate, mid-green basal leaves, and unbranched, hairy stems bearing clasping, ovate leaves, 5–8cm (2–3in) long, with heart-shaped bases. In early and midsummer, produces terminal, rounded, umbel-like cymes of 10–30 star-shaped scarlet flowers, 1.5cm (½in) across, the petals each with 2 deep notches. Requires support. Self-seeds freely. 0.9–1.2m (3–4ft), 30cm (12in). European Russia. \*\*\*. **'Rosea'** has rose-pink flowers.

**L. coeli-rosa** see *Silene coeli-rosa*.

**L. coronaria** ■ (Dusty miller, Rose campion). Erect, woolly, silver-grey biennial or short-lived perennial with ovate-lance-shaped, silver-grey leaves: the basal leaves up to 18cm (7in) long, the stem leaves up to 10cm (4in). In late summer, long-stalked, salverform, rounded, purple-red or pale purple flowers, 3cm (1¼in) across, with slightly reflexed, shallowly 2-lobed petals, are borne in few-flowered, terminal cymes;

*Lychnis flos-jovis*

they open singly, but in long succession. Self-seeds freely. 80cm (32in), 45cm (18in). S.E. Europe. \*\*\*. **'Alba'** produces white flowers.

**L. coronata** var. **sieboldii** see *L. sieboldii*.

**L. flos-cuculi** (Ragged robin). Slender, upright or spreading, sparsely hairy perennial with inversely lance-shaped, mid- to bluish green basal leaves, to 12cm (5in) long, and smaller, oblong-lance-shaped stem-clasping leaves. In late spring and early summer, produces loose, few-flowered, branched, terminal cymes of star-shaped, pale to bright purplish pink, sometimes white flowers, to 4cm (1½in) across, with petals deeply cut into 4 linear segments. Suitable for a wild garden. 1 to 75cm (30in), 80cm (32in). Damp places in Europe, Caucasus, and Russia (Siberia). \*\*\* **L. flos-jovis** ■ (Flower of Jove, Flower of Jupiter). Mat-forming perennial with usually unbranched, erect, white-hairy stems, and lance- to spoon-shaped basal and stem-clasping leaves, to 10cm (4in) long. From early to late summer, bears loosely rounded cymes of 4–10 rounded, pink, white, or scarlet flowers, 2.5cm (1in) across, with slightly

reflexed, notched petals. 20–60cm (8–24in) or more, 45cm (18in). C. Alps. \*\*\*. **'Hort's Variety'** has rose-pink flowers; 30cm (12in).

**L. x haageana** (*L. fulgens* x *L. sieboldii*). Short-lived, clump-forming, hairy perennial with lance-shaped, mid-green leaves, 4–8cm (1½–3in) long. In mid- and late summer, salverform, brilliant red or orange flowers, 5cm (2in) across, with notched petals, are borne in few-flowered, loose, terminal cymes.

1.45–60cm (18–24in), 30cm (12in). Garden origin. \*\*\* (borderline)

**L. sieboldii** syn. *L. coronata* var.

**sieboldii**. Clump-forming, hairy perennial bearing inversely lance-shaped to elliptic, mid-green leaves, 5–8cm (2–3in) long. Clustered, terminal cymes of many flat, rounded, deep red flowers, 5cm (2in) across, the petals with shallowly toothed lobes, are produced in summer and early autumn. 60cm (24in), 30cm (12in). Japan. \*\*\* **L. viscaria** ■ syn. *Viscaria vulgaris* (German catchfly). Mat-forming to tufted perennial with elliptic-lance-shaped to oblong-lance-shaped, hairless, dark green basal leaves, to 8cm (3in) long. The usually unbranched stems are sticky, with a few lance-shaped leaves. In early and midsummer, bears narrow, spike-like panicles of numerous salverform, purplish pink flowers, 2cm (¾in) across, with notched petals. 1–1.45cm (18in). Europe to W. Asia. \*\*\*.

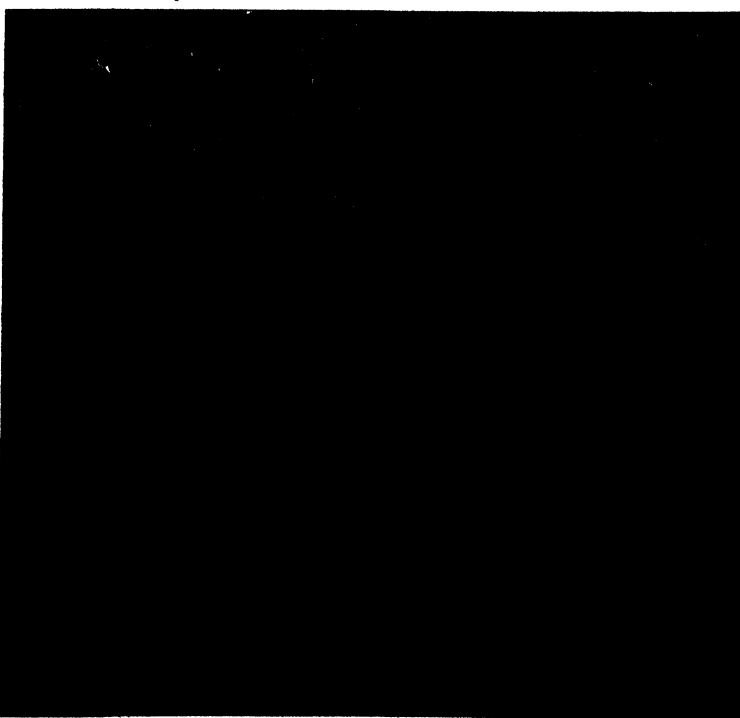
**'Flore Pleno'** see *'Splendens Plena'*.

**'Fontaine'** produces large, double, pale red flowers, 2.5cm (1in) across.

**'Snowbird'** produces white flowers.

**'Splendens Plena'** syn. *'Flore Pleno'*, bears double, bright pinkish magenta flowers, 2.5cm (1in) across.

**L. x walkeri 'Abbotswood Rose'** ■ Clump-forming, woolly, silver-grey perennial, similar to *L. coronaria* but more spreading and shorter, with ovate, silver-grey basal leaves, to 8cm (3in) long, and smaller stem leaves. From early to late summer, produces terminal cymes of numerous salverform, rose-

*Lychnis viscaria*

## LYCHNIS

pink flowers, 3cm (1¼in) across, with slightly reflexed, shallowly notched petals. †40cm (16in) or more, ↔ 45cm (18in). \*\*\*

▷ *Lycianthes* see *Solanum*  
*L. rantonnetii* see *S. rantonnetii*

## LYCIUM

### SOLANACEAE

Genus of about 100 species of sometimes spiny, deciduous and evergreen, often scandent shrubs, occurring throughout temperate and subtropical regions, usually in dry soil. Leaves are entire and alternate, and funnel-shaped or tubular flowers are borne singly or in clusters of up to 4 from the leaf axils. Cultivated for their habit, flowers, and fruits, they are useful for a shrub border or for covering a dry bank; they are particularly effective as a windbreak or hedge in a coastal garden. In frost-prone areas, grow tender species in a cool or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Pruning group 1, or, for scandent species, group 11, in winter or early spring. Cut back hedges hard in spring; trim in early summer.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Take hardwood cuttings in winter, or softwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

*L. barbarum*, syn. *L. halimifolium* (Chinese box thorn, Duke of Argyll's tea-tree). Variable, vigorous, erect or wide-spreading, sometimes scandent, often spiny, deciduous shrub. Long, arching branches bear narrowly oblong-lance-shaped, elliptic, or ovate, mid-green to grey-green leaves, to 6cm (2½in) long. Small clusters of 1–4 funnel-shaped, purple, lilac, or pink flowers, 9mm (¾in) long, are produced in late spring and summer, followed by ovoid, orange-red or yellow berries, to 2cm (¾in) long. †3.5m (11ft) or more, ↔ 5m (15ft). China. \*\*\*

*L. halimifolium* see *L. barbarum*.

## LYCOPODIUM

### Club moss

### LYCOPODIACEAE

Genus of 100 or more species of rhizomatous, evergreen, terrestrial or epiphytic, moss-like perennials, found in most parts of the world in a very wide range of habitats, but mainly in tropical or temperate rainforest or cloud forest. They have erect, pendent, or creeping stems, which are usually repeatedly forked, and bear small, simple, linear-lance-shaped to ovate-triangular leaves, overlapping or in whorls. Spores are produced in the leaf axils, or sometimes in terminal cones on the smaller leaves. Only the epiphytic species are cultivated. In frost-prone areas, grow in a temperate or warm greenhouse. In frost-free climates, grow as epiphytes in shaded, damp sites.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in slatted wooden baskets in equal parts peat, roughly chopped sphagnum moss, charcoal, and broken crocks, in bright



*Lycopodium phlegmaria*

indirect light. In the growing season, water moderately (avoiding the foliage), mist daily in summer, and apply a half-strength, seaweed-based liquid fertilizer as a foliar spray every month. Reduce watering in winter but do not allow the compost to dry out. Outdoors, grow epiphytically in a permanently damp niche on a tree, in partial shade.

- **PROPAGATION** Layer tips of fertile leaves at any time of year. See also p.51.
- **PESTS AND DISEASES** Slugs, snails, or mites may eat the soft, tender tips of growing stems. Fern scale may be a serious problem.

*L. phlegmaria* ■ Epiphytic perennial with initially upright, later pendent stems, to 1m (3ft) long, forked several times. Produces often upright, broadly ovate-triangular, yellow- to olive-green leaves, to 2cm (¾in) long. Spores are formed in branched, terminal cones, to 1.5cm (½in) across, on small leaves. Probably an aggregate of several species. †90cm (36in), ↔ 1m (3ft). Asia, Australia, Pacific islands. ♀ (min. 10°C/50°F)

## LYCORIS

### AMARYLLIDACEAE

Genus of 10–12 species of bulbous perennials from wooded hills or rocky sites in low mountains, and the margins of cultivated fields, in China and Japan. They are grown for their showy umbels of tubular-funnel-shaped flowers, with narrow, spreading, sometimes reflexed tepal lobes, borne on leafless stems from spring to early autumn. The leaves are linear or strap-shaped. In areas with dry summers, grow in a sunny border or rock garden. Where summers are wet, they are best grown as container plants in a conservatory or cool greenhouse, but do not always flower regularly.

- **HARDINESS** Frost hardy to half hardy.
- L. aurea*, *L. radiata*, and *L. squamigera* tolerate occasional temperatures to -15°C (5°F).

- **CULTIVATION** Plant in autumn with the necks of the bulbs at the surface. Under glass, grow in loam-based potting compost (J1 No.2) in full light. Top-dress when growth begins, then water freely and apply a balanced liquid fertilizer monthly until the leaves die down. Keep dry in summer when dormant. Outdoors, grow in fertile, well-drained soil that dries out in summer, in full sun. In frost-prone areas, protect with a dry winter mulch.
- **PROPAGATION** Sow seed at 6–12°C (45–54°F) as soon as ripe. Remove offsets after flowering.
- **PESTS AND DISEASES** Trouble free.

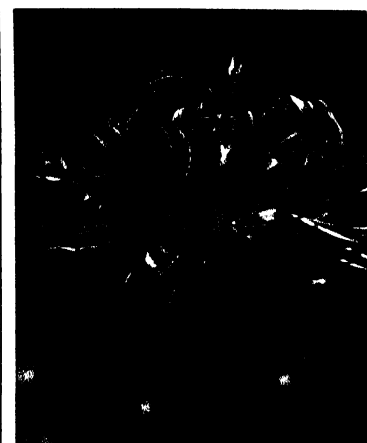
*L. albiflora*. Bulbous perennial bearing umbels of 4–6 small, tubular-funnel-shaped white flowers, 4–5cm (1½–2in) long, with strongly reflexed, wavy-margined tepals and protruding stamens, in late summer and early autumn. Semi-erect, strap-shaped, glaucous, mid-green leaves, 30–60cm (12–24in) long, are produced after the flowers. Similar to *L. radiata*, and probably a variety of it. †45cm (18in), ↔ 20cm (8in). Japan. \*

*L. aurea* ■ (Golden spider lily). Bulbous perennial producing umbels,



*Lycoris aurea*

## LYGODIUM



*Lycoris radiata*

from spring to summer, of 5 or 6 tubular-funnel-shaped, wavy-margined yellow flowers, 10cm (4in) across, with the tepals reflexed at the tips, and protruding stamens. Semi-erect, strap-shaped, fleshy, glaucous, mid-green leaves, to 60cm (24in) long, appear after the flowers. † to 60cm (24in), ↔ 20cm (8in). China, Japan. \*\*

*L. radiata* ■ (Red spider lily). Bulbous perennial with wavy-margined, rose-red or deep red flowers, 4–5cm (1½–2in) long, with strongly reflexed tepals and conspicuous, protruding stamens, borne in umbels of 4–6 in late summer and early autumn. Semi-erect, strap-shaped, dark green leaves, 30–60cm (12–24in) long, appear after the flowers. †30–50cm (12–20in), ↔ 20cm (8in). Japan. \*\*

*L. sanguinea*. Bulbous perennial producing umbels of up to 6 funnel-shaped, wavy-margined, bright red flowers, 5–6cm (2–2½in) across, the tepals with slightly reflexed tips, in summer and early autumn. Semi-erect, linear, dark green leaves, to 60cm (24in) long, appear after the flowers. † to 50cm (20in), ↔ 20cm (8in). China, Japan. \*

*L. squamigera* (Resurrection lily). Bulbous perennial with almost erect, tubular-funnel-shaped, slightly wavy, fragrant, pale rose-red flowers, 9–10cm (3½–4in) across, flushed or veined blue or purple, the tepals with reflexed tips, borne in umbels of up to 8 in summer. Semi-erect, strap-shaped, mid-green leaves, 30cm (12in) long, are produced the following spring. †45–70cm (18–28in), ↔ 30cm (12in). Japan. \*\*

## LYGODIUM

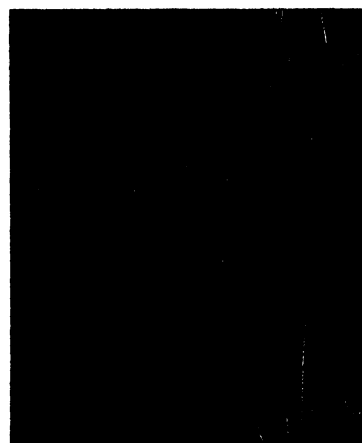
### Climbing fern

### SCHIZAEACEAE

Genus of 40 species of semi-evergreen and deciduous, scrambling or climbing ferns from tropical and subtropical forests worldwide. A single, palmately lobed or pinnate frond arises from the creeping, branching rhizomes. The midrib of the frond continues to grow, producing new pinnae in distant pairs; each pinna has a long, often forked stalk and a varying number of leaf-like segments. Spores are produced in small spikes at the segment margins. In frost-prone areas, grow in a warm greenhouse. In warmer areas, grow in moist woodland.

- **HARDINESS** Half hardy to frost tender.
- L. palmarum* will withstand short periods at -5°C (23°F).

L

*Lygodium japonicum*

- **CULTIVATION** Under glass, grow in a mix of equal parts coarse leaf mould or peat, loam-based potting compost (J1 No.2), chopped sphagnum moss, and charcoal, in bright filtered light. Support on wires and provide plenty of space to climb. During the growing season, water freely, apply a balanced liquid fertilizer monthly, and mist daily. Reduce watering in winter but do not allow the compost to dry out. Outdoors, grow in moderately fertile, moist, peaty soil in deep or partial shade. *L. palmatum* needs lime-free soil.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Divide plants before the leaves develop. See also p.51.
- **PESTS AND DISEASES** Trouble free.

***L. japonicum*** ■ (Japanese climbing fern). Deciduous, climbing fern producing 2- or 3-pinnate, very finely divided fronds. Sterile pinnae, 5–12cm (2–5in) long, are irregularly and deeply lobed to pinnate; fertile pinnae are similar, or more finely divided. ‡ 2–3m (6–10ft) or more. India, China, Korea, Japan. ♀ (min. 5°C/41°F)

***L. palmatum***. Deciduous, climbing fern with palmately 3- to 7-lobed fronds, to 4cm (1½in) long. Fertile pinnae are much more finely divided than sterile ones. ‡ to 2m (6ft) or more. E. USA (N. Carolina to Florida). \*

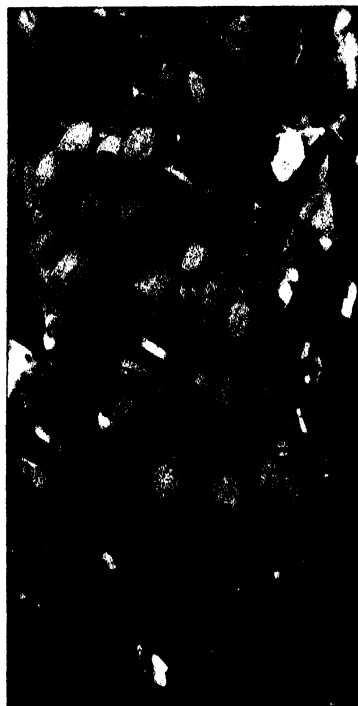
▷ **Lygos** see *Retama*

## LYONIA

ERICACEAE

Genus of approximately 35 species of deciduous and evergreen shrubs, sometimes small trees, from the Himalayas, E. Asia, USA, Mexico, and the Antilles, generally occurring in woodland. They have simple, glossy, leathery leaves, borne alternately, and are cultivated for their dense, axillary racemes or clusters of often urn-shaped, sometimes bell-shaped, ovoid, or cylindrical flowers, borne on the previous year's shoots. Suitable for a woodland garden or peat garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in acid to neutral, moderately fertile, humus-rich, moist but well-drained soil in partial or deep shade. Pruning group 1 or 8.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Take semi-ripe cuttings in summer. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

*Lyonia mariana*

***L. ferruginea*** ♀ (Rusty lyonia). Spreading, bushy, evergreen shrub or small tree with elliptic to ovate or obovate, leathery, dark green leaves, to 9cm (3½in) long, usually with the margins rolled under. The shoots and the undersides of the leaves are covered with red-brown scales. Pendent clusters of up to 10 urn-shaped white flowers, 4mm (¼in) long, are produced in late winter or spring. ‡ 5m (15ft), usually less, ↔ 2m (6ft). S.E. USA. \*\*\*

***L. mariana*** ■ (Stagger-bush). Rounded, deciduous shrub with oblong, elliptic, or narrowly obovate, leathery, dark green leaves, to 8cm (3in) long, red in autumn, dotted with brown glands beneath. Pendent, ovoid-cylindrical, white to pale pink flowers, 0.8–1.5cm (⅜–½in) long, are borne in many-flowered, umbel-like racemes in late spring and early summer. ‡ to 2m (6ft), ↔ 1.2m (4ft). E. USA. \*\*\*

***L. ovalifolia*** ♀ Bushy, rounded, deciduous or semi-evergreen shrub or small tree with red shoots. Paired, ovate-elliptic, ovate, or ovate-oblong, leathery, dark green leaves, to 15cm (6in) long, are often finely downy beneath. In late spring or summer, bears ovoid white flowers, to 1cm (½in) long, in racemes 5–10cm (2–4in) long. ‡ 3m (10ft), ↔ 2m (6ft) as a shrub; ‡ 12m (40ft), ↔ 8m (25ft) as a tree. Himalayas, China, Japan, Taiwan. \*\*\*

▷ **Lyonia, Rusty** see *Lyonia ferruginea*

## LYONOTHAMNUS

ROSACEAE

Genus of one species of evergreen tree, growing wild in canyons and on dry slopes in California, USA. Cultivated mainly for its habit, attractive bark, and simple to pinnate, thick, glossy leaves, borne in opposite pairs, it is effective as a specimen tree or in woodland.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or

partial shade. Shelter from cold, drying winds in frost-prone areas. Pruning group 1.

- **PROPAGATION** Sow seed in containers outdoors in autumn, or take greenwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***L. floribundus*** ♀ (Catalina ironwood). Conical, evergreen tree with peeling, red-brown bark and oblong to lance-shaped, glossy, deep green leaves, to 20cm (8in) long, softly hairy beneath; leaves are simple, or sometimes partially or fully pinnate on the same tree. From spring to summer, bears large, terminal, corymb-like panicles, to 20cm (8in) across, of small, 5-petalled, star-shaped white flowers. ‡ 12m (40ft), ↔ 6m (20ft). USA (California, Santa Catalina Island). \*\*\* **var. *asplenifolius*** has pinnate or 2-pinnate leaves, often with pinnatifid leaflets; USA (islands off the coast of California).

▷ **Lyre flower** see *Dicentra spectabilis*

## LYSICHITON

Skunk cabbage

ARACEAE

Genus of 2 species of robust, marginal aquatic perennials, with short rhizomes, from N.E. Asia and W. North America. They are grown for their basal clusters of large, ovate-oblong, glossy, mid- to dark green leaves, and yellow or white spathes that surround spadices bearing small, bisexual green flowers. They have a musky smell. Grow beside a stream or pool.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, humus-rich soil at the margins of a stream or pool, in full sun or partial shade. Allow ample room for the leaves to develop. See also pp.52–53.
- **PROPAGATION** Sow seed on a tray of wet soil in a cold frame as soon as ripe. Remove offsets at the bases of the main stems in spring or summer.
- **PESTS AND DISEASES** Trouble free.

*Lysichiton americanus**Lysichiton camtschatcensis*

***L. americanus*** ■ ♀ (Yellow skunk cabbage). Marginal aquatic perennial with rosettes of ovate-oblong, strongly veined, leathery, glossy, mid- to dark green leaves, 50–120cm (20–48in) long. Ovary to narrowly ovate, bright yellow spathes, to 40cm (16in) long, are borne in early spring. ‡ 1m (3ft), ↔ 1.2m (4ft). W. North America. \*\*\*

***L. camtschatcensis*** ■ ♀ (White skunk cabbage). Marginal aquatic perennial with rosettes of ovate-oblong, strongly veined, leathery, glossy, mid- to dark green leaves, 50–100cm (20–39in) long. In early spring, produces ovate to broadly lance-shaped, usually pointed white spathes, to 40cm (16in) long. ‡ ↔ 75cm (30in). N.E. Asia. \*\*\*

## LYSIMACHIA

Loosestrife

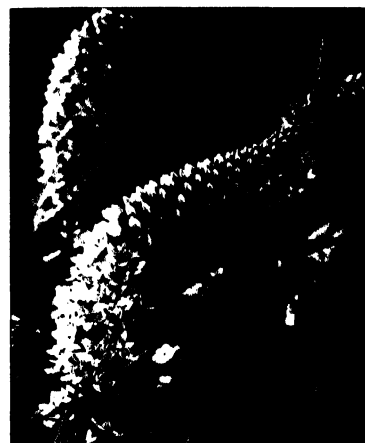
PRIMULACEAE

Genus of about 150 species of herbaceous and evergreen perennials and shrubs, mainly growing in damp grassland and woodland or by water, in subtropical regions, including South Africa, and N. temperate regions. They have opposite, alternate, or whorled, simple, entire or sometimes toothed or scalloped, often hairy leaves. The 5-petalled flowers vary from star-shaped to saucer- or cup-shaped, and are usually white or yellow, sometimes pink or purple, and either solitary and axillary or borne in terminal racemes or panicles. Larger species are suitable for a moist herbaceous border, bog garden, or pond margin, or for naturalizing in a wild or woodland garden. Low-growing species provide good ground cover. In frost-prone climates, grow tender species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in humus-rich, preferably moist but well-drained soil that does not dry out in summer, in full sun or partial shade. Tall species may need support.
- **PROPAGATION** Sow seed in containers outdoors in spring. Divide in spring or autumn.
- **PESTS AND DISEASES** May be damaged by slugs and snails.

***L. barytachys***. Erect herbaceous perennial with softly hairy stems and alternate, rarely opposite, linear-oblong to lance-shaped, hairy, mid-green leaves, to 8cm (3in) long, glaucous beneath. Dense, pendent then erect, terminal





*Lysimachia clethroides*

racemes, to 30cm (12in) long, of star-shaped white flowers, 7–10mm (¼–½in) across, are borne in mid- and late summer. ‡60cm (24in), ↔45cm (18in). E. Russia, China, Korea, Japan. \*\*\*  
***L. ciliata***, syn. *Steironema ciliata*. Erect, rhizomatous herbaceous perennial with opposite or whorled, ovate-lance-shaped to ovate, hairy, mid-green leaves, to 15cm (6in) long, with hairy leaf-stalks. Solitary or paired, slightly pendent, star-shaped yellow flowers, 2.5cm (1in) across, with small, reddish brown centres, are produced on slender stalks from the upper leaf axils in midsummer. ‡1.2m (4ft), ↔60cm (24in). North America. \*\*\*  
***L. clethroides*** □ ♀ Spreading, softly hairy, rhizomatous herbaceous perennial with erect stems bearing alternate, narrowly ovate-lance-shaped, pointed leaves, to 13cm (5in) long, mid-green above, pale green beneath. In mid- and late summer, saucer-shaped white flowers, 1cm (½in) across, are produced in dense, tapering, terminal racemes, 10–20cm (4–8in) long, which are pendent before the flowers open but become upright with arching tips as they

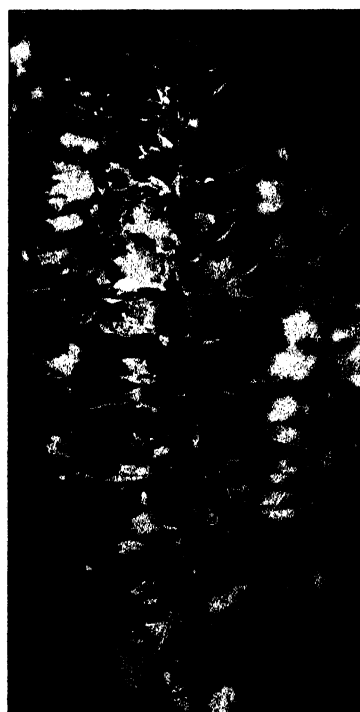


*Lysimachia ephemerum*



*Lysimachia nummularia* 'Aurea'

mature. ‡90cm (36in), ↔60cm (24in). China, Korea, Japan. \*\*\*  
***L. ephemerum*** □ Clump-forming herbaceous perennial with erect stems and opposite, linear-lance-shaped to linear-spoon-shaped, hairless, glaucous, grey-green, stem-clasping leaves, 15cm (6in) long. Saucer-shaped white flowers, 1cm (½in) across, are borne in slender, upright, dense, terminal racemes, to 40cm (16in) long, in early and mid-summer. Provide protection in severe winters. ‡1m (3ft), ↔30cm (12in). W. Portugal, S., C., and E. Spain, Pyrenees. \*\*\* (borderline)  
***L. nummularia* 'Aurea'** □ ♀ (Golden creeping Jenny). Rampant, prostrate, stem-rooting, evergreen perennial with opposite, broadly ovate to rounded, golden yellow leaves, to 2cm (¾in) long, heart-shaped at the bases. During summer, produces usually solitary, upturned, cup-shaped, bright yellow flowers, to 2cm (¾in) across. ‡to 5cm (2in), ↔indefinite. \*\*\*  
***L. punctata*** □ Erect, rhizomatous, softly hairy herbaceous perennial with opposite or whorled, elliptic to lance-shaped, dark green leaves, 8cm (3in) long. Whorls of cup-shaped yellow



*Lysimachia punctata*

flowers, 2.5cm (1in) across, are borne on short stalks from the leaf axils in mid- and late summer. May be invasive. ‡to 1m (3ft), ↔60cm (24in). C. and S. Europe to Turkey. \*\*\*  
***L. vulgaris*** (Yellow loosestrife). Stoloniiferous, softly hairy herbaceous perennial with erect stems bearing opposite or whorled, ovate to lance-shaped, mid- to bright green leaves, to 9cm (3½in) long. During summer, cupped yellow flowers, to 1.5cm (½in) across, are produced in leafy, terminal panicles, 10–30cm (4–12in) long. ‡to 1.2m (4ft), ↔to 1m (3ft). Europe, W. Asia. \*\*\*

## LYTHRUM

Loosestrife

LYTHRACEAE

Genus of 38 species of annuals and perennials found in moist meadows and scrub, and in ditches and riversides, in N. temperate regions. They have 4-angled stems and usually opposite, ovate to lance-shaped or linear, stalkless leaves, which are occasionally softly hairy. Small, star-shaped or shallowly funnel-shaped, purple, pink, or rarely white flowers are produced singly or in groups from the leaf axils, sometimes forming spike-like racemes. Loosestrifes are long-flowering, and effective in a moist border, or bog garden, or naturalized near water. Some provide attractive autumn colour. A few species have become noxious weeds in the USA.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any (preferably fertile), moist soil in full sun. Remove flowered stems to prevent self-seeding.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide in spring. Take basal cuttings in spring or early summer.
- **PESTS AND DISEASES** Slugs and snails may damage young shoots.

***L. 'Morden Pink'***. Clump-forming perennial with erect, branched stems and linear-lance-shaped, hairless leaves, 10cm (4in) long. From early to late summer, bears star-shaped, clear pink flowers, 1cm (½in) across, in loose, spike-like racemes, to 45cm (18in) long. ‡to 80cm (32in), ↔45cm (18in). \*\*\*

***L. salicaria*** (Purple loosestrife). Clump-forming perennial with erect, stiff, branched stems bearing lance-shaped, downy leaves, 10cm (4in) long. From midsummer to early autumn, produces star-shaped, bright purple-red to purple-pink flowers, 2cm (¾in) across, in spike-like racemes, to 45cm (18in) long. ‡1.2m (4ft), ↔45cm (18in). Europe, temperate Asia. \*\*\*. **'Feuerkerze'** ♀ syn. **'Firecandle'**, bears intense rose-red flowers in slender racemes; ‡to 90cm (36in). **'Firecandle'** see **'Feuerkerze'**. **'Happy'** has dark pink flowers; ‡45cm (18in). **'Robert'** produces bright pink flowers; ‡90cm (36in).

***L. virgatum***. Clump-forming perennial with erect, branched stems and linear-lance-shaped, hairless leaves, 10cm (4in) long. From early to late summer, star-shaped, purple-red flowers, 1cm (½in) across, are borne in slender, spike-like racemes, to 30cm (12in) long. ‡90cm (36in), ↔45cm (18in). E. Europe, W. and C. Asia, N.W. China. \*\*\*. **'Rose**



*Lythrum virgatum* 'The Rocket'

**'Queen'** produces bright rose-pink flowers, purple in bud; ‡60cm (24in). **'The Rocket'** □ produces deep pink flowers; ‡80cm (32in).

## LYTOCARYUM

ARECACEAE/PALMACEAE

Genus of 3 species of single- or multi-stemmed palms occurring in open woodland in seasonally dry areas, or among shrubs on rocky ridges, in southern Brazil. The upright stems each bear a terminal rosette of lance-shaped, pinnate, bright mid-green leaves, with about 60 pairs of linear leaflets. Small, cup-shaped flowers are borne in panicles, to 1.5m (5ft) long, arising from the leaf bases. They are followed by spherical green fruits, which split when ripe to reveal nut-like seeds. In frost-prone areas, grow in a temperate or warm greenhouse. In frost-free areas, grow as specimen trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with moderate humidity. Water moderately when in growth, sparingly when dormant. Apply a balanced liquid fertilizer monthly when in growth. Outdoors, grow in fertile, well-drained soil in full sun or partial shade; shelter from cold, drying winds.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

***L. weddellianum*** ♀ ♂ syn. *Microcoelum weddellianum*, *Syagrus weddelliana* (Weddell palm). Small palm with a slender, erect stem. Pinnate leaves, to 1.2m (4ft) long, have red-black scales along the stalks and midribs, and are composed of many narrowly linear leaflets, bright green above, greyish green beneath. Cup-shaped, 3-petalled green flowers are borne in panicles to 1m (3ft) long, usually in summer. ‡2–3m (6–10ft), ↔1–2m (3–6ft). Brazil. ♀ (min. 13°C/55°F)

# M

## MAACKIA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 8 species of deciduous trees or shrubs occurring in woodland in E. Asia. Maackias are cultivated both for their foliage and flowers. The leaves are alternate and pinnate, each with up to 17 pairs of leaflets and a single terminal one. The small, pea-like flowers are produced in dense, terminal racemes or panicles in summer, and are followed by compressed, linear-oblong seed pods. Maackias are unusual specimen trees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, neutral to acid soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed outdoors in containers or in a seedbed, in autumn. Insert greenwood cuttings in early or midsummer.
- **PESTS AND DISEASES** Trouble free.

*M. amurensis* ♂ Open, spreading tree with pinnate, dark green leaves, 20–30cm (8–12in) long, with 7–11 ovate leaflets. In mid- and late summer, white flowers, to 1cm (½in) long, are produced in upright racemes, 10–15cm (4–6in) long, followed by flattened seed pods, to 5cm (2in) long, with ridged seams. ‡ to 15m (50ft), ↔ to 10m (30ft). N.E. China. \*\*\*

*M. chinensis* ♀ Rounded, sometimes flat-topped tree bearing pinnate, dark green leaves, to 20cm (8in) long, with 9–13 oblong to elliptic leaflets, silvery

grey-blue when they unfold. In mid- and late summer, white flowers, to 1cm (½in) long, are produced in upright panicles, 15–20cm (6–8in) long, followed by oblong to elliptic seed pods, to 7cm (3in) long. ‡ to 10m (30ft). China (Hubei, Sichuan). \*\*\*

## MACFADYENA

syn. DOXANTHA

Cat's claw vine

BIGNONIACEAE

Genus of 3 or 4 species of evergreen climbers found in tropical forest and dry woodland from Mexico and the West Indies to Uruguay and Argentina. The leaves are borne in opposite pairs, each with 2 spreading leaflets and a short, 3-clawed tendril. Tubular-bell-shaped flowers, with 5 spreading lobes, are solitary or produced in axillary cymes from spring to summer. In frost-prone climates, grow these attractive climbers in a temperate greenhouse. In warm areas, grow over a fence, pergola, arch, or trellis, or use for ground cover.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, or full light with shade from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained, slightly acid to slightly alkaline soil in full sun. Provide shelter from cold, drying winds. Pruning group 11, after flowering.
- **PROPAGATION** Sow seed at 16–21°C (61–70°F) as soon as ripe or in spring. Root semi-ripe cuttings with bottom heat in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may prove troublesome under glass.

*M. unguis-cati* ♂ syn. *Bignonia unguis-cati*, *Doxantha unguis-cati* (Common cat's claw vine). Slender-stemmed,



*Macfadyena unguis-cati*

vigorous climber with lance-shaped to ovate leaflets, 5–10cm (2–4in) or more long. From spring to summer, produces tubular, bright yellow flowers, 10cm (4in) across, usually with orange lines in the throats, followed by slender, bean-like seed pods, 25–90cm (10–36in) long. ‡ 6–10m (20–30ft). Mexico and West Indies to Argentina. ♀ (min. 7°C/45°F)

▷ *Macraerocereus eruca* see *Stenocereus eruca*

## MACKAYA syn. ASYSTASIA

ACANTHACEAE

Genus of one species of evergreen shrub occurring in dry, open, mixed forest in southern Africa. *M. bella* is cultivated for its opposite, slender-pointed, elliptic leaves and its arching, terminal racemes of tubular-funnel-shaped flowers, each with 5 large, flared lobes, usually borne from spring to autumn. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer climates, grow in a shrub border or as a specimen plant.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, or full light with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained, neutral to slightly acid or alkaline soil in full sun or light dappled shade. Pruning group 9; plants under glass need restrictive pruning in late winter.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites and whiteflies may be troublesome under glass.

*M. bella* ♂♀ syn. *Asystasia bella*. Erect then spreading shrub, with elliptic, slender-pointed, wavy-margined,



*Mackaya bella*

lustrous, deep green leaves, 8–12cm (3–5in) long, with prominent veins. Terminal racemes of narrowly funnel-shaped flowers, to 5cm (2in) across, with large, pale lilac petal lobes finely veined dark purple, are mainly produced from spring to autumn. ‡ 1–2m (3–6ft), ↔ 1–1.5m (3–5ft). South Africa (Northern Transvaal, Eastern Transvaal, E. Northern Cape, KwaZulu-Natal), Swaziland. ♀ (min. 10°C/50°F)

## MACLEANIA

ERICACEAE

Genus of 40 species of evergreen shrubs and climbers, some scrambling or semi-scandent, and sometimes epiphytic, occurring in tropical forest in Central and South America. They are cultivated for their waxy, tubular flowers, each with 5 short petal lobes, which are produced in pendent racemes from the upper leaf axils. The simple, leathery leaves are arranged alternately. In areas where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse. In frost-free climates, train over an arch or pergola, or grow against a wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained, acid soil in partial shade. Pruning group 11 for climbers, immediately after flowering; group 8 for shrubs.
- **PROPAGATION** Surface-sow seed at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings with bottom heat in early summer. Air layer in spring.
- **PESTS AND DISEASES** Scale insects may be a problem under glass.

*M. insignis*. Semi-scandent, sparsely branched shrub with a woody, tuberous base, often epiphytic in the wild. Ovate to elliptic leaves, 5–10cm (2–4in) long, are red-tinted when young, maturing to deep green. Orange to deep scarlet flowers, 2.5–4cm (1–1½in) long, with small, triangular petal lobes and softly hairy mouths, are produced in short, leafy racemes, mainly in summer. ‡ 2–4m (6–12ft), ↔ 1–1.5m (3–5ft). S. Mexico, Honduras, Guatemala. ♀ (min. 10°C/50°F)



**MACLEAYA** syn. *BOCCONIA*

Plume poppy

PAPAVERACEAE

Genus of 2 or 3 species of rhizomatous perennials from grassy meadows, scrub, and woodland in China and Japan. They are cultivated for their foliage and graceful inflorescences. Erect, glaucous stems bear alternate, heart-shaped, palmately lobed, glaucous, grey-green to olive-green leaves, to 25cm (10in) long, with rounded, toothed lobes and prominent veins. Numerous petalless, tubular flowers, to 1cm (½in) long, with 2 or 4 sepals and a cluster of stamens, are borne in airy, plume-like panicles. The stems and leaf-stalks produce a yellowish orange latex. Grow in a mixed or herbaceous border or as free-standing specimens; they may also be grown among shrubs or used to form a tall screen. They can be invasive.

- **HARDINESS** Fully hardy, but new growth may be damaged by late frosts.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, although they will tolerate most soils and partial shade. Provide shelter from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in late autumn or spring. Separate and transplant rooted rhizomes when dormant. Insert root cuttings in winter.
- **PESTS AND DISEASES** Slugs may attack young growth.

*M. cordata* ♀ syn. *Bocconia cordata* (Plume poppy). Rhizomatous perennial with 5- to 7-lobed, grey- to olive-green leaves, white-downy beneath. In mid- and late summer, produces large, plume-like panicles of pendent, buff-white flowers, each with 25–40 stamens, on grey-green stems. ‡ to 2.5m (8ft), ↔ 1m (3ft). China, Japan. \*\*\*

*M. x kewensis* (*M. cordata* x *M. microcarpa*). Rhizomatous perennial with 5- to 9-lobed, grey-green leaves.

Creamy buff flowers, each with 12–18 stamens, are produced in loose, terminal panicles in early and late summer. ‡ 2.5m (8ft), ↔ 1m (3ft) or more.

Garden origin. \*\*\*. 'Flamingo' has pink buds and buff-pink flowers.

*M. microcarpa* 'Kelway's Coral Plume' ♂♀ Rhizomatous perennial with 5- to 7-lobed, grey- to olive-green leaves, white-downy beneath. Large, loose panicles of pendent, deep buff- to coral-pink flowers, each with 8–15 stamens, open from pink buds in early and midsummer. ‡ 2.2m (7ft), ↔ 1m (3ft) or more. \*\*\*

**MACLURA** syn. *CUDRANIA*

MORACEAE

Genus of 15 species of usually thorny, evergreen or deciduous, dioecious trees, shrubs, or climbers, the branches often reduced to spines, found in woodland and clearings, and by roadsides, from E. Asia to Australia, and from S. central USA to South America. The alternate or spiralling leaves are obovate or narrowly to broadly ovate. Racemes or clusters of small, spherical or cup-shaped, usually green flowers are followed by fleshy, spherical fruits, surrounded by enlarged bracts. Grow in a shrub border or as specimens; *M. pomifera* is also used for hedging. They need long, hot summers to grow well and produce fruit.

- **HARDINESS** Fully hardy. Unripened wood, particularly of young plants, may be susceptible to frost damage.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Root semi-ripe cuttings with bottom heat in summer, or take root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

*M. aurantiaca* see *M. pomifera*.

*M. pomifera* ♂ syn. *M. aurantiaca* (Osage orange). Rounded, deciduous tree, thorny when young, becoming less

so with age, with ovate, pointed, dark green leaves, to 10cm (4in) long, turning yellow in autumn. Tiny, cup-shaped, yellow-green flowers – the females in short racemes, the males in dense, spherical clusters – are borne in early summer, followed on female trees by large, wrinkled, yellow-green fruit, to 12cm (5in) across. ‡ 15m (50ft), ↔ 12m (40ft). S. central USA. \*\*\*

*M. tricuspidata* ♂ syn. *Cudrania tricuspidata*. Compact, rounded, deciduous shrub or small tree with ovate or obovate, dark green leaves, to 10cm (4in) long, sometimes 3-lobed at the apex. In summer, spherical clusters of tiny green flowers are borne singly or in pairs from the leaf axils of the current year's growth, followed on female trees by glossy, edible, orange-red fruit, 2–5cm (¾–2in) across. ‡ 7m (22ft), ↔ 6m (20ft). C. China, Korea. \*\*\*

▷ *Macqui* see *Aristotelia chilensis*

**MACROPIDIA**

HAEMODORACEAE

Genus of one species of evergreen, rhizomatous perennial from Australia, found in open ground at the edges of scrub. It has fans of sword-shaped, basal leaves, and produces panicles of woolly, swollen, tubular flowers, with sharply reflexed segments often likened to a kangaroo's foot. In frost-prone areas, grow in a cool or temperate greenhouse. In warmer climates, it is an unusual and effective border plant.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in bright filtered light, or full light with shade from hot sun, with low humidity. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained, neutral to slightly acid soil in full sun, with shade from midday sun. Protect from excessive winter wet.
- **PROPAGATION** Sow seed at 10°C (50°F) as soon as ripe or in spring. Divide as growth starts in spring.
- **PESTS AND DISEASES** Trouble free.

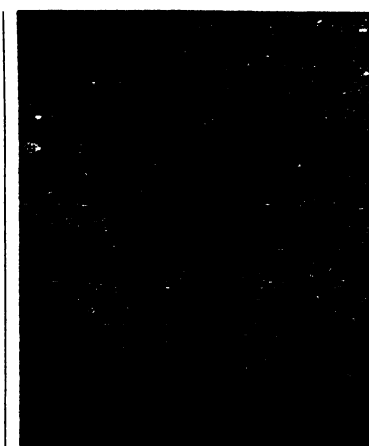
*M. fuliginosa* (Black kangaroo paw). Perennial with short rhizomes and fan-shaped tufts of linear to narrowly strap-shaped, bluish green leaves, to 30cm (12in) long. Panicles of yellow flowers, 4.5cm (1¾in) long, covered in plume-like black hairs, are borne on stout, branched stems, to 1.2m (4ft) long, in summer. ‡ 1.2m (4ft), ↔ 60cm (24in). S.W. Australia. ☉ (min. 7°C/45°F)

▷ *Macrotomia echinoides* see *Arnebia pulchra*

**MACROZAMIA**

ZAMIACEAE

Genus of 12 species of dioecious cycads from well-drained sites in open forest in Australia. Some species have a palm-like stem; in others, the stem is short and completely or partly buried. Evergreen, pinnate leaves, with linear to lance-shaped, leathery, light to mid-green leaflets, are borne in terminal whorls or rosettes. Male or female inflorescences



*Macrozamia communis*

("cones") are borne among the leaves. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer climates, grow as specimen trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full light with shade from hot sun, and with low to moderate humidity. Pot on or top-dress in spring. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in poor to moderately fertile, well-drained, neutral to slightly acid soil in full sun, with shade from midday sun.
- **PROPAGATION** Sow seed at 21–30°C (70–86°F) as soon as ripe or in spring.
- **PESTS AND DISEASES** Trouble free.

*M. communis* ♂ (Burrawong). Cycad with a robust stem, buried at first then slowly elongating. Whorled leaves, to 2m (6ft) long, have linear, sharply pointed, lustrous, rich green leaflets. Cylindrical, green to brown flowering cones usually appear in summer: male cones are 20–45cm (8–18in) long, females to 45cm (18in) long. They are followed by ovoid fruit containing large, fleshy red seeds. ‡ 2–3m (6–10ft), ↔ to 4m (12ft). Australia (New South Wales). ☉ (min. 10°C/50°F)

*M. corallipes* see *M. spiralis*.

*M. moorei* ♂ Palm-like cycad with a thick, columnar trunk and whorled leaves, to 3m (10ft) long, with narrowly lance-shaped, deep green, often bluish green leaflets. Bears cylindrical, usually green flowering cones in summer: the males to 30cm (12in) long, the females to 90cm (36in) long. Flowers are followed by ovoid fruit with bright red seeds. ‡ to 9m (28ft), ↔ to 6m (20ft). Australia (New South Wales, Queensland). ☉ (min. 10°C/50°F)

*M. spiralis*, syn. *M. corallipes*. Small cycad with a largely underground stem, with only the growing point above the surface. Leaves, to 90cm (36in) or more long, have stalks with pink, red, or orange bases, and consist of many linear, matt, deep green leaflets that spiral longitudinally, at least when young. Cylindrical to ellipsoid green flowering cones, 15–20cm (6–8in) long, appear in summer, followed by ovoid fruit with orange to scarlet seeds. ‡ 1m (3ft) or more, ↔ to 2m (6ft). Australia (New South Wales). ☉ (min. 10°C/50°F)

▷ *Madroño* see *Arbutus menziesii*.



*Macleaya microcarpa* 'Kelway's Coral Plume'

M

## MAGNOLIA

## MAGNOLIACEAE

Genus of about 125 species of deciduous and evergreen trees and shrubs, occurring in woodland, in scrub, and on riverbanks from the Himalayas to E. and S.E. Asia, and from E. North America to tropical North and South America. They are grown for their showy, solitary, fragrant, usually erect, sometimes pendent or horizontal, cup-, saucer-, goblet-, or star-shaped flowers (see panel opposite), often borne before the leaves. The flowers have usually 6–9 petals; colours include pure white, white flushed or stained pink or purple, pink, rich purple, creamy yellow, greenish yellow, glaucous green, and light to mid-yellow. The alternate leaves are usually obovate to ovate, oblong, or elliptic. Cone-like fruits, often with red-coated seeds, are attractive in autumn.

Grow magnolias as specimens or among other trees and shrubs. In frost-prone climates, grow tender species in a cool or temperate greenhouse. Some species take many years to flower: up to 30 years for *M. campbellii* when grown from seed and about 15 years for grafted or budded plants. *M. grandiflora* and *M. x soulangeana* may be wall-trained.

• **HARDINESS** Fully hardy to frost tender. Flowers, and sometimes young foliage, of early-flowering magnolias may be damaged by late frosts.

• **CULTIVATION** Grow in moist, well-drained, humus-rich, preferably acid to neutral soil in sun or partial shade, with shelter from strong winds. *M. delavayi*

and *M. grandiflora* will tolerate dry, alkaline soil; *M. kobus*, *M. x loebneri*, *M. sieboldii*, *M. stellata*, and *M. wilsonii* will grow in moist, alkaline soils. Mulch with manure and leaf mould in early spring, particularly on dry soils. Pruning group 1 for trees and deciduous shrubs; group 9 for evergreen shrubs; group 13 if wall-trained.

• **PROPAGATION** Sow seed in a seedbed in autumn. Stratified seeds germinate freely. For deciduous magnolias, root greenwood cuttings in early summer, or semi-ripe cuttings in late summer. For evergreens, root semi-ripe cuttings from late summer to early autumn. Graft in winter. Bud in summer. Layer in early spring.

• **PESTS AND DISEASES** Prone to honey fungus, coral spot, and scale insects.

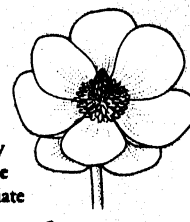
*M. acuminata* ◻ ◻ (Cucumber tree). Vigorous, conical, deciduous tree with ovate to elliptic or oblong-ovate leaves, dark green above, lighter and softly hairy beneath, to 25cm (10in) long. In late spring and early summer, produces small, cup-shaped, yellow-green or glaucous green flowers, to 9cm (3½in) across, among the leaves, followed by red or brown fruit. ‡ 20m (70ft), ↔ 10m (30ft). E. North America. \*\*\*.

'Golden Glow' has yellow flowers. var. *subcordata*, syn. *M. cordata*, is shrubby, with smaller leaves, to 15cm (6in) long, and pale yellow to yellow-green flowers; ‡ 8m (25ft), ↔ 6m (20ft); S.E. USA.

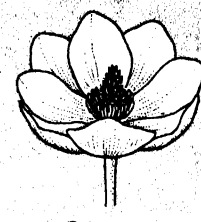
*M. ashei* ◻ ◻ syn. *M. macrophylla* subsp. *ashei*. Spreading, deciduous shrub or small tree with stout shoots and large, obovate leaves, glossy, light green above

## MAGNOLIA FLOWERS

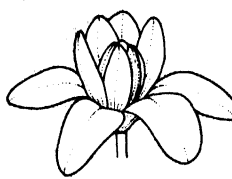
Magnolias have large, often subtly fragrant flowers. They are borne singly, often before the leaves, although evergreen species and cultivars are usually summer-flowering. Some of the flower forms may be intermediate between those shown here. As they mature, most magnolias flower increasingly freely.



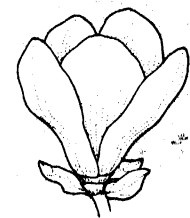
SAUCER-SHAPED



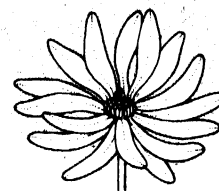
CUP-SHAPED



CUP-AND-SaucER-SHAPED



GOBLET-SHAPED



STAR-SHAPED

and glaucous beneath, to 60cm (24in) long. In early summer, produces saucer-shaped white flowers, 20–25cm (8–10in) across, the petals stained maroon at the bases. Differs from *M. macrophylla* in its smaller flowers and cylindrical to ovoid (not spherical) fruit. ‡ 10–20m (30–70ft), ↔ 8–15m (25–50ft). USA (N.W. Florida). \*\*\*.

*M. 'Betty'* ♀ Vigorous, rounded, deciduous shrub with broadly ovate, mid-green leaves, to 15cm (6in) long. In mid-spring, bears large, cup-shaped flowers, to 20cm (8in) across, with up to 19 petals, purple-red outside and white inside. ‡ 4m (12ft). \*\*\*.

*M. x brooklynensis* 'Woodsman' ◻ Conical, later spreading, deciduous tree with ovate, mid-green leaves, to 25cm (10in) long. In late spring and early summer, bears narrowly cup-shaped flowers, to 12cm (5in) across, the outer 3 petals green, the middle 3 green-flushed purple, and the central 3 pale pink. ‡ 10m (30ft), ↔ 6m (20ft). \*\*\*.

*M. campbellii* ◻ ◻ Vigorous, conical then spreading deciduous tree with elliptic-ovate to oblong-elliptic, mid-green leaves, to 25cm (10in) long. Cup-and-saucer-shaped, white or crimson to rose-pink flowers, to 30cm (12in) across, with up to 16 petals, are borne from late winter to spring, before the leaves. ‡ 15m (50ft), ↔ 10m (30ft). Nepal, India (Sikkim), Bhutan. \*\*\*.

var. *alba* has white flowers. 'Charles Raffill' ◻ ♀ has purple-pink flowers. 'Darjeeling' ◻ produces very dark pink flowers. 'Kew's Surprise' has dark purple-pink flowers. 'Lanarth' has rich lilac-purple flowers. 'Maharajah' has large white flowers with purple bases. subsp. *mollicomata* ◻ bears pink to purple-pink flowers at an earlier age and slightly later in the year; S.W. Tibet, N. Burma, China (Yunnan). 'Strybing White' has large white flowers.

*M. 'Charles Coates'* ◻ Vigorous, open, spreading, deciduous shrub with ovate leaves, clustered at the shoot tips, dark green above and slightly glaucous green beneath, to 25cm (10in) long. In late spring and early summer, produces erect or horizontal, fragrant, saucer-shaped, creamy white flowers, to 10cm (4in) across, with red anthers and 9–12 petals. ‡ 10m (30ft), ↔ 6m (20ft). \*\*\*.

*M. cordata* sec *M. acuminata* var. *subcordata*.

*M. cylindrica* ◻ ♀ ◻ Deciduous shrub or small, spreading tree with obovate leaves, to 15cm (6in) long, dark green above and pale green beneath. Cup-shaped, creamy white or yellowish white flowers, to 10cm (4in) long, are borne in spring, before and with the young leaves. ‡ 6m (20ft). E. China. \*\*\*.

*M. dawsoniana* ◻ Broadly oval-headed, deciduous tree, occasionally a large shrub, with obovate, dark green leaves, to 15cm (6in) long, slightly glaucous beneath. Large, horizontal to pendent, saucer-shaped, pale lilac-pink flowers, to 12cm (5in) across, are borne in early spring, before the leaves. ‡ 15m (50ft), ↔ 10m (30ft). China. \*\*\*.

'Chyverton' ◻ has deep purplish pink petals, white or very pale pink at the tips and within, and crimson anthers; \*\*\*.

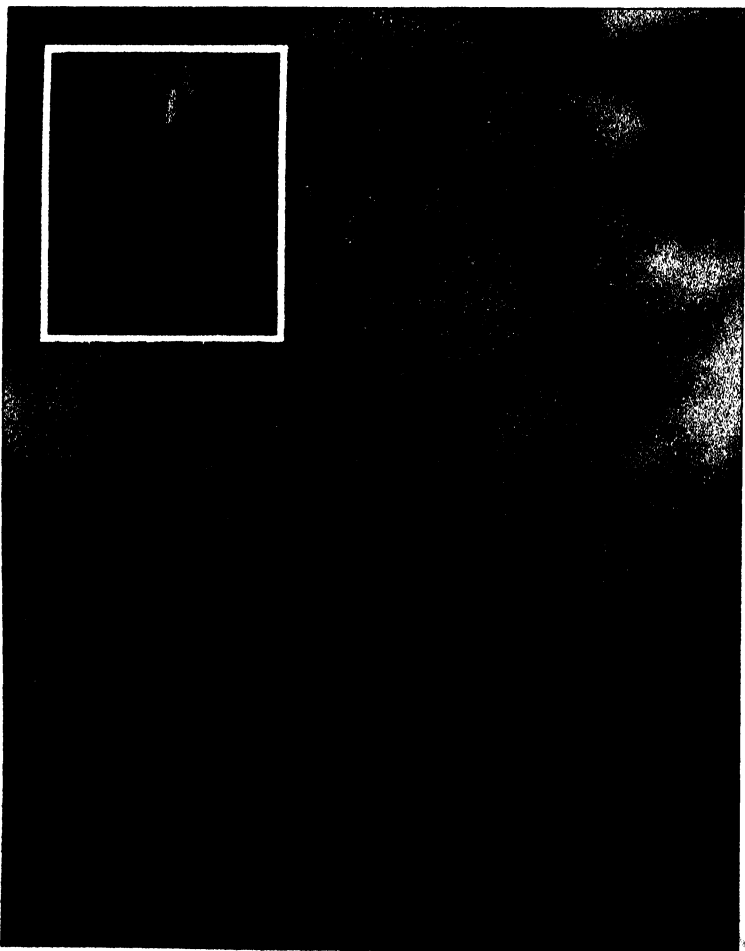
*M. delavayi* ◻ ◻ Dense, rounded, evergreen shrub or tree with ovate to oblong, dark green leaves, to 30cm (12in) long. Short-lived, cup-shaped, creamy or yellowish white flowers, to 20cm (8in) across, are borne in late summer. Grows well against a wall. ‡ 10m (30ft). China. \*\*\*.

*M. denudata* ◻ ♀ ◻ syn. *M. heptapeta* (Lily tree, Yulan). Spreading, deciduous shrub or tree with obovate, mid-green leaves, to 15cm (6in) long. Cup-shaped, pure white flowers, to 15cm (6in) across, are borne in spring, before the leaves. ‡ 10m (30ft). China. \*\*\*.

*M. 'Elizabeth'* ◻ ♀ ◻ Conical, deciduous tree with obovate leaves, to 20cm (8in) long, bronze when young, maturing to dark green. Cup-shaped, clear primrose-yellow flowers, to 15cm (6in) across, are produced in mid- and late spring, before and with the young leaves. ‡ 10m (30ft), ↔ 6m (20ft). \*\*\*.

*M. fraseri* ◻ ◻ Open, spreading, deciduous tree with obovate leaves, usually to 25cm (10in) long, but occasionally much larger, with distinct auricles, bronze when young, maturing to mid-green. Narrowly cup- or goblet-shaped, green-flushed, creamy white flowers, 15–20cm (6–8in) across, are borne in late spring and early summer. ‡ 10m (30ft). S.E. USA. \*\*\*.

*M. 'Galaxy'* ♀ ◻ Fast-growing, broadly conical, deciduous tree with obovate, mid-green leaves, to 20cm (8in) long. Large, goblet-shaped, rich purple-pink flowers, to 12cm (5in) across, are borne



in mid-spring, before the leaves. ‡ 12m (40ft), ↔ 8m (25ft). \*\*\*

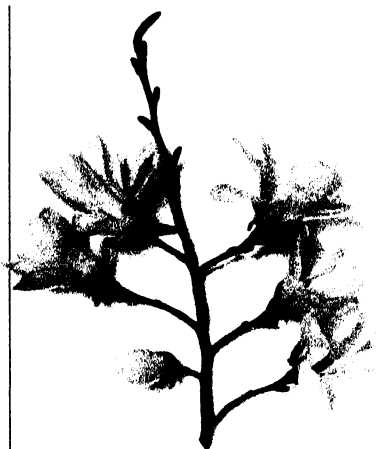
*M. glauca* see *M. virginiana*.

*M. globosa* ◯ Rounded, deciduous shrub or tree with rust-red young branches and elliptic to obovate, glossy, dark green leaves, to 20cm (8in) long. Pendent, rounded, cup-shaped white flowers, to 12cm (5in) across, with red anthers and 9–12 petals, are produced in early summer. ‡↔ 5m (15ft). Himalayas, W. China. \*\*

*M. grandiflora* △ (Bull bay). Dense, broadly conical, evergreen tree with narrowly elliptic to broadly ovate, leathery, glossy, dark green leaves, to 20cm (8in) long, with paler green and often rusty-hairy undersides. Large, cup-shaped, creamy white flowers, to 25cm (10in) across, with 9–12 petals, are produced from late summer to autumn. ‡ 6–18m (20–60ft), ↔ to 15m (50ft). S.E. USA. \*\*\*. 'Exmouth' ♀ is particularly hardy, with narrowly ovate, light green leaves, thinly hairy beneath.

'Ferruginea' ◻ has dark green leaves, rusty-hairy beneath. 'Goliath' ◻ ♀ has broad, slightly twisted leaves and very large flowers, 20–30cm (8–12in) across. 'Little Gem' ◻ is compact and upright, with elliptic to oval, dark green leaves, to 12cm (5in) long, rusty-hairy beneath, and small flowers; ‡ 6m (20ft), ↔ 3m (10ft). 'Russet' has upright, dark green leaves, orange-brown beneath. 'Samuel Sommer' has glossy, dark green leaves, rusty-hairy beneath, and very large flowers, to 35cm (14in) across.

*M. 'Heaven Scent'* ♀ ◻ Spreading, deciduous tree or large shrub with broadly elliptic, glossy, mid-green leaves, to 20cm (8in) long. Goblet-shaped flowers, to 12cm (5in) long, with 9–12 petals, pink outside and white inside, are produced from mid-spring to early summer. ‡↔ 10m (30ft). \*\*\*



*Magnolia kobus*

*M. heptapeta* see *M. denudata*.

*M. hypoleuca* ◻ ♀ ◻ syn. *M. obovata* (Japanese big-leaf magnolia). Vigorous, conical, deciduous tree with large, obovate, mid-green leaves, to 40cm (16in) long, clustered at the ends of the shoots. Large, cup-shaped, very fragrant, creamy white flowers, to 20cm (8in) across, with 9–12 petals and crimson stamens, are produced in late spring and early summer, after the leaves. ‡ 15m (50ft), ↔ 10m (30ft). Japan. \*\*\*

*M. insignis* see *Manglietia insignis*.

*M. 'Iolanthe'* ♀ ◻ Vigorous, upright, deciduous tree with obovate, mid-green leaves, to 25cm (10in) long. From an early age, very large, cup-shaped flowers, to 25cm (10in) across, rose-pink outside and creamy white inside, are borne in mid-spring. ‡ 12m (40ft), ↔ 8m (25ft). \*\*\*

*M. 'Jane'* ♀ Upright, deciduous shrub with ovate, glossy, mid-green leaves, to 15cm (6in) long. Cup-shaped, very fragrant flowers, to 10cm (4in) across,

with 10 petals, red-purple outside and white inside, are produced from slender, erect, red-purple buds in late spring. ‡ 4m (12ft), ↔ 3m (10ft). \*\*\*

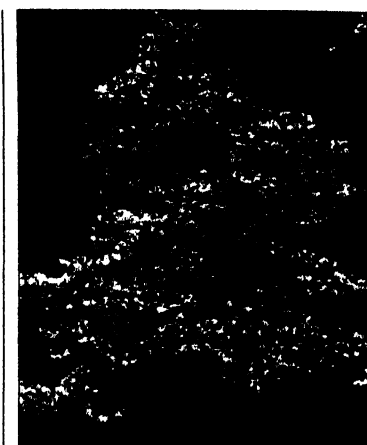
*M. x kewensis* △ (*M. kobus* x *M. salicifolia*). Deciduous tree or shrub, conical when young, later spreading, with elliptic, mid-green leaves, bluish green below, to 12cm (5in) long. Bears open cup-shaped white flowers, smelling of orange blossom, to 12cm (5in) across, in mid-spring, before the leaves. ‡ 12m (40ft), ↔ 8m (25ft). Garden origin. \*\*\*

*M. kobus* ◻ △ Broadly conical, deciduous tree with narrowly obovate, often puckered, aromatic, mid-green leaves, to 20cm (8in) long. Goblet- to saucer-shaped white flowers, to 10cm (4in) across, occasionally flushed pink at the bases, are borne profusely in mid-spring. ‡ 12m (40ft), ↔ 10m (30ft). Japan. \*\*\*

*M. liliiflora*, syn. *M. quinquepetala*. Bushy, deciduous shrub with elliptic to obovate, dark green leaves, to 20cm (8in) long. Goblet-shaped, purplish pink flowers, to 7cm (3in) across, are borne from mid-spring to midsummer. ‡ 3m (10ft), ↔ 4m (12ft). China. \*\*\*

'Nigra' ◻ ♀ is compact and flowers when young, bearing very dark purple-red flowers in early summer and intermittently into autumn; ↔ 2.5m (8ft).

*M. x loebneri* △ (*M. kobus* x *M. stellata*). Small, slender-branched, upright, deciduous tree or large shrub, with narrowly obovate, mid-green leaves, 10–15cm (4–6in) long. Star-shaped flowers, 8–13cm (3–5in) across, with 10–14 slender white petals, sometimes suffused lilac-purple outside and pale pink inside, are produced before the leaves in mid-spring. ‡ 10m (30ft), ↔ 7m (22ft). Garden origin. \*\*\*. 'Leonard Messel' ◻ ♀ ◻ is



*Magnolia x loebneri* 'Merrill'

more rounded in habit, and produces abundant 12-petalled, pale lilac-pink flowers in mid-spring; ‡ 8m (25ft), ↔ 6m (20ft). 'Merrill' ◻ ♀ ◻ is vigorous, erect, and compact in habit, with broader leaves; flowers are initially goblet-shaped then star-shaped, with 15 broad white petals; ↔ 8m (25ft). 'Spring Snow' has pure white flowers with 15 petals; ‡ 9m (28ft).

*M. macrophylla* ◻–◻ (Great-leaved magnolia, Umbrella tree). Broadly upright, later rounded, deciduous tree with stout, blue-grey shoots and very large, obovate leaves, to 1m (3ft) long, light green above, silvery grey beneath. In early summer, produces open-cup-shaped, fragrant, creamy white flowers, to 30cm (12in) or more across, with 6 petals, the inner 3 marked maroon at the bases. ‡↔ 10m (30ft). S.E. USA. \*\*\*. subsp. *ashei* see *M. ashei*.

*M. 'Manchu Fan'* ◻ ◻ Spreading, deciduous tree or shrub with obovate, mid-green leaves, to 20cm (8in) long.



*Magnolia ashei*



*Magnolia campbellii*



*Magnolia campbellii*  
'Charles Raffill'



*Magnolia campbellii*  
'Darjeeling'



*Magnolia campbellii* subsp.  
*mollicomata*



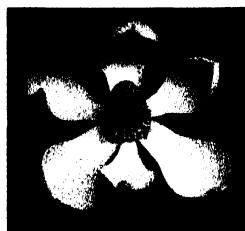
*Magnolia* 'Charles Coates'



*Magnolia cylindrica*



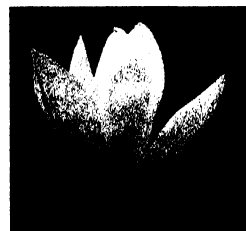
*Magnolia dawsoniana*  
'Chyverton'



*Magnolia delavayi*



*Magnolia denudata*



*Magnolia* 'Elizabeth'



*Magnolia fraseri*



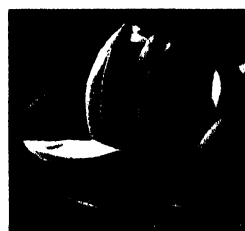
*Magnolia grandiflora*  
'Ferruginea'



*Magnolia grandiflora*  
'Goliath'



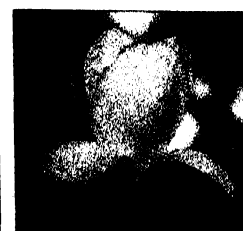
*Magnolia hypoleuca*



*Magnolia liliiflora* 'Nigra'



*Magnolia x loebneri*  
'Leonard Messel'



*Magnolia* 'Manchu Fan'



*Magnolia* 'Ricki' (inset: flower detail)

In late spring, bears large, goblet-shaped, creamy white flowers, to 12cm (5in) across, each with 9 petals, the inner ones flushed purple-pink at the bases. ‡ 6m (20ft), ↔ 5m (15ft). \*\*\*

*M. 'Maryland'* ♀△ Broadly conical, evergreen shrub or tree with oblong, slightly wavy-margined, glossy, mid-green leaves, to 23cm (9in) long. Bears cup-shaped, strongly fragrant white flowers, to 15cm (6in) across, in late summer. Flowers when young, ‡ 6m (20ft) or more, ↔ 5m (15ft). \*\*\*

*M. 'Norman Gould'* ♂△ Small, open, spreading, deciduous tree with obovate, mid-green leaves, to 12cm (5in) long. Goblet-shaped white flowers, to 12cm (5in) across, with 9–12 broad petals, faintly streaked pink on the outside, are borne horizontally in early and mid-spring. ‡ 5m (15ft). \*\*\*

*M. obovata* see *M. hypoleuca*.

*M. parviflora* see *M. sieboldii*.

*M. 'Peppermint Stick'* ♀△ Conical, deciduous tree or large shrub, with obovate, mid-green leaves, to 20cm

(8in) long. From mid-spring to early summer, large, cup-and-saucer-shaped flowers, to 11cm (4½in) across, with creamy white petals, flushed dark purple-pink at the bases, are produced from long, slender buds. ‡ 10m (30ft), ↔ 6m (20ft). \*\*\*

*M. 'Princess Margaret'* △ Deciduous tree, conical when young, spreading when mature, with oblong-elliptic, mid-green leaves, to 25cm (10in) long. In early spring, before the leaves, bears large, cup-and-saucer-shaped flowers, to 28cm (11in) across, with 11 petals, rich rose-pink outside and white inside. ‡ 15m (50ft), ↔ 10m (30ft). \*\*\*

*M. x proctoriana* ♀△ (*M. salicifolia* × *M. stellata*). Conical, deciduous tree with oval, aromatic leaves, to 12cm (5in) long, mid-green above and pale green beneath. Erect or horizontal, star-shaped white flowers, to 10cm (4in) across, with up to 12 petals, are produced in mid-spring. ‡ 8m (25ft), ↔ 6m (20ft). Garden origin. \*\*\*

*M. quinquepeta* see *M. liliiflora*.

*M. 'Randy'* ♀ Upright, almost columnar, free-flowering, deciduous shrub with broadly ovate, mid-green leaves, to 15cm (6in) long. The flowers, to 12cm (5in) across, produced from dark purple-red buds in mid-spring, are initially goblet-shaped, then star-shaped when fully open; each has 10 petals, purple-pink outside and white inside. ‡ 4m (12ft), ↔ 2.5m (8ft). \*\*\*

*M. 'Ricki'* ♂♀ Upright, deciduous shrub with broadly ovate, mid-green leaves, to 15cm (6in) long. Goblet-shaped flowers, to 15cm (6in) across, with 15 twisted petals, pink to dark purple-pink at the bases, are produced from dark purple-pink buds in mid-spring. ‡ 4m (12ft). \*\*\*

*M. salicifolia* ♂♀△ (Willow-leaved magnolia). Conical, deciduous tree with narrowly elliptic to lance-shaped, lemon-scented leaves, dull green above and grey-white beneath, to 15cm (6in) long. Abundant star-shaped, fragrant, pure white flowers, to 10cm (4in) across, are borne in mid-spring, before the leaves. ‡ 10m (30ft), ↔ 6m (20ft). Japan. \*\*\*

*M. 'Jermyns'* is shrubby and spreading, with flowers to 13cm (5in) across, and broad leaves; ‡ 5m (15ft). *M. sargentiana* △ Broadly conical, deciduous tree with obovate, light to mid-green leaves, to 18cm (7in) long. Large, horizontal to nodding, goblet-to cup-shaped, 12- to 14-petaled flowers, to 20cm (8in) across, white inside and purple-pink outside, are borne in mid- and late spring, before the leaves. ‡ 15m (50ft), ↔ 10m (30ft). W. China. \*\*\*

*var. robusta* is usually more spreading, with oblong-obovate leaves and large flowers, 22–30cm (9–12in) across.

*M. 'Sayonara'* ♀△ Spreading, deciduous tree or shrub with obovate, mid-green leaves, to 20cm (8in) long. Large, broadly goblet-shaped, creamy white flowers, to 12cm (5in) across, the inner petals faintly flushed purple-pink at the bases, are borne in mid- and late spring. ‡ 6m (20ft), ↔ 5m (15ft). \*\*\*

*M. sieboldii*, syn. *M. parviflora*. Spreading, deciduous shrub with oblong to ovate-elliptic leaves, to 15cm (6in) long, dark green above, grey-green and downy beneath. From late spring to late summer, bears cup-shaped, erect then horizontal or slightly nodding, fragrant white flowers, to 10cm (4in) across,



*Magnolia x soulangeana*

with 12 petals and crimson anthers. ‡ 8m (25ft), ↔ 12m (40ft). China, Korea, Japan. \*\*\*

*subsp. sinensis* ♀ syn. *M. sinensis*, produces slightly larger, fully pendent flowers and more rounded, oval leaves; W. China.

*M. sinensis* see *M. sieboldii* subsp.

*sinensis*.

*M. x soulangeana* ♂△ (*M. denudata* × *M. liliiflora*). Variable, deciduous shrub or spreading tree with obovate, dark green leaves, to 20cm (8in) long. Large, goblet-shaped flowers, 8–30cm (3–6in) across, varying from deep rose-pink to violet-purple or pure white, are borne in mid- and late spring, before and with the young leaves. ‡ 7m (22ft), ↔ 5m (15ft).

origin. \*\*\*

*'Alba Superba'* △ syn. *'Alba'*, is upright, with large, fragrant white flowers, slightly purple-flushed at the bases; ‡ 7m (22ft), ↔ 5m (15ft).

*'Alexandrina'* ♀△ is upright, with deeply saucer-shaped white flowers, to 10cm (4in) across, purple-flushed outside.

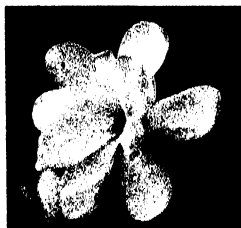
*'Brozzoni'* ♀△ is tree-like, with white flowers, to 13cm (5in) across, faintly purple-flushed outside; ‡ 8m (25ft).

*'Burgundy'* bears profuse deep purple-pink flowers, 10cm (4in) across.

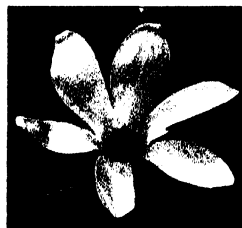
*'Lennei'* ♀ has dark purple-pink flowers, to 10cm (4in) across, white within.

*'Lennei Alba'* ♂♀ bears ivory-white flowers, 10cm (4in) across.

*'Picture'* ♂ is compact and upright, with flowers, 10–13cm (4–5in) across, richly streaked dark reddish purple, white within, and flowering when only



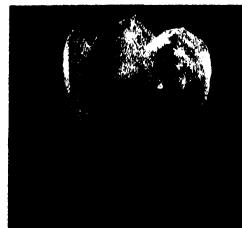
*Magnolia* 'Norman Gould'



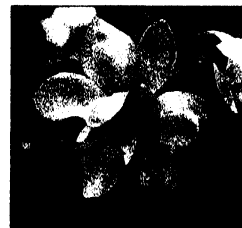
*Magnolia salicifolia*



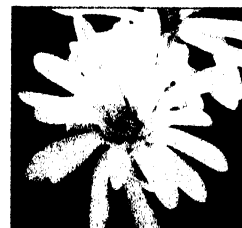
*Magnolia x soulangeana* 'Lennei Alba'



*Magnolia x soulangeana* 'Rustica Rubra'



*Magnolia sprengeri*



*Magnolia stellata* 'Royal Star'



*Magnolia* 'Susan'



*Magnolia x veitchii* 'Peter Veitch'



*Magnolia virginiana*



*Magnolia* 'Wada's Memory'



*Magnolia x wieseneri*



*Magnolia wilsonii*



*Magnolia stellata*

1m (3ft) high; ‡ 8m (25ft). 'Rubra' see 'Rustica Rubra'. 'Rustica Rubra' ♀ syn. 'Rubra', has deeply goblet-shaped, dark purplish red flowers, 10–13cm (4–5in) across, milky white within. 'San José' bears creamy white flowers, 10–13cm (4–5in) across, heavily flushed dark pink outside.

**M. sprengeri** ♀ Spreading, deciduous tree with obovate, dark green leaves, to 15cm (6in) long. Bears large, cup-shaped, white to pink flowers, to 15cm (6in) across, with 12–15 petals, in mid-spring, before the leaves. ‡ 15m (50ft), ↔ 10m (30ft). China. \*\*\*. **var. diva** has rich deep pink flowers, streaked with white and pink inside. 'Wakehurst' ♀ has dark purple-pink flowers, rich pink inside.

**M. stellata** ♀ (Star magnolia). Compact, bushy then spreading, deciduous shrub with obovate-oblong to inversely lance-shaped, mid-green leaves, to 10cm (4in) long. Silky buds open to star-shaped, mostly erect but sometimes horizontal, pure white, sometimes faintly pink-flushed flowers, 12cm (5in) across, with up to 15 petals; flowers are borne profusely in early and mid-spring, before the leaves. ‡ 3m (10ft), ↔ 4m (12ft). Japan. \*\*\*. 'Centennial' bears white flowers, to 14cm (5½in) across, with 28–32 petals. 'Royal Star' ♀ has faintly pink buds and white flowers, 12cm (5in) across, with 25–30 petals. 'Rubra' has dark pink flowers, to 12cm (5in) across. 'Waterlily' ♀ has white flowers, to 12cm (5in) across, with up to 32 petals; it is similar to 'Centennial' but has slightly smaller flowers.

**M. 'Susan'** ♀ Upright, deciduous shrub bearing ovate, mid-green leaves, to 15cm (6in) long. In mid-spring, narrowly goblet-shaped, fragrant flowers, to 15cm (6in) across, with usually slightly twisted petals, purple-red outside and paler inside, are produced from slender, dark red-purple buds. ‡ 4m (12ft), ↔ 3m (10ft). \*\*\*. **M. tripetala** ♂ (Elkwood, Umbrella tree). Broadly conical, deciduous tree

with obovate to inversely lance-shaped, dark green leaves, to 60cm (24in) long, clustered at the ends of the shoots. Cup-shaped, unpleasantly scented, creamy white flowers, to 15cm (6in) across, with 9–16 petals, are produced in late spring and early summer. ‡ 10m (30ft). E. USA. \*\*\*.

**M. x veitchii** ♀ (*M. campbellii* x *M. denudata*). Large, upright, deciduous tree with purple-green juvenile foliage and branches. Leaves are obovate or oblong, 15–30cm (6–12in) long, mostly rounded at the bases and pointed at the tips, and dark green when mature. Bears goblet-shaped, pink to white flowers, 15cm (6in) long, on bare branches in mid-spring. ‡ 30m (100ft), ↔ 3–10m (10–30ft). Garden origin. \*\*\*. 'Isca' has obovate leaves and satin-textured white flowers, faintly pink-tinged at the petal bases; ‡ 25m (80ft), ↔ 15m (50ft). 'Peter Veitch' ♀ has pale pink flowers, shading to white at the petal tips.

**M. virginiana** ♀ syn. *M. glauca* (Sweet bay). Conical, deciduous or semi-evergreen shrub or small tree with elliptic to ovate, glossy, bright green leaves, to 15cm (6in) long, glaucous beneath. From early summer to early autumn, bears almost spherical, deeply cup-shaped, very fragrant flowers, to 6cm (2½in) across, with 8 or 9 creamy white petals and an outer row of up to 6 smaller, greenish white petals. ‡ 9m (28ft), ↔ 6m (20ft). E. USA. \*\*\*.

**M. 'Wada's Memory'** ♀ Compact, broadly conical, deciduous tree with narrowly ovate, dark green leaves, to 18cm (7in) long, bronze when young. Abundant cup-shaped white flowers, to 15cm (6in) across, are produced in mid- and late spring, before the leaves. ‡ 9m (28ft), ↔ 7m (22ft). \*\*\*.

**M. x watsonii** see *M. x wieseneri*. **M. x wieseneri** ♀ (*M. hypoleuca* x *M. sieboldii*), syn. *M. x watsonii*. Spreading, deciduous shrub or tree with obovate, leathery, bright green leaves, to 20cm (8in) long, glaucous beneath. In early and midsummer, spherical white buds open to deeply cup-shaped, strongly fragrant flowers, 15cm (6in) across, with 6–9 ivory-white inner petals, 3 smaller, pink-flushed outer petals, and rose-crimson anthers. ‡ 6m (20ft), ↔ 5m (15ft). Garden origin. \*\*\*.

**M. wilsonii** ♀ Spreading, deciduous shrub or small tree with red-purple shoots and elliptic or ovate to lance-shaped, dark green leaves, to 15cm (6in) long, felted red-brown beneath. In late spring and early summer, bears pendent, cup-shaped white flowers, to 10cm (4in) across, with crimson stamens. ‡ 6m (20ft). W. China. \*\*\*.

**M. 'Yellow Bird'** ♂ Conical, later spreading, deciduous tree with ovate, mid-green leaves, to 25cm (10in) long. Deeply cup-shaped, pure yellow flowers, to 12cm (5in) across, are borne in late spring and early summer. ‡ 10m (30ft), ↔ 6m (20ft). \*\*\*.

▷ **Magnolia**,  
Great-leaved see *Magnolia macrophylla*  
Japanese big-leaf see *Magnolia hypoleuca*  
Star see *Magnolia stellata*  
Willow-leaved see *Magnolia salicifolia*

## MAHONIA

## BERBERIDACEAE

Genus of about 70 species of evergreen shrubs occurring in rocky places and woodland in the Himalayas, E. Asia, and North and Central America. They are grown for their handsome foliage, fragrant flowers, decorative fruits, and, in tall species and cultivars, for their deeply fissured bark. The alternate, pinnate or occasionally 3-palmate, usually spiny-margined leaves are light grey-green to dark green, and sometimes purplish red or orange-red when young. Racemes or panicles (see panel below) of cup-shaped, usually yellow flowers, 0.8–1.5cm (⅜–½in) across, are followed by spherical or ovoid, mainly purple to black berries. Mahonias are useful for a variety of situations: use low-growing species and cultivars as ground cover, and taller ones as specimens in a shrub border or woodland garden.

• **HARDINESS** Fully hardy to frost hardy.

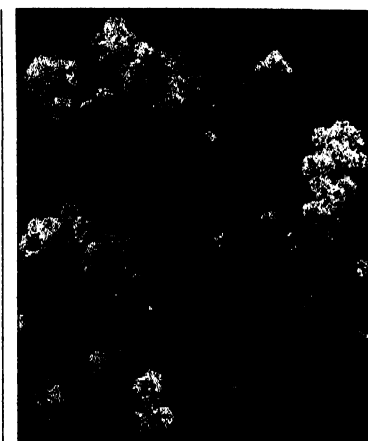
• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil. Most mahonias prefer full or partial shade, but will tolerate sun if the soil is not too dry. *M. fremontii* and *M. nevini* require very well-drained soil and full sun. Shelter *M. fortunei*, *M. lindsayae*, and *M. lomariifolia* from cold, drying winds. Pruning group 8.

• **PROPAGATION** Sow seed outdoors in a seedbed or containers, in autumn or as soon as ripe. Stratified seeds germinate freely. Root semi-ripe or leaf-bud cuttings from late summer to autumn.

• **PESTS AND DISEASES** Rust and mildew may attack *M. aquifolium*.

**M. acanthifolia** see *M. napaulensis*.

**M. aquifolium** (Oregon grape). Open, suckering shrub with pinnate, bright

*Mahonia aquifolium* 'Smaragd'

green leaves, to 30cm (12in) long, with up to 9 obliquely ovate, spiny-toothed leaflets, often turning red-purple in winter. Yellow flowers are borne in densely clustered racemes, to 8cm (3in) long, in spring, followed by spherical blue-black berries. ‡ 1m (3ft), ↔ 1.5m (5ft). W. North America. \*\*\*.

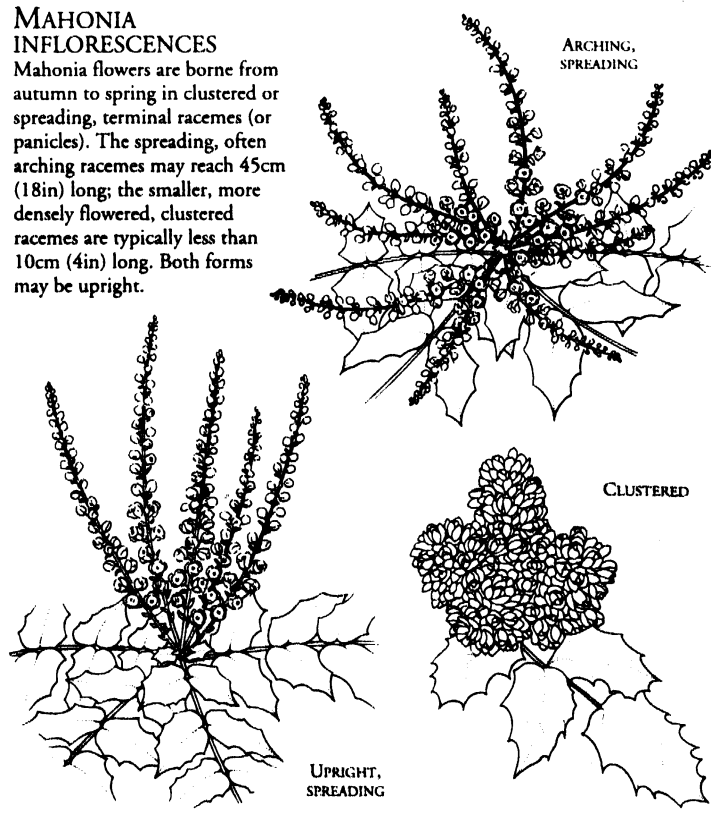
'Atropurpurea' has leaves that turn dark red-purple in winter. 'Orange Flame' has rust-orange young foliage, turning red in winter; ‡ 60cm (24in), ↔ 1m (3ft). 'Smaragd' ♀ is compact, bearing bright yellow flowers in large clusters, to 10cm (4in) long; ‡ to 60cm (24in), ↔ to 1m (3ft).

**M. bealei** see *M. japonica* 'Bealei'.

**M. fortunei**. Upright shrub with pinnate, dark green leaves, to 20cm (8in) long, with up to 13 slender, sharply toothed, elliptic-lance-shaped leaflets. Bright yellow flowers are borne in dense, upright racemes, to 7cm (3in) long, in early and mid-autumn; they are followed by ovoid to spherical, white-

## MAHONIA INFLORESCENCES

Mahonia flowers are borne from autumn to spring in clustered or spreading, terminal racemes (or panicles). The spreading, often arching racemes may reach 45cm (18in) long; the smaller, more densely flowered, clustered racemes are typically less than 10cm (4in) long. Both forms may be upright.



M

frosted, dark blue berries. †1.2m (4ft), ↔ 1m (3ft). China. \*\*

**M. fremontii.** Upright, stiffly branched shrub bearing pinnate leaves, to 10cm (4in) long, with 3–7 wavy-margined, sharply toothed, oblong-lance-shaped, glaucous, grey-green leaflets. In summer, produces densely clustered racemes, to 5cm (2in) long, of yellow flowers, followed by ovoid, white-frosted, dark blue berries. †2m (6ft). S.W. USA, Mexico. \*\*

**M. 'Heterophylla'.** Upright shrub with red-purple shoots and pinnate, glossy, bright green leaves, to 30cm (12in) long, with up to 7 slender, ovate, lance-shaped to narrowly oblong-ovate, twisted leaflets, turning red-purple in winter. Yellow flowers are produced in clustered racemes, to 8cm (3in) long, in spring. Seldom produces fruit. †1m (3ft), ↔ 1.5m (5ft). \*\*

**M. japonica** ♀ Erect shrub with stout, upright branches and pinnate, dark green leaves, to 45cm (18in) long, with up to 19 sharply toothed, ovate-oblong to lance-shaped leaflets. Fragrant, pale yellow flowers are produced in arching, then spreading racemes, to 25cm (10in) long, from late autumn to early spring, followed by ovoid, blue-purple berries. †2m (6ft), ↔ 3m (10ft). China. \*\*\*

**'Bealei'**, syn. *M. bealei*, has blue-green leaves divided into broad leaflets, and produces flowers in shorter, upright racemes, to 10cm (4in) long.

**M. x lindsayae 'Cantab'.** Stoutly branched shrub bearing large, arching, pinnate, glossy, rich, deep green leaves, to 60cm (24in) long, with up to 15 ovate-oblong, sharply toothed leaflets, some turning red in winter. Fragrant, lemon-yellow flowers are produced in spreading racemes, to 30cm (12in) long, in late autumn and early winter. †↔ 2.5m (8ft). \*\*

**M. lomariifolia** ♀ Erect shrub with stout, upright shoots bearing pinnate, dark green leaves, to 60cm (24in) long, with up to 41 oblong-ovate to oblong-lance-shaped, sharply toothed leaflets. Fragrant yellow flowers are produced in densely clustered, upright racemes, 20cm (8in) long, from late autumn to winter, followed by ovoid, blue-black berries. †3m (10ft), ↔ 2m (6ft). W. China (S. Sichuan, Yunnan). \*\*

**M. x media** (*M. japonica* x *M. lomariifolia*). Erect shrub with pinnate leaves, to 45cm (18in) long, with 17–21 ovate to lance-shaped, sharply toothed, dark green leaflets. Bright yellow to



*Mahonia x media* 'Charity'

lemon-yellow flowers are borne in erect then spreading racemes, 25–35cm (10–14in) long, from late autumn to late winter. † to 5m (15ft), ↔ 4m (12ft). Garden origin. \*\*\*

**'Arthur Menzies'** produces lemon-yellow flowers in upright, later spreading racemes, to 25cm (10in) long, in late autumn and early winter; †4m (12ft). **'Buckland'** ♂ bears bright yellow flowers in arching racemes, to 45cm (18in) long. **'Charity'** ♂ has densely clustered, upright then spreading racemes. **'Lionel Fortescue'** ♀ bears bright yellow flowers in upright racemes, to 40cm (16in) long. **'Winter Sun'** ♀ bears bright yellow flowers in densely clustered, arching racemes.

**M. napaulensis**, syn. *M. acanthifolia*. Open, upright shrub with pinnate, glossy, dark green leaves, to 50cm (20in) long, with up to 15 lance-shaped to narrowly ovate, sharply toothed leaflets. In early and mid-spring, bears yellow flowers in spreading racemes, to 20cm (8in) long, followed by ovoid, white-frosted, blue-black berries. †2.5m (8ft), ↔ 3m (10ft). Himalayas. \*\*

**M. nervosa.** Dwarf, suckering shrub with pinnate, glossy, dark green leaves,



*Mahonia x wagneri* 'Pinnacle'

to 60cm (24in) long, with up to 23 ovate-oblong to lance-shaped leaflets, often red-purple in winter. Bears yellow flowers in dense racemes, to 20cm (8in) long, in late spring and early summer, followed by spherical, blue-black berries. †45cm (18in), ↔ 1m (3ft). W. North America. \*\*\*

**M. nevinii.** Upright shrub with purplish green shoots and pinnate leaves, grey-green to blue-green above, greyish white beneath, to 10cm (4in) long, with 5 lance-shaped, sharply toothed leaflets. Bright yellow flowers are produced in small, dense racemes, to 5cm (2in) long, in early and mid-spring, followed by spherical, dark red berries. †↔ 2m (6ft). USA (S. California). \*\*

**M. pinnata of gardens** see *M. x wagneri* 'Pinnacle'.

**M. pumila.** Low, dense, suckering shrub bearing pinnate, grey-green leaves, to 15cm (6in) long, with up to 9 ovate-oblong, sharply toothed leaflets, wedge-shaped at the bases, with long, pointed tips. Dark yellow flowers are borne in densely clustered racemes, to 5cm (2in) long, in spring, followed by ellipsoid, blue-black berries. †30cm (12in), ↔ 1m (3ft). USA (California, Oregon). \*\*\*

**M. repens.** Upright, suckering shrub bearing pinnate, matt green leaves, to 25cm (10in) long, with up to 7 pointed, ovate, wavy-margined, sharply toothed leaflets. Dark yellow flowers are borne in dense, upright racemes, to 8cm (3in) long, in mid- and late spring, followed by spherical, blue-black berries. †30cm (12in), ↔ 1m (3ft). W. North America. \*\*\*

**'Rotundifolia'** ♂ is taller, with broadly ovate, almost entire, rounded leaflets; †1.5m (5ft), ↔ 2m (6ft).

**M. 'Undulata'** see *M. x wagneri* 'Undulata'.

**M. x wagneri** (*M. aquifolium* x *M. pinnata*). Upright shrub bearing pinnate leaves, to 20cm (8in) long, with 7–11 ovate, sharply toothed, dull to dark green leaflets. Yellow flowers are borne in dense racemes, to 8cm (3in) long, in spring, followed by spherical, white-frosted, blue-black berries. †80cm (32in), ↔ 1m (3ft). Garden origin.

\*\*\* **'Moseri'** has pale green leaves, flushed pink or red. **'Pinnacle'** ♂ syn. *M. pinnata* of gardens, is upright and taller, with bronze juvenile leaves, maturing to bright green; †↔ 1.5m (5ft). **'Undulata'** ♀ syn. *M. 'Undulata'*, has leaves with glossy, dark green, wavy-margined leaflets, turning red-purple in winter, and produces rich yellow flowers; †↔ 2m (6ft).

## MAIANthemum

May lily

CONVALLARIACEAE/LILIACEAE

Genus of 3 species of creeping, rhizomatous perennials from woodland in the N. hemisphere. They are grown for their dense, terminal racemes of tiny, fluffy, star-shaped, 4-tepalled white flowers, followed by red berries, and for their alternate, heart-shaped leaves, borne on upright stems. Use for ground cover in a wild or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, leafy, moist but well-drained, neutral to acid soil in light dappled or deep shade.

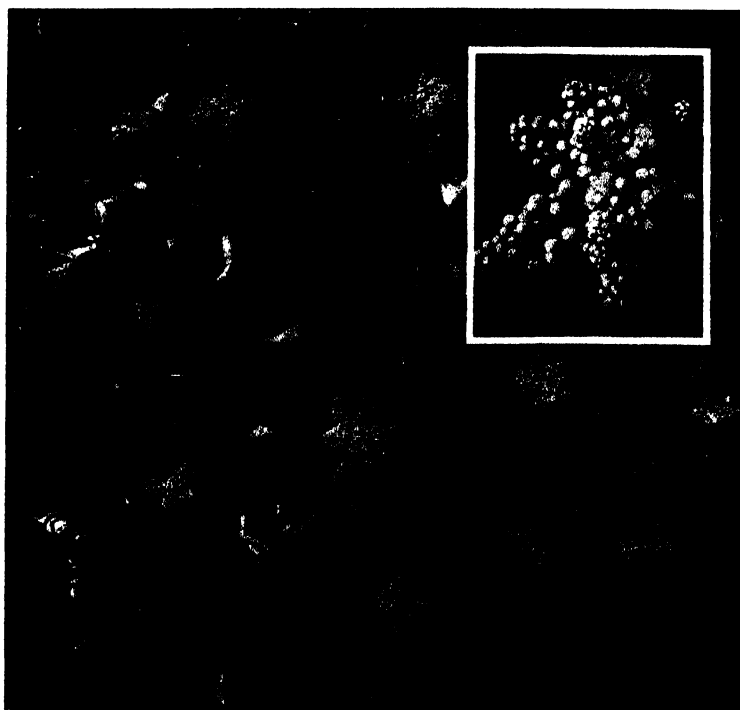
• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Separate rooted runners in spring.

• **PESTS AND DISEASES** Slugs and snails may attack young leaves.

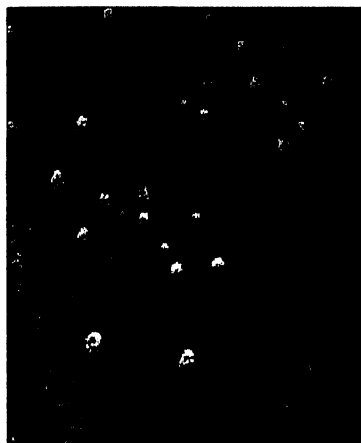
**M. bifolium** ♂ (False lily-of-the-valley). Spreading perennial with 2 broadly heart-shaped to ovate, thin, glossy, dark green leaves, to 8cm (3in) across. In early summer, produces slender-



*Mahonia x media* 'Buckland'



*Mahonia repens* 'Rotundifolia' (inset: flower detail)



*Maianthemum bifolium*

stemmed racemes of 8–20 white flowers, followed by small, spherical berries.

† 15cm (6in), ↔ indefinite. W. Europe to Japan. \*\*\*

*M. racemosum* see *Smilacina racemosa*.

▷ **Maidenhair fern** see *Adiantum*

**Aleutian** see *A. aleuticum*

**Australian** see *A. formosum*

**Barbados** see *A. tenerum* 'Farleyense'

**Brittle** see *A. tenerum*

**Delta** see *A. raddianum*

**Diamond** see *A. trapeziforme*

**Dwarf** see *A. aleuticum* var.

*subpumilum*

**Giant** see *A. formosum*, *A.*

*trapeziforme*

**Himalayan** see *A. venustum*

**Northern** see *A. aleuticum*

**Silver dollar** see *A. peruvianum*

**Tassel** see *A. raddianum* 'Grandiceps'

**Trailing** see *A. caudatum*

**True** see *A. capillus-veneris*

**Walking** see *A. caudatum*

▷ **Maidenhair tree** see *Ginkgo*, *G. biloba*

## MAIHUENIA

CACTACEAE

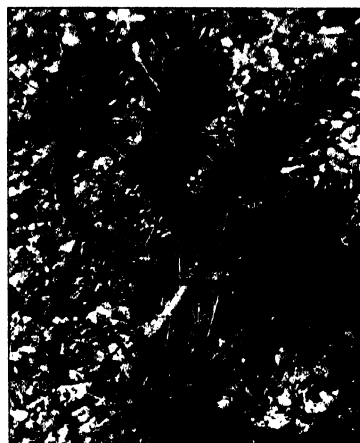
Genus of 3–5 species of dwarf, clustering, perennial cacti found at high altitudes in the Andes of S. Chile and S. Argentina. Cylindrical or spherical, fleshy, jointed stems bear small, ovate, slender, evergreen leaves. Diurnal, cup-shaped flowers are produced from the near-terminal areoles in summer, followed by soft berries, to 5cm (2in) across, containing numerous black-coated seeds. Where temperatures fall below 0°C (32°F), grow in a cool or temperate greenhouse. In warmer areas, grow in a rock or desert garden. Long, hot summers are needed for production of flowers.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in standard cactus compost in bright filtered light, or full light with shade from hot sun, with low humidity. From spring to summer, water moderately and apply a dilute fertilizer monthly; at other times, keep almost dry. Outdoors, grow in moderately fertile, sharply drained soil in dappled shade, or full sun with shade from midday sun. Protect from excessive winter wet. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root stem cuttings in spring and summer.

• **PESTS AND DISEASES** Mealybugs may cause problems.



*Maihuenia poeppigii*

*M. poeppigii* ■ Clustering cactus with many short, cylindrical stems and fleshy, evergreen leaves, 5mm (¼in) long.

Areoles bear 3 or 4 slender, generally short, stiff spines, one of which grows to 2cm (¾in) long. Produces bright yellow flowers, 3–4.5cm (1¼–1½in) long, in summer. † 6cm (2½in), ↔ 30cm (12in). S. Chile, S. Argentina. \*

▷ **Maiten** see *Maytenus boaria*

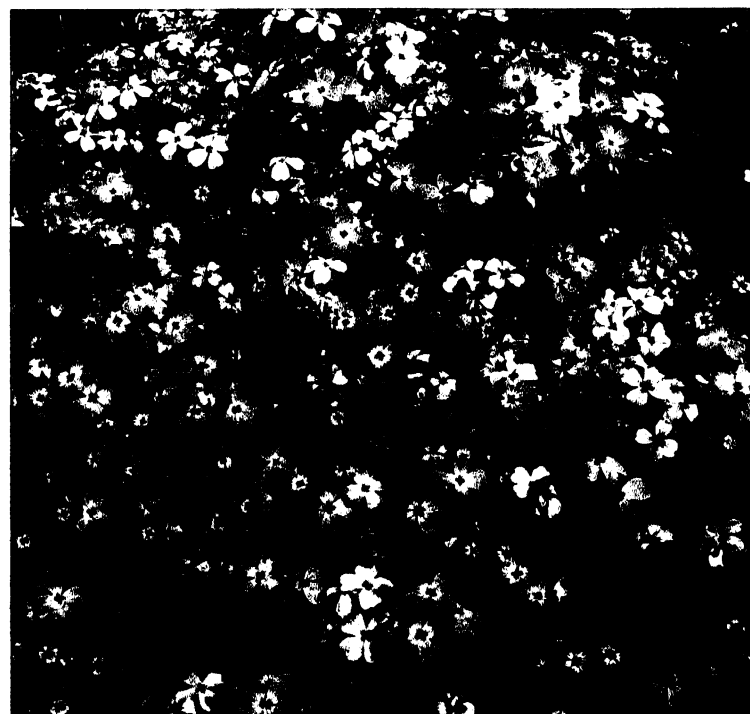
▷ **Maize** see *Zea mays*

▷ **Majorana onites** see *Origanum onites*

## MALCOLMIA

BRASSICACEAE/CRUCIFERAE

Genus of 35 species of bushy, sometimes prostrate annuals and perennials found on rocky slopes and as wild species in cultivated and disturbed ground, from the Mediterranean region to Afghanistan. They are grown for their short racemes of narrow, cross-shaped, 4-petalled, white, purple, or red flowers, borne from spring to autumn; they self-seed freely. Leaves are linear-oblong to ovate, spoon-shaped, or pinnatisect with lance-shaped lobes. Suitable for the



*Malcolmia maritima* Compacta Series

front of an annual or mixed border, and for paving crevices, edging, or a gravel path; they thrive in coastal gardens.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun, with shade from midday sun. Flowering is poor in regions with hot, humid summers, unless seed is sown early.

• **PROPAGATION** Sow seed thinly *in situ* from late spring. For a succession of flowers, repeat at intervals of 4–6 weeks.

• **PESTS AND DISEASES** Downy mildew may be troublesome.

*M. maritima* (Virginian stock). Low-growing, erect to spreading, basally branching annual, with oval to elliptic, hairy-toothed or entire, blunt-tipped, grey-green leaves, to 5cm (2in) long. From spring to autumn, produces open, many-flowered, slender-stemmed spikes of sweetly fragrant, red or purple flowers, to 1cm (½in) across, each petal notched at the apex. † 20–40cm (8–16in), ↔ 10–15cm (4–6in). Mediterranean. \*\*\*. **Compacta Series** ■ cultivars have white, pink, red, or purple flowers; † 40cm (16in).

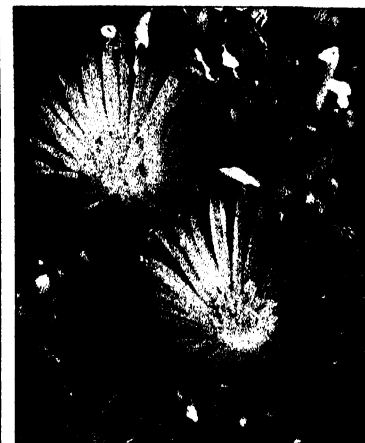
## MALEPHORA

AIZOACEAE

Genus of about 15 species of bushy, prostrate to erect, woody-based, perennial succulents from dry, hilly areas of southern Africa. The stems have prominent internodes. The opposite, semi-cylindrical or bluntly 3-angled, soft, fleshy, pale to mid-green leaves are united at the bases and coated with blue or white wax. Short-stalked, star-shaped, terminal or axillary flowers open in daytime from late summer to autumn. In frost-prone climates, grow in a cool or temperate greenhouse. In warmer areas, grow in a rock garden or desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun, and with low



*Malephora crocea*

humidity. From late spring to early autumn, water freely and apply a balanced liquid fertilizer monthly. Keep just moist at other times. Outdoors, grow in poor or moderately fertile soil in full sun. Provide protection from excessive winter wet. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root leaf cuttings or stem segments in spring or summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

*M. crocea* ■ Semi-prostrate or erect, woody-based succulent with a thick, gnarled stem and greyish brown branches. Bears clusters of blunt-tipped, white-frosted, mealy, pale green leaves, to 4.5cm (1¾in) long, on short shoots. Solitary, golden yellow flowers, 3cm (1¼in) across, with red-backed petals, are produced in late summer. † 20cm (8in), ↔ indefinite. South Africa (Western Cape). ☉ (min. 7°C/45°F)

▷ **Mallow** see *Lavatera*, *Malva*

**Annual** see *Malope*, *M. trifida*

**Common rose** see *Hibiscus*

*moscheutos*

**Confederate rose** see *Hibiscus*

*mutabilis*

**False** see *Sidalcea*, *Sphaeralcea*

**Globe** see *Sphaeralcea*

**Hollyhock** see *Malva alcea*

**Indian** see *Abutilon*

**Marsh** see *Althaea officinalis*

**Musk** see *Abelmoschus moschatus*,

*Malva moschata*

**Poppy** see *Callirhoe*

**Prairie** see *Sidalcea*, *Sphaeralcea*

*coccinea*

**Prairie poppy** see *Callirhoe*

*involuta*

**Sleepy** see *Malvaviscus*

**Swamp rose** see *Hibiscus moscheutos*

**Tree** see *Lavatera arborea*

**Wax** see *Malvaviscus arboreus*

## MALOPE

Annual mallow

MALVACEAE

Genus of 4 species of tall, bushy to almost unbranched annuals and perennials found on rocky limestone slopes, in thickets of prickly shrubs, and growing wild in arable fields, from the Mediterranean region to W. Asia. The ovate leaves are entire or lobed, and the showy, axillary flowers are long-stalked, broadly trumpet-shaped, and paper thin, ranging from pink to violet-blue to

*Malope trifida* 'Vulcan'

white, often veined in a deeper shade. Grow at the front or middle of an annual or mixed border, where they self-seed freely and provide long-lasting cut flowers. Annual mallows thrive in coastal gardens, although they do poorly in hot, humid summer conditions.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, although partial shade is tolerated. Dead-head to prolong flowering. Give brushwood support in exposed sites.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring, or *in situ* in mid-spring.
- **PESTS AND DISEASES** Aphids and rust may be troublesome.

*M. trifida* (Annual mallow). Erect, branching to almost unbranched, stout-stemmed annual with hairy stems and leaves. Ovate, mid-green leaves, to 10cm (4in) long, are entire near the stem bases but 3- to 5-lobed higher up. From summer to autumn, produces broadly trumpet-shaped, pale to dark purple-red flowers, 5–8cm (2–3in) across, heavily veined dark purple, the petals narrowing at the bases to reveal bright green sepals below. ‡ to 90cm (36in), ↔ 23cm (9in). W. Mediterranean. \*\*\*. 'Rosea' has rose-red flowers. 'Vulcan' bears abundant bright magenta-pink flowers, to 8cm (3in) across. 'White Queen' has pure white flowers, 5cm (2in) across.

## MALPIGHIA

### MALPIGHIACEAE

Genus of about 45 species of evergreen shrubs and small trees found in dry woodland in tropical North, Central, and South America, especially the Caribbean. They are grown for their opposite, simple, often toothed and leathery leaves, and their star-shaped to shallowly trumpet-shaped flowers, each with 5 unequally sized, clawed petals, often with crimped, waved, or fringed tips or margins. Flowers are borne singly

or in axillary or terminal corymbs, followed by colourful, edible fruits. Where temperatures fall below 16°C (61°F), grow in a temperate or warm greenhouse. Elsewhere, use as specimen trees, in a shrub border, or for hedging.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. In spring and summer, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with shade from midday sun. Pruning group 9.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*M. coccigera* (Miniature holly, Singapore holly). Small, bushy shrub, often prostrate unless regularly trimmed. Elliptic to obovate or rounded leaves, 1–2cm (½–¾in) long, are wavy-margined, spiny-toothed, and lustrous, deep green. Shallowly trumpet-shaped, pink or lilac-pink flowers, 1.5cm (½in) across, are produced singly or in pairs from all the upper leaf axils in summer, and usually followed by broadly ovoid red berries, 0.5–1.5cm (¼–½in) across. ‡ 30–150cm (1–5ft), ↔ 1–2m (3–6ft) or more. West Indies. ♀ (min. 16°C/61°F).

*M. glabra* (Barbados cherry). Upright, bushy shrub with ovate to elliptic-lance-shaped, entire, lustrous, dark green leaves, 2.5–7cm (1–3in) long. In summer, produces star-shaped pink flowers, 1.5cm (½in) across, with fringed margins, in axillary or terminal corymbs of 3–8 flowers, followed by spherical red berries, 1.5cm (½in) across. ‡ 3m (10ft), ↔ 1.5m (5ft). USA (Texas) to West Indies and N. South America. ♀ (min. 16°C/61°F).

▷ **Maltese cross** see *Lychnis chalcidonica*

## MALUS

Apple, Crab apple

### ROSACEAE

Genus of about 35 species of deciduous trees and shrubs from woodland and thickets in Europe, Asia, and North America. They are grown for their often fragrant flowers, mostly 2–5cm (¾–2in) across, borne singly or in umbel-like corymbs, for their attractive, more or less spherical, edible fruits (although some are unpalatable if uncooked), and sometimes for their purple foliage and autumn colour. The flowers are usually shallowly cup-shaped and 5-petalled; in some cultivars, they may be semi-double or double. The leaves are alternate, oval to ovate or elliptic, mostly toothed, rarely entire, and occasionally lobed.

Crab apples are ideal specimen trees, many of them suitable for small gardens. Apples of commerce, *Malus x domestica* and its cultivars, are not described here.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, although partial shade is tolerated. Purple-leaved forms colour best in full sun. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Bud in late summer. Graft in midwinter.
- **PESTS AND DISEASES** Aphids, red spider mites, caterpillars, apple scab, honey fungus, canker, fireblight, and mildew may cause problems.

*M. 'Aldenhamsensis'* ♀ Spreading tree with ovate to shallowly lobed leaves, to 10cm (4in) long, red-purple when young, later bronze-green. Single or semi-double, dark red flowers are produced in late spring, followed by broadly ovoid, red-purple fruit, to 3cm (1¼in) long. ‡ 8m (25ft). \*\*\*.

*M. 'Almey'* ♀ Rounded tree with ovate leaves, to 8cm (3in) long, red-purple when young, later dark green. Deep rose-pink flowers, paler at the

*Malus x arnoldiana*

bases, are produced in late spring, followed by orange-red fruit, to 2.5cm (1in) across. ‡ 8m (25ft). \*\*\*.

*M. x arnoldiana* ♀ (♀ *M. baccata* x *M. floribunda*). Low, spreading tree with long, arching branches and oval, mid-green leaves, to 8cm (3in) long. In mid- and late spring, red buds open to fragrant pink flowers, fading to white, followed by ovoid, red-flushed yellow fruit, to 2cm (¾in) long. ‡ 5m (15ft), ↔ 8m (25ft). Garden origin. \*\*\*.

*M. x atrosanguinea* ♀ (*M. halliana* x *M. sieboldii*). Spreading tree with oval or slightly lobed, glossy, dark green leaves, to 8cm (3in) long. Rich pink flowers are produced from red buds in mid-spring, followed by long-stalked, yellow-flushed red fruit, to 1cm (½in) across. ‡ 6m (20ft). Garden origin. \*\*\*.

*M. baccata* ♀ (Siberian crab apple). Vigorous, rounded tree with oval, dark green leaves, paler beneath, to 9cm (3½in) long. Abundant white flowers are produced in mid- and late spring, followed by long-stalked, red or yellow fruit, 1cm (½in) across. ‡ 15m (50ft). E. Asia. \*\*\*. var. *mandschurica* ♀ (Manchurian crab apple) has more sparsely toothed leaves, downy beneath.

*Malus* 'Almey' (inset: flower detail)

*Malus baccata* var. *mandschurica*

**M. 'Baskatong'** ☐ Small, rounded tree with oval, dark green leaves, to 8cm (3in) long. Purple-red flowers, with paler centres, are produced from darker buds in late spring, followed by dark purple-red fruit, to 2.5cm (1in) across. ↑↔ 8m (25ft). \*\*\*

**M. 'Brandywine'** ☐ Rounded tree with ovate, red-flushed, dark green leaves, to 9cm (3½in) long. Abundant fragrant, double pink flowers are produced in late spring, followed by yellow-green fruit, to 2.5cm (1in) across. ↑↔ 6m (20ft). \*\*\*

**M. 'Butterball'** ☐☐ Spreading tree with broadly ovate to heart-shaped, bright green leaves, to 8cm (3in) long, grey-green when young. Pink-flushed white flowers are borne in late spring, followed by striking, orange-yellow fruit, red-flushed at first, 3cm (1¼in) across. ↑↔ 8m (25ft). \*\*\*

**M. 'Candied Apple'** ♀ syn. *M. 'Weeping Candied Apple'*. Small, spreading tree with weeping branches and ovate, red-flushed, dark green leaves, to 8cm (3in) long. Pink flowers are produced from red buds in late spring, followed by long-lasting, bright red fruit, 1cm (½in) across. ↑↔ 5m (15ft). \*\*\*

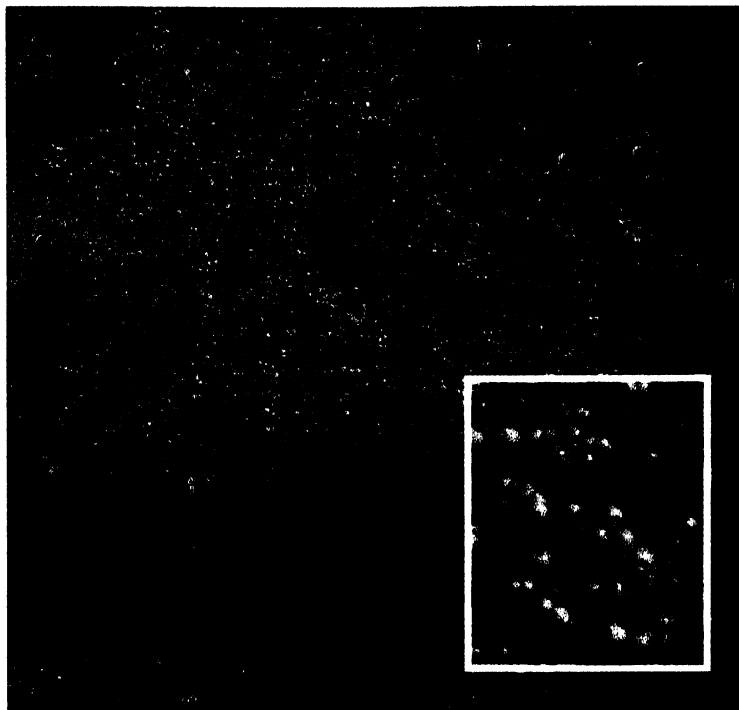
**M. 'Centurion'** ☐ Narrowly upright tree, developing an oval head with age. Ovate, bronze-green leaves, to 10cm (4in) long, are red when young. Bears rose-red flowers in late spring, followed by long-lasting cerise fruit, to 1cm (½in) across. ↑↔ 8m (25ft). ↔ 6m (20ft). \*\*\*

**M. 'Chilko'** ☐ Spreading tree with oval, dark green leaves, 8–9cm (3–3½in) long, red-purple when young. Dark rose-pink flowers are produced in mid-spring, followed by bright crimson fruit, 5cm (2in) across. ↑↔ 8m (25ft). \*\*\*

**M. coronaria** ☐ (Wild sweet crab apple). Spreading tree producing ovate, toothed, sometimes shallowly lobed, dark green leaves, to 10cm (4in) long, red-tinged when young, turning scarlet-red and orange in autumn. Violet-scented pink flowers are borne in late spring, followed by acid-tasting, yellow-green fruit, 4cm (1½in) across. ↑↔ 9m (28ft). E. North America. \*\*\*

**'Charlottae'** has semi-double flowers.

**M. 'Covichan'** ☐☐ Spreading tree with oval, glossy, dark green leaves, to 11cm (4½in) long, red-purple when young. Rose-pink, later almost white flowers are produced in mid-spring, followed by bright red-purple fruit, 4cm (1½in) across. ↑↔ 8m (25ft). \*\*\*

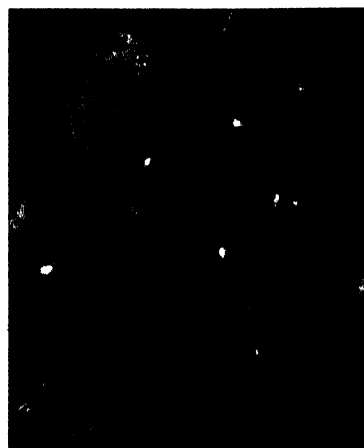
*Malus* 'Butterball' (inset: fruit detail)

**M. 'Crittenden'** ☐ Compact, spreading tree with oval, dark green leaves, to 9cm (3½in) long. Pink-flushed white flowers are produced in late spring, followed by profuse, glossy, scarlet fruit, 2.5cm (1in) across, which last well into winter. ↑↔ 7m (22ft), ↔ 8m (25ft). \*\*\*

**M. 'Dartmouth'** ☐–☐ Vigorous, broadly upright to rounded tree with elliptic to broadly ovate, dark green leaves, to 11cm (4½in) long. White flowers are produced from pink buds in late spring, followed by large, smooth, red-purple fruit, to 5cm (2in) across. ↑↔ 8m (25ft), ↔ 7m (22ft). \*\*\*

**M. 'Dolgo'** ☐ Vigorous, spreading tree with ovate, dark green leaves, to 8cm (3in) long. Fragrant white flowers are produced from pink buds in late spring, followed by ovoid-spherical, bright red-purple fruit, 5cm (2in) long. ↑↔ 11m (35ft), ↔ 10m (30ft). \*\*\*

**M. 'Dorothea'** ☐ Spreading tree with oval, dark green leaves, to 8cm (3in) long. Semi-double to double, silvery pink flowers are produced from darker buds in late spring, followed by yellow fruit, 1cm (½in) across. Slow-growing and susceptible to scab. ↑↔ 8m (25ft). \*\*\*

*Malus* 'Cowichan'

**M. 'Echtermeyer'** ☐☐ syn. *M. 'Okonomierat Echtermeyer'*. Weeping tree with oval, sometimes slightly lobed, bronze-green leaves, 8–10cm (3–4in) long, bronze-purple when young. Dark red-purple flowers are produced in late spring, followed by ovoid-spherical, purple-red fruit, 2.5cm (1in) long. ↑↔ 5m (15ft). \*\*\*

**M. 'Eleyi'** ☐ Spreading tree with oval, purple-green leaves, to 10cm (4in) long, bronze-purple when young. Dark red-purple flowers are produced in late spring, followed by obovoid purple fruit, 2.5cm (1in) long. ↑↔ 8m (25ft). \*\*\*

**M. 'Evereste'** ♀☐ Conical tree with oval, sometimes lobed, dark green leaves, 8–11cm (3–4½in) long. White flowers are freely produced from red buds in late spring, followed by red-flushed, orange-yellow fruit, 2.5cm (1in) across. ↑↔ 7m (22ft), ↔ 6m (20ft). \*\*\*

**M. floribunda** ☐☐ (Japanese crab apple). Dense, spreading tree with ovate, sometimes lobed, dark green leaves, to 8cm (3in) long. Pale pink flowers are produced in mid- and late spring, from red buds, followed by very small, pea-like yellow fruit, 2cm (¾in) across. ↑↔ 10m (30ft). Japan. \*\*\*

*Malus* 'Echtermeyer'*Malus floribunda*

**M. 'Frettingham's Victoria'** ☐ Upright tree with oval, dark green leaves, to 8cm (3in) long. White flowers are produced in late spring, followed by red-flushed yellow fruit, 4cm (1½in) across. ↑↔ 8m (25ft), ↔ 4m (12ft). \*\*\*

**M. 'Golden Hornet'** ♀☐ Rounded tree with oval, sharply toothed, bright green leaves, to 9cm (3½in) long. White flowers are produced from pink buds in late spring, followed by long-lasting, ovoid-spherical, golden yellow fruit, 2.5cm (1in) long. ↑↔ 10m (30ft), ↔ 8m (25ft). \*\*\*

**M. 'Hopa'** ☐ Spreading tree with oval, dark green leaves, to 10cm (4in) long, red-purple when young. Dark pink flowers, with white centres, open from red-purple buds in mid-spring, followed by bright red fruit, to 2.5cm (1in) across. ↑↔ 10m (30ft). \*\*\*

**M. hupehensis** ☐☐ Vigorous, spreading tree with elliptic to ovate, dark green leaves, to 10cm (4in) long. Fragrant white flowers are produced from pink buds in mid- and late spring, followed by cherry-like red fruit, 1cm (½in) across. ↑↔ 12m (40ft). China. \*\*\*

**M. 'Indian Magic'** ☐ Rounded tree with ovate, dark green leaves, 8–10cm (3–4in) long. Rose-pink flowers open from red buds in late spring, followed by long-lasting, ellipsoid, glossy red, later orange fruit, 1cm (½in) across. ↑↔ 6m (20ft). \*\*\*

**M. 'Jewelberry'** ☐ Dense, rounded tree or shrub with ovate, dark green leaves,

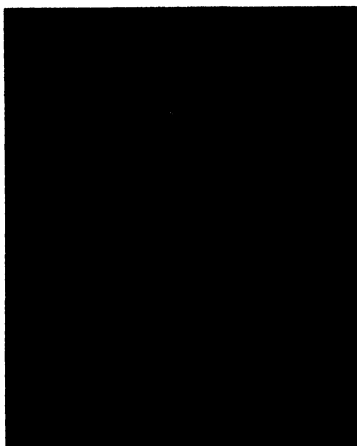
*Malus hupehensis*

*Malus* 'John Downie'

7–9cm (3–3½in) long. White flowers open from pink buds in late spring, followed by glossy red fruit, 1cm (½in) across, profusely borne, even on young trees. ↗ 5m (15ft). \*\*\*

**M. 'John Downie'** □ ♀ ♂–△ Narrow, upright tree, broadly conical when mature, with ovate, bright green leaves, to 10cm (4in) long. White flowers open from pale pink buds in late spring, followed by ovoid, orange and red fruit, to 3cm (1¼in) long. ↑ 10m (30ft), ↔ 6m (20ft). \*\*\*

**M. 'Katherine'** □ ♀ ♂ Open, rounded tree with oval, dark green leaves, to 8cm (3in) long. Large, double, pale pink flowers, maturing to white, are borne in mid- and late spring, followed by very small, pea-like, red-flushed yellow fruit, 1cm (½in) across. ↗ 6m (20ft). \*\*\*

*Malus* 'Lemoinei'

**M. 'Lemoinei'** □ ♂ Spreading tree with ovate or slightly lobed, dark red-purple leaves, to 8cm (3in) long, turning purple-green. Dark wine-red flowers are produced in late spring, followed by cherry-like, dark red-purple fruit, 1.5cm (½in) across. ↗ 8m (25ft). \*\*\*

**M. 'Liset'** □ ♂ Rounded tree with ovate, often lobed, bronze-green leaves, to 8cm (3in) long, reddish purple when young. Dark purple-pink flowers open from dark red buds in late spring, followed by cherry-like, dark purple-red fruit, 1cm (½in) across. ↗ 6m (20ft). \*\*\*

**M. 'Magdeburgensis'** □ ♂ Spreading tree with ovate, dark green leaves, to 8cm (3in) long. Dense clusters of semi-double, deep pink flowers are produced in late spring, sometimes followed by

*Malus* 'Liset'

yellow fruit, 1cm (½in) across. ↑ 6m (20ft), ↔ 6m (20ft). \*\*\*

**M. 'Marshall Oyama'** □ ♂ Broadly conical tree with elliptic, dark green leaves, to 8cm (3in) long. Pink-flushed white flowers are borne in late spring, followed by ovoid-spherical, yellow-flushed red fruit, to 4cm (1½in) long. ↑ 8m (25ft), ↔ 6m (20ft). \*\*\*

**M. 'Molten Lava'** ♂ Weeping tree with yellowish green winter bark and ovate, dark green leaves, 6–10cm (2½–4in) long. White flowers open from dark red buds in late spring, followed by orange-red fruit, 1cm (½in) across. ↑ 5m (15ft), ↔ 4m (12ft). \*\*\*

**M. 'Neville Copeman'** ♀ ♂ Spreading tree with oval, dark green leaves, to 10cm (4in) long, purplish red when young. Dark purple-pink flowers are borne in mid- and late spring, followed by orange-red to crimson fruit, 3.5cm (1½in) across. ↗ 9m (28ft). \*\*\*

**M. niedzwetskyana** □ syn. *M. pumila* var. *niedzwetskyana*. Spreading tree with oval, purple-green leaves, red when young, to 12cm (5in) long. Dark red-purple flowers are produced in late spring, followed by conical, red-purple fruit, to 5cm (2in) long. ↑ 6m (20ft), ↔ 8m (25ft). C. Asia. \*\*\*

**M. 'Okonomierat Echtermeyer'** see *M. 'Echtermeyer'*.

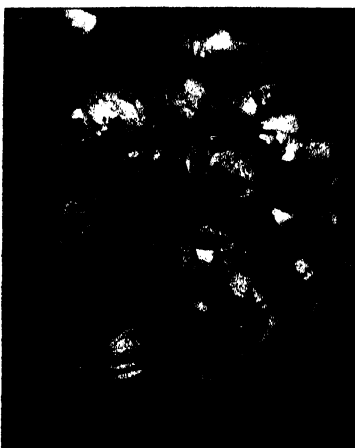
**M. 'Pink Spires'** ♂ Narrowly upright tree with ovate, red-purple young leaves, 6–12cm (2½–5in) long, maturing to bronze-green in summer. Lavender-pink flowers are produced from darker buds in mid- and late spring, followed by long-lasting, purple-red fruit, 1cm (½in) across. ↑ 6m (20ft), ↔ 4m (12ft). \*\*\*

*Malus* 'Marshall Oyama'

**M. prattii** ♂–♀ Broadly conical, upright tree, spreading with age, with ovate, tapered, mid-green leaves, to 12cm (5in) long, turning orange and red in autumn. Bears white flowers in late spring, followed by spherical to ovoid, white-speckled red fruit, 1cm (½in) across. ↗ 10m (30ft). W. China. \*\*\*

**M. 'Professor Sprenger'** □ ♂ Dense, rounded tree with broadly ovate, glossy, bright green leaves, to 8cm (3in) long, turning yellow in late autumn. In mid- and late spring, pink buds open to very fragrant white flowers, followed by long-lasting, orange-red fruit, to 1.5cm (½in) across. ↗ 7m (22ft). \*\*\*

**M. 'Profusion'** ♂ Spreading tree with elliptic, bronze-green leaves, to 8cm (3in) long, purple-red when young. Dark purple-pink flowers are freely

652 *Malus* 'Katherine' (inset: flower detail)*Malus niedzwetskyana**Malus* 'Magdeburgensis'*Malus* 'Professor Sprenger'





*Malus prunifolia*

produced in late spring, followed by cherry-like, reddish purple fruit, 1cm (½in) across. ‡↔ 10m (30ft). \*\*\*

***M. prunifolia*** □ ◊ Spreading tree with elliptic to ovate, dark green leaves, to 10cm (4in) long. Fragrant white flowers open from pink buds in mid-spring, followed by long-lasting, spherical to ovoid, red or sometimes yellow fruit, 2.5cm (1in) across. ‡↔ 9m (28ft). Probably China. \*\*\*

***M. pumila* var. *niedzwetskyana*** see *M. niedzwetskyana*.

***M. x purpurea*** □ (*M. atrosanguinea* x *M. niedzwetskyana*). Erect, open tree with broadly ovate, sometimes lobed, dark green leaves, to 10cm (4in) long. The young wood and spring foliage are both purplish red. Purplish pink flowers open from ruby-red buds in mid-spring, followed by dark red fruit, 2–2.5cm (¾–1in) across. Several cultivars listed here under their own names, *M.*

'Aldenhamensis', *M.* 'Eleyi', and *M.* 'Lemoinei', are sometimes referred to this hybrid. ‡4–7m (12–22ft), ↔ 2–4m (6–12ft). Garden origin. \*\*\*

***M. 'Red Barron'*** ◊ Broadly upright tree with ovate, bronze-green leaves, 6–10cm (2½–4in) long, purple when young. Dark pink flowers open from dark red buds in late spring, followed by glossy, dark red fruit, 1cm (½in) across. ‡↔ 6m (20ft). \*\*\*

***M. 'Red Jade'*** ♀ Weeping tree with ovate, tapered, glossy, mid-green leaves, to 9cm (3½in) long. White or pink-flushed flowers are produced from red buds in late spring, followed by ovoid, glossy, bright red fruit, to 1.5cm (½in) long. ‡4m (12ft), ↔ 6m (20ft). \*\*\*



*Malus 'Red Sentinel'*



*Malus 'Royalty'* (inset: flower detail)

***M. 'Red Sentinel'*** □ ◊ Broadly upright tree with ovate, dark green leaves, to 8cm (3in) long. White flowers are produced in late spring, followed by long-lasting, yellow-flushed red, later glossy, dark red fruit, 2.5cm (1in) across. ‡↔ 7m (22ft). \*\*\*

***M. 'Red Siberian'*** see *M. x robusta* 'Red Siberian'.

***M. 'Red Silver'*** ◊ Spreading tree with ovate leaves, grey-hairy at first, turning purple-red and hairless, then dark green, to 8cm (3in) long. Dark red-purple flowers are produced in late spring, followed by purple fruit, 2cm (¾in) across. ‡6m (20ft), ↔ 7m (22ft). \*\*\*

***M. x robusta* 'Red Siberian'** ♀ ◊ syn. *M. 'Red Siberian'*. Vigorous, spreading tree with ovate, dark green leaves, to 10cm (4in) long. In mid- and late spring, produces abundant pink-tinged white flowers followed by long-lasting red fruit, 2cm (¾in) across. ‡12m (40ft), ↔ 10m (30ft). \*\*\*. **'Yellow Siberian'** ♀ syn. *M. 'Yellow Siberian'*, has yellow fruit.

***M. 'Royal Beauty'*** ♀ ♀ Small, weeping tree with elliptic, reddish purple leaves, to 6cm (2½in) long, turning dark green, purple beneath. Dark red-purple flowers



*Malus sieboldii*

are produced in late spring, followed by dark red fruit, 1cm (½in) across. ‡2m (6ft), ↔ 2.5m (8ft). \*\*\*

***M. 'Royalty'*** □ ◊ Spreading tree with ovate, dark red-purple leaves, to 10cm (4in) long, retaining colour well and turning red in autumn, the larger leaves often slightly lobed. Crimson-purple flowers are produced in mid- and late spring, followed by dark red fruit, 1.5cm (½in) across. ‡↔ 8m (25ft). \*\*\*

***M. 'Rudolph'*** ◊ Upright tree with ovate, glossy, dark green leaves, to 7cm (3in) long, reddish purple when young. Rose-red flowers open from darker red buds in late spring, followed by long-lasting, orange-yellow fruit, 1.5cm (½in) long. ‡7m (22ft), ↔ 4m (12ft). \*\*\*

***M. sargentii*** ◊ syn. *M. toringo* subsp. *sargentii*. Spreading shrub or tree with ovate or 3-lobed, dark green leaves, to 8cm (3in) long. Abundant white flowers are produced in late spring, followed by long-lasting, dark red fruit, 8mm (⅜in) across. ‡4m (12ft), ↔ 5m (15ft). Japan. \*\*\*

***M. sieboldii*** □ syn. *M. toringo*. Spreading shrub with arching branches and ovate to deeply 3- to 5-lobed leaves, to 6cm (2½in) long. Fragrant white



*Malus 'Striped Beauty'*

flowers open from pink buds in mid-spring, followed by slender-stalked, red or yellow fruit, 1cm (½in) across. ‡2.5m (8ft), ↔ 3m (10ft). Japan. \*\*\*

**'Calocarpa'** see *M. x zumi* 'Calocarpa'.

***M. 'Snowdrift'*** ◊ Dense, rounded tree with elliptic to ovate, glossy, dark green leaves, to 10cm (4in) long. Abundant white flowers open from pink buds in late spring, followed by long-lasting, glossy, orange-red fruit, 1.5cm (½in) across. ‡↔ 6m (20ft). \*\*\*

***M. spectabilis*** ◊ Rounded tree with oval, glossy, dark green leaves, to 9cm (3½in) long. Blush-pink flowers are produced from rose-red buds in mid- and late spring, followed by yellow fruit, to 2.5cm (1in) across. ‡↔ 10m (30ft). Probably China. \*\*\*

***M. 'Spring Snow'*** ◊ Dense, upright tree with oval, bright green leaves, 3–8cm (1¼–3in) long. Abundant fragrant white flowers are borne in late spring. Fruit are seldom produced. ‡8m (25ft), ↔ 6m (20ft). \*\*\*

***M. 'Striped Beauty'*** □ ◊ Spreading tree with broadly elliptic, dark green leaves, to 12cm (5in) long. Bears white flowers in late spring, followed by red-striped yellow fruit, 2.5cm (1in) across. ‡↔ 7m (22ft). \*\*\*

***M. sylvestris*** ◊ (Common crab apple, Wild crab apple). Rounded, sometimes thorny tree with ovate, mid-green leaves, 4–8cm (1½–3in) long. Pink-flushed white flowers are produced in late spring, followed by greenish yellow, red-flushed fruit, to 2.5cm (1in) across. ‡9m (28ft), ↔ 7m (22ft). Europe. \*\*\*

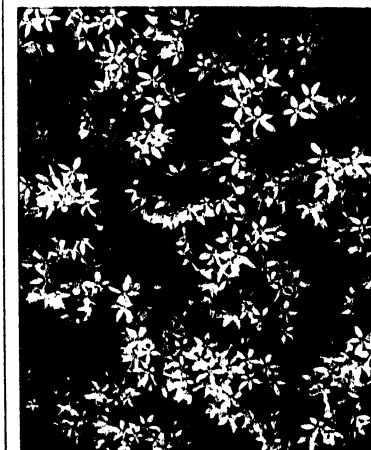
***M. toringo*** see *M. sieboldii*.

***M. toringo* subsp. *sargentii*** see *M. sargentii*.

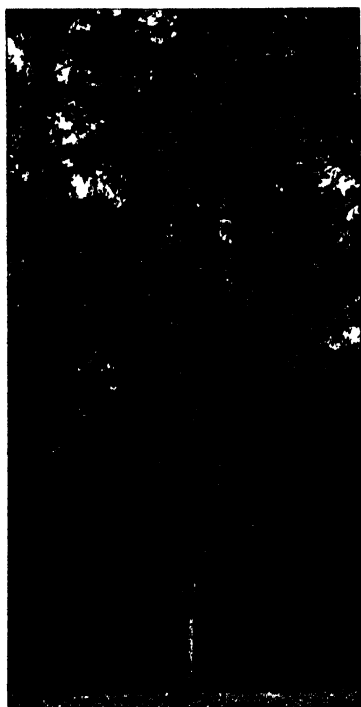
***M. toringoides*** ◊ Spreading tree with ovate to lance-shaped, usually deeply 3- to 7-lobed, mid-green leaves, to 9cm (3½in) long. Slightly fragrant, creamy white flowers are produced in late spring, followed by spherical to ovoid yellow fruit, to 1.5cm (½in) long. ‡8m (25ft), ↔ 10m (30ft). W. China. \*\*\*

***M. transitoria*** □ ♀ ◊ Elegant, spreading tree with oblong to deeply 3-lobed, bright green leaves, 2–3cm (¾–1¼in) long, turning yellow in autumn. In late spring, white flowers open from pink buds, followed by very small, pea-like yellow fruit, 8mm (⅜in) long, on slender red stalks. ‡8m (25ft), ↔ 10m (30ft). N.W. China. \*\*\*

***M. trilobata*** ◊ Conical tree with maple-like, 3-lobed, glossy, bright green leaves, to 9cm (3½in) long, the lobes



*Malus transitoria*

*Malus tschonoskii*

sometimes further lobed, turning yellow, red, and purple in autumn. White flowers are produced in early summer, followed by ellipsoid, red-flushed green fruit, 2cm (¾in) long. † 15m (50ft), ↔ 7m (22ft). Greece, Syria, Lebanon, Israel. \*\*\*

***M. tschonoskii*** □ Erect tree with broadly ovate, glossy, mid-green leaves, to 12cm (5in) long, turning brilliant orange, red, and purple in autumn. In late spring, bears pink-flushed white flowers, followed by red-flushed, yellow-green fruit, 3cm (1¼in) across. † 12m (40ft), ↔ 7m (22ft). Japan. \*\*\*

***M. 'Van Eseltine'*** □ Upright tree with ovate, glossy, mid-green leaves, to 9cm (3½in) long. Double pink flowers are produced in late spring, followed by red-flushed yellow fruit, 1.5cm (½in) across, which fall early. † 8m (25ft), ↔ 6m (20ft). \*\*\*

***M. 'Veitch's Scarlet'*** □ □ Upright, spreading tree with ovate to elliptic, dark green leaves, to 8cm (3in) long. White flowers are produced in late spring, followed by ellipsoid, crimson-flushed scarlet fruit, 4.5cm (1¾in) long. † 9m (28ft). \*\*\*

***M. 'Weeping Candied Apple'*** see *M. 'Candied Apple'*.

***M. 'White Cascade'*** □ Weeping tree with ovate, dark green leaves, 6–10cm (2½–4in) long. Abundant white flowers open from pink buds in late spring, followed by small, greenish yellow fruit, 1cm (½in) across. † 5m (15ft). \*\*\*

***M. 'Winter Gold'*** □ Rounded tree with elliptic, often slightly lobed leaves, to 7cm (3in) long, bronze-tinged when young. White flowers open from pink buds in mid- and late spring, followed by long-lasting, lemon-yellow fruit, 1cm (½in) across. † 6m (20ft). \*\*\*

***M. 'Wisley'*** □ Rounded tree with elliptic to obovate leaves, to 10cm (4in) long, bronze-red at first, turning dark green. Lightly fragrant, dark purple-red flowers are produced in late spring, followed by large, conical, dark red fruit, 7cm (3in) long. † 6m (20ft). \*\*\*

*Malus 'Veitch's Scarlet'*

***M. 'Yellow Siberian'*** see *M. x robusta* 'Yellow Siberian'.

***M. yunnanensis*** □ Broadly upright tree with ovate, sometimes shallowly lobed, pale green leaves, to 12cm (5in) long, with pale brown, felted hairs beneath, turning orange, red, and purple in autumn. White, sometimes pink-tinged flowers are borne in late spring, followed by speckled red fruit, 1.5cm (½in) across. † 6–12m (20–40ft), ↔ 6m (20ft). S.W. China. \*\*\*

***M. x zumi* 'Calocarpa'** □ syn. *M. sieboldii* 'Calocarpa'. Upright, pyramidal to rounded tree with ovate, frequently deeply lobed, dark green leaves, to 9cm (3½in) long. White flowers open from pink buds in late spring, followed by long-lasting, cherry-like, bright red fruit, 1cm (½in) across. † 9m (28ft), ↔ 8m (25ft). \*\*\*

## MALVA

Mallow

MALVACEAE

Genus of about 30 species of annuals, biennials, and perennials, sometimes woody-based, occurring in dry, open habitats, waste ground, roadsides, and hedge banks in Europe, N. Africa, and temperate Asia, and widely naturalized elsewhere. The alternate, rounded or heart- or kidney-shaped leaves are entire, toothed, or shallowly 3- to 9-lobed, sometimes pinnatisect. The 5-petalled, shallowly funnel-shaped, or saucer- to cup-shaped, purple, blue, pink, or white flowers are produced singly, in clusters from the leaf axils, or sometimes in leafy, terminal racemes. An involucre of 1–3 distinct bracts is usually produced below the flowers (distinguishing *Malva* species and cultivars from those of the genus *Lavatera*, which have 3–9 joined bracts). Mallows are easily grown and produce long-lasting, often showy flowers; they are suitable for an annual, herbaceous, mixed, or shrub border, or for a wildflower garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Provide support, especially in rich soils. Perennials are often short-lived, but will self-seed.

• **PROPAGATION** Sow seed *in situ* or in containers in early spring or early summer. Root basal cuttings of perennials in spring.

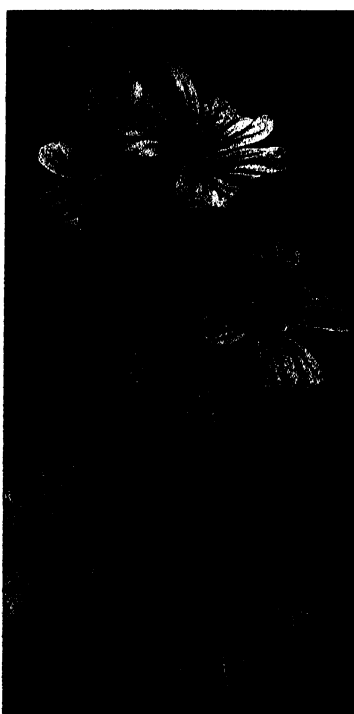
• **PESTS AND DISEASES** Susceptible to rust and leaf spot.

*Malva moschata*

***M. alcea*** (Hollyhock mallow). Erect, bushy, hairy, woody-based perennial with heart-shaped, scalloped, light green lower leaves, to 30cm (12in) long, and deeply pinnatisect upper leaves, to 15cm (6in) long. From early summer to early autumn, open funnel-shaped, purplish pink flowers, 5–7cm (2–3in) across, the petals slightly notched, are produced in terminal racemes and axillary clusters. † 1.2m (4ft), ↔ 60cm (24in). S. Europe. \*\*\*

**var. *fastigiata*** is narrow and upright, bearing deep pink flowers well into autumn; † to 80cm (32in). ***M. moschata*** □ (Musk mallow). Erect, bushy, woody-based perennial with slightly musk-scented leaves, to 10cm (4in) long, the lower ones heart-shaped and the upper ones pinnatisect. From early summer to early autumn, bears saucer-shaped, pale pink or white flowers, 4–6cm (1½–2½in) across, in axillary clusters. † 90cm (36in), ↔ 60cm (24in). Europe, N.W. Africa. \*\*\*

***M. nicaensis***. Erect, slightly hairy annual or biennial with semi-circular, shallowly 3- to 7-lobed, blunt-toothed leaves, to 10cm (4in) long, the leaf-stalks often considerably longer than the leaf-blades. In summer, saucer-shaped

*Malva sylvestris* 'Primley Blue'

pink or lilac-pink flowers, to 3.5cm (1½in) across, with hairy petal bases, are borne singly or in clusters from the upper leaf axils. † to 50cm (20in), ↔ 23cm (9in). Mediterranean, Arabian Peninsula to Iran, S. Russia. \*\*\*

***M. sylvestris***. Erect to spreading, bushy, hairy, woody-based perennial, occasionally biennial. Broadly heart-shaped to rounded, shallowly 3- to 7-lobed leaves are dark green, to 10cm (4in) long. From late spring to mid-autumn, produces axillary clusters of open funnel-shaped, pinkish purple flowers, to 6cm (2½in) across, with notched petals and darker purple veins. † to 1.2m (4ft), ↔ 60cm (24in). N. Europe, N. Africa, S.W. Asia. \*\*\*

**f. *alba*** has white flowers; † to 80cm (32in). **'Brave Heart'** is upright, with large purple flowers, to 8cm (3in) across, with strong veins and dark purple centres; † to 90cm (36in). **'Cottenham Blue'** is early-flowering, and has pale blue flowers, veined darker blue; † to 75cm (30in). **'Primley Blue'** □ is prostrate, and produces pale blue-violet flowers, veined darker blue; † to 20cm (8in), ↔ 30–60cm (12–24in).

## MALVASTRUM

MALVACEAE

Genus of about 30 species of spreading to erect, evergreen, sometimes semi-evergreen perennials and shrubs, found on rock outcrops, rocky areas of prairies, and alluvial soils in arid and semi-arid areas of North and South America. The alternate, entire or lobed leaves are lance-shaped to rounded, 2.5–11cm (1–4½in) long, often with toothed margins. They are usually cultivated for their attractive, funnel- or cup-shaped, yellow, orange, pink, or red flowers, either solitary and axillary, or borne in terminal or axillary racemes or spikes. Grow in a sunny border or on a bank. In frost-prone areas, grow tender species in a cool greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in well-drained soil in full sun. Trim back any excess growth or dead shoots in spring.

• **PROPAGATION** Sow seed in containers in spring. Insert softwood cuttings in late spring or summer.

• **PESTS AND DISEASES** Trouble free.

***M. capensis*** see *Anisodontea capensis*.

***M. coccineum*** see *Sphaeralcea coccinea*.

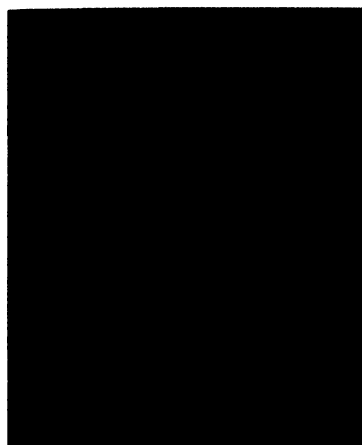
***M. lateritium***. Prostrate perennial with alternate, rounded leaves, 8cm (3in) long, with 3–5 wedge-shaped to oblong lobes. Solitary, cup-shaped, peach-coloured flowers, 5cm (2in) across, with yellow anthers and deep yellow centres surrounded by deep rose-pink bands, are produced from late spring to summer. † 20cm (8in), ↔ 1.5m (5ft). Argentina, Uruguay. \*\*\* (borderline)

## MALVAVISCUS

Sleepy mallow

MALVACEAE

Genus of 3 species of evergreen shrubs found in coppices and thickets, often in coastal areas, in tropical North and South America. They have alternate, simple to palmately lobed, toothed, pale to mid-green leaves, and solitary, axillary or terminal racemes of long-stemmed,

*Malva viscus arboreus*

pendent, red, pink, or white flowers. The flowers are similar to those of *Hibiscus*, although the long petals only partially unfurl, producing a narrowly funnel-shaped outline. In frost-prone climates, grow in a temperate or warm greenhouse. In warmer areas, grow in a shrub border or as an informal hedge.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, or full light with shade from hot sun. In growth, water freely, and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun; tolerates partial shade. Pruning group 8.
- **PROPAGATION** Sow seed at 15–21°C (59–70°F) in spring. Root softwood cuttings with bottom heat in spring, or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Susceptible to red spider mites, whiteflies, and mealybugs under glass.

*M. arboreus* ☐ syn. *M. mollis* (Wax mallow). Large, erect to spreading, usually freely branching shrub with densely velvety, downy stems and leaves. Bright green leaves are broadly ovate to heart-shaped, 6–12cm (2½–5in) long, and sometimes 3-lobed. Axillary, bright red flowers, to 5cm (2in) long, are borne mainly in late summer and early autumn. ‡ to 4m (12ft) or more, ↔ 1.5–3m (5–10ft). S.E. USA, Mexico to Colombia, Peru, Brazil. ☐ (min. 10°C/50°F). var. *drummondii*, syn. *M. conzattii*, *M. grandiflorus*, has rounded, symmetrically lobed leaves, and flowers to 3cm (1¼in) long; S.W. USA, Mexico to Colombia. var. *mexicanus* is almost hairless, with lance-shaped to ovate leaves; Mexico to Colombia.

*M. candidus*. Erect, freely branching shrub with hairy stems. Hairy, mid-green leaves, to 18cm (7in) long, are broadly ovate to rounded, with 5-lobed, heart-shaped bases. Red flowers, 3cm (1¼in) long, are produced in terminal racemes in summer. ‡ to 4m (12ft), ↔ to 2m (6ft). Mexico. ☐ (min. 8°C/46°F).

*M. conzattii* see *M. arboreus* var. *drummondii*.

*M. grandiflorus* see *M. arboreus* var. *drummondii*.

*M. mollis* see *M. arboreus*.

▷ *Mammillopsis senilis* see *Mammillaria senilis*

## MAMMILLARIA

### CACTACEAE

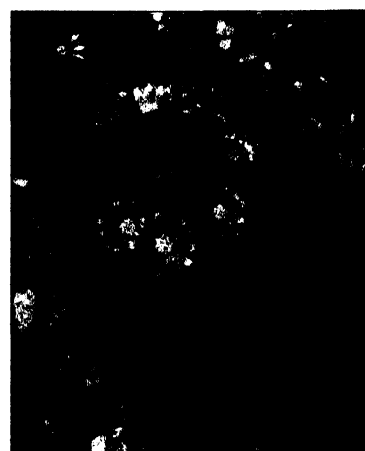
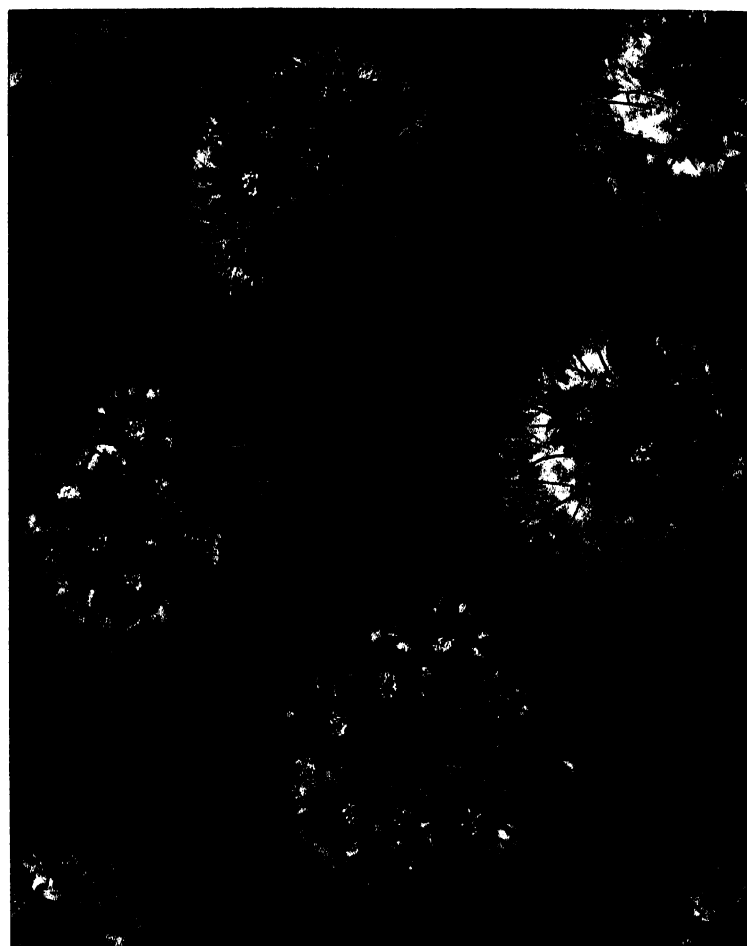
Genus of about 150 species of spherical to cylindrical or columnar, perennial cacti from semi-desert regions, mainly in Mexico, but also in S. USA, the West Indies, Central America, Colombia, and Venezuela. Most offset freely to form clusters. Conical, cylindrical, or somewhat flattened tubercles encircle spined stems. The funnel-shaped, diurnal, white to yellow, orange, red, pink, or purple flowers are mostly borne in a ring around the crown. The berry-like fruits are oblong-ovoid to club-shaped. In frost-prone areas, grow in a temperate greenhouse or as houseplants. In warmer areas, grow on a gentle slope or raised ground in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun. Provide low humidity. From mid-spring to autumn, water freely, applying a balanced liquid fertilizer monthly in late spring and summer; water sparingly in winter. Outdoors, grow in poor or moderately fertile, sharply drained soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in late winter or early spring. Remove offsets in early spring.
- **PESTS AND DISEASES** Vulnerable to mealybugs and root mealybugs.

*M. armillata*. Clustering or solitary cactus with narrowly columnar, dull green stems, 4.5cm (1¾in) thick, and brown or brown-yellow spines (9–15 radials, one or more of which is hooked, and 1–4 centrals). Pale pink, creamy white, or pale yellow flowers, 2cm (¾in) long, are borne in summer. ‡ to 30cm (12in), ↔ indefinite. N.W. Mexico. ☐ (min. 7–10°C/45–50°F)

*M. baumii* ♀ syn. *Dolichothele baumii*. Clustering cactus with spherical to ovoid, mid-green stems, 3–6cm (1¼–2½in) thick. The areoles produce 30–35 thread-like white radial spines and 5 or 6 longer, pale yellow centrals. Bright yellow flowers, 3cm (1¼in) long, are produced in summer. ‡ 8cm (3in), ↔ 12cm (5in). N.E. Mexico. ☐ (min. 7–10°C/45–50°F)

*M. blossfeldiana*, syn. *M. shurliana*. Solitary or clustering cactus with spherical to short, cylindrical, dark green

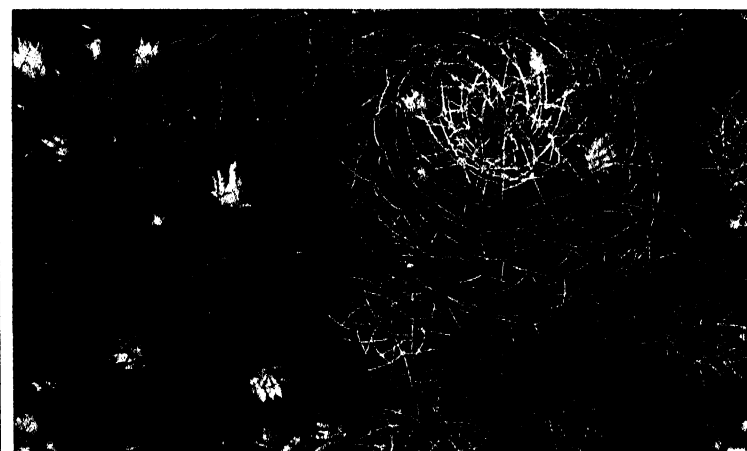
*Mammillaria bocasana**Mammillaria bombycina*

stems, 4cm (1½in) thick, bearing close-set areoles with 15–20 black-tipped yellow radial spines and 3 or 4 black centrals, one of which is hooked. In summer, bears pale pink flowers, 3.5cm (1½in) long, with deep carmine-red median lines. ‡ 4cm (1½in). N.W. Mexico. ☐ (min. 7–10°C/45–50°F)

*M. bocasana* ☐♀ (Snowball cactus). Clump-forming cactus with spherical, white-hairy, dark bluish green stems, to 5cm (2in) thick. Close-set areoles bear 25–50 spreading white radial spines and 1 or 2 (sometimes up to 5) red or brown-yellow centrals. From spring to summer, bears yellowish white flowers, 1.5cm (½in) long, with red or pink median lines and often red-tipped petals. ‡ 5cm (2in), ↔ indefinite. C. Mexico. ☐ (min. 7–10°C/45–50°F)

*M. bombycina* ☐♀ Densely clustering cactus with spherical to cylindrical, mid-green stems, 5–8cm (2–3in) thick, densely white-woolly in the axils. Areoles bear 30–40 white radial spines and 2–4 longer, white to yellow or red-brown centrals, one of which is hooked and twice as long as the other centrals. Produces reddish purple flowers, 1.5cm (½in) long, from spring to summer. ‡ 20cm (8in), ↔ indefinite. W. central Mexico. ☐ (min. 7–10°C/45–50°F)

*M. camptotricha* ☐ syn. *Dolichothele camptotricha*. Freely clustering cactus with spherical, deep green stems, 7cm (3in) thick, the areoles with 2–8 pale yellow radial spines, but no centrals. Produces scented white flowers, to 2cm (¾in) long, each with a green median line, from summer to autumn. ‡ to 8cm

*Mammillaria camptotricha*

(3in), ↔ 20cm (8in). E. central Mexico. ☼ (min. 7–10°C/45–50°F)

**M. candida** ♀ (Snowball cushion cactus). Slow-growing, solitary or clustering cactus with spherical to cylindrical, mid-green stems, 6–12cm (2½–5in) thick, with 4–7 white bristles in each axil. White-felted areoles bear white, often brown- or pink-tipped spines (50 radials and 8–12 centrals). Bears rose-pink flowers, 2cm (¾in) long, with white margins, from spring to summer. ‡↔ 15cm (6in). N.E. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. carmenae** ♂♀ Clustering cactus with spherical to ovoid, mid-green stems, 3–4cm (1¼–1½in) thick, with white wool and long white bristles in the axils. The areoles bear 100 or more white or cream radial spines but no centrals. Pink- or cream-flushed white flowers, 1cm (½in) long, are produced from spring to summer. ‡ to 8cm (3in), ↔ 15cm (6in). E. central Mexico. ☼ (min. 7–10°C/45–50°F)

**M. centricirrha** see *M. magnimamma*.

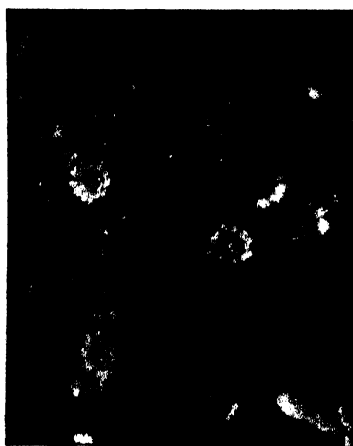
**M. conoidea** see *Neolloydia conoidea*.

**M. crucigera**. Clustering, branching cactus with depressed spherical or cylindrical to obovoid, dark brownish green stems, 3–5cm (1¼–2in) thick, with white-woolly axils and areoles. The areoles bear 24 or more needle-like white radial spines and usually 4 longer, thicker, waxy-yellow, brown- or black-tipped centrals. Pinkish purple flowers, 1.5cm (½in) long, are produced in summer. ‡ to 15cm (6in), ↔ indefinite. S. Mexico. ☼ (min. 7–10°C/45–50°F)

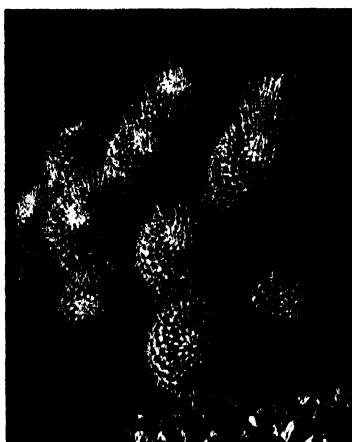
**M. dealbata** see *M. haageana*.

**M. densispina**. Solitary cactus with spherical or cylindrical, dark green stems, to 10cm (4in) thick, and white-woolly areoles bearing about 25 yellow or pale brown radial spines and 5 or 6 longer, reddish brown, black-tipped centrals. Sulphur-yellow flowers, 2cm (¾in) long, often with red-flushed outer petals, are produced from spring to summer. ‡↔ 10cm (4in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. elongata** ♀ (Gold lace cactus). Variable, densely clustering cactus with cylindrical, mid-green stems, 1–3cm (½–1¼in) thick, and white, yellow, or dark reddish brown spines (15–20 radials and up to 3 centrals, although the centrals may be absent). Bears white or yellow, sometimes faintly pink-striped flowers, to 1.5cm (½in) long, in summer. ‡ 15cm (6in), ↔ 30cm (12in). C. Mexico. ☼ (min. 7–10°C/45–50°F)



*Mammillaria carmenae*



*Mammillaria geminispina*

**M. geminispina** ♂♀ Solitary cactus, later offsetting and forming mounds, producing spherical, mid-green stems, 8cm (3in) thick, becoming cylindrical. The white-woolly areoles bear white spines (16–20 radials and 2–4 longer, often brown-tipped centrals). White to creamy white flowers, 1.5cm (½in) or more long, with carmine-red stripes, are produced from summer to autumn. ‡ 25cm (10in), ↔ 50cm (20in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. gracilis**. Freely clustering cactus producing cylindrical, fresh green stems, 3–4.5cm (1¼–1¾in) thick, and slightly woolly areoles with 3–5 brown central spines and 12–17 shorter, yellowish white radials. From spring to summer, bears yellowish white flowers, 1.5cm (½in) long, with pink or white median

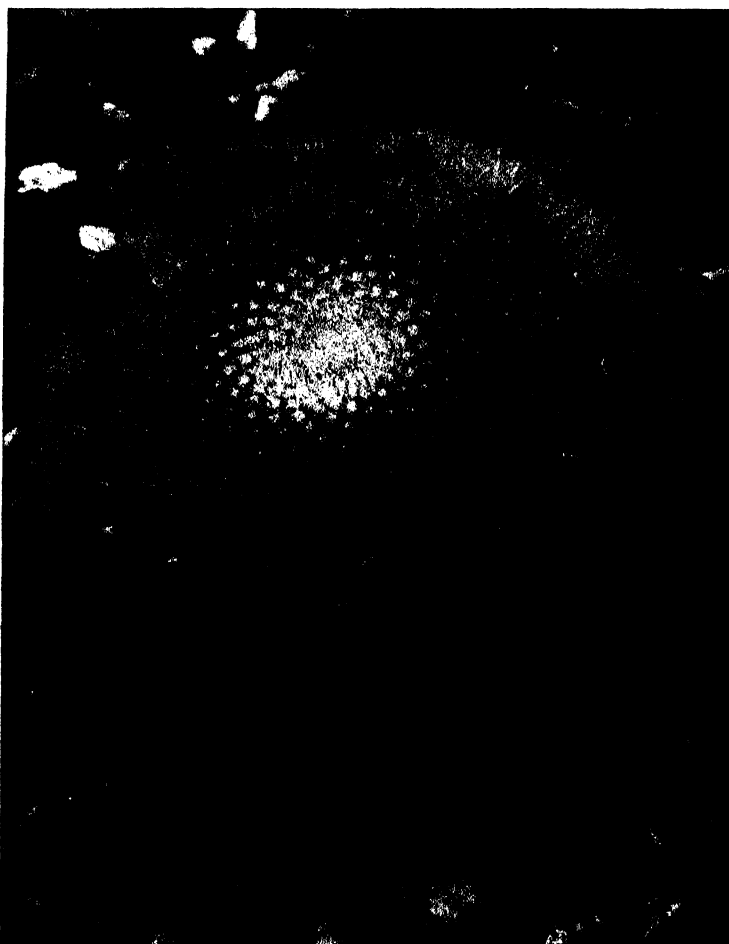


*Mammillaria magnimamma*

lines. Offsets fall away at the least touch. ‡ 5cm (2in), ↔ 20cm (8in). E. central Mexico. ☼ (min. 7–10°C/45–50°F). **var. fragilis** has 2 brown-tipped white central spines per areole; ‡ to 4cm (1½in), ↔ to 12cm (5in).

**M. haageana**, syn. *M. dealbata*. Cactus offsetting from the base and sides, with spherical or cylindrical, mid-green stems, 10cm (4in) thick, with slightly woolly axils. Areoles bear 18–20 thin white radial spines and 1 or 2 longer, black-tipped, red-brown centrals. Bears carmine-red flowers, 1.5cm (½in) long, from spring to summer. ‡ 15cm (6in), ↔ 24cm (10in). C. and S.E. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. hahniana** ♂♀ (Old lady cactus). Solitary cactus, forming groups when mature, with spherical, mid-green stems,



*Mammillaria hahniana*



*Mammillaria microbelia*

12cm (5in) thick, coated with long white hairs, bristles, and spines (20–30 fine, hair-like radials and 1–3 or more shorter, dark-tipped centrals). Purplish red flowers, to 1cm (½in) long, are produced from spring to summer. ‡ to 20cm (8in), ↔ to 40cm (16in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. herrerae**. Solitary or clustering cactus with spherical, mid-green stems, 2–3cm (¾–1¼in) thick, occasionally elongating slightly with age, and densely coated with about 100 near-white radial spines but no centrals. Pale pink to reddish violet flowers, 2.5cm (1in) long, are produced from spring to summer. ‡↔ 3–4cm (1¼–1½in). C. Mexico. ☼ (min. 7–10°C/45–50°F). **var. albiflora** has pure white flowers.

**M. magnimamma** ♂ syn. *M. centricirrha*. Extremely variable, freely clustering cactus with spherical, greyish green stems, 10–15cm (4–6in) thick, and white-woolly axils and areoles, the latter with 3–6 brown-tipped, yellowish white radial spines of unequal length, but no centrals. From spring to summer, bears purple-red to pink or brownish yellow flowers, 2.5cm (1in) long. ‡ to 30cm (12in), ↔ to 60cm (24in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. mazatlanensis**. Clustering cactus with cylindrical, greyish green stems, 4cm (1½in) thick. Rounded, woolly areoles bear 12–15 white radial spines and 3 or 4 longer, hooked, glossy, reddish brown centrals with cream bases. Bright carmine-red flowers, 4cm (1½in) long, develop in summer. ‡ 12cm (5in), ↔ 30cm (12in). W. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. microbelia** ♂ Solitary or clustering cactus with cylindrical, greyish green stems, 3.5–5cm (1½–2in) thick, densely covered with spines (up to 50 golden yellow to pale brown-white radials and up to 8, shorter, dark red-brown centrals, although these may be absent). Bears creamy white, occasionally pink-suffused flowers, to 1.5cm (½in) long, from spring to summer. ‡↔ 15cm (6in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

**M. mystax**. Clustering or solitary cactus with spherical to cylindrical, grey-green stems, 10cm (4in) thick, with white wool and bristles in the axils. The areoles bear 5–10 brown-tipped white radial spines and 3 or 4 longer, purplish grey centrals. From spring to summer, bears purplish pink flowers, 2.5cm (1in) long. ‡ to 15cm (6in), ↔ 24cm (10in). S. Mexico. ☼ (min. 7–10°C/45–50°F)

*Mammillaria plumosa*

***M. plumosa*** ☐♀ Clustering cactus with spherical, mid-green stems, 7cm (3in) thick, and white-woolly axils. The areoles bear about 40 feathery white radial spines but no centrals. Greenish white or pale yellow flowers, 1.5cm (½in) long, with reddish brown median lines, are borne in late summer. ↑ 12cm (5in), ↔ 40cm (16in). N.E. Mexico. ☼ (min. 7–10°C/45–50°F)

***M. rhodantha***. Solitary cactus with mostly spherical to cylindrical, mid-green stems, 10–12cm (4–5in) thick, and white-woolly axils. The areoles bear 16–24 straight, glossy, white to yellow radial spines and 4–7 longer, often curved, red-brown, occasionally straw-coloured or golden yellow centrals. Purplish pink flowers, 2cm (¾in) long, are borne in summer. ↑ 40cm (16in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

***M. schiedeana***. Solitary or clustering cactus with slightly depressed spherical, mid-green stems, 4–6cm (1½–2½in) thick, with long, woolly hairs in the axils. The areoles bear 70–80 yellow to white radial spines but no centrals. Cream flowers, 2cm (¾in) long, are produced from summer to autumn. ↑ 10cm (4in), ↔ 30cm (12in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

***M. sempervivi***. Solitary to clump-forming cactus with depressed spherical to short, cylindrical, dark green stems, to 10cm (4in) thick, often elongating, and densely woolly in the axils. The areoles bear 3–7 white radial spines and 2–4 slightly longer, yellow-brown or red centrals. White or yellowish pink flowers, 1cm (½in) long, with red median lines, are borne from spring to

summer. ↑ 8cm (3in). C. Mexico.

☼ (min. 7–10°C/45–50°F)

***M. senilis***, syn. *Mamilopsis senilis*. Slow-growing, solitary cactus, eventually clustering, with spherical to cylindrical, pale green stems, 6–10cm (2½–4in) thick, white-woolly, bristly axils, and white spines (30–40 radials and 4–6 longer centrals, 1 or 2 of which are hooked). Violet- or orange-red flowers, 6cm (2½in) long, with slender tubes, are borne from spring to summer. ↑ 15cm (6in), ↔ to 40cm (16in). N.W. Mexico. ☼ (min. 7–10°C/45–50°F)

***M. shurliana*** see *M. blossfeldiana*.

***M. zeilmanniana*** ☐♀ Clustering cactus with spherical, dark green stems, 4.5cm (1¾in) thick, with bare axils. The areoles bear 15–18 hair-like white radial spines and 4 shorter, reddish brown centrals, 1 of which is hooked. Reddish violet, pink, or white flowers, to 2cm (¾in) long, are produced in summer. ↑ 15cm (6in), ↔ 30cm (12in). C. Mexico. ☼ (min. 7–10°C/45–50°F)

▷ **Mandarin** see *Citrus reticulata*

## MANDEVILLA

syn. DIPLADENIA

APCYNACEAE

Genus of about 120 species of mainly tuberous-rooted, woody-stemmed, twining climbers, with some perennials, from tropical woodland in Central and South America. Opposite, simple leaves are borne on stems containing a milky latex. They have often showy, funnel-shaped to tubular-salverform flowers, each with 5 broad, spreading petal lobes, borne mainly in axillary racemes. Use to clothe a pergola, arch, or trellis, or grow as a screen. In frost-prone climates, grow in a temperate or warm greenhouse. Contact with the sap may cause skin irritation, and all parts may cause mild stomach upset if ingested.

• **HARDINESS** Frost tender; *M. laxa* may survive temperatures near to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), in full light with shade from hot sun. In the growing season, water moderately, and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with some midday shade. Pruning group 12, in late winter or early spring.

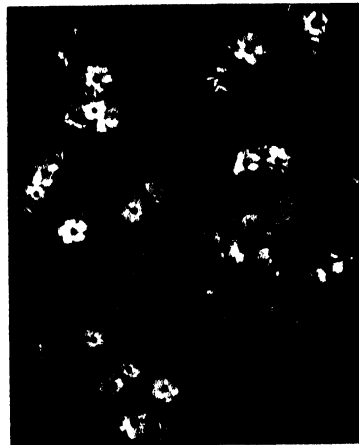
• **PROPAGATION** Sow seed at 18–23°C (64–73°F) in spring. Root softwood cuttings in late spring or semi-ripe cuttings in summer, with bottom heat.

• **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be troublesome under glass.

***M. x amabilis*** 'Alice du Pont' see *M. x amoena* 'Alice du Pont'.

***M. x amoena*** 'Alice du Pont' ☐ syn. *M. x amabilis* 'Alice du Pont'. Woody-stemmed, twining climber bearing elliptic-oblong to ovate-oblong, slightly wrinkled, mid- to deep green leaves, 9–18cm (3½–7in) long, with short points. Racemes of up to 20 narrowly funnel-shaped, glowing pink flowers, 8–10cm (3–4in) across, are freely produced in summer. ↑ to 7m (22ft). ☼ (min. 10–15°C/50–59°F)

***M. boliviensis***, syn. *Dipladenia boliviensis*. Slender-stemmed, usually

*Mandevilla x amoena* 'Alice du Pont'

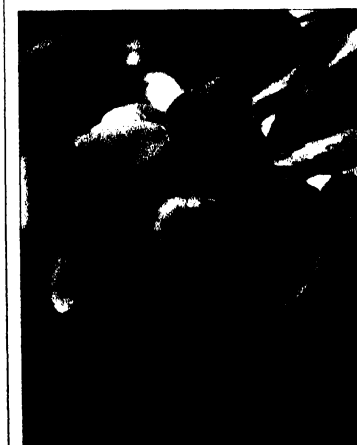
freely branching, woody, twining climber with elliptic to oblong or elliptic-obovate, slender-pointed, shiny, mid-green leaves, 5–10cm (2–4in) long. In mid- and late summer, bears racemes of 3–7 white flowers, 5–7cm (2–3in) across, with yellow eyes and angular petal lobes. ↑ 3–4m (10–12ft). Ecuador, Bolivia. ☼ (min. 10–15°C/50–59°F)

***M. laxa***, syn. *M. suaveolens*, *M. tweediana* (Chilean jasmine). Vigorous, freely branching, woody-stemmed, twining climber. Ovate to oblong leaves, 5–10cm (2–4in) long, have heart-shaped bases and slender-pointed tips, lustrous, rich green above and purple or grey-green beneath. From summer to early autumn, bears racemes of 5–15 tubular, strongly fragrant, pure white or creamy white flowers, 5–9cm (2–3½in) across, with broad, rounded, often crimped petal lobes. ↑ 3–5m (10–15ft). Peru, Bolivia, Argentina. ☼ (min. 5°C/41°F)

***M. splendens*** ☐ syn. *Dipladenia splendens*. Vigorous, moderately to freely branching, woody-stemmed, twining climber with downy young stems and broadly elliptic, lustrous, mid-green leaves, 10–20cm (4–8in) long, with heart-shaped bases and slender-pointed tips. In summer, produces racemes of 3–5 narrowly funnel-shaped flowers, to 10cm (4in) across, with rounded, rose-pink petal lobes and white and yellow throats. ↑ 3–6m (10–20ft). S.E. Brazil. ☼ (min. 10–15°C/50–59°F). 'Rosacea' has rose-pink flowers, margined and flushed deep purplish pink, with the tops of the throats ringed brighter pink.

***M. suaveolens*** see *M. laxa*.

***M. tweediana*** see *M. laxa*.

*Mandevilla splendens*

## MANDRAGORA

Mandrake

SOLANACEAE

Genus of 6 species of perennials, with fleshy tap roots found in dry, stony areas from the Mediterranean region to the Himalayas. They produce large, basal rosettes of ovate to lance-shaped leaves, and are grown for their stemless or short-stemmed, tubular-bell-shaped flowers, with triangular lobes, borne singly or in basal clusters from autumn to early spring. The fleshy fruits are spherical or ellipsoid. Grow in a rock garden or at the base of a warm, sunny wall. Alkaloids in the plant may be harmful if ingested.

• **HARDINESS** Hardy to -10°C (14°F).

• **CULTIVATION** Grow in deep, moderately fertile, well-drained soil in full sun. Shelter from cold, drying winds and protect from excessive winter wet. Avoid disturbance once established.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe or in autumn. Insert root cuttings in winter.

• **PESTS AND DISEASES** Slugs and snails may damage leaves and fruits.

***M. autumnalis*** (Autumn mandrake). Perennial with rosettes of oblong to lance-shaped, dark green leaves, to 25cm (10in) long. From autumn to winter, produces basal clusters of tubular-bell-shaped, violet or white flowers, to 3cm (1¼in) across, often with green or white streaks, followed by ellipsoid, orange or yellow fruit, to 3cm (1¼in) long. ↑ 15cm (6in), ↔ to 30cm (12in).

Portugal, Spain, E. Mediterranean. \*\*

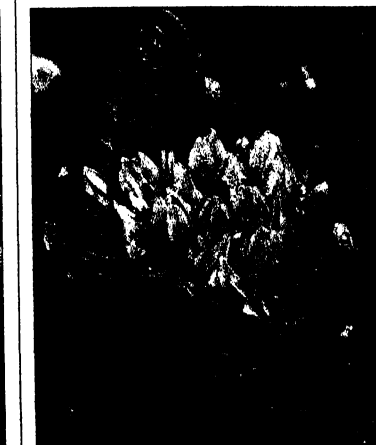
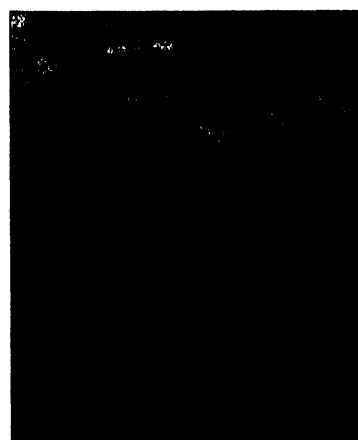
***M. officinarum*** ☐ (Common mandrake, Devil's apples, Love apple). Perennial with rosettes of ovate to lance-shaped, wavy-margined, dark green leaves, to 30cm (12in) long, upright at first, then lying flat on the ground. In spring, bears basal clusters of upward-facing, tubular-bell-shaped, greenish white flowers, to 2.5cm (1in) across, sometimes stained purple, followed by spherical yellow fruit, to 3cm (1¼in) across. ↑ 15cm (6in), ↔ to 30cm (12in). N. Italy, W. Balkans, Greece, W. Turkey. \*\*

▷ **Mandrake** see *Mandragora*

**American** see *Podophyllum peltatum*

**Autumn** see *Mandragora autumnalis*

**Common** see *Mandragora officinarum*

*Mandragora officinarum**Mammillaria zeilmanniana*

## MANETTIA

## RUBIACEAE

Genus of about 80 species of evergreen perennials and woody-stemmed, twining climbers from moist woodland or rain-forest in tropical North and South America, and the West Indies. They produce opposite pairs of usually simple, sometimes toothed leaves. Tubular to funnel-shaped, often brightly coloured flowers, each with 4 short lobes, are borne singly or in small, axillary panicles or cymes. In frost-prone areas, grow in a cool or temperate greenhouse. In warmer areas, use to clothe an arch, or grow on a wall or through small trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light or bright filtered light. In the growing season, water moderately and apply a balanced liquid fertilizer every 3–4 weeks; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun, although they will tolerate partial shade. Pruning group 12, in late winter or early spring.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root stem-tips of softwood cuttings in late spring or summer.

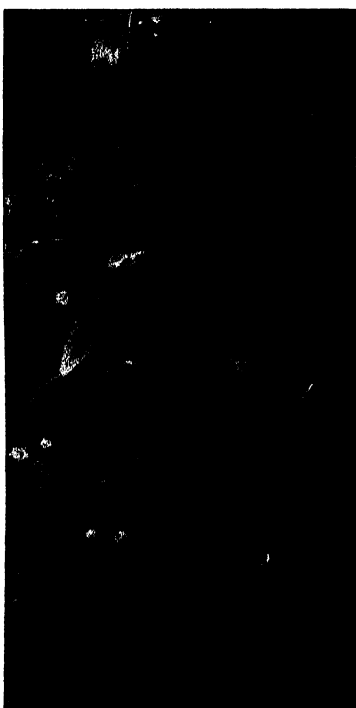
• **PESTS AND DISEASES** Whiteflies may be a problem under glass.

*M. bicolor* see *M. luteorubra*.

*M. cordifolia* (Firecracker vine).

Vigorous climber with thin, oblong to lance-shaped, ovate, or heart-shaped leaves, to 8cm (3in) long, lustrous, bright green above, paler and downy or hairless beneath. From late winter to summer, tubular, brilliant red to deep orange flowers, 3–5cm (1¼–2in) long, sometimes yellow-flushed on the lobes, are borne singly or in crowded, leafy panicles. ‡ 2–4m (6–12ft). Peru, Bolivia, Argentina. ☉ (min. 7°C/45°F)

*M. inflata* see *M. luteorubra*.



*M. luteorubra* ☉ syn. *M. bicolor*, *M. inflata* (Brazilian firecracker). Fast-growing climber with angular, slightly sticky, hairy stems bearing ovate to lance-shaped, light to dark green leaves, 3.5–15cm (1½–6in) long, semi-leathery when mature. Solitary, occasionally paired, tubular, bright red, yellow-lobed flowers, 2.5–5cm (1–2in) long, inflated at the bases and with dense velvety hairs, are borne in summer. ‡ 2–4m (6–12ft). Paraguay, Uruguay. ☉ (min. 7°C/45°F)

## MANGLIETIA

## MAGNOLIACEAE

Genus of 25 species of upright to spreading, evergreen trees and shrubs found in mountain woodland from the Himalayas to S. and W. China and Malaysia. The alternate, mostly oblong-ovate to elliptic or inversely lance-shaped leaves are glossy, light or dark green. *Manglietia* species are usually cultivated for their magnolia-like flowers, borne singly at the tips of the branches. They are followed by cone-like heads containing oblong to ovoid, fleshy-coated seeds. Grow as specimen plants. In frost-prone areas, grow in a cool or temperate greenhouse.

• **HARDINESS** Frost tender, although *M. insignis* may survive short periods near to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered or indirect light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade, or in full sun in humid conditions. Pruning group 1; need restrictive pruning under glass, after flowering.

• **PROPAGATION** Sow seed at 5–9°C (41–48°F) as soon as ripe. Root softwood cuttings with bottom heat in spring. Layer or air layer one-year-old stems in spring.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

*M. insignis* ☉ syn. *Magnolia insignis*. Erect then spreading, many-branched tree with grey-downy young shoots. The narrowly oval to inversely lance-shaped, leathery leaves, 10–20cm (4–8in) long, are glossy, rich green above and slightly glaucous beneath. Erect, cup-shaped, cream-tinted, pink to rose-pink or carmine-red flowers, 8cm (3in) across, with 9–12 tepals, are produced from spring to early summer, sometimes followed by elongated, oblong-ovoid purple fruit, 5–10cm (2–4in) long. ‡ 8–12m (25–40ft), ↔ 3–5m (10–15ft). C. Himalayas to N. Vietnam and W. China. ☉ (min. 5°C/41°F)

▷ **Manuka** see *Leptospermum scoparium*

▷ **Manzanita** see *Arbutus*, *Arctostaphylos*, *A. manzanita*

**Bigberry** see *Arctostaphylos glauca*

**Dune** see *Arctostaphylos pumila*

**Eastwood** see *Arctostaphylos*

*glandulosa*

**Greenleaf** see *Arctostaphylos patula*

**Parry** see *Arctostaphylos manzanita*

**Pine-mat** see *Arctostaphylos*

*nevadensis*

**Stanford** see *Arctostaphylos*

*stanfordiana*

▷ **Maple** see *Acer*

**Amur** see *Acer tataricum* subsp.

*ginnala*

**Ash-leaved** see *Acer negundo*

**Big-leaf** see *Acer macrophyllum*

**Canyon** see *Acer saccharum* subsp.

*grandidentatum*

**Cappadocian** see *Acer cappadocicum*

**Caucasian** see *Acer cappadocicum*

**Eagle's claw** see *Acer platanoides*

*'Laciniatum'*

**Flowering** see *Abutilon*

**Full-moon** see *Acer japonicum*

**Greek** see *Acer heldreichii* subsp.

*trautvetteri*

**Hawthorn** see *Acer crataegifolium*

**Hornbeam** see *Acer carpinifolium*

**Italian** see *Acer opalus*

**Japanese** see *Acer japonicum*, *A.*

*palmatum*

**Korean** see *Acer pseudosieboldianum*

**Lobel's** see *Acer cappadocicum* subsp.

*lobelii*

**Montpellier** see *Acer monspessulanum*

**Mountain** see *Acer spicatum*

**Nikko** see *Acer maximowiczianum*

**Norway** see *Acer platanoides*

**Oregon** see *Acer macrophyllum*

**Paper-bark** see *Acer griseum*

**Parlour** see *Abutilon*

**Père David's** see *Acer davidii*

**Red** see *Acer rubrum*

**Red bud** see *Acer heldreichii* subsp.

*trautvetteri*

**Rock** see *Acer saccharum*

**Scarlet** see *Acer rubrum*

**Shantung** see *Acer truncatum*

**Silver** see *Acer saccharinum*

**Snake-bark** see *Acer capillipes*,

*A. davidii*, *A. rufinerve*

**Striped** see *Acer pensylvanicum*

**Sugar** see *Acer saccharum*

**Swamp** see *Acer rubrum*

**Tatarian** see *Acer tataricum*

**Three-toothed** see *Acer*

*buergerianum*

**Trident** see *Acer buergerianum*

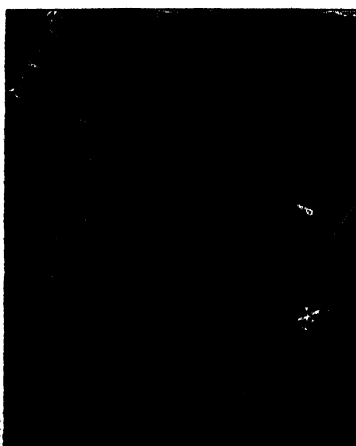
**Vine** see *Acer circinatum*

▷ **Maracuja de refresco** see *Passiflora alata*

## MARANTA

## MARANTACEAE

Genus of about 20 species of evergreen, rhizomatous perennials from rainforest in tropical Central and South America. They are cultivated for their crowded clumps of blunt-ended, elliptic leaves, spreading by day and raised to an erect position in the evening. Small, tubular, 2-lipped white flowers are produced in



*Maranta leuconeura* 'Erythroneura'



*Maranta leuconeura* 'Kerchoviana'

pairs in loose racemes. In frost-prone areas, grow as houseplants or in a warm greenhouse, either in hanging baskets or trained up moss poles. In warmer climates, use as ground cover among shrubs in shade.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered or bright indirect light, in half-pots or pans to accommodate the shallow root system. Provide high humidity at all times. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil in deep or partial shade.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe. Divide in spring. Take basal cuttings, 7–10cm (3–4in) long, and root with bottom heat in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*M. kerchoviana* see *M. leuconeura* 'Kerchoviana'.

*M. leuconeura* (Prayer plant). Very variable, clump-forming perennial with elliptic to obovate, dark green leaves, 12cm (5in) long, with silver lines that fan from the midribs to the margins; the undersides are deep purple or grey-green. ‡↔ 30cm (12in). Brazil. ☉ (min. 15°C/59°F). 'Erythroneura' ☉ syn. 'Erythrophylla' (Herringbone plant), bears oblong-obovate to obovate, velvety, olive- and black-green leaves with bright red midribs and veins, and jagged, light yellow-green markings around the midribs; the undersides are deep red. 'Kerchoviana' ☉☉ syn. *M. kerchoviana* (Rabbit's foot, Rabbit's tracks), bears broadly oblong-elliptic, light grey-green leaves with roughly square brown marks, turning green with age, either side of the pale green midribs; the undersides are pale blue-grey. 'Massangeana', syn. var. *massangeana*, produces broadly elliptic, blackish green leaves with silver-grey feathering along the midribs and veins; the undersides are purple.

*M. makoyana* see *Calathea makoyana*.

▷ **Marginatocereus marginatus** see

*Stenocereus marginatus*

▷ **Marguerite** see *Leucanthemum*

*vulgare*

**Golden** see *Anthemis tinctoria*



## MARGYRICARPUS

### ROSACEAE

Genus of one species of dwarf, evergreen shrub from dry, open sites in northern mountains and southern lowlands of the Andes. It produces pinnate leaves and insignificant flowers, and is valued for its long-lasting fruit. Suitable for a scree bed, a rock garden, or an alpine house.

• **HARDINESS** Hardy to -7°C (19°F) in well-drained soil.

• **CULTIVATION** Grow in moderately fertile, acid, moist but well-drained soil in full sun with some midday shade. In an alpine house, grow in lime-free (ericaceous) compost. Shelter from cold, drying winds and protect from excessive winter wet. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or as soon as ripe. Layer or root softwood cuttings in late spring or early summer.

• **PESTS AND DISEASES** Susceptible to aphids and whiteflies under glass.

**M. pinnatus**, syn. *M. setosus* (Pearl berry). Spreading, densely branched shrub bearing sharply pointed, pinnate leaves, to 2cm (¾in) long, with linear, dark green leaflets with inrolled, silky-hairy margins. In early summer, bears axillary clusters of 1–3 tiny green flowers, followed by spherical, leathery, purple-tinted white fruit, to 7mm (¼in) across. † to 30cm (12in), ↔ to 45cm (18in). Andes. \* \*

**M. setosus** see *M. pinnatus*.

▷ **Marigold** see *Calendula*

**African** see *Tagetes* African Group

**Afro-French** see *Tagetes* Afro-French Group

**Corn** see *Chrysanthemum segetum*

**English** see *Calendula*

**French** see *Tagetes* French Group

**Marsh** see *Calitha*, *C. palustris*

**Pot** see *Calendula*

**Signet** see *Tagetes* Signet Group

▷ **Mariposa, Yellow** see *Calochortus luteus*

▷ **Mariposa tulip** see *Calochortus*

▷ **Marjoram** see *Origanum*

**Compact** see *O. vulgare*

**'Compactum'**

**French** see *O. onites*

**Golden wild** see *O. vulgare* 'Aureum'

**Hop** see *O. dictamnus*

**Pot** see *O. onites*

**Sweet** see *O. majorana*

**Wild** see *O. vulgare*

▷ **Marlberry** see *Ardisia japonica*

▷ **Marmalade bush** see *Streptosolen jamesonii*

▷ **Marniera chrysocardium** see *Epiphyllum chrysocardium*

## MARRUBIUM

Horehound

### LABIATAE/LAMIACEAE

Genus of about 40 species of woolly perennials from Mediterranean Europe and temperate Asia, mainly found in sunny, dry, stony wasteland. They have square stems and alternate, opposite pairs of usually ovate or ovate-oblong, often malodorous leaves. Tubular, 2-lipped flowers are borne in axillary whorls. Grow in a large rock garden or a mixed border; they are particularly effective in a Mediterranean garden.

• **HARDINESS** Hardy to -10°C (14°F).

• **CULTIVATION** Grow in poor, well-drained soil in full sun. Provide shelter from cold, drying winds and protection from excessive winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame in late spring, although germination is erratic. Root softwood cuttings in spring.

• **PESTS AND DISEASES** Trouble free.

**M. candidissimum** of gardens see *M. incanum*.

**M. incanum**, syn. *M. candidissimum* of gardens. Spreading, silky-hairy perennial with many erect, densely white-hairy shoots bearing oblong-ovate, scalloped or toothed, grey-green leaves, white-felted beneath. In early summer, bears congested whorls of very pale lilac, almost white flowers, to 1.5cm (½in) long, within grey-woolly calyces. † 20–50cm (8–20in), ↔ 60cm (24in). Italy, Sicily, Balkan Peninsula. \* \*

▷ **Marsdenia** see *Cionura*

**M. erecta** see *C. erecta*

▷ **Marsh mallow** see *Althaea officinalis*

▷ **Marsh marigold** see *Calitha*, *C. palustris*

**Giant** see *C. palustris* var. *palustris*

▷ **Marsh orchid** see *Dactylorhiza*

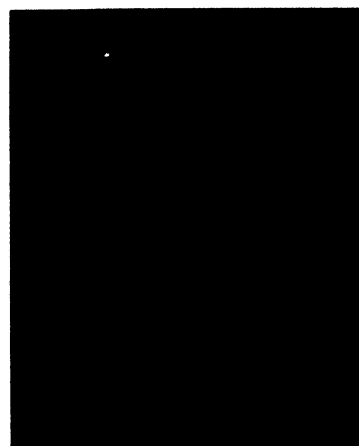
**Robust** see *D. elata*

## MARSILEA

Pepperwort, Water clover

### MARSILEACEAE

Genus of 65 species of rhizomatous, terrestrial, amphibious, and aquatic perennial ferns from warm-temperate Europe, tropical W. Africa, N. Asia, Australia, and E. USA. They grow in large numbers, mainly beside rivers, but also in lakes, where the elongated rhizomes grow upwards, producing a canopy of surface leaves that develop a terrestrial form if the water recedes. Triangular to ovate, 4-lobed leaves each bear a spore case at the base, and close up at night when submerged. Grow at



*Marsilea quadrifolia*

the margins of a pool. In frost-prone areas, grow the tender species in an indoor pool in a warm greenhouse or conservatory, or in a tropical aquarium; *M. quadrifolia* is suitable for a cold-water aquarium.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Outdoors, grow in the muddy margins of a pool, or in lattice baskets filled with loamy soil, in full sun, at a depth of 15cm (6in). Under glass, grow in baskets of fertile soil at the pool margins, in slightly acid water at 20–26°C (68–79°F), in full light. In an aquarium, root in containers of fine sand or peat; feed with a proprietary aquatic fertilizer. See also pp.52–53.

• **PROPAGATION** Cut the rhizomes into sections and anchor to the substrate in shallow water.

• **PESTS AND DISEASES** Trouble free.

**M. drummondii** (Common nardoo).

Creeping, terrestrial or aquatic, perennial fern with fan-shaped leaves, 1–4cm (½–1½in) across, with 4 leaflets, and upright stems, to 30cm (12in) long, produced singly from the rhizomes. † to 15cm (6in), ↔ indefinite. Australia. ☀ (min. 18°C/64°F)



*Marsilea drummondii*

**M. quadrifolia** (Water clover).

Creeping, aquatic, perennial fern with long rhizomes, and leaves to 3cm (1¼in) across, with 4 soft, triangular, sometimes overlapping leaflets, downy when young; when submerged, they float on the surface, on stalks to 15cm (6in) long. † to 15cm (6in), ↔ indefinite. Europe, N. Asia, E. USA. \* \* \*

▷ **Martynia** see *Proboscidea*

▷ **Marvel of Peru** see *Mirabilis jalapa*

▷ **Mascarena lagenicaulis** see *Hyophorbe lagenicaulis*

## MASDEVALLIA

### ORCHIDACEAE

Genus of about 340 species of evergreen, epiphytic, terrestrial, or litho-phytic orchids, mainly found in cloud forest at 800–4,200m (2,600–13,700ft), from Mexico to Central and South America. They lack pseudobulbs but have short, erect stems, each supporting a single, oblong to ovate or linear to lance-shaped, curved or upright, rigid, fleshy leaf. Flowers are borne singly or in racemes, among or usually above the foliage, mostly from spring to summer. Enlarged, often long-tailed sepals surround the minute petals and lips, giving the flowers a triangular shape.

• **HARDINESS** Frost tender.

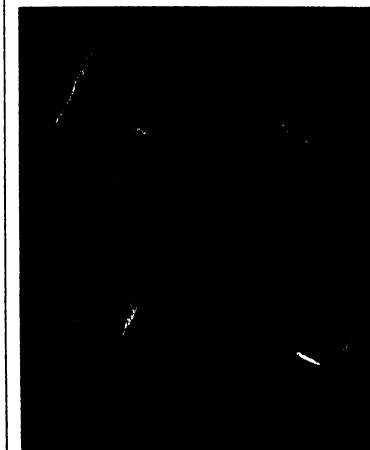
• **CULTIVATION** Cool-growing orchids. Grow in small pots of epiphytic orchid compost made with fine-grade bark. Provide full light and ample ventilation. In summer, provide moist shade, water freely, feed at every third watering, and mist once or twice daily. In winter, water more sparingly, but do not allow to dry out. See also p.46.

• **PROPAGATION** Not suitable for division, although cuttings or offshoots may be rooted successfully.

• **PESTS AND DISEASES** Red spider mites, aphids, mealybugs, and yellow bean virus may be troublesome.

**M. Angel Frost** (M. *strobelii* x *M. veitchiana*). Epiphytic orchid with upright, oblong to narrowly ovate leaves, 15cm (6in) long. Bears racemes of orange flowers, 8cm (3in) long, in spring. † 23cm (9in), ↔ 15cm (6in). ☀ (min. 11°C/52°F; max. 24°C/75°F)

**M. Angel Heart** (M. *ignea* x *M. infracta*). Epiphytic orchid with upright, linear to lance-shaped leaves, 15cm (6in) long. Red flowers, 8cm (3in) long, are borne singly or in racemes, in spring.



*Masdevallia* Angel Frost

*Masdevallia coccinea*

‡ 23cm (9in), ↔ 15cm (6in). ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. coccinea** ■ Terrestrial orchid with upright, oblong to lance-shaped leaves, 15–20cm (6–8in) long. In summer, bears solitary flowers, 6–10cm (2½–4in) long, with purple-pink, crimson, red-orange, yellow, or white sepals, and white petals. ‡ 40cm (16in), ↔ 30cm (12in). Colombia, Peru. ♀ (min. 11°C/52°F; max. 24°C/75°F)

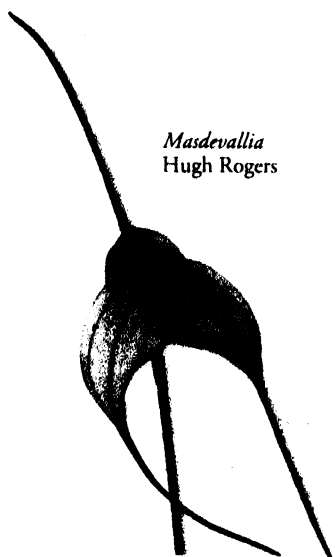
**M. elephanticeps** var. *pachysepala* see *M. mooreana*.

**M. Hugh Rogers** ■ (*M. amabilis* × *M. yungasensis*). Epiphytic orchid with upright, oblong to lance-shaped leaves, 15cm (6in) long. In spring, bears racemes of orange or red flowers, 8cm (3in) long, with darker veins in the same colour. ‡ 23cm (9in), ↔ 15cm (6in). ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. ignea** see *M. militaris*.

**M. infracta** ■ Epiphytic orchid with upright, oblong to lance-shaped leaves, 8–14cm (3–5½in). Bears short racemes of cupped, yellow-flushed, dull red to purplish pink flowers, 10–15cm (4–6in) long, with long, pale yellow tails, in summer. ‡ 15cm (6in). Peru, Brazil. ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. Measuresiana** (*M. amabilis* × *M. tovarensis*). Epiphytic orchid with upright, oblong to lance-shaped leaves, 10–15cm (4–6in) long. Bears racemes of long-tailed white flowers, 8cm (3in) long, flushed pale pink, in succession in winter. ‡ 23cm (9in), ↔ 15cm (6in). ♀ (min. 11°C/52°F; max. 24°C/75°F)

*Masdevallia*  
Hugh Rogers*Masdevallia infracta*

**M. militaris**, syn. *M. ignea*. Lithophytic orchid with upright, oblong to lance-shaped leaves, to 15cm (6in) long. Orange-scarlet to red-brown flowers, 4.5cm (1¾in) long, are borne singly in summer. ‡ 30cm (12in), ↔ 23cm (9in). Venezuela, Colombia. ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. mooreana**, syn. *M. elephanticeps* var. *pachysepala*. Epiphytic orchid with upright, linear-oblong leaves, to 20cm (8in) long. Greenish yellow flowers, to 9cm (3½in) across, spotted dull purple, with bright yellow tails, are borne singly in summer. ‡ 15cm (6in). Venezuela, Colombia. ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. rolfeana**. Epiphytic orchid with upright, obovate to elliptic leaves, 11–14cm (4½–5½in) long. Dark reddish purple flowers, 6cm (2½in) long, with short yellow tails, are borne singly from spring to summer. ‡ 15cm (6in). Costa Rica. ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. tovarensis** ■ Epiphytic orchid with upright, obovate to lance-shaped leaves, to 15cm (6in) long. Milk-white flowers, 8cm (3in) long, with short tails, are produced in short racemes in winter. ‡ 15cm (6in). Venezuela. ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. veitchiana**. Lithophytic orchid with upright, oblong to narrowly obovate leaves, 15–25cm (6–10in) long. Bright orange-red, purple-hairy flowers, 10–15cm (4–6in) long, shot with crimson, with short tails, are borne singly from spring to summer. ‡ 30cm (12in), ↔ 23cm (9in). Peru. ♀ (min. 11°C/52°F; max. 24°C/75°F)

*Masdevallia tovarensis*

- ▷ **Mask flower** see *Alonsoa*
- ▷ **Masterwort** see *Astrantia*
- ▷ **Mastic, Chinese** see *Pistacia chinensis*
- ▷ **Mastic tree** see *Pistacia lentiscus*
- ▷ **Peruvian** see *Schinus molle*
- ▷ **Mat rush** see *Lomandra*
- ▷ **Pale** see *L. glauca*
- ▷ **Spiny-headed** see *L. longifolia*

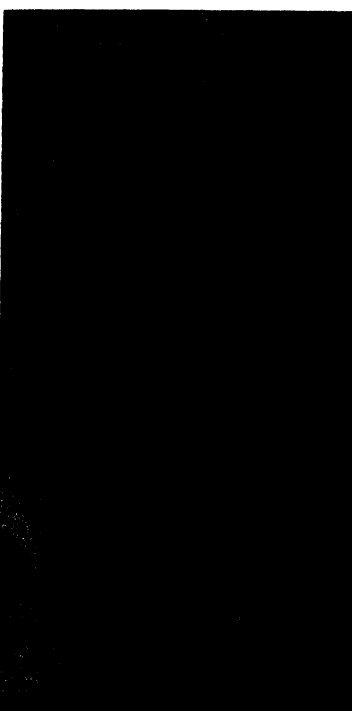
## MATTEUCCIA

DRYOPTERIDACEAE/WOODSIACEAE

Genus of 3 or 4 species of deciduous, terrestrial ferns, commonly occurring in deciduous woodland in Europe, E. Asia, and North America. In spring, the erect or creeping rhizomes produce lance-shaped, pinnate to 2-pinnatifid sterile fronds in regular "shuttlecocks". These are followed in mid- and late summer by distinctive, smaller, more erect, darker, and longer-stalked fertile fronds, which persist over winter. Grow in moist shade in a woodland garden, a damp border, or at the edge of a pond.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, neutral to slightly acid soil in partial or light dappled shade.
- **PROPAGATION** Sow spores at 15°C (59°F) as soon as ripe. Divide established clumps in early spring.
- **PESTS AND DISEASES** Trouble free.

**M. struthiopteris** ■ ♀ (Ostrich fern, Shuttlecock fern). Rhizomatous fern with erect "shuttlecocks" of broadly lance-shaped, pinnate, pale green sterile fronds, 1.2m (4ft) or more long, with narrowly lance-shaped, pinnatifid pinnae. Shorter, lance-shaped, dark brown fertile fronds, 30cm (12in) or more long, have linear pinnae with strongly inrolled margins, and appear in late summer. Spreads by horizontal rhizomes, producing separate "shuttlecocks" 10–20cm (4–8in) from the parent plant. ‡ 1.7m (5½ft), ↔ to 1m (3ft). Europe, E. Asia, E. North America. \*\*\*

*Matteuccia struthiopteris*

## MATTHIOLA

Gillyflower, Stock

BRASSICACEAE/CRUCIFERAE

Genus of 55 species of bushy, erect annuals and perennials, occasionally subshrubs, from scrub and hilly areas in W. Europe, South Africa, and C. and S.W. Asia. The leaves are simple, usually lance-shaped, sometimes pinnatifid or shallowly lobed, and grey-green to mid-green. *Matthiola* species and cultivars are grown for their usually sweetly scented, pastel pink, purple, or white flowers. The flowers are cross-shaped (double in some cultivar selections), and borne in terminal, spike-like racemes or panicles. Grow in a mixed or annual border.

Cultivars of *M. incana* are useful spring and summer bedding plants, and provide attractive cut flowers. They are often divided by horticulturists into the following 4 groups. Brompton stocks, grown as biennials, bear tall panicles of single or double flowers. East Lothian stocks may be grown as biennials or spring-sown annuals; more compact and smaller-flowered than Brompton Group stocks, they produce spike-like racemes of single or double flowers. Ten Week stocks are grown as annuals, and may be dwarf or tall; dwarf cultivars, suitable for bedding or containers, bear single or double flowers, usually in panicles; tall cultivars bear mostly double flowers in dense, usually unbranched, spike-like racemes. Column stocks are generally grown under glass for cut flowers, and produce long, dense, upright, spike-like racemes of mainly double flowers.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained, preferably neutral to slightly alkaline soil in a sheltered position in full sun. Give support to tall cultivars.
- **PROPAGATION** Sow seed of *M. longipetala* subsp. *bicornis* in situ in spring, and repeat for a succession of flowers. For bedding, sow seed of *M. incana* Cinderella Series, Midget Series, and Ten Week Mixed at 10–18°C (50–64°F) in early spring. Sow seed of *M. incana* Legacy Series, Sentinel Series, and Excelsior Mammoth Column Series in a seedbed or in containers in a cold frame in midsummer; overwinter under cloches in cold climates and plant out in spring. Seedlings are prone to "damping off". Sow seed of perennials in containers in a cold frame in spring or summer; overwinter in a cold frame and plant out in the following spring.
- **PESTS AND DISEASES** Susceptible to aphids, flea beetles, cabbage root flies, clubroot, downy mildew, grey mould (*Botrytis*), seed-borne infections of bacterial leaf spot, root and stem rots, and cucumber mosaic virus.

**M. bicornis** see *M. longipetala* subsp. *bicornis*.

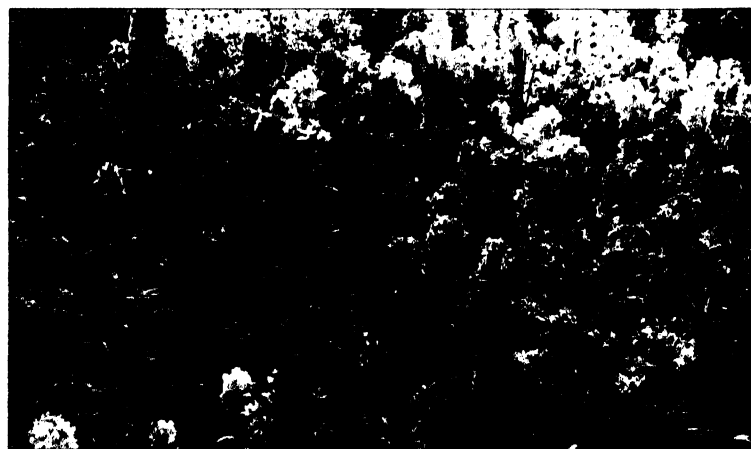
**M. fruticulosa**. Dwarf, lax or tufted, woody-based, hairy to densely white-woolly perennial with simple or pinnatifid, linear to oblong, grey-green leaves, to 12cm (5in) long. In summer, bears long, upright, spike-like racemes of flowers, 1.5–3cm (½–1¼in) across, varying from yellow to purplish violet. ‡ to 60cm (24in), ↔ to 20cm (8in). C. and S. Europe, Turkey (in Europe



*Matthiola incana* Cinderella Series

only), Cyprus, Lebanon, N.W. Africa. \*\*\*. **subsp. valesiaca** is tufted, spreads by underground runners, and bears dense racemes of mauve-purple to red-purple flowers; prefers acid soil; ↑ 25cm (10in), ↔ 30cm (12in); N. and E. Spain, Pyrenees, S. Alps, Balkans. ***M. incana*** (Gillyflower, Stock). Woody-based perennial or subshrub, sometimes short-lived, with entire, occasionally pinnatifid or lobed, inversely lance-shaped to linear-lance-shaped, grey-green to white-hairy leaves, 5–10cm (2–4in) long. Upright racemes of sweet-scented, mauve, purple, violet, pink, or white flowers, to 2.5cm (1in) across, are borne from late spring to summer. ↑ to 80cm (32in), ↔ to 40cm (16in). Coastal S. and W. Europe, from Spain to W. Turkey, Cyprus, Arabian Peninsula, Egypt. \*\*\* (borderline). The many cultivars of *M. incana*, sometimes resulting from crosses with *M. sinuata*, are grown as annuals or biennials, and produce single or fully double, almost rosette-like, scented flowers in dense, spike-like racemes or panicles, 15–45cm (6–18in) tall, in summer. *M. incana* cultivars are sometimes divided into informal groups (see

introduction). **Cinderella Series** □ ♀ cultivars bear double, dark blue-purple, lavender-blue, red, rose-pink, silvery blue, or white flowers in racemes 15cm (6in) long; ↑ 20–25cm (8–10in), ↔ to 25cm (10in). **Excelsior Mammoth Column Series** cultivars bear mostly double, pink, red, pale blue, or white flowers in spike-like racemes, 30cm (12in) long; ↑ to 75cm (30in), ↔ to 30cm (12in). **Legacy Series** cultivars bear mainly double flowers in scarlet-red, crimson-red, rose-pink, lavender-blue, white, and creamy yellow, in panicles 30cm (12in) long; ↑ 30–45cm (12–18in) or more, ↔ to 30cm (12in). **Midget Series** cultivars produce double flowers in a range of pastel and deeper tones, including rose-red, red, violet, and white, in spikes 15cm (6in) long; ↑ to 25cm (10in). **Sentinel Series** cultivars produce racemes 30cm (12in) long, of double flowers in colours including white, pink, carmine-red, and light to dark blue; ↑ to 75cm (30in), ↔ to 30cm (12in). **Ten Week Mixed** □ bears mainly double flowers in shades of crimson, pink, lavender-pink, purple, and white, in racemes 15cm (6in) long; ↑ 30cm (12in), ↔ to 25cm (10in).



*Matthiola incana* Ten Week Mixed

***M. longipetala* subsp. *bicornis***, syn. *M. bicornis* (Night-scented stock). Erect to spreading, single-stemmed to branching annual with narrowly linear, sometimes pinnatifid, grey-green leaves, to 8cm (3in) long. In summer, produces open racemes of pink, mauve, or purple flowers, to 2cm (¾in) across, which are strongly fragrant at night. ↑ 30–35cm (12–14in), ↔ 23cm (9in). Greece to S.W. Asia. \*\*\*

▷ ***Matucana aurantiaca*** see *Oreocereus aurantiacus*

▷ ***Matucana haynei*** see *Oreocereus haynei*

▷ ***Matucana intertexta*** see *Oreocereus intertexta*

## MAURANDELLA

SCROPHULARIACEAE

Genus of one species of twining, herbaceous, perennial climber from dry desert riverbeds, subject to flooding, in limestone areas of S.W. USA and Mexico. It has hairless, slender, many-branched stems, to 2.2m (7ft) long, and ovate-triangular, lobed leaves. Tubular flowers are borne singly from the leaf axils throughout summer and autumn. In frost-prone climates, grow as a half-hardy annual or in a cool greenhouse. In warmer areas, use to clothe a pergola, arch, or trellis, or grow against a wall.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass and when grown as an annual, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with some midday shade, or in light dappled shade. Shelter from cold, drying winds. Remove dead top growth.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root softwood cuttings with bottom heat in late spring.

• **PESTS AND DISEASES** Trouble free.

***M. antirrhiniflora*** □ syn. *Asarina antirrhiniflora* (Violet twining snapdragon). Wiry-stemmed climber with shallowly lobed, bright to mid-green leaves, 2.5–10cm (1–4in) or more long. Produces snapdragon-like flowers, to 4.5cm (1¾in) long, with white tubes and usually violet or purple, occasionally pink lobes, in summer and autumn. ↑ 1–2m (3–6ft). S.W. USA, Mexico. \*



*Maurandella antirrhiniflora*

## MAURANDYA

SCROPHULARIACEAE

Genus of 2 species of twining, woody-based, herbaceous, perennial climbers found in rocky areas and woodland in Mexico and Central America. The leaves are triangular to broadly ovate, sometimes heart-shaped at the bases, and sometimes 5-lobed. Solitary, trumpet-shaped blooms are borne in the leaf axils throughout summer and autumn. Use to clothe a trellis, or grow against a wall. In frost-prone areas, grow in a cool greenhouse or outdoors as annuals.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, or in bright filtered light. In growth, water freely; apply a balanced liquid fertilizer monthly. Keep just moist in winter.

Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Remove dead top growth in autumn.

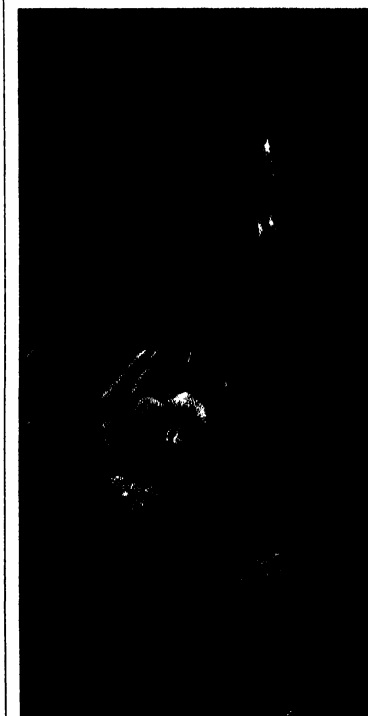
• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root softwood cuttings with bottom heat in late spring.

• **PESTS AND DISEASES** Trouble free.

***M. barclayana*** □ syn. *Asarina barclayana*. Medium-sized, erect, free-flowering climber with angular to shallowly lobed, ovate, mid- to light green leaves, 2.5–4.5cm (1–1¾in) long, with heart-shaped bases. From summer to autumn, produces flowers, 4–7cm (1½–3in) long, with white or green-tinted white tubes and white, pink, or deep purple lobes. ↑ 2–5m (6–15ft). Mexico. \*

***M. erubescens*** see *Lophospermum erubescens*.

***M. purpusii***, syn. *Asarina purpusii*. Tuberous climber with triangular-ovate, softly hairy, mid-green leaves, 4–8cm (1½–3in) long, sometimes coarsely toothed. Produces purplish pink flowers, 4cm (1½in) long, throughout summer and autumn. ↑ 60cm (24in). Mexico. \*



*Maurandya barclayana*

## MAXILLARIA

## ORCHIDACEAE

Genus of about 250 species of evergreen, rhizomatous, epiphytic or terrestrial orchids from tropical and subtropical Central and South America, found from sea level to over 3,000m (10,000ft), sometimes in cloud forest. Solitary or clustered, usually laterally compressed, ovoid to spherical, sometimes oblong pseudobulbs produce 1 or 2 thin to leathery, grass-like or broadly oblong, usually mid-green leaves. Flowers are borne singly or in clusters on scapes produced from long or short rhizomes. They range from white to dark red or yellow, and usually appear intermittently throughout summer.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- or intermediate-growing orchids. Grow in epiphytic orchid compost in pots or slatted baskets, or epiphytically on slabs of bark. In summer, grow in moist partial shade, water freely, feed at every third watering, and mist once or twice daily. Admit full light in winter; keep moist throughout the year. See also p.46.
- **PROPAGATION** Divide when plants fill the containers and "flow" over the sides.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

**M. cucullata**, syn. *M. meleagris*. Very variable, epiphytic orchid with small, ovoid pseudobulbs producing 1, occasionally 2, strap-shaped leaves, to 30cm (12in) long. From summer to autumn, bears deep red, occasionally yellow, pink, or black-maroon flowers with yellow to white lips, heavily spotted and striped dark red, on scapes 12–16cm (5–6in) long.  $\pm$  15cm (6in). Mexico, Guatemala, Panama.  $\hat{=}$  (min. 10°C/50°F; max. 30°C/86°F)

**M. grandiflora**. Epiphytic orchid with compressed, ovoid pseudobulbs and one strap-shaped, apical leaf, 25–50cm (10–20in) long. White flowers, 6cm (2½in) across, with white or yellow, pink- or purple-margined lips, are borne on scapes 10–30cm (4–12in) long, from spring to early summer.  $\pm$  30cm (12in). N.W. South America.  $\hat{=}$  (min. 10°C/50°F; max. 30°C/86°F)

**M. meleagris** see *M. cucullata*.

**M. picta**. Epiphytic orchid with conical pseudobulbs and one narrowly oblong leaf, to 30cm (12in) long. Fragrant, deep yellow to white flowers, spotted

purple, dark red, or brown, to 4cm (1½in) across, are borne on scapes 15cm (6in) long, from spring to summer.  $\pm$  23cm (9in). Colombia, Brazil.

$\hat{=}$  (min. 10°C/50°F; max. 30°C/86°F)  
**M. porphyrostele**  $\square$  Epiphytic orchid with ovoid pseudobulbs and 2 lance-shaped, apical leaves, 20cm (8in) long. From winter to spring, slightly fragrant, light yellow flowers, 2.5cm (1in) across, with purple-striped throats, are borne on scapes 8cm (3in) long.  $\pm$  15cm (6in). Brazil.  $\hat{=}$  (min. 10°C/50°F; max. 30°C/86°F)

**M. sanderiana**. Epiphytic or terrestrial orchid with compressed, ovoid pseudobulbs, with one narrowly oblong leaf, to 40cm (16in) long. Bears fragrant white flowers, 12cm (5in) across, with heavy red basal spotting, on short, horizontal or erect scapes, to 25cm (10in) long, from summer to early autumn.

$\pm$  45cm (18in). Ecuador, Peru.

$\hat{=}$  (min. 10°C/50°F; max. 30°C/86°F)

▷ **May see** *Crataegus laevigata*,  
*C. monogyna*

▷ **May apple** see *Podophyllum peltatum*  
**Chinese** see *P. pleianthum*

▷ **Mayflower** see *Epigaea repens*

▷ **Maypops** see *Passiflora incarnata*

## MAYTENUS

## CELASTRACEAE

Genus of about 225 species of evergreen, mainly dioecious trees and shrubs from forest in North and South America and tropical Africa. The variably shaped, alternate leaves are entire or toothed.

Tiny, star-shaped to tubular flowers are produced in axillary cymes, racemes, or panicles, or sometimes singly. Grow as specimen trees or in woodland. In frost-prone areas, grow tender species in a cool or temperate greenhouse. Long, hot summers are needed for production of flowers and fruits.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun with midday shade. Shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed under glass in autumn. Remove suckers, which may appear at some distance from the parent plant, in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

**M. boaria**  $\square$ — $\square$  syn. *M. chilensis* (Maiten). Tree or shrub, of variable habit, with pendent or upright branches and narrowly elliptic to lance-shaped, glossy, dark green, finely toothed leaves, to 5cm (2in) long. Bears small clusters of tiny, tubular, pale green flowers, the males with yellow anthers, in mid- and late spring; on the same plant, female flowers produce orange-red capsules, which open to release red seeds.  $\pm$  20m (70ft),  $\leftrightarrow$  to 10m (30ft). Chile. \*\*\*  
**M. chilensis** see *M. boaria*.

## MAZUS

## SCROPHULARIACEAE

Genus of about 30 species of annuals and creeping, usually mat-forming, prostrate perennials, which root at the nodes. They are found in wet habitats from lowland to mountainous regions of the Himalayas, India, Pakistan,



*Mazus reptans*

China, Taiwan, Japan, S.E. Asia, and Australasia. The leaves, 1–5cm (½–2in) long, borne in opposite pairs, are mostly linear to spoon-shaped or obovate, toothed, and usually mid-green.

Narrowly tubular flowers, with erect upper lips and large, spreading, 3-lobed lower lips, are produced singly or in few-flowered racemes from the leaf axils.

*Mazus* species are suitable for ground cover in a sheltered rock garden or in paving crevices, or as pan plants in an alpine house.

• **HARDINESS** Hardy to -10°C (14°F).

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in a sheltered site in full sun. In an alpine house, grow in shallow containers of loam-based potting compost (J1 No.2).

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn.

Divide in spring.

• **PESTS AND DISEASES** Slugs and snails may be a problem.

**M. reptans**  $\square$  Mat-forming perennial with lance-shaped to elliptic or obovate, coarsely toothed leaves, 1–3cm (½–1¼in) long. From late spring to summer, produces 2- to 5-flowered racemes of purple-blue flowers, 1.5–2cm (½–¾in) long, with yellow- and red-spotted white lower lips.  $\pm$  to 5cm (2in),  $\leftrightarrow$  to 30cm (12in) or more. Himalayas. \*\*

▷ **Meadow beauty** see *Rhexia*, *R. virginica*

▷ **Meadow rue** see *Thalictrum*  
**Yellow** see *T. flavum*

▷ **Meadowsweet** see *Filipendula ulmaria*

## MECONOPSIS

## PAPAVERACEAE

Genus of about 45 species of annuals, biennials, and deciduous or evergreen, often short-lived or monocarpic perennials. They occur in moist, shady mountainous areas, alpine meadows, woodland, scrub, scree, and rocky slopes in the Himalayas, Burma, and China, with one species from W. Europe. Usually hairy or bristly, they produce basal rosettes of pinnate or simple leaves, which may be entire, toothed, lobed, or pinnatisect. The lower leaves are long-stalked, the upper ones short-stalked or stalkless. The flowering stems, usually one per leaf rosette, are either leafless and unbranched, each bearing a solitary flower, or leafy and branched near the top, bearing flowers singly or in short racemes or panicles, the uppermost opening first. The flowers are generally pendent, saucer- to cup-shaped, poppy-like, and silky, with numerous stamens and usually 4, but sometimes up to 9 petals. The flower-stalks lengthen after flowering as the fruits develop.

*Meconopsis* species grow best in areas with cool, damp summers. Most are suitable for growing in large groups in a moist, cool woodland garden, but also perform well in a moist peat bed or terrace. *M. cambrica* is suitable for a wildflower garden but will thrive almost anywhere, except in very dry soils.

• **HARDINESS** Fully hardy; young growth may be damaged by late frosts.

• **CULTIVATION** Grow in humus-rich, leafy, moist but well-drained, neutral to slightly acid soil, open enough to prevent stagnation and rot in winter; site in partial shade with shelter from cold, drying winds. Mulch generously, and water in dry spells in summer. Short-lived perennials, e.g. *M. betonicifolia*, are less likely to be monocarpic in moist conditions, and if flowering is prevented until several crowns have been formed.

• **PROPAGATION** Sow seed in containers in a cold frame, preferably as soon as ripe or in spring. Use loamless seed compost, sow thinly, and keep moist; light is needed for germination. Over winter, keep young plants produced from autumn sowings in a cold greenhouse or frame. Seedlings are prone to damping off.

Divide after flowering. Root vegetative buds of *M. chelidoniifolia* when they appear in the upper leaf axils.



*Meconopsis betonicifolia*

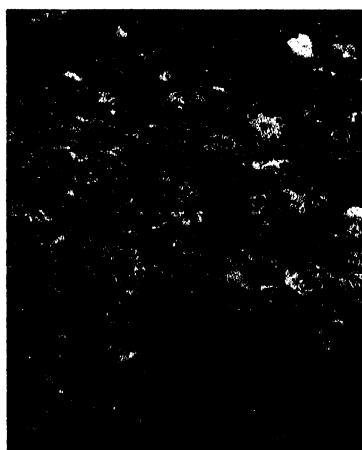
*Meconopsis cambrica*

• **PESTS AND DISEASES** Susceptible to downy mildew and to damage caused by slugs and snails.

***M. betonicifolia*** ☐ ♀ (Himalayan blue poppy, Tibetan blue poppy). Deciduous perennial, sometimes short-lived, with loose rosettes of oblong to ovate, toothed, light bluish green leaves, 15–30cm (6–12in) long, heart-shaped or truncate at the bases and covered with rust-coloured hairs. In early summer, pendent to horizontal, saucer-shaped, bright blue, sometimes purple-blue or white flowers, 8–10cm (3–4in) across, with yellow stamens, are borne singly on bristly stalks, to 20cm (8in) long, sometimes clustered towards the tops of the stems. ‡ 1.2m (4ft), occasionally more, ↔ 45cm (18in). Tibet, S.W. China, Burma. \*\*\*

***M. cambrica*** ☐ (Welsh poppy). Tap-rooted, deciduous perennial. Elliptic, pinnatisect to pinnatifid or irregularly lobed, pale to bluish green, hairless to hairy leaves, to 20cm (8in) long, are borne on branched stems and in basal tufts. From mid-spring to mid-autumn, produces solitary, shallowly cup-shaped, lemon-yellow to orange flowers, 5–6cm (2–2½in) across, on slender stalks, to 25cm (10in) long, from the upper leaf axils. ‡ 45cm (18in) occasionally more, ↔ 25cm (10in). W. Europe. \*\*\*. **var. *aurantiaca*** has orange flowers. '**Flore Pleno**' has double yellow flowers.

***M. chelidoniifolia*** ☐ Deciduous perennial, spreading by offset buds to form clumps of slender, semi-scandent, leafy, branched stems. The hairy, pale green leaves, to 40cm (16in) long at the

*Meconopsis chelidoniifolia**Meconopsis grandis*

base and 3–12cm (1¼–5in) on the stems, are pinnatisect with pinnatifid lobes. In mid- and late summer, nodding, saucer-shaped, pale yellow flowers, 2.5–3.5cm (1–1½in) across, are produced from the upper leaf axils, on stalks 4–5cm (1½–2in) long. ‡ 1m (3ft), ↔ 60cm (24in). China (W. Sichuan). \*\*\*

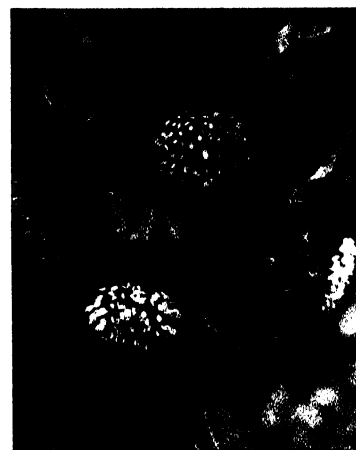
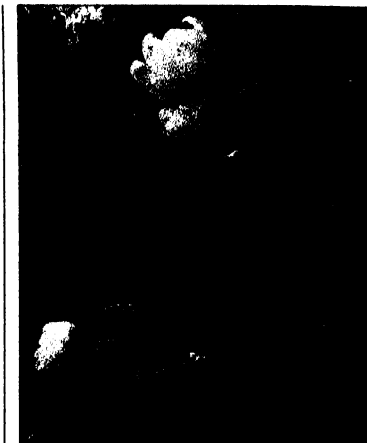
***M. dhwojii***. Monocarpic, evergreen perennial forming basal rosettes of pinnatisect leaves, to 30cm (12in) long, with elliptic-oblong or inversely lance-shaped, lobed segments, covered with bristly, black-based yellow hairs. Branched, leafy stems, to 60cm (24in) long, bear numerous nodding, shallowly cup-shaped, pale yellow flowers, 4–5cm (1½–2in) across, with stalks to 15cm (6in) long, in early summer. The upper flowers are solitary; those on the lower branches are in short racemes of up to 5 flowers. ‡ to 90cm (36in), ↔ 30cm (12in). E. Nepal. \*\*\*

***M. grandis*** ☐ ♀ (Himalayan blue poppy). Clump-forming, deciduous perennial with erect, elliptic, irregularly toothed leaves, 15–25cm (6–10in) long, tapered at the bases. The leaves are borne in basal rosettes and on branched stems, the uppermost forming a whorl below the flowers; they are mid-to dark green, with red-brown or rust-coloured hairs. In early summer, nodding, shallowly cup-shaped, rich blue to purplish red flowers, 12–15cm (5–6in) across, each with up to 9 petals and clusters of yellow anthers, are produced singly from the upper leaf axils on stalks to 40cm (16in) long. Monocarpic in dry conditions. ‡ 1–1.2m (3–4ft), ↔ 60cm

(24in). E. Tibet, E. Nepal to India (Sikkim) and Bhutan. \*\*\*

***M. horridula*** ☐ Monocarpic, deciduous perennial with loose rosettes of simple, entire, elliptic to narrowly inversely lance-shaped, wavy-margined, mid- to grey-green leaves, to 25cm (10in) long, covered with yellow to purple spines. In early and midsummer, branched, leafless, spiny stems bear numerous semi-pendent, cup-shaped, pale to deep blue or reddish blue (rarely white) flowers, 5–8cm (2–3in) across, usually in racemes, on stalks to 15cm (6in) long. ‡ 20–90cm (8–36in), ↔ 45cm (18in). W. Nepal to S.E. Tibet and China (Gansu, Sichuan, Yunnan). \*\*\*

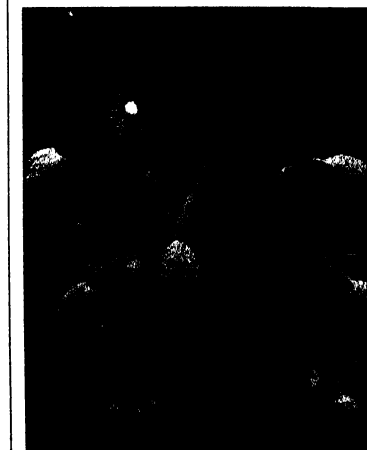
***M. integrifolia*** ☐ Monocarpic, deciduous perennial covered in downy,

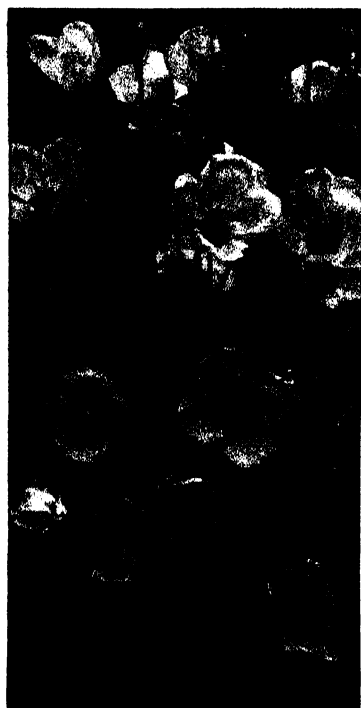
*Meconopsis horridula**Meconopsis integrifolia*

red-brown or yellow hairs, and forming rosettes of entire, inversely lance-shaped to obovate or linear, pale green, strongly 3-veined leaves, 35cm (14in) long, yellow-hairy when young, almost hairless when mature. From late spring to midsummer, stout, sometimes branched stems bear leaves in a loose whorl below 2–10 erect flowers. The shallowly cup-shaped, 6- to 8-petalled flowers, to 23cm (9in) across, are pale to rich lemon-yellow with dark yellow or orange stamens, and produced on stalks to 45cm (18in) long. ‡ to 90cm (36in), ↔ 45–60cm (18–24in). N.E. Tibet, China (Gansu, Sichuan, Yunnan). \*\*\*

***M. napaulensis*** ☐ Monocarpic, evergreen perennial forming rosettes of pinnatisect, yellow-green, red-bristly basal leaves, to 50cm (20in) long, with oblong, lobed segments; the upper stem leaves are pinnatifid or simple. From late spring to midsummer, branching stems bear semi-pendent, bowl-shaped, pink, red, or purple (rarely white) flowers, 6–8cm (2½–3in) across; flowers are borne on stalks to 8cm (3in) long, often in racemes of up to 17 on the lower branches but singly near the stem tops. ‡ 2.5m (8ft), ↔ 60–90cm (24–36in). C. Nepal to China (W. Sichuan). \*\*\*

***M. paniculata***. Monocarpic, evergreen perennial, similar to *M. napaulensis*, with rosettes of pinnatisect or pinnatifid, greyish green leaves, to 60cm (24in) long, covered with rough yellow hairs. From late spring to midsummer, tall, branched stems bear shallowly lobed leaves and many-flowered racemes or panicle-like cymes of pendent, shallowly

*Meconopsis napaulensis*

*Meconopsis regia*

cup-shaped, pale yellow flowers, 5–9cm (2–3½in) across. † to 2m (6ft), ↔ 60cm (24in). E. Nepal to India (Assam). \*\*\*

**M. punicea.** Tap-rooted, deciduous perennial with crowded rosettes of entire, inversely lance-shaped, densely grey-hairy, mid-green, basal leaves, 15–35cm (6–14in) long. From mid-summer to early autumn, unbranched scapes, to 45cm (18in) long, up to 6 per rosette, bear solitary, pendent, narrowly funnel-shaped, vivid crimson flowers, to 10cm (4in) long, with 4–6 long, somewhat flared petals. Monocarpic in dry conditions. † to 75cm (30in), ↔ 30cm (12in). N.E. Tibet, W. China. \*\*\*

**M. quintuplinervia** ♀ (Harebell poppy). Slowly clump-forming, deciduous perennial forming rosettes of entire, obovate to narrowly inversely lance-shaped or lance-shaped, mid- to dark green, basal leaves, to 25cm (10in) long, with dense golden to rust-coloured bristles. From early to late summer, pendent, cup-shaped, pale lavender-blue or purplish blue (rarely white) flowers, 3.5cm (1½in) across, are produced singly, or rarely in twos or threes, on unbranched, slender scapes, to 35cm (14in) long. † 45cm (18in), ↔ 30cm (12in). N.E. Tibet, W. China (Gansu, N.W. Sichuan to C. Shaanxi). \*\*\*

**M. regia** ♂ Monocarpic, evergreen perennial with branched, leafy, hairy stems, and rosettes of simple, narrowly elliptic, finely but deeply toothed, densely silver- or gold-hairy leaves, to 60cm (24in) long. From late spring to midsummer, bears numerous outward-facing, cup-shaped, soft yellow or red flowers, 9–13cm (3½–5in) across, with 4, occasionally 6, overlapping, rounded petals. Upper flowers are solitary; the lower ones are grouped on lateral branches in the upper leaf axils. † to 2m (6ft), ↔ 1m (3ft). C. Nepal. \*\*\*

**M. x sarsonsii** (*M. betonicifolia* x *M. integrifolia*). Deciduous, sometimes monocarpic, fertile perennial with ovate, toothed, mid-green leaves, to 15cm

(6in) long, covered with rust-coloured hairs and arranged in loose rosettes. In early summer, branched stems produce solitary, pendent to erect, saucer-shaped, pale creamy yellow flowers, 7–10cm (3–4in) across, on stalks to 40cm (16in) long, produced from the axils of loose whorls of stem leaves. † 1.2m (4ft), ↔ 90cm (3ft). Garden origin. \*\*\*

**M. x sheldonii** ♀ (*M. betonicifolia* x *M. grandis*). Rosette-forming, hairy perennial with elliptic-oblong to lance-shaped, toothed, dark green basal and stem leaves, 15–30cm (6–12in) long. In late spring and early summer, shallowly cup-shaped, deep rich to pale blue flowers, 6–10cm (2½–4in) across, are borne singly in the upper leaf axils of the branched stems, on stalks 20–50cm (8–20in) long. † 1.2–1.5m (4–5ft), ↔ 60cm (24in). Garden origin. \*\*\*

**'Branklyn'** has coarsely toothed leaves, and produces vivid blue flowers, to 12cm (5in) across; † to 1.8m (6ft).

**'Slieve Donard'** ♀ is vigorous and free-flowering, with entire leaves and brilliant, rich blue flowers with long, pointed petals; † to 1m (3ft).

**M. villosa**, syn. *Cathcartia villosa*. Rosette-forming, evergreen perennial with ovate to rounded, hairy, light green basal and stem leaves, to 12cm (5in) long, palmately 3- to 5-lobed and sparsely toothed. In late spring and early summer, semi-pendent, saucer-shaped yellow flowers, 4–5cm (1½–2in) across, on stalks to 13cm (5in) long, are borne singly from the upper leaf axils of hairy, branched stems. † 60cm (24in), ↔ 30cm (12in). E. Nepal to Bhutan. \*\*\*

## MEDICAGO

Medick

LEGUMINOSAE/PAPILIONACEAE

Genus of 50–60 species of annuals, perennials, and small shrubs from dry, sunny grassland in Europe and W. and S.W. Asia. They have 3-palmate, light or yellow-green to mid-green or bluish green leaves, sometimes with red spots, and bear short, axillary racemes of pea-like flowers. Grow annuals and perennials in a wild or meadow garden; the shrubby species tolerate coastal conditions, and are best grown in a sunny, open border or against a warm wall. *M. sativa* is grown as a crop plant, as sprouted seeds for salads, and as a "green manure". The flowers attract bees and butterflies.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun. Pruning group 1; remove dead wood in spring.
- **PROPAGATION** Sow seed of perennials *in situ* in spring or autumn. Sow seed of shrubs in containers in a cold frame in spring or autumn. Root greenwood cuttings with bottom heat in early summer.
- **PESTS AND DISEASES** Trouble free.

**M. arborea** (Moon trefoil). Dense, bushy, evergreen shrub with dark green leaves with obovate leaflets, 0.6–2cm (¼–¾in) long, silky-hairy when young. From late spring to early autumn, bears dense racemes of 4–8 yellow flowers, 1.5–2cm (½–¾in) long, followed by flattened, spiralled, green, later brown seed pods. † to 2m (6ft). Canary Islands,

S. Europe and Mediterranean to S.W. Asia. \*\*\* (borderline)

**M. sativa** (Alfalfa, Lucerne). Erect or spreading, hairy, slender-stemmed perennial bearing bluish green leaves with obovate to linear leaflets, to 3cm (1¼in) long. In summer and early autumn, produces long-stalked racemes of pale mauve to violet flowers, to 1cm (½in) long, followed by small, spiralled or sickle-shaped, deep brown seed pods. † to 80cm (32in), ↔ 30–80cm (12–32in). Europe, W. Asia. \*\*\*

▷ **Medick** see *Medicago*

## MEDINILLA

MELASTOMATACEAE

Genus of about 150 species of evergreen shrubs and scandent climbers, some epiphytic, from rainforest in tropical Africa, S.E. Asia, and the Pacific. They have simple, entire, boldly veined leaves, borne in whorls or opposite pairs. Small, star- to bowl-shaped, 4- to 6-petalled flowers, often with large, coloured bracts, are borne in pendent or upright panicles or cymes. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse. In moist, tropical areas, grow climbing species over an arch or pergola; the shrubs are suitable for specimen planting or a shrub border. Long, hot summers are required for production of flowers and fruits.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, or full light with shade from hot sun; provide high humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in dappled shade, or full sun with some midday shade. Pruning group 11 for climbers, after flowering; group 8 for shrubs.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root softwood

*Medinilla magnifica*

cuttings in spring or semi-ripe cuttings with bottom heat in summer. Air layer in spring.

- **PESTS AND DISEASES** Scale insects may be troublesome under glass.

**M. magnifica** ♂ Erect, sparsely branched, epiphytic shrub with robust, ribbed to strongly winged stems bearing broadly ovate to obovate, leathery, lustrous, deep green leaves, 20–30cm (8–12in) long, with prominent, pale green veins. From spring to summer, yellow-stamened, pink to coral-red flowers, to 2.5cm (1in) across, are borne in dense, pendent panicles, 25–40cm (10–16in) long, with several pairs of large, cupped pink basal bracts. † 1–2m (3–6ft), ↔ 0.6–1.5m (2–5ft). Philippines. ♂ (min. 15°C/59°F)

▷ **Mediterranean heath** see *Erica erigena*

▷ **Medlar** see *Mespilus germanica*

▷ **Medusa's head** see *Euphorbia caput-medusae*

## MEEHANIA

LABIATAE/LAMIACEAE

Genus of 6 species of stoloniferous, clump-forming perennials found in moist, deciduous woodland in Asia and North America. Square stems bear opposite pairs of ovate to heart-shaped, finely hairy leaves. Tubular, 2-lipped, violet or blue flowers are produced from the leaf axils from late spring to summer. Grow in a shady border or as ground cover in a woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in full to light dappled shade.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Separate stolons in early spring or autumn. Root stem-tip cuttings in spring.
- **PESTS AND DISEASES** Susceptible to damage by slugs.

**M. urticifolia** ♂ Stoloniferous, clump-forming perennial, spreading widely, with broadly ovate, heart-shaped, wrinkled, softly hairy leaves, 3–6cm (1¼–2½in) long, with scalloped margins. One-sided spikes of 3–12 deep violet flowers, 4–5cm (1½–2in) long, sometimes with white lines and the lower lips spotted dark purple, are produced in late spring and early summer. † 30–45cm (12–18in), ↔ to 2.5m (8ft). Japan. \*\*\*

*Meehania urticifolia*



## MEGACODON

### GENTIANACEAE

Genus of one species of clump-forming perennial found in damp pastures and streamsides from C. Nepal to S.W. China. It has basal rosettes of elliptic to broadly elliptic leaves, and bears smaller leaves on stout, erect stems. Broadly bell-shaped flowers are produced in summer. Grow in a woodland or bog garden, or plant near pools and streams.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in partial or light dappled shade. Provide a dry winter mulch and shelter from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Basal shoots can be rooted in spring, although seldom successfully. Like the large herbaceous gentians (*Gentiana*), *M. stylophorus* does not transplant readily.
- **PESTS AND DISEASES** Susceptible to damage by slugs.

*M. stylophorus*, syn. *Gentiana stylophora*. Upright, clump-forming perennial with basal rosettes of elliptic to broadly elliptic, glossy, dark green leaves, 30cm (12in) long, and pairs of smaller leaves, 10–15cm (4–6in) long, joined at their bases around the stems. In mid- and late summer, pale to mid-yellow flowers, 6–8cm (2½–3in) long, with green lines inside, are borne in pairs from the upper leaf axils. † to 2m (6ft), ↔ 60cm (24in). C. Nepal to China (Yunnan). \*\*\*

▷ *Megalonium* see *Aeonium*

*M. nobile* see *A. nobile*

▷ *Megasea* see *Bergenia*

## MEGASKEPasma

### ACANTHACEAE

Genus of one species of evergreen shrub from tropical woodland in Venezuela. It has opposite, simple, entire leaves, and is grown for its colourful, terminal, spike-like cymes of 2-lipped, tubular flowers surrounded by crimson bracts. Where temperatures fall below 15°C (59°F), grow in a temperate or warm greenhouse; in warmer areas, grow in a courtyard garden or a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2 or No.3) in full light, with high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist, well-drained soil in full sun. Pruning group 8; withstands restrictive pruning and renovation well.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root greenwood cuttings in early summer, or semi-ripe cuttings with bottom heat in late summer.
- **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be troublesome under glass.

*M. erythrochlamys* ■ (Brazilian red cloak, Red justicia). Erect, robust-stemmed shrub, sparsely branched unless regularly pruned, with ovate to



*Megaskepasma erythrochlamys*

broadly elliptic or lance-shaped, boldly veined, mid-green leaves, 12–30cm (5–12in) long. From early autumn to winter, terminal, columnar to narrowly pyramidal, spike-like cymes, 20–30cm (8–12in) long, of tubular, 2-lipped, white or pink flowers, to 8cm (3in) long, are produced from the axils of broadly ovate crimson bracts, to 4cm (1½in) long. † 2–3m (3–10ft), ↔ 1–2m (3–6ft). Venezuela. ♀ (min. 15°C/59°F)

## MELALEUCA

### Paperbark

### MYRTACEAE

Genus of at least 150 species of evergreen shrubs and trees, allied to *Callistemon*, found in habitats ranging from rainforest to semi-arid areas in tropical to cool-temperate zones, mainly in Australia but also in New Caledonia, New Guinea, and Malaysia. Many species have several layers of paper-thin, corky bark, which is shed continuously. The small, flat or cylindrical, often leathery leaves are mainly alternate, or sometimes opposite or whorled. Small flowers, each with 5 short petals and numerous conspicuous, coloured stamens, arranged in 5 fused bundles, are borne in dense, axillary spikes, resembling those of bottlebrushes. In frost-prone areas, grow in a cool or temperate greenhouse. Elsewhere, grow in a shrub border or as specimen trees. Long, hot summers are required for production of flowers and fruits.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2),

with added leaf mould, in full light with shade from hot sun. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun with some midday shade. Shelter from cold, drying winds. Pruning group 1; plants under glass need restrictive pruning after flowering.

- **PROPAGATION** Sow seed at 13–24°C (55–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*M. elliptica* ■ (Granite bottlebrush). Many-branched shrub, erect at first, then spreading or rounded, with furrowed, peeling bark. The opposite,



*Melaleuca elliptica*



*Melaleuca nesophila*

broadly elliptic to elliptic-oblong leaves, 0.5–1.5cm (¼–¾in) long, are mid- to deep green above and paler beneath. From spring to early summer, small, bright pink to crimson flowers, with stamens of the same colour, are borne in abundant short, dense spikes, to 4cm (1½in) or more long. † 1–3m (3–10ft). Australia (Western Australia). ♀ (min. 5–7°C/41–45°F)

*M. hypericifolia* ♀ Many-branched, large shrub or small tree, erect at first, then spreading, with very firm, papery bark and opposite, sometimes arching, narrowly oblong-elliptic or obovate leaves, 1–4cm (½–1½in) long. From spring to summer, small red flowers, with crimson stamens, are produced in loose, feathery, lateral spikes, 5–8cm (2–3in) long. † 2–5m (6–15ft), ↔ 1.5–2.5m (5–8ft). Australia (New South Wales). ♀ (min. 5–7°C/41–45°F)

*M. nesophila* ■ ♀ syn. *M. nesophylla* (Western tea myrtle). Erect to spreading, large shrub or small tree with freely branching stems and spongy, peeling bark. Alternate, mid- to deep green leaves are narrowly obovate, 2–3cm (¾–1¼in) long, with 1–3 faint veins. From spring to summer, bears lavender-pink to rose-pink flowers in dense, spherical spikes, to 2.5cm (1in) or more across. † 3–7m (10–22ft), ↔ 2–4m (6–12ft). Australia (Western Australia). ♀ (min. 5–7°C/41–45°F)

*M. nesophylla* see *M. nesophila*.

▷ *Melandrium elisabethae* see *Silene elisabethae*

## MELASPHAERULA

### IRIDACEAE

Genus of one species of spring-flowering, cormous perennial from shaded woodland in South Africa. It has narrow, grass-like leaves, and produces spikes of star-shaped flowers. In frost-prone areas, grow in a cool greenhouse or in a bulb frame. In warmer climates, grow at the base of a warm, sunny wall.

- **HARDINESS** Half hardy.
- **CULTIVATION** Plant 10–15cm (4–6in) deep. Under glass, grow in loam-based potting compost (J1 No.2), with additional sharp sand, in full light. Water sparingly until the flower spikes appear, then water moderately; apply a balanced liquid fertilizer every 6–8 weeks in the growing season; keep just moist in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. In mild areas, plant in autumn, providing a dry winter mulch; in areas with prolonged frosts, plant in early spring and lift in autumn, after the leaves die down. Protect from excessive winter wet.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in autumn. Remove offsets when dormant in autumn.
- **PESTS AND DISEASES** Trouble free.

*M. graminea* see *M. ramosa*.

*M. ramosa*, syn. *M. graminea*. Cormous perennial with spreading, branched stems bearing erect, grass-like leaves, 5–25cm (2–10in) long. Spikes of up to 7 star-shaped, creamy white or yellowish flowers, 2–3cm (¾–1¼in) across, often veined purple, are produced in spring. ‡ 20–50cm (8–20in), ↔ 8cm (3in). South Africa (S. Western Cape). \*

## MELASTOMA

### MELASTOMATACEAE

Genus of up to 70 species of evergreen shrubs, small trees, and a few herbaceous perennials from moist woodland, often in hilly areas, in India, S.E. Asia, and adjacent Pacific islands. The opposite leaves are lance-shaped to oblong or elliptic, mostly dark green, and often leathery. Usually 5-petalled, open bowl- to saucer-shaped, purple, red, pink, or white flowers are produced in terminal cymes of 3–7 or, rarely, are borne singly; the flowers are followed by fleshy berries. Where temperatures fall below 13–15°C (55–59°F), grow in a warm greenhouse. In warmer regions, grow as free-standing specimen plants or among other shrubs. Long, hot summers are required for the production of flowers and fruits.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. Provide moderate humidity. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with some midday shade. Shelter from cold, drying winds. Pruning group 1 or 8; need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Scale insects and red spider mites may be troublesome under glass.

*M. malabathricum* (Indian rhododendron). Many-branched, spreading shrub with densely scaly-hairy stems and ovate to broadly lance-shaped, coarsely hairy, dark green leaves, 7–10cm (3–4in) long, with prominent veins. Produces shallowly bowl-shaped purple flowers, 3cm (1¼in) across,

singly or in cymes of 2–5, from spring to summer, sometimes followed by spherical, red-pulped berries, 8mm (⅜in) across. ‡ 2–3m (6–10ft), ↔ 1.5–2.5m (5–8ft). India, S.E. Asia. ☞ (min. 13°C/55°F)

## MELIA

### MELIACEAE

Genus of 3–5 species of deciduous or semi-evergreen trees and shrubs from India to China, S.E. Asia, and N. Australia. They have alternate, pinnate or 2-pinnate leaves, and bear small, star-shaped flowers in large, axillary panicles. Each flower has 5 or 6 spreading petals and 10–12 stamens, the filaments of which are fused into a tube with the anthers arranged around the rim. The attractive, bead-like, spherical, single-seeded berries are poisonous. In frost-prone areas, grow in a temperate greenhouse mainly for their foliage, although plants in large containers may flower when 2–3m (6–10ft) tall. In warmer areas, grow as specimen or shade trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Provide shelter from cold, drying winds. Pruning group 1; plants under glass may need restrictive pruning.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root softwood cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*M. azedarach* ☞ ☞ (Bead-tree, Persian lilac, Pride of India). Fast-growing, many-branched, spreading, round-headed, deciduous tree with fissured grey bark. Pinnate or 2-pinnate leaves, 30–60cm (12–24in) long, have many ovate to elliptic, sharply toothed, sometimes lobed, mid- to bright green leaflets. Produces a profusion of star-shaped, fragrant lilac flowers, 2cm (¾in) across, in arching to pendent panicles, 10–20cm (4–8in) long, from spring to early summer; they are followed by spherical to broadly ovoid yellow fruit, 1cm (½in) long. Seeds are used as beads in Asia. ‡ 10–15m (30–50ft), ↔ 5–8m (15–25ft). N. India, China. ☞ (min. 7°C/45°F)



*Melia azedarach*

## MELIANTHUS

### MELIANTHACEAE

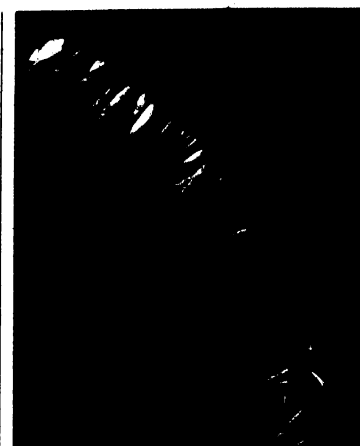
Genus of 6 species of evergreen shrubs from grassland in hilly areas of southern Africa. The alternate, pinnate, light green, grey-green, or blue-green leaves have prominent stipules. Small flowers, producing profuse quantities of nectar, are borne in erect, terminal and axillary racemes; each has 5 irregular sepals and petals, the upper ones often forming a hood or tube, and the lower ones making a short spur. Grow in a border or as specimen plants; they are particularly suited to a coastal garden. In frost-prone areas, grow tender species as foliage plants in a cold greenhouse, and stand or plant outside in summer. Alternatively, treat them as herbaceous perennials; where temperatures do not fall much below -5°C (23°F), they will usually re-sprout annually from the base.

- **HARDINESS** Frost hardy to frost tender; *M. major* may survive temperatures just below 0°C (32°F), if the wood has been well ripened in summer.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. Provide low humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Provide a dry winter mulch and protect from excessive winter wet. Shelter from cold, drying winds. Pruning group 7 or 8.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root basal or softwood cuttings in late spring or early summer. Remove any rooted suckers in spring.
- **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

*M. major* ☞ (Honey bush). Tall, erect to spreading shrub with robust, hollow stems, most of them near ground level and branching sparingly. Spreading, pinnate leaves, 30–50cm (12–20in) long, have 9–17 closely set, ovate, sharply and boldly toothed, grey-green to bright blue-grey leaflets. From late spring to midsummer, produces spike-like racemes, 30–80cm (12–32in) long, of brownish crimson to deep brick-red flowers, 2.5cm (1in) long. ‡ 2–3m (6–10ft), ↔ 1–3m (3–10ft). South Africa (Northern Cape, Western Cape, Eastern Cape). \*



*Melianthus major*



*Melica altissima* 'Atropurpurea'

## MELICA

Melick

### GRAMINEAE/POACEAE

Genus of about 75 species of deciduous, rhizomatous, clump-forming, perennial grasses occurring in grasslands of most temperate regions, except Australia. In summer, panicles of laterally compressed spikelets are borne on erect stems among clumps of linear, flat or inrolled, arching leaves. Grow in a mixed or herbaceous border or in a woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil. *M. altissima* thrives in full sun or light dappled shade; *M. nutans* prefers light shade; *M. uniflora* will tolerate full shade and drier conditions. Protect from excessive winter wet.
- **PROPAGATION** Sow seed *in situ* in spring or as soon as ripe. Divide as growth starts in early or mid-spring.
- **PESTS AND DISEASES** Trouble free.

*M. altissima* (Siberian melick). Tufted, perennial grass with creeping rhizomes and pointed, linear, pale to mid-green leaves, 10–23cm (4–9in) long, with rough surfaces. In summer, green spikelets are produced in erect, one-sided panicles, 10–25cm (4–10in) long, with densely flowered tips. ‡ 0.6–1.5m (2–5ft), ↔ 40–80cm (16–32in). Europe. \*\*\*. 'Alba' has pale green leaves, and produces conspicuous, pale greenish white spikelets from late spring to late summer. 'Atropurpurea' ☞ has lustrous, deep purple spikelets that become paler with age. Good for drying. *M. nutans* (Mountain melick, Wood melick). Slowly creeping, perennial grass forming loose clumps of shiny, fresh green leaves, to 20cm (8in) long. Gracefully arching stems bear one-sided panicles, to 15cm (6in) long, of bead-like, brown and cream spikelets from late spring to midsummer. ‡ 45cm (18in), ↔ 30cm (12in) or more. Europe, N. and S.W. Asia. \*\*\*

*M. uniflora*. Perennial grass with slender, creeping rhizomes forming loose tufts of linear, pointed, bright green leaves, 5–20cm (2–8in) long, with hairy upper surfaces. Purple or brown spikelets are borne in sparsely branched, erect or nodding panicles, 2.5–20cm (1–8in) long, in summer. ‡ 20–60cm (8–24in), ↔ to 60cm (24in). Europe, S.W. Asia. \*\*\*. 'Variegata' has fresh

## MELICA

green leaves with creamy white central stripes and purple-flushed bases, and bears dark purplish brown spikelets from late spring to midsummer.

▷ **Melick** see *Melica*

**Mountain** see *M. nutans*

**Siberian** see *M. alba*

**Wood** see *M. nutans*

## MELICYTUS

syn. HYMENANTHERA

VIOLACEAE

Genus of about 7 species of evergreen or semi-evergreen shrubs from Australasia, found in rocky sites from mountains to woodland, dry riverbeds, and coasts. They have alternate, lance-shaped to broadly ovate, elliptic, or oblong, sweetly fragrant leaves. Small male and female flowers, with 5 spreading petals, are usually borne on separate plants.

*M. crassifolius* and *M. dentatus* are grown for their attractive habits and their decorative fruits. Grow in an open, sunny site in a shrub border. In frost-prone areas, grow tender species in a cool greenhouse. Need long, hot summers to flower and fruit well.

• **HARDINESS** Fully hardy to frost tender.  
• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Protect from cold, drying winds. Pruning group 8 or 9.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*M. crassifolius*, syn. *Hymenanthera crassifolia*. Densely branched, twiggy, and often slightly spiny shrub with obovate to oblong-elliptic, leathery, dark green leaves, to 2cm (¾in) long. In late spring and early summer, bears tiny yellow flowers, followed by ovoid purple berries, 5mm (¼in) across. ↑→ 1.2m (4ft). New Zealand. \*\*\* (borderline)

*M. dentatus*, syn. *Hymenanthera dentata*. Dense shrub with oblong, leathery, dark green leaves, to 4cm (1½in) long. Tiny, yellow to greenish white flowers are borne in late spring, followed by spherical purple berries, 5mm (¼in) across. ↑ 1.5m (5ft), ↔ 2m (6ft) or more. S.E. Australia. \*\*

## MELINIS syn. RHYNCHELYTRUM

GRAMINEAE/POACEAE

Genus of about 15 species of clump-forming, annual or perennial grasses from savannah grasslands of tropical Africa and S.E. Asia. They have flat, linear to thread-like leaves, and produce compact or open panicles of spikelets from summer to autumn. *M. repens*, the only species in general cultivation, is grown for its brightly coloured flower-heads, which may be cut for fresh flowers. Grow at the front of a border; in frost-prone areas, treat as an annual, or lift and keep frost-free in winter.

• **HARDINESS** Half hardy to frost tender; *M. repens* may tolerate short periods below 0°C (32°F).

• **CULTIVATION** Grow in moderately fertile, light, well-drained soil in full sun. In areas with light frosts, provide a deep, dry winter mulch. In colder areas, lift in late autumn and pot up in a loam-based potting compost (J1 No.1); keep

barely moist and frost-free in winter, and plant out again in spring when danger of frost has passed.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in late winter, harden off, and plant out after all danger of frost has passed. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

*M. repens*, syn. *Rhynchelytrum repens*, *R. roseum* (Natal grass). Loosely tufted, annual or short-lived, perennial grass. Upright, ascending stems bear flat, linear, long-pointed leaves, to 30cm (12in) long. From midsummer to early autumn, bears cylindrical to ovoid panicles, to 20cm (8in) long, of keeled, flattened spikelets, densely clothed in silky white hairs and strongly tinted bright purple to rose-red. ↑ 45–120cm (18–48in), ↔ 60–100cm (24–39in). Tropical Africa. \*

## MELIOSMA

MELIOSMACEAE/SABIACEAE

Genus of 20–25 species of evergreen and deciduous trees and shrubs occurring in forests from India and Sri Lanka to Japan, and in Mexico, Central America, and tropical South America. The alternate leaves are simple, sometimes pinnate, and mid- to dark green. Large panicles of tiny, cup- and saucer-shaped, 5-petalled, fragrant flowers are borne in spring or summer. Grow as specimen plants in a shrub border or woodland garden, or against a warm, sunny wall.

• **HARDINESS** Fully hardy to frost hardy; young foliage may be damaged by late frosts.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained, neutral to slightly acid soil, in full sun with some midday shade. Shelter from cold, drying winds. Pruning group 1, or 13 if grown as a wall specimen.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root green-wood cuttings in early summer.

• **PESTS AND DISEASES** Trouble free.

*M. myriantha* ♀ Spreading, deciduous, small tree or shrub with arching branches and simple, narrowly elliptic to ovate-lance-shaped, sharply toothed, mid-green leaves, to 20cm (8in) long; these have soft, red-brown hairs on the midribs and leaf-stalks. Very fragrant, minute, creamy white flowers are borne in panicles, 30cm (12in) long, in mid-summer, followed by small, peppercorn-like, dark red fruit, to 2mm (⅛in) across. ↑ 2.5m (8ft) or more, ↔ 4m (12ft). China, Korea, Japan. \*\*\*

*M. oldhamii* see *M. pinnata* var. *oldhamii*.

*M. pinnata* var. *oldhamii* ♀ syn. *M. oldhamii*. Stoutly branched, deciduous tree, upright when young, later spreading, with pinnate, dark green leaves, to 35cm (14in) long, with up to 13 broadly ovate to obovate leaflets. White flowers are borne in panicles, to 30cm (12in) long, in early summer, followed by small, black or dark red fruit, 5mm (¼in) across. ↑ 10m (30ft), ↔ 6m (20ft). China, Korea. \*\*\*

*M. veitchiorum* ♂ Slow-growing, deciduous tree, upright when young, later spreading, with pinnate, dark green leaves, to 75cm (30in) long, with up to 11 ovate or oblong leaflets and red



*Meliosma veitchiorum*

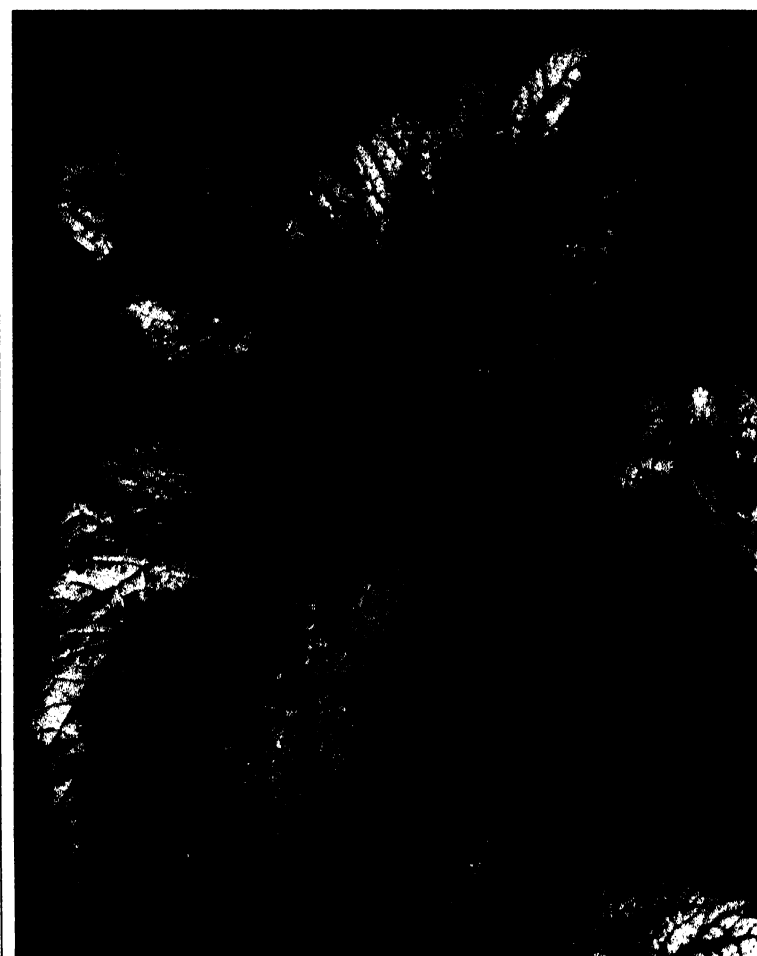
stalks. Creamy white flowers are borne in dense panicles, to 45cm (18in) long, in late spring, followed by spherical violet fruit, to 8mm (⅜in) across. ↑ 10m (30ft), ↔ 8m (25ft). W. China. \*\*\*

## MELISSA

Balm

LABIATAE/LAMIACEAE

Genus of 3 species of herbaceous perennials occurring from Europe to C. Asia on damp wasteland, from sea level to mountains. Toothed, ovate, pale or mid-green leaves, which smell strongly of lemons when bruised, are borne in opposite pairs on square, branching stems. Leafy, whorled spikes of tubular, 2-lipped, pale yellow or white flowers are borne in summer. *M. officinalis* is a



*Melissa officinalis* 'Aurea'

decorative, drought-tolerant plant, useful for a herbaceous or mixed border, or a herb garden. The flowers attract bees and other insects, and the leaves may be used in pot-pourri or for herb tea.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor, well-drained soil in full sun, with protection from excessive winter wet. In early summer, cut back variegated forms to encourage strongly coloured growth.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide as growth starts in spring, or in autumn.

• **PESTS AND DISEASES** Trouble free.

*M. officinalis* (Bee balm, Lemon balm). Bushy, upright perennial with hairy, glandular stems and wrinkled, ovate, light green leaves, to 7cm (3in) long. Throughout summer, produces irregular spikes of pale yellow flowers, becoming white or lilac-tinted white, to 1.5cm (½in) long. ↑ 60–120cm (2–4ft), ↔ 30–45cm (12–18in). S. Europe. \*\*\*. 'All Gold' has golden yellow leaves and white flowers, tinted pale lilac. 'Aurea' ♂ syn. 'Variegata' of gardens, has dark green leaves, heavily splashed gold at the margins.

## MELITTIS

Bastard balm

LABIATAE/LAMIACEAE

Genus of one species of clump-forming perennial occurring in light woodland throughout Europe, except the extreme north, as far as the Ukraine. It has leafy, square stems, bearing opposite pairs of leaves, and produces 2-lipped flowers in

M

*Melittis melissophyllum*

white, pink, or purple, or white with pink or purple lips, in whorls from the upper leaf axils. Grow *M. melissophyllum* in a shady, mixed or herbaceous border, or in a woodland garden. The flowers are attractive to bees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in partial shade; avoid excessively dry soil.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide as new growth starts in spring.
- **PESTS AND DISEASES** Trouble free.

**M. melissophyllum** ■ Herbaceous perennial with erect, hairy or glandular stems. The oval, scalloped, aromatic, honey-scented leaves, to 8cm (3in) long, are hairy and wrinkled, with prominent veins. In late spring and early summer, produces whorls of 2–6 tubular, 2-lipped flowers, 4cm (1½in) long, in pink, purple, or white, or creamy white with pink or purple lips and spots. †20–70cm (8–28in), ↔ 50cm (20in). Europe to Ukraine. \*\*\*

## MELOCACTUS

Turk's cap cactus

CACTACEAE

Genus of 20 or more species of spherical, rarely elongated, simple, occasionally branching, perennial cacti from coastal areas of Central and South America, Cuba, and the West Indies. They have prominently spined ribs. As plants mature, a cephalium, consisting of a mass of wool and bristles, which in some species gradually elongates to over 1m (3ft) tall, forms on the crown of each stem. The plant body apparently does not develop further once the cephalium appears. Spreading, funnel-shaped, diurnal flowers are borne on the cephalium in summer, followed by berry-like fruits with glossy, black-coated seeds. Where temperatures fall below 16°C (61°F), grow in a warm greenhouse. Elsewhere, grow in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light and away from draughts. In growth, water sparingly, mist very occasionally, and apply fertilizer monthly. Plants are prone to root rot if overwatered or will rot if too cold. Water very sparingly in winter. Outdoors, grow in moderately

fertile, gritty, sharply drained soil in full sun. See also pp.48–49.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

**M. actinacanthus** see *M. matanzanus*.

**M. azureus**. Cactus with a spherical to cylindrical, mid- to grey-green, often glaucous stem with 9–12 ribs bearing white spines (1–3 centrals and 7–11 radials). The white-woolly cephalium bears conspicuous red bristles. Pink flowers, 1.5–2cm (½–¾in) across, are borne in summer, followed by white to pale pink fruit. †14–30cm (5½–12in), ↔ 14–20cm (5½–8in). E. Brazil. ♀ (min. 16°C/61°F)

**M. communis** see *M. intortus*.

**M. curvispinus**, syn. *M. oaxacensis*.

Cactus with a spherical or ovoid, dull green stem bearing 10–15 furrowed ribs and reddish brown spines (8–12 radials and 1 or 2 longer centrals). The low-set cephalium has dense brown bristles and a white-woolly top. Dark rose-pink flowers, 2–4cm (¾–1½in) across, are produced in summer. †15cm (6in). S. and E. Mexico, Guatemala. ♀ (min. 16°C/61°F)

**M. intortus** ■ syn. *M. communis*.

Cactus with a flattened-spherical, dark green stem, elongating with age, bearing 12–24 ribs and yellow-brown spines (10–14 radials and 1–3 centrals). Rose-pink flowers, 1.5–2cm (½–¾in) across, are borne from the cylindrical, brown-bristly cephalium in summer. †1m (3ft) or more, ↔ 25cm (10in). West Indies. ♀ (min. 16°C/61°F)

**M. macrodiscus** see *M. zehntneri*.

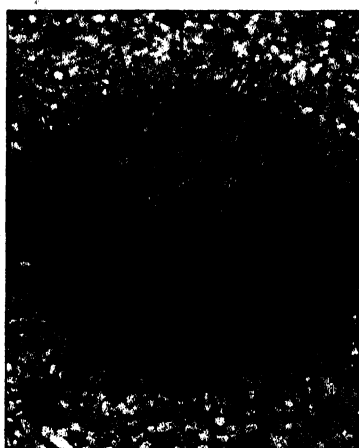
**M. matanzanus**, syn. *M. actinacanthus*.

Cactus with a spherical, dark green stem bearing 8–13 straight ribs and brownish white or grey spines (5–9 radials and 1 longer central). The low-set cephalium has dense, orange-red bristles. Pink flowers, 1.5–2cm (½–¾in) across, are borne in summer. †8cm (3in), ↔ 9cm (3½in). N. Cuba. ♀ (min. 16°C/61°F)

**M. oaxacensis** see *M. curvispinus*.

**M. zehntneri**, syn. *M. macrodiscus*.

Cactus with a spherical, bluish green stem with 10 ribs and pale brown spines (6–10 radials and 1 central, although the central one may be absent). The low-set, white-woolly cephalium is often slow to develop. Rose-red flowers, 1.5–2.5cm (½–1in) across, are borne in summer, followed by reddish violet fruit. †14cm (5½in), ↔ 18cm (7in). E. Brazil. ♀ (min. 16°C/61°F)

*Melocactus intortus*

## MENISPERMUM

Moonseed

MENISPERMACEAE

Genus of 2 species of twining, suckering, semi-woody, sometimes herbaceous, deciduous, dioecious climbers from woodland in E. Asia and E. North America. They are grown for their long racemes or panicles of grape-like, glossy black fruits. The alternate, peltate leaves are ovate-heart-shaped to almost rounded. Inconspicuous, bowl-shaped, male and female flowers are borne in racemes or panicles. Grow on a trellis, against a wall, or through small trees. The fruits may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy; unripened growth may be damaged by frost.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or dappled shade. Provide support. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Transplant suckers in autumn or spring.
- **PESTS AND DISEASES** Trouble free.

**M. canadense** (Canadian moonseed, Yellow parilla). Usually semi-woody, suckering climber with slender shoots and long-stalked, ovate-heart-shaped to rounded, 3- to 7-angled leaves, 8–15cm (3–6in) long. In summer, produces tiny, yellow-green flowers in axillary racemes or panicles, followed on female plants by grape-like, glossy black fruit, to 1cm (½in) long. †5m (15ft). E. North America. \*\*\*

## MENTHA

Mint

LABIATAE/LAMIACEAE

Genus of 25 species of aromatic, rhizomatous perennials, rarely annuals, widely distributed in Europe, Africa, and Asia, often found in shallow water or wet or moist soil. Erect, branching stems bear lance-shaped to rounded, light to dark green, purple-, blue-, or grey-green leaves. The tubular to bell-shaped flowers are weakly 2-lipped, each with 4 spreading lobes and leafy bracts. They are borne in summer, in spikes of whorl-like clusters, or occasionally in a single, terminal cluster. Mints are widely used as culinary herbs.

Grow in a herb or vegetable garden; the less invasive species are also suitable for a herbaceous border. *M. aquatica* is useful for stabilizing the muddy edges of a pool, *M. pulegium* can be used as low ground cover, and *M. requienii* is useful for a rock garden. All attract bees; most dry well for use in pot-pourri.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor, moist soil in full sun. Restrict spread of invasive species by planting in deep containers and plunging in the soil, or by growing in small beds to restrict root run. *M. aquatica* can be grown in containers submerged in water up to 15cm (6in) deep. See also pp.52–53.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring or autumn. Portions of rhizome will root at any time during the growing season; pot up until established. Root tip cuttings in spring or summer.

*Mentha aquatica*

- **PESTS AND DISEASES** Powdery mildew, especially during drought, and rust are troublesome.

**M. aquatica** ■ (Watermint). Marginal aquatic or semi-aquatic perennial with long, thin, segmented rhizomes, often reddish purple stems, and ovate to ovate-lance-shaped, toothed, aromatic, sometimes hairy, dark green leaves, to 6cm (2½in) long, occasionally to 9cm (3½in). In summer, produces whorls of shallowly tubular lilac flowers, to 5mm (¼in) long, in dense, spherical, terminal clusters. †15–90cm (6–36in), ↔ 1m (3ft) or more. Eurasia. \*\*\*

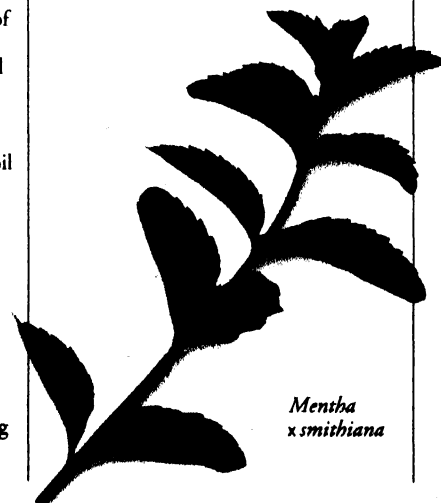
**M. corsica** see *M. requienii*.

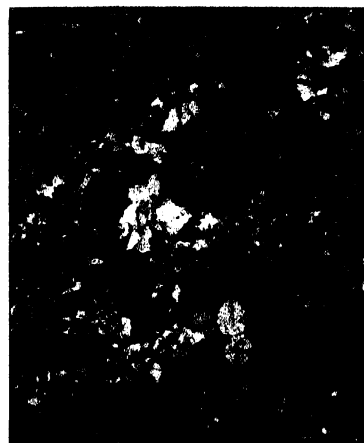
**M. x gentilis 'Aurea'** see *M. x gracilis 'Variegata'*.

**M. x gentilis 'Variegata'** see *M. x gracilis 'Variegata'*.

**M. x gracilis 'Variegata'** (*M. arvensis* x *M. spicata*), syn. *M. x gentilis 'Aurea'*, *M. x gentilis 'Variegata'* (Ginger mint, Red mint). Spreading perennial with erect, often red-tinted stems and short-stalked, ovate-lance-shaped to elliptic-oblong leaves, 3–7cm (1¼–3in) long, striped and flecked gold, and strongly aromatic and ginger-flavoured. In summer, bears dense, whorled clusters of tubular lilac flowers, to 4mm (¼in) long, widely spaced on upright stems. †30cm (12in) or more, ↔ 1m (3ft) or more. \*\*\*

**M. longifolia**, syn. *M. sylvestris* (Horsemint). Vigorous, creeping perennial with grey-hairy stems and oblong-elliptic, toothed, strongly aromatic, musty-scented, green to silver-grey leaves, 6–9cm (2½–3½in) long, with unbranched hairs. In summer,

*Mentha x smithiana*



*Mentha suaveolens* 'Variegata'

tubular, lilac or white flowers, to 5mm (1/4in) long, are borne in dense whorls in terminal, tapering spikes. ‡ to 1.2m (4ft), ↔ 1m (3ft) or more. Europe, Turkey, Caucasus, N.W. Iran. \*\*\*  
***M. odorata*** see *M. x piperita* f. *citrata*.  
***M. x piperita* f. *citrata*** (*M. aquatica* x *M. spicata*), syn. *M. odorata*, *M. piperita* var. *citriodora* (Eau de Cologne mint, Lemon mint). Vigorous, spreading, eau de Cologne-scented perennial with hairless stems and thin-textured, ovate, dark green leaves, 4–9cm (1½–3½in) long, tinged reddish purple in sun or copper-red in shade. Dense, terminal, oblong spikes of congested whorls of tubular, pinkish purple flowers, 4mm (1/4in) long, are borne in late summer. ‡ 50cm (20in), ↔ 1m (3ft) or more. Garden origin. \*\*\*  
***M. piperita* var. *citriodora*** see *M. x piperita* f. *citrata*.  
***M. pulegium*** (Pennyroyal). Spreading perennial with upright and procumbent stems bearing short-stalked, narrowly elliptic to rounded, sharply aromatic, bright green leaves, to 3cm (1¼in) long, hairy beneath. Widely spaced, leafy whorls of tubular lilac flowers, 4–6mm (1/8–¼in) long, are borne in spikes in summer. ‡ 10–40cm (4–16in), ↔ to 50cm (20in). S.W. and C. Europe, Mediterranean to Iran. \*\*\*  
***M. requienii***, syn. *M. corsica* (Corsican mint). Procumbent, mat-forming, hairy or hairless perennial with slender, creeping, rooting stems bearing broadly ovate to rounded, peppermint-scented, bright green leaves, to 7mm (1/4in) across. In summer, bears whorls of tiny, tubular lilac flowers, 2mm (1/8in) long, in short spikes. Prefers shade. ‡ to 1cm (1/2in), ↔ indefinite. France (Corsica), Italy (including Sardinia). \*\*\*  
***M. rotundifolia*** of gardens see *M. suaveolens*.  
***M. rubra* var. *rariopila*** see *M. x smithiana*.  
***M. x smithiana*** (M. *aquatica* x *M. arvensis* x *M. spicata*), syn. *M. rubra* var. *rariopila* (Red rariopila). Vigorous, spreading perennial with ovate, toothed, sweet-smelling, sparsely hairy, dark green, red-tinted leaves, 3–9cm (1¼–3½in) long. In summer, produces spikes of dense whorls of tubular lilac flowers, to 5mm (1/4in) long, usually well spaced, sometimes clustered at the stem tips. ‡ to 1m (3ft), ↔ 1.2m (4ft) or more. N. and C. Europe. \*\*\*  
***M. spicata***, syn. *M. viridis* (Spearmint). Spreading perennial with stalkless,

lance-shaped to oblong-ovate, toothed, aromatic (usually sweet-smelling but sometimes pungent), bright green leaves, 5–9cm (2–3½in) long, hairless or with branched and unbranched hairs beneath. Bears dense, cylindrical spikes of usually separated whorls of tubular to bell-shaped, pink, lilac, or white flowers, to 3mm (1/8in) long, in summer. ‡ to 1m (3ft), ↔ indefinite. W. and C. Europe, Mediterranean. \*\*\*

***M. suaveolens***, syn. *M. rotundifolia* of gardens (Apple mint). Vigorous, spreading, apple-scented perennial with often white-hairy stems and toothed, oblong-ovate to rounded, irregularly wrinkled and softly hairy, greyish green leaves, to 3cm (1¼in) long, the margins sometimes rolled under and wavy. In summer, bears tubular, pink or white flowers, to 2mm (1/8in) long, in dense whorls in terminal, often branched spikes. ‡ to 1m (3ft), ↔ indefinite. W. and S. Europe, Mediterranean. \*\*\*  
**'Variegata'** (Pineapple mint) has leaves with broad cream streaks and margins, and a rich, fruity fragrance.  
***M. sylvestris*** see *M. longifolia*.  
***M. x villosa* f. *alopecuroides*** (*M. spicata* x *M. suaveolens*) (Bowles' mint). Variable, spreading perennial with softly hairy, broadly ovate or rounded, aromatic, toothed, bright green leaves, 4–8cm (1½–3in) long. In summer, whorls of tubular pink flowers, 2–3mm (1/8–¼in) long, are produced in large, leafy spikes. ‡ 30–90cm (12–36in), ↔ indefinite. Garden origin. \*\*\*  
***M. viridis*** see *M. spicata*.

## MENTZELIA

Starflower

LOASACEAE

Genus of 60 species of spreading to erect, freely branching, densely stiff-haired annuals, biennials, perennials, and subshrubs, mostly from dry, sandy, or rocky scrub in S.W. USA, Mexico, and the West Indies. Alternate, mainly lance-shaped, coarsely toothed, light to



*Mentzelia lindleyi*

mid-green leaves may be simple, lobed, or pinnatifid. The poppy-like, 5- to 10-petaled, bright orange, yellow, or white flowers, often night-scented or opening only in strong sunlight, are borne singly or in loose cymes in summer. Grow in an annual or mixed border, or a wild garden; they need long, hot summers to flower well. In frost-prone areas, grow tender species in a cool greenhouse.

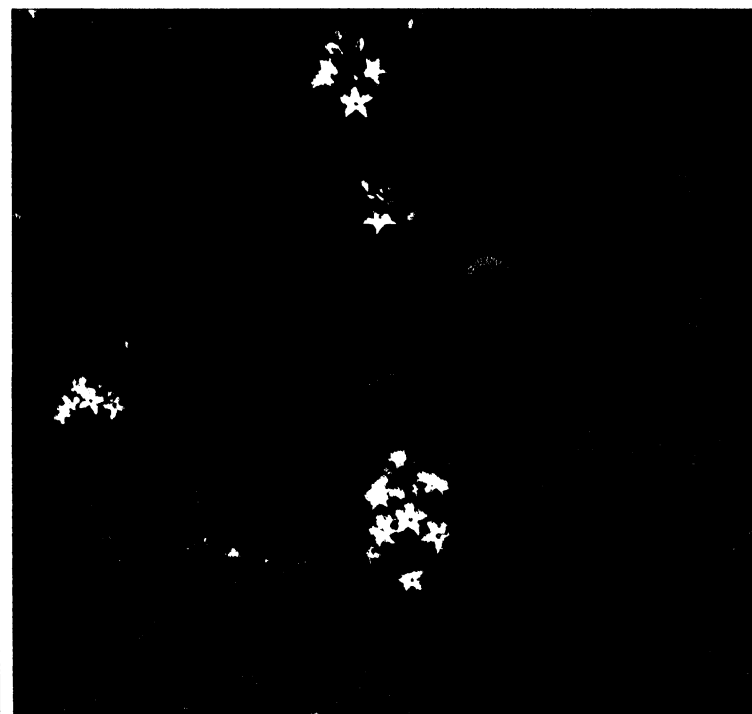
• **HARDINESS** Fully hardy to frost tender.  
 • **CULTIVATION** Grow in moderately fertile, well-drained soil in a warm, sheltered site in full sun. Water freely in the growing season for repeat flowering. After first flush of bloom, cut annuals back to 5cm (2in).  
 • **PROPAGATION** Sow seed of annuals *in situ* in spring.  
 • **PESTS AND DISEASES** Trouble free.

***M. lindleyi*** (Blazing star). Erect, freely branching annual with lance-shaped to oval, pinnatifid, mid-green to grey leaves, to 15cm (6in) long, the lobes sometimes toothed. In summer, 5-petaled, very fragrant, night-scented, golden yellow blooms, 5–9cm (2–3½in) across, are borne singly from the leaf axils or in 2- or 3-flowered cymes at the stem tips; petals are flushed orange-red at the bases. ‡ 15–70cm (6–28in), ↔ to 23cm (9in). USA (California). \*\*\*

## MENYANTHES

MENYANTHACEAE

Genus of one species of rhizomatous, aquatic or semi-aquatic perennial from the N. hemisphere, especially in Europe. It forms large, spreading, floating mats that extend over the shallow, still or slow-moving water of lakes or ponds, and sometimes across the muddy margins. *M. trifoliata* has 3-palmate leaves and bears racemes of star-shaped flowers. It is a decorative plant for ponds and for the margins of a wildlife pool, and is useful for disguising hard edges.  
 • **HARDINESS** Fully hardy.



*Menyanthes trifoliata*

• **CULTIVATION** In a large pool, grow in an aquatic planting basket, at a depth of 15–23cm (6–9in), or in muddy pond margins. Provide a site in full sun to encourage production of the short-lived flowers. See also pp.52–53.

• **PROPAGATION** Sow seed in winter in containers standing in water. In summer, divide young rhizomes into pieces, 23–30cm (9–12in) long, and place them horizontally on soft mud in an aquatic planting basket or in shallow water; push in and peg down.  
 • **PESTS AND DISEASES** Trouble free.

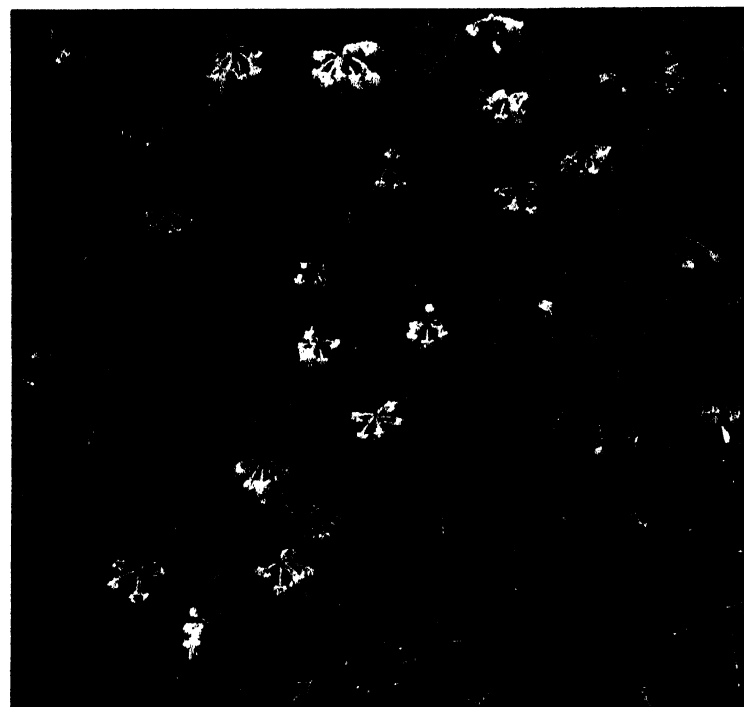
***M. trifoliata*** (Bogbean). Aquatic perennial with extensive, creeping rhizomes, to 1.2m (4ft) long, and 3-palmate leaves with elliptic to ovate or obovate leaflets, to 6cm (2½in) long. In summer, bears erect racemes of 10–20 white flowers, 2.5cm (1in) across, pink outside and in bud, with very finely fringed and bearded petals. ‡ 20–30cm (8–12in), ↔ indefinite. Europe, N. Asia, N.W. India, North America. \*\*\*

## MENZIESIA

ERICACEAE

Genus of about 7 species of freely branching, spreading to upright, deciduous shrubs, found in woodland in E. Asia and North America. The ovate to elliptic or oblong leaves are arranged alternately and often clustered at the shoot tips. Small, nodding, urn- to bell-shaped, 4- or 5-lobed flowers are borne in umbels in late spring and early summer. Grow *Menziesia* species in a peat bed or woodland garden; they grow best in areas with cool, damp summers.

• **HARDINESS** Fully hardy, although young growth may be damaged by late frosts.  
 • **CULTIVATION** Grow in moist but well-drained, humus-rich, acid soil in partial shade. Shelter from cold, drying winds. Pruning group 8.  
 • **PROPAGATION** Sow seed in containers in spring at 13°C (55°F), or in a cold



*Menziesia ciliicalyx* var. *purpurea*

frame outdoors in autumn. Root green-wood cuttings with bottom heat in early summer.

• **PESTS AND DISEASES** Trouble free.

*M. ciliicalyx* var. *lasiophylla* see *M. ciliicalyx* var. *purpurea*.

*M. ciliicalyx* var. *purpurea* ■ syn. *M. ciliicalyx* var. *lasiophylla*. Slow-growing, bushy shrub with clustered, obovate to oval, bright green leaves, to 7cm (3in) long. In late spring and early summer, bears umbels of 3–8 urn-shaped, dark purple-pink flowers, 1.5cm (½in) long. ± 1m (3ft). Japan. \*\*\*

*M. ferruginea* (Fool's huckleberry, Rusty leaf). Upright, twiggy shrub with clustered, obovate to elliptic, mid-green leaves, to 6cm (2½in) long, covered in soft, rust-brown hairs and turning red in autumn. From late spring to summer, bears umbels of 2–5 urn-shaped, red-flushed yellow flowers, 7mm (¼in) long. ± 2m (6ft), ± 1.5m (5ft). N.W. North America (Alaska to N. California). \*\*\*

## MERENDERA

COLCHICACEAE/LILIACEAE

Genus of about 10 species of bulbous perennials from subalpine meadows and dry sites in open woodland in the Mediterranean region, N. Africa, the Middle East, and W. Asia. The basal, semi-erect leaves are linear to linear-lance-shaped, strap-shaped, or inversely lance-shaped, and elongate after flowering. Small, funnel-shaped flowers, with separate, often narrow, star-shaped tepals, are borne at ground level, with or before the leaves in spring or autumn. Grow in a raised bed, alpine house, or bulb frame; *M. montana* is suitable for a sunny rock garden.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Plant 5–7cm (2–3in) deep in late summer. Outdoors, grow in moist but well-drained soil in full sun. In a bulb frame, grow in loam-based potting compost (J1 No.2) with added

sharp sand. Water moderately in the growing season. *Merendera* species require a hot, dry period of summer dormancy. Report annually in summer.

• **PROPAGATION** Sow seed in containers in a cold frame: in spring for autumn-flowering species, in autumn for spring-flowering species. Remove offsets during summer dormancy.

• **PESTS AND DISEASES** Trouble free.

*M. bulbocodium* see *M. montana*.

*M. caucasica* see *M. trigyna*.

*M. montana* ■ syn. *M. bulbocodium*, *M. pyrenaica*. Cormous perennial with 3 or 4 linear, channelled leaves, to 22cm (9in) long, borne just with or after the flowers. In autumn, produces 1 or 2 upright, funnel-shaped, purple to red-purple flowers, to 7cm (3in) long, sometimes with white bases. ± 5cm (2in). C. Pyrenees, Iberian peninsula. \*\*\*

*M. pyrenaica* see *M. montana*.

*M. raddeana* see *M. trigyna*.

*M. robusta*. Cormous perennial with 3–6 linear to lance-shaped leaves, to 25cm (10in) long, with the flowers. Produces 1–4 upright, funnel-shaped, deep pink to lilac or white flowers, 2–4cm (¾–1½in) long, in spring. ± 8cm



*Merendera montana*

(3in), ± 5cm (2in). Iran, Afghanistan, Turkmenistan, N. India. \*\*\*

*M. trigyna*, syn. *M. caucasica*, *M. raddeana*. Bulbous perennial with linear to linear-lance-shaped leaves, to 17cm (7in) long, borne with the flowers. In spring, bears 1–3 funnel-shaped, purple-pink to white flowers, 2–3cm (¾–1¼in) long, with narrow, inversely lance-shaped tepals. ± 5cm (2in). Turkey, Caucasus, Iran. \*\*\*

## MERREMIA

CONVOLVULACEAE

Genus of at least 70 species of woody, evergreen and herbaceous, mainly twining climbers found in tropical regions in diverse habitats, including mudflats, grassland, and woodland. The alternate or spiralling leaves are entire or palmately lobed or divided. Funnel- to bell-shaped flowers are borne singly or in small clusters from the upper leaf axils. In frost-prone areas, grow in a temperate greenhouse, or treat as tender annuals and grow outdoors. Elsewhere, grow over a pergola, arch, or trellis.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with some midday shade. Shelter from cold, drying winds. Pruning group 11, in late winter or early spring.

• **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring.

• **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

*M. tuberosa*, syn. *Ipomoea tuberosa*, *Operculina tuberosa* (Spanish morning glory, Wood rose, Yellow morning glory). Vigorous, woody-stemmed, evergreen twining climber. Palmately 5- to 7-lobed, bright to mid-green leaves have oblong-lance-shaped lobes, to 15cm (6in) long. Bears funnel-shaped yellow flowers, 5–6cm (2–2½in) across, usually in stalked clusters of 3–9, but sometimes also singly, mainly in summer. Spherical fruit, to 4cm (1½in) across, develop from the woody sepals. ± 10–20m (30–70ft). Mexico to tropical South America. ☼ (min. 7–10°C/45–50°F)

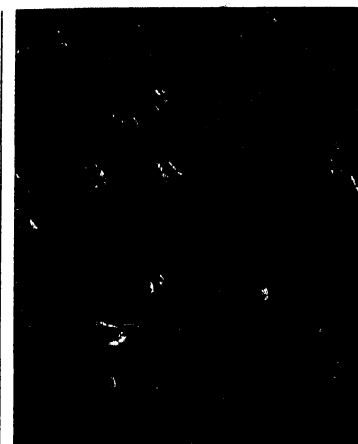
▷ **Merrybells** see *Uvularia*  
Large see *U. grandiflora*

## MERTENSIA

BORAGINACEAE

Genus of about 50 species of clump-forming, mound-forming, or prostrate perennials from wet meadows, woodland, and coasts in Europe, Asia, North America, and Greenland. The alternate, lance-shaped to rounded leaves, sometimes with heart-shaped bases, are light to dark green or greyish or bluish green. Pendent, tubular or bell-shaped, 5-lobed blue flowers, with flared, funnel-shaped mouths, are borne in terminal or axillary cymes. Grow the smaller species in a gravel bed, rock garden, or alpine house, the larger ones in a peat bed, herbaceous border, or woodland garden.

• **HARDINESS** Fully hardy.



*Mertensia ciliata*

• **CULTIVATION** Grow in moist but well-drained, humus-rich soil in light dappled shade. Alpine species, such as *M. echinoides*, require humus-rich, gritty soil; *M. maritima* and *M. simplicissima* prefer low-fertility, sharply drained, very gritty or sandy soil. All prefer full sun with some midday shade.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn; keep young plants shaded and do not allow the soil to dry out. Divide clumps carefully as new growth commences in spring. Take root cuttings of *M. pulmonarioides* when dormant, in autumn or early winter.

• **PESTS AND DISEASES** Slugs and snails may cause damage.

*M. asiatica* see *M. simplicissima*.

*M. ciliata* ■ Upright perennial with stemless, ovate, lance-shaped, or oblong, bluish green basal leaves, to 15cm (6in) long, and ovate to lance-shaped stem leaves. Axillary cymes of bell-shaped, clear blue flowers, to 8mm (⅓in) long, are borne in summer. ± to 60cm (24in), ± to 30cm (12in). W. USA. \*\*\*

*M. echinoides*. Clump-forming perennial with spoon-shaped or ovate to lance-shaped or oblong, dark green leaves, to 9cm (3½in) long. Many-flowered, curving cymes, to 12cm (5in) long, of funnel-shaped, deep blue flowers, to 7mm (¼in) long, are borne on upright stems in summer. ± 15cm (6in), ± to 10cm (4in). Himalayas. \*\*\*

*M. maritima* (Oyster plant). Spreading, prostrate perennial with fleshy, spoon-shaped to oblong-ovate, very glaucous, blue-green leaves, to 10cm (4in) long. Bell-shaped, bright blue flowers, to



*Mertensia simplicissima*



8mm (3/4in) across, open from pink buds in branching, terminal cymes in early summer. †10cm (4in), ↔ 30cm (12in). Coasts of E. North America, Greenland, and N. Europe. \*\*\*

*M. pterocarpa* see *M. sibirica*.

*M. pulmonarioides* ♀ syn. *M. virginica* (Blue bells, Virginia cowslip). Clump-forming perennial with erect, branching stems bearing elliptic to ovate, soft, hairless, bluish green leaves, to 15cm (6in) long. Terminal cymes of flared, long-tubed, violet-blue or white flowers, 2–2.5cm (3/4–1in) long, are borne in mid- and late spring. †45cm (18in), ↔ 25cm (10in). North America. \*\*\*

*M. sibirica*, syn. *M. pterocarpa*. Clump-forming perennial with broadly elliptic, broadly ovate, or heart-shaped, light green basal leaves, 5–10cm (2–4in) long. The erect, unbranched, hairless, light green stems bear more oval, pointed leaves. From late spring to midsummer, terminal cymes of flared, tubular, deep blue or purple-blue flowers, to 1cm (1/2in) long, are borne on long, axillary flower-stalks. †60cm (24in), ↔ 30cm (12in). E. Siberia, E. Asia. \*\*\*

*M. simplicissima* ♂ syn. *M. asiatica*. Prostrate perennial with procumbent, leafy shoots and rosettes of obovate to broadly ovate, glaucous, blue-green leaves, 3–8cm (1 1/4–3in) long. From late spring to early autumn, bears terminal cymes of flared, tubular, turquoise-blue flowers, 1cm (1/2in) long, on spreading stems. †to 90cm (36in), ↔ 30cm (12in). Russia (Sakhalin), Korea, Japan. \*\*\*

*M. virginica* see *M. pulmonarioides*.

- ▷ *Mesembryanthemum cordifolium* see *Aptenia cordifolia*
- ▷ *Mesembryanthemum criniflorum* see *Dorotheanthus bellidiflorus*
- ▷ *Mesembryanthemum derenbergianum* see *Ebracteola derenbergiana*
- ▷ *Mesembryanthemum multiradiatum* see *Lampranthus roseus*
- ▷ *Mesembryanthemum tricolor* see *Dorotheanthus gramineus*

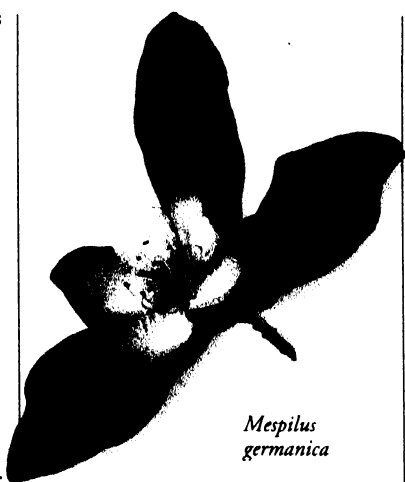
## MESPILUS

ROSACEAE

Genus of one species of deciduous tree or large shrub found in woodland and thickets in mountainous regions of S.E. Europe and S.W. Asia. It is grown for its attractive, spreading habit, its colourful autumn foliage, its bowl-shaped flowers, borne singly at the ends of short shoots, and its flattened, apple-like fruit, which have prominent, persistent calyces. Grow as a specimen tree. The fruit are edible following the first frosts in late autumn, when they are well-ripened and partly rotten.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or light shade. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Bud in late summer.
- **PESTS AND DISEASES** Aphids, brown rot, caterpillars, and powdery mildew may cause problems.

*M. germanica* ♂ (Medlar). Spreading tree or large shrub with alternate, lance-shaped to oblong-oval, dark green leaves, to 15cm (6in) long, turning yellow-brown in autumn. Bears



*Mespilus germanica*

white, sometimes pink-tinged flowers, to 5cm (2in) across, in late spring and early summer. Almost spherical, fleshy brown fruit grow up to 5cm (2in) or more across. †6m (20ft), ↔ 8m (25ft). S.E. Europe, S.W. Asia. \*\*\*. 'Dutch' has russet-brown fruit. 'Nottingham' has brown fruit, 4cm (1 1/2in) across.

▷ *Mespilus*, *Snowy* see *Amelanchier*

## METASEQUOIA

TAXODIACEAE

Genus of one species of deciduous, monoecious, coniferous tree from valley forests of C. China. It has 2-ranked, linear leaves that turn gold to red-brown in autumn. The shoots, leaves, and cone scales grow in opposite pairs. Tolerant of waterlogged soils, it is an excellent specimen tree, growing quickly to a considerable height.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in full sun. Initial growth is fast, but on dry sites is slower after plants reach 10m (30ft) tall.
- **PROPAGATION** Sow seed in a seedbed in autumn. Root hardwood cuttings in



*Metasequoia glyptostroboides*

winter or semi-ripe cuttings with bottom heat in midsummer.

• **PESTS AND DISEASES** Trouble free.

*M. glyptostroboides* ♂ ♀ (Dawn redwood). Conical tree with ascending branches and fibrous, orange-brown bark, often fluted in cultivation. Soft, spreading leaves are bright fresh green, to 1.5cm (1/2in) long on mature trees, 2cm (3/4in) or more on seedlings, with 2 light green bands beneath. Deciduous shoots are green, without growth buds; permanent shoots, bearing growth buds, are pink-brown, later brown. Produces ovoid, light brown female cones, 2cm (3/4in) long, on stalks 2–4cm (3/4–1 1/2in) long, and pendent, spherical brown male cones, 0.5–1.5cm (1/4–1/2in) long, with 15–20 scales, in the upper crown. †20–40m (70–130ft), ↔ 5m (15ft) or more. China (N.W. Hubei). \*\*\*

## METROSIDEROS

Pohutakawa, Rata

MYRTACEAE

Genus of 50 species of dwarf to tall, upright, evergreen shrubs, trees, and climbers found in rainforest, dry river valleys, and subalpine areas from South Africa to Malaysia, Australasia, and the Pacific islands (including Hawaii). The simple, mostly entire, leathery leaves are borne in opposite pairs. Small, trumpet-shaped flowers, with insignificant petals and conspicuous, brush-like tufts of stamens with coloured filaments, are borne in terminal or axillary cymes or racemes. In frost-prone areas, grow in a cool greenhouse. Elsewhere, grow as specimens or as a hedge or screen.

- **HARDINESS** Frost hardy to frost tender; *M. excelsus* and *M. robustus* survive short spells several degrees below 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moderately fertile, moist but well-drained, neutral to acid soil, in full sun. Shelter from cold, drying winds. Pruning group 1; plants under glass need restrictive pruning.
- **PROPAGATION** Surface-sow seed at 13–15°C (55–59°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Air layer in spring.
- **PESTS AND DISEASES** Scale insects may be a problem under glass.

*M. excelsus* ♂ ♀ syn. *M. tomentosus* (Christmas tree, Common Pohutakawa). Erect, freely branching tree, spreading with age, with elliptic to oblong leaves, 5–10cm (2–4in) long, semi-glossy, dark green above, densely white-felted beneath. Broad, compact, many-flowered, terminal cymes of flowers, 3–4cm (1 1/4–1 1/2in) long, with crimson filaments and golden anthers, are borne in summer. †to 20m (70ft), ↔ 10–20m (30–70ft). New Zealand (North Island). \*. 'Aureus' has rich yellow filaments.

*M. hermaderensis* ♂ Bushy, rounded to spreading tree with broadly ovate to oblong-elliptic leaves, 2.5–5cm (1–2in) long, with recurved margins, dark green above and densely white-felted beneath. In summer, produces abundant dense,



*Metrosideros excelsus*

terminal cymes of flowers 2cm (3/4in) long, with crimson filaments and yellow anthers. †to 20m (70ft), ↔ 8–12m (25–40ft). New Zealand, including Raoul Island. \*. 'Sunninghill' has variegated leaves, irregularly splashed creamy yellow. 'Variegatus' has leaves marbled dark green and grey-green, with broad, irregular, creamy white margins. *M. robustus* ♂ (Northern rata, Rata). Erect, freely branching tree, often epiphytic when young, spreading with age. Elliptic to ovate-oblong leaves, 2.5–5cm (1–2in) long, are semi-glossy, dark green above and hairless and paler beneath. In summer, flowers 3cm (1 1/4in) long, with matt crimson filaments and yellow anthers, are borne in dense, terminal cymes on 4-angled stems. †to 30m (100ft), ↔ to 12m (40ft). New Zealand. \*

*M. tomentosus* see *M. excelsus*.

## MEUM

APIACEAE/UMBELLIFERAE

Genus of one species of clump-forming perennial from mountain slopes, poor grassland, and roadsides in W. and C. Europe. The hairless, aromatic, mainly basal leaves are pinnate with whorled, hair-like segments. Small, star-shaped flowers are borne in compound umbels in summer. Grow as a foliage plant in a mixed or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, preferably alkaline soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring; pot up until established.
- **PESTS AND DISEASES** Slugs and snails may damage young growth. Aphids may also be a problem.

*M. athamanticum* (Baldmoney, Spignel). Perennial with oblong, 3- or 4-pinnate, light to mid-green leaves, with finely cut leaflets 5mm (1/4in) long. In early and midsummer, bears tiny, white

## MEUM

or purple-tinged white flowers in small umbels, 3–6cm (1¼–2½in) across, grouped into larger, compound umbels. ‡ 20–60cm (8–24in), ↔ 30cm (12in). W. and C. Europe. \*\*\*

▷ **Mexican bush** see *Salvia leucantha*

▷ **Mexican creeper** see *Antigonon leptopus*

▷ **Mexican hat** see *Ratibida*

▷ **Mexican hat plant** see *Kalanchoe daigremontiana*

▷ **Mexican orange blossom** see *Choisya C. ternata*

▷ **Mezereon** see *Daphne mezereum*

▷ **Michaelmas daisy** see *Aster novi-belgii*

## MICHAUXIA

### CAMPANULACEAE

Genus of 7 species of imposing biennials or short-lived, monocarpic perennials from sunny, well-drained, stony sites in the E. Mediterranean region and S.W. Asia. The toothed, hairy, rosette-forming leaves are pinnatisect or pinnatifid, each leaf with a single large, terminal lobe. Racemes or panicles of white or blue flowers, with spreading or reflexed corollas consisting of many narrow petals, are produced on stout, leafy stems. Grow in a mixed border.

• **HARDINESS** Fully hardy.

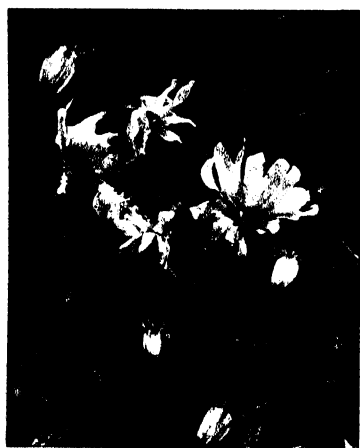
• **CULTIVATION** Grow in moderately fertile, well-drained, alkaline soil in full sun. Provide a dry winter mulch.

• **PROPAGATION** Sow seed *in situ* in spring. May also self-seed.

• **PESTS AND DISEASES** Trouble free.

**M. campanuloides.** Perennial with robust, branched stems and lance-shaped, pinnatifid leaves, to 20cm (8in) long. Pendent, purple-tinged white flowers, 2–4cm (¾–1½in) across, with narrow, reflexed corolla lobes and protruding, tubular, hairy styles, are borne in panicles in early summer. ‡ to 1.5m (5ft), ↔ 45cm (18in). E. Mediterranean (Turkey, Syria). \*\*\*

**M. schibatchewii** Perennial with long-stalked, oblong to broadly lance-shaped, coarsely toothed leaves, 15–20cm (6–8in) long. In midsummer, robust, stiff, branching stems, one per rosette, bear dense, spike-like racemes of nodding, initially broadly bell-shaped, white or blue flowers, to 3cm (1¼in) across, with mildly reflexed corollas, the lobes divided only to one-third of their length. ‡ 1.5m (5ft) or more, ↔ 45cm (18in). Turkey. \*\*\*



*Michauxia schibatchewii*

## MICHELIA

### MAGNOLIACEAE

Genus of 45 species of deciduous and evergreen, rounded, spreading shrubs and upright trees from broad-leaved woodland in India and Sri Lanka, and from the Himalayas to China and S.E. Asia. They are grown for their usually fragrant, magnolia-like flowers, borne singly from the leaf axils in spring or summer. The oblong, oval-oblong, or elliptic, leathery leaves are alternate or spiralling. In frost-prone areas, grow in a cool greenhouse or conservatory. Elsewhere, grow the shrubs in a border or small courtyard garden and the trees in a woodland garden or as specimen plants.

• **HARDINESS** Half hardy to frost tender; *M. doltisopa* and *M. figo* may survive short spells near to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added peat or composted bark, in full light with shade from hot sun, and low or moderate humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained, neutral to acid soil, in full sun with some midday shade, or in partial shade. Shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame or under glass either in autumn or as soon as ripe. Root green-wood cuttings in early summer or semi-ripe cuttings in mid- or late summer. Layer in spring.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

**M. doltisopa** Small, evergreen tree, sometimes shrubby. It is erect, bushy, and pyramidal when young, with slightly warty stems, spreading with age. Leaves are oval-oblong to lance-shaped, 8–18cm (3–7in) long, lustrous, dark green above, silky, grey-hairy beneath. Bowl-shaped, fragrant, white to very pale yellow flowers, 7–10cm (3–4in) across, are borne from spring to early summer. ‡ 8–15m (25–50ft), ↔ 5–10m (15–30ft). E. Himalayas, Tibet, W. and S.W. China. (min. 5°C/41°F)

**M. figo** Rounded, bushy, freely branching, evergreen shrub with downy, yellowish brown stems and elliptic-oblong to slightly obovate or oval leaves, 5–10cm (2–4in) long, lustrous, dark green above, paler beneath. From spring



*Michelia doltisopa*



*Michelia figo*

to summer, bears cup-shaped, banana-scented, yellowish green to ivory-white flowers, 3cm (1¼in) across, with dark red or maroon petal margins. Flowers are initially enclosed in woolly brown bracts. ‡ 3–6m (10–20ft), ↔ 1.5–3.5m (5–11ft). China. (min. 5°C/41°F)

▷ **Mickey Mouse plant** see *Ochna serrulata*

## MICROBIOTA

### CUPRESSACEAE

Genus of one species of prostrate to low mound-forming, evergreen, dioecious or monoecious, coniferous shrub from open slopes in S.E. Siberia. It has scale-like, broadly triangular, pointed leaves that turn bronze over winter; this can be



*Microbiota decussata*

## MICROCACHRYS

a striking feature, although it sometimes appears that the plant is dying. The minute, ovoid cones have leathery scales, each one opening to release a single seed. Grow in a shrub border or as a specimen shrub; *M. decussata* is also a useful ground-cover plant, similar to the spreading junipers (*Juniperus*).

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Pruning is not required.

• **PROPAGATION** Sow seed in a seedbed in autumn. Root semi-ripe cuttings in summer.

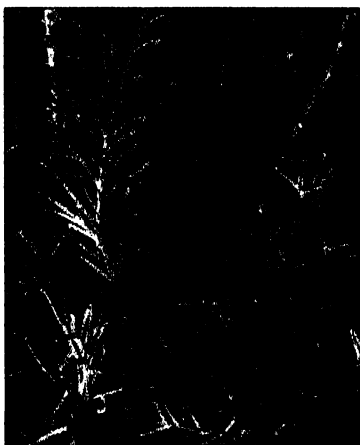
• **PESTS AND DISEASES** Trouble free.

**M. decussata** Spreading coniferous shrub with green shoots, later turning red-brown, and flat sprays of bright mid-green leaves, to 3mm (¼in) long, paler below, in symmetrical pairs. Female cones, 3mm (¼in) long, each have 2–4 scales, one of which is fertile; male cones, 2–4mm (¼–½in) long, are pale yellow. ‡ to 1m (3ft), ↔ indefinite. Russia (S.E. Siberia). \*\*\*

## MICROCACHRYS

### PODOCARPACEAE

Genus of one species of monoecious, evergreen, spreading, coniferous shrub, found on 2 mountain summits in W. Tasmania. It is cultivated for its small, scale-like, triangular leaves, borne on procumbent, snake-like branches, and, to a lesser extent, for its small, mulberry-like cones. *M. tetragona* is suitable for a shrub border or rock garden, or for ground cover.

*Microcachrys tetragona*

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, neutral to slightly acid soil in full sun, with some midday shade.
- **PROPAGATION** Sow seed as soon as ripe in a seedbed, or in containers in a cold frame. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**M. tetragona** ■ Spreading, coniferous shrub with overlapping, dark green leaves, 2–3mm (1/16–1/8in) long, arranged spirally in 4 rows on the shoots. Ovoid female cones, 1cm (1/2in) long, have whorls of 4 rounded scales, becoming fleshy and translucent red, each with a single seed; oblong male cones, 3mm (1/8in) long, are borne at the ends of the shoots. † to 50cm (20in), ↔ 1m (3ft). Australia (W. Tasmania). \*\*

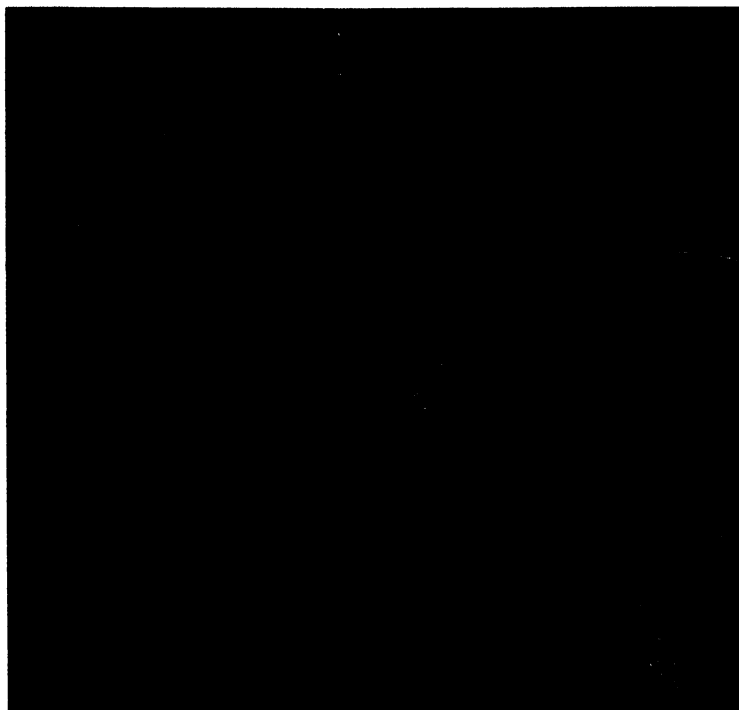
- ▷ *Microcoelum weddellianum* see *Lytocaryum weddellianum*
- ▷ *Microglossa* see *Aster*
- M. albescens* see *A. albescens*

## MICROLEPIA

DENNSTAEDTIACEAE

Genus of about 45 species of terrestrial, evergreen ferns from tropical regions worldwide, mainly found at forest margins. Long-creeping rhizomes produce soft, usually dark green fronds. These are pinnate to 3-pinnate, the pinnae sometimes shallowly to deeply lobed. The round sori are formed within the margins of the leaf-blade. In frost-prone areas, grow in a temperate greenhouse. In warmer climates, *Microlepia* species and cultivars are suitable for a peat bed or woodland garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in 1 part coarse leaf mould (or peat) and charcoal, and 2 parts loam-based potting compost (JI No.2), in bright indirect light with high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil in light dappled or partial shade. See also p.51.
- **PROPAGATION** Sow spores in containers at 20°C (68°F) as soon as ripe. Divide rhizomes of well-established plants in spring, before new growth commences.
- **PESTS AND DISEASES** Trouble free.

*Microlepia speluncae*

**M. speluncae** ■ Large, terrestrial, clump-forming fern producing long-stalked, triangular, 2- or 3-pinnate, dark green fronds, 0.8–1.5m (32–60in) long, which consist of triangular or lance-shaped to oblong pinnae without raised veins. † to 1.5m (5ft), ↔ to 3m (10ft). S.E. Asia to Australia. ♀ (min. 5–10°C/41–50°F)

**M. strigosa.** Terrestrial fern producing ovate to lance-shaped, 2- or 3-pinnate, dark green fronds, 70–90cm (28–36in) long, consisting of linear to lance-shaped pinnae. Fronds are small and often arching, and have raised veins on their lower surfaces. † to 1m (3ft), ↔ to 2m (6ft). N. India to Japan and Polynesia. ♀ (min. 5–10°C/41–50°F). 'Cristata' produces fronds with lobed pinnae, which are crested at the tips.

## MICROMERIA

LABIATAE/LAMIACEAE

Genus of about 70 species of annuals, perennials, and dwarf, evergreen shrubs (which at one time included species now placed in the genus *Acinos*). They occur in dry, rocky sites in the Mediterranean region, the Caucasus, and S.W. China. The ovate, linear, or lance-shaped, often aromatic, light to dark green leaves are arranged in opposite pairs. Spike-like racemes of small, tubular, 2-lipped, white to purple flowers are produced in short-stalked whorls in summer. *Micromeria* species are suitable for a rock garden, or at the front of a mixed border.

- **HARDINESS** Hardy to -10°C (14°F).
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun, with protection from excessive winter wet. Pruning group 10, in early spring or after flowering.
- **PROPAGATION** Sow seed of perennials in containers in a cold frame in spring; sow seed of annuals *in situ* in late spring. Divide perennials in spring. Root softwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

**M. corsica** see *Acinos corsicus*.

**M. juliana.** Rounded, evergreen, downy shrub with stalkless, ovate to linear or lance-shaped, aromatic, dark green leaves, 5–10mm (1/4–1/2in) long. In summer, upright, spike-like racemes, comprising whorls of up to 20 purplish pink flowers, to 4mm (1/8in) long, are borne at the stem tips. † to 10–40cm (4–16in). Mediterranean. \*\*

- ▷ *Mignonette* see *Reseda*
- Common** see *R. odorata*
- ▷ *Mignonette tree* see *Lawsonia*

## MIKANIA

ASTERACEAE/COMPOSITAE

Genus of about 300 species of woody-stemmed and herbaceous, deciduous or evergreen, twining or scandent climbers, allied to *Eupatorium*. They occur in tropical to warm-temperate regions worldwide in a broad range of habitats, from prairies and grassland to deciduous and tropical woodland. The usually opposite leaves are simple, and may be entire, toothed, or shallowly to palmately lobed. Hemispherical flower-heads, similar to those of groundsel (*Senecio*), lack ray-florets, and are borne in spikes, racemes, corymbs, or panicles. In frost-prone areas, grow in a temperate greenhouse. In warmer climates, grow in a woodland garden, use to clothe an arch or pergola, or allow to scramble through shrubs.

- **HARDINESS** Frost tender; *M. scandens* may survive short periods at 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in light dappled shade. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed at 13–15°C (55–59°F) in spring. Insert softwood cuttings in late spring.

- **PESTS AND DISEASES** Red spider mites and whiteflies may prove troublesome under glass.

**M. scandens** (Climbing hempweed, Hemp vine). Twining climber, often semi- or fully evergreen in tropical areas, with triangular to heart-shaped, glossy, mid- to bright green leaves, 5–10cm (2–4in) long, with entire or irregularly toothed margins. From late summer to late autumn, small but dense corymbs, 2–5cm (3/4–2in) long, of vanilla-scented, usually white to pale flesh-pink, sometimes lilac to purple or yellow-tinted white flowerheads are produced from the upper leaf axils. † 2–5m (6–15ft). Tropical North and South America. ♀ (min. 5°C/41°F)

- ▷ **Mile-a-minute plant** see *Fallopia aubertii*, *F. baldschuanica*
- ▷ **Milfoil** see *Myriophyllum*
- Diamond** see *M. aquaticum*
- Western** see *M. hippuroides*

## MILIUM

GRAMINEAE/POACEAE

Genus of 6 species of annual and tussock-forming, perennial grasses found mainly in woodland in temperate regions of Europe, Asia, and E. North America. They have flat, linear to lance-shaped, light to yellow-green leaves, and produce open, spreading panicles of well-spaced, single-flowered spikelets from late spring to midsummer. Grow in a herbaceous or mixed border, or in woodland.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in partial shade; will tolerate sun where soils remain reliably moist. May self-seed, but not in profusion.
- **PROPAGATION** Sow seed *in situ* in spring; *M. effusum* 'Aureum' comes true from seed. Divide in early spring and early summer.
- **PESTS AND DISEASES** Trouble free.

**M. effusum 'Aureum'** (Bowles' golden grass, Golden wood millet). Slowly spreading, loosely tufted. Semi-evergreen, perennial grass. Smooth, flat strap-shaped to linear leaves, to 30cm (12in) long, are rich golden yellow, particularly in spring. From late spring to midsummer, tiny golden spikelets are produced in delicate, slender, golden-stemmed, nodding panicles, 30cm (12in) long. † to 60cm (24in), ↔ 30cm (12in). \*\*\*

- ▷ **Milk bush** see *Gomphocarpus fruticosus*
- ▷ **Milkmaids** see *Burchardia*
- ▷ **Milkweed** see *Asclepias*, *Euphorbia*
- Swamp** see *Asclepias incarnata*
- ▷ **Milkwort** see *Polygala*, *P. calcarea*

## MILLA

ALLIACEAE/LILIACEAE

Genus of about 6 species of bulbous perennials, related to *Brodiaea*, often found on dry slopes in S. USA, Mexico, and Central America. They have cylindrical or flat, linear leaves. Umbels of erect, tubular, scented flowers, each with 6 spreading tepals, are produced from summer to autumn. In frost-prone areas, lift and overwinter in frost-free

conditions, or grow in a cool greenhouse or alpine house. In warmer climates, grow in a sheltered bed under a wall, or in a herbaceous border.

- **HARDINESS** Half hardy.
- **CULTIVATION** In frost-prone areas, plant 8cm (3in) deep in well-drained soil in spring. Provide a sheltered site in full sun. Lift after flowering, and keep frost free during winter. Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand, in full light. Water sparingly until shoots appear, then apply a balanced liquid fertilizer every 4–6 weeks and water moderately. Reduce water as leaves wither and keep dry in winter. In frost-free areas, plant 10cm (4in) deep in autumn, in a well-drained, sheltered site in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Remove offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

**M. biflora.** Bulbous perennial with semi-erect, narrowly linear, glaucous, mid-green, basal leaves, 10–50cm (4–20in) long. In summer, bears umbels of 1–6, occasionally 8, white or white-flushed lilac or pink flowers, 1.5–3.5cm (½–1½in) long, with green central veins on the flat, spreading, reflexed tepals. † 30cm (12in), ↔ 5cm (2in). S.W. USA, Mexico, Central America. \*

▷ **Millet** see *Panicum miliaceum*  
**Golden wood** see *Milium effusum* 'Aureum'

## M MILLETTIA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 120 species of deciduous and evergreen trees, shrubs, and woody-stemmed climbers from deciduous and evergreen woodland in Africa, Madagascar, India, and E. Asia. They have pinnate leaves, with lance-shaped to broadly ovate leaflets, borne alternately or in opposite pairs. Pea-like flowers are produced in terminal and lateral racemes or panicles, similar to those of wisterias. In frost-prone areas, grow in a cool or temperate greenhouse. In milder areas, grow as specimen trees or shrubs, and use climbers to clothe a fence, arch, pergola, or trellis.

- **HARDINESS** Half hardy to frost tender; *M. reticulata* will survive short periods at 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1 for trees and shrubs; group 11 for climbers, after flowering; group 13 for wall-trained plants.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) as soon as ripe. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Whiteflies, aphids, and red spider mites may be troublesome under glass.

**M. reticulata.** Twining, woody climber or scandent shrub bearing pinnate leaves with 5–9 lance-shaped to elliptic, semi-leathery leaflets, 3–9cm (1¼–3½in)

long. In summer, produces pea-like, rose-pink, red, or blue flowers, to 1cm (½in) long, in dense racemes or panicles, 15–20cm (6–8in) long. † 5m (15ft) or more, ↔ 1–2m (3–6ft). S. China, Taiwan. ♀ (min. 5°C/41°F)

## MILTONIA

ORCHIDACEAE

Genus of about 15 species of evergreen, epiphytic orchids (which at one time included species now in *Miltoniopsis*), occurring mainly in warm, moist forests in Brazil. They produce ovoid to cylindrical, compressed pseudobulbs, each with 2 linear, oblong, oblong-linear, or oblong-lance-shaped, apical, usually mid-green leaves. Often star-shaped, sometimes fragrant flowers are produced in usually erect racemes from the bases of the pseudobulbs, at various times of the year.

- **HARDINESS** Frost tender.
- **CULTIVATION** Intermediate-growing orchids. Grow in containers of epiphytic compost, epiphytically on bark, or in slatted baskets. In summer, provide humid conditions with partial shade, water freely, feed at every third watering, and mist once or twice daily. In winter, admit full light and water moderately. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Prone to aphids, red spider mites, and mealybugs.

**M. Bluntii** (*M. clowesii* x *M. spectabilis*). Naturally occurring, epiphytic hybrid orchid with elongated pseudobulbs and linear leaves, 15cm (6in) long. In autumn, produces racemes of 3–7 star-shaped, fragrant, light yellow flowers, 8cm (3in) long, with red-brown markings, white lips, and purplish crimson bases. † ↔ 23cm (9in). Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

**M. candida** ♀ syn. *Anneliesia candida*. Epiphytic orchid with oblong-ovoid pseudobulbs and linear-lance-shaped



*Miltonia clowesii*

leaves, 30cm (12in) long. In autumn, produces racemes of 2–8 star-shaped, greenish yellow flowers, 8cm (3in) across, spotted chestnut-brown and yellow, with lips sometimes flushed white or pink. † ↔ 23cm (9in). Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

**M. clowesii** ♀ Epiphytic orchid with narrowly ovoid pseudobulbs and linear leaves, 30cm (12in) long. In autumn, bears long racemes of 3–7 star-shaped, greenish yellow flowers, 5cm (2in) across, each barred chestnut-brown, with white lips tinted violet-purple at the bases. † ↔ 23cm (9in). Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

**M. phalaenopsis** see *Miltoniopsis phalaenopsis*.

**M. roezlii** see *Miltoniopsis roezlii*.

**M. spectabilis** ♀ Epiphytic orchid producing elongated pseudobulbs and linear-oblong leaves, 15cm (6in) long. Throughout summer, white, red, or purple flowers, 8cm (3in) across, with red or purple lips, each with 3 yellow ridges at the base, are borne singly or occasionally in pairs. † ↔ 23cm (9in). Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

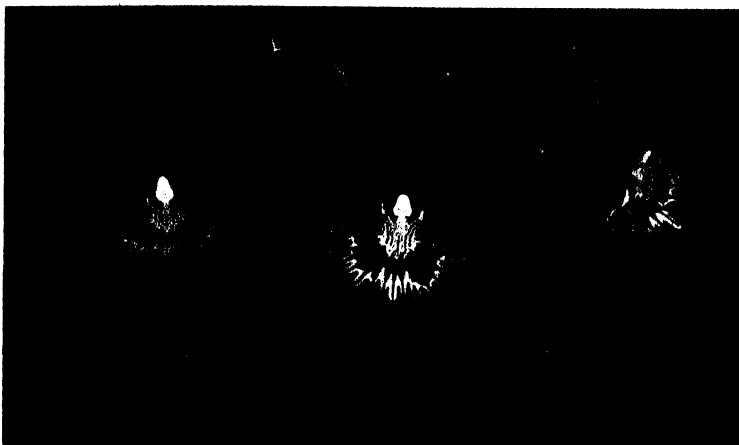
## MILTONIOPSIS

Pansy orchid

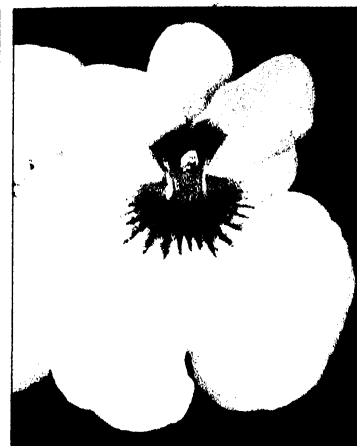
ORCHIDACEAE

Genus of 5 species of evergreen, epiphytic or lithophytic orchids (often included in *Miltonia*) from Central and South America, found in mountainous regions from 300m (1,000ft) to over 2,000m (7,000ft). The fleshy, ovoid pseudobulbs are partially covered by soft-textured, linear, grey-green, basal leaves. Decorative, fragrant flowers, with large, flat lips, are produced in racemes from the bases of the pseudobulbs. There are many colourful hybrids, often blooming twice a year, with up to 6 flowers in a raceme.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool-growing orchids. Grow in containers of epiphytic orchid compost. In summer, provide humid, shady conditions with plenty of fresh air, water freely, and feed at every third watering; water sparingly in winter. Do not spray the foliage, as it may become spotted. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Red spider mites, aphids, and mealybugs may prove troublesome.



*Miltoniopsis* Anjou 'St. Patrick'



*Miltoniopsis* Robert Strauss 'Ardingly'

**M. Anjou 'St. Patrick'** ♀ (*M. Hoggart* x *M. Piccadilly*). Epiphytic orchid with ovoid pseudobulbs and linear leaves, 20cm (8in) long. Deep red flowers, 8cm (3in) across, with white and orange-red marks at the bases of the lips, are borne in racemes, mostly in summer. † ↔ 23cm (9in). ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. Emotion 'Redbreast'** (*M. Emoi* x *M. Nyasa*). Epiphytic orchid with ovoid pseudobulbs and linear leaves, 20cm (8in) long. Bears racemes of bright cream flowers, 8cm (3in) across, with attractive brownish red flushing on the lips, mostly in summer. † ↔ 23cm (9in). ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. Jersey** (*M. Hamburg* x *M. Hannover*). Epiphytic orchid with ovoid pseudobulbs and linear leaves, 20cm (8in) long. Produces racemes of dark red flowers, 8cm (3in) across, with red lips, mostly in summer. † ↔ 23cm (9in). ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. phalaenopsis**, syn. *Miltonia phalaenopsis*. Epiphytic orchid with compressed, ovoid pseudobulbs and narrowly linear leaves, 15–22cm (6–9in) long. Racemes of 2–4 white flowers, 5cm (2in) across, with bold, red-purple splashes on the lips, are produced in autumn. † ↔ 15cm (6in). Colombia. ♀ (min. 11°C/52°F; max. 24°C/75°F)

**M. Robert Strauss 'Ardingly'** ♀ (*M. Augusta* x *M. Gattionensis*). Epiphytic orchid with ovoid pseudobulbs and linear leaves, 20cm (8in) long. White flowers, 8cm (3in) across, highlighted with yellow, with red or pink petal bases, and flushed orange at the bases of the lips, are produced in racemes,

mostly in summer.  $\pm$  23cm (9in).  
 ☼ (min. 11°C/52°F; max. 24°C/75°F)

**M. roezlii**, syn. *Miltonia roezlii*.  
 Epiphytic orchid with ovoid pseudobulbs. Linear leaves, 15–25cm (6–10in) long, have dark green longitudinal lines beneath. In autumn and winter, bears 4- to 6-flowered racemes of white flowers, 6cm (2½in) across, with purple or red-mauve patches at the bases of the petals.  $\pm$  15cm (6in). Colombia. ☼ (min. 11°C/52°F; max. 24°C/75°F)

## MIMETES

PROTEACEAE

Genus of 11 species of upright, evergreen shrubs or subshrubs from heath and scrub, often exposed, in South Africa. Alternate or spiralling, narrowly to broadly ovate, oblong, or lance-shaped, mid- to blue-green or silvery leaves are usually crowded and overlap to varying degrees. Tubular flowers enclosed in overlapping, leaf-like bracts, often with protruding perianth segments and styles, are borne terminally or in the upper leaf axils. In frost-prone climates, grow in a cool or temperate greenhouse. Elsewhere, grow in a shrub border.

- **HARDINESS** Frost tender; may survive brief spells near 0°C (32°F).
- **CULTIVATION** Under glass, grow in a mix of equal parts loam, leaf mould, and grit or perlite, with added charcoal, in full light and with good ventilation. Water moderately in growth, sparingly in winter. In spring and early autumn, apply a liquid fertilizer of magnesium sulphate and urea. Outdoors, grow in moist but well-drained, neutral to

slightly acid, poor or moderately fertile soil with low levels of phosphates and nitrates, in full sun. Pruning group 1.

- **PROPAGATION** Sow seed at 6–12°C (43–54°F) as soon as ripe, in equal parts of grit and peat. Prick out seedlings into individual containers as soon as possible.

- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**M. cucullatus** ☐ syn. *M. lyrigera* (Rooistompie). Usually erect, sometimes decumbent shrub with densely downy stems that branch from near the base. Spiralling, narrowly oblong, slightly glaucous, mid-green leaves, 3–8cm (1–3in) long, have rounded, irregularly notched, orange-brown tips. In summer, bears axillary, or sometimes terminal flowerheads, 5–7cm (2–3in) long, which consist of overlapping, red and yellow leaf-like bracts and flowers with perianth segments in the same colours but with protruding, feathery, silver-white tips and red styles. Grows on stony slopes.  $\pm$  to 1.5m (5ft). South Africa (Western Cape). ☼ (min. 5°C/41°F)

**M. hirtus**. Erect shrub with stems that branch near the base and spiralling, ovate, very hairy, mid-green leaves, 1–6cm (½–2½in) long, often pinkish brown when young. In summer, bears terminal or axillary flowerheads, 5cm (2in) long, consisting of overlapping green leaf-like bracts, and flowers with prominent, silvery white and red-tipped, bright yellow perianth segments and red styles. Grows in marshy ground.  $\pm$  to 1.5m (5ft). South Africa (Western Cape). ☼ (min. 10°C/50°F)

**M. lyrigera** see *M. cucullatus*.



*Mimetes cucullatus*

## MIMOSA

LEGUMINOSAE/MIMOSACEAE

Genus of about 400 species of annuals, evergreen perennials, shrubs (which are sometimes scandent or trailing), and small trees, found in habitats ranging from forest to dry savannah in tropical regions worldwide. The often spiny stems bear alternate, 2-pinnate leaves, which in some species are sensitive to touch. Tiny, pea-like flowers, each with 4 or 5 petals and up to 10 long stamens, are lightly clustered in spherical heads, which are borne singly, or in spikes or panicles. The seed pods are sometimes twisted, curled, or spiny. In climates where temperatures fall below 13–16°C (55–61°F), grow in a warm greenhouse or as houseplants. In warmer areas, grow the annuals and perennials as ground cover, the shrubs in a border, and the trees as specimen plants. Long, hot summers are required for the production of flowers and fruits. (For the yellow-flowered florists' mimosa, see *Acacia dealbata*.)

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun, although they will tolerate light dappled shade. Pruning group 1.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Alternatively, root softwood cuttings with bottom heat in early summer.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

**M. pudica** ☐ (Humble plant, Sensitive plant). Bushy, mat-forming annual or short-lived, evergreen perennial with slender, prickly, branching stems. Bright green to greyish green leaves, 5–10cm (2–4in) long, each have 4 radiating linear leaflets divided into 10–25 pairs of narrow, oblong segments that fold up when touched. Spherical, light pink to lilac flowerheads, 1–2cm (½–¾in) across, are produced mainly in summer.  $\pm$  30–75cm (12–30in),  $\pm$  40–90cm (16–36in). Tropical North and South America. ☼ (min. 13°C/55°F)

▷ **Mimosa** see *Acacia dealbata*



*Mimosa pudica*

## MIMULUS syn. DIPLACUS

Monkey flower, Musk

SCROPHULARIACEAE

Genus of about 150 species of annuals, perennials, and evergreen shrubs found in southern Africa, Asia, Australia, and North, Central, and South America, usually occurring in damp areas but sometimes found in chaparral or deserts. The opposite, entire or toothed leaves are linear to nearly rounded, and mostly pale to dark green. Snapdragon-like, 5-lobed, 2-lipped, tubular or trumpet- or funnel-shaped flowers, often heavily spotted in contrasting colours, are borne from spring to autumn on upright stems, either in the axils or in spike-like racemes. The smaller species and cultivars are suitable for a damp pocket in a rock garden; grow most of the larger ones in a damp border or bog garden. Use the shrubs in a warm border. In frost-prone areas, grow the tender perennials in a cold greenhouse or as bedding annuals, and the tender shrubs in a cool greenhouse or conservatory.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow most species in fertile, humus-rich, very moist soil in full sun or light dappled shade. *M. aurantiacus*, *M. longiflorus*, and *M. puniceus* need well-drained soil and full sun; *M. cardinalis* and *M. lewisii* tolerate drier soils. *M. luteus* can be grown in water to 7cm (3in) deep, *M. ringens* to 15cm (6in). Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun and good ventilation. In the growing season, water freely and apply a balanced liquid fertilizer monthly; keep moist in winter. Monkey flowers are often short-lived, so propagate regularly. Pruning group 9 for shrubs.
- **PROPAGATION** Sow seed of hardy species and variants in containers in a cold frame in autumn or early spring; sow seed of tender ones at 6–12°C (43–54°F) in spring; plant out after danger of frost has passed. Divide perennials in spring. Root softwood cuttings in early summer, and semi-ripe cuttings of shrubs in midsummer.
- **PESTS AND DISEASES** Slugs and snails may cause damage. Young plants are susceptible to powdery mildew.

**M. 'Andean Nymph'** ☐♀ Spreading perennial with branching rhizomes and narrowly ovate to triangular-ovate,



*Mimulus* 'Andean Nymph'



*Mimulus aurantiacus*

hairy, sparsely toothed, pale green leaves, to 3cm (1¼in) long. Leafy racemes of trumpet-shaped, white to cream flowers, to 2cm (¾in) across, the lobes heavily stained pink-purple, and with pink-spotted cream throats and lower lips, are borne over a long period in summer. ‡ to 20cm (8in), ↔ to 30cm (12in). Andes. \*\*

***M. aurantiacus*** ☐♀ syn. *Diplotis glutinosus*, *M. glutinosus*. Erect, often laxly branched shrub with lance-shaped to oblong, toothed, sticky, glossy, rich green leaves, to 7cm (3in) long. Open trumpet-shaped, orange, yellow, or dark red flowers, to 4.5cm (1¾in) long, with wavy petal margins, are produced in leafy racemes from late summer to autumn. ‡ to 1m (3ft). USA (Oregon, California). \*\*

***M. x bartonianus*** (*M. cardinalis* x *M. lewisii*). Upright perennial with elliptic, lobed, toothed, softly hairy, sticky, mid-green leaves, to 7cm (3in) long. From early summer to early autumn, produces solitary, axillary, tubular, bright clear pink to rose-red flowers, to 3cm (1¼in) long, with wide lips and with red-brown spots on the yellow throats. ‡ 60cm (24in), ↔ 45cm (18in). Garden origin. \*\*

***M. cardinalis*** ☐♀ (Scarlet monkey flower). Creeping perennial with erect, branching, hairy stems bearing ovate to oblong-elliptic, sharply toothed, downy, light green leaves, to 10cm (4in) long. Throughout summer, produces solitary, axillary, tubular scarlet flowers, 4–5cm (1½–2in) long, sometimes with yellow throat markings; the lips are wide open but the tubular throats pinched. ‡ 90cm



*Mimulus cardinalis*



*Mimulus x hybridus* Magic Series

(36in), ↔ 60cm (24in). W. USA to Mexico. \*\*\* (borderline)

***M. cupreus*** 'Whitecroft Scarlet' see *M. 'Whitecroft Scarlet'*.

***M. glutinosus*** see *M. aurantiacus*.

***M. glutinosus* var. *puniceus*** see *M. puniceus*.

***M. guttatus***, syn. *M. langsdorfii*.

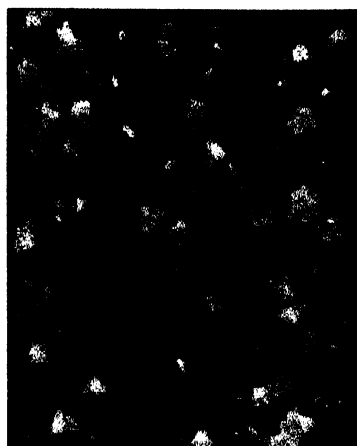
Upright to spreading, vigorous perennial, producing stolons that root at the nodes. Broadly ovate to oval, mid-green leaves, 1–8cm (½–3in) long, are coarsely or sometimes deeply toothed. In summer, produces racemes of funnel-shaped yellow flowers, 1.5–2.5cm (½–1in) long, often tinged or strongly spotted or marked red at the throats. ‡ to 30cm (12in), ↔ 50–120cm (20–48in). North America (Alaska to California). \*\*\*

***M. 'Highland Yellow'***. Upright perennial with branching rhizomes and narrowly ovate, sparsely toothed, hairy, pale green leaves, 3–8cm (1¼–3in) long. Trumpet-shaped, pale creamy yellow flowers, 2 per axil, each to 2.5cm (1in) across, usually with few spots, are produced over a long period in summer. ‡ to 20cm (8in), ↔ to 30cm (12in). \*\*

***M. x hybridus* cultivars** (*M. guttatus* x *M. luteus*). Erect, basally branching, bushy, tender perennials, often grown as annuals, with oval to elliptic, toothed, mid- to dark green leaves, 3–7cm (1¼–3in) long. In summer, they bear axillary, solitary, tubular then flaring, open-mouthed, brightly coloured, usually spotted flowers, to 5cm (2in) across; the upper lips are 2-lobed, the lower ones 3-lobed. ‡ 12–30cm (5–12in), ↔ to 30cm (12in). \*\*\*.



*Mimulus lewisii*



*Mimulus luteus*

'Calypso' is available as a mixture, and produces self-coloured, bicoloured, and spotted flowers in a wide colour range, including mixtures of orange, yellow, burgundy-red, and pink; ‡ 13–23cm (5–9in). **Magic Series** ☐ cultivars are early-flowering, producing small flowers in a broad range of colours, including bright oranges, yellows, and reds, as well as more unusual pastel shades and bicolours; ‡ 15–20cm (6–8in). **Mystic Series** cultivars are compact and early-flowering, producing wine-red or bright red, ivory-white, yellow, rose-pink, or orange flowers, almost entirely without marking or spotting; ‡ 13–23cm (5–9in). 'Viva' is large and vigorous, with large, bright yellow flowers, with a broad red mark on each lobe; ‡ 20–30cm (8–12in).

***M. langsdorfii*** see *M. guttatus*.

***M. 'Leopard'***. Spreading perennial with branching rhizomes and narrowly ovate, sparsely toothed, hairy, pale green leaves, 3–8cm (1¼–3in) long. Solitary, axillary, trumpet-shaped yellow flowers, 2.5cm (1in) across, spotted reddish brown, are borne over long periods in summer. ‡ to 20cm (8in), ↔ to 30cm (12in). \*\*



*Mimulus* 'Whitecroft Scarlet'

***M. lewisii*** ☐♀ Upright perennial with oblong-elliptic, minutely toothed, stalkless, softly hairy, glandular, sticky, mid-green leaves, to 7cm (3in) long. Solitary, axillary, tubular, purple-pink to deep rose-pink, sometimes white flowers, 3–5cm (1¼–2in) long, with yellowish white throats, are produced throughout summer. ‡ 60cm (24in), ↔ 45cm (18in). North America (Alaska to California). \*\*

***M. longiflorus***. Variable, erect-branched shrub with lance-shaped to oblong, toothed, sticky, pale green leaves, to 8cm (3in) long, with impressed veins. From spring to summer, bears trumpet-shaped, orange, lemon-yellow to cream, or dark red flowers, to 6cm (2½in) long, with dark orange bands at the mouths, in leafy racemes. ‡ to 1m (3ft). USA (California), N.W. Mexico. \*

***M. luteus*** ☐ (Monkey musk, Yellow monkey flower). Vigorous, spreading perennial with decumbent or upright stems and toothed, broadly ovate to oblong, mid-green leaves, 2–3cm (¾–1¼in) long. Yellow flowers, 2–5cm (¾–2in) long, 2 per axil, with dark red or purple-red spots on the petal lobes and throats, are borne from late spring to summer. Self-seeds freely. ‡ 30cm (12in), ↔ to 60cm (24in). Chile, widely naturalized elsewhere. \*\*\*

***M. primuloides***. Rhizomatous, mat-forming perennial with hairy, oblong to obovate, entire or toothed, light to mid-green leaves, 1–4cm (½–1½in) long. Trumpet-shaped yellow flowers, to 2cm (¾in) long, with red-spotted throats, are produced on short stems, usually 2 per axil, in summer. ‡ to 10cm (4in), ↔ to 20cm (8in). W. USA. \*\*\*

***M. puniceus***, syn. *M. glutinosus* var. *puniceus*. Erect-branched shrub with narrowly lance-shaped, toothed, sticky, dark green leaves, to 7cm (3in) long. Funnel-shaped, brick-red to orange-red flowers, 5cm (2in) long, are produced in leafy racemes from spring to late summer. ‡ 1.5m (5ft). USA (California), N.W. Mexico. \*\*



**M. ringens** (Allegheny monkey flower). Erect, hairless perennial with square, branching stems and semi-clasping, lance-shaped to narrowly oblong or inversely lance-shaped, toothed, mid-green leaves, 5–10cm (2–4in) long. Solitary, axillary, tubular, violet-blue, white, or rarely pink flowers, 3cm (1½in) long, with narrow throats, are produced from early to late summer. ‡ to 90cm (36in), ↔ 30cm (12in). E. North America. \*\*\*

**M. 'Whitcroft Scarlet'** □ ♀ syn. *M. cupreus* 'Whitcroft Scarlet'. Short-lived, spreading perennial bearing ovate, mid-green leaves, 2–8cm (¾–3in) long, with toothed margins. Numerous trumpet-shaped, deep scarlet flowers, 2cm (¾in) across, are produced in many-flowered racemes over a long period from early to late summer. ‡ to 10cm (4in), ↔ to 15cm (6in). \*\*

**M. 'Wisley Red'**. Short-lived, spreading perennial with branching rhizomes and narrowly ovate to lance-shaped, hairy, pale green leaves, to 3cm (1¼in) long, with sparsely toothed margins. Solitary, axillary, trumpet-shaped, velvety, blood-red flowers, to 2cm (¾in) across, are produced in summer. ‡ 15cm (6in), ↔ to 20cm (8in). \*\*

▷ **Mina** see *Ipomoea*

▷ **Mind your own business** see

*Soleirolia soleirolia*

▷ **Mint** see *Mentha*

**Apple** see *M. suaveolens*

**Bowles'** see *M. x villosa*

f. *alopecuroides*

**Corsican** see *M. requienii*

**Eau de Cologne** see *M. x piperita*

f. *citratea*

**Ginger** see *M. x gracilis* 'Variegata'

**Lemon** see *M. x piperita* f. *citratea*

**Pineapple** see *M. suaveolens*

'Variegata'

**Red** see *M. x gracilis* 'Variegata'

▷ **Mint bush** see *Prostanthera*

**Alpine** see *P. cuneata*

**Oval-leaved** see *P. ovalifolia*

**Round-leaved** see *P. rotundifolia*

**Snowy** see *P. nivea*

▷ **Mintleaf** see *Plectranthus madagascariensis*

## MIRABILIS

NYCTAGINACEAE

Genus of about 50 species of annuals and tuberous perennials occurring in dry, open habitats in S.W. USA and Central and South America. Branched stems bear opposite, ovate leaves. Large, trumpet-shaped, often fragrant flowers, are borne in axillary corymbs or panicles over a long period in summer. In frost-prone areas, grow most perennial species as annuals, lift after flowering, and overwinter in frost-free conditions; alternatively, grow in a cool greenhouse. In warmer climates, grow in a border.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Outdoors, grow in moderately fertile, well-drained soil in full sun, watering freely while in growth. Provide protection from excessive winter wet. In frost-prone areas, protect perennials with a mulch or lift tubers and store in frost-free conditions over winter, and then plant out in late spring. Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full light. In the growing season, water



*Mirabilis jalapa*

freely and apply a balanced liquid fertilizer monthly; keep dry in winter.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring, or *in situ* after danger of frost has passed. Divide tubers in spring.

• **PESTS AND DISEASES** Slugs and aphids may be troublesome.

**M. jalapa** □ (Four o'clock flower, Marvel of Peru). Bushy perennial with ovate leaves, 5–10cm (2–4in) long. Fragrant, red, pink, magenta, yellow, or white flowers, to 5cm (2in) long, some striped, and often with several colours present on the same plant, are borne from early to late summer. Individual flowers open in late afternoon and die by morning. ‡↔ 60cm (24in) or more. Peru, tropical North, Central, and South America. \*\* (borderline)

## MISCANTHUS

GRAMINEAE/POACEAE

Genus of 17–20 species of deciduous or evergreen, tufted or rhizomatous, perennial grasses occurring in moist meadows and marshland from Africa to E. Asia. The reed-like stems bear linear or narrowly lance-shaped, folded, arching, light or mid-green, or blue- or purplish green leaves. Dense, terminal, arching panicles of silky-hairy spikelets are borne in late summer and autumn; flowerheads are more numerous following long, hot summers. In many cases, the dying growth provides russet autumn colours, and is sometimes attractive in winter. Grow *Miscanthus* species and cultivars as free-standing specimens, or in a mixed or herbaceous border. They may also be used for waterside planting or temporary summer screening. The flowerheads may be used for cutting.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Tolerant of most conditions but best in moderately fertile, moist but well-drained soil in full sun. Protect from excessive winter wet. Where withered stems are left for winter effect, they should be cut to the ground by early spring; however, *M. floridulus* may lose dead foliage in strong winds.

• **PROPAGATION** Sow seed in containers in a cold frame in early spring. Divide as new growth commences in spring. May be slow to establish; pot on divisions or grow in a cold frame or cold or cool greenhouse until established.

• **PESTS AND DISEASES** Trouble free.

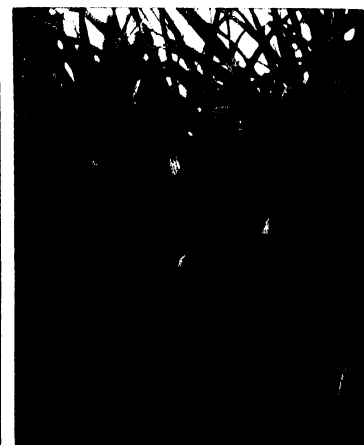
**M. floridulus** ♀ Deciduous or evergreen, slowly spreading, clump-forming, perennial grass with sturdy, upright stems and downward-arching, linear, glaucous, pale green leaves, to 90cm (36in) long, with silver midribs. Erect, pyramidal panicles, to 50cm (20in) long, of silvery spikelets, are produced in autumn, although these are rarely borne in cooler regions. Often confused with *M. sacchariflorus*. ‡ 2.5m (9ft), ↔ 1.5m (5ft) or more. S.E. Asia. \*\*\*

**M. sacchariflorus** (Silver banner grass).

Deciduous, robust, clump-forming, perennial grass bearing stiff, flat, linear, blue-green leaves, to 90cm (36in) long, with pale, silver-green midribs. In late summer and early autumn, produces finely hairy, pyramidal or fan-shaped panicles, to 40cm (16in) long, of numerous silky-hairy, silvery white spikelets. ‡ 1.5–2.2m (5–7ft), ↔ 1.4m (4½ft). S.E. Asia. \*\*

**M. sinensis** ♀ Deciduous, clump-forming, perennial grass with erect stems and mostly basal, flat, erect or arching, linear, blue-green leaves, to 1.2m (4ft) long. Pyramidal panicles, to 40cm (16in) long, of silky-hairy, pale grey spikelets, tinted maroon or purple-brown, are produced in autumn. ‡ to 4m (12ft), ↔ 1.2m (4ft). S.E. Asia. \*\*\*

'Cabaret' has broad, mid-green leaves with conspicuous white stripes; ‡ to 1.8m (6ft). 'Gracillimus' (Maiden grass) has very narrow, curved leaves with white midribs, becoming bronzed in autumn; ‡ 1.3m (4½ft). 'Kleine Silberspinne' is lower-growing, bearing open, spidery, white-tinged red panicles, fading to silver, from late summer to autumn; ‡ 1.2m (4ft). 'Morning Light' resembles 'Gracillimus' but has narrow white leaf margins, giving a silvery effect; ‡ 1.2m (4ft). 'Pünkchen' is stiffly upright, with creamy yellow horizontal bands on the leaves; ‡ 1.2m (4ft). **var. purpurascens** has leaves that turn purplish green, with pink midribs, in summer, and develop red and orange tones in autumn; ‡ 1.2m (4ft).



*Miscanthus sinensis* 'Zebrinus'

'Rotsilber' bears rich red-tinted silver panicles in late summer and early autumn, above narrow leaves with prominent silver midribs; ‡ 1.2m (4ft). 'Silberfeder' □ syn. 'Silver Feather', is free-flowering, bearing silvery to pale pinkish brown panicles in early and mid-autumn, remaining through winter; ‡ to 2.5m (8ft). 'Silver Feather' see 'Silberfeder'. 'Variegatus' has leaves with creamy white and pale green longitudinal bands; ‡ 1.8m (6ft). 'Zebrinus' □ (Zebra grass) is broadly arching, with creamy white or pale yellow horizontal bands on the leaves; ‡ to 1.2m (4ft).

**M. yakushimensis**. Dense, clump-forming, deciduous, perennial grass with narrowly linear leaves, to 60cm (24in) long; leaves are light green, with silvery pink midribs, and turn yellow in autumn. Slender, open, conical or fan-shaped silvery panicles, to 50cm (20in) long, are produced in late summer and early autumn. ‡ 60–75cm (24–30in), ↔ 75cm (30in). Japan. \*\*\*

▷ **Mission bells** see *Fritillaria biflora*

▷ **Miss Willmott's ghost** see *Eryngium giganteum*



*Miscanthus sinensis* 'Silberfeder'

## MITCHELLA

Partridge berry

RUBIACEAE

Genus of 2 species of trailing, evergreen perennials found in woodland in North America and Japan. The trailing stems root at the nodes and bear opposite, broadly ovate to lance-shaped leaves. Small, funnel-shaped, fragrant white flowers, borne in pairs in summer, are followed by ornamental red berries. Grow in a rock garden or woodland garden, or on a peat terrace.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich, acid soil in light dappled or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn; keep moist after sowing. Separate rooted runners in spring.
- **PESTS AND DISEASES** Trouble free.

*M. repens* (Creeping box, Partridge berry). Prostrate, mat-forming perennial with broadly ovate, glossy, dark green, white-veined leaves, to 2cm (¾in) long. White, often pink-flushed flowers, 1cm (½in) long, are borne in early summer, followed by spherical, bright red berries, to 1cm (½in) across. †5cm (2in), ↔ to 30cm (12in). North America. \*\*\*

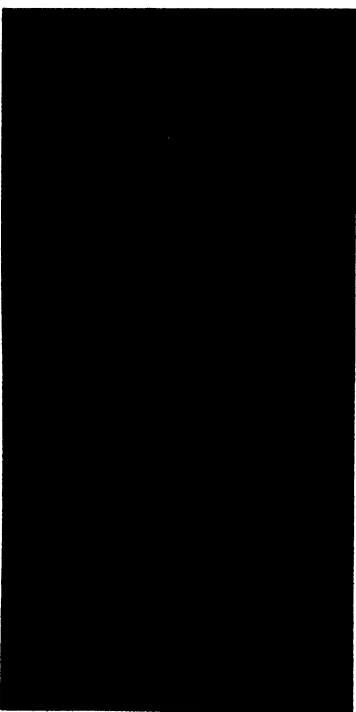
## MITELLA

Bishop's cap, Mitrewort

SAXIFRAGACEAE

Genus of 20 species of clump-forming, rhizomatous perennials occurring in woodland in E. Asia and North America. The long-stalked, lobed, ovate, glossy, mid- or dark green, basal leaves are heart-shaped at the bases. Slender, often one-sided, occasionally leafy racemes of tiny, pendent or horizontal, bell-shaped flowers, each with 5 fringed petals, are borne in summer. Use for ground cover in a woodland garden.

- **HARDINESS** Fully hardy.

678 *Mitella breweri*

- **CULTIVATION** Grow in moist but well-drained, leafy, acid soil in partial or dappled shade. They self-seed freely.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring.
- **PESTS AND DISEASES** Slugs and snails may be a problem.

*M. breweri* ■ Perennial with hairy, indistinctly lobed, broadly ovate, mid-green leaves, 5–10cm (2–4in) long. In late spring and summer, bears racemes of 20–40 yellowish green flowers, 2mm (¼in) long, with fringed, comb-like petals, on stems to 15cm (6in) tall. †15cm (6in), ↔ to 20cm (8in). W. to C. North America. \*\*\*

*M. stauropetala*. Vigorous perennial with broadly ovate, slightly lobed, often purple-tinged, mid-green leaves, 4–10cm (1½–4in) long. In summer, bears racemes of 10–35 white or purple flowers, to 4mm (¼in) long, with deeply cut and fringed petals, on stems to 50cm (20in) tall. †to 50cm (20in), ↔ to 30cm (12in). North America (Rocky Mountains). \*\*\*

## MITRARIA

CESNERIACEAE

Genus of one species of woody, evergreen, scandent or spreading shrub from moist woodland in Chile and Argentina. The leaves are opposite and ovate, and the showy flowers are tubular. *M. coccinea* prefers cool, humid climates. Grow in a woodland garden or sheltered shrub border. Where frosts are severe, grow in a cool greenhouse.

- **HARDINESS** Frost hardy borderline.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light, with moderate to high humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter but do not allow to dry out. Outdoors, grow in moist but well-drained, humus-rich, acid soil in light dappled shade. Shelter from cold, drying winds. Keep roots cool and shaded, but allow the top to grow into sunlight. Pruning group 9.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

*M. coccinea* ■ Weakly scandent shrub with opposite, ovate, toothed, leathery, glossy, dark green leaves, to 2.5cm (1in)

*Mitraria coccinea*

long. Scarlet flowers, 3cm (1¼in) long, each with 5 small lobes, are borne singly from the leaf axils over a long period from late spring to autumn. †to 2m (6ft). Chile, Argentina. \*\* (borderline)

▷ **Mitrewort** see *Mitella*▷ **Mock orange** see *Philadelphus*, *P. coronarius*Australian see *Pittosporum undulatum*Japanese see *Pittosporum tobira*▷ **Modocca digitata** see *Adenia digitata*▷ **Mole plant** see *Euphorbia lathyris*

## MOLINIA

GRAMINEAE/POACEAE

Genus of 2 species of loosely or densely tufted, perennial grasses found in damp moorland in Europe and N. and S.W. Asia. They are grown for their attractive habit, autumn foliage, and graceful, dense to open panicles of compressed spikelets, each with 4 florets, held well above the foliage. Grow in a mixed or herbaceous border, or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist but well-drained, preferably acid to neutral soil, in full sun or partial shade.
- **PROPAGATION** Sow seed of species in containers in a cold frame in spring. Divide species and cultivars in spring, and pot up until established.
- **PESTS AND DISEASES** Trouble free.

*M. caerulea* (Purple moor grass).

Tufted perennial with dense clumps of flat, linear-oblong, mid-green leaves, to 45cm (18in) long, with purple bases.

*Molinia caerulea* subsp. *arundinacea* 'Karl Foerster'

From spring to autumn, bears dense, narrow panicles, 40cm (16in) long, of purple spikelets on yellow-tinted stems. †to 1.5m (5ft), ↔ 40cm (6in). Europe, N. and S.W. Asia. \*\*\*. subsp. *arundinacea* 'Karl Foerster' ■ has leaves to 80cm (32in) long, and open panicles of purple spikelets on arching stems. subsp. *arundinacea* 'Sky Racer' has leaves, to 1m (3ft) long, that turn clear gold in autumn; †to 2.2m (7ft). 'Moorhexe' is very upright, with dark purple spikelets held tightly against erect stems; †45cm (18in). 'Variegata' is tufted and compact, with dark green, cream-striped leaves, ochre stems, and purple spikelets; †45–60cm (18–24in).

## MOLTZIA

BORAGINACEAE

Genus of about 6 species of perennials or shrubs, some evergreen, found in alkaline soils in rock crevices or on open hillsides from N. Italy and Greece to S.W. Asia. They have alternate, oblong or linear to lance-shaped or inversely lance-shaped, hairy, mid- or dark green leaves. Tubular or funnel-shaped, blue, purple, or yellow flowers are borne in short, one-sided, terminal cymes from late spring to summer. Grow in a Mediterranean or rock garden, or at the front of a mixed or shrub border.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in poor, well-drained, preferably alkaline soil in full sun. Protect from excessive winter wet and shelter from cold, drying winds. Pruning group 10, after flowering, if required.

*Moltskia doerfleri*

- **PROPAGATION** Sow seed under glass or in containers in a cold frame in autumn. Root softwood cuttings in early summer. Layer woody species in spring.
- **PESTS AND DISEASES** Susceptible to aphids and whiteflies under glass.

*M. doerfleri* ■ syn. *Lithospermum doerfleri*. Rhizomatous, woody-based perennial with wiry, upright stems and lance-shaped, mid-green leaves, to 5cm (2in) long. Bears cymes of pendent, narrowly tubular, deep purple flowers, to 2.5cm (1in) long, from late spring to midsummer. †↔ 30–50cm (12–20in). N.E. Albania. \*\*\*

*M. x intermedia* ♀ (*M. petraea* x *M. suffruticosa*), syn. *Lithodora x intermedia*. Evergreen, dome-shaped subshrub with linear or narrowly oblong, dark green leaves, to 10cm (4in) long. In early summer, bears compact cymes of open funnel-shaped, bright blue flowers, 1.5cm (½in) long, often pink-tinged in bud. † 15–30cm (6–12in), ↔ to 30cm (12in). Garden origin. \*\*\*

*M. petraea*. Semi-evergreen, dwarf shrub with oblong-lance-shaped to linear, inrolled leaves, to 5cm (2in) long, dark green above and white beneath. In

summer, pink-purple buds open to funnel-shaped, deep blue or violet-blue flowers, to 8mm (⅜in) long, with prominent stamens, borne in compact cymes. †↔ 20–40cm (8–16in). Former Yugoslavia, Albania, Greece. \*\*\*  
*M. suffruticosa* ■ syn. *Lithodora graminifolia*, *Lithospermum graminifolium*. Deciduous, upright, loosely branched shrub with narrowly linear, bristly, dark green leaves, to 15cm (6in) long. In summer, tubular, bright blue to purple-blue flowers, to 1.5cm (½in) long, are borne in dense, clustered cymes. †↔ to 30cm (12in). N. Italy. \*\*\*

## MOLUCCELLA

LABIATAE/LAMIACEAE

Genus of 4 species of erect, branching annuals and short-lived perennials found in fallow fields and on stony slopes from the Mediterranean to N.W. India. The 4-sided stems bear opposite, simple, rounded to ovate, incised or scalloped, mid- to pale green leaves. From summer to autumn, small, tubular, 2-lipped, hooded flowers, with expanded, bell-shaped calyces, are borne in whorls from

*Moluccella laevis*

the upper leaf axils. Grow in a mixed or annual border; the unusual flower spikes are useful for dried flower arrangements.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early or mid-spring, or *in situ* in late spring.
- **PESTS AND DISEASES** Trouble free.

*M. laevis* ■ (Bells of Ireland, Shell flower). Annual with very broadly ovate, deeply scalloped, pale green leaves, to 6cm (2½in) long. In late summer, bears whorls of 6–8 fragrant, white to pale purplish pink flowers in spikes 23–30cm (9–12in) tall; each flower is cupped in a pale green calyx, which becomes white-veined and papery in fruit. † 60–90cm (24–36in), ↔ 23cm (9in). Caucasus, Turkey, Syria, Iraq. \*

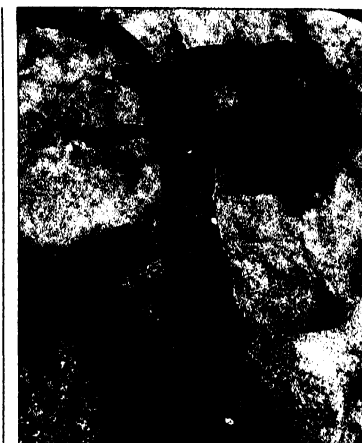
## MONADENIUM

EUPHORBIAEAE

Genus of about 50 species of bushy, tree-like, or trailing, monoecious, perennial succulents from low to high altitudes in tropical E. Africa, Angola, Namibia, South Africa, and Zimbabwe. Some species produce annual growth from a subterranean, thickened tuber or caudex; others retain fleshy stems all year. The fleshy or scaly leaves may fall quickly. In summer, unusual, small, petalless, diurnal flowers are borne in cup-like bracts within yellow, green, or brown-orange involucre. In areas where temperatures fall below 18°C (64°F), grow in a warm greenhouse. Elsewhere, grow in a rock or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light, with low humidity. From spring to summer, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep dry in winter. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root cuttings of stem sections in spring and summer.
- **PESTS AND DISEASES** Trouble free.

*M. ellenbeckii*. Bushy succulent with thick, fleshy, cylindrical stems, and pitted branches, to 2.5cm (1in) thick, produced at or near the base. A few oval,

*Monadenium lugardiae*

stiff, fleshy, hairy, mid-green leaves, 1cm (½in) long, are borne at the branch tips and soon fall. Yellow-green involucre, with bract-cups 1cm (½in) across, form in summer. † 1m (3ft), ↔ 45cm (18in). Ethiopia, Kenya. ☼ (min. 18°C/64°F)  
*M. lugardiae* ■ Erect succulent with a caudiciform base and a spineless stem, to 3cm (1¼in) thick, branching freely at or near the base. Thick, obovate, scalloped to toothed, fleshy leaves, to 9cm (3½in) long, form at the branch tips. Pale green involucre, yellow or orange-brown within, with bract-cups 7mm (¼in) across, are produced in summer. † 60cm (24in), ↔ 45cm (18in). Namibia, South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal), Zimbabwe. ☼ (min. 18°C/64°F)

## MONANTHES

CRASSULACEAE

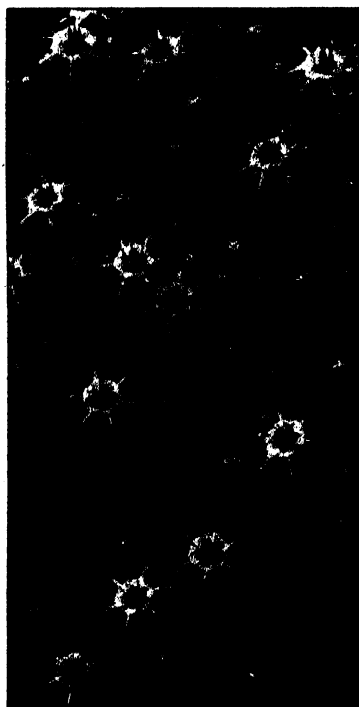
Genus of about 12 species of mat-forming or shrubby, perennial or annual succulents from rocky, upland areas in N. Africa and the Canary Islands.

Rosettes of fleshy, often warty leaves are crowded at the ends of thick, fleshy branches. Small, star-shaped, diurnal flowers, often in compact racemes or branched cymes, are borne from spring to summer. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse throughout the year, or use for outdoor bedding from spring to summer. In warmer climates, grow in a rock or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to autumn, water moderately and apply a low-nitrogen liquid fertilizer monthly; keep dry in winter. Outdoors, grow in poor, sharply drained soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root stem-tip or leaf cuttings in spring or summer.
- **PESTS AND DISEASES** Trouble free.

*M. dasyphylla*. Semi-prostrate succulent with thick, inversely lance-shaped, softly hairy, reddish green to dark green leaves, to 2cm (¾in) long, with purple stripes and spots, the inner leaves shorter and incurved. Sub-erect racemes of 2–5 yellow, red-striped flowers, to 5mm (¼in) across, are produced in summer. † to 5cm (2in), ↔ 15cm (6in). Canary Islands (Tenerife). ☼ (min. 7°C/45°F)

*Moltskia suffruticosa*

*Monanthes muralis*

**M. laxiflora.** Shrubby, slightly pendent succulent with opposite, ovate, wrinkled, dark green leaves, to 1.5cm (½in) long. Suberect racemes of 6–10 yellow, sometimes purple flowers, to 1cm (½in) across, with minute red spots, are produced from spring to summer. †90cm (4in) or more. Canary Islands. ☼ (min. 7°C/45°F)

**M. muralis** ☼ Shrubby succulent with dense rosettes of obovate, warty leaves, to 1cm (½in) long, marked deep greyish purple or red. From spring to summer, produces racemes of 3–7 yellowish white flowers, 1cm (½in) across, with red tufted stamens. †10cm (4in), ↔ 15cm (6in) or more. Canary Islands (Hiero, Gomera). ☼ (min. 7°C/45°F)

**M. polyphylla.** Mat- or cushion-forming succulent with cylindrical to club-shaped, pale green leaves, to 1cm (½in) long. From spring to summer, produces erect racemes, usually with 1–4 red flowers, 1cm (½in) across, with white-hairy stalks and calyces. †to 12cm (5in), ↔ indefinite. Canary Islands. ☼ (min. 7°C/45°F)

▷ **Monarch of the East** see *Sauromatum venosum*

▷ **Monarch of the veldt** see *Arctotis fastuosa*

## MONARDA

Bergamot

LABIATAE/LAMIACEAE

Genus of about 15 species of annuals and clump-forming, rhizomatous herbaceous perennials occurring in dry scrub, prairies, and woodland in North America. Simple or sparsely branching, square stems bear alternate, opposite, lance-shaped to oval, usually toothed but sometimes entire, aromatic, mid- to dark green or purple-green leaves with conspicuous veins. From midsummer to early autumn, tubular, sage-like, white, pink, red, or violet flowers, often with coloured bracts, are produced in terminal whorls. Each flower has 2 lips,

*Monarda* 'Beauty of Cobham'

the upper one hooded and erect, the lower one 3-lobed and more spreading. Most monardas in general cultivation (including those described below) are derived from *M. didyma*, or are hybrids with *M. fistulosa*. They have ovate, toothed, usually dark green leaves, to 14cm (5½in) long, sometimes softly hairy beneath. Flowers, to 5cm (2in) long, are borne in whorls, with usually red-tinged bracts. Long-flowering and colourful, monardas are suitable for a mixed or herbaceous border; the flowers attract bees.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or light dappled shade. Protect from excessive winter wet; do not allow to dry out in summer.

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide clumps in spring, before new growth commences. Root basal cuttings in spring.

• **PESTS AND DISEASES** Susceptible to slugs, especially in spring, and to powdery mildew in hot, dry summers. Some cultivars are mildew-resistant.

**M. 'Adam'.** Clump-forming perennial bearing cherry-red flowers from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**M. 'Beauty of Cobham'** ☼ Clump-forming perennial with purplish green leaves. Pale pink flowers, with purple-pink bracts, are produced from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

*Monarda* 'Cambridge Scarlet'*Monarda* 'Croftway Pink'

**M. 'Blaustrumpf'**, syn. *M. 'Blue Stocking'*. Clump-forming perennial bearing deep violet-purple flowers, with purple bracts, from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**M. 'Blue Stocking'** see *M. 'Blaustrumpf'*.

**M. 'Cambridge Scarlet'** ☼ Clump-forming perennial bearing rich scarlet-red flowers, with brownish red calyces, from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**M. 'Croftway Pink'** ☼ Clump-forming perennial producing clear rose-pink flowers, with pink-tinged bracts, from midsummer to early autumn.

†90cm (36in), ↔ 45cm (18in). \*\*\*

**M. didyma** (Bee balm, Bergamot, Oswego tea). Bushy, clump-forming perennial with branching, square stems and ovate to ovate-lance-shaped, dull, mid-green leaves, to 14cm (5½in) long, softly hairy beneath. From mid- to late summer, each flowering stem bears 2 whorls of bright scarlet or pink flowers, 3–4.5cm (1¼–1½in) long, with red-tinged bracts. †90cm (36in) or more, ↔ 45cm (18in). E. North America. \*\*\*

**M. fistulosa** (Wild bergamot). Bushy, clump-forming perennial with branching stems, more rounded than *M. didyma*. Bears ovate to ovate-lance-shaped, softly hairy, dull, mid-green leaves, 4–10cm (1½–4in) long. From mid- to late summer or early autumn, bears lilac-purple or pale pink flowers, 2–3cm (¾–1¼in) long, with purple-tinged bracts. †1.2m (4ft), ↔ 45cm (18in). E. North America. \*\*\*

**M. 'Loddon Crown'.** Clump-forming perennial bearing rich, dark red-purple flowers, with purplish brown bracts and calyces, from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**M. 'Mahogany'** ☼ Clump-forming perennial bearing wine-red flowers, with brownish red bracts, from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**M. 'Prairie Night'** see *M. 'Prärienacht'*.

**M. 'Prärienacht'** ☼ syn. *M. 'Prairie Night'*. Clump-forming perennial bearing purple-lilac flowers, with green, slightly red-tinged bracts, from midsummer to early autumn. †90cm (36in), ↔ 45cm (18in). \*\*\*

**M. 'Schneewittchen'**, syn. *M. 'Snow Witch'*. Clump-forming perennial bearing white flowers, with green bracts,

*Monarda* 'Mahogany'



*Monarda* 'Prärienacht'

from midsummer to early autumn.  
 ‡ 90cm (36in), ↔ 45cm (18in). \*\*\*  
*M. 'Snow Witch'* see *M. Schneewittchen*.

*M. 'Vintage Wine'*. Clump-forming perennial bearing red-purple flowers, with brownish green bracts and calyces, from midsummer to early autumn.  
 ‡ 90cm (36in), ↔ 45cm (18in). \*\*\*

## MONARDELLA

LABIATAE/LAMIACEAE

Genus of about 20 species of annuals and herbaceous perennials, often with creeping stems, occurring mainly on dry, stony slopes in W. North America. The small, opposite, aromatic, entire or toothed leaves are linear to diamond-lance-shaped, oblong, ovate, or elliptic. Terminal, spherical whorls of 2-lipped, tubular flowers (the upper lip 2-lobed and the lower one 3-lobed), often with purplish red, leaf-like bracts, are produced in summer. Suitable for a Mediterranean or rock garden, the front of a mixed border, or an alpine house.

• **HARDINESS** Fully hardy to frost hardy.  
 • **CULTIVATION** Grow in poor, sharply drained soil in full sun. In an alpine house, grow in shallow containers in a mix of equal parts loam-based potting compost (J1 No.2) and grit. Protect from excessive winter wet and shelter from cold, drying winds.

• **PROPAGATION** Sow seed under glass in autumn. Divide, or root basal or soft-wood cuttings in spring, both with bottom heat.

• **PESTS AND DISEASES** Susceptible to aphids and whiteflies under glass.

*M. macrantha*. Deciduous, decumbent, woody-based perennial with spreading branches and ovate to elliptic, toothed, hairy, slightly leathery, mid-green leaves, to 3cm (1¼in) long. In mid- and late summer, bears scarlet flowers, 1cm (½in) long, in whorled flowerheads, 3–4cm (1¼–1½in) across, surrounded by purplish red bracts. ‡ 15cm (6in), ↔ to 20cm (8in). USA (California). \*\*

▷ **Monkey cup** see *Nepenthes*

▷ **Monkey flower** see *Mimulus*

Allegheny see *M. ringens*

Scarlet see *M. cardinalis*

Yellow see *M. luteus*

▷ **Monkey plant** see *Ruellia makoyana*

▷ **Monkey puzzle** see *Araucaria araucana*

▷ **Monkshood** see *Aconitum*, *A. napellus*

## MONSTERA

ARACEAE

Genus of 22 species of evergreen, often epiphytic root climbers found in rain-forest in tropical North, Central, and South America. The alternate leaves usually differ in size and shape on young and mature plants, but are mainly ovate and entire, lobed, or deeply pinnatifid. On mature plants, arum-like spathes, enclosing tiny, star-shaped, petalless flowers, are produced singly from the leaf axils. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse or as houseplants. In warmer climates, grow up palm trees or on an arch or pergola. The fruit of *M. deliciosa* taste of pineapple when fully ripe. Other parts may cause mild stomach upset if ingested, and contact with the fruit may irritate skin.

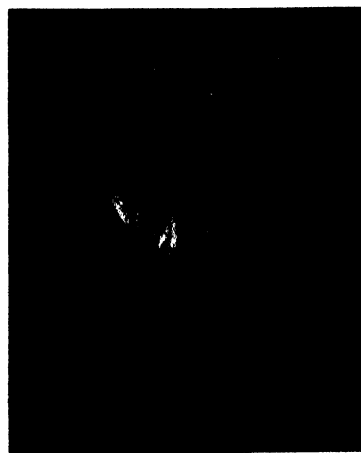
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), in bright indirect light with moderate to high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade. Pruning group 11, in spring; plants grown under glass may require restrictive pruning.

• **PROPAGATION** Sow seed at 18–24°C (64–75°F) as soon as ripe. Root tip or leaf cuttings with bottom heat in summer. Layer in autumn.

• **PESTS AND DISEASES** Scale insects and red spider mites may be troublesome under glass.

*M. deliciosa* ♀ (Ceriman, Mexican breadfruit, Swiss cheese plant). Robust, strong-growing climber with thick, sparingly branched stems. Mature plants have broadly ovate to heart-shaped, long-stalked, leathery, glossy, mid- to deep green leaves, 30–90cm (12–36in) long. Each leaf is pinnatifid and often perforated with elliptic to oblong holes between the main lateral veins. Juvenile leaves are shorter-stalked, much smaller, and entire. Bears creamy white spathes, 20–30cm (8–12in) long, usually from spring to summer, sometimes followed by edible, cone-shaped cream fruit, to 25cm (10in) long. ‡ 10–20m (30–70ft). S. Mexico to Panama. ♀ (min. 15°C/59°F). 'Albovariegata' produces leaves with irregular, creamy white



*Monstera deliciosa*

patches. 'Variegata' ♀ produces leaves splashed and marbled yellowish cream; very liable to revert to green.

*M. latevaginata* of gardens see *Rhaphidophora celatocaulis*.

▷ **Montbretia** see *Crocasmia*, *C.*

× *crocasmiiiflora*

▷ **Montia australasica** see *Neopaxia australasica*

▷ **Moonflower** see *Ipomoea alba*

▷ **Moonseed** see *Menispermum Canadian* see *M. canadense*

▷ **Moor grass**,

Balkan see *Sesleria heufleriana*

Blue see *Sesleria albicans*

Nest see *Sesleria nitida*

Purple see *Molinia caerulea*

▷ **Moosewood** see *Acer pensylvanicum*

## MORAEA

IRIDACEAE

Genus of about 120 species of deciduous or semi-deciduous, cormous perennials, occurring in seasonally moist grassland throughout Africa. The linear or lance-shaped, flat or rolled, often channelled, light to mid-green leaves may be basal or borne on the stems. From spring to summer, a succession of short-lived, colourful, iris-like flowers are produced in clusters within pairs of large bracts. In frost-free climates, some species, such as *M. angusta*, *M. moggii*, and *M. spathulata*, are evergreen. In frost-prone areas, grow the half-hardy species in a cool greenhouse. In warmer climates, the frost-hardy species are best in a mixed border or at the base of warm, sunny wall; grow the half-hardy species in a mixed border or a rock garden.

• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Plant 7cm (3in) deep in spring or autumn. Outdoors, grow frost-hardy species in well-drained, humus-rich, moderately fertile soil in full sun with some midday shade. Provide protection from excessive winter wet. In areas prone to severe frosts, grow under glass, as for half-hardy species. Under glass, grow half-hardy species in loam-based potting compost (J1 No.2), with additional sharp sand, in full light. Water sparingly as growth begins, then freely when in full growth. Dry off as leaves wither, in order to ensure a dry dormancy from midsummer to autumn. In warmer areas, grow outdoors, as for frost-hardy species above.

• **PROPAGATION** Sow seed of frost-hardy species in containers in a cold frame in spring; sow seed of half-hardy species under glass in autumn. Separate offsets when dormant.

• **PESTS AND DISEASES** Trouble free.

*M. angusta*. Cormous perennial producing a solitary, erect, linear, rolled, stem leaf, to 60cm (24in) long. Brown- or grey-tinged yellow flowers, 6–8cm (2½–3in) across, are produced in spring. ‡ 20–40cm (8–16in), ↔ 8cm (3in). South Africa (S. Western Cape). \*

*M. aristata*, syn. *M. glaucopsis*.

Cormous perennial producing a solitary, erect, narrowly linear, flat, basal leaf, to 45cm (18in) long. Produces white flowers, 5–7cm (2–3in) across, with conspicuous, green, blue, or violet central eyes on the outer tepals, on occasionally branched stems in late



*Moraea huttonii*

spring, ‡ 25–35cm (10–14in), ↔ 8cm (3in). South Africa. \*

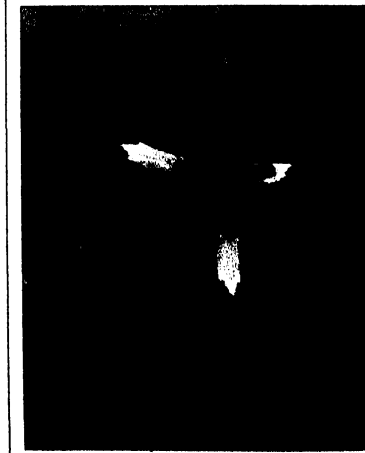
*M. glaucopsis* see *M. aristata*.

*M. huttonii* ♀ Cormous perennial with a solitary, semi-erect, narrowly linear, flat or channelled, basal leaf, to 1m (3ft) long. Scented, golden yellow flowers, to 8cm (3in) across, with brown marks and deeper yellow eyes towards the centres, are produced on occasionally branched stems from spring to early summer. Similar to *M. spathulata*, but with purple-brown marks on the styles. ‡ 70–90cm (28–36in), ↔ 8cm (3in). South Africa (KwaZulu/Natal), Lesotho. \*\*

*M. moggii*. Robust, cormous perennial with a solitary, erect, narrowly linear, basal leaf, to 60cm (24in) long, channelled at the base and rolled at the tip. Yellow, sometimes cream or white flowers, to 5cm (2in) across, with bright yellow and purple veins on the outer tepals, are borne in late summer. One of the easiest species to grow. ‡ 70cm (28in), ↔ 8cm (3in). South Africa (KwaZulu/Natal), Swaziland. \*\*

*M. natalensis*. Cormous perennial with a solitary, narrowly linear, channelled leaf, to 20cm (8in) long, borne near the top of the stem. In summer, produces lilac or violet-blue flowers, 2.5–3cm (1–1¼in) across, with a conspicuous yellow central mark, ringed dark mauve, on each of the outer tepals. ‡ to 45cm (18in), ↔ 8cm (3in). Zaire, Zambia, Malawi, Zimbabwe, Mozambique, South Africa (KwaZulu/Natal, Eastern Transvaal). \*

*M. polystachya* ♀ Cormous perennial bearing 3–5 erect but later spreading,



*Moraea polystachya*

N

*Moraea ramosissima*

linear, channelled to almost flat leaves, to 80cm (32in) long, on branching stems. In summer, bears violet to pale blue flowers, 6–8cm (2½–3in) across, with a conspicuous, white-margined yellow mark at the centre of each outer tepal. ‡ to 80cm (32in), ↔ 8cm (3in). Namibia, Botswana, South Africa (Northern Cape, Eastern Cape, W. Northern Transvaal). \*

***M. ramosissima*** ■ Cormous perennial with numerous semi-erect, narrowly linear, channelled, basal leaves, 30–50cm (12–20in) long. Produces yellow flowers, 4–6cm (1½–2½in) across, with deeper yellow centres, on many-branched stems from spring to early summer. Produces offset corms. ‡ 50–120cm (20–48in), ↔ 10cm (4in). South Africa. \*

***M. spathacea*** see *M. spathulata*.

***M. spathulata***, syn. *M. spathacea*. Robust, cormous perennial with a solitary, semi-erect, narrowly linear, flat or channelled, basal leaf, to 80cm (32in) long. Golden yellow flowers, to 9cm (3½in) across, are produced in early and midsummer. The outer tepals each have a deep yellow to orange-yellow central mark and purple-brown margins. Similar to *M. huttonii* but more robust and with larger flowers. ‡ 50–90cm (20–36in), ↔ 8cm (3in). Zimbabwe, Mozambique, Swaziland, Lesotho, South Africa (KwaZulu/Natal, Northern Transvaal, Eastern Transvaal, Eastern Cape). \*\*

***M. tripetala***. Cormous perennial with a solitary (occasionally 2), trailing, linear or lance-shaped, channelled, basal leaf, 20–60cm (8–24in) long. In spring, pale or deep blue, purple, pink, or sometimes yellow flowers, 4–5cm (1½–2in) across, are produced on sometimes branched stems; the 3 large outer tepals each have a white or yellow central mark. ‡ 10–50cm (4–20in), ↔ 8cm (3in). South Africa (Northern Cape, Western Cape, Eastern Cape). \*

***M. villosa***. Very variable, cormous perennial with a solitary, trailing, narrowly linear, channelled, basal leaf, 20–50cm (8–20in) long. In early spring, branched stems bear white, cream, pink, orange, vivid blue, lilac, or purple flowers, 5–7cm (2–3in) across. The outer tepals each have a yellow central mark, surrounded by 1 or 2 darker yellow, purple, or black bands. ‡ 15–40cm (6–16in), ↔ 5cm (2in). South Africa (Northern Cape, Western Cape, Eastern Cape). \*

## MORINA syn. ACANTHOCALYX

### MORINACEAE

Genus of 4 or 5 species of evergreen perennials found on open, rocky and grassy slopes and in open woodland in E. Europe, Turkey to C. Asia, the Himalayas, and S.W. China. They have rosettes of lance-shaped, glossy, mid- to dark green leaves with spiny-toothed, wavy margins; the leaves become smaller near the tops of the stems. Whorled, spiny bracts are held immediately below spikes of tubular, red, pink, white, or yellow flowers, borne in whorled clusters. Each flower has a long perianth tube and a wide, 2-lipped mouth. Grow in a mixed or herbaceous border; *M. persica* is useful for a rock or Mediterranean garden. The seed heads are useful for dried flower arrangements.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor or moderately fertile, sharply drained soil in full sun. Protect from winter wet.

• **PROPAGATION** Sow seed in a cold frame as soon as ripe, with one seed per container of gritty seed compost. *M. persica* is difficult to germinate. Overwinter young plants in a well-ventilated cold frame. Insert root cuttings in winter.

• **PESTS AND DISEASES** Susceptible to slug damage and rot, especially in shade.

***M. longifolia*** ■ (Whorlflower).

Rosette-forming perennial with linear to oblong, pinnatifid, aromatic, glossy, dark green basal leaves, to 25cm (10in) long, with sharp marginal spines. In midsummer, tiered, whorled clusters of waxy white flowers, 3cm (1¼in) long, are produced in spikes; flowers become rose-pink then red after fertilization. ‡ to 90cm (36in) or more, ↔ 30cm (12in). Himalayas. \*\*\*

***M. persica***. Rosette-forming perennial with linear to elliptic, deeply lobed to pinnatifid, very spiny, dark green basal leaves, to 20cm (8in) long. In mid- and

*Morina longifolia*

late summer, numerous flowering stems bear dense whorls of bracts below spikes of whorled clusters of scented flowers, 3–3.5cm (1¼–1½in) long; flowers are white, sometimes with yellow-flushed throats, and become pink or reddish pink after fertilization. ‡ to 1.5m (5ft), ↔ 60cm (24in). S. and E. Balkans, Turkey, Iran. \*\*\*

## MORISIA

### BRASSICACEAE/CRUCIFERAE

Genus of one species of compact, rosette-forming, tap-rooted perennial occurring in sandy areas of Corsica and Sardinia. It produces pinnatifid leaves and almost stemless, cross-shaped flowers. Grow in a rock garden, scree bed, trough, or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, sharply drained soil in full sun. Protect from excessive winter wet. In an alpine house, use a mix of equal parts loam-based potting compost (J1 No. 1) and grit.

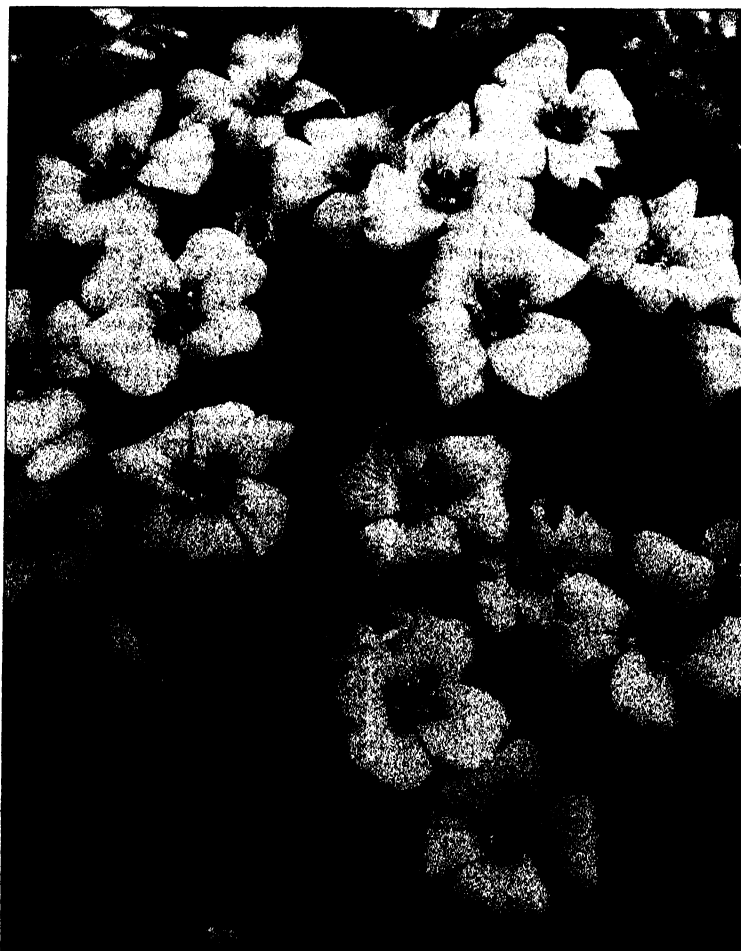
• **PROPAGATION** Sow seed in containers in a cold frame in spring. Insert root cuttings in a cold frame in winter.

• **PESTS AND DISEASES** Neck rot may be a problem in very damp conditions.

***M. hypogaea*** see *M. monanthos*.

***M. monanthos*** ■ syn. *M. hypogaea*.

Perennial forming neat rosettes of lance-shaped, pinnatifid, slightly fleshy, glossy, dark green leaves, 5–8cm (2–3in) long, with oblong segments. In late spring and early summer, bears almost stemless, golden yellow flowers, to 1.5cm (½in)

*Morisia monanthos*

across. ‡ 5cm (2in), ↔ to 10cm (4in). France (Corsica), Italy (Sardinia). \*\*\*. 'Fred Hemingway' has flowers to 2cm (¾in) across.

▷ **Morning glory** see *Ipomoea*, *I. tricolor*

**Common** see *Ipomoea purpurea*

**Red** see *Ipomoea coccinea*

**Spanish** see *Merremia tuberosa*

**Star** see *Ipomoea coccinea*

**Woolly** see *Argyrea nervosa*

**Yellow** see *Merremia tuberosa*

▷ **Mortifia** see *Vaccinium floribundum*

## MORUS

*Mulberry*

### MORACEAE

Genus of about 10 species of upright to rounded, deciduous shrubs and trees found mainly in woodland in Africa, Asia, and North and South America. The alternate, ovate to rounded, toothed leaves, often lobed and heart-shaped at the bases, are light to dark green. In late spring and early summer, tiny, cup-shaped, pale green male and female flowers are borne in separate catkins on the same plant; each female flower cluster develops into a single, spherical to oblong, edible, raspberry-like fruit. Grow as specimen trees; *M. alba* 'Pendula' is particularly suitable for a small garden; *M. nigra* is the best species for edible fruit. In frost-prone areas, grow tender species in a temperate greenhouse. The leaves of several species are used to feed silkworms.

• **HARDINESS** Fully hardy to frost tender; unripened wood may be damaged by frost.



*Morus nigra*

- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Shelter from cold, drying winds. Pruning group 1, in late autumn or early winter, as trees "bleed" at other times.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Root semi-ripe cuttings in summer. Root hardwood cuttings in a prepared bed in a cold frame in autumn; thick pieces of 2- to 4-year-old wood, known as "truncheons", will also root if treated as hardwood cuttings. Bud cultivars in summer.
- **PESTS AND DISEASES** Susceptible to bacterial blight, canker, coral spot, and powdery mildew.

**M. alba** ♀ syn. *M. bombycis* (White mulberry). Spreading tree with ovate to heart-shaped, sometimes lobed, glossy, bright green leaves, to 20cm (8in) long, turning yellow in autumn. Ovoid, insipid-tasting white fruit, to 2.5cm (1in) long, ripening to pink and red, are borne in late summer. ♂↔ 10m (30ft). China. \*\*\*. 'Lacinata' has deeply lobed leaves. 'Pendula' ♀ is weeping, and produces pendent shoots; ♂ 3m (10ft), ↔ 5m (15ft).

**M. bombycis** see *M. alba*.

**M. nigra** ♂ ♀ (Black mulberry). Rounded tree with ovate to heart-shaped, often doubly toothed, mid-green leaves, to 15cm (6in) long, rough-textured above. Ovoid, green fruit, to 2.5cm (1in) long, turn red then dark purple in late summer, and have a pleasant, slightly acidic flavour. ♂ 12m (40ft), ↔ 15m (50ft). Origin uncertain (probably S.W. Asia). \*\*\*  
**M. rubra** ♀ (Red mulberry). Rounded tree with broadly ovate, sometimes lobed leaves, usually to 12cm (5in) long but sometimes more, with heart-shaped bases and abruptly pointed tips; they are dark green, turning yellow in autumn. Cylindrical, sweet-tasting fruit, to 3cm (1¼in) long, ripen to dark purple in late summer. ♂ 12m (40ft), ↔ 15m (50ft). S.E. Canada, E. USA. \*\*\*

- ▷ **Moses-in-the-cradle** see *Tradescantia spathacea*
- ▷ **Mosquito bills** see *Dodecatheon hendersonii*
- ▷ **Mosquito grass** see *Bouteloua gracilis*
- ▷ **Mosquito plant** see *Azolla filiculoides*
- ▷ **Moss,**
  - Club see *Lycopodium*
  - Fairy see *Azolla filiculoides*
  - Rose see *Portulaca, P. grandiflora*
  - Spanish see *Tillandsia usneoides*

- ▷ **Moss rose, Common** see *Rosa x centifolia* 'Muscosa'
- ▷ **Mother-in-law's cushion** see *Echinocactus grusonii*
- ▷ **Mother-in-law's tongue** see *Dieffenbachia, Sansevieria trifasciata*
- ▷ **Mother of pearl plant** see *Graptopetalum paraguayense*
- ▷ **Mother of thousands** see *Saxifraga stolonifera* 'Tricolor', *Soleirolia soleirolia*
- ▷ **Mother of thyme** see *Acinos arvensis*
- ▷ **Mottlecah** see *Eucalyptus macrocarpa*
- ▷ **Mountain ash** see *Sorbus aucuparia*
- ▷ **American** see *S. americana*
- ▷ **Korean** see *S. alnifolia*
- ▷ **Mountain devil** see *Lambertia formosa*
- ▷ **Mountain fringe** see *Adlumia fungosa*
- ▷ **Mountain pine** see *Pinus uncinata*
- ▷ **Dwarf** see *P. mugo*
- ▷ **Mountain spinach, Red** see *Atriplex hortensis*
- ▷ **Mourning widow** see *Geranium phaeum*
- ▷ **Mouse plant** see *Arisarum proboscideum*
- ▷ **Moutan** see *Paeonia suffruticosa*
- ▷ **Mrs. Robb's bonnet** see *Euphorbia amygdaloides* var. *robbiae*

## MUCUNA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 100 species of herbaceous and woody-stemmed, evergreen, twining climbers and shrubs from woodland in tropical regions worldwide. The 3-palmate leaves are alternate or arranged in spirals. *Mucuna* species are grown for their large, pea-like flowers, with prominent, curved and pointed, keeled petals, which are borne in showy, pendent, axillary racemes. Where temperatures fall below the minimum levels given below, grow in a temperate or warm greenhouse. In warmer areas, use to clothe an arch, pergola, or trellis.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2)

*Mucuna bennettii*

in bright filtered light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun, with some midday shade. Pruning group 11 or 12 outdoors; group 12 under glass. Prune after flowering.

- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring.
- **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

**M. bennettii** ♂ (New Guinea creeper). Fast-growing, woody-stemmed climber with sparingly to moderately branched, wrinkled stems, and dark green leaves with elliptic to oblong leaflets, 11–14cm (4½–5½in) long. Short, dense racemes of scarlet to flame-red flowers, 8–13cm (3–5in) long, with downy orange calyces, are borne mainly in summer. ♂ to 20m (70ft) or more. New Guinea. ♂ (min. 15°C/59°F)

**M. pruriens**. Semi-woody, annual or short-lived perennial climber bearing branched stems with a rough covering of long, bristly hairs when young, eventually becoming hairless. Leaves are mid-green with elliptic to oblong leaflets, 5–16cm (2–6in) long. From late spring to summer, produces racemes of deep blackish purple to lilac or white flowers, 2–4cm (¾–1½in) long, with downy, pale brown calyces. ♂ 4m (12ft). Tropical Asia, widely naturalized elsewhere. ♂ (min. 8°C/46°F)

## MUEHLENBECKIA

POLYGONACEAE

Genus of 20 species of dioecious, deciduous and evergreen shrubs (sometimes mat-forming with runners) and twining, woody climbers, from rocky areas and woodland in New Guinea, Australia, New Zealand, and South America. They are cultivated for their intricate habit, their minute, alternate, linear to rounded leaves (absent in some species), and their tiny, cup-shaped, sweet-scented flowers, produced singly or in pairs, in axillary clusters or spikes, or in terminal or axillary racemes or panicles. The shrubs are suitable for a border, the climbing species for clothing an arch, pergola, or trellis. *M. complexa* is also useful as ground cover. In frost-prone climates, grow tender species in containers in a temperate greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, with some midday shade. Provide shelter from cold, drying winds and suitable support where required. Pruning group 11, after flowering; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

**M. adpressa** (Climbing lignum, Macquarie vine). Small, deciduous, wiry-stemmed climber with lance-shaped to broadly ovate, glossy, dark green leaves, 1–6cm (½–2½in) long, with crinkly margins and often heart-shaped bases. From spring to summer, whitish green flowers are produced in short, axillary spikes, 2.5–8cm (1–3in)

long. ♂ 2m (6ft) or more. Coastal, temperate Australia. \*

**M. axillaris**. Small, deciduous, prostrate or spreading, many-branched shrub, often rooting at the nodes, with broadly ovate-oblong to rounded, mid-green leaves, 5–10cm (2–4in) long. Cup-shaped, yellowish green flowers are produced singly or in pairs from the leaf axils, from summer to early autumn. ♂ 20cm (8in), ↔ 80cm (32in). S.E. Australia, New Zealand. \*\*  
**M. axillaris** of gardens see *M. complexa*.

**M. complexa**, syn. *M. axillaris* of gardens. Vigorous, deciduous, creeping shrub or twining climber with slender shoots and rounded to violin-shaped, dark green leaves, 0.5–1.5cm (¼–½in) long. Bears greenish white flowers in terminal and axillary racemes, 2.5–3cm (1–1¼in) long, in summer, followed by fleshy white fruit, 5mm (¼in) across. ♂ 3m (10ft). New Zealand. \*\*  
**M. platyclados** see *Homalocladium platycladum*.

▷ **Mugga** see *Eucalyptus sideroxylon*

▷ **Mugwort** see *Artemisia*

▷ **Western** see *A. ludoviciana*

▷ **White** see *A. lactiflora*

## MUKDENIA

syn. ACERIPHILLUM

SAXIFRAGACEAE

Genus of 2 species of slowly spreading herbaceous perennials from woodland in N.E. Asia. They have short, thick rhizomes and large, long-stalked, palmately 5- to 9-lobed, toothed leaves. Leafless panicles or racemes of small, bell-shaped, 5- to 6-petalled white flowers are borne in spring. *Mukdenia* species are suitable for a woodland garden or peat terrace, and grow best in areas with cool, damp summers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in leafy, moist but well-drained soil in light dappled or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring, just before buds expand.
- **PESTS AND DISEASES** Slugs and snails may damage young leaves.

**M. rossii**, syn. *Aceriphyllum rossii*. Perennial with short, thick rhizomes and palmately 5- to 9-lobed, bronze-tinted, mid-green leaves, 15cm (6in) across. Dense, short-branched panicles of creamy white flowers, to 5mm (¼in) across, are borne above the leaves in spring. ♂ to 35cm (14in), ↔ to 40cm (16in) or more. N. China, Korea. \*\*\*

▷ **Mulberry** see *Morus*

▷ **Black** see *Morus nigra*

▷ **Paper** see *Broussonetia papyrifera*

▷ **Red** see *Morus rubra*

▷ **White** see *Morus alba*

▷ **Mulgedium alpinum** see *Cicerbita alpina*

▷ **Mulgedium plumieri** see *Cicerbita plumieri*

▷ **Mulla mulla, Pink** see *Prilotus exaltatus*

▷ **Mullein** see *Verbascum*

▷ **Dark** see *V. nigrum*

▷ **Great** see *V. thapsus*

▷ **Nettle-leaved** see *V. chaixii*

▷ **Purple** see *V. phoeniceum*

## MUSA

Banana, Plantain

MUSACEAE

Genus of 40 species of evergreen, palm-like, suckering perennials found in light woodland and at forest margins, in N.E. India and Bangladesh, and from S.E. Asia to Japan and N. Australia. The leaf-blades are huge and often paddle-shaped (although the shape may vary) and light to mid-green, or grey-green; the leaf-sheaths form false stems. In summer, clusters of tubular flowers are produced from the axils of broad, coloured bracts in erect or pendent spikes. The cylindrical fruits are edible; several different species and cultivars produce the bananas of commerce. In frost-prone areas, grow in a temperate greenhouse (in a border or containers), or plant out in a subtropical, summer bedding scheme. In warmer climates, grow as specimen plants.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun. From spring to summer, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Repot ornamental species annually or every other year, in spring. For bedding, plant out when danger of frost has passed; lift and pot-up in autumn. Outdoors, grow in humus-rich soil in full sun. Provide a sheltered position, as wind causes leaves to shred, especially on soft new growth.

• **PROPAGATION** Sow seed as soon as ripe at 21–24°C (70–75°F). Pre-soak spring-sown seed for 24 hours. Separate suckers in early spring, removing the older leaves to allow better establishment. Divide established clumps every 5 years.

• **PESTS AND DISEASES** Red spider mites, mealybugs, and aphids may be troublesome, particularly under glass.

*M. acuminata* ✱ syn. *M. cavendishii*. Upright, very variable, suckering perennial with false stems and paddle-shaped, glaucous, mid-green leaf-blades, 2–3m (6–10ft) long, with brown, papery margins. In summer, pendent, pear-shaped, white, cream, or yellow flowers, 2–3cm (¾–1¼in) long, with dull purple bracts, are produced in 2 rows per bract, followed by edible fruit, 15–20cm (6–8in) long, which are yellow when ripe. ‡ 4–6m (12–20ft),



Musa basjoo



Musa ornata

↔ 2–3m (6–10ft). S.E. Asia to N. Australia. ☉ (min. 7°C/45°F). 'Dwarf Cavendish' ✱ syn. 'Basrai', *M. x paradisiaca* 'Dwarf Cavendish' (Edible banana, French plantain), has oblong, mid-green leaf-blades, to 1.5m (5ft) long. Pendent clusters of yellow flowers, with reddish purple bracts, are produced irregularly throughout the year. Seedless yellow fruit, to 20cm (8in) long, borne in long bunches, have sweet-tasting white pulp. The most suitable cultivar for general garden cultivation; should produce fruit annually if a minimum temperature of 15–18°C (59–64°F) is maintained. ‡↔ to 3m (10ft).

*M. arnoldiana* see *Ensete ventricosum*.

*M. basjoo* ☉ ✱ syn. *M. japonica* (Japanese banana). Suckering perennial with slender false stems, green at first, becoming papery with age, and arching, oblong-lance-shaped, bright green leaf-blades, to 3m (10ft) long. In summer, produces pale yellow or cream flowers, 2–3cm (¾–1¼in) long, with large brown bracts, in pendent, terminal spikes, followed by unpalatable, yellowish green fruit, 6cm (2½in) long, with black seeds in white pulp. ‡ to 5m (15ft), ↔ to 4m (12ft). Japan (including Ryukyu Islands). ✱ ✱

*M. cavendishii* see *M. acuminata*.

*M. coccinea* ✱ syn. *M. uranoscopus* (Scarlet banana). Suckering perennial with reddish green false stems, becoming papery with age. Produces oval to elliptic leaf-blades, 1m (3ft) long, glossy, bright green above, paler and waxy beneath. In summer, bears erect spirals of tubular yellow flowers, 2–3cm (¾–1¼in) long, enclosed in bright red bracts, followed by orange-yellow fruit, 5cm (2in) long, with black seeds. Good for containers and cut flowers. ‡↔ 1.5m (5ft). S.E. Asia (S. China, Vietnam, Laos, Cambodia). ☉ (min. 7°C/45°F)

*M. ensete* see *Ensete ventricosum*.

*M. japonica* see *M. basjoo*.

*M. ornata* ☉ ✱ ✱ (Flowering banana). Suckering perennial with oblong to elliptic, waxy, slightly glaucous, blue-green leaf-blades, 2m (6ft) long. Produces yellowish orange flowers, 3cm (1¼in) long, with purplish pink bracts, on short, erect false stems at various times of year, followed by greenish yellow fruit, 6cm (2½in) long, with black seeds. ‡ to 3m (10ft), ↔ to 4m (12ft). Bangladesh. ☉ (min. 7°C/45°F)

*M. x paradisiaca* 'Dwarf Cavendish' see *M. acuminata* 'Dwarf Cavendish'.

*M. uranoscopus* see *M. coccinea*.

## MUSCARI syn. MUSCARIMIA

Grape hyacinth

HYACINTHACEAE/LILIACEAE

Genus of 30 species of bulbous perennials occurring from sea level to subalpine areas, in woodland and on steppes, stony slopes, and screes, in the Mediterranean region and S.W. Asia. The fleshy leaves, arranged in basal clusters, are linear to inversely lance-shaped, or sickle- or spoon-shaped, mostly channelled, and mid-green, or blue- or grey-green. Flowers are borne in terminal racemes on leafless stems in spring or, occasionally, autumn; the lower fertile flowers are sometimes crowned by smaller, paler sterile ones. They may be tubular, bell-shaped, or spherical, often with constricted mouths, and are 4–8mm (¼–⅜in) long, occasionally to 1cm (½in) long. Grow in massed displays in a mixed border; they are also suitable for a deciduous woodland garden, a wild garden, or for naturalizing in grassland. Use the smaller species in a rock garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Plant 10cm (4in) deep in groups in autumn, in moderately fertile, moist but well-drained soil in full sun. Lift and divide congested clumps to maintain vigour, when dormant in summer.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Remove offsets in summer.

• **PESTS AND DISEASES** Prone to viruses.

*M. armeniacum* ☉ ✱ Vigorous, bulbous perennial producing semi-erect, narrowly linear to linear-inversely lance-shaped, mid-green leaves, 30cm (12in) long, in autumn. Tubular, bright blue flowers with distinct, constricted white mouths, are borne in dense racemes, 2–8cm (¾–3in) long, in spring. May be invasive. ‡ 20cm (8in), ↔ 5cm (2in). S.E. Europe to Caucasus. ✱ ✱ ✱

'Argaei' has bright blue flowers. 'Blue



Muscari armeniacum

Muscari armeniacum 'Blue Spike'

'Spike' ☉ has large, densely bunched, double, blue flowers.

*M. aucheri* ☉ ✱ syn. *M. linguatum*. Bulbous perennial with erect or semi-erect, narrowly sickle- to narrowly spoon-shaped, mid-green leaves, 5–20cm (2–8in) long. In spring, bears tight racemes, 1–4cm (½–1½in) long, of tubular, bright blue flowers with constricted white mouths, usually crowned with paler blue, sterile flowers. ‡ 10–15cm (4–6in), ↔ 5cm (2in). Turkey. ✱ ✱ ✱

'Tubergenianum', syn. *M. tubergenianum*, is more robust, with a conspicuous crown of sterile flowers; ‡ 20cm (8in).

*M. azureum* ✱ syn. *Hyacinthus azureus*, *Pseudomuscari azureum*. Bulbous perennial with erect, narrowly inversely lance-shaped, greyish green leaves, 6–20cm (2½–8in) long. In spring, bears shortly bell-shaped, bright sky-blue flowers with a darker stripe on each lobe and scarcely constricted mouths, in dense, conical to ovoid racemes, 1–3cm (½–1¼in) long. May self-seed freely. ‡ 10cm (4in), ↔ 5cm (2in). Turkey. ✱ ✱ ✱

f. *album* has pure white flowers.

*M. botryoides*. Slender perennial with semi-erect, narrowly spoon-shaped,

*Muscari aucheri*

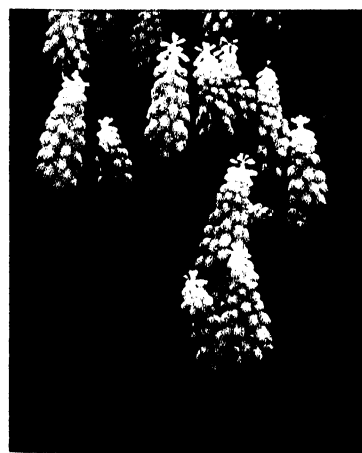
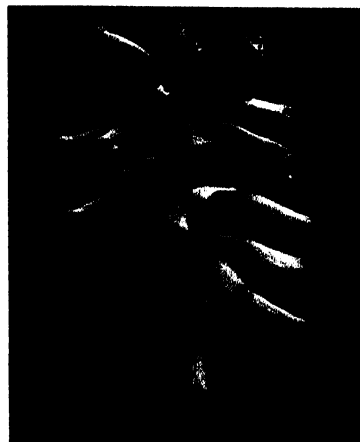
mid-green leaves, 5–25cm (2–10in) long. In spring, bears spherical, bright blue flowers with constricted white mouths, in dense racemes 2–5cm (¾–2in) long. †15–20cm (6–8in), ↔ 5cm (2in). C. and S.E. Europe. \*\*\* *f. album* □ has slender racemes of fragrant white flowers.

*M. comosum*, syn. *Leopoldia comosa* (Tassel grape hyacinth). Bulbous perennial with spreading, linear, mid-green leaves, to 15cm (6in) long. In spring, bears oblong-urn-shaped, creamy brown flowers with constricted mouths, in racemes 6–30cm (2½–12in) long. Spherical, bright violet, upper, sterile flowers are borne in tassels on long, upright stalks. †20–60cm (8–24in), ↔ 5cm (2in). S. Europe, Turkey, Iran. \*\*\* *'Plumosum'*, syn. *'Monstrosum'*, has feathery heads composed entirely of purple, sterile threads.

*M. latifolium*. Bulbous perennial with solitary, semi-erect, inversely lance-shaped, mid-green leaves, 7–30cm (3–12in) long. In spring, bears dense racemes, 2–6cm (¾–2½in) long, of oblong-urn-shaped, violet-black flowers, constricted at the mouths, and crowns of paler, sterile flowers. †20cm (8in), ↔ 5cm (2in). S.W. Asia. \*\*

*M. lingulatum* see *M. aucheri*.

*M. macrocarpum* □ syn. *M. moschatum* var. *flavum*, *M. muscarimi* var. *flavum*. Bulbous perennial with thick, fleshy, persistent roots and semi-erect, linear, greyish green leaves, to 30cm (12in) long. In spring, produces tubular, strongly fragrant yellow flowers, with constricted mouths, opening from purplish brown buds, in racemes 4–6cm

*Muscari botryoides f. album**Muscari macrocarpum*

(1¾–2½in) long. Requires a hot, dry summer dormancy to flower well. †10–15cm (4–6in), ↔ 8cm (3in). Greece (Aegean islands), W. Turkey. \*\*

*M. moschatum* var. *flavum* see *M. macrocarpum*.

*M. muscarimi* var. *flavum* see *M. macrocarpum*.

*M. neglectum*, syn. *M. racemosum*. Bulbous perennial with many semi-erect, linear, channelled to almost cylindrical, bright, mid-green leaves, 6–40cm (2½–16in) long, often produced in autumn. In spring, bears blue-black flowers with constricted white mouths, in dense racemes 1–5cm (½–2in) long. Increases rapidly. †10–20cm (4–8in), ↔ 5cm (2in). Europe, N. Africa, S.W. Asia. \*\*\*

*M. paradoxum* of gardens see *Bellevia pycnantha*.

*M. pycnantha* see *Bellevia pycnantha*.

*M. racemosum* see *M. neglectum*.

*M. tubergenianum* see *M. aucheri* 'Tubergenianum'.

▷ *Muscarimia* see *Muscari*

▷ *Musk* see *Mimulus*

Monkey see *M. luteus*

## MUSSAENDA

RUBIACEAE

Genus of about 100 species of evergreen perennials, shrubs, subshrubs, and twining climbers found in woodland from tropical Africa and Asia to Malaysia. The opposite or whorled, membranous, lance-shaped to elliptic, or ovate or oblong, usually mid-green leaves are often hairy on the lower surfaces. Tubular or funnel-shaped, yellow, red, pink, or white flowers, each with 5 spreading lobes, are borne in often large, terminal or axillary panicles or cymes. One sepal of each flower is often greatly enlarged and colourful. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse. In warmer areas, grow as free-standing specimens or in a shrub border, or use climbers to clothe an arch or pergola.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun, with some

*Mussaenda 'Don Leonila'*

midday shade. Pruning group 1 for shrubs; group 12, after flowering, for climbers under glass.

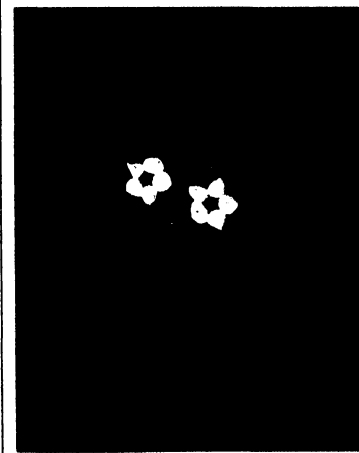
• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

*M. 'Aurorae'*, syn. *M. philippica* 'Aurorae'. Rounded, evergreen shrub with opposite, ovate, prominently veined, downy leaves, 8–15cm (3–6in) long. Narrowly funnel-shaped, deep golden yellow flowers, with pendent, obovate white sepals, to 8cm (3in) long, are borne in terminal cymes, 8cm (3in) long, in summer, or throughout the year in warm regions. †↔ 1.5m (5ft). ☀ (min. 12°C/54°F)

*M. 'Don Leonila'* □ Rounded, evergreen shrub with opposite, ovate, downy leaves, 8–15cm (3–6in) long, with prominent veins. In summer, bears narrowly funnel-shaped, deep yellow flowers, with obovate, creamy white sepals, to 8cm (3in) long, in terminal cymes, 8cm (3in) long. †3m (10ft), ↔ 1.5m (5ft). ☀ (min. 12°C/54°F)

*M. erythrophylla* □ Twining climber, usually grown as a shrub, with ovate or broadly elliptic to broadly ovate, softly hairy, red-veined, dark green leaves, 10–18cm (4–7in) long. In summer, bears small, creamy white, red-centred flowers, each with one broadly ovate sepal, 5–10cm (2–4in) long, in large, dense panicles, 4cm (1½in) long. †2–3m (6–10ft) (grown as a shrub), 8–10m (25–30ft) (grown as a climber); ↔ 1.5–2.5m (5–8ft). Tropical Africa.

*Mussaenda erythrophylla*

☀ (min. 15°C/59°F). 'Queen Sirikit' bears pendent flowers, with numerous large, wavy, deep pink to ivory sepals, on arching branches.

*M. philippica* 'Aurorae' see *M. 'Aurorae'*.

## MUTISIA

ASTERACEAE/COMPOSITAE

Genus of about 60 species of evergreen shrubs and tendril climbers occurring in woodland and scrub in South America. The leaves are alternate, linear to oblong-ovate, sometimes pinnate, and mid- or dark green. Showy, daisy-like flowerheads are borne singly from the leaf axils from summer to autumn.

Grow in a small courtyard garden or through shrubs in a border, or use to clothe a fence or trellis. In frost-prone areas, grow frost-hardy species in a cool or temperate greenhouse.

• **HARDINESS** Frost hardy to half hardy.

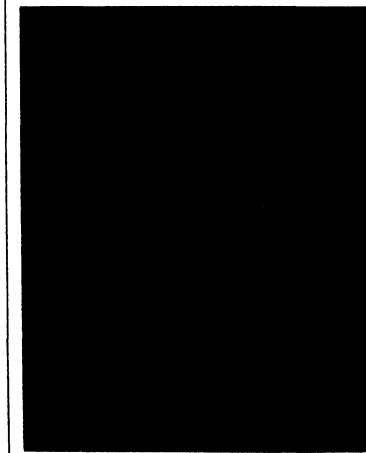
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, or full light with shade from hot sun. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Protect from excessive winter wet and shelter from cold, dry winds. Keep roots cool and moist. Pruning group 11, in spring, if necessary to restrict size.

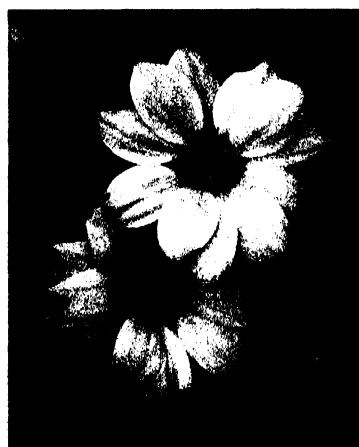
• **PROPAGATION** Sow seed in autumn: frost-hardy species in containers in a cold frame; half-hardy species at 13–18°C (55–64°F). Can be difficult to germinate. Root stem-tip cuttings in late spring or summer. Layer in autumn. Separate suckers in spring.

• **PESTS AND DISEASES** Trouble free.

*M. decurrens* □ Suckering climber with winged stems and narrowly oblong, entire or toothed, dark green leaves, to 12cm (5in) long, each ending in a 2-lobed tendril. Bright orange flowerheads, to 12cm (5in) across, are borne in summer. Best propagated from suckers. †3m (10ft). Chile, Argentina. \*\*

*M. ilicifolia*. Climber with winged shoots and holly-like, ovate to ovate-elliptic, bright green leaves, to 6cm (2½in) long, each ending in a long, unbranched tendril. Short-stalked, pale pink flowerheads, to 7cm (3in) across, with yellow centres, are borne from summer to autumn and often irregularly during the year. †3m (10ft). Chile. \*\*

*Mutisia decurrens*

*Mutisia oligodon*

***M. oligodon*** ■ Climber with oblong, sharply toothed, glossy, dark green leaves, white woolly beneath, to 3.5cm (1½in) long, each ending in a long tendril. Long-stalked pink flowerheads, to 7cm (3in) across, with yellow centres, are produced from summer to autumn. † 1.5m (5ft). Chile, Argentina. \* \*

▷ **Myall, Weeping** see *Acacia pendula*

## MYOPORUM

MYOPORACEAE

Genus of about 30 species of spreading, prostrate to upright, evergreen shrubs and trees from open, dry areas, usually at low altitudes, from E. Asia to Australia, New Zealand, and Hawaii. The alternate, variably shaped, entire or toothed, light to mid-green leaves are dotted with glands. Small, bell-shaped or tubular-bell-shaped flowers, each with 5 spreading lobes, are borne singly or in short cymes from the leaf axils, followed by small, succulent berries. In frost-prone areas, grow in a temperate or warm greenhouse, mainly for foliage. Elsewhere, they are suitable for a shrub border, and are ideal as informal hedges and windbreaks, especially near the sea.

- **HARDINESS** Frost tender; may survive brief spells near 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun, or in bright filtered light. In growth, water freely; apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun, with midday shade. Pruning group 9.
- **PROPAGATION** Sow seed at 6–12°C (45–54°F) as soon as ripe. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Scale insects may be a problem under glass.

***M. laetum*** □ (Ngaio). Large shrub or small tree of dense habit, with sticky stem tips and thick, furrowed brown bark when mature. Fleshy, bright green leaves are lance-shaped to oblong or obovate, 4–10cm (1½–4in) long. Bears cymes of 2–6 bell-shaped, purple-spotted white flowers, 1cm (½in) across, in summer. Narrowly ovoid berries are pale to deep reddish purple, 6–9mm (¼–¾in) long. † 5–10m (15–30ft), ↔ 2–5m (6–15ft). New Zealand.

⊕ (min. 2°C/36°C). **var. *decumbens*** is

*Myoporum parvifolium*

spreading or prostrate, and useful for ground cover; † to 1m (3ft).

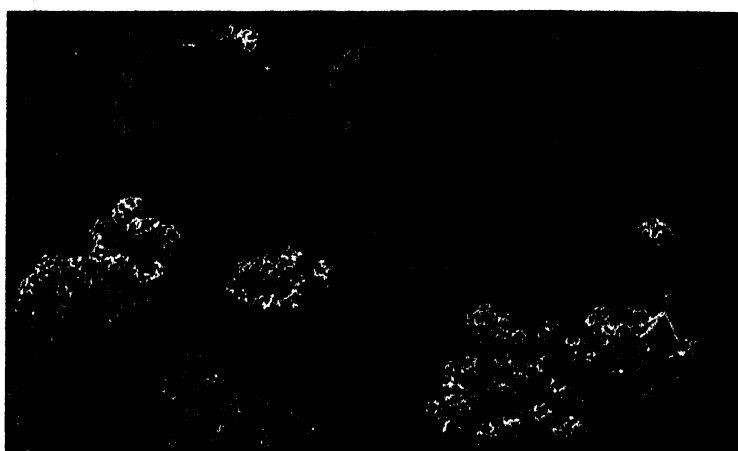
***M. parvifolium*** ■ Small, spreading, bushy shrub with reddish green, sticky stems, and narrowly spoon-shaped to linear, fleshy, bright green leaves, to 3cm (1¼in) long, with prominent glands. In summer, produces bell-shaped, honey-scented, white, occasionally lilac flowers, 1cm (½in) across, usually purple-dotted, singly or in twos or threes, followed by broadly ovoid purple berries, 7mm (¼in) long. † to 60cm (24in), ↔ 60–90cm (24–36in). Australia (South Australia, Victoria, Tasmania). ⊕ (min. 2°C/36°C)

## MYOSOTIDIUM

BORAGINACEAE

Genus of one species of evergreen perennial from rocky or sandy coasts on Chatham Island, New Zealand. It has thick, fleshy stems and leaves, the latter large, simple, and glossy, and forget-me-not-like flowers. Grow in a peat bed or rock garden; it can be difficult to grow as it needs cool, damp conditions, preferably in a coastal location. In frost-prone areas, grow in a cool greenhouse.

- **HARDINESS** Half hardy, although will survive temperatures just below 0°C (32°F) with some protection.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. In growth, water freely and apply a seaweed-based fertilizer monthly; keep just moist in winter. Outdoors, grow in humus-rich, gritty, moist but well-drained soil with a seaweed mulch, in light dappled shade. Provide shelter from cold, drying winds.

*Myosotidium hortensia*

- **PROPAGATION** Sow seed under glass in autumn or as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Prone to slugs.

***M. hortensia*** ■ syn. *M. nobile* (Chatham Island forget-me-not). Clump-forming, evergreen perennial with very glossy, ovate to heart-shaped, ribbed, basal leaves, to 30cm (12in) long, with conspicuous veins and wavy margins. In early summer, bears dense, corymb-like cymes of open bell-shaped, pale to dark blue flowers, 1cm (½in) across, sometimes with white-margined lobes. † to 60cm (24in). New Zealand (Chatham Island). \*

***M. nobile*** see *M. hortensia*.

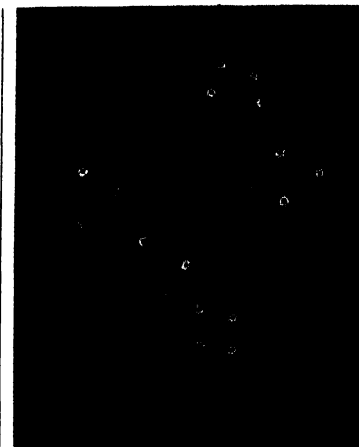
## MYOSOTIS

Forget-me-not

BORAGINACEAE

Genus of 50 or more species of annuals, biennials, and clump- or mat-forming perennials found in woods, meadows, swampy soils, and at pond margins in Europe, Asia, Australasia, and North and South America. They produce alternate, variably shaped, hairy leaves, and usually paired cymes of 5-lobed, salverform, occasionally funnel-shaped flowers in blue, yellow, or white, mostly with yellow or white eyes. The dwarf perennials are mainly short-lived but self-seed freely; they are useful for a rock garden, bank, scree bed, or alpine house. Grow *M. scorpioides* at the margins of a pond. *M. sylvatica* is suitable for a mixed or wildflower border; its cultivars are useful for spring bedding.

- **HARDINESS** Fully hardy; *M. alpestris* and *M. explanata* need gritty, sharply drained soil to survive wet winters.
- **CULTIVATION** Grow in moderately fertile or poor, moist but well-drained soil in full sun, with some midday shade, or in partial shade. Dwarf perennials need soil that is not too fertile as they may become coarse in rich soils; in an alpine house, grow in a mix of equal parts loam, leaf mould, and grit. Grow *M. scorpioides* in wet soil, or in an aquatic planting basket as a shallow-water marginal, at a maximum depth of 10cm (4in); see also pp.52–53.
- **PROPAGATION** Sow seed of annuals and biennials *in situ* in spring or, for spring bedding, in containers in a cold frame or seedbed in early summer. Sow seed of perennials in containers in a cold frame in spring; divide when dormant,

*Myosotis alpestris*

and propagate regularly as they are often short-lived. Sow seed of *M. scorpioides* *in situ* in mud at pond margins, or in moist compost in containers in a cold frame, in spring; divide and replant in mud or in baskets in shallow water.

- **PESTS AND DISEASES** Susceptible to powdery and downy mildew. Slugs and snails may cause damage outdoors.

***M. alpestris*** ■ syn. *M. rupicola* (Alpine forget-me-not). Short-lived, clump-forming perennial with oblong-lance-shaped or spoon-shaped, bright green leaves, to 8cm (3in) long. Dense cymes of salverform, bright blue, yellow-eyed flowers, to 9mm (¾in) across, are borne from spring to early summer. † 20cm (8in), ↔ to 15cm (6in). Europe. \* \* \*

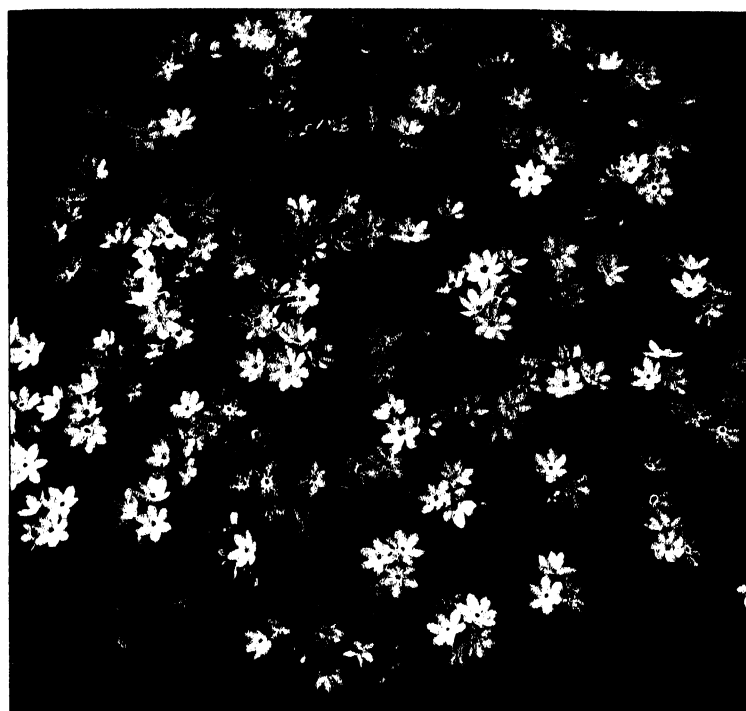
***M. explanata***. Clump- to hummock-forming perennial with rosettes of obovate to spoon-shaped, white-hairy, grey-green leaves, to 7cm (3in) long. In early summer, spreading stems bear large cymes of salverform to funnel-shaped white flowers, to 1cm (½in) across. † to 20cm (8in), ↔ to 15cm (6in). New Zealand (South Island). \* \* \*

***M. palustris*** see *M. scorpioides*.

***M. rupicola*** see *M. alpestris*.

***M. scorpioides***, syn. *M. palustris* (Water forget-me-not). Marginal aquatic perennial with creeping rhizomes and upright or semi-upright, angular stems. Leaves are narrowly ovate and mid-green, to 10cm (4in) long at the bases, becoming slightly longer up the stem. In early summer, bears open cymes of salverform, bright blue flowers, to 8mm (⅜in) across, each with a white, pink, or yellow eye. † 15–30cm (6–12in) or

*Myosotis sylvatica* 'Music'



*Myosotis sylvatica* Victoria Series 'Victoria Rose'

more, ↔ 30cm (12in). Europe, Asia, North America. \*\*\*. 'Mermaid' is strong-stemmed and more compact, with dark green leaves, 4–6cm (1½–2½in) long, and bright blue, yellow-eyed flowers; ↑ 15–23cm (6–9in). ***M. sylvatica***. Tufted, hairy biennial or short-lived perennial, usually grown as a biennial, with ovate to elliptic or lance-shaped, grey-green leaves, to 11cm (4½in) long. From spring to early summer, bears saucer-shaped, yellow-eyed, blue or occasionally white flowers, to 9mm (¾in) across, in numerous dense cymes. ↑ 12–30cm (5–12in), ↔ to 15cm (6in). Europe. \*\*\*. Cultivars of **Ball Series** are ball-shaped and compact; ↑ 15cm (6in); the series includes 'Blue Ball' with azure flowers, and 'Snowball' with white flowers. 'Blue Basket' is tall and erect, with deep azure flowers; ↑ 25–30cm (10–12in). 'Music' is vigorous and erect, with large, very bright blue flowers; ↑ to 25cm (10in). 'Pompadour' is compact and ball-shaped, with large, deep rose-pink flowers; ↑ 15–20cm (6–8in). 'Ultramarine' is dwarf and compact, with deep indigo-blue flowers; ↑ to 15cm (6in). **Victoria Series** cultivars are dwarf and compact, with white, blue, or pink flowers; the series includes 'Victoria Rose' with bright rose-pink flowers; ↑ 10cm (4in).

▷ **Myriad leaf** see *Myriophyllum verticillatum*

## MYRICA

MYRICACEAE

Genus of about 50 species of dioecious or monoecious, deciduous and evergreen, usually suckering shrubs and erect trees, found in moist ground worldwide. They have alternate, lance-shaped to ovate, usually aromatic, dark green leaves. *M. cerifera* and *M. gale* are both effective when grown in groups. *M. cerifera* may also be used as a screening plant; *M. gale* is a useful bog plant.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in humus-rich, moist soil. *M. gale* will also grow in permanently waterlogged, acid soil. Pruning group 1.
- **PROPAGATION** Sow seed in containers outdoors as soon as ripe. Root green-wood cuttings in early to midsummer. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

***M. cerifera*** (Wax myrtle). Rounded, deciduous or evergreen shrub with upright branches and obovate or narrowly inversely lance-shaped, aromatic leaves, to 10cm (4in) long. In spring, bears inconspicuous, yellow-green male catkins, to 2cm (¾in) long. Spherical, waxy, grey-white fruit, 3mm (¼in) across, are densely clustered along the shoots and persist over winter. ↑↔ 5m (15ft). S.E. USA. \*\*  
***M. gale*** (Bog myrtle, Sweet gale). Thicket-forming, suckering, deciduous shrub with upright branches and inversely lance-shaped, toothed, aromatic leaves, to 6cm (2½in) long. Yellow-brown male catkins, to 1.5cm (½in) long, are borne in mid- and late spring, followed by spherical, yellow-brown fruit, to 3mm (¼in) across, dotted with resin. ↑↔ 1.5m (5ft). Europe, Asia, North America. \*\*\*

## MYRIOPHYLLUM

Milfoil

HALORAGACEAE

Genus of 45 species of submerged or marginal aquatic annuals and perennials occurring in wet ground, ponds, and streams, widely distributed but mainly found in the S. hemisphere. The foliage is highly decorative, with long, submerged, delicate stems and alternate, opposite, or whorled leaves. The submerged leaves are linear to oblong or rounded, and pinnatifid with fine, hair-like segments; the emergent leaves are entire or toothed, and lance-shaped to ovate or linear. Milfoils provide refuge

for fish fry, as well as oxygenating the water. Grow in an outdoor pool, or use *M. aquaticum* in a tropical aquarium and *M. hippuroides* and *M. verticillatum* in a cold-water aquarium.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** In an aquarium, grow in an inert medium in full light, preferably in hard water, at 10–15°C (50–59°F) for *M. hippuroides* and *M. verticillatum*, 18–24°C (64–75°F) for *M. aquaticum*. Outdoors, grow in baskets of loamy soil in full sun, at a depth of 1m (3ft) for *M. aquaticum* and *M. verticillatum*, and 45cm (18in) for *M. hippuroides*. Top growth may be damaged by frost but should re-emerge below the surface in spring. See also pp. 52–53.
- **PROPAGATION** Root cuttings (young tips, or segments) by inserting in the bottom sand.
- **PESTS AND DISEASES** Young growth may be eaten by fishes. Algae or detritus in the water chokes the leaves.

***M. aquaticum*** [syn. *M. brasiliense*, *M. proserpinacoides* (Diamond milfoil, Parrot feather). Aquatic perennial with rarely branched stems, to 2m (6ft) long, becoming woody at the bases and often creeping out of shallow water. Rounded, pinnatifid, bright yellowish green submerged leaves, to 4cm (1½in) long, have 4–8 segments and are arranged in whorls of 4 or 5; rounded, bluish green emergent leaves are shorter. In summer, minute, monoecious, bright yellow-green flowers are borne in spikes from the axils of the submerged leaves.

↔ indefinite. Indonesia (Java), Australia, New Zealand, South America. \*\*  
***M. brasiliense*** see *M. aquaticum*.

***M. hippuroides*** [Western milfoil]. Aquatic perennial with thin stems, to 60cm (24in) long. Bears lance-shaped to ovate, pinnatifid, yellow-green submerged leaves, to 2cm (¾in) long, with up to 25 segments. Linear to lance-shaped, finely divided, olive-green to red emergent leaves, 5cm (2in) long, borne in whorls of 4–6, are usually upward-pointing. Bears minute white flowers from the axils of the emergent leaves in summer. ↔ indefinite. S.W. USA. \*\*  
***M. proserpinacoides*** see *M. aquaticum*.  
***M. verticillatum*** (Myriad leaf). Aquatic perennial with stems to 1m (3ft) long. Linear, pinnatifid, tightly packed, bright green submerged leaves, to 4cm (1½in) long, are arranged in whorls of 4–6, with 8–16 pairs of opposite segments. Emergent leaves are pinnatifid and



*Myriophyllum aquaticum*



*Myriophyllum hippuroides*

comb-like, to 2.5cm (1in) long. In summer, bears yellowish flowers in a spike, to 15cm (6in) tall, just above the water surface. ↔ indefinite. Europe, Asia, North America. \*\*\*

▷ **Myrmecophila tibicinis** see

*Schomburgkia tibicinis*

▷ **Myrobalan** see *Prunus cerasifera*

▷ **Myrrh, Garden** see *Myrrhis odorata*

## MYRRHIS

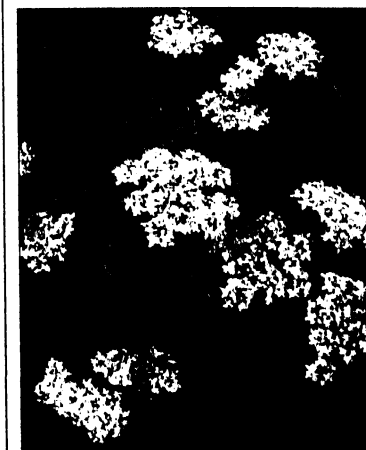
Sweet Cicely

APIACEAE/UMBELLIFERAE

Genus of one species of aromatic herbaceous perennial originally found in mountains of S. Europe, now widespread in damp sites in Europe and Asia. It has compound umbels of small white flowers and delicate, fern-like foliage. Grow in a mixed border, or in a herb or wildflower garden. Self-seeds freely.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in dappled shade. Harvest leaves from early spring to late summer. To improve the flavour and quality of the leaves, remove the flowering stems as they develop.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or as soon as ripe. Divide in spring or autumn.
- **PESTS AND DISEASES** Trouble free.

***M. odorata*** [Garden myrrh, Sweet Cicely]. Perennial with stout, hairy, hollow stems and soft, 2- or 3-pinnate,



*Myrrhis odorata*

bright green leaves, to 45cm (18in) long, comprising deeply toothed, oblong to lance-shaped pinnae. Compound umbels of small, star-shaped white flowers, are produced in early summer, followed by ridged, beaked, shiny brown fruit, to 2cm (¾in) long. Aniseed-flavoured leaves and young shoots provide sweetness when cooked with fruit. ‡2m (6ft), ↔ 1.5m (5ft). S. Europe. \*\*\*

## MYRSINE

### MYRSINACEAE

Genus of about 5 species of dioecious, evergreen, many-branched, upright or rounded shrubs and small trees, found in forest and scrub in Africa, the Azores, the Himalayas, China, and New Zealand. They are mainly cultivated for their alternate, linear or lance-shaped to rounded, usually entire, leathery, sometimes glossy, mid- or dark green leaves. Inconspicuous male and female flowers are produced in umbels on separate plants; both are needed to produce fruit. Grow in a shrub border, against a wall, or in a rock, heather, peat, or woodland garden. In frost-prone areas, grow half-hardy and frost-tender species in a temperate greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in full sun or light dappled shade. *M. africana* is lime-tolerant, but will not thrive on shallow, dry, chalk soil. Pruning group 1 or 8.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

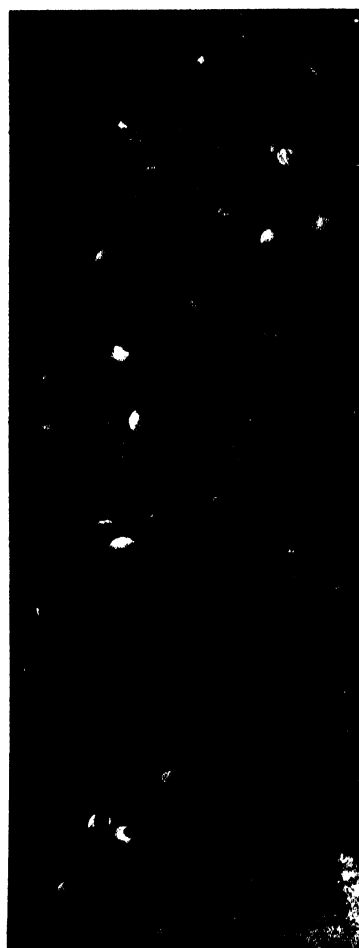
*M. africana* (African boxwood, Cape myrtle). Slow-growing, densely leafy, upright shrub with narrowly obovate to elliptic, aromatic, glossy, dark green leaves, to 2cm (¾in) long. In late spring, produces umbels of 3–6 tiny, yellow-brown flowers. Female plants bear spherical, pale blue fruit, 5mm (¼in) across. ‡1.2m (4ft), ↔ 75cm (30in). Azores, E. and S. Africa, Himalayas, China. \*\*

## MYRTEOLA

### MYRTACEAE

Genus of 12 species of dwarf, evergreen, mat-forming to rounded, bushy shrubs or subshrubs from upland slopes and raised bogs in South America. They are grown for their attractive fruits and glossy foliage. Leaves are opposite, ovate to rounded, and mid- to dark green. Cup-shaped, 4- or 5-petalled, pale yellow to white flowers are borne singly from the leaf axils from late spring to summer, followed by spherical, pink to dark red berries in autumn. Grow in a peat bed, or a rock or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained, acid soil in full sun, with some midday shade, or in dappled shade. Pruning is not required; trim wayward shoots if necessary.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Root semi-ripe cuttings, taken with a heel, with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.



*Myrteola nummularia*

*M. nummularia* [ ] syn. *Myrtus nummularia*. Mat-forming subshrub with branching stems clothed in tiny, ovate, dark green leaves, to 8mm (¼in) long. In early summer, bears small white flowers, 8mm (⅜in) across, followed in late summer by spherical to ellipsoid pink berries, 7–10mm (¼–½in) long. ‡5cm (2in), ↔ 30cm (12in). S. Chile, S. Argentina, Falkland Islands. \*\*\*

## MYRTILLOCACTUS

### CACTACEAE

Genus of 4 species of shrubby or tree-like perennial cacti occurring in semi-arid areas of Mexico and Guatemala. They have short, deep bluish green stems and thick, erect branches with 5–8 ribs and spiny, felted areoles. Open funnel-shaped, short-tubed flowers are borne from the upper lateral areoles in early and midsummer, followed by ovoid, purplish blue fruits. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse. In warmer areas, grow in a rock or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. From mid-spring to early autumn, water moderately and apply a low-nitrogen fertilizer monthly; keep just moist at other times. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. Provide protection from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or take stem cuttings, both in spring.



*Myrtillocactus geometrizans*

- **PESTS AND DISEASES** Susceptible to damage by mealybugs.

*M. cochal*. Tree-like cactus with mid-green stems, 15cm (6in) or more thick, with 6–8 shallow-grooved ribs and grey or black spines (3–5 radials and sometimes 1 longer central). White or pale yellow flowers, 2.5cm (1in) across, tinged green or purple, are borne both diurnally and nocturnally in early and midsummer. ‡1m (3ft), ↔ 45cm (18in). N.W. Mexico. ☉ (min. 10°C/50°F)

*M. geometrizans* [ ] Tree-like cactus with bluish green stems, to 10cm (4in) thick, branching from about 30cm (12in) above ground level. Each has 5–6 smooth, acute ribs with 5–9 red-brown then grey radial spines and 1 longer, almost black central spine. White or cream flowers, 2.5–3.5cm (1–1½in) across, are produced diurnally in early and midsummer. ‡4m (12ft), ↔ 2m (6ft). Mexico. ☉ (min. 10°C/50°F)

### ▷ Myrtle see *Myrtus*

**Bog** see *Myrica gale*

**Cape** see *Myrsine africana*, *Phyllica*

**Common** see *Myrtus communis*

**Crepe** see *Lagerstroemia indica*

**Giant crepe** see *Lagerstroemia speciosa*

**Heath** see *Thryptomene*

**Lemon-scented** see *Backhousia citriodora*, *Darwinia citriodora*

**Queen's crepe** see *Lagerstroemia speciosa*

**Sand** see *Leiophyllum buxifolium*

**Sea** see *Baccharis halimifolia*

**Snow** see *Calytrix alpestris*

**Tarentum** see *Myrtus communis* subsp. *tarentina*

**Wax** see *Myrica cerifera*

**Western tea** see *Melaleuca nesophila*

## MYRTUS

### Myrtle

### MYRTACEAE

Genus of 2 species of upright or rounded, evergreen trees and shrubs from scrub, woodland, and woodland margins in the Mediterranean region, N. Africa, South America, and the Falkland Islands. They are cultivated for their aromatic leaves and their solitary, bowl-shaped, fragrant white flowers, borne from spring to autumn. Myrtles are suitable for a mixed or shrub border, or for growing against a warm, sunny wall. They may also be grown as free-standing specimen shrubs or as an informal

hedge. Long, hot summers are required for the production of flowers and fruits.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, sheltered from cold, drying winds. Pruning group 1 for *M. lechleriana*; group 9 for *M. communis*; group 13 if wall-trained.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings with bottom heat in late summer.
- **PESTS AND DISEASES** Trouble free.

*M. bullata* see *Lophomyrtus bullata*.

*M. bullata* 'Gloriosa' see *Lophomyrtus* x *ralphii* 'Variegata'.

*M. chequen* see *Luma chequen*.

*M. communis* [ ] ♀ (Common myrtle).

Upright, bushy shrub, arching with age, bearing opposite, ovate, glossy, dark green leaves, to 5cm (2in) long. From mid- to late summer or early autumn, produces solitary, 5-petalled flowers, 2cm (¾in) across, with conspicuous central tufts of white stamens; flowers are followed by oblong-ellipsoid, purple-black berries, 1cm (½in) long. ‡→ 3m (10ft). Mediterranean. \*\*\*

**'Jenny Reitenbach'** see subsp. *tarentina*.

**'Microphylla'** see subsp. *tarentina*.

**'Nana'** see subsp. *tarentina*.

**'tarentina'** ♀ syn. 'Jenny Reitenbach', 'Microphylla', 'Nana' (Tarentum myrtle), is more compact and rounded, with narrowly elliptic leaves, to 2cm (¾in) long, pink-tinted cream flowers, and white berries; ‡→ 1.5m (5ft).

**subsp. 'tarentina' 'Microphylla Variegata'** is similar to subsp. *tarentina*, but has white-margined leaves. 'Variegata' has leaves margined creamy white.

*M. lechleriana* [ ] syn. *Amomyrtus luma*.

*M. luma* of gardens. Upright, bushy shrub or many-stemmed tree with ovate, slightly aromatic, dark green leaves, to 2.5cm (1in) long, coppery-brown when young. Compact, axillary racemes of 4–10 fragrant, 5-petalled, creamy white flowers, 1cm (½in) across, are produced in mid- and late spring, followed by edible, spherical, aromatic red berries, ripening to black. ‡6m (20ft) or more, ↔ 4m (12ft). Chile. \*\*

*M. luma* see *Luma apiculata*.

*M. luma* of gardens see *M. lechleriana*.

*M. nummularia* see *Myrteola nummularia*.

*M. x ralphii* 'Variegata' see

*Lophomyrtus x ralphii* 'Variegata'.

*M. ugni* see *Ugni molinae*.



*Myrtus communis*



# N

- ▷ *Naegelia cinnabarina* see *Smithiantha cinnabarina*
- ▷ *Naegelia zebrina* see *Smithiantha zebrina*
- ▷ **Naked ladies** see *Colchicum*
- ▷ *Nananthus rubrolineata* see *Aloinopsis rubrolineata*
- ▷ *Nananthus schooneesii* see *Aloinopsis schooneesii*

## NANDINA

BERBERIDACEAE

Genus of one species of evergreen or semi-evergreen shrub, with alternate, pinnate leaves, from mountain valleys in India, China, and Japan. *N. domestica* is grown for its flowers, fruit, and elegant foliage. Grow in a shrub border; low-growing cultivars are fine ground cover.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in a sheltered site in moist but well-drained soil, preferably in full sun. Pruning group 9.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Viruses can cause narrow, distorted leaflets to develop.

*N. domestica* [M] ♀ (Heavenly bamboo). Evergreen or semi-evergreen shrub with upright shoots and pinnate to 3-pinnate leaves, to 90cm (36in) long, with lance-shaped leaflets, red to reddish purple when young and in winter. In mid-summer, bears conical panicles, to 40cm (16in) long, of small, star-shaped white flowers, to 1cm (1/2in) across, with large yellow anthers, followed by long-lasting, spherical, bright red fruit, 8mm (3/8in) across. ↑ 2m (6ft), ↔ 1.5m (5ft). India, China, Japan. ✱✱. 'Firepower' is dwarf and compact, with bright red leaves; ↑ 45cm (18in), ↔ 60cm (24in). 'Harbor Dwarf' is compact; ↑ 1m (3ft), ↔ 1.2m (4ft). 'Umpqua Chief' is compact; ↑ 1.5m (5ft), ↔ 1.2m (4ft).



*Nandina domestica*

## NARCISSUS

Daffodil

AMARYLLIDACEAE

Genus of about 50 species of bulbous perennials from a variety of habitats in Europe and N. Africa, usually found in meadows from sea level to subalpine altitudes, and in woodland, river silts, and rock crevices. Many thousands of cultivars have been developed. All are grown for their attractive flowers, borne in spring, sometimes autumn or winter. Leafless stems bear between 1 and 20 flowers, each with 6 spreading perianth segments (petals) surrounding an almost flat or long and narrow corona (the cup or trumpeter). The flowers are mostly yellow or white, occasionally green; some have red, orange, or pink coronas. The leaves are basal, often strap-shaped or cylindrical, 15–75cm (6–30in) long, depending on the species.

Most daffodils are suitable for planting between shrubs or in a border, or for growing in containers; many are easily naturalized in grass or in a woodland garden. They are excellent for cutting. Smaller species, hybrids, and cultivars are good rock garden plants; some can be naturalized in fine, short grass. *N. cantabricus*, *N. romieuxii*, *N. rupicola*, and *N. watieri* either need a warm, dry summer dormancy or produce delicate flowers early in the year, and are therefore best grown in an alpine house or bulb frame. In frost-prone areas, grow the less hardy members of Division 8 in a cool greenhouse. Contact with the sap of daffodils may irritate skin or aggravate skin allergies.

For horticultural purposes, daffodils are split into 12 divisions, each with distinct characteristics. All are of garden origin, except for Division 10 species. The spreads given for each division provide a guide to planting distance.

### Division 1. Trumpet

Flowers are solitary, each with a trumpet (corona) as long as, or longer than, the perianth segments. Spring-flowering. ↔ 8–16cm (3–6in).

### Division 2. Large-cupped

Flowers are solitary, each with a cup (corona) more than one-third the length of, but not as long as, the perianth segments. Usually mid-spring-flowering. ↔ 16cm (6in).

### Division 3. Small-cupped

Flowers are solitary, each with a cup (corona) up to one-third the length of the perianth segments. Early and mid-spring-flowering. ↔ 16cm (6in).

### Division 4. Double

Each stem has one or more flowers, with doubling of the perianth segments or the corona or both. Some are sweetly scented. Usually early and mid-spring-flowering. ↔ 16cm (6in).

### Division 5. Triandrus

Each stem produces 2–6 nodding flowers, usually with reflexed perianth segments and shortish cups (coronas). Mid- and late spring-flowering. ↔ 5–8cm (2–3in).

### Division 6. Cyclamineus

Flowers are solitary, each acutely angled to the stem, with significantly reflexed perianth segments and usually a long cup or trumpet (corona). Early- and mid-spring-flowering. ↔ 8cm (3in).

### Division 7. Jonquilla

Each stem produces 1–5 usually scented flowers, with spreading perianth segments and small, shallow cups (coronas). The stems are cylindrical; the dark green leaves are very narrow and almost cylindrical. Mid- and late spring-flowering. ↔ 8cm (3in).

### Division 8. Tazetta

Small-flowered cultivars produce up to 20 flowers per stem; larger-flowered cultivars bear 3 or 4 flowers per stem. They have stout stems, wide leaves, broad perianth segments, and small cups (coronas). They are usually scented, and are good as cut flowers. Some cultivars are half-hardy and should be grown in a cool greenhouse. Late-autumn- to mid-spring-flowering. ↔ 8cm (3in).

### Division 9. Poeticus

Flowers are fragrant, usually solitary, with spreading, pure white perianth segments and small, open, red-rimmed cups (coronas). Mid- to late spring- or early-summer-flowering. ↔ 16cm (6in).

### Division 10. Wild species

Includes all wild daffodils and their wild hybrids, such as the tiny hoop-petticoat daffodil, *N. bulbocodium*, the larger, single-flowered *N. pseudonarcissus*, and the multi-headed *N. tazetta*. Some are

difficult to grow in an open garden. Autumn- to spring-flowering. ↔ 5–8cm (2–3in), or 16cm (6in) for larger bulbs.

### Division 11. Split-corona

Flowers are usually solitary, each with a corona split for more than half its length. Spring-flowering. ↔ 16cm (6in). There are 2 subdivisions:

**Division 11a. Collar** – The corona segments lie on top of the perianth segments.

**Division 11b. Papillon** – The flowers have alternating corona segments and perianth segments.

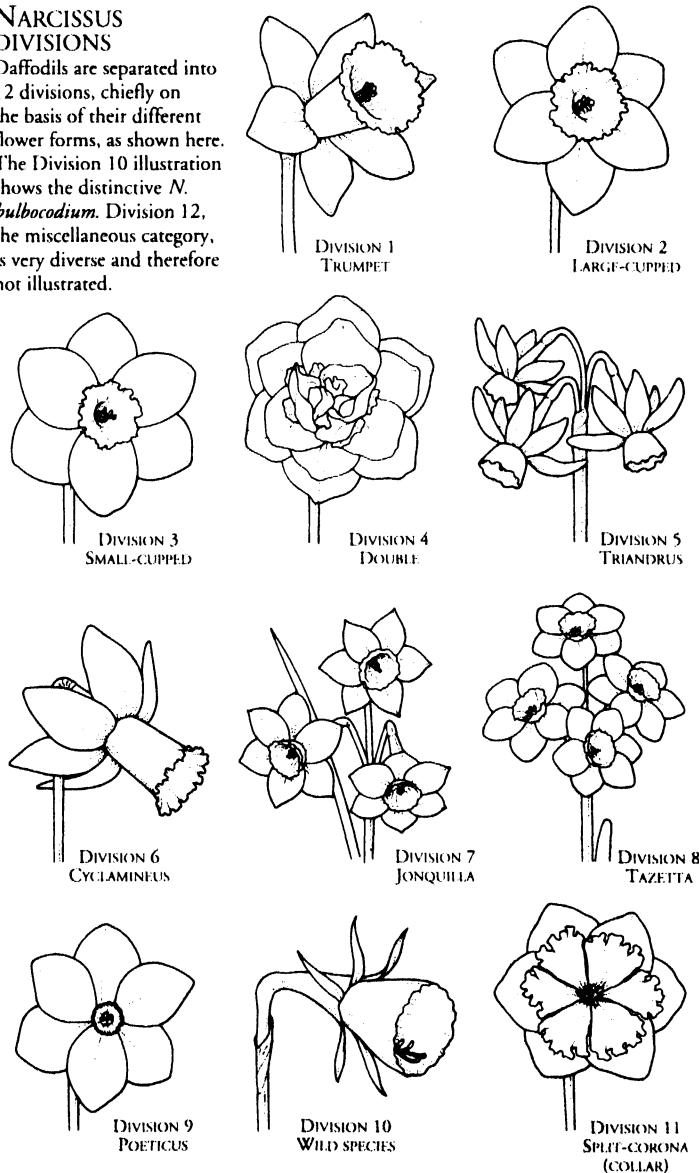
### Division 12. Miscellaneous

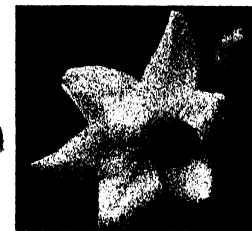
Includes daffodils not in any other division, such *N. bulbocodium* cultivars, and the twin-headed, cyclamineus cultivars like *N. 'Jumble'*. ↔ 5–8cm (2–3in) or 16cm (6in), depending on the size of the bulbs.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Plant bulbs at one-and-a-half times their own depth in autumn, slightly deeper in light soils and in grass. Most tolerate a range of soils but grow best in moderately fertile, well-drained soil that is moist during the growing season. *N. asturiensis*, *N. bulbocodium*, *N. cyclamineus*, *N. triandrus*, and their

## NARCISSUS DIVISIONS

Daffodils are separated into 12 divisions, chiefly on the basis of their different flower forms, as shown here. The Division 10 illustration shows the distinctive *N. bulbocodium*. Division 12, the miscellaneous category, is very diverse and therefore not illustrated.



*Narcissus* 'Acropolis'*Narcissus* 'Actaea'*Narcissus* 'Aircastle'*Narcissus* 'Altruist'*Narcissus* 'Ambergate'*Narcissus* 'Arkle'*Narcissus* 'Avalanche'*Narcissus* 'Bartley'*Narcissus* 'Belcanto'*Narcissus* 'Beryl'*Narcissus* 'Bob Minor'*Narcissus* 'Bravoure'

cultivars need neutral to acid soils. *N. jonquilla* and *N. tazetta* prefer slightly alkaline soils. Most daffodils thrive in full sun or dappled part-day shade. *N. assoanus* and *N. asturiensis* need full sun. Division 7 and 8 daffodils flower best in full sun and drier soils. Division 6 daffodils like cooler conditions and do well in grass. Water late-flowering daffodils in dry spring weather (flowers may abort in dry conditions). Dead-head plants as flowers fade, and allow leaves to die down naturally for at least 6 weeks. Apply a low-nitrogen, high-potash fertilizer after flowering if bulbs are not performing well. Lift and divide clumps when flowering becomes sparse or the clumps congested. If daffodils are naturalized in grass, delay the first cut until 4–6 weeks after flowers have faded; for species such as *N. pseudonarcissus*, *N. bulbocodium*, and *N. cyclamineus*, delay cutting until seeds have dispersed.

Under glass, grow in a mix of 2 parts loam-based potting compost (J1 No.2) and 1 part grit. Plunge outdoors in a cool, shady spot and keep dry when dormant.

For indoor display, plant bulbs 5cm (2in) deep in early autumn in loamless or loam-based potting compost (J1 No.2). Plunge in a cold frame outdoors until the roots are well-established and shoots appear. Keep cool and moist, and protect from frost. Move into a cool greenhouse in full light, and gradually increase the temperature to 10°C (50°F), then to no more than 18°C (64°F) when flowering. Water freely and apply a half-strength, high-potash fertilizer weekly. Bring indoors as the buds begin to open. Discard or plant out into the garden after flowering.

• **PROPAGATION** Sow seed of species as soon as ripe in deep containers in a cold frame. Cultivars do not come true from seed, but new cultivars are often selected from seed of crosses between cultivars, or from open-pollinated seed. After germination, keep frost-free, cool, and moist. After 2 years, transfer seedlings to a nursery bed and grow on until they reach flowering size, which may take up to 7 years. Alternatively, separate and replant offsets as leaves fade in early summer, or in early autumn before new roots are produced.

• **PESTS AND DISEASES** The most serious problems include large narcissus bulb

fly, narcissus eelworm, slugs, narcissus basal rot and other fungal infections, viruses (including narcissus yellow stripe virus), and bulb scale mite on bulbs forced for early flowering.

***N. 'Acropolis'*** ■ Division 4 daffodil bearing well-formed, double flowers, 11cm (4½in) across, in mid-spring. Numerous snow-white segments are interspersed with bright orange-red ones. †45cm (18in). \*\*\*

***N. 'Actaea'*** ■ Division 9 daffodil producing strongly scented flowers, 8.5cm (3¼in) across, in late spring. Open, wavy, pure white perianth segments surround the red ribbon-like margin of each flattened, bowl-shaped yellow corona. †45cm (18in). \*\*\*

***N. 'Aircastle'*** ■ Division 3 daffodil flowering in mid-spring. Flowers, 9cm (3½in) across, have rounded perianth segments, white on opening, green-tinged with age, and small, flat, lemon-yellow cups, darker at the rims. †40cm (16in). \*\*

***N. 'Albus Plenus Odoratus'*** see *N. poeticus* 'Plenus'.

***N. 'Altruist'*** ■ Division 3 daffodil flowering in mid-spring. Flowers, 8–8.5cm (3–3¼in) across, have pointed, pale apricot perianth segments and fluted, bright orange-red cups. Colour fades rapidly in sunlight. †45cm (18in). \*\*\*

***N. 'Ambergate'*** ■ Division 2 daffodil flowering in mid-spring. Flowers, 9.5cm (3¾in) across, have soft tangerine perianth segments and expanded, rich orange cups. †40cm (16in). \*\*\*

***N. 'April Love'*** ■ Division 1 daffodil producing all-white flowers, 12.5cm (5in) across, in mid-spring. The rim of each slender trumpet is neatly rolled back; the perianth segments are slightly pointed and broadly overlapping. †40cm (16in). \*\*\*

***N. 'Arctic Gold'*** ♀ Division 1 daffodil. In mid-spring, bears smooth, waxy, rich golden yellow flowers, 9.5cm (3¾in) across, with widely flanged, deeply notched trumpets. †40cm (16in). \*\*\*

***N. 'Arkle'*** ■ Strong, vigorous Division 1 daffodil. Flowers, 12.5cm (5in) across, among the largest of the yellow trumpet daffodils, are borne in mid-spring. The perianth segments are smooth and each corona is slightly flared, with a roll at the mouth. †40cm (16in). \*\*\*

***N. assoanus***, syn. *N. juncifolius*, *N. requienii* (Rush-leaved jonquil). Tiny Division 10 daffodil with thin, cylindrical leaves, to 20cm (8in) long. In mid-spring, bears circular, scented, golden yellow flowers, 2cm (¾in) across, singly or in pairs. †15cm (6in). S. France, S. and E. Spain. \*\*\*

***N. asturiensis***, syn. *N. minimus*. Division 10 daffodil with spreading, channelled, glaucous, mid-green leaves, to 15cm (6in) long. In late winter and early spring, bears solitary, pale yellow flowers, 3.5cm (1½in) across, with narrow perianth segments and waisted trumpets. †8cm (3in). N. Portugal, N. and C. Spain. \*\*\*

**subsp. *jacatensis*** '**Cedric Morris**' produces larger, lemon-yellow flowers, 8cm (3in) across, in early winter; †15cm (6in).

***N. 'Avalanche'*** ■ Division 8 daffodil producing 10 or more sweetly scented flowers, 3.5cm (1½in) across, with pure white perianth segments and lemon-yellow cups, in mid-spring. Long-lasting as cut flowers. †35cm (14in). \*\*

***N. 'Avenger'*** ■ Division 2 daffodil flowering in mid-spring. Flowers, 9cm (3½in) across, have rounded, smooth, almost pure white perianth segments and slightly flattened, intense orange-red coronas. †40cm (16in). \*\*\*

***N. 'Ballyrobert'*** ■ Division 1 daffodil producing well-balanced, deep yellow flowers, 10cm (4in) across, in mid-spring. Perianth segments are slightly pointed and waved; trumpets are slender. †40cm (16in). \*\*\*

***N. 'Balvenie'*** ■ Division 2 daffodil. In mid-spring, bears flowers 10.5cm (4¼in) across, with pure white perianth segments and white cups suffused pink, intensifying in colour at the mouths. Among the largest and most vigorous of the pink daffodils. †40cm (16in). \*\*\*

***N. 'Bantam'*** ♀ Division 2 daffodil with well-shaped flowers, 5.5cm (2¼in) across, on stiff stems, produced in mid-spring. Short, bright golden yellow perianth segments surround short, flared, intense orange cups with orange-red rims. †20–24cm (8–10in). \*\*\*

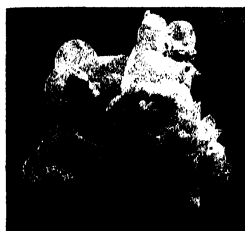
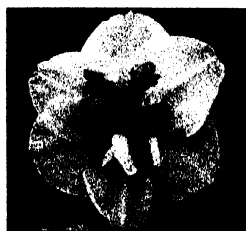
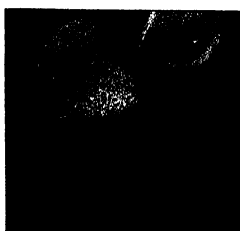
***N. 'Bartley'*** ■ Division 6 daffodil producing long-lasting, golden yellow flowers, 6cm (2½in) across, with long, slender, angled trumpets and strongly reflexed perianth segments, borne in early spring. †40cm (16in). \*\*\*

***N. 'Beige Beauty'*** ■ Division 3 daffodil flowering in mid-spring. Flowers, 10cm (4in) across, have rounded perianth segments, opening white and turning soft lemon-yellow, and pale yellow, almost flat coronas, fading to very pale yellow. †40cm (16in). \*\*\*

***N. 'Belcanto'*** ■ Division 11a daffodil flowering in late spring. Flowers, 8–12cm (3–5in) across, have pure white perianth segments, almost obscured by the flattened, pale yellow coronas. †45cm (18in). \*\*\*

***N. 'Bell Song'*** ■ Division 7 daffodil. In mid- and late spring, bears 2 or 3 flower stems, each with 1 or 2 nodding white flowers, 4cm (1½in) across, with pale pink cups. †30cm (12in). \*\*\*

*Narcissus cantabricus*

*Narcissus* 'Bridal Crown'*Narcissus* 'Broadway Star'*Narcissus bulbocodium**Narcissus* 'Canisp'*Narcissus* 'Cantabile'*Narcissus* 'Cassata'*Narcissus* 'Ceylon'*Narcissus* 'Charity May'*Narcissus* 'Cheerfulness'*Narcissus* 'Cool Crystal'*Narcissus cyclamineus**Narcissus* 'Dover Cliffs'

**N. 'Bere Ferrers'**. Division 4 daffodil. In mid-spring, bears fully double flowers, 10cm (4in) across, with evenly arranged, broadly ovate white perianth segments contrasting with bright orange corona segments. ↑40cm (16in). \*\*\*

**N. 'Beryl'** ■ Vigorous Division 6 daffodil flowering in early spring. Flowers, 7.5cm (3in) across, have reflexed perianth segments, opening yellow but quickly fading to creamy white, and small yellow and orange cups. ↑20cm (8in). \*\*\*

**N. 'Binkie'**. Robust Division 2 daffodil producing clear lemon-yellow flowers, 10cm (4in) across, in mid-spring. The long cups gradually fade to cream. ↑35cm (14in). \*\*\*

**N. 'Birthright'**. Division 1 daffodil flowering in mid-spring. Bears almost square, crystalline, pure white flowers, 11cm (4½in) across, with narrow, flanged trumpets. ↑40cm (16in). \*\*\*

**N. 'Bobbysoxer'**. Division 7 daffodil producing 1 or 2 flowers per stem, in late spring. Flowers, 3cm (1¼in) across, have primrose-yellow perianth segments and yellow and orange cups. ↑18cm (7in). \*\*\*

**N. 'Bob Minor'** ■ Division 1 daffodil with stiff stems bearing golden yellow flowers, 6.5cm (2½in) across, in mid-spring. The perianth segments are twisted and the long trumpets slightly flared. ↑20cm (8in). \*\*\*

**N. 'Brabazon'** ♀ Vigorous Division 1 daffodil bearing rich golden yellow flowers, 10cm (4in) across, in early spring. Among the earliest-flowering trumpet daffodils. ↑40cm (16in). \*\*\*

**N. 'Bravoure'** ■ Division 1 daffodil flowering in mid-spring. Flowers, 12cm (5in) across, have unusually long and slender yellow trumpets and overlapping, slightly pointed white perianth segments. ↑45cm (18in). \*\*\*

**N. 'Bridal Crown'** ■ Division 4 daffodil producing numerous sweetly scented, double flowers, 4cm (1½in) across, in early spring. Flowers are mostly white, highlighted by short, orange-yellow corona segments in central clusters. ↑40cm (16in). \*\*\*

**N. 'Broadway Star'** ■ Division 11b daffodil producing white flowers, 8cm (3in) across, in mid-spring. The expanded segments of the split coronas are flattened against the perianth segments; each has a narrow, orange

mid-stripe running lengthways. ↑40cm (16in). \*\*\*

**N. 'Broomhill'**. Long-lasting Division 2 daffodil producing robust, well-proportioned, smooth, waxy, pure white flowers, 10cm (4in) across, in mid-spring. ↑40cm (16in). \*\*\*

**N. 'Bryanston'**. Vigorous Division 2 daffodil bearing yellow flowers, 9.5–10cm (3¾–4in) across, in mid-spring. The pointed, smooth, wide perianth segments lie very flat; the cups are indented. ↑40cm (16in). \*\*\*

**N. bulbocodium** ■ (Hoop-petticoat daffodil). Small Division 10 daffodil with narrow, semi-cylindrical, dark green leaves, 10–40cm (4–16in) long. In mid-spring, bears funnel-shaped, deep yellow flowers, 3.5cm (1½in) across, with expanded trumpets and tiny, pointed perianth segments. Can be naturalized in damp grass that dries out in summer. ↑10–15cm (4–6in). S.W. and W. France, Portugal, Spain, N. Africa. \*\*\*. **var. citrinus** has pale lemon-yellow flowers.

**N. 'Burntoller'**. Division 1 daffodil. In mid-spring, bears smooth, pure white flowers, 11cm (4½in) across, with long, well-proportioned trumpets, flanged at the mouths. ↑40cm (16in). \*\*\*

**N. campbelli** see *N. x odoratus*.

**N. 'Canisp'** ■ Division 2 daffodil bearing white flowers, 12cm (5in) across, in mid-spring. Cups are slender and trumpet-like, with a hint of green in the throats; the perianth segments are pointed. ↑40cm (16in). \*\*\*

**N. 'Cantabile'** ■ Division 9 daffodil. In late spring, stiff stems bear neat, well-rounded white flowers, 4cm (1½in) across, with tiny, red-rimmed, green and yellow cups. ↑25cm (10in). \*\*\*

**N. cantabricus** ■ (White hoop-petticoat daffodil). Division 10 daffodil with narrow, semi-cylindrical, slightly channelled leaves, to 15cm (6in) long. In winter, bears funnel-shaped white flowers, 3.5cm (1½in) across, with tiny, pointed perianth segments and expanded trumpets. ↑15–20cm (6–8in). S. Spain, N. Africa. \*\*\*

**N. 'Cantatrice'**. Division 1 daffodil producing pure white flowers, 11cm (4½in) across, in mid-spring. The perianth segments are pointed; the trumpets are smooth and slender. ↑40cm (16in). \*\*\*

**N. 'Capax Plenus'** see *N. 'Eystettensis'*.

**N. 'Cassata'** ■ Division 11a daffodil. In mid-spring, produces flowers 10cm (4in) across, with pure white perianth segments nearly obscured by the flattened corona segments, which open lemon-yellow and become white. ↑40cm (16in). \*\*\*

**N. 'Ceylon'** ■ Robust, erect Division 2 daffodil. In mid-spring, bears flowers 10cm (4in) across, with yellow perianth segments and goblet-shaped, fiery orange cups. ↑40cm (16in). \*\*\*

**N. 'Charity May'** ■ Division 6 daffodil bearing lemon-yellow flowers, 9cm (3½in) across, with broad, reflexed perianth segments and long cups, in early spring. ↑30cm (12in). \*\*\*

**N. 'Charter'** ♀ Division 2 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, open greenish lemon-yellow; the perianth segments retain their colour, the cups fade almost to pure white. ↑40cm (16in). \*\*\*

**N. 'Cheerfulness'** ■ Division 4 daffodil flowering in mid-spring. Each stem bears several sweetly scented, double white flowers, 5.5cm (2¼in) across, with clusters of cream segments in the centres. ↑40cm (16in). \*\*\*

**N. 'Cherrygarden'**. Division 2 daffodil flowering in mid-spring. Flowers, 10.5cm (4¼in) across, have overlapping, sparkling white perianth segments and intense pink coronas, with darker rims and green eyes. ↑40cm (16in). \*\*\*

**N. 'Chiloquin'**. Division 1 daffodil with strong, vigorous stems, each bearing a solitary greenish yellow flower, 8.5cm (3¼in) across, in mid-spring. The trumpets gradually fade almost to white. ↑40cm (16in). \*\*\*

**N. 'Cloud Nine'**. Division 2 daffodil bearing lemon-yellow flowers, 8.5cm (3¼in) across, with pointed, smooth perianth segments, in mid-spring. The goblet-shaped cups soon fade almost to white. ↑40cm (16in). \*\*\*

**N. 'Como'**. Division 9 daffodil with scented flowers, 5.5cm (2¼in) across, borne in late spring. The rounded, snow-white perianth segments surround small, flattened yellow coronas, with green throats and bright red margins. ↑30cm (12in). \*\*\*

**N. 'Cool Crystal'** ■ Division 3 daffodil with white flowers, 10.5cm (4¼in) across, produced in mid-spring. The bowl-shaped coronas have green eyes. ↑50cm (20in). \*\*\*

**N. 'Cragford'**. Division 8 daffodil flowering in early spring. Each stem bears several scented white flowers, 5.5cm (2¼in) across, the coronas interspersed with tangerine-orange perianth segments. ↑50cm (20in). \*\*\*

**N. 'Cristobal'**. Division 1 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, have prominent, overlapping, rounded white perianth segments and deep lemon-yellow coronas, evenly indented at the mouths. ↑40cm (16in). \*\*\*

**N. cyclamineus** ■ Robust, vigorous Division 10 daffodil with spreading, narrow, keeled, bright green leaves, 12–30cm (5–12in) long. Bears solitary, nodding, golden yellow flowers, 4.5cm (1½in) long, in early spring. Narrow perianth segments are completely reflexed from the long, narrow-waisted trumpets. ↑15–20cm (6–8in). N.W. Portugal, N.W. Spain. \*\*\*

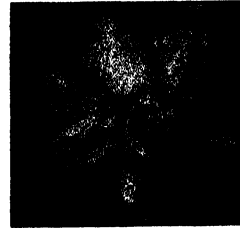
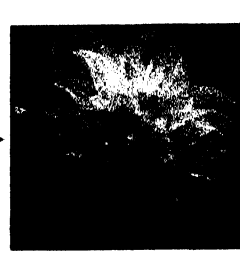
**N. 'Dailmanach'**. Division 2 daffodil. In mid-spring, bears flowers 11.5cm (4½in) across, with broad, smooth, glistening white perianth segments; the large, rich bright pink cups, of almost trumpet-like proportions, have darker pink, rolled, indented mouths. ↑40cm (16in). \*\*\*

**N. 'Daydream'**. Division 2 daffodil flowering in mid-spring. Flowers, 8cm (3in) across, have greenish yellow perianth segments; each cup has a white halo surrounding the base. At maturity, cups become almost white. ↑35cm (14in). \*\*\*

**N. 'Descanso'**. Strong-growing Division 1 daffodil flowering in mid-spring. Flowers, 11.5cm (4½in) across, have triangular, shining white perianth segments and slender, deep lemon-yellow trumpets, fading to clear lemon-yellow, each flanged at the mouth. ↑45cm (18in). \*\*\*

**N. 'Doubtful'**. Division 3 daffodil flowering in early spring. Bears flowers 9.5cm (3¾in) across, with smooth, deep yellow perianth segments and goblet-shaped, rich scarlet cups. ↑45cm (18in). \*\*\*

**N. 'Dover Cliffs'** ■ Division 2 daffodil producing well-proportioned, pure white flowers, 11cm (4½in) across, in mid-spring. The smooth perianth segments tend to form a hood over each corona. ↑40cm (16in). \*\*\*

*Narcissus* 'Dove Wings'*Narcissus* 'Empress of Ireland'*Narcissus* 'February Gold'*Narcissus* 'Fortune'*Narcissus* 'Golden Ducat'*Narcissus* 'Grand Soleil d'Or'*Narcissus* 'Hawera'*Narcissus* 'Honeybird'*Narcissus* 'Ice Follies'*Narcissus* 'Ice Wings'*Narcissus* 'Irene Copeland'*Narcissus* 'Jack Snipe'

**N. 'Dove Wings'** ■ ♀ Division 6 daffodil flowering in early spring. Flowers, 8.5cm (3¼in) across, have broad, creamy white perianth segments swept back from long, clear lemon-yellow cups. †30cm (12in). \*\*\*  
**N. 'Downpatrick'**. Division 1 daffodil bearing consistently good-quality flowers, to 11.5cm (4½in) across, in mid-spring, with smooth, white perianth segments and dark primrose-yellow trumpets. †40cm (16in). \*\*\*  
**N. 'Dr. Hugh'**. Division 3 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, have smooth white perianth segments surrounding small orange cups with clear green eyes. †50cm (20in). \*\*\*

**N. 'Dunmurry'**. Division 1 daffodil. In mid-spring, bears flowers 11cm (4½in) across, with broad, smooth, waxy white perianth segments overlapping the deep golden yellow coronas, set at right-angles. †40cm (16in). \*\*\*  
**N. 'Dutch Master'**. Prolific Division 1 daffodil. In mid-spring, bears golden yellow flowers, 11cm (4½in) across, with broadly ovate perianth segments, and coronas expanded at the deeply indented mouths. †45cm (18in). \*\*\*  
**N. 'Easter Moon'**. Division 2 daffodil with circular, waxy, pure white flowers, 10cm (4in) across, borne in mid-spring. The short cups have faintly green-tinted throats. †40cm (16in). \*\*\*

**N. 'Empress of Ireland'** ■ ♀ Division 1 daffodil flowering in mid-spring. Produces large white flowers, 10–11cm (4–4½in) across, with very broad, triangular, overlapping perianth segments and narrow, widely flanged trumpets. Among the largest white trumpet daffodils. †40cm (16in). \*\*\*  
**N. 'Eystettensis'**, syn. *N. 'Capax Plenus'* (Queen Anne's double daffodil). Division 4 daffodil with fully double, lemon-yellow flowers, 6cm (2½in) across, with many rows of evenly overlapping perianth segments, borne in mid-spring. †23cm (9in). \*\*\*  
**N. 'February Gold'** ■ ♀ Vigorous Division 6 daffodil flowering in early spring. Flowers, 7.5cm (3in) across, have reflexed, golden yellow perianth segments and long, slightly darker trumpets. †30cm (12in). \*\*\*

**N. 'February Silver'** ■ Robust, long-lasting Division 6 daffodil flowering in early spring. Flowers, 5cm (2in) across,

have white perianth segments slightly reflexed from the large, lemon-yellow trumpets. †30cm (12in). \*\*\*  
**N. 'Fortune'** ■ Division 2 daffodil. In mid-spring, bears flowers 11cm (4½in) across, with rich butter-yellow perianth segments and expanding warm orange cups, becoming darker towards the mouths. †45cm (18in). \*\*\*  
**N. 'Foundling'**. Division 6 daffodil flowering in mid-spring. Flowers, 7cm (3in) across, have broad white perianth segments, well-reflexed from short, clear rose-pink cups. †30cm (12in). \*\*\*

**N. 'Foxfire'**. Division 2 daffodil flowering in mid-spring. Flowers, 9.5cm (3¾in) across, have broad, pure white perianth segments and greenish white cups, with a wide band of coral-pink at the mouths and green eyes. †40cm (16in). \*\*\*  
**N. 'Galway'**. Division 2 daffodil flowering in mid-spring. Bears golden yellow flowers, 11.5cm (4½in) across, with well-proportioned, trumpet-like, prominently flanged cups. †40cm (16in). \*\*\*

*Narcissus* 'February Silver'

**N. 'Gay Kybo'**. Division 4 daffodil producing well-formed, double flowers, 10.5cm (4¼in) across, in mid-spring. The regularly arranged, creamy white perianth segments surround the shorter, rich orange-red central segments. †45cm (18in). \*\*\*

**N. 'Geranium'**. Division 8 daffodil bearing up to 6 scented, glistening white flowers, 5.5cm (2¼in) across, with bright orange-red cups, in mid- and late spring. Excellent for cutting. †35cm (14in). \*\*\*

**N. 'Golden Aura'**. Division 2 daffodil producing rich golden yellow flowers, 9.5cm (3¾in) across, in mid-spring. Flowers have smooth, flat perianth segments and large, well-proportioned, bell-shaped cups. †40cm (16in). \*\*\*  
**N. 'Golden Ducat'** ■ Division 4 daffodil bearing double, golden yellow flowers, 11cm (4½in) across, with many layers of pointed segments, in mid-spring. †35cm (14in). \*\*\*

**N. 'Golden Jewel'**. Division 2 daffodil flowering in mid-spring. Bears rich golden yellow flowers, 10cm (4in) across, with overlapping, broadly ovate perianth segments; the frilled coronas expand slightly towards the mouths, with a hint of green in the eyes. †45cm (18in). \*\*\*

**N. 'Golden Vale'**. Division 1 daffodil. In mid-spring, bears large, rich golden yellow flowers, 12cm (5in) across, with the trumpets expanding towards the indented mouths. †45cm (18in). \*\*\*

**N. 'Grand Soleil d'Or'** ■ Division 8 daffodil with each stem bearing many scented, double gold and tangerine-orange flowers, 4.5cm (1¾in) across, in early spring. †45cm (18in). \*\*  
**N. 'Hawera'** ■ Slender Division 5 daffodil with multiple stems per bulb, each bearing up to 5 canary-yellow flowers, 3–5cm (1¼–2in) across, with slightly reflexed perianth segments, in late spring. †18cm (7in). \*\*

**N. 'Highfield Beauty'**. Division 8 daffodil producing stems with up to 3 slightly scented, butter-yellow flowers, 6.5cm (2½in) across, in mid-spring. The small cups are several shades darker than the smooth, overlapping perianth segments. †50cm (20in). \*\*\*

**N. 'Home Fires'**. Division 2 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, have spreading, distinctly pointed, bright yellow perianth

segments and short, brilliant orange coronas. †45cm (18in). \*\*\*

**N. 'Honeybird'** ■ Division 1 daffodil bearing well-proportioned flowers, 10.5cm (4¼in) across, opening greenish yellow, in mid-spring. The trumpets gradually fade almost to pure white. †50cm (20in). \*\*\*

**N. 'Ice Follies'** ■ ♀ Division 2 daffodil flowering in mid-spring. Flowers, 9.5cm (3¾in) across, have large, creamy white perianth segments and wide cups, frilled at the mouths, that open lemon-yellow and fade almost to white. Very prolific. †40cm (16in). \*\*\*

**N. 'Ice Wings'** ■ Division 5 daffodil. In mid-spring, bears 2 or 3 pure white flowers, 4cm (1½in) across, with strongly reflexed perianth segments and relatively long, straight-sided trumpets. †35cm (14in). \*\*\*

**N. 'Irene Copeland'** ■ Division 4 daffodil. In mid-spring, bears double flowers, 8.5cm (3¼in) across, with pure white perianth segments and sulphur-yellow corona segments. †40cm (16in). \*\*\*

**N. 'Irish Charm'**. Division 2 daffodil flowering in mid-spring. Flowers, 10cm (4in) across, have well-formed, smooth, snow-white perianth segments and flattish, bowl-shaped, apricot-orange coronas. †45cm (18in). \*\*\*

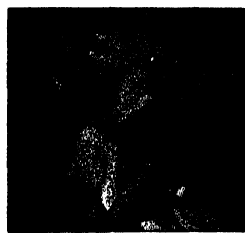
**N. 'Jack Snipe'** ■ Vigorous Division 6 daffodil. In early and mid-spring, produces long-lasting flowers, 4cm (1½in) across, with reflexed white perianth segments and short, lemon-yellow trumpets. Increases rapidly. †20cm (8in). \*\*\*

**N. 'Jenny'** ♀ Division 6 daffodil. In early and mid-spring, bears flowers 5cm (2in) across, with strongly reflexed, pointed, creamy white perianth segments and long, clear lemon-yellow trumpets that fade to cream. Similar to *N. 'Dove Wings'* but perianth segments are more pointed. †30cm (12in). \*\*\*  
**N. 'Jettfire'** ■ Division 6 daffodil. In early spring, bears flowers 7.5cm (3in) across, with strongly reflexed, golden yellow perianth segments and long, bright orange trumpets, which fade in bright sun. †20cm (8in). \*\*\*

**N. 'Jonquilla'** ♀ (Wild jonquil). Division 10 daffodil with erect to spreading, narrow, semi-cylindrical leaves, 40–45cm (16–18in) long. In late spring, bears heads of up to 5 strongly



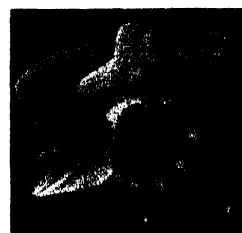
Narcissus 'Jetfire'



Narcissus 'Jumble'



Narcissus 'Kilworth'



Narcissus 'Kingscourt'



Narcissus 'Lemonade'



Narcissus 'Lemon Glow'



Narcissus 'Liberty Bells'



Narcissus 'Little Beauty'



Narcissus 'Little Witch'



Narcissus 'Merlin'



Narcissus 'Minnow'



Narcissus 'Mount Hood'

scented, golden yellow flowers, 3cm (1¼in) across, with small, pointed perianth segments and tiny, flat cups. ‡30cm (12in). Spain. \*\*\*  
**N. 'Jumble'** ■ Small Division 12 daffodil. In early spring, bears multiple stems per bulb, each with up to 3 nodding flowers, 3cm (1¼in) across, with strongly reflexed, bright golden yellow perianth segments and deeper yellow-orange cups. ‡17cm (7in). \*\*\*  
**N. juncifolius** see *N. assoanus*.  
**N. 'Kilworth'** ■ Division 2 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, have broad white perianth segments and intense red-orange, well-proportioned, bowl-shaped coronas. ‡50cm (20in). \*\*\*  
**N. 'Kimmeridge'**. Division 3 daffodil flowering in mid-spring. Bears flowers, 9.5cm (3¾in) across, with smooth, flat, pure white perianth segments and small, neat, pale yellow cups with rich orange rims. Fades rapidly in sunlight. ‡40cm (16in). \*\*\*  
**N. 'Kingscourt'** ■ Division 1 daffodil bearing rich golden yellow

flowers, 11cm (4½in) across, in mid-spring. Flowers have large, smooth perianth segments and well-balanced trumpets that broaden gently towards the mouths. ‡45cm (18in). \*\*\*  
**N. 'Lemonade'** ■ Division 3 daffodil producing white flowers, 8.5cm (3¼in) across, with smooth, rounded perianth segments and small, flattened cups, in mid-spring. The perianth segments gradually become yellow tinged green; the cups are slightly darker. ‡45cm (18in). \*\*\*  
**N. 'Lemon Glow'** ■ Division 1 daffodil bearing greenish yellow flowers, to 8cm (3in) across, bordering between trumpet and large-cupped, in mid-spring. Each straight corona darkens slightly towards the indented mouth. ‡45cm (18in). \*\*\*  
**N. 'Liberty Bells'** ■ Sturdy Division 5 daffodil bearing 2 nodding, clear lemon-yellow flowers, 9cm (3½in) across, with spreading perianth segments, in mid-spring. ‡30cm (12in). \*\*\*  
**N. 'Lintie'**. Division 7 daffodil. In mid-spring, produces 1 or 2 unscented,

primrose-yellow flowers, 5.5cm (2¼in) across, with orange cups. Similar to *N. 'Bobbysoxer'* but the flowers are slightly larger and each cup has a distinct green eye. ‡25cm (10in). \*\*\*  
**N. 'Little Beauty'** ■ Sturdy, dwarf Division 1 daffodil bearing well-formed, creamy white flowers, 3cm (1¼in) across, with clear yellow trumpets, in early spring. ‡14cm (5½in). \*\*\*  
**N. 'Little Gem'**. Dwarf Division 1 daffodil bearing golden yellow flowers, 4.5cm (1¾in) across, in early spring. Similar to *N. minor* and probably a selection from it. ‡13cm (5in). \*\*\*  
**N. 'Little Witch'** ■ Vigorous, sturdy Division 6 daffodil. In early and mid-spring, produces long-lasting, golden yellow flowers, 4cm (1½in) across, with strongly reflexed perianth segments and long trumpets. ‡22cm (9in). \*\*\*  
**N. lobularis** see *N. pseudonarcissus*.  
**N. 'Loch Hope'**. Division 2 daffodil. In mid-spring, bears flowers, 10cm (4in) across, with well-formed, smooth, gold perianth segments and small, tubular, fiery red cups. ‡45cm (18in). \*\*\*  
**N. 'Meldrum'**. Division 1 daffodil producing among the darkest yellow daffodil flowers, 10cm (4in) across, in spring. The widening trumpets, each neatly indented at the mouth, are several shades deeper than the broadly ovate perianth segments. ‡45cm (18in). \*\*\*  
**N. 'Merlin'** ■ Division 3 daffodil flowering in mid-spring. Flowers, 7.5cm (3in) across, have rounded, pure white perianth segments and flattened, pale yellow cups, each trimmed with a band of intense red. ‡45cm (18in). \*\*\*  
**N. minimus** see *N. asturiensis*.  
**N. 'Minnow'** ■ Dwarf Division 8 daffodil. In mid-spring, bears up to 5 flowers, 2.5cm (1in) across, with cream perianth segments and pale yellow cups fading to cream. Increases rapidly but may be shy to flower. ‡18cm (7in). \*\*\*  
**N. minor** ■ syn. *N. nanus* of gardens. Dwarf Division 10 daffodil with erect, narrow, flat or channelled, grey-green leaves, 8–15cm (3–6in) long, and yellow flowers, 3cm (1¼in) across, borne in early spring. Increases well. ‡10–15cm (4–6in). France, N. Spain. \*\*\*  
**subsp. pumilus** see *N. pumilus*.  
**subsp. pumilus 'Plenus'** see *N. 'Rip van Winkle'*.

**N. minor of gardens** see *N. pumilus*.  
**N. 'Monksilver'**. Division 3 daffodil bearing pure white flowers, 11cm (4½in) across, in mid-spring. Flowers have overlapping, smooth perianth segments and bowl-shaped coronas. ‡40cm (16in). \*\*\*  
**N. 'Mount Hood'** ■ Division 1 daffodil flowering in mid-spring. Flowers, 10cm (4in) across, have well-formed, broadly overlapping, off-white perianth segments and creamy white trumpets, soon fading to off-white; each trumpet broadens towards the mouth. ‡45cm (18in). \*\*\*  
**N. 'Nampa'**. Division 1 daffodil flowering in mid-spring. Flowers, 9cm (3½in) across, have bright yellow perianth segments and trumpets with white bases, which open greenish yellow and soon fade to white. ‡50cm (20in). \*\*\*  
**N. nanus**. Dwarf Division 10 daffodil with semi-erect, glaucous, grey-green leaves, to 15cm (6in) long. In early spring, bears nodding, sulphur-yellow flowers, 3.5cm (1½in) across, with deep yellow trumpets. Very similar to *N. minor*. ‡15cm (6in). Unknown in the wild. \*\*\*  
**N. nanus of gardens** see *N. minor*.  
**N. 'Newcastle'**. Division 1 daffodil flowering in mid-spring. Flowers, 12cm (5in) across, have off-white perianth segments, which seldom lie flat, and deep golden yellow trumpets, slightly expanded at the mouths, with indented rolls. ‡45cm (18in). \*\*\*  
**N. 'Norval'**. Division 2 daffodil flowering in mid-spring. Flowers, 10.5cm (4¼in) across, have overlapping, pointed, pure white perianth segments and large, shallow, bright orange coronas. ‡50cm (20in). \*\*\*  
**N. obvallaris** ♀ syn. *N. pseudonarcissus* subsp. *obvallaris* (Tenby daffodil). Sturdy Division 10 daffodil with erect, glaucous, mid-green leaves, 30cm (12in) long, and stiff stems that bear neat, golden yellow flowers, 4cm (1½in) across, in early spring. Excellent for naturalizing. ‡30cm (12in). UK (S. Wales), W. Europe. \*\*\*  
**N. x odoratus** (*N. jonquilla* x *N. pseudonarcissus*) syn. *N. campenelli* (Campernelle jonquil). Division 10 daffodil with narrow, strap-shaped, strongly keeled leaves, to 50cm (20in) long. In early spring, bears 1 or 2



Narcissus minor

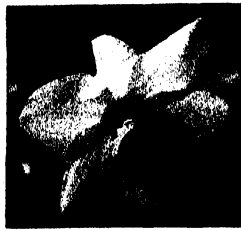




*Narcissus x odoratus*  
'Rugulosus'



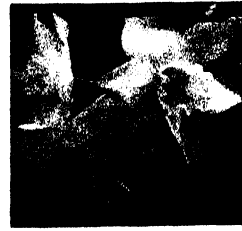
*Narcissus* 'Panache'



*Narcissus* 'Passionale'



*Narcissus* 'Pencrebar'



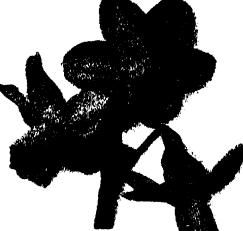
*Narcissus* 'Pipit'



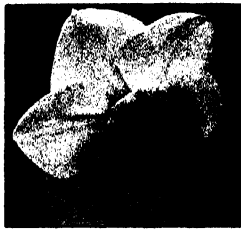
*Narcissus poeticus* var.  
*recurvus*



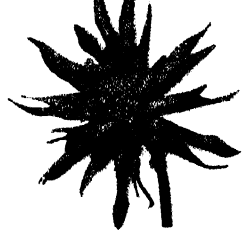
*Narcissus* 'Portrush'



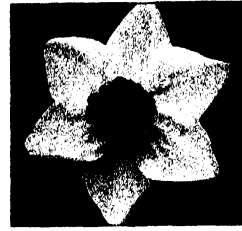
*Narcissus* 'Quince'



*Narcissus* 'Rainbow'



*Narcissus* 'Rip van Winkle'



*Narcissus* 'Rockall'



*Narcissus romieuxii*

strongly scented, golden yellow flowers, 4cm (1½in) across, with large cups and narrow perianth segments. ‡25cm (10in). Garden origin. \*\*\*.

'**Rugulosus**' ■ is more robust with up to 4 flowers, 5.5cm (2¼in) across; ‡30cm (12in).

*N.* '**Olympic Gold**'. Division 1 daffodil bearing golden yellow flowers, 11.5cm (4½in) across, in mid-spring. Smooth, flat perianth segments are at right-angles to the long trumpets, which are rolled at the mouths. ‡45cm (18in). \*\*\*.

*N.* '**Osmington**'. Division 2 daffodil flowering in mid-spring. Flowers, 9.5cm (3¾in) across, have broad, smooth white perianth segments and bright red coronas. ‡40cm (16in). \*\*\*.

*N.* '**Panache**' ■ Division 1 daffodil producing among the largest white daffodil flowers, 11.5cm (4½in) across, in mid-spring. Flowers are pure white, with well-balanced trumpets, tinged green at the bases, and broad, overlapping perianth segments. ‡40cm (16in). \*\*\*.

*N.* '**Paper White**' see *N. papyraceus*.

*N.* '**Paper White Grandiflorus**' see *N. papyraceus*.

*N. papyraceus*, syn. *N.* 'Paper White', *N.* 'Paper White Grandiflorus' (Paper-white narcissus). Division 8 daffodil with erect, keeled, glaucous, mid-green leaves, 30cm (12in) long. Bears clusters of up to 10 strongly fragrant, glistening white flowers, 1.5cm (½in) across, from winter to early spring. ‡35cm (14in). S. France, S. Spain, N. Africa. \*\*'. '**Ziva**', syn. *N.* 'Ziva', is a clone of *N. papyraceus* used for forcing and bowl culture.

*N.* '**Park Springs**'. Division 3 daffodil flowering in mid-spring. Flowers, 9.5–10.5cm (3¾–4¼in) across, have rounded, pure white perianth segments and greenish white cups with cream rims. ‡45cm (18in). \*\*\*.

*N.* '**Passionale**' ■ ♀ Division 2 daffodil flowering in mid-spring. Flowers, 10cm (4in) across, have overlapping, pure white perianth segments and rose-pink cups that are rolled and slightly frilled at the mouths. ‡40cm (16in). \*\*\*.

*N.* '**Pencrebar**' ■ Small Division 4 daffodil with circular, fragrant, double, golden yellow flowers, 3cm (1¼in) across, often 2 per stem, borne in mid-spring. ‡18cm (7in). \*\*\*.

*N.* '**Pennine Way**'. Division 1 daffodil flowering in mid-spring. Flowers, 9.5cm

(3¾in) across, have off-white perianth segments and rich ochre trumpets. ‡40cm (16in). \*\*\*.

*N.* '**Perimeter**'. Division 3 daffodil flowering in mid-spring. Bears lemon-yellow flowers, 9.5cm (3¾in) across, each with a narrow, sharply defined band of orange at the rim of the slightly flattened cup. ‡45cm (18in). \*\*\*.

*N.* '**Petrel**'. Division 5 daffodil producing clusters of up to 7 nodding, pure white flowers, 3cm (1¼in) across, with slightly reflexed perianth segments, in late spring. ‡25cm (10in). \*\*\*.

*N.* '**Pink Champagne**'. Division 4 daffodil. In mid-spring, bears double flowers, 9cm (3½in) across, with broadly overlapping white perianth segments and abundant bright pink corona segments. ‡40cm (16in). \*\*\*.

*N.* '**Pipe Major**'. Division 2 daffodil flowering in mid-spring. Flowers, 10cm (4in) across, have rounded, smooth, deep primrose-yellow perianth segments and bowl-shaped, deep red-orange coronas. ‡45cm (18in). \*\*\*.

*N.* '**Pipit**' ■ Division 7 daffodil bearing 2 or 3 sweetly scented, lemon-yellow flowers, 7cm (3in) across, in mid- and late spring. The cups quickly fade to cream. ‡25cm (10in). \*\*\*.

*N.* '**Pixie's Sister**'. Dwarf Division 7 daffodil producing clusters of up to 5 well-shaped, scented, golden yellow flowers, 2.5cm (1in) across, in late spring. ‡16cm (6in). \*\*\*.

*N. poeticus*, (Poet's narcissus). Robust, variable Division 10 daffodil with erect, narrow, strap-shaped, channelled leaves, to 45cm (18in) long. In late spring, bears solitary, fragrant flowers, 4.5–7cm (1¾–3in) across, with flat, pure white perianth segments and tiny, red-rimmed yellow cups. ‡20–50cm (8–20in). France, Switzerland, Italy (widely naturalized in S. Europe). \*\*\*.

'**Plenus**', syn. *N.* 'Albus Plenus Odoratus', has strongly fragrant, untidy, double, pure white flowers, 4cm (1½in) across. Occasionally, the remains of the red cups are visible between the perianth segments. Excellent for cutting; ‡40cm (16in). var. *recurvus* ■ ♀ (Old pheasant's eye) has flowers 4cm (1½in) across, with recurved, glistening white perianth segments; ‡35cm (14in); Switzerland.

*N.* '**Poet's Way**'. Division 9 daffodil producing scented flowers, 5.5cm

(2¼in) across, in mid-spring. Flowers have broad, smooth, pure white perianth segments and bright yellow cups with deep red rims and green eyes. ‡40cm (16in). \*\*\*.

*N.* '**Portrush**' ■ Division 3 daffodil bearing pure white flowers, 8.5cm (3¼in) across, in mid-spring. Broadly overlapping perianth segments surround flat cups with distinctive dark green eyes. ‡45cm (18in). \*\*\*.

*N.* '**Preamble**'. Division 1 daffodil producing long-lasting flowers, 11.5cm (4½in) across, in mid-spring. The perianth segments are pure white; the trumpets open deep canary-yellow and darken with age. ‡40cm (16in). \*\*\*.

*N.* '**Pride of Cornwall**'. Division 8 daffodil producing 2 or 3 scented white flowers, 6cm (2½in) across, with deep orange-yellow cups, margined with red, in mid-spring. Excellent for cutting. ‡40cm (16in). \*\*.

*N. pseudonarcissus*, syn. *N. lobularis* (Lent lily, Wild daffodil). Very variable Division 10 daffodil with erect, strap-shaped, usually glaucous, mid-green

leaves, 8–50cm (3–20in) long. Nodding flowers, 4–7cm (1½–3in) across, with yellow trumpets and narrow, twisted cream perianth segments, are produced in early spring. Good for naturalizing. ‡15–35cm (6–14in). Europe. \*\*\*.

subsp. *obvallaris* see *N. obvallaris*.

*N. pumilus*, syn. *N. minor* of gardens, *N. minor* subsp. *pumilus*. Small Division 10 daffodil with erect, channelled or flat, grey-green leaves, 8–15cm (3–6in) long. Bears yellow flowers, 3cm (1¼in) across, with flared, frilled trumpets, in early spring. Similar to *N. minor*, which has straighter trumpets. ‡10–15cm (4–6in). Possibly garden origin. \*\*\*.

'**Plenus**' see *N.* 'Rip van Winkle'.

*N.* '**Purbeck**'. Division 3 daffodil flowering in mid-spring. Flowers, 9.5cm (3¾in) across, have broad, bright white perianth segments and small, goblet-shaped yellow cups, each with a green-tinged throat, fringed with a bright orange band. ‡45cm (18in). \*\*\*.

*N.* '**Quail**'. Robust Division 7 daffodil. In mid-spring, bears 2 or 3 scented, golden yellow flowers, 4cm (1½in) across, with long cups and neat perianth segments. ‡40cm (16in). \*\*\*.

*N.* '**Quince**' ■ Division 12 daffodil producing 1–3 soft yellow flowers, 3cm (1¼in) across, with short, frilled, golden yellow cups, in early and mid-spring. Each bulb bears a succession of flower stems. ‡16cm (6in). \*\*.

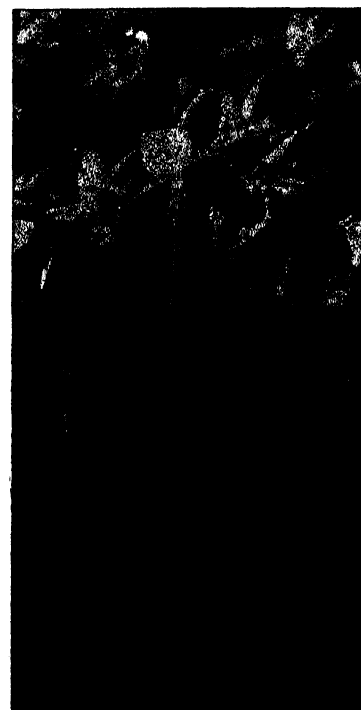
*N.* '**Rainbow**' ■ Vigorous Division 2 daffodil flowering in mid-spring. Bears consistently good-quality flowers, 10cm (4in) across, with fine-textured white perianth segments and white cups, each with a broad band of copper-pink at the slightly indented mouth. ‡45cm (18in). \*\*\*.

*N.* '**Rameses**'. Division 2 daffodil flowering in mid-spring. Flowers, 8.5cm (3¼in) across, have broadly ovate white perianth segments contrasting with rich red cups. ‡50cm (20in). \*\*\*.

*N. requienii* see *N. assoanus*.

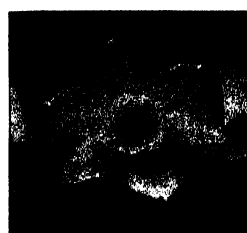
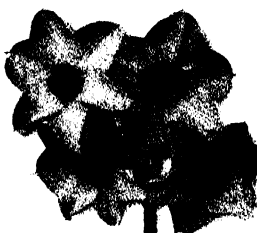
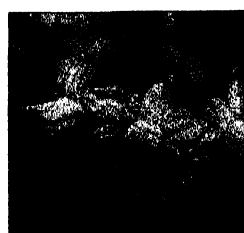
*N.* '**Rijnveld's Early Sensation**' ♀ Division 1 daffodil producing yellow flowers, 9cm (3½in) across, in late winter. Very early-flowering and long-lasting. ‡25–35cm (10–14in). \*\*\*.

*N.* '**Rip van Winkle**' ■ syn. *N. minor* subsp. *pumilus* 'Plenus', *N. pumilus* 'Plenus'. Division 4 daffodil bearing double, greenish yellow flowers, 5cm (2in) across, with irregular, pointed



*Narcissus* 'St. Keverne'



*Narcissus rupicola**Narcissus* 'Salome'*Narcissus* 'Satin Pink'*Narcissus* 'Scarlet Gem'*Narcissus* 'Sealing Wax'*Narcissus* 'Shining Light'*Narcissus* 'Silver Chimes'*Narcissus* 'Stratosphere'*Narcissus* 'Suzy'*Narcissus* 'Sweetness'*Narcissus* 'Tête-à-Tête'*Narcissus* 'Thalia'

perianth segments, in early spring.

†14cm (5½in). \*\*\*

**N. 'Rockall'** ■ Division 3 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, have large, overlapping, slightly pointed white perianth segments and saucer-shaped, finely fluted, rich orange-red coronas. †50cm (20in). \*\*\*

**N. romieuxii** ■ Small Division 10 daffodil with erect or spreading, narrow, semi-cylindrical, dark green leaves, to 20cm (8in) long. In early spring, bears funnel-shaped flowers, 3.5cm (1½in) across, which vary from pale straw-yellow to pale primrose-yellow. Similar to *N. bulbocodium*, which has deeper yellow flowers. †8–10cm (3–4in). N. Africa. \*\*

**N. rupicola** ■ Division 10 daffodil with erect, thin, cylindrical, keeled, grey-green leaves, 18cm (7in) long. Circular, golden yellow flowers, 3cm (1¼in) across, with shallow, 6-lobed cups, are produced in mid-spring. †15cm (6in). Portugal, Spain. \*\*\*

**N. 'St. Keverne'** ■ Erect Division 2 daffodil bearing rich golden yellow flowers, 10cm (4in) across, in mid-spring. Large cups, occasionally trumpet-sized, are indented at the rims and slightly flared. †45cm (18in). \*\*\*

**N. 'Salome'** ■ Division 2 daffodil flowering in mid-spring. Produces consistently good quality flowers, 9cm (3½in) across, with smooth, waxy, pale cream perianth segments and large, almost trumpet-shaped, peach pink cups. †45cm (18in). \*\*\*

**N. 'Satin Pink'** ■ Division 2 daffodil flowering in mid-spring. Flowers, 8–12cm (3–5in) across, have neatly overlapping white perianth segments and pale pink cups, deepening slightly at the finely indented mouths and with greenish yellow eyes. †45cm (18in). \*\*\*

**N. 'Scarlet Gem'** ■ Division 8 daffodil with clusters of many scented yellow flowers, 5cm (2in) across, with red-orange cups, produced in mid-spring. Good for cutting. †35cm (14in). \*\*

**N. 'Sea Green'**. Division 9 daffodil producing scented flowers, 6cm (2½in) across, in late spring. Rounded, snow-white perianth segments surround white coronas that are rich green at the bases and trimmed with bright red margins. †40cm (16in). \*\*\*

**N. 'Sealing Wax'** ■ Division 2 daffodil flowering in mid-spring. Flowers, 9cm (3½in) across, have wide, rounded, rich golden yellow perianth segments and relatively small, goblet-shaped, deep red-orange coronas. †50cm (20in). \*\*\*

**N. 'Shining Light'** ■ Division 2 daffodil bearing uniform flowers, 8.5cm (3¼in) across, in mid-spring. They have slightly pointed, smooth, butter-yellow perianth segments and goblet-shaped, bright orange-red cups, slightly indented at the mouths. †40cm (16in). \*\*\*

**N. 'Silent Valley'**. Division 1 daffodil bearing snow-white flowers, 11.5cm (4½in) across, in mid-spring. Strongly overlapping, broad, pointed, smooth perianth segments surround trumpets highlighted by striking green eyes. †40cm (16in). \*\*\*

**N. 'Silver Chimes'** ■ Sturdy Division 8 daffodil. In mid- and late spring, produces up to 10 nodding, scented, creamy white flowers, 5cm (2in) across, with pale primrose-yellow cups. †30cm (12in). \*\*\*

**N. 'Smyrna'**. Division 9 daffodil. In mid-spring, bears scented flowers, 6cm (2½in) across, with rounded, pure white perianth segments and small, flattened, bright orange coronas. †40cm (16in). \*\*\*

**N. 'Spellbinder'** ♀ Vigorous Division 1 daffodil bearing sulphur-yellow flowers, 10–11.5cm (4–4½in) across, in mid-spring. Coronas gradually fade to white, with whitish green at the mouths. †50cm (20in). \*\*\*

**N. 'Stratosphere'** ■ Division 7 daffodil. In mid-spring, each tall, strong stem bears up to 3 scented blooms, to 6.5cm (2½in) across, with smooth yellow perianth segments and small, rich deep gold cups. †65cm (26in). \*\*\*

**N. 'Strines'**. Division 2 daffodil. In mid-spring, produces flowers 12.5cm (5in) across, with well-balanced, deep yellow cups, slightly flared and indented at the mouths and of near trumpet proportions; the overlapping perianth segments are a shade or so deeper. †45cm (18in). \*\*\*

**N. 'Sundial'**. Small Division 7 daffodil producing 1 or 2 golden yellow flowers, 3.5cm (1½in) across, in mid-spring. †20cm (8in). \*\*\*

**N. 'Sun Disc'**. Neat, dwarf Division 7 daffodil with stiff stems, each bearing a single, perfectly circular, mid-yellow

flower, 5cm (2in) across, in mid-spring. The perianth segments fade to cream with age. †18cm (7in). \*\*\*

**N. 'Suzy'** ■ ♀ Division 7 daffodil producing 1 or 2 scented flowers, 6cm (2½in) across, with primrose-yellow perianth segments and rich orange cups, in mid-spring. †40cm (16in). \*\*\*

**N. 'Sweetness'** ■ Vigorous Division 7 daffodil with stiff stems bearing solitary, strongly fragrant, golden yellow flowers, 4cm (1½in) across, in mid-spring. Long-lasting as a cut flower. †40cm (16in). \*\*\*

**N. 'Tahiti'** ■ Division 4 daffodil with double flowers, 11cm (4½in) across, borne in mid-spring. Regular, rounded, rich golden yellow perianth segments surround a cluster of bright red-orange corona segments. †45cm (18in). \*\*\*

**N. 'Tamar Fire'**. Division 4 daffodil bearing well-formed, scented flowers, 7cm (3in) across, with rich yellow outer perianth segments and blood-red inner segments. †30cm (12in). \*\*\*

**N. tazetta**. Very variable Division 10 daffodil with erect, broad, twisted,

keeled, glaucous, mid-green leaves, 20–50cm (8–20in) long. In winter or spring, bears up to 20 sweetly scented flowers, 4cm (1½in) across, with white perianth segments and yellow cups. †15–50cm (6–20in). Mediterranean region. Widely naturalized in many parts of the world. \*\*

**N. 'Telamonius Plenus'**, syn. *N. 'Van Sion'*. Vigorous Division 4 daffodil producing double, greenish yellow flowers, 10cm (4in) across, in early spring. This very old cultivar is variable in flower shape: it is occasionally fully double; sometimes the trumpet is filled with segments, but the perianth segments remain distinct. Excellent for naturalizing. †35cm (14in). \*\*\*

**N. 'Tête-à-Tête'** ■ Vigorous dwarf Division 12 daffodil bearing 1–3 flowers, 6.5cm (2½in) across, in early spring. They have deep golden yellow perianth segments, slightly reflexed from deeper yellow cups. †15cm (6in). \*\*\*

**N. 'Thalia'** ■ Division 5 daffodil flowering in mid-spring. Bears 2 milk-white flowers, 5cm (2in) across, with narrow, twisted, slightly reflexed perianth segments and open cups. †35cm (14in). \*\*\*

**N. 'Tonga'**. Division 4 daffodil bearing well-formed, scented, double flowers, 8cm (3in) across, in mid-spring. Deep primrose yellow perianth segments, becoming paler yellow, are intermingled with short, bright red corona segments. †40cm (16in). \*\*\*

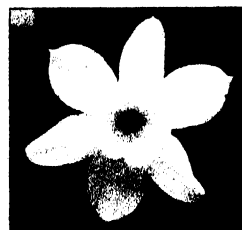
**N. 'Torricon'**. Division 2 daffodil bearing long-lasting flowers, 8cm (3in) across, in mid-spring. The well-formed perianth segments are deep yellow and the corona is fiery orange-red. †35cm (14in). \*\*\*

**N. 'Tracey'**. Division 6 daffodil flowering in early spring. Bears flowers, 7cm (3in) across, with reflexed white perianth segments and trumpet-shaped, pale yellow coronas. †25cm (10in). \*\*\*

**N. 'Tresamble'**. Robust Division 5 daffodil producing 1–3 well-formed flowers, 9cm (3½in) across, in mid-spring. Flowers have spreading, milk-white perianth segments and cream cups. †40cm (16in). \*\*\*

**N. 'Trevithian'**. Vigorous Division 7 daffodil bearing 1–3 scented, soft lemon-yellow flowers, 7cm (3in) across, in mid-spring. The perianth segments

*Narcissus* 'Tahiti'

*Narcissus triandrus**Narcissus* 'Trousseau'*Narcissus* 'Vigil'*Narcissus watieri**Narcissus* 'Woodland Star'*Narcissus* 'Yellow  
Cheerfulness'

are well-rounded; the cups are short and flared. †45cm (18in). \*\*\*

*N. triandrus* ☐ ♀ (Angel's tears). Small Division 10 daffodil with decumbent or erect, narrow, flat or channelled leaves, 20–30cm (8–12in) long. In mid-spring, bears 1–6 nodding cream flowers, 6cm (2½in) across, with reflexed perianth segments and rounded cups. †10–25cm (4–10in). Portugal, Spain. \*\*\*

*N. 'Tripartite'*. Division 11a daffodil bearing stems of up to 3 golden yellow flowers, 6.5cm (2½in) across, in late spring. Each expanded corona is split into 6 segments that lie flat against the perianth segments. †45cm (18in). \*\*\*

*N. 'Trousseau'* ☐ Division 1 daffodil bearing delicate, satin-like flowers, 12cm (5in) across, in mid-spring. White perianth segments surround flanged trumpets that open soft yellow and turn beige-pink. †45cm (18in). \*\*\*

*N. 'Tudor Minstrel'*. Division 2 daffodil flowering in mid-spring. Flowers, 11cm (4½in) across, have pointed, slightly hooded white perianth segments and large, slightly expanded, rich golden yellow coronas, frilled at the mouths. †50cm (20in). \*\*\*

*N. 'Tuesday's Child'*. Division 5 daffodil bearing 1–3 slightly pendent flowers, 6cm (2½in) across, in mid-spring. Pointed white perianth segments are swept back from short, lemon yellow coronas. †35cm (14in). \*\*\*

*N. 'Tutankhamun'*. Division 2 daffodil. In mid-spring, bears trumpet-shaped, intense white flowers, 10.5cm (4¼in) across, with conspicuous green eyes. †40cm (16in). \*\*\*

*N. 'Unique'*. Division 4 daffodil producing well-formed, double flowers, 10.5cm (4¼in) across, in mid-spring. They are circular, with broad, rounded white perianth segments, interleaved with rich yellow corona segments in the centres. †50cm (20in). \*\*\*

*N. 'Van Sion'* see *N. 'Tetamionius Plenus'*.

*N. 'Verona'* ♀ Division 3 daffodil flowering in mid-spring. Bears circular flowers, 9.5–10cm (3¾–4in) across, with broadly overlapping white perianth segments. The flattish, fluted cups open cream and soon fade to white. †45cm (18in). \*\*\*

*N. 'Vigil'* ☐ ♀ Division 1 daffodil bearing pure white flowers, 12.5cm

(5in) across, in mid-spring. Flowers have sharply pointed, finely textured perianth segments and long, slender trumpets, slightly rolled at the mouths. †40cm (16in). \*\*\*

*N. 'Viking'*. Division 1 daffodil. In mid-spring, bears deep golden yellow flowers, 11.5cm (4½in) across, with broad, pointed perianth segments and long, slightly expanded trumpets, frilled at the mouths. †45cm (18in). \*\*\*

*N. 'Vulcan'* ♀ Division 2 daffodil flowering in mid-spring. Flowers, 9.5cm (3¾in) across, have rounded, smooth, rich golden yellow perianth segments and fiery orange-red cups, each widening slightly to a jagged mouth. †50cm (20in). \*\*\*

*N. watieri* ☐ Tiny Division 10 daffodil with erect, narrow, keeled, grey-green leaves, 18cm (7in) long. In mid-spring, bears solitary flowers, 1.5cm (½in) across, with flat, pure white perianth segments, and widely funnel-shaped coronas. †10cm (4in). N. Africa. \*\*\*

*N. 'Woodland Prince'*. Division 3 daffodil producing consistently good quality flowers, 9cm (3½in) across, in mid-spring. The creamy white perianth segments are broad and smooth; the small, lemon-yellow cups have deeper yellow rims. †50cm (20in). \*\*\*

*N. 'Woodland Star'* ☐ Division 3 daffodil. In mid-spring, produces flowers 9.5cm (3¾in) across, with pure white perianth segments contrasting with the small, bowl-shaped, deep orange-red cups. †50cm (20in). \*\*\*

*N. 'W.P. Milner'*. Sturdy Division 1 daffodil bearing nodding flowers, 6cm (2½in) across, in early and mid-spring. Forward-pointing, cream perianth segments surround the pale, creamy white trumpets. †23cm (9in). \*\*\*

*N. 'Yellow Cheerfulness'* ☐ Division 4 daffodil producing strong stems of 3 or 4 circular, sweetly scented, double, golden yellow flowers, 2cm (¾in) across, in mid-spring. †45cm (18in). \*\*\*

*N. 'Ziva'* see *N. papyraceus* 'Ziva'.

#### ▷ *Narcissus*,

Paper-white see *Narcissus papyraceus*  
Poet's see *Narcissus poeticus*

▷ *Nardoo*, Common see *Marsilea drummondii*

▷ *Nasturtium* see *Tropaeolum majus*  
Flame see *T. speciosum*

## NAUTILOCALYX

### GESNERIACEAE

Genus of 38 species of evergreen perennials, often woody at the bases, from open woodland in the West Indies, Central America and tropical South America. They are grown for their opposite, prominently veined, glossy leaves and tubular, 5-lobed flowers, borne singly or in clustered cymes in the upper leaf axils. In frost-prone areas, grow in a warm greenhouse. In warmer areas, plant among shrubs or trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light and high humidity. During growth, water freely with soft water and apply a balanced liquid fertilizer monthly. Water moderately in winter. Outdoors, grow in moist but well-drained, humus-rich soil in light shade.

• **PROPAGATION** Root softwood or stem-tip cuttings in spring or summer.

• **PESTS AND DISEASES** Mealybugs and tarsonemid mites may be troublesome.

*N. bullatus*, syn. *N. tessellatus*. Erect perennial with elliptic, finely toothed, puckered, dark green leaves, to 23cm (9in) long, purple beneath. From spring to summer, bears cymes of up to 10 hairy, pale yellow flowers, 3cm (1¼in) across. †60cm (24in), ↔ 35cm (14in). Peru. ☼ (min. 16°C/61°F)

*N. lynchii* ☐ Erect, branched perennial with elliptic-lance-shaped, toothed, very dark green, sometimes red-purple leaves, 12cm (5in) long, red-purple beneath. In summer, bears cymes of 2 or 3 yellow flowers, to 3cm (1¼in) across, with red hairs outside, purple streaks inside, and maroon sepals. †60cm (24in), ↔ 30cm (12in). Colombia. ☼ (min. 16°C/61°F)

*N. tessellatus* see *N. bullatus*.

▷ *Navelwort* see *Omphalodes*

*Venus's* see *O. linifolia*

▷ *Neanthe bella* see *Chamaedorea elegans*

*Nautilocalyx lynchii**Nectaroscordum siculum* subsp.  
*bulgaricum*

## NECTAROSCORDUM

### ALLIACEAE/LILIACEAE

Genus of 3 species of bulbous perennials from damp or shady woodland, rocky places, and dry mountain slopes of S. Europe and W. Asia. They have linear, deeply channelled or keeled leaves, which smell of garlic. Loose umbels of bell-shaped flowers, 2–2.5cm (¾–1in) long, are borne in summer. Grow in a wild garden or herbaceous border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any moderately fertile, well-drained soil in full sun or partial shade. May self-seed freely.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Remove offsets in summer.

• **PESTS AND DISEASES** Trouble free.

*N. dioscoridis* see *N. siculum* subsp. *bulgaricum*.

*N. siculum*, syn. *Allium siculum*. Robust, bulbous perennial with linear, sharply keeled, basal leaves, 30–40cm (12–16in) long. In summer, stout stems bear umbels of 10–30 pendulous, open bell-shaped, white or cream flowers, 1.5–2.5cm (½–1in) long, flushed pink or purplish red, and tinted green at the bases. Seed pods become erect as flowers fade. † to 1.2m (4ft), ↔ 10cm (4in). France, Italy. \*\*\*. subsp.

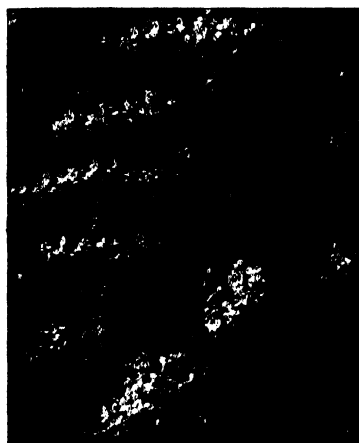
*bulgaricum* ☐ syn. *Allium bulgaricum*, *N. dioscoridis*, has off-white flowers, flushed green and purple. S.E. Europe, N.W. Turkey, Ukraine (Crimea).

## NEILLIA

### ROSACEAE

Genus of 10 species of deciduous shrubs and subshrubs, with branching, zigzag stems, found in scrub and at rocky stream margins in the Himalayas and E. Asia. The dark, glossy leaves are alternate, irregularly toothed, each with up to 5, but usually 3, lobes. They are

## NEILLIA



*Neillia thibetica*

cultivated for their graceful, arching habit and their racemes or panicles of small, bell-shaped or tubular flowers, profusely borne in late spring and early summer. Grow in a shrub border or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun or partial shade. Pruning group 2 or 3, after flowering.
- **PROPAGATION** Take greenwood cuttings in early summer. Remove suckers in autumn.
- **PESTS AND DISEASES** Trouble free.

*N. longiracemosa* see *N. thibetica*.

*N. sinensis*. Thicket-forming, suckering shrub with arching shoots and peeling brown bark. Leaves are usually 3-lobed, ovate to oblong, sharply toothed, and long-pointed, to 10cm (4in) long. In late spring and early summer, small, tubular, pinkish white flowers, to 12mm (½in) long, are produced in slender, 12- to 20-flowered racemes, to 6cm (2½in) long. ↑ 2m (6ft). C. China. \*\*\*

*N. thibetica* ■ syn. *N. longiracemosa*. Thicket-forming, suckering shrub with arching shoots and ovate or ovate-oblong, 3-lobed, long-pointed, toothed, bright green leaves, to 10cm (4in) long. In early summer, small, tubular-bell-shaped, rose-pink flowers, to 8mm (⅜in) long, are produced in arching racemes, to 15cm (6in) long. ↑ 2m (6ft). W. China. \*\*\*

## NELUMBO

Lotus

NELUMBONACEAE

Genus of 2 species of rhizomatous, marginal aquatic perennials from Asia, N. Australia, and E. North America, found at the shallow margins or on the muddy banks of pools. They are widely cultivated and naturalized in subtropical and tropical areas. The handsome, horizontally held, peltate, waxy-bloomed, almost circular leaves are held well above the water. The showy, solitary, fragrant, water lily-like flowers are borne on long stalks, and develop distinctive, flat-topped seed pods that may be dried for use in flower arrangements. They are excellent as specimen plants in an outdoor pool. In frost-prone areas, grow *N. nucifera* with giant water lilies (*Victoria*) in an indoor tropical pool, or in large, water-filled half-barrels on a patio outdoors; overwinter in frost-free conditions.



*Nelumbo lutea*

• **HARDINESS** Half hardy to frost tender; in cold climates, *N. lutea* and some *N. nucifera* cultivars can be overwintered outdoors given sufficient summer warmth to ripen the rhizomatous roots; these will survive if well below any frozen soil or water.

• **CULTIVATION** In an outdoor pool, grow in large containers in heavy loam enriched with well-rotted farmyard manure or compost, in full sun. As growth proceeds, gradually lower the containers to increase the water depth to 40–60cm (16–24in), or 15–22cm (6–9in) for smaller cultivars. Remove fading foliage. In very cold areas, reduce the water level gradually in autumn, remove the containers, and overwinter in frost-free conditions, keeping the rhizomes just moist. Under glass, grow in large containers in an indoor pool in full light. See also pp.52–53.

• **PROPAGATION** Sow seed in spring, preferably scarified before sowing, at a minimum temperature of 25°C (77°F), in small containers of loam covered by 5cm (2in) of water. Increase water depth and container size until plants are large enough to plant in the flowering site.

Carefully divide the fragile rhizomes, which resent disturbance. In spring, plant rootstock horizontally just below the soil surface, and barely submerge until growth starts.

• **PESTS AND DISEASES** Outdoors, leaves may be attacked by corn-borers and woolly-bear caterpillars, and by various leaf-spotting diseases, particularly brown spot and dry brown spot. Red spider mites and whiteflies may be a problem under glass.



*Nelumbo* 'Mrs. Perry D. Slocum'

*N. lutea* ■ (American lotus, Water chinquapin, Yanquapin). Aquatic perennial with radical, concave-circular, bluish green leaves, 50cm (20in) across, prominently veined beneath, held on stalks to 2m (6ft) long. In summer, produces rose-like yellow flowers, to 25cm (10in) across. ↑ 2m (6ft). ↔ indefinite. North America. ☼ (min. 7°C/45°F)

*N. 'Mrs. Perry D. Slocum'* ■ Aquatic perennial with rounded, flat or wavy-margined, glaucous, grey-green leaves, 80cm (32in) across, on stalks to 1.4m (4½ft) long. In summer, freely produces deep pink flowers, to 30cm (12in) across, turning yellow over a period of several days. ↑ 1.2–1.5m (4–5ft). ↔ indefinite. ☼ (min. 5°C/41°F)

*N. nucifera* (Sacred lotus). Aquatic perennial with flat or concave-circular, wavy-margined, glaucous, mid-green leaves, 80cm (32in) across, on stalks to 2m (6ft) long. Peony-like, sometimes double, pink or white flowers, to 30cm (12in) across, are produced in summer on long stalks with short, fleshy prickles. ↑ 0.7–1.5m (28–60in), above water level, ↔ indefinite. Asia (Iran to Japan), N. Australia. ☼ (min. 5°C/41°F).

'Alba Grandiflora' has wavy-margined, dark green leaves and white flowers, 22–25cm (9–10in) across, sometimes hidden in the foliage; ↑ 1.2–1.8m (4–6ft). 'Alba Striata' has white flowers, with jagged red margins. 'Charles Thomas' has lavender-pink flowers, 15–20cm (6–8in) across. Grow in a tub or small pool; ↑ 60–90cm (26–36in).

'Kermesina' has fully double, rose-pink to bright red flowers, 15–20cm (6–8in) across, produced on stiff stems well above the leaves; ↑ 60–90cm (26–36in). 'Momo Botan' has long-lasting flowers, to 15cm (6in) across, with dark rose-pink petals, yellow towards the bases. Suitable for a small pool or half-barrel. ↑ 60–120cm (2–4ft). 'Rosea Plena' produces double, dark rose-pink flowers, 25–35cm (10–14in) across, yellowish towards the bases; ↑ 1.2–1.5m (4–5ft).

## NEMATANTHUS

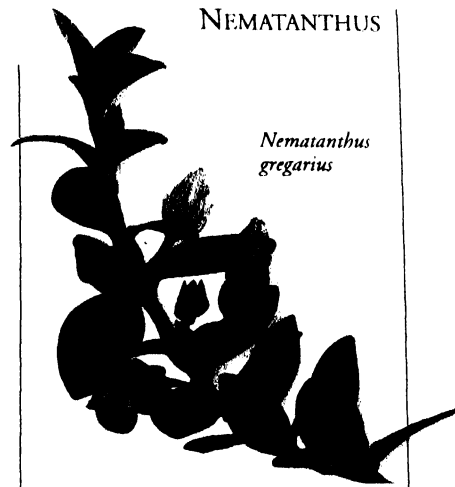
GESNERIACEAE

Genus of about 30 species of scandent or trailing, evergreen, usually epiphytic subshrubs, often becoming woody at the bases, from tropical rainforest in South America. They have opposite, sometimes whorled, elliptic to obovate, entire to toothed, fleshy leaves. The colourful flowers, borne singly or in clustered cymes in the leaf axils, are tubular and pouched. In frost-prone areas, grow in a warm greenhouse or as houseplants. Elsewhere, grow epiphytically on trees or shrubs, or underplant among them.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light, or full light with shade from hot sun, with moderate humidity. Water moderately with soft water (less in winter), and feed actively growing plants every month with a balanced liquid fertilizer. For sporadic flowering through winter, maintain a minimum temperature of 15–16°C (59–61°F). Tip-prune young plants when young to encourage branching. Outdoors, grow in moist but well-drained, humus-rich soil in partial shade.

## NEMATANTHUS



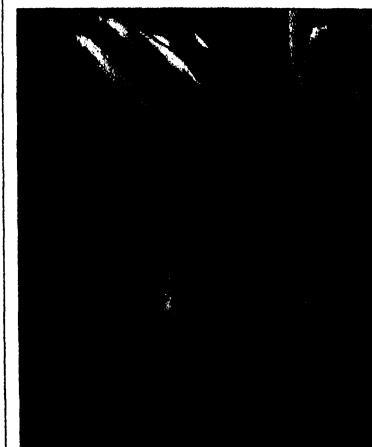
*Nematanthus gregarius*

- **PROPAGATION** Take stem-tip cuttings in spring.
- **PESTS AND DISEASES** Aphids may infest new growth, including calyces and flowers.

*N. gregarius* ■ syn. *Hypocyrta radicans*, *N. radicans*. Trailing to pendent or scandent subshrub with elliptic to obovate, fleshy, glossy, rich green leaves, 2–4cm (¾–1½in) long, borne in opposite pairs or whorls of 3. Clusters of 1–3 tubular, pouched, bright orange flowers, 2.5cm (1in) long, with purple-brown stripes and green, orange-tipped calyces, are borne in summer. ↑ to 80cm (32in), ↔ 90cm (36in) or more. Brazil. ☼ (min. 10–15°C/50–59°F)

*N. radicans* see *N. gregarius*. *N. strigillosus*, syn. *Hypocyrta strigillosa*. Scandent to trailing subshrub, woody at the base, with opposite, elliptic, mid-to deep green leaves, to 3.5cm (1½in) long, sparsely hairy above, pale green and densely downy beneath. Solitary, tubular, orange and yellow flowers, to 2cm (¾in) long, with prominent pouches and green calyces flushed brownish red, are produced mainly in summer. Becomes pendent if grown in a hanging basket. ↑ to 1.5m (5ft), ↔ to 90cm (36in), or more if trailing. Brazil. ☼ (min. 10–15°C/50–59°F)

*N. 'Tropicana'* ■ ♀ Erect, freely-branching subshrub with purple stems and opposite, obovate, thick, fleshy, glossy, dark green leaves, 3cm (1¼in) long. Tubular, pouched, glossy, dark yellow flowers, 2.5cm (1in) long, with maroon stripes, enclosed in long-lasting, leafy, bright red calyces, are produced throughout the year. ↑ 30cm (12in), ↔ 45cm (18in). ☼ (min. 13°C/55°F)



*Nematanthus* 'Tropicana'

## NEMESIA

## SCROPHULARIACEAE

Genus of 50 or more species of bushy, erect annuals, perennials, and subshrubs from South Africa, where they grow in sandy soils near the coast or in scrubby, often disturbed soil inland. The leaves are opposite, simple, usually linear to lance-shaped, frequently toothed. The showy, almost trumpet-shaped, 2-lipped flowers (the upper lip 4-lobed, the lower lip unlobed or 2-lobed) are borne singly in the upper leaf axils or in short terminal racemes. Annual cultivars are colourful summer bedding plants outdoors, or may be grown as short-lived, early spring-flowering container plants in a cool greenhouse. They are good for cutting. *N. caerulea* is suitable for a raised bed or herbaceous border, and is often used as a container plant.

• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Grow in moist but well-drained, moderately fertile, slightly acidic soil in full sun. Water annuals freely in dry weather to maintain flower production. Under glass, grow in loam-based potting compost (J1 No.2) in full light. Water moderately during growth. Pinch out growing tips to promote bushiness.

• **PROPAGATION** Sow seed at 15°C (59°F) from early to late spring, or in autumn for spring-flowering container plants. Take tip cuttings of unflowered shoots from perennial species in late summer; overwinter young plants in frost-free conditions.

• **PESTS AND DISEASES** Foot rot and root rot may cause problems.

*N. caerulea* ■ syn. *N. foetens* of gardens, *N. fruticans* of gardens. Woody-based perennial with erect or spreading stems and entire or toothed, linear to lance-shaped leaves, 4cm (1½in) long. Produces terminal racemes of short-tubed, 2-lipped, pink, pale blue, lavender-blue, or white flowers, to



*Nemesia strumosa* Carnival Series

1.5cm (½in) long, with yellow throats, from early summer to autumn. ‡ to 60cm (24in), ↔ 30cm (12in). South Africa (Northern Transvaal, Eastern Transvaal, Orange Free State, KwaZulu/Natal), Lesotho. \*\*.

'Innocence' has white flowers. 'Joan Wilder' has deep lavender-blue flowers.

*N. foetens* of gardens see *N. caerulea*.

*N. fruticans* of gardens see *N. caerulea*.

*N. strumosa*. Basally branching annual with lance-shaped, entire to coarsely toothed, slightly hairy leaves, to 7cm (3in) long. In mid- and late summer, produces terminal racemes of 2-lipped red, yellow, pink, blue, purple, or white flowers, to 2.5cm (1in) across. The flowers may be in single colours, or bicolours with the upper and lower lips in contrasting colours; they often have external purple veins, and yellow, "bearded" throats with darker marks.

‡ 18–30cm (7–12in), ↔ 10–16cm (4–6in). South Africa. \*. 'Blue Gem' bears bright blue flowers. **Carnival Series** ■ cultivars are compact and dwarf, with purple-veined yellow, red, bronze-yellow, orange, pink, or white flowers; ‡ 17–23cm (7–9in). 'Danish Flag' has bicoloured flowers in red and

white. 'KLM' ■ has bicoloured flowers in blue and white, with yellow throats. 'National Ensign' is a bicoloured cultivar with deep pink-red and white flowers. 'Prince of Orange' produces orange flowers with purple veins; ‡ to 20cm (8in).

## NEMOPHILA

## HYDROPHYLLACEAE

Genus of 11 species of spreading to erect, slender, fleshy-stemmed, sometimes sticky-hairy annuals found in variable habitats in W. North America, from coastal sands to chaparral and redwood forest. The mid-green or grey-green leaves are opposite, lobed or pinnate, ovate to rounded, spoon-shaped, or oblong, and toothed. Small, saucer- or bell-shaped, blue or white flowers are borne singly in the upper leaf axils in summer. Grow as edging in a border, or in a window-box or other container.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. May cease flowering in hot, dry weather if not watered.

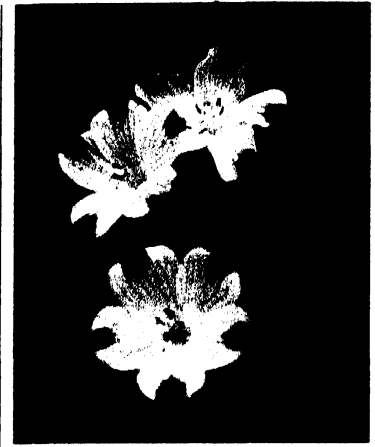
• **PROPAGATION** Sow seed *in situ* in early spring or autumn; they self-seed freely.

• **PESTS AND DISEASES** Aphids may be troublesome.

*N. insignis* see *N. menziesii*.

*N. maculata* ■ (Five-spot). Fleshy-stemmed, sometimes slightly downy annual with 5- to 9-pinnate leaves, oblong to oval in outline and 1–3cm (½–1¼in) long. In summer, produces solitary, saucer-shaped white flowers, to 4.5cm (1¾in) across, borne on long stalks; each petal is tipped with a small, violet-blue mark, and is sometimes faintly veined or tinted mauve-blue. ‡ 15–30cm (6–12in). USA (California). \*\*.

*N. menziesii*, syn. *N. insignis* (Baby blue-eyes). Fleshy-stemmed, downy annual with 9- to 11-pinnate, toothed,



*Nemophila maculata*

grey-green leaves, oval to oblong in outline, 2–5cm (¾–2in) long. In summer, bears solitary, long-stalked, saucer-shaped, bright blue flowers, to 4cm (1½in) across, with lighter blue centres often stained white or yellow, and with darker blue or deep purple spots or marks on the petals. ‡ 20cm (8in), ↔ 30cm (12in). USA (California). \*\*\*. subsp. *atromaria* has white flowers, to 3cm (1¼in) across, with black or dark purple spots. 'Coelestis' has white flowers margined sky-blue. 'Oculata' has pale blue flowers with deep purple centres.

▷ *Neobesseyia asperispina* see *Escobaria asperispina*

▷ *Neobesseyia macdougallii* see *Ortegocactus macdougallii*

## NEOBUXBAUMIA

## CACTACEAE

Genus of about 8 species of columnar or tree-like, perennial cacti from dry to humid areas of Mexico. The stems are cylindrical and the ribs usually low-set; the areoles bear numerous bristles and bristly spines. The nocturnal, white, pink, or red flowers, produced in summer, are followed by angular fruits, which open like stars when ripe. In areas where temperatures drop below 15°C (59°F), grow in a warm greenhouse. In warmer climates, grow in a courtyard or border.

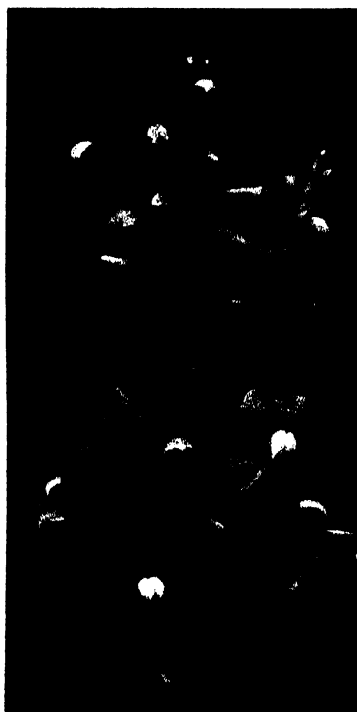
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost with added grit in full light, with shade from hot sun, and with low humidity. From mid-spring to late summer, water freely and apply a dilute liquid fertilizer monthly. Keep completely dry at other times. Outdoors, grow in sharply drained, gritty, poor to moderately fertile, humus-rich soil in full sun. See also pp.48–49.

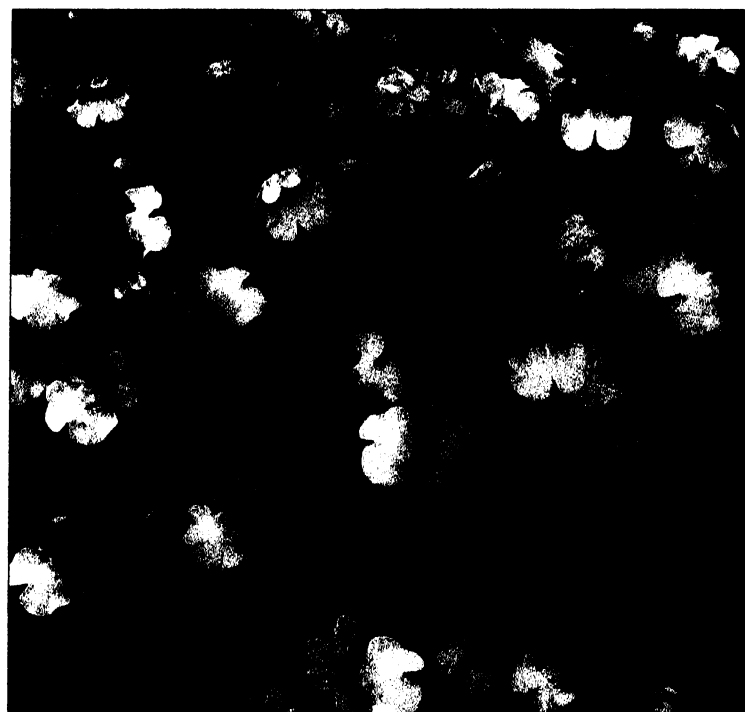
• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.

• **PESTS AND DISEASES** Susceptible to scale insects.

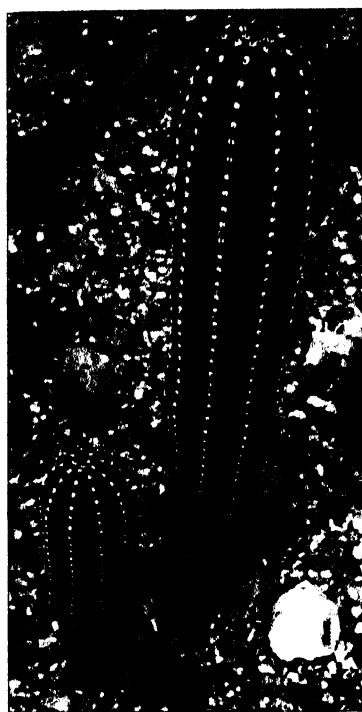
*N. euphorbioides* ■ syn. *Cephalocereus euphorbioides*, *Lemaireocereus euphorbioides*, *Rooksbya euphorbioides*. Simple, tree-like cactus with a columnar, greyish green, dark green, or blue-green, sometimes red-tinged stem, 10–15cm (4–6in) thick, with 8–10 acute, straight ribs. White-woolly areoles produce



*Nemesia caerulea*



*Nemesia strumosa* 'KLM'

*Neobuxbaumia euphorbioides*

bristly, black to dark grey spines (1–5 radials and sometimes 1 central), becoming white. Funnel-shaped flowers, 8–10cm (3–4in) long, with reddish pink tubes, wine-red outer tepals, and cream throats, are borne in summer. † 1–2m (3–6ft), ↔ 15cm (6in). E. Mexico. ☀ (min. 15°C/59°F)

***N. polylopha***. Usually simple, columnar cactus producing a pale green stem, 35cm (14in) or more thick, bearing 20–50 slightly rounded ribs with white-woolly areoles, yellow bristles, and yellow spines (7–9 radials and 1 shorter central). Funnel-shaped, red or pink flowers, to 5–8cm (2–3in) long, with purple-brown tubes, develop in summer. † 2–3m (6–10ft), ↔ 35cm (14in). C. Mexico. ☀ (min. 15°C/59°F)

▷ ***Neochilenia chilensis*** see *Neoporteria chilensis*

▷ ***Neochilenia mitis*** of gardens see *Neoporteria napina*

## NEOLITSEA

LAURACEAE

Genus of 60 species of evergreen, dioecious shrubs and trees from tropical woodland in E. and S.E. Asia, Malaysia, and Indonesia. Only *N. sericea* is usually cultivated, for its handsome, simple, alternate, leathery leaves. Flowers are insignificant, each having 4 sepals that fall on opening; on female plants these are followed by red or black berries. In very cold areas, grow in a cool greenhouse as foliage plants. In milder climates, grow at the base of a warm, sunny wall, in a woodland garden, or as specimen plants; they also make useful screens or hedges.

• **HARDINESS** Frost hardy to frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light or bright filtered light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but

well-drained soil in full sun or partial shade, with shelter from cold, dry winds. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed in containers in a cool greenhouse as soon as ripe. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

***N. glauca*** see *N. sericea*.

***N. sericea*** ♀ syn. *Litsea glauca*, *N. glauca*. Large shrub or small tree, ovoid to columnar, later spreading, with yellow-brown, silky-hairy shoots. Leaves are ovate to oblong-elliptic, 10–18cm (4–7in) long, with 3 prominent veins; they are softly golden-hairy above when young, becoming deep green above and glaucous beneath. In late summer, produces small, star-shaped yellow flowers in stalkless umbels, followed in autumn by red berries, 1.5cm (½in) long, on female plants. † to 6m (20ft), ↔ to 3m (10ft) or more. China, Taiwan, Korea, Japan. \*

## NEOLLOYDIA

CACTACEAE

Genus of 10–14 species of spherical or cylindrical, perennial cacti found on low hillsides in S.W. Texas, USA, and in E. and N.E. Mexico. They frequently form clumps by offsetting. The ribs bear spined tubercles, often spirally arranged, sometimes with dense hairs or wool in the axils. The wide-spreading, funnel-shaped, diurnal flowers are produced from spring to summer. In areas where temperatures drop below 15°C (59°F), grow in a warm greenhouse. In warmer climates, grow in a border or desert garden.

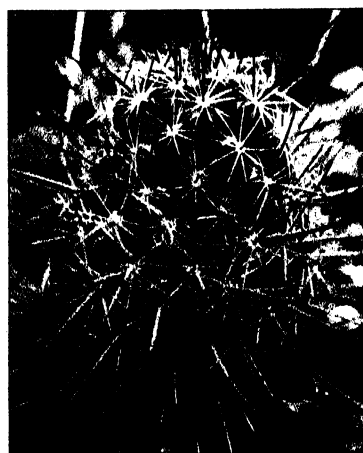
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From mid-spring to early autumn, water moderately and apply a dilute, balanced liquid fertilizer monthly. Keep dry at other times. Outdoors, grow in sharply drained, humus-rich, moderately fertile soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.

• **PESTS AND DISEASES** Susceptible to root mealybugs when container-grown.

***N. conoidea*** ♀ syn. *Coryphantha conoidea*, *Mammillaria conoidea*. Often offsetting, variable cactus with spherical

*Neolloydia conoidea*

to cylindrical, bluish grey or yellow-green stems, to 7cm (3in) thick. Ovoid tubercles have woolly axils and white-woolly areoles (8–28 white to grey radial spines, 0–6 longer black centrals). In summer, produces reddish violet, magenta, or deep purple flowers, to 6cm (2½in) across. † to 10cm (4in), ↔ 15cm (6in) in clusters. S.W. Texas, E. and N.E. Mexico. ☀ (min. 15°C/59°F)  
***N. schmidickeana***, syn. *Turbinicarpus schmidickeanus*. Variable, simple or clump-forming cactus with spherical or short-cylindrical, dark blue to grey-green stems, to 5cm (2in) thick; they have 10–12 ribs divided into pyramidal, 4-angled tubercles with bare axils. White-woolly areoles, later bare, produce 1–8 incurved grey spines. In spring, bears white, yellow, or pink to magenta flowers, 1–3cm (½–1¼in) across, with violet mid-lines on the inner petals. † to 5cm (2in), ↔ to 15cm (6in). Mexico. ☀ (min. 15°C/59°F)

## NEOMARICA

IRIDACEAE

Genus of about 15 species of rhizomatous, herbaceous perennials from often mountainous habitats in tropical Central and South America. They are cultivated for their short-lived, iris-like flowers, borne in summer on erect stems. The erect, sword-shaped leaves are ribbed or heavily veined, and arranged in basal fans. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer climates, grow in a border or among shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2), with added sharp sand and leaf mould, in bright filtered light, or in full light with shade from the hottest sun. Water moderately in summer, sparingly in winter. Apply a balanced liquid fertilizer monthly when in full growth. Outdoors, grow in well-drained, moderately fertile, humus-rich soil in partial shade.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring, or divide in spring.  
• **PESTS AND DISEASES** Trouble free.

***N. caerulea*** ♀ Rhizomatous perennial with a basal fan of sword-shaped, dark green leaves, to 1.6m (5½ft) long. In summer, bears a succession of flat, scented, mid-blue flowers, 8–10cm (3–4in) across, striped white, yellow, and brown in the centres. † to 60cm (24in). Brazil. ☀ (min. 10°C/50°F)

▷ ***Neopanax arboreum*** see *Pseudopanax arboreum*

## NEOPAXIA

PORTULACACEAE

Genus of one variable species of prostrate, stoloniferous, mat-forming, herbaceous perennial found in moist habitats, including bogs, swamps, and streams, at high altitudes in Australia and New Zealand. It is grown for its erect, alternate, fleshy leaves and its saucer-shaped, white or pale pink flowers, borne from spring to summer. Grow at the margins of streams and ponds, or in any other moist, boggy soil.

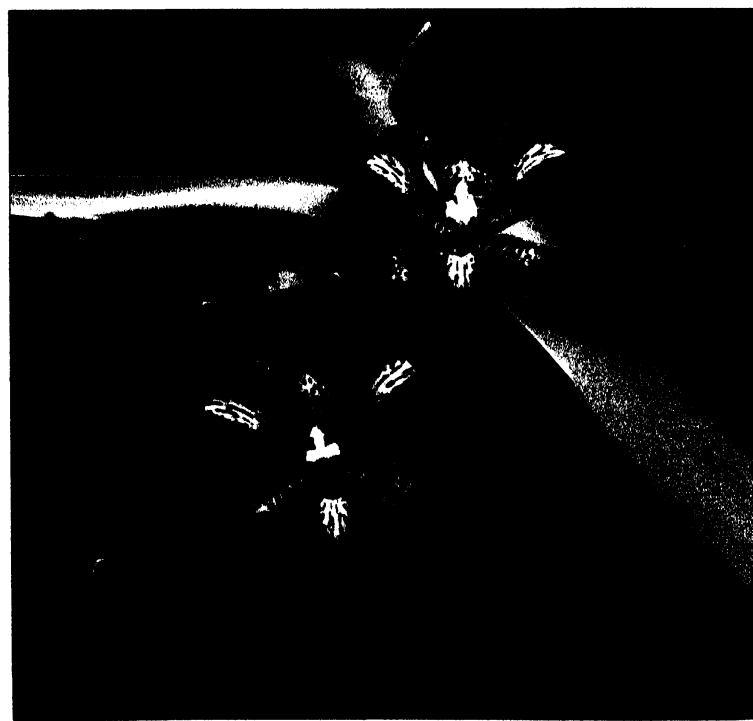
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist soil, preferably in full sun.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Divide mats in spring.

• **PESTS AND DISEASES** Trouble free.

***N. australasica***, syn. *Montia australasica*. Prostrate, stoloniferous, mat-forming perennial with alternate, linear to spoon-shaped, fleshy, deep green to bright light green, or grey-green leaves, 3–10cm (1¼–4in) long. From spring to early summer, bears saucer-shaped, white or pink flowers, 1–2cm (½–¾in) across, borne singly or in few-flowered cymes. † 10cm (4in), ↔ 40cm (16in). Australia (Western Australia, South Australia, Victoria, Tasmania), New Zealand. \*\*\*

*Neomarica caerulea*



## NEOPORTERIA

## CACTACEAE

Genus of 20–30 species of simple, sometimes clustering, perennial cacti, most from rocky, coastal sites in Chile, a few from S. Peru and W. Argentina. They have spherical to short-cylindrical, ribbed, spiny stems and usually solitary, funnel- or bell-shaped flowers produced from or close to the crowns. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse or as houseplants; elsewhere, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with low humidity. From mid-spring to early autumn, water moderately and apply a dilute liquid fertilizer monthly. Keep dry at other times. Outdoors, grow in sharply drained, poor to moderately fertile, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or summer.

• **PESTS AND DISEASES** Vulnerable to root mealybugs and mealybugs, especially when container-grown.

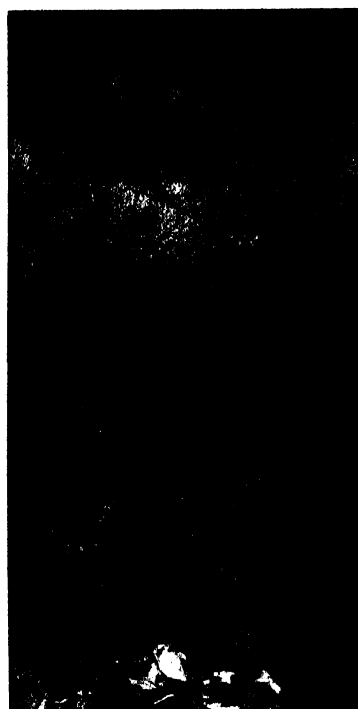
*N. chilensis*, syn. *Echinocactus chilensis*, *Neochilenia chilensis*. Simple or clustering cactus with spherical to short-cylindrical, pale green stems, each with about 20 ribs. Areoles each bear about 20 glassy white radial spines and 6–8 longer, yellowish brown centrals. From late spring to early autumn, bears broadly funnel-shaped, white or pink flowers, 5cm (2in) across, with carmine-red outer petals. ‡30cm (12in), ↔10cm (4in). Chile. ☉ (min. 10°C/50°F)

*N. crista*, syn. *Pyrrhocactus crispus*. Simple cactus with a tuberous rootstock. The spherical, dark green stem has 13–16 ribs, and black or grey spines (6–10 radials, 2–4 longer centrals). Funnel-shaped red flowers, 3.5cm (1½in) across, with a deeper red mid-stripe to each inner petal, are borne from late summer to autumn. ‡↔7cm (3in). Chile. ☉ (min. 10°C/50°F)

*N. litoralis* see *N. subgibbosa*.

*N. mitis* see *N. napina*.

*N. napina* ☐ syn. *Neochilenia mitis* of gardens, *Neoporteria mitis*. Variable, simple cactus with a spherical, brownish green stem, sometimes tinged red, divided into chin-like tubercles, and with dark brownish black spines (3–9 radials, no centrals). From late spring to



*Neoporteria villosa*

early autumn, bell- to funnel-shaped, pale yellow, sometimes pink-flushed flowers, 3–4cm (1¼–1½in) across, open from green-woolly buds. ‡2.5cm (1in), ↔3.5cm (1½in). Chile. ☉ (min. 10°C/50°F)

*N. nidus*. Simple cactus with a spherical to short-cylindrical, dark green stem, rarely elongating, bearing 16–18 deeply scalloped ribs hidden by about 30 upward-curved, pale grey, cream, or yellow spines per areole. Tubular-funnel-shaped, red or pink flowers, 4cm (1½in) across, with prominently pointed petals, are produced from late spring to early autumn. ‡to 30cm (12in), ↔to 10cm (4in). Chile. ☉ (min. 10°C/50°F)

*N. subgibbosa*, syn. *N. litoralis*. Variable, simple cactus producing a spherical, mid-green to grey-green stem, later elongating and often decumbent; the stem bears 16–20 warty ribs and deep orange-yellow, brown, or black spines (16–30 thin radials, 4–8 much thicker centrals). Funnel-shaped, carmine-pink flowers, 4cm (1½in) across, with paler, almost white throats, develop from late spring to early autumn. ‡to 30cm (12in), ↔10cm (4in). Chile. ☉ (min. 10°C/50°F)

*N. talcaensis*. Simple cactus with a spherical, dull dark green stem, 10–16 warty ribs, and pale yellowish brown areoles bearing 6–20 curving to twisted, brown, later white radial spines, and up to 6 dark greyish brown to black centrals. Bears funnel-shaped, purplish pink, yellow, or white flowers, 3cm (1¼in) across, in summer. ‡↔8cm (3in). Chile. ☉ (min. 10°C/50°F)

*N. villosa* ☐ Simple or clustering cactus with spherical then short-cylindrical, grey-green stems turning black-purple; the stems bear 13–15 ribs covered with upward-curved, hair-like, yellowish grey or pale brown spines (12–16 or more radials, 4 thicker centrals). Funnel-shaped, white-throated pink flowers, to 3cm (1¼in) across, are borne from late spring to summer. ‡15cm (6in), ↔to 10cm (4in). Chile. ☉ (min. 10°C/50°F)



*Neoporteria napina*

## NEOREGELIA syn. AREGELIA

## BROMELIACEAE

Genus of about 70 species of evergreen, sometimes rhizomatous or stoloniferous, epiphytic or terrestrial perennials (bromeliads) from coastal scrub, woodland, and rainforest, to 1,600m (5,000ft) high, in South America. They are grown for the striking colouring of their central leaves and bracts when flowering. The variable, usually spiny-margined leaves are borne in rosettes; large sheaths totally enclose the scape and its bracts. An umbel-like, sometimes raceme- or corymb-like, compact inflorescence nestles in the heart of each leaf rosette and, in summer, bears numerous long-lasting, tubular flowers. Offsets form around the flowering rosettes. Where temperatures drop below 10°C (50°F), grow in a temperate greenhouse, or as houseplants. In warm climates, grow in a shady, moist site.

• **HARDINESS** Frost tender.

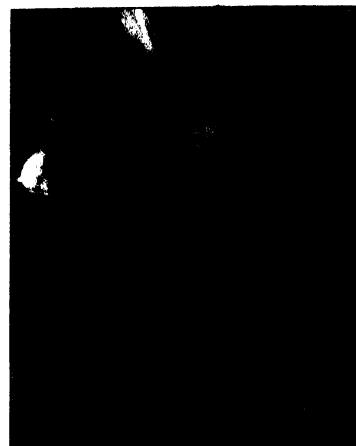
• **CULTIVATION** Under glass, grow in epiphytic or terrestrial bromeliad compost in bright filtered light. During growth, water freely with soft water. Apply a low-nitrogen liquid fertilizer monthly from spring to late autumn. Keep rosette cups filled with soft water from spring to early autumn. Water sparingly in winter. Sever spent leaf rosettes at the bases. Outdoors, grow in gritty, leafy soil in an open site with partial shade, or grow epiphytically in a tree. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Separate offsets in spring or summer.

• **PESTS AND DISEASES** Susceptible to scale insects.

*N. ampullacea*. Stoloniferous, terrestrial bromeliad with dense, funnel-shaped rosettes of 6–15 tongue-shaped, sometimes red-banded, mid-green leaves, 15–20cm (6–8in) long. Tubular flowers, to 2.5cm (1in) long, with blue, white-based petals and white-margined green sepals, are borne in summer. Stolons appear from beneath the rosettes; at the tips, further rosettes develop. ‡↔40cm (16in). Brazil. ☉ (min. 10°C/50°F)

*N. caroliniae*, syn. *Aregelia caroliniae*, *Nidularium caroliniae* (Blushing bromeliad). Epiphytic bromeliad with open rosettes of 12–20 strap-shaped, toothed, copper-suffused, mid-green leaves, 40–60cm (16–24in) long; at



*Neoregelia concentrica*

flowering time, the central leaves turn crimson. Red bracts surround violet-purple to lavender-blue flowers, to 4cm (1½in) long, produced in summer. ‡20–30cm (8–12in), ↔40–60cm (16–24in). Brazil. ☉ (min. 10°C/50°F)

'Tricolor' ☐ syn. f. *tricolor*, var. *tricolor*, has leaves striped ivory-white, green and rose-red.

*N. concentrica* ☐ Rhizomatous, epiphytic bromeliad with dense rosettes of 7–30 broadly strap-shaped, spreading, glossy, mid- to dark green leaves, 20–40cm (8–16in) long, often marked dark purple at the tips, and with black marginal spines. Yellow-white bracts, suffused violet or purple, turn purple-pink in summer, when the pale blue or white flowers, 4–5cm (1½–2in) long, are produced. ‡to 30cm (12in), ↔to 70cm (28in). Brazil. ☉ (min. 10°C/50°F)

var. *plutonis* ☐ syn. 'Plutonius', has spreading rosettes of broad, mid-green, sometimes pale green leaves, which are flushed magenta-red during flowering; the flowers are pale lavender; ↔40cm (16in) or more.

*N. eleutheropetala* ☐ Stoloniferous, terrestrial or epiphytic bromeliad with rosettes of about 30 tongue-shaped, mid-green leaves, 50–70cm (20–28in) long, turning reddish green towards the bases, and with sharp marginal spines and brown sheaths. The innermost, purple-brown leaves surround dense, umbel-like inflorescences of white flowers, to 3.5cm (1½in) long, borne in summer and interspersed with long, purple-tipped bracts. ‡↔to 70cm (28in). Venezuela, Colombia, Peru, Amazonian Brazil. ☉ (min. 10°C/50°F)

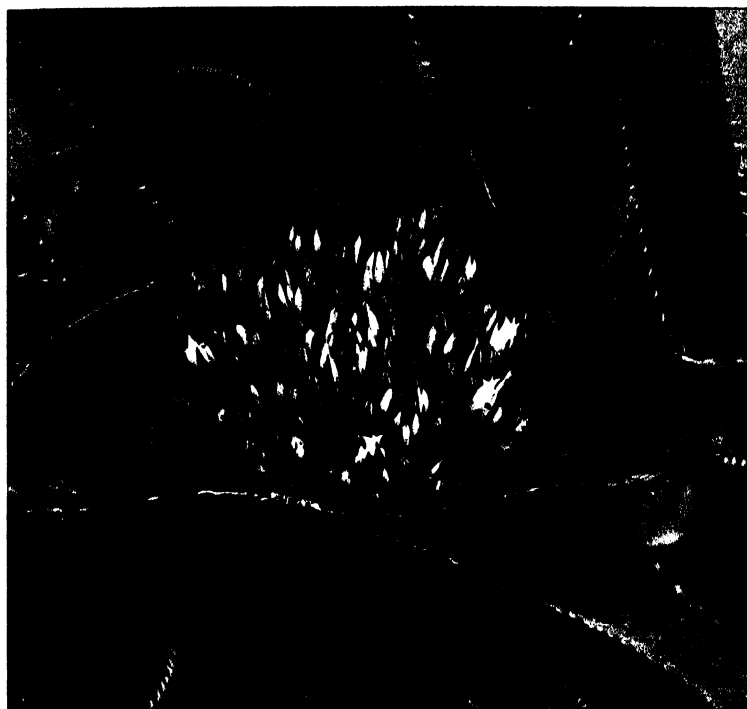


*Neoregelia caroliniae* 'Tricolor'



*Neoregelia concentrica* var. *plutonius*



*Neoregelia eleutheropetala*

***N. pineliana*.** Epiphytic bromeliad with a short stem producing ascending stolons, which bear leaves along their lengths. The rosettes have up to 12 narrowly lance-shaped to linear, mid-green leaves, grey-scaly on both surfaces, to 50cm (20in) long, with minute marginal spines and purple sheaths. In summer, the central leaves turn red, and dense umbels of blue, white-based flowers, to 6cm (2½in) long, darkening towards the tips, are produced. ↑↔ 40cm (16in) or more. Possibly Brazil. ☼ (min. 10°C/50°F)

***N. princeps*.** Epiphytic or terrestrial bromeliad with spreading rosettes of 15–20 strap-shaped, pointed, minutely scaly, laxly toothed, mid-green leaves, 50cm (20in) long, with densely grey-scaly sheaths; the inner leaves are smaller and bright red. White flowers, 3–4cm (1¼–1½in) long, with deep blue tips and red sepals, are produced in summer. ↑↔ 75cm (30in). S. Brazil. ☼ (min. 10°C/50°F)

***N. spectabilis* ♀** (Fingernail plant). Terrestrial bromeliad producing broadly funnel-shaped rosettes of 20–30 strap-shaped, arching, red-tipped, grey-scaly, glossy, olive-green leaves, 40–45cm (16–18in) long, with smooth or minutely spiny margins and grey-white cross-banding beneath. The inner leaves are red, often margined purple, with white bases. Blue flowers, 4–4.5cm (1½–1¾in) long, with red or purple bracts, are borne in summer. ↑ to 40cm (16in), ↔ to 80cm (32in). S. Brazil. ☼ (min. 10°C/50°F)

## NEPENTHES

Monkey cup, Tropical pitcher plant

NEPENTHACEAE

Genus of over 70 species and numerous hybrids of dioecious, evergreen, carnivorous, climbing, terrestrial or epiphytic perennials from Madagascar, the Seychelles, S.E. Asia, Borneo, and Queensland, Australia. They are found in moist, acid, organic soils in open

grassland or forest, and sometimes grow epiphytically on trees. The usually lance-shaped or strap-shaped leaves, 5–65cm (2–26in) long, each have a prolonged midrib, which acts as a tendril and may be terminated by a hanging, hollow "pitcher", 5–35cm (2–14in) long, with 2 vertical ridges, or "wings", at the front. Pitchers vary greatly in shape and colour, from pale yellow to green or purplish red, and are frequently mottled; upper and lower pitchers often differ in colour on the same plant. The colourful, thickened rim of a pitcher secretes nectar to attract insects, small mammals, and even birds, which become trapped inside. Its apex forms a lid to deflect excess rain. The tiny, petalless male and female flowers, with green or brown sepals, are borne in spike-like racemes. In frost-prone areas, grow in a warm greenhouse or conservatory; in tropical climates, grow climbers through trees or attach epiphytes to branches. Heights vary greatly according to conditions and support; in cultivation, most are cut back to encourage young foliage and the development of large pitchers.

• **HARDINESS** Frost tender.

• **CULTIVATION** Lowland species and hybrids from sea level to 1,000m (3,300ft) need daytime temperatures of 24°C (75°F) and night-time temperatures of 15°C (59°F) in winter, 21°C (70°F) in summer. Provide ventilation when over 38°C (100°F). Highland species and hybrids from 1,000–3,000m (3,300–9,900ft) need daytime temperatures of 18°C (64°F), and 10°C (50°F) at night. Ventilate when over 21°C (70°F). Under glass, grow in slatted baskets in a mix of 2 parts bark, 2 parts perlite, and 1 part coarse peat or coconut fibre, or in clean, live sphagnum moss. Provide bright filtered light, or full light with shade from hot sun, and high humidity. In summer, apply a high-nitrogen liquid fertilizer weekly. Prune mature plants in spring, reducing stems by two-thirds of their length, to induce vigorous, pitcher-

producing shoots. Outdoors, grow in moist, open, leafy soil in partial shade, or as epiphytes.

• **PROPAGATION** Sow seed as soon as ripe on the surface of moist peat or fine coir compost, and place in a tray of water in a shaded propagator; maintain a temperature of 27°C (81°F). In spring, insert cuttings with 3 or 4 leaves into nepenthes compost (described above) and maintain at 21–27°C (70–81°F). Air layer in spring or summer.

• **PESTS AND DISEASES** Mealybugs may be troublesome. Grey mould (*Botrytis*) may affect leaves.

***N. ampullaria*.** Lowland climber with rounded, squat, deep red or green, sometimes mottled pitchers, to 5cm (2in) long, with round, horizontal mouths, and small, narrow, reflexed lids. Wings are broad, spreading, and toothed. Pitchers are produced only from the basal leaves or in clusters from the rhizomes, not from climbing shoots. ↑ to 20m (70ft). Malaysia to New Guinea. ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

***N. x coccinea* (*N. x dominii* x *N. mirabilis*).** Lowland climber with yellow-green pitchers, to 15cm (6in) long, mottled purple-red, with inflated bases and oblique mouths. The green lids have red markings. ↑ to 6m (20ft). Garden origin. ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

***N. 'Director G.T. Moore'* ■** Lowland climber with pear-shaped, light green pitchers, to 13cm (5in) long, with dense purple-red mottling, oblique mouths, and fringed, mottled wings. ↑ 3m (10ft). ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

***N. gracilis*.** Slender, lowland climber with linear to elliptic leaves and numerous pitchers. Lower pitchers are small, cylindrical, light green, sometimes suffused pink or maroon, to 7cm (3in) long, with narrow lips, round lids, and narrow wings. Upper pitchers, to 15cm (6in) long, are dark mahogany-red and narrow in the middle. Even young plants bear inflorescences, 15cm (6in) long, of red-brown flowers. ↑ to 2m (6ft). Philippines to Indonesia. ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

***N. x hookeriana* (*N. ampullaria* x *N. rafflesiana*).** Lowland climber producing ovoid lower pitchers with broad wings and rim, and funnel-shaped upper pitchers. Both are pale green with dark red spots, and have oblique mouths. Upper pitchers grow to 13cm (5in) long, lower to 11cm (4¼in). ↑ 3m (10ft). Malaysia to Borneo. ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

***N. mirabilis*.** Lowland climber or terrestrial perennial with cylindrical pitchers, to 18cm (7in) long, red, or pale green with red blotches; each has an oblique, round mouth and an oval lid. ↑ to 10m (30ft). S. China, S.E. Asia to Australia (N. Queensland). ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

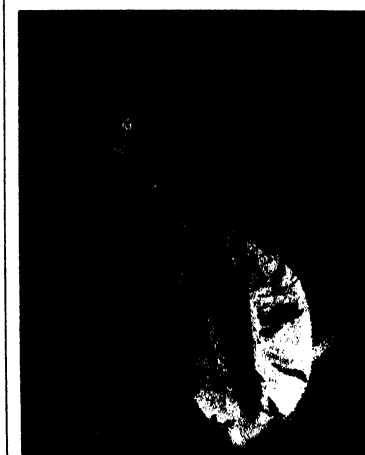
***N. rafflesiana* ■** Lowland climber with creamy green pitchers, marked chocolate-red, each with a striped rim.

*Nepenthes 'Director G.T. Moore'*

Lower pitchers, to 13cm (5in) long, each have a rounded base, an oblique, oval mouth with the rim rising vertically at the back to form a stalk for the lid, and large, toothed wings. Upper pitchers, to 30cm (12in) long, with small wings, are tapered at the bases. ↑ to 9m (28ft). Sumatra to Borneo. ☼ (min. day: 24°C/75°F; night: 15°C/59°F in winter, 21°C/70°F in summer)

***N. rajah*.** Rare, highland climber with large green pitchers, to 35cm (14in) long, mottled red to red-purple, each with an elliptic and oblique mouth, a broad, wavy rim, and a large, oval lid. Lower pitchers are ellipsoid, while upper ones are tapered only at the bases. The pitchers have been known to catch rats. Commercial trading in this species is severely regulated. ↑ 2m (6ft). Borneo (Mt. Kinabalu). ☼ (min. day: 18°C/64°F; night: 10°C/50°F)

***N. ventricosa*.** Highland, terrestrial or epiphytic perennial producing numerous cylindrical pitchers, to 18cm (7in) long, each narrower in the middle, with a round to oval mouth and small green lid, suffused red. ↑ 4m (12ft). Philippines. ☼ (min. day: 18°C/64°F; night: 10°C/50°F)

*Nepenthes rafflesiana*

N

# NEPETA

Catmint

LABIATAE/LAMIACEAE

Genus of approximately 250 species of perennials, rarely annuals, native to a variety of habitats, from cool and moist to hot and dry sites in scrub, on grassy banks and stony slopes, or in high mountains, in non-tropical parts of the N. hemisphere. Ovate to lance-shaped, entire, scalloped, or toothed, often aromatic leaves are borne in opposite pairs; some are hairy, producing a silvery or greyish green effect. The spike-like cymes (sometimes racemes or panicles) of tubular, irregularly 2-lipped flowers, in white and shades of blue and purple, occasionally yellow, are borne in interrupted axillary whorls along the flower stems, often over long periods. Grow taller catmints in a mixed or herbaceous border, the shorter ones in a rock garden. Some species attract cats; most are attractive to bees.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun or partial shade. *N. gowaniana* and *N. subsessilis* prefer moist, cool soils. *N. sibirica* likes fairly dry conditions. Grow *N. phyllocladys* in a hot, dry rock crevice or in a trough. Provide support for taller catmints; trim *N. nervosa* and *N. x faassenii* after flowering to keep plants compact and to induce a second flowering.
- **PROPAGATION** Sow seed in a seedbed, or in containers in a cold frame, in autumn; some catmints self-seed freely. Divide in spring or autumn. Take softwood cuttings in early summer.
- **PESTS AND DISEASES** Slugs may damage young growth. Powdery mildew may be a problem in dry summers.

*N. 'Blue Beauty'* see *N. 'Souvenir d'André Chaudron'*.  
*N. x faassenii* (N. nepetella x N. racemosa), syn. *N. mussinii* of gardens. Clump-forming perennial with erect to spreading, branched stems and narrowly ovate to lance-shaped, scalloped, wrinkled, hairy, aromatic, silvery grey-green leaves, to 3cm (1¼in) long. From early summer to early autumn, freely bears spike-like, whorled cymes of pale lavender-blue flowers, to 12mm (½in) long, with darker purple spots. ‡ to 45cm (18in) Garden origin. \*\*\*  
*N. glechoma 'Variegata'* see *Glechoma hederacea 'Variegata'*.



*Nepeta x faassenii*



*Nepeta gowaniana*

*N. gowaniana* (N. syn. *Dracocephalum gowanianum*). Clump-forming perennial bearing erect, branching, hairy stems and ovate to oblong-elliptic, pointed, scalloped, softly hairy, aromatic leaves, to 10cm (4in) long. From midsummer to early autumn, bears long, lax racemes or panicles of light yellow flowers, to 3cm (1¼in) long. ‡ 90cm (36in), ‡ 60cm (24in). W. Himalayas. \*\*\*  
*N. grandiflora*. Clump-forming perennial with erect, sparsely branched stems and ovate, scalloped, softly hairy, aromatic leaves, 10cm (4in) long. In early summer, produces spike-like, whorled cymes of violet-blue flowers, to 2cm (¾in) long. ‡ 75cm (30in), ‡ 30cm (12in). Caucasus. \*\*\*  
*N. hederacea 'Variegata'* see *Glechoma hederacea 'Variegata'*.  
*N. macrantha* see *N. sibirica*.  
*N. mussinii* see *N. racemosa*.  
*N. mussinii* of gardens see *N. x faassenii*.  
*N. nervosa* (N. Bushy perennial bearing erect, unbranched stems with narrowly lance-shaped, entire to slightly toothed, conspicuously veined, hairy, faintly aromatic, mid- to grey-green leaves, to 10cm (4in) long. Dense, cylindrical,



*Nepeta nervosa*



*Nepeta sibirica*

spike-like, whorled cymes of purplish blue, rarely yellow flowers, to 12mm (½in) long, are borne from midsummer to early autumn. ‡ 45–60cm (18–24in), ‡ 30cm (12in). India (Kashmir). \*\*\*  
*N. phyllocladys*. Spreading perennial with decumbent stems and triangular-ovate, scalloped, intensely white-downy, aromatic leaves, to 1.5cm (½in) long. In summer, bears short, spike-like, whorled cymes of lilac-pink flowers, 1cm (½in) long, with white-felted bracts. Requires very sharply drained soil. ‡ to 10cm (4in), ‡ to 20cm (8in). Turkey. \*\*\*  
*N. racemosa*, syn. *N. mussinii*. Spreading to upright perennial with opposite, ovate, scalloped, finely hairy, aromatic, mid-green leaves, 1–3cm (½–1¼in) long, with heart-shaped bases. In summer, produces raceme-like, whorled cymes of deep violet- to lilac-blue flowers, 1–2cm (½–¾in) long. ‡ to 30cm (12in), ‡ to 45cm (18in). Caucasus, Turkey, N. and N.W. Iran. \*\*\*  
*N. sibirica* (N. syn. *Dracocephalum sibiricum*, *N. macrantha*). Erect, leafy perennial with branching stems bearing oblong-lance-shaped, toothed, aromatic, dark green leaves, to 9cm (3½in) long, minutely hairy at the margins. In mid- and late summer, bears long, raceme-like, whorled cymes of blue to lavender-blue flowers, to 4cm (1½in) long. ‡ 90cm (36in), ‡ 45cm (18in). Russia (Siberia), E. Asia. \*\*\*  
*N. 'Six Hills Giant'*. Vigorous, clump-forming perennial with narrowly ovate, toothed, hairy, aromatic, light grey-green leaves, to 4cm (1½in) long. In summer, bears abundant spike-like, whorled cymes of lavender-blue flowers, 2cm (¾in) long. ‡ to 90cm (36in), ‡ 60cm (24in). \*\*\*  
*N. 'Souvenir d'André Chaudron'*, syn. *'Blue Beauty'*. Spreading, clump-forming perennial with oval to lance-shaped, toothed, smooth, aromatic, grey-green leaves, to 8cm (3in) long. Throughout summer, bears spike-like, whorled cymes of large, dark lavender-blue flowers, 4cm (1½in) long. ‡ to 45cm (18in). \*\*\*  
*N. subsessilis*. Clump-forming perennial with erect, unbranched stems bearing ovate, toothed, hairless, aromatic, dark green leaves, 8–10cm (3–4in) long. Spike-like, whorled cymes of bright blue flowers, 3cm (1¼in) long, appear from midsummer to early autumn. ‡ to 90cm (36in), ‡ 30cm (12in). Japan. \*\*\*

# NEPHROLEPIS

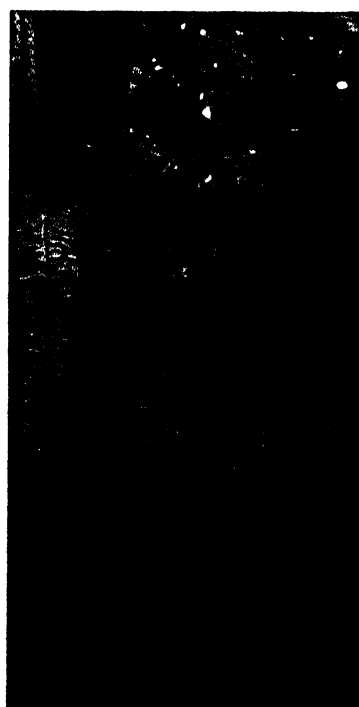
Sword fern

NEPHROLEPIDACEAE/OLEANDRACEAE

Genus of about 30 species of evergreen or semi-evergreen, epiphytic and terrestrial ferns from rainforest or more open habitats in tropical and subtropical regions worldwide. They have short, erect rhizomes, usually with numerous runners. The dense clusters of pinnate fronds may be erect, spreading, or pendent. Pinnae are usually linear and simple, but may be divided, forked, or crisped in cultivars, of which there are many. In frost-prone areas, grow in a temperate greenhouse or as houseplants; in warmer climates, grow in moist, shady sites among shrubs.

- **HARDINESS** Mostly frost tender. *N. cordifolia* is half hardy.
- **CULTIVATION** Under glass, grow in a mix of 1 part loam, 2 parts sharp sand, and 3 parts leaf mould in bright filtered light, with moderate to high humidity and good ventilation. During the growing season, water moderately with soft water and apply a half-strength, balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained, humus-rich soil in partial shade.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Many cultivars are sterile, or do not come true from spores. Separate rooted runners in late winter or early spring. See also p.51.
- **PESTS AND DISEASES** Some cultivars are susceptible to fern scale, as well as rot, when fronds become too wet.

*N. cordifolia* (N. Tufted fern bearing erect to arching or pendent, lance-shaped to linear fronds, to 80cm (32in) long, with up to 70 pairs of oblong to linear pinnae, sometimes toothed at the tips. ‡ 80cm (32in), ‡ to 1.5m (5ft). Tropical regions. \* *'Duffii'* has short, rounded pinnae, and its fronds are often



*Nephrolepis cordifolia*

*Nephrolepis exaltata* 'Bostoniensis'

forked at the tips. 'Plumosa' is slow-growing, with lobed pinnae.

***N. exaltata***. Tufted fern with widely arching to erect, linear fronds, to 2m (7ft) long, with shallowly toothed, sickle-shaped pinnae. It is the source of nearly all *Nephrolepis* cultivars. ♂ to 2m (7ft). USA (Florida), Mexico, West Indies, Central America, tropical South America, Polynesia, and Africa. ☞ (min. 7–10°C/45–50°F). 'Aurea' see 'Golden Boston'. 'Bostoniensis' ■ (Boston fern) has broader, lance-shaped fronds, erect at first, then arching to pendent. A very tolerant houseplant. 'Childsii' has very broad, 3- or 4-pinnate, closely overlapping fronds. 'Elegantissima' has 2-pinnate fronds. 'Golden Boston' ■ syn. 'Aurea', is similar to 'Bostoniensis' but with golden yellow fronds. 'Gracillima'

has lacy, 3-pinnate fronds. 'Hilli' is very vigorous, with 2-pinnate or 2-pinnatifid fronds, the pinnae variously lobed or crisped; ♂ to 1m (3ft), ↔ to 2m (6ft). 'Mini Ruffle' is a very compact cultivar with 2- or 3-pinnate fronds; ♂ to 5cm (2in), ↔ 8cm (3in). 'Silver Balls' has fronds covered with dense, silvery scales as they unfurl. 'Verona' has dense, pendent, 3- or 4-pinnate fronds.

***N. falcata***. Tufted fern with arching to pendent, lance-shaped, glossy, dark green fronds, 2.5m (8ft) long, divided into close-set, sickle-shaped pinnae. ♂ to 2.5m (8ft), ↔ to 1m (36in). S.E. Asia. ☞ (min. 7–10°C/45–50°F). ***f. furcans*** ■ has pinnae with 1 or 2 forks at the tips.

▷ *Nephthytis triphylla* of gardens see *Syngonium podophyllum*

*Nephrolepis exaltata* 'Golden Boston'*Nephrolepis falcata* f. *furcans*

## NERINE

## AMARYLLIDACEAE

Genus of about 30 species of bulbous perennials, some evergreen, found on mountain screes, on rock ledges, and in other well-drained or arid habitats in southern Africa. They are grown for their spherical umbels of lily-like flowers, with reflexed, often wavy-margined tepals; in herbaceous species, these appear before or with the strap-shaped leaves. Many cultivars with large, colourful flowers have been developed; flowers are borne in umbels, 10–20cm (4–8in) across, of up to 25 flowers, followed by semi-erect, basal leaves.

Grow *N. bowdenii* at the base of a sunny wall. *N. sarniensis* and *N. undulata* thrive where frosts are rare. Grow *N. filifolia* and *N. masoniorum* in a rock garden. All are ideal greenhouse plants, and are good as cut flowers. If ingested, all parts may cause mild stomach upset.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Under glass, plant in autumn or spring with the tips of the bulbs above the surface of the loam-based potting compost (J1 No. 2); they flower best when bulbs are congested. Provide full light. Water freely during active growth. Keep warm and dry when dormant in summer. After flowering, apply a low-nitrogen liquid fertilizer. Outdoors, plant in well-drained soil in full sun in early spring. Provide a deep, dry winter mulch in cold areas.

• **PROPAGATION** Sow seed at 10–13°C (50–55°F) as soon as ripe. Divide clumps after flowering.

• **PESTS AND DISEASES** Prone to attack by slugs.

***N. 'Baghdad'***. Bulbous perennial bearing loose umbels of crimson flowers with paler centres in autumn. ♂ 60cm (24in), ↔ 8cm (3in). \*

***N. 'Blanche fleur'***. Bulbous perennial bearing glistening white flowers in compact umbels in autumn. ♂ 50cm (20in), ↔ 8cm (3in). \*

***N. bowdenii*** ■ ♀ Robust, bulbous perennial with broad, strap-shaped leaves, to 30cm (12in) long. In autumn, bears open umbels of up to 7 or more funnel-shaped, faintly scented pink flowers, to 8cm (3in) across, with recurved, wavy-margined tepals. ♂ 45cm (18in), ↔ 8cm (3in). South Africa (Eastern Cape, KwaZulu/Natal, Orange Free State). \*\*\*. **f. *alba*** ■ has white

*Nerine bowdenii* f. *alba*

flowers, sometimes flushed pale pink.

'Mark Fenwick', syn. 'Fenwick's Variety', has pink flowers on dark stalks.

***N. 'Corusca Major'***, syn. *N. sarniensis* var. *corusca* 'Major'. Bulbous perennial bearing compact umbels of scarlet flowers with bold stamens in early autumn. Grown commercially for cutting. ♂ 60cm (24in), ↔ 8cm (3in). \* ***N. crista*** see *N. undulata*.

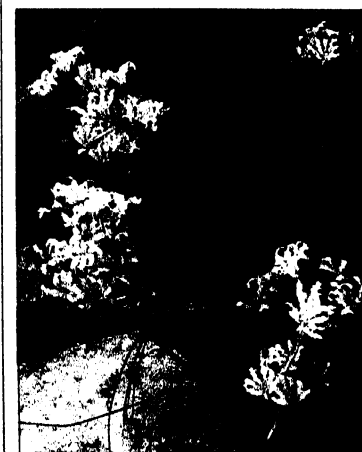
***N. 'Early Snow'***. Bulbous perennial with compact umbels of pure white flowers, borne in early autumn. ♂ 60cm (24in), ↔ 8cm (3in). \*

***N. filifolia*** ■ Bulbous perennial with narrow, grass-like leaves, 20cm (8in) long. In autumn, bears compact umbels of 5–10 small, bright pink to white flowers, to 2.5cm (1in) across, with wavy-margined tepals. Bears new leaves as old ones fade, so the plant is virtually evergreen. ♂ 30cm (12in), ↔ 5cm (2in). South Africa (Orange Free State). \*

***N. flexuosa***. Bulbous perennial with arching, narrow, strap-shaped leaves, to 30cm (12in) long. In late autumn, bears compact umbels of 10–20 dark-veined pink flowers, to 3cm (1¼in) across, with wavy-margined tepals, the upper ones recurved. ♂ 45cm (18in), ↔ 8cm (3in). South Africa (Eastern Cape, KwaZulu/Natal, Orange Free State). \*. 'Alba' has white flowers.

***N. 'Fothergillii Major'***. Bulbous perennial bearing large, compact umbels of 10–20 bright orange-red flowers, with wavy margined tepals, in late summer and early autumn. ♂ 50cm (20in), ↔ 8cm (3in). \*

***N. masoniorum***. Slender, bulbous perennial with narrow, grass-like, almost

*Nerine bowdenii**Nerine filifolia*

*Nerine sarniensis*

evergreen leaves, to 20cm (8in) long. In autumn, downy stems bear compact umbels of 4–15 bright pink flowers, to 2cm (¾in) across, with a deep rose-red vein down the centre of each wavy-margined petal. ‡30cm (12in), ↔ 5cm (2in). South Africa (Eastern Cape). \* *N. 'Radiant Queen'*. Bulbous perennial bearing loose umbels of rose-pink flowers in autumn. ‡60cm (24in), ↔ 8cm (3in). \*

*N. 'Salmon Supreme'*. Bulbous perennial bearing compact umbels of salmon-pink flowers in autumn. ‡60cm (24in), ↔ 8cm (3in). \*

*N. sarniensis* □ (Guernsey lily). Bulbous perennial with erect, strap-shaped, bright green leaves, to 30cm (12in) long. In early autumn, bears compact umbels of 10–20 crimson to orange-red flowers, 3–4cm (1¼–1½in) across, with wavy-margined tepals and conspicuous stamens. ‡45cm (18in), ↔ 8cm (3in). South Africa (Northern Cape, Western Cape). \*. *var. corusca 'Major'* see *N. 'Corusca Major'*.

*N. undulata*, syn. *N. crispa*. Bulbous perennial with strap-shaped leaves, to 45cm (18in) long. In autumn, bears umbels of 8–12 slender, mid-pink flowers, 4–5cm (1½–2in) across, with narrow, crinkled tepals. ‡45cm (18in), ↔ 8cm (3in). South Africa (Eastern Cape). \*

## NERIUM

*Oleander*

APOCYNACEAE

Genus of 1 or 2 species of evergreen shrubs or small trees found in seasonally dry stream beds and margins from the Mediterranean to China. They are grown for their often large, terminal cymes of colourful, narrowly funnel-shaped or salverform flowers, which each have 5 broad, spreading, angular petal lobes, and are followed by forked, elongated, bean-like seed pods. Lance-shaped leaves are narrow, leathery, and borne in opposite pairs or whorls of 3. *N. oleander* has been widely naturalized. Numerous cultivars have been raised, both single- and double-flowered, with white, yellow, apricot, pink, red, purple-red, and lilac flowers. In frost-prone areas, grow *N. oleander* in a cool greenhouse and move outdoors in summer; in warmer climates, use as a specimen plant or grow in a shrub border, or as a hedge. All parts are highly toxic if ingested; contact with foliage may irritate skin.

*Nerium oleander*

• **HARDINESS** Most are frost tender, but may survive short periods at 0°C (32°F). *N. oleander* 'Little Red' is hardy to -12°C (10°F).

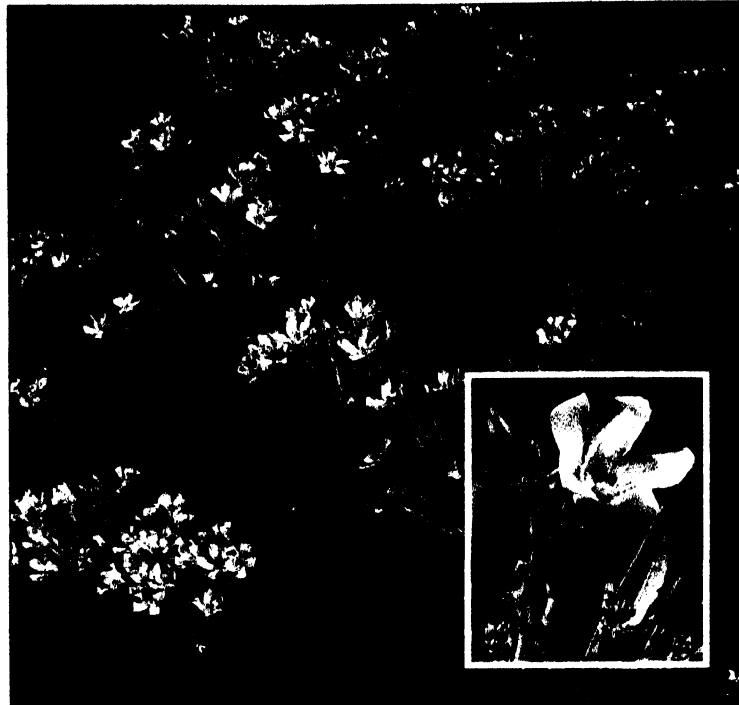
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light; ventilate well. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 9; plants under glass may need restrictive pruning in late winter; will tolerate hard pruning.

• **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings in summer, with bottom heat. Air layer in spring.

• **PESTS AND DISEASES** Scale insects, mealybugs, and red spider mites may be a problem under glass.

*N. obesum* see *Adenium obesum*.

*N. oleander* □ □ (Rose bay). Tall, erect to spreading shrub or small tree with lance-shaped, deep green to greyish green leaves, 6–20cm (2½–8in) long. In summer, bears cymes of up to 80 pink, red, or white flowers, 3–5cm (1½–2in) across. ‡2–6m (6–20ft), ↔ 1–3m (3–10ft). E. Mediterranean (possibly to W. China); widely naturalized. ♀ (min. 2–5°C/36–41°F). '*Casablanca*' □ syn. '*Monca*', has single white flowers, sometimes suffused pink. '*Little Red*' has single red flowers; \* \* \* (borderline). '*Monca*' see '*Casablanca*'. '*Monta*' see '*Tangier*'. '*Monvis*' see '*Ruby Lace*'. '*Mrs. George Roeding*' is dwarf, with double, salmon-pink flowers; ‡1–2m (3–6ft), ↔ 60–100cm

*Nerium oleander* 'Casablanca'*Nerium oleander* 'Petite Salmon' (inset: flower detail)

(24–39in). '*Petite Pink*' is dwarf, with single, pale pink flowers; ‡1–2m (3–6ft), ↔ 60–100cm (24–39in).

'*Petite Salmon*' □ is dwarf, with large, single, salmon-pink flowers; ‡1–2m (3–6ft), ↔ 60–100cm (24–39in). '*Ruby Lace*', syn. '*Monvis*', has showy clusters of large, single, deep red flowers, 8cm (3in) across, with fringed lips and wavy edges. '*Tangier*', syn. '*Monta*', bears single, light pink flowers. '*Variegatum*' has leaves with white to pale yellow margins, and double pink flowers.

## NERTERA

RUBIACEAE

Genus of approximately 6 species of mat-forming perennials from moist lowland to mountainous forest, and moist grassland and scrub, in S. China, S.E. Asia to Australasia, the Antarctic, and Mexico to South America. They have very small, broadly ovate to lance-shaped leaves, tiny funnel- or bell-shaped flowers, and fleshy, spherical to pear-shaped fruits. In frost-prone areas, grow as houseplants, or in an alpine house or cool greenhouse. Elsewhere, grow as ground cover in a rock garden.

• **HARDINESS** Fully hardy to frost tender; *N. granadensis* tolerates temperatures to -3°C (27°F) for short periods.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light or indirect light. During growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in humus-rich, gritty, moist but well-drained soil in partial shade. Protect from excessive winter wet.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F), or divide, in spring.

• **PESTS AND DISEASES** May be infested by aphids or red spider mites.

*N. granadensis* □ (Bead plant). Stem-rooting, moss-like perennial with broadly ovate, bright green leaves, to 8mm (⅓in) long. In summer, bears small, stemless, bell-shaped, yellowish green flowers, 3mm (⅓in) across, followed by masses of spherical, shiny, orange or red berries, 5mm (¼in) across. (Populations from South America, New Zealand, and Australia are sometimes considered a distinct species, *N. depressa*.) ‡2cm (¾in), ↔ to 20cm (8in). Mexico, Central America. \*

*Nertera granadensis*

- ▷ **Nerve plant** see *Fittonia*
- ▷ **Net bush** see *Calothamnus*
- Common see *C. quadrifidus*
- ▷ **Net leaf,**
- Painted** see *Fittonia*
- Silver** see *Fittonia verschaffeltii* var. *argyoneura*
- ▷ **Nettle,**
- Dead** see *Lamium*
- Flame** see *Solenostemon*, *S. scutellarioides*
- Hedge** see *Stachys*
- Painted** see *Solenostemon*, *S. scutellarioides*
- Pyrenean dead** see *Horminum pyrenaicum*
- ▷ **Nettle tree** see *Celtis*
- Southern see *C. australis*
- ▷ **Never-never plant** see *Ctenanthe oppenheimiana* 'Tricolor'
- ▷ **New Guinea creeper** see *Mucuna bennettii*
- ▷ **New Zealand daisy** see *Celmisia*
- ▷ **New Zealand flax** see *Phormium tenax*
- ▷ **Ngaio** see *Myoporum laetum*

## NICANDRA

Apple of Peru, Shoo-fly

SOLANACEAE

Genus of one species of upright, branching annual from open sites and wasteland in Peru. It has alternate, solitary, oval to elliptic-lance-shaped or ovate, toothed leaves. The short-lived, bell-shaped flowers are followed by brown berries borne in green, lantern-like calyces. Grow in a wild garden or a mixed border. Fruiting branches can be dried for use in winter arrangements.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 15°C (59°F) in early spring, or *in situ* in mid-spring; self-seeds freely.
- **PESTS AND DISEASES** Trouble free.

*N. physalodes* (Apple of Peru, Shoo-fly). Erect, vigorous annual with wavy-margined leaves, to 10cm (4in) or more long. White-throated, light violet-blue flowers, to 3.5cm (1½in) across, are borne profusely in the upper leaf axils, from summer to autumn, followed by round berries that are enclosed in green calyces, 3–4cm (1¼–1½in) across. Peru. ↑ to 90cm (36in), ↔ 30cm (12in). \* \* \*. 'Violacea' has flowers with the upper section of each corolla indigo-blue, the lower part white.

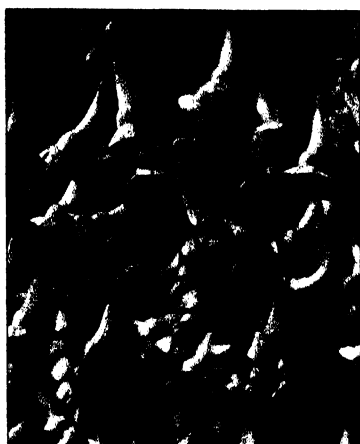
- ▷ *Nicodemia madagascariensis* see *Buddleja madagascariensis*
- ▷ *Nicolaia elatior* see *Etlingera elatior*

## NICOTIANA

Tobacco plant

SOLANACEAE

Genus of about 67 species of erect, frequently rosette-forming annuals, biennials, perennials, and shrubs from Australia, North America, and tropical South America, where they grow on mountain slopes and valley floors, often in moist soils. They have alternate, linear or oblong-lance-shaped to broadly ovate, glandular-hairy leaves. The flowers are tubular to trumpet-shaped or salverform, occasionally scented, and borne in racemes or panicles, usually over long periods in summer, sometimes



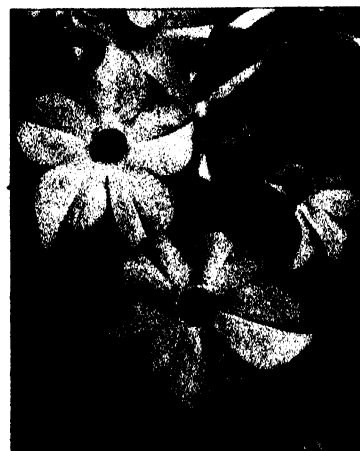
*Nicotiana langsdorffii*

in autumn. Flowers usually open only in the early evening and at night; flowers of some cultivars remain open during the day if sited in partial shade. Cultivars derived from *N. alata* and *N. x sanderae* are ideal summer bedding annuals, their upward- or horizontally-facing blooms remaining open in full sun. Grow *N. sylvestris* in a mixed border or semi-wild garden. Contact with the foliage may irritate skin.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Stake tall plants in open positions. Although half hardy, *N. alata* and *N. sylvestris* can be overwintered outdoors where temperatures only occasionally fall to -5°C (23°F); they will resprout from rootstocks the following spring. Provide a dry winter mulch. Pruning group 6 for shrubs.
- **PROPAGATION** Surface-sow seed at 18°C (64°F) in mid-spring.
- **PESTS AND DISEASES** Prone to aphids, whiteflies, leafhoppers, and grey mould (*Botrytis*), particularly under glass. Also prone to viruses, especially mosaic virus.

*N. affinis* see *N. alata*.

*N. alata*, syn. *N. affinis*. Short-lived, rosette-forming perennial, grown as an annual, with spoon-shaped to ovate leaves, to 25cm (10in) long, becoming smaller up the stems. Tubular, greenish yellow flowers, to 10cm (4in) long, with funnel-shaped mouths, white within, are produced in open racemes, and are strongly fragrant at night. ↑ to 1.5m (5ft), ↔ 30cm (12in). S. Brazil, N. Argentina. \*



*Nicotiana* 'Lime Green'



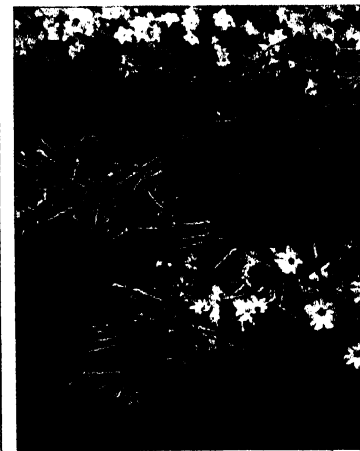
*Nicotiana x sanderae* Domino Series 'Salmon Pink'

*N. glauca*. Fast-growing, gaunt, semi-evergreen shrub with long, arching, smooth, glaucous shoots and ovate, fleshy, blue-grey leaves, 10cm (4in) or more long. Bears tubular, bright yellow flowers, to 4cm (1½in) long. ↑ to 2.5–3m (8–10ft). S. Bolivia to N. Argentina. \*

*N. langsdorffii* ♀ Well-branched, sticky annual with a basal rosette of ovate leaves, to 25cm (10in) long. Bears nodding, slender panicles of tubular, apple-green flowers, to 5cm (2in) long, with spreading, 5-lobed mouths. ↑ to 1.5m (5ft), ↔ to 35cm (14in). Brazil. \*

*N. 'Lime Green'* ♀ Upright annual with spoon-shaped leaves, 5–20cm (2–8in) long, the upper leaves oblong-lance-shaped. Produces salverform, lime-green flowers, to 12cm (5in) long, each with an abruptly flattened limb. ↑ 60cm (24in), ↔ 25cm (10in). \*

*N. x sanderae* (*N. alata* x *N. forgetiana*). Upright, woody-based, sticky annual or short-lived perennial with spoon-shaped to oblong-ovate, wavy-edged basal leaves, 5–25cm (2–10in), the upper leaves oblong-lance-shaped. Bears open racemes or panicles of red, occasionally white, rose-pink, or purple, salverform



*Nicotiana x sanderae* Starship Series



*Nicotiana sylvestris*

flowers, to 5cm (2in) across. ↑ to 60cm (24in), ↔ 30–40cm (12–16in). Garden origin. \*

**Domino Series** cultivars have upward-facing flowers in red, white, crimson-pink, lime-green, pink with white eyes, purple, purple with white eyes, salmon-pink, or white with rose-pink margins; ↑ 30–45cm (12–18in). **Domino Series 'Salmon Pink'** ♀ has salmon-pink flowers. **Havana Series** cultivars are compact; colours include pale pink with deep rose-pink reverse, and lime-green with rose-pink reverse; ↑ 30–35cm (12–14in). **Merlin Series** cultivars are dwarf, bred for containers; colours include purple, purple with white eyes, crimson-pink, lime-green, and white; ↑ 23–30cm (9–12in). **Metro Series** cultivars have rose-pink, red, lime-green, white, or lilac-pink flowers; ↑ to 35cm (14in). **Starship Series** ♀ cultivars have pink, red, rose-pink, white, or lime-green flowers, and good all-weather tolerance; ↑ 30cm (12in). *N. sylvestris* ♀ Many-branched, stout-stemmed biennial or short-lived perennial with a basal rosette of dark green, oblong-elliptic to elliptic-ovate leaves, to 35cm (14in) long. Produces short, densely packed panicles of nodding, sweet-scented, long-tubed, trumpet-shaped white flowers, to 9cm (3½in) long, with 5 spreading lobes. Flowers close in full sun. ↑ to 1.5m (5ft), ↔ to 60cm (24in). Argentina. \*

## NIDULARIUM

Bird's-nest bromeliad

BROMELIACEAE

Genus of about 25 species of rosette-forming, evergreen, usually epiphytic perennials (bromeliads), sometimes rhizomatous, related to *Neoregelia*, from woodland and rainforest, to 2,000m (6,500ft) high, mainly in Brazil. The toothed leaves are narrow to broadly strap-shaped. The conspicuous leaf sheaths surround tubular flowers, usually borne in summer; they nestle in a cluster of large bracts, resembling a bird's nest. Where temperatures drop below 12°C (54°F), grow in a warm greenhouse or as houseplants; in warmer areas, grow in a moist, shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in epiphytic bromeliad compost in bright filtered light with moderate to high humidity. During the growing season, water freely with soft water. Apply a low-nitrogen liquid fertilizer monthly



*Nidularium procerum* var. *kermesianum*

from spring to late autumn. Keep rosette cups filled with soft water from spring to early autumn. Keep just moist in winter. Outdoors, grow in an open site, in gritty, moderately fertile, leafy soil in partial shade, or grow epiphytically on a tree. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Separate offsets in spring or summer.

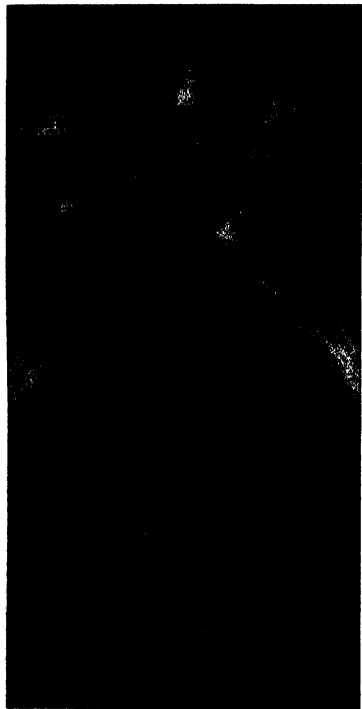
• **PESTS AND DISEASES** Susceptible to scale insects.

*N. caroliniae* see *Neoregelia caroliniae*.

*N. fulgens* (Blushing bromeliad).

Epiphytic, rhizomatous bromeliad with spreading rosettes of 15–20 strap-shaped, sparsely and sharply toothed, pointed, bright pale green leaves, to 40cm (16in) long, slightly scaly beneath. Bears clusters of tubular white flowers, 5cm (2in) long, with purple-blue tips and bright red sepals, among the lance-shaped, brilliant red bracts. †40cm (16in), ↔ to 60cm (24in). S. Brazil. ♀ (min. 12°C/54°F)

*N. innocentii*. Very variable, epiphytic bromeliad with funnel-shaped rosettes of 30 or more sword- or strap-shaped, minutely toothed, dark green or reddish



*Nidularium regelioides*

green leaves, 20–60cm (8–24in) long, widening towards the tips, with dark red undersides. Produces clusters of tubular, white- or pink-sepalled, green-based white flowers, to 6cm (2½in) long, in rosettes of bright red or green-tipped red bracts. †20–30cm (8–12in), ↔ 60cm (24in). Brazil. ♀ (min. 12°C/54°F)

*N. procerum*. Epiphytic bromeliad with erect rosettes of 12–40 sharp-pointed, finely toothed, waxy, copper-suffused, pale green leaves, 40–100cm (16–39in) long. Bears 25–30 or more tubular, blue-tipped vermilion flowers, to 3cm (1¼in) long, among clusters of red floral bracts. †20–30cm (8–12in), ↔ to 75cm (30in). Brazil. ♀ (min. 12°C/54°F). var. *kermesianum* ♀ has red-suffused, often narrower, shorter leaves, to 40cm (16in) long; ↔ to 45cm (18in).

*N. regelioides* ♀ Terrestrial or epiphytic bromeliad with tubular rosettes of 12–20 strap-shaped, pointed, toothed, bright green leaves, 35–40cm (14–16in) long, suffused deeper green. Bright red bracts surround clusters of 5–8 tubular red flowers, 4–5cm (1½–2in) long, with purple-tipped white sepals. †30cm (12in), ↔ 45cm (18in). S. Brazil. ♀ (min. 12°C/54°F)

## NIEREMBERGIA

Cup flower

SOLANACEAE

Genus of over 20 species of annuals, perennials, and shrubs from moist, sunny habitats in temperate South America. Slender, spreading or upright stems bear alternate, entire leaves and colourful, open cup- or bell-shaped, sometimes tubular flowers in summer. Most perennial species are frost tender, but are easily propagated and are often grown as annuals; use as bedding, as border edging, or in containers under glass for early spring flowers. In warm areas, grow in open sites among shrubs. Grow *N. repens* in a rock garden or in paving crevices; may become invasive.

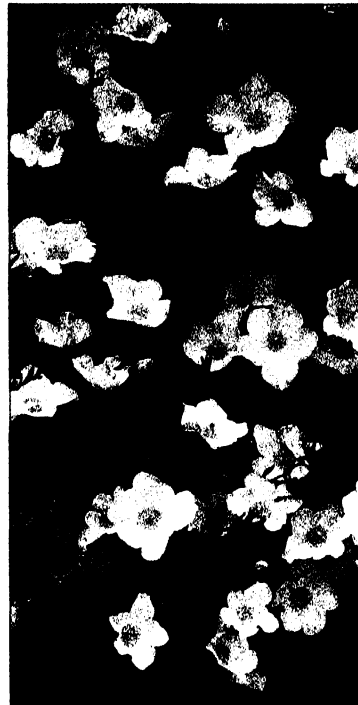
• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Outdoors, grow in a sheltered site in moist but well-drained soil in full sun. *N. repens* prefers dry, sandy soils. Under glass, grow in loam-based potting compost (J1 No.1) in full light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Trim lightly after flowering.

• **PROPAGATION** Sow seed in autumn for spring flowering, or in spring at 15°C (59°F). Take stem-tip cuttings of tender perennials at any time during summer. Divide *N. repens* in spring.

• **PESTS AND DISEASES** Susceptible to aphids and whiteflies under glass, and may be damaged by slugs and snails outdoors. May be affected by viruses, especially tobacco mosaic virus.

*N. caerulea* ♀ syn. *N. hippomanica*. Upright, branching, downy-stemmed perennial with narrowly spoon-shaped, pointed leaves, to 8mm (¾in) long. Cup-shaped, lavender-blue flowers, to 2cm (¾in) across, with yellow throats, are borne over long periods in summer. †↔ to 20cm (8in). Argentina. \* 'Mont Blanc' ♀ bears white flowers. 'Purple Robe' has rich violet-blue flowers; \*\*\*. var. *violacea* has longer leaves and deep violet-blue flowers.



*Nierembergia caerulea* 'Mont Blanc'

*N. frutescens* see *N. scoparia*.

*N. hippomanica* see *N. caerulea*.

*N. repens*, syn. *N. rivularis* (White cup). Creeping, mat-forming, stem-rooting perennial with rounded, spoon-shaped, light green leaves, to 3cm (1¼in) long. Bears open bell-shaped, yellow-centred white flowers, 2.5–5cm (1–2in) across, over long periods in summer. †5cm (2in), ↔ 60cm (24in) or more. Andes, warm-temperate South America. \*\*.

'Violet Queen' produces rich purple flowers.

*N. rivularis* see *N. repens*.

*N. scoparia*, syn. *N. frutescens*. Shrubby perennial with well-branched stems and linear to narrowly spoon-shaped, stalkless leaves, to 5cm (2in) long. Numerous tubular, pale blue flowers, 2.5cm (1in) across, fading to white at the margins, and with wide-spreading mouths, are produced from midsummer to early autumn. †to 45cm (18in) or more, ↔ 30cm (12in). Chile. \*\*

## NIGELLA

Devil-in-a-bush, Love-in-a-mist

RANUNCULACEAE

Genus of 20 species of stiffly erect, bushy annuals found on rocky slopes, wasteland, and in fallow fields in the Mediterranean, Eurasia, and N. Africa. Leaves are alternate, feathery, pinnatisect to 3-pinnatisect. The solitary, sometimes paired, terminal or axillary flowers, borne mainly in summer, are pink, blue, yellow, or white, with 5 petal-like sepals and 5–10 smaller, 2-lipped true petals; they sometimes nestle within a showy, ruff-like surround of strongly veined leaves with hair-like, wispy divisions at each tip. The decorative, sometimes inflated capsules with persistent styles can be dried for flower arrangements. Grow in an informal, mixed or annual border; self-seeding may occur. They also provide long-lasting cut flowers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any well-drained soil in full sun.



*Nigella damascena* 'Miss Jekyll'

• **PROPAGATION** Sow seed *in situ* in mid-spring or autumn. Provide cloche protection in winter for autumn-sown plants.

• **PESTS AND DISEASES** Trouble free.

*N. damascena* (Devil-in-a-bush, Love-in-a-mist). Single-stemmed or branching annual with ovate, finely divided, 2- or 3-pinnatisect, bright green leaves, 12cm (5in) long. In summer, bears terminal, saucer-shaped, pale blue flowers, to 4.5cm (1¾in) across, becoming sky-blue with age, surrounded by a "ruff" of foliage, finely divided at the tips. †to 50cm (20in), ↔ to 23cm (9in). S. Europe, N. Africa. \*\*\*. 'Blue Midget' is dwarf; †25cm (10in). 'Dwarf Moody Blue' is dwarf, with flowers opening violet, fading to sky-blue; †20cm (8in). 'Miss Jekyll' ♀ is tall, with sky-blue flowers; †to 45cm (18in). 'Mulberry Rose' has large flowers opening creamy pink and deepening to rose-pink; †to 45cm (18in). **Persian Jewel Series** ♀ cultivars have sky-blue, deep violet-blue, rose-pink, deep pink, or white flowers; †to 40cm (16in).

*N. hispanica* 'Curiosity'. Bushy annual bearing broadly ovate, finely divided, 2- or 3-pinnatisect, dark green leaves, to 14cm (5½in) long. Terminal, scented, saucer-shaped, bright blue flowers, to 6cm (2½in) across, with dark eyes and deep maroon-red stamens, are solitary or produced in pairs, in summer. †60–75cm (24–30in), ↔ to 45cm (18in). \*\*\*

*N. orientalis* 'Transformer'. Bushy annual with finely divided, 2- or 3-pinnatisect, broadly ovate, bluish green



*Nigella damascena* Persian Jewel Series



## NIGELLA

leaves, to 14cm (5½in) long. In late spring and early summer, bears terminal, solitary yellow flowers, to 4.5cm (1¾in) across. The strongly ribbed seed pods resemble umbrellas when turned inside out, making an unusual addition to dried flower arrangements. † to 45cm (18in), ↔ 22–30cm (9–12in). \*\*\*

▷ **Nightshade, Stinking** see *Hyoscyamus niger*

▷ **Ninebark** see *Physocarpus opulifolius*

## NIPPONANTHEMUM

ASTERACEAE/COMPOSITAE

Genus of one species of herbaceous or subshrubby perennial from sandy, coastal regions of Japan. It has erect or spreading stems bearing alternate, aromatic leaves crowded together at the ends of the branches. Solitary, daisy-like white flowerheads are produced in summer. Grow *N. nipponicum* in a mixed or herbaceous border, or at the base of a warm, sunny wall.

- **HARDINESS** Frost hardy; may survive temperatures down to -10°C (14°F).
- **CULTIVATION** Grow in very well-drained, moderately fertile soil in full sun. In frost-prone areas, provide a winter mulch over the roots, and protect the leaves with evergreen branches.
- **PROPAGATION** Sow seed at 13°C (55°F) in spring. Divide in early summer.
- **PESTS AND DISEASES** Slugs and aphids may be troublesome.

*N. nipponicum*. Almost subshrubby perennial with erect or spreading, sparsely branched stems and stalkless, narrowly spoon-shaped, irregularly toothed, aromatic, mid- to dark green leaves, to 9cm (3½in) long. From late summer to late autumn, bears daisy-like white flowerheads, to 6cm (2½in) across, with green disc-florets maturing yellow. †↔ 60cm (24in). Japan. \*\*

▷ **Nirre** see *Nothofagus antarctica*

▷ **Nodding catchfly** see *Silene pendula*

▷ **Nodding ladies' tresses** see *Spiranthes cernua*

## NOLANA

SOLANACEAE

Genus of 18 species of often glandular-hairy, erect to spreading annuals, perennials, and subshrubs, usually grown as annuals, found in semi-desert and coastal areas in Peru and Chile. They have simple, alternate or whorled, sometimes succulent leaves. The broadly trumpet-shaped, 5-petalled, blue, pink, or white flowers are borne singly or in clusters in the leaf axils. Grow in a border, or as short-lived container plants in a cool greenhouse. In warm climates, grow perennials in a rock garden.

- **HARDINESS** Half hardy.
- **CULTIVATION** Outdoors, grow in any moderately fertile soil in full sun. Under glass, grow in loam-based potting compost (J1 No.2) in full light. Water moderately during the growing season.
- **PROPAGATION** Sow seed at 13–15°C (55–59°F) in early spring, *in situ* in late spring, or in autumn for spring-flowering container plants.
- **PESTS AND DISEASES** Aphids can be a problem.



*Nolana paradoxa*

*N. humifusa* 'Little Bells'. Spreading, sticky, glandular-hairy annual, perennial, or subshrub with a basal rosette of stalkless, inversely lance-shaped leaves, to 2.5cm (1in) long, and elliptic stem leaves. Lilac-blue flowers, to 2.5cm (1in) across, with broad white throats, streaked lilac-blue, are produced in summer. † to 15cm (6in), ↔ 45cm (18in). \*

*N. paradoxa* □ Spreading, fleshy, glandular-hairy annual or perennial with a basal rosette of stalkless, inversely lance-shaped leaves, 5cm (2in) long, and ovate to elliptic stem leaves. In summer, bears dark blue, sometimes purple or purple-blue flowers, to 5cm (2in) across, with yellow throats and white eyes, only opening in full sun. † 20–25cm (8–10in), ↔ to 60cm (24in). \*

▷ *Nolana recurvata* see *Beaucarnea recurvata*

▷ *Nolana tuberculata* see *Beaucarnea recurvata*

## NOMOCHARIS

LILIACEAE

Genus of about 7 species of bulbous perennials from seasonally moist meadows, rocks, and woodland in mountainous areas of W. China, S.E. Tibet, Burma, and N. India. They have linear to lance-shaped or oblong-ovate leaves borne in whorls on the upper halves of the stems, or scattered along them in pairs or threes. In summer, they bear loose racemes of often boldly spotted, saucer-shaped to flat, 6-tepalled flowers, 5–7cm (2–3in) across. They are



*Nomocharis pardanthina*

ideal for a cool woodland garden and effective grown with rhododendrons.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Plant 15cm (6in) deep in winter or spring, in humus-rich, acid soil in partial shade; in cool areas, they may be grown in full sun. They dislike hot, dry conditions; ensure soil is moist in summer but never waterlogged.
- **PROPAGATION** Sow seed at 7–10°C (45–50°F) in autumn or spring. Flowers appear about 4 years after germination.
- **PESTS AND DISEASES** Prone to slug damage.

*N. aperta*. Bulbous perennial with lance-shaped leaves, 6–10cm (2½–4in) long, in pairs along the stem. In early summer, produces racemes of 5 or 6 nodding, flattish, pale pink flowers, 5–10cm (2–4in) across, spotted deep purple. † 30–80cm (12–32in), ↔ 10cm (4in). W. China. \*\*\*

*N. farreii*. Bulbous perennial with linear to lance-shaped leaves, 3.5cm (1½in) long, in whorls up the stem. In early summer, bears racemes of up to 20 nodding, saucer-shaped, white or pale pink flowers, 5–11cm (2–4½in) across, with heavy reddish purple spotting and dark centres. Similar to *N. pardanthina*, but the petals have smooth margins and the leaves are narrower. † 90cm (36in), ↔ 10cm (4in). N.E. Burma. \*\*\*

*N. mairei* see *N. pardanthina*.

*N. nana* see *Lilium nanum*.

*N. oxypetala* see *Lilium oxypetalum*.

*N. pardanthina* □ syn. *N. mairei*.

Bulbous perennial with elliptic to lance-shaped leaves, 2.5–11cm (1–4½in) long, in whorls up the stem. In early summer, bears racemes of 2–20 nodding, saucer-shaped then flat, white or pale pink flowers, 5–9cm (2–3½in) across; they are heavily spotted reddish purple, and have dark centres and fringed petal margins. † 90cm (36in), ↔ 10cm (4in). W. China. \*\*\*

*N. saluenensis*. Bulbous perennial with elliptic leaves, 2–4cm (¾–1½in) long, scattered up the stem. In early summer, bears racemes of 1–6 nodding, saucer-shaped flowers, 6–9cm (2½–3½in) across, that vary from pale to mid-pink or white, with light maroon spotting towards the dark purple centres. † 90cm (36in), ↔ 10cm (4in). W. China, N.E. Burma. \*\*\*

▷ *Nopalea cochenillifera* see *Opuntia cochenillifera*

## NOPALXOCHIA

CACTACEAE

Genus of 4 species of freely branching, epiphytic, perennial cacti, very closely related to *Epiphyllum*, from forest in S. Mexico and Central America. They have strap-shaped, jointed, spineless stems, often cylindrical at the bases, with notched margins. In late spring and early summer, funnel- to bell- or cup-shaped, diurnal flowers are borne on slender tubes from the marginal areoles. The flowers last for 3–4 days and are followed in the species by ovoid red fruits, containing seeds encased in jelly-like pulp. Below 10°C (50°F), grow in a temperate or warm greenhouse, or as houseplants. In warmer climates, grow in a courtyard or in a shady border.

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow in slightly acid, epiphytic cactus compost in bright filtered light, with moderate humidity, away from draughts. During growth, water freely and apply a dilute balanced liquid fertilizer monthly. Keep barely moist when dormant. Outdoors, grow in moist but sharply drained, leafy, gritty soil in a sheltered site in partial shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take cuttings of stem sections after flowering.
- **PESTS AND DISEASES** Vulnerable to mealybugs, especially in early spring.

*N. 'Achievement'*. Semi-erect, perennial cactus producing strap-shaped stems with rounded margins. Bears yellow flowers, 14cm (5½in) across, with frilled petals. † 45cm (18in) or more, ↔ 40cm (16in). ☼ (min. 10°C/50°F)

*N. ackermannii* □ syn. *Epiphyllum ackermannii*. Erect, perennial cactus with flat, thin, slightly scalloped, fleshy stems, rarely 3-ribbed. The crimson or orange-red flowers have pale yellow-green tubes, 12cm (5in) long, with short pink styles and white stigma lobes. † 45cm (18in) or more, ↔ 40cm (16in). S. Mexico. ☼ (min. 10°C/50°F)

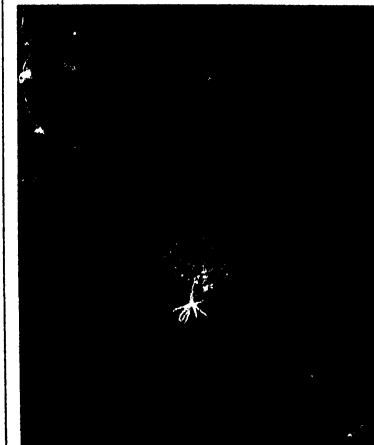
*N. 'Alba Superba'*. Erect, perennial cactus producing strap-shaped stems with rounded margins. Bears flowers 15–20cm (6–8in) across, with pure white inner petals and pinkish white outer segments. †↔ to 50cm (20in). ☼ (min. 10°C/50°F)

*N. 'Calypso'*. Semi-erect, perennial cactus producing strap-shaped stems with rounded margins and lilac-pink flowers, 12cm (5in) or more across. †↔ to 30cm (12in). ☼ (min. 10°C/50°F)

*N. 'Celestine'*. Erect, perennial cactus producing strap-shaped stems with rounded margins. Bears ruffled, pale reddish pink flowers, 12cm (5in) across. †↔ 35cm (14in). ☼ (min. 10°C/50°F)

*N. 'Chauncey'*. Erect, perennial cactus producing strap-shaped stems with rounded margins. Flowers, 15cm (6in) across, have purple inner petals, each with a red mid-line, and dark red outer segments. † to 60cm (24in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

*N. 'Dreamland'*. Erect, perennial cactus producing strap-shaped stems with rounded margins. Flowers, 12cm (5in) across, have pinkish orange petals, each with a deeper, almost red mid-line, and rose-red throats. †↔ 50cm (20in). ☼ (min. 10°C/50°F)



*Nopalxochia ackermannii*



*Nopalxochia* 'Gloria'

**N. 'Gloria'** ■ Erect then pendent, perennial cactus bearing slender, strap-shaped stems with minutely notched margins. Produces deep, rich reddish pink flowers, paler in the throats, 10cm (4in) across. ↑ 30cm (12in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**N. 'Helena'**. Erect, perennial cactus with 3-angled, notched stems and minutely spiny areoles. Bears red to violet flowers, 12cm (5in) across, with frilled petals. ↑↔ 45cm (18in). ☼ (min. 10°C/50°F)

**N. 'Jennifer Ann'** ■ Erect then pendent, perennial cactus with strap-shaped, strongly notched stems. Bears bright yellow flowers, 10cm (4in) across, with white centres. ↑ 30cm (12in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)



*Nopalxochia* 'Jennifer Ann'



*Nopalxochia* 'Kismet'



*Nopalxochia phyllanthoides* 'Deutsche Kaiserin'

**N. 'King Midas'**. Erect, perennial cactus with strap-shaped or angular stems. Bears bright yellow flowers, to 20cm (8in) across, each with a deep golden mid-stripe and yellowish orange sepals. ↑ to 1m (3ft), ↔ 50cm (20in). ☼ (min. 10°C/50°F)

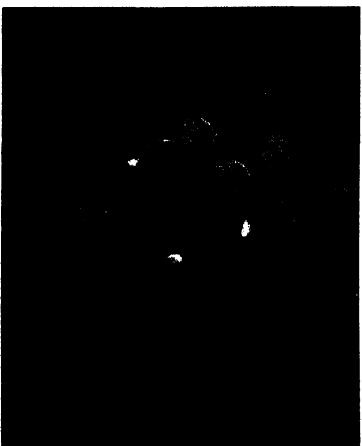
**N. 'Kismet'** ■ Perennial cactus producing wide, strap-shaped stems with rounded margins. Bears widely cup-shaped flowers, 16cm (6in) across, in shades of pale purple in the throats and deepening to dark, rich scarlet in the outer segments. ↑↔ to 40cm (16in). ☼ (min. 10°C/50°F)

**N. macedougallii**, syn. *Epiphyllum macedougallii*, *Lobeira macedougallii*. Semi-erect, perennial cactus producing flat, 2-winged, scalloped, fleshy stems with inset, marginal areoles. Narrowly trumpet-shaped, lilac-rose flowers, to 8cm (3in) across, have brown-green tubes. ↑ 30cm (12in), ↔ 45cm (18in). S.E. Mexico. ☼ (min. 10°C/50°F)

**N. 'M.A. Jeans'**. Erect then slightly pendent, perennial cactus producing strap-shaped stems with minutely notched margins. Bears deep pink flowers, 8cm (3in) across. ↑ 30cm (12in), ↔ 50cm (20in). ☼ (min. 10°C/50°F)

**N. 'Moonlight Sonata'**. Erect, perennial cactus producing strap-shaped stems with rounded margins. Bears flowers, 18cm (7in) across, with white bases, purple-pink petals, and dark violet sepals. ↑ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F)

**N. phyllanthoides** 'Deutsche Kaiserin' ■ Semi-erect, perennial cactus with



*Nopalxochia* 'Zoe'

strap-shaped, scalloped, fleshy, deep green stems, tapering towards the ends. Bears pink flowers, 7–9cm (3–3½in) across, with white centres. ↑ to 45cm (18in), ↔ 24cm (10in). ☼ (min. 10°C/50°F)

**N. 'Queen Anne'**. Semi-pendent, perennial cactus producing strap-shaped stems with rounded margins. Bears yellow flowers, 10cm (4in) across. ↑ 24cm (10in), ↔ 40cm (16in). ☼ (min. 10°C/50°F)

**N. 'Soraya'**. Erect, perennial cactus producing strap-shaped stems with rounded margins. Bears brilliant deep scarlet flowers, 11cm (4½in) across, with broad, almost oval petals. ↑ 24cm (10in), ↔ 20cm (8in). ☼ (min. 10°C/50°F)

**N. 'Tyke'**. Erect, untidy, perennial cactus producing strap-shaped stems with rounded margins. Reddish orange flowers, 12cm (5in) across, have wide-spreading, twisted petals. ↑ to 50cm (20in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**N. 'Zoe'** ■ Semi-prostrate, perennial cactus producing strap-shaped stems with rounded margins. Bears peach-orange flowers, to 12cm (5in) across, each with 3 rows of petals. ↑↔ 40–50cm (16–20in). ☼ (min. 10°C/50°F)

▷ **Nordmann fir** see *Abies nordmanniana*

▷ **Norway spruce** see *Picea abies*

## NOTHOFAGUS

Southern beech

FAGACEAE

Genus of 20 or more species of evergreen or deciduous trees and shrubs from the S. hemisphere (New Guinea and New Caledonia to Australia, New Zealand, and South America), where they occur as forest trees from sea level to the mountains. Leaves are alternate, simple, entire or toothed, sometimes with wavy margins. Flowers and fruits are inconspicuous. They are grown for their habit and foliage, and, in the case of deciduous species, for their attractive autumn colour. Grow as specimen trees in a large garden or woodland garden. In the wild, they often attain much greater heights than in cultivation.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained, lime-free soil in full sun. Shelter evergreen species from strong cold winds, at least when young. Pruning group 1.

• **PROPAGATION** Sow seed in a seedbed in autumn. Seed from garden sources may give rise to hybrids.

• **PESTS AND DISEASES** Root rot may be a problem.

**N. alpina** of gardens see *N. procera*.

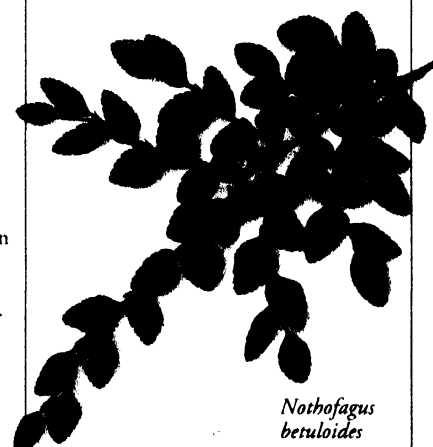
**N. antarctica** ■ □ (Antarctic beech, Nirre). Broadly conical, often many-stemmed, deciduous tree or shrub bearing ovate to broadly ovate, glossy, dark green leaves, to 3cm (1¼in) long. Leaves are finely toothed and crinkle-margined, and turn yellow in autumn. ↑ 15m (50ft), ↔ 10m (30ft). S. Chile, S. Argentina. \*\*\*

**N. betuloides** ■ □ Dense, broadly columnar, evergreen tree with ovate to broadly ovate, blunt-toothed, dark blackish green leaves, to 2.5cm (1in) long, often unequal at the bases, borne

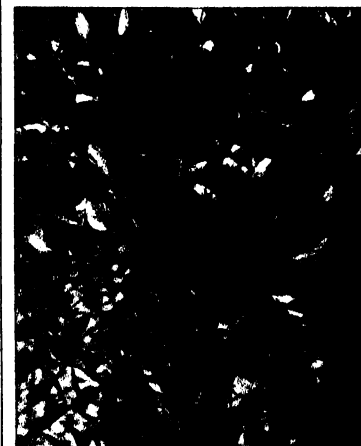


*Nothofagus antarctica*

on sticky red shoots. ↑ 15m (50ft), ↔ 6m (20ft). Chile, Argentina. \*\*  
**N. cunninghamii** ♂ (Myrtle beech). Conical, evergreen tree with slender, downy shoots and ovate to triangular-ovate, blunt-toothed, glossy leaves, to 2cm (¾in) long, bronze-red in summer when young. ↑ 12m (40ft), ↔ 8m (25ft). Australia (Victoria, Tasmania). \*\*  
**N. dombeyi** ■ □–△ Broadly columnar to conical, evergreen tree. Shoots, which are pendulous at the tips, bear narrowly ovate-lance-shaped, finely toothed, dark green leaves, 2–4cm (¾–1½in) long, often unequal at the bases. ↑ 20m (70ft), ↔ 10m (30ft). Chile, Argentina. \*\*  
**N. menziesii** △ (Silver beech). Dense, conical, evergreen tree with silvery white bark when young. Bears broadly ovate to rounded, leathery, dark green leaves, to 2cm (¾in) long, toothed at the margins, pale green when young. ↑ 15m (50ft), ↔ 8m (25ft). New Zealand. \*\*



*Nothofagus betuloides*



*Nothofagus dombeyi*



*Nothofagus procera*

*N. obliqua* △ (Roblé). Fast-growing, narrowly to broadly conical, deciduous tree with arching shoots. Oblong or oblong-lance-shaped, dark green leaves, to 7cm (3in) long, blue-green beneath, with usually 8–10 pairs of veins and doubly toothed margins, turn yellow to orange or red in autumn. ‡20m (70ft), ↔15m (50ft). Chile, Argentina. \*\*\*  
*N. procera* ▢△ syn. *N. alpina* of gardens (Rauli). Fast-growing, broadly conical, deciduous tree. Bears oblong-lance-shaped to elliptic-lance-shaped, matt, slightly scalloped, deep green leaves, to 10cm (4in) or more long, conspicuously marked with 15–18 pairs of veins. Leaves are bronze when young, turning yellow to orange or red in autumn. ‡25m (80ft), ↔15m (50ft). Chile, Argentina (Andes). \*\*\*

*N. pumilio* ▢△–□ Columnar, sometimes shrubby, often several-stemmed, deciduous tree bearing oblong to obovate, dark green leaves, to 4cm (1½in) long; each has 5–7 pairs of veins with 2 rounded teeth between each vein. ‡15m (50ft), ↔10m (30ft). Chile, Argentina (Andes). \*\*\*  
*N. solandri* △ (Black beech). Broadly conical, evergreen tree with ovate-elliptic to elliptic-oblong, entire, dark blackish green leaves, to 1.5cm (½in) long, grey-hairy beneath, ending in a short point. ‡15m (50ft), ↔10m (30ft). New Zealand. \*\*\*  
**var. cliffortioides** (Mountain beech) has ovate, twisted, more sharply pointed leaves.

## NOTHOLIRION

LILIACEAE

Genus of 6 species of bulbous perennials, related to *Fritillaria* and *Lilium*, found in open woodland, scrub, and rocky mountains from Afghanistan to W. China. They produce basal tufts of narrowly lance-shaped leaves in winter, followed by racemes of nodding, trumpet- or funnel-shaped flowers in summer. In frost-prone areas, grow in a cool, protected site outdoors, or in a cool greenhouse. They grow best in areas with cool summers.  
 • **HARDINESS** Frost hardy, but leaves are susceptible to frost damage.  
 • **CULTIVATION** Plant 10–15cm (4–6in) deep in autumn. Outdoors, plant in deep, humus-rich, well-drained soil in partial shade. Provide protection during periods of prolonged frost. Under glass, plant in large containers in loamless

potting compost with added leaf mould and sharp sand, in bright filtered light. Water freely during growth. Keep barely moist when dormant. Bulbs are monocarpic and die after flowering, leaving offsets or a cluster of bulblets that take some time to reach flowering size.  
 • **PROPAGATION** Sow seed or grow on bulblets in late summer in containers in a cold frame. Remove offsets in autumn.  
 • **PESTS AND DISEASES** Trouble free.

*N. bulbiferum*. Bulbous perennial with narrow, lance-shaped, basal leaves, to 45cm (18in) long. In summer, bears racemes of 10–30 trumpet-shaped, pale lilac flowers, to 4cm (1½in) long, with green tips. ‡to 1.5m (5ft), ↔15cm (6in). Nepal to W. China. \*\*\*  
*N. campanulatum*. Bulbous perennial with narrow, lance-shaped, basal leaves, to 30cm (12in) long. In summer, bears racemes of up to 20 pendent, deep crimson-purple, green-tipped flowers, to 5cm (2in) long. ‡80cm (32in), ↔15cm (6in). N. Burma, W. China. \*\*\*

## NOTHOSCORDUM

False garlic

ALLIACEAE/LILIACEAE

Genus of about 20 species of bulbous perennials from rocky hillsides and disturbed ground in North and South America. They have linear, basal leaves and, from spring to summer, bear loose umbels of 6-tepalled, funnel-, bell-, or almost star-shaped flowers, borne on erect, leafless stems. They resemble *Allium* but without its characteristic smell. Grow in a rock garden or raised bed. *N. gracile* is best in a wild garden as it increases freely; may become invasive.  
 • **HARDINESS** Hardy to -10°C (14°F).  
 • **CULTIVATION** Plant 7cm (3in) deep in any soil in full sun or partial shade in autumn.  
 • **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Remove offsets in autumn.  
 • **PESTS AND DISEASES** Trouble free.

*N. fragrans* see *N. gracile*.  
*N. gracile*, syn. *N. fragrans*,  
*N. inodorum* of gardens. Very vigorous, bulbous perennial with narrow, linear, basal leaves, 20–40cm (8–16in) long. Fragrant umbels of 8–15 small, funnel-shaped, brown- or pink-striped, white or occasionally lilac flowers, 0.9–1.5cm (¾–½in) long, are borne from spring to summer. ‡25–70cm (10–28in), ↔5cm (2in). Mexico, South America. \*\*\*  
*N. inodorum* of gardens see *N. gracile*.  
*N. neriniflorum* see *Caloscordum neriniflorum*.

▷ *Notocactus* see *Parodia*  
*N. apricus* see *P. concinna*  
*N. brevipalmatus* see *P. brevipalmatus*  
*N. claviceps* see *P. claviceps*  
*N. concinnus* see *P. concinna*  
*N. graessneri* see *P. graessneri*  
*N. haselbergii* see *P. haselbergii*  
*N. magnifica* see *P. magnifica*  
*N. mammulosus* see *P. mammulosus*  
*N. mutabilis* see *P. mutabilis*  
*N. ottonis* see *P. ottonis*  
*N. penicillata* see *P. penicillata*  
*N. rutilans* see *P. rutilans*  
*N. scopa* see *P. scopa*  
*N. submammulosus* see *P. mammulosa*



*Notospartium glabrescens*

## NOTOSPARTIUM

LEGUMINOSAE/PAPILIONACEAE

Genus of 3 species of leafless shrubs or trees found on valley sides and river terraces in South Island, New Zealand. They are grown for their elegant habit, green, leafless branches, and pendulous racemes of colourful, pea-like flowers, borne in summer. Grow in a shrub border or at the base of a sunny wall.  
 • **HARDINESS** Frost hardy.  
 • **CULTIVATION** Grow in moist but well-drained soil in full sun; shelter from strong winds. Pruning group 9.  
 • **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Take semi-ripe cuttings in summer, with bottom heat.  
 • **PESTS AND DISEASES** Trouble free.

*N. carmichaeliae* (Pink broom). Weeping shrub with slender, pendulous, leafless green shoots. Pea-like, purple-veined pink flowers, 8mm (⅜in) long, with broad, standard petals, are borne in dense, slender racemes, to 5cm (2in) long. ‡2–4m (6–12ft), ↔1.5m (5ft). New Zealand (South Island). \*\*\*  
*N. glabrescens* ▢♀ Upright shrub or small tree with pendulous lower branches and slightly flattened, slender, dark blue-green shoots. Pea-like pink flowers, to 1cm (½in) long, flushed and veined purple, are produced in open racemes, to 5cm (2in) long. ‡3m (10ft), ↔2m (6ft) or more. New Zealand (South Island). \*\*\*

## NUPHAR

Spatterdock, Yellow pond lily

NYMPHAEACEAE

Genus of 25 species of deciduous, submerged, aquatic perennials, mainly from temperate regions of the N. hemisphere. They have stout, creeping rhizomes, and both leathery floating leaves and membranous submerged leaves. In summer, they bear solitary,



*Nothofagus pumilio* (inset: leaf detail)

almost spherical flowers, which are held above the water surface. The flowers are followed by berry-like, ovoid to flask-shaped fruits. Generally more vigorous than water lilies (*Nymphaea*), they thrive in deeper, cooler water, forming robust groups of foliage on large natural lakes, where they may cover the water surface completely.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Outdoors, grow vigorous species in water 2m (6ft) deep, anchoring the thick rhizomes in the mud at the bottom. Grow less vigorous species in acid water about 30cm (12in) deep, providing a free root-run. Grow in full sun, and divide frequently for optimum flower production.
- **PROPAGATION** Separate pieces of rhizome that have a growing point attached, and transplant.
- **PESTS AND DISEASES** Trouble free.

*N. advena* (American spatterdock). Aquatic perennial with floating or upright, thick, tough, leathery, broadly ovate to oblong leaves, to 30cm (12in) long. In summer, bears red-tinged yellow flowers, 4cm (1½in) across, with coppery-red stamens. ↔ indefinite. C. and E. USA. \*\*\*

*N. japonica* (Japanese pond lily). Aquatic perennial with narrowly ovate to oblong floating leaves, to 40cm (16in) long, arrow-shaped at the bases, and distinctive, narrow, arrow-shaped, wavy submerged leaves, to 30cm (12in) long. Produces yellow, red-tinged flowers, 5cm (2in) across, in summer. ↔ 1m (3ft). Japan. \*\*

*N. halmiana*. Aquatic perennial with broadly rounded floating leaves, 10cm (4in) long, softly hairy beneath, and distinctive, thin, rounded submerged leaves. In summer, bears orange flowers, 2cm (¾in) across, with yellow margins. ↔ 60–90cm (24–36in). E. USA. \*\*

*N. lutea* (syn. *N. luteum*) (Yellow pond lily). Aquatic perennial with ovate-oblong to rounded, thick, mid- to deep green floating leaves, 40cm (16in) long, and broadly ovate to rounded, wavy-margined, translucent, pale green submerged leaves, each with a deep sinus. In summer, bears yellow flowers, 6cm (2½in) across, with a distinctive, unpleasant smell. ↔ 2m (6ft). Eurasia, N. Africa, E. USA, West Indies. \*\*\*

*N. luteum* see *N. lutea*.

*N. pumila*. Aquatic perennial with broadly ovate floating leaves, 14cm (5½in) long, and broadly ovate to



*Nuphar japonica*



*Nuphar lutea*

rounded, wavy-margined, translucent, pale green submerged leaves. In summer, bears yellow flowers, to 3cm (1¼in) across. Suitable for a small pool. ↔ 1.4m (4½ft). Europe, Russia (W. Siberia), Japan. \*\*\*

▷ **Nutmeg tree, California** see *Torreya californica*

▷ **Nutmeg yew** see *Torreya*

▷ **Nuttallia** see *Oemleria*

*N. cerasiformis* see *O. cerasiformis*

▷ **Nyctocereus serpentinus** see *Peniocereus serpentinus*

## NYMANIA

ALTONIACEAE/MELIACEAE

Genus of one species of evergreen shrub from hot, dry areas of South Africa. It is grown for its small, 4-petalled flowers, with 8 long stamens, produced singly from the leaf axils, and its colourful, bladder-like seed pods. The leaves are very narrow and arranged alternately. In frost-prone areas, grow *N. capensis* in a cool greenhouse or conservatory. In warm, dry climates, grow in a border or as a specimen plant.

• **HARDINESS** Frost tender, but may survive short periods at 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In spring and summer, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 8; may need restrictive pruning under glass after fruiting.

• **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings in summer, with bottom heat.

• **PESTS AND DISEASES** Usually trouble free, although scale insects may be a problem under glass.

*N. capensis* ♀ (Chinese lanterns, Klapperbos). Erect to ascending, large shrub or sometimes small tree, usually very open, with rigid branches. The stems are crowded with linear to narrowly oblong leaves, to 5cm (2in) long. Bears 4-petalled flowers, 1.5cm (½in) long, with erect, carmine-red to rose-pink petals, from late winter to early summer. Inflated seed capsules, 2.5–3cm (1–1¼in) long, are off-white, and heavily mottled and suffused carmine-red. † 2–3m (6–10ft) or more, ↔ 1–2m (3–6ft). South Africa (Eastern Cape). ☉ (min. 5–7°C/41–45°F)

## NYMPHAEA

Water lily

NYMPHAEACEAE

Genus of 50 species of herbaceous, submerged aquatic perennials occurring worldwide, cultivated for their showy, sometimes fragrant flowers and floating leaves. Water lilies have horizontal or upright rhizomes or stoloniferous tubers, and broadly ovate to rounded, floating leaves, each cleft into 2 lobes, with a basal sinus and a long leaf-stalk. The mostly white, yellow, pink, red, or, in the non-hardy species, blue flowers, borne in summer, each have 4 sepals and numerous narrow petals and stamens. Berry-like fruits, with many seeds, mature under water.

Hardy water lilies, usually day-blooming and with floating flowers, include 2 subgroups: the robust Marliacea Group hybrids, probably derived from *N. alba*, *N. odorata*, *N. tuberosa*, and *N. mexicana*, have rounded leaves, and flowers held just above the water; hybrids in the less vigorous Laydekeri Group, derived from *N. alba* and *N. tetragona*, have flowers held on or just above the water, and rounded, often mottled leaves. Tender, tropical water lilies are either day-blooming or night-blooming, with larger, often toothed leaves, and generally bear their flowers well above the water.

Water lilies are a decorative addition to any pool; the shade of their leaves is useful in reducing algae growth. In frost-prone areas, grow tender water lilies in a conservatory in full sun.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in undisturbed water in full sun. In summer, plant hardy water lilies in firm, loamy soil; insert the rhizomes just under the surface and cover with washed pea gravel or chippings. Submerge freshly planted containers so that 15–25cm (6–10in) of water covers the young crowns, either by temporarily lowering the water level or by raising the containers on brick plinths. For small rhizomes, reduce the depth to 8cm (3in); increase to 50cm (20in) for the largest rhizomes. Once plants are established, gradually increase the water depth above the crowns to twice the initial planting depth. Contain vigorous water lilies in an aquatic planting basket, or in a specially constructed, permanent planting station, about 1m (3ft) across and 45cm (18in)



*Nymphaea* 'Blue Beauty'

deep. During active growth, feed container-grown water lilies with proprietary aquatic fertilizer according to the manufacturer's instructions. Remove yellow leaves and dead-head regularly. Divide established plants, whose leaves thrust vertically above the water surface, to maintain flowering.

In frost-prone areas, grow tropical water lilies year-round in baskets in an indoor pool with a minimum temperature of 10°C (50°F) in winter and 21°C (70°F) in summer. In frost-free areas, plant in an outdoor pool in summer, remove the tubers in autumn, and overwinter in damp sand at a minimum of 10°C (50°F). Restart young plants in spring when dividing overwintered tubers. See also pp.52–53.

• **PROPAGATION** Surface-sow seed as soon as ripe, and cover with 2.5cm (1in) of water; germinate hardy species at 10–13°C (50–55°F), tropical species at 23–27°C (73–81°F). The seed heads sink as seeds ripen; enclose in a muslin bag to avoid losses. Divide rhizomes of older plants, or separate offsets. Remove young plantlets from viviparous water lilies in summer, and pot individually in shallow water until established.

• **PESTS AND DISEASES** Susceptible to brown china-mark moth, false leaf-mining midge, water lily beetle, water lily aphid (which overwinters on *Prunus* species), and brown spot, crown rot, and water lily leaf spot.

*N. alba* (White water lily). Aquatic perennial with rounded, dark green leaves, often red-green beneath, 30cm (12in) across, with open sinuses. The faintly fragrant white flowers, 20cm (8in) across, with yellow stamens, are cup-shaped, later star-shaped, and day-blooming. ↔ 1.7m (5½ft). Eurasia, N. Africa. \*\*\*

*N. 'Albida'* (syn. *N. 'Marliacea Albida'*). Aquatic perennial (Marliacea Group) with rounded, dark green leaves, 22cm (9in) across, slightly bronzed when young, with open sinuses. The fragrant, cup-shaped white flowers, 12–15cm (5–6in) across, have yellow stamens. ↔ 0.9–1.2m (3–4ft). \*\*\*

*N. 'Amabilis'*. Aquatic perennial with rounded leaves, 24cm (10in) across, with open sinuses, reddish purple when young, maturing to dark green with red-margined, light green undersides. Star-shaped flowers, 15–19cm (6–7in) across, are pink with light pink tips and dark yellow stamens. ↔ 1.5–2.2m (5–7ft). \*\*\*

*N. 'American Star'* (syn. *N. 'American Star'*). Aquatic perennial bearing rounded leaves, 25–27cm (10–11in) across, with open sinuses, purple-green when young, with red undersides, maturing to light green. Star-shaped flowers, 15–17cm (6–7in) across, with long, salmon-pink petals tipped paler pink, yellow inner stamens, and pinkish orange outer stamens, are borne well above the water surface. ↔ 1.2–1.5m (4–5ft). \*\*\*

*N. 'Attraction'* (syn. *N. 'Attraction'*). Aquatic perennial bearing oval, light bronze leaves, to 25–30cm (10–12in) long, with overlapping lobes, one of which is distinctly raised. Cup-shaped, later star-shaped flowers, to 23cm (9in) across, have dark garnet-red inner petals, lighter towards the margins, and orange-red stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. 'Aurora'** ■ Aquatic perennial with oval, mid-green leaves with maroon mottling, to 16cm (6in) long, with open sinuses. Cup-shaped, later flattened flowers, 10cm (4in) across, with orange stamens, change from yellowish apricot-red through orange-red to a slightly flecked burgundy-red. ↔ 0.9–1.5m (3–5ft). \*\*\*

**N. 'Blue Beauty'** ■ Aquatic perennial with oval, toothed, wavy-margined, dark green leaves lightly speckled brown above, to 35cm (14in) across, with partly overlapping lobes. Day-blooming, star-shaped, fragrant, mid-blue flowers, 20–28cm (8–11in) across, have dark yellow stamens. ↔ 1.2–2.2m (4–7ft). ☼ (min. 10°C/50°F)

**N. caerulea** (Blue lotus). Aquatic perennial with ovate, mid-green leaves, 30–40cm (12–16in) long, purple-spotted beneath, with overlapping lobes. Day-blooming, star-shaped, pale blue flowers, 15cm (6in) across, have paler inner petals and yellow stamens. ↔ 2.5–3m (8–10ft). N. and tropical Africa. \*

**N. capensis** ■ (Cape blue water lily). Aquatic perennial with rounded, toothed, wavy-margined, mid-green leaves, 25–40cm (10–16in) across, with slightly overlapping lobes. The young leaves are purple-spotted beneath. Produces day-blooming, star-shaped, fragrant, light blue flowers, 21–25cm (8–10in) across, with dark yellow stamens. ↔ 1.5–2.5m (5–8ft). E. Africa, southern Africa, Madagascar. ☼ (min. 5°C/41°F). 'Rosea' has leaves tinted red beneath and red-flushed, pale pink flowers.

**N. 'Carnea'**, syn. *N. 'Marliacea Carnea'*. Aquatic perennial (Marliacea Group) with dark green leaves, 19–20cm (7–8in) across, purplish when young, and light pink flowers, 11–12cm (4½–5in) across, with yellow stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. caroliniana 'Nivea'** ■ syn. *N. 'Caroliniana Nivea'*. Aquatic perennial bearing rounded, pale green leaves, 20–25cm (8–10in) across, with slightly open sinuses. Star-shaped, fragrant ivory-white flowers, 12–15cm (5–6in) across, have yellow stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. 'Caroliniana Nivea'** see *N. caroliniana 'Nivea'*.

**N. 'Charlene Strawn'**. Aquatic perennial with rounded leaves, 20–22cm (8–9in) across, red with purple mottling when young, maturing to mid-green, sometimes marked with purple, and with overlapping lobes. Star-shaped, highly fragrant, yellow flowers, 15–20cm (6–8in) across, have yellow stamens. ↔ 0.9–1.5m (3–5ft). \*\*\*

**N. 'Charles de Meurville'**. Aquatic perennial with oval, dark green leaves, 25cm (10in) long, with long, deep sinuses. Star-shaped flowers, 15–17cm (6–7in) across, are dark pinkish red in the centre, fading to pink towards the margins, with orange stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

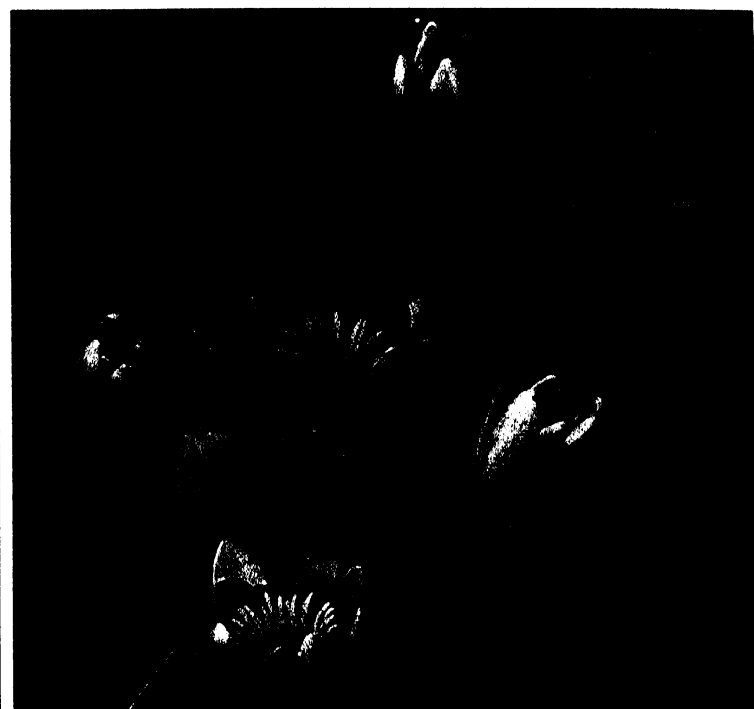
**N. 'Chromatella'** ■ ♀ syn. *N. 'Marliacea Chromatella'*. Aquatic perennial (Marliacea Group) bearing olive-green leaves with bronze markings, 15–20cm (6–8in) across, coppery with purple streaks when young. Canary-yellow flowers, 15cm (6in) across, have broad, incurved petals and golden stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. x daubenyana** (*N. caerulea* x *N. micrantha*). Aquatic, viviparous, hybrid perennial producing ovate, olive-to bronze-green leaves, to 30cm (12in) long, with wavy margins and overlapping lobes, many bearing a plantlet. Day-blooming, cup-shaped, fragrant flowers, 10–18cm (4–7in) across, are light blue with dark margins and yellow stamens. ↔ 0.9–1.2m (3–4ft). Garden origin. ☼ (min. 10°C/50°F)

**N. 'Ellisiana'**. Aquatic perennial with oval, mid-green leaves, 17–20cm (7–8in) long, with open sinuses; young leaves are dark green, marked purple. Star-shaped, fragrant, bright red flowers, 10–12cm (4–5in) across, have orange-red stamens. ↔ 90cm (36in). \*\*\*

**N. 'Emily Grant Hutchings'**. Aquatic perennial bearing rounded, wavy-margined leaves, 25–30cm (10–12in) across, bronze-green above, olive-green beneath, with overlapping nodes. Night-blooming, cup-shaped, dark pink flowers, 15–20cm (6–8in) across, have red stamens. ↔ 1.8–2.2m (6–7ft). ☼ (min. 10°C/50°F)

**N. 'Escarboucle'** ■ ♀ Aquatic perennial with rounded, mid-green leaves, 25–27cm (10–11in) across, brown-tinged when young, with overlapping lobes. Cup-shaped, later star-shaped,



*Nymphaea 'Froebelii'*

vermillion-red flowers, about 15–17cm (6–7in) across, have white-tipped outer petals and dark orange stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. 'Firecrest'** ■ Aquatic perennial with rounded, mid-green leaves, 22cm (9in) across, dark purple when young, with open sinuses. Star-shaped, deep pink flowers, 15cm (6in) across, with lavender-pink inner petals, have orange inner stamens and pink outer stamens. ↔ 1.2m (4ft). \*\*\*

**N. flava** see *N. mexicana*.

**N. 'Froebelii'** ■ Aquatic perennial with rounded, pale green leaves, 15cm (6in) across, bronzed when young, with open sinuses. Cup-shaped, later star-shaped, burgundy-red flowers, 10–12cm (4–5in) across, have orange-red stamens. ↔ 90cm (36in). \*\*\*

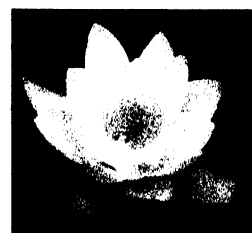
**N. 'Fulgens'** ■ syn. *N. 'Laydekeri Fulgens'*. Aquatic perennial (Laydekeri Group) with broadly ovate, dark green leaves, 21cm (8in) long, with overlapping lobes; young leaves are purplish green, marked dark purple. Cup-shaped,

burgundy-red flowers, 12–15cm (5–6in) across, have orange-red stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. 'General Pershing'** ■ Aquatic perennial bearing rounded, wavy-margined, olive-green, purple-marked leaves, 23–25cm (9–10in) across, with almost closed sinuses. Day-blooming, cup-shaped, later flat, highly fragrant, lavender-pink flowers, 20–27cm (8–11in) across, have yellow stamens. ↔ 1.5–1.8m (5–6ft). ☼ (min. 10°C/50°F)

**N. gigantea** (Australian water lily). Aquatic perennial with rounded, toothed, wavy-margined, veined, mid-green leaves, to 60cm (24in) across, tinged pink to purple beneath, with often overlapping lobes. Day-blooming, star-shaped, sky-blue to purplish blue flowers, to 30cm (12in) across, have bright yellow stamens. ↔ 2–3m (6–10ft). N. Papua New Guinea, tropical Australia. ☼ (min. 10°C/50°F)

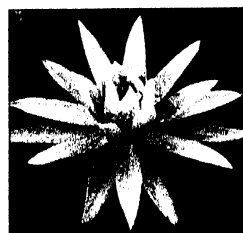
**N. 'Gladstoneana'** ♀ Aquatic perennial with rounded, wavy-margined, dark



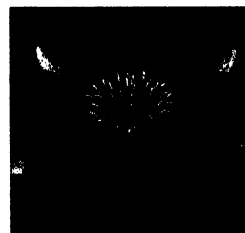
*Nymphaea alba*



*Nymphaea 'Albida'*



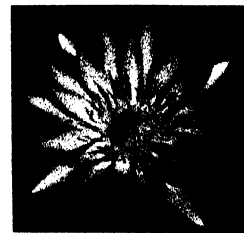
*Nymphaea 'American Star'*



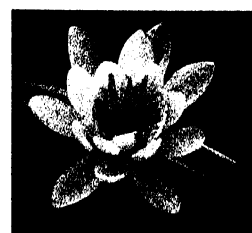
*Nymphaea 'Attraction'*



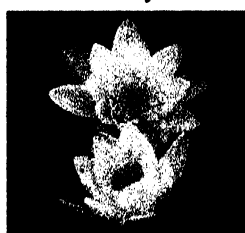
*Nymphaea 'Aurora'*



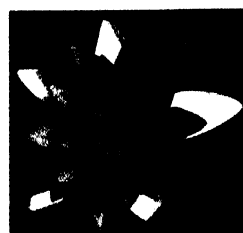
*Nymphaea capensis*



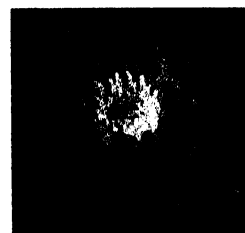
*Nymphaea caroliniana 'Nivea'*



*Nymphaea 'Chromatella'*



*Nymphaea 'Escarboucle'*



*Nymphaea 'Firecrest'*



*Nymphaea 'Fulgens'*



*Nymphaea 'General Pershing'*

green leaves, 27–30cm (11–12in) across, with toothed margins along the overlapping lobes, and bronzed when young. Star-shaped white flowers, 12–17cm (5–7in) across, have yellow stamens. ↔ 1.5–2.5m (5–8ft). \*\*\*  
**N. 'Gloriosa'**. Aquatic perennial with broadly ovate, bronze-green leaves, 20–22cm (8–9in) long, with open sinuses; young leaves are light-purple with darker markings and have overlapping lobes. Cup-shaped to star-shaped, bright red flowers, 12cm (5in) across, have orange-red stamens. ↔ 1.5m (5ft). \*\*\*

**N. 'Gonnère'** [♀] Aquatic perennial with rounded, light green leaves, 15–22cm (6–9in) across, with open sinuses; young leaves are bronzed. Globe-shaped, fragrant white flowers, 10–15cm (4–6in) across, have yellow stamens. ↔ 0.9–1.2m (3–4ft). \*\*\*

**N. 'Indiana'**. Aquatic perennial with rounded, olive-green leaves, 12cm (5in) long, with open sinuses; young leaves are heavily marked with purplish green. Cup-shaped flowers, gradually flattening to 9–10cm (3½–4in) across, turn from apricot, through apricot-orange, to dark orange-red, and have orange stamens. ↔ 75cm (30in). \*\*\*

**N. 'James Brydon'** [♀] Aquatic perennial with rounded, bronze-green leaves, 17cm (7in) across, with overlapping lobes; young leaves are purplish brown with dark purple markings. Cup-shaped, vivid rose-red flowers, 10–12cm (4–5in) across, have orange-red stamens. ↔ 0.9–1.2m (3–4ft). \*\*\*

**N. 'Laydekeri Fulgens'** see *N. 'Fulgens'*.

**N. lotus** (Egyptian water lily). Aquatic perennial with rounded, toothed, dark green leaves, to 50cm (20in) across, softly hairy beneath, with wavy margins and overlapping nodes. Bears day- or night-blooming, star-shaped, pink-tinged white flowers, to 25cm (10in) across. ↔ 2–3m (6–10ft). Egypt to tropical and S.E. Africa. ☉ (min. 10°C/50°F)

**N. 'Louise'**. Aquatic perennial with rounded, mid-green leaves, 22–25cm (9–10in) across, with open sinuses; young leaves are slightly bronzed. Cup-shaped, sweetly fragrant red flowers, 15cm (6in) across, have dark yellow stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*



*Nymphaea* 'Lucida'

**N. 'Lucida'** [♀] Aquatic perennial with broadly ovate, mid-green leaves, to 25cm (10in) long, with large purple markings and open sinuses. Star-shaped flowers, 12–15cm (5–6in) across, have red inner petals, pink-veined, whitish pink outer petals, and yellow stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. 'Marliacea Albida'** see *N. 'Albida'*.  
**N. 'Marliacea Carneae'** see *N. 'Carneae'*.  
**N. 'Marliacea Chromatella'** see *N. 'Chromatella'*.

**N. mexicana**, syn. *N. flava* (Yellow water lily). Aquatic perennial with ovate to rounded, wavy, toothed, leathery, mid-green leaves, to 18cm (7in) across, with brown marks above, purple beneath, and with open sinuses and overlapping lobes. Bears both floating and aerial, day-blooming, cup-shaped, later star-shaped, slightly fragrant, pale to bright yellow flowers, to 13cm (5in) across. ↔ 2–3m (6–10ft). S. USA, Mexico. ☉ (min. 10°C/50°F)

**N. 'Mme Wilfon Gonnère'**. Aquatic perennial with rounded leaves, 23–25cm

(9–10in) across, with overlapping lobes, slightly bronzed when young, maturing to mid-green; each has a broad yellow stripe in spring that disappears in summer. Peony-like pink flowers, 12cm (5in) across, have light pink outer petals and gold stamens. ↔ 1.2m (4ft). \*\*\*

**N. odorata**. Aquatic perennial with ovate to rounded, leathery, glossy, mid-green leaves, 15–30cm (6–12in) across, with open sinuses. Day-blooming, cup-shaped or later star-shaped, fragrant white flowers, 10–22cm (4–9in) across, have yellow stamens. ↔ 1.2–1.8m (4–6ft). N.E. USA. \*\*\*

**'Sulphurea'** has purple-marked, bronze-green leaves, and fragrant yellow flowers, held slightly above the water. ↔ 0.9–1.2m (3–4ft).  
**'Sulphurea Grandiflora'** [♀] is similar to 'Sulphurea', with marbled, dark green leaves and very large, star-shaped, bright rich yellow flowers. 'Turicensis' has rounded leaves, 12–15cm (5–6in) across, with rounded lobes and open sinuses, and bears star-shaped, fragrant, soft pink flowers; ↔ 70cm (28in).

**N. 'Paul Hariot'**. Aquatic perennial with oval leaves, 15–17cm (6–7in) long, with rounded tips to the lobes and open sinuses; leaves are olive-green and purple-speckled when young, maturing to dark green with irregular purple marks. Cup-shaped flowers, 10–12cm (4–5in) across, are creamy apricot, turning light pink, and have orange stamens. ↔ 0.9–1.2m (3–4ft). \*\*\*

**N. 'Pearl of the Pool'** [♀] Aquatic perennial with rounded, deep green leaves, 25cm (10in) across, with lobes sometimes overlapping and raised, bronzed when young. Star-shaped, fragrant pink flowers, 12–15cm (5–6in) across, have pinkish orange stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

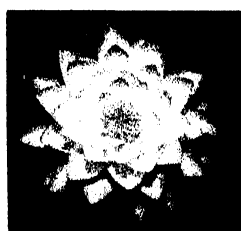
**N. 'Pink Sensation'** [♀] Aquatic perennial with rounded, mid-green leaves, to 25cm (10in) across, with narrow sinuses; young leaves are purple-green. Cup-shaped, later star-shaped pink flowers, 12–15cm (5–6in) across, have yellow inner stamens and pink outer stamens. ↔ 1.2m (4ft). \*\*\*

**N. pygmaea** see *N. tetragona*.  
**N. 'Radiant Red'**. Aquatic perennial with rounded, mid-green leaves, to 25cm (10in) across, with partly open sinuses. Star-shaped red flowers, 12–15cm (5–6in) across, have long, flecked petals and orange stamens. ↔ 0.9–1.2m (3–4ft). \*\*\*

**N. 'Red Flare'**. Aquatic perennial with rounded, heavily toothed, reddish bronze leaves, 25–30cm (10–12in) across, with wavy margins and open sinuses. Night-blooming, flat, dark red flowers, 17–25cm (7–10in) across, have light pink or yellowish stamens and are held well above the water. ↔ 1.5–1.8m (5–6ft). ☉ (min. 10°C/50°F)

**N. 'Rembrandt'**. Aquatic perennial with rounded, mid-green leaves, 22–25cm (9–10in) across, with open sinuses; young leaves are purplish green. Bears peony-like red flowers, 15–20cm (6–8in) across, with yellow stamens. ↔ 70–120cm (28in–48in). \*\*\*

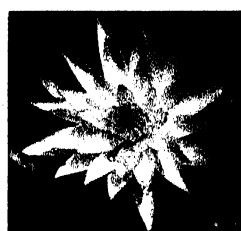
**N. 'René Gérard'** [♀] Aquatic perennial with rounded, mid-green leaves, to 25–27cm (10–11in) across, bronzed when young, with partly open sinuses. Star-shaped, rosy-red flowers, 15–22cm (6–9in) across, have strongly flecked, paler outer petals and yellow stamens. ↔ 1.5m (5ft). \*\*\*



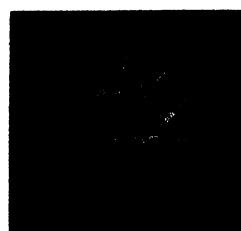
*Nymphaea* 'Gonnère'



*Nymphaea* 'James Brydon'



*Nymphaea odorata* 'Sulphurea Grandiflora'



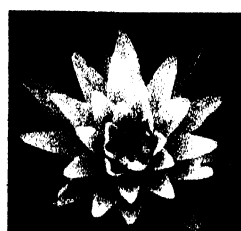
*Nymphaea* 'Pearl of the Pool'



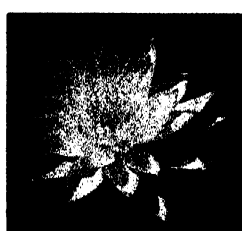
*Nymphaea* 'Pink Sensation'



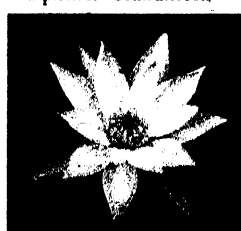
*Nymphaea* 'René Gérard'



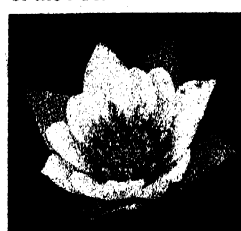
*Nymphaea* 'Rose Arey'



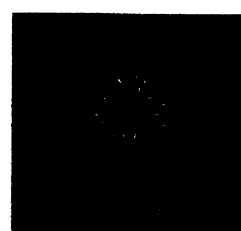
*Nymphaea* 'Sunrise'



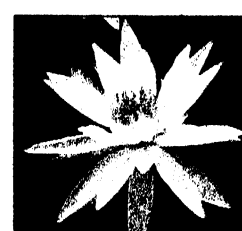
*Nymphaea tetragona*



*Nymphaea tetragona* 'Helvola'



*Nymphaea* 'Vésuve'



*Nymphaea* 'Virginalis'



**N. 'Rose Arey'** ■ Aquatic perennial with rounded, bronze-green leaves, 22cm (9in) across, purple when young, with narrow sinuses. Bears star-shaped, fragrant, deep rose-pink flowers, 17–20cm (7–8in) across, orange-pink toward the margins, with golden stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. 'St. Louis'** ■ Aquatic perennial with broadly ovate, light green leaves, to 50cm (20in) long, sometimes with wavy margins, purple-marked when young, with open sinuses. Day-blooming, star-shaped, fragrant, lemon-yellow flowers, 20–27cm (8–11in) across, have golden yellow stamens. ↔ 2.5–3m (8–10ft). ☼ (min. 10°C/50°F)

**N. 'Sunrise'** ■ Aquatic perennial with broadly ovate, dark green leaves, 27cm (11in) long, with open sinuses; young leaves have purple mottling. Bears star-shaped, bright yellow flowers, 17–23cm (7–9in) across, with long, narrow petals and yellow stamens. ↔ 1.2–1.5m (4–5ft). \*\*\*

**N. tetragona** ■ syn. *N. pygmaea*. Aquatic perennial with ovate, dark green, purple-blotched leaves, to 8cm (3in) across, with open sinuses. Day-blooming, cup-shaped, slightly fragrant flowers, 2.5–5cm (1–2in) across, are white with yellow stamens. ↔ 25–40cm (10–16in). N.E. Europe, N. Asia to Japan, N. America. \*\*\*

**'Helvola'** ■ has heavily mottled, purple-marked leaves, 12cm (5in) long. Slightly fragrant, vivid yellow flowers, 5–7cm (2–3in) across, have orange-yellow stamens and become star-shaped.

**N. tuberosa**. Aquatic perennial with rounded, bright green leaves, 10–40cm (4–16in) across, with open sinuses. Day-blooming, cup-shaped, slightly scented white flowers, 10–22cm (4–9in) across, with yellow stamens, are sometimes held 5–8cm (2–3in) above the water. N.E. USA. ↔ 2.2m (7ft). \*\*\*

**'Richardsonii'** has mid-green leaves, 40cm (16in) across, with overlapping lobes. Peony-like white flowers have yellow stamens. \*\*\*

**N. 'Vésuve'** ■ Aquatic perennial with rounded, mid-green leaves, 22–25cm (9–10in) across, with open sinuses. Star-shaped, fragrant red flowers, 17cm (7in) across, darkening with age, have inward-curving petals and orange-red stamens. ↔ 1.2m (4ft). \*\*\*

**N. 'Virginalis'** ■ Aquatic perennial with rounded, pale green leaves, 22cm (9in) across, purple or bronze when young, with overlapping lobes. Star-shaped, fragrant white flowers, 11–14cm (4½–5½in) across, have yellow stamens. ↔ 0.9–1.2m (3–4ft). \*\*\*

**N. 'Virginia'**. Aquatic perennial with ovate, mid-green leaves, 25cm (10in) long, heavily marked with purple, mainly at the margins of older leaves, with open sinuses. Star-shaped, fragrant flowers, 17–20cm (7–8in) across, pale yellow in the centres and off-white towards the outsides, have yellow stamens. ↔ 1.5–1.8m (5–6ft). \*\*\*

**N. 'Wood's White Knight'**. Aquatic perennial bearing rounded, mid-green leaves, 30–40cm (12–16in) across, with scalloped, wavy margins and open sinuses. Produces night-blooming, peony-like, fragrant white flowers, 25–30cm (10–12in) across, with yellow stamens. ↔ 2.5–3m (8–10ft). ☼ (min. 10°C/50°F)

## NYMPHOIDES

Floating heart

MENYANTHACEAE

Genus of 20 species of rhizomatous, herbaceous, submerged aquatic perennials occurring worldwide. They are often found in shallow, still water in lakes and ponds, where they spread rapidly, the leaves forming a floating carpet. Leaves are rounded with heart-shaped bases, or kidney-shaped, and grow from thin, creeping, branched rhizomes. The yellow or white, fringed flowers, resembling miniature water lilies (*Nymphaea*), are held above the surface of the water. Grow in a wildlife pool with water lilies or *Nuphar* species. In frost-prone areas, grow tender species in a greenhouse pool or aquarium.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow hardy species, and tender species in frost-free areas, in water no deeper than 60cm (2ft). In a small pool, contain within an aquatic planting basket; in a larger pool or lake, growth is limited to the shallow margins. In frost-prone areas, grow tender species in an inert medium in a large aquarium or indoor pool in full light; most are tolerant of a range of water qualities. See also pp.52–53.
- **PROPAGATION** Separate runners during summer.
- **PESTS AND DISEASES** Trouble free.

**N. humboldtiana**. Rhizomatous, aquatic perennial with spreading runners and kidney-shaped, shiny, pale green leaves, 15cm (6in) across, reddish green beneath, borne on stalks to 1m (3ft) long. In summer, bears funnel-shaped white flowers, to 4cm (1½in) across, with fringed petals. ↔ indefinite. Mexico, West Indies, Central America and tropical South America. ☼ (min. 5°C/41°F)

**N. indica** (Water snowflake). Rhizomatous, aquatic perennial bearing rounded, glossy, pale green leaves, 5–20cm (2–8in) across, with heart-shaped bases. In summer, bears funnel-shaped white flowers, to 2cm (¾in) across, with yellow centres, and fringed petals covered with hairy white glands. ↔ indefinite. Tropical regions worldwide. ☼ (min. 5°C/41°F)

**N. peltata** ■ syn. *Limnathemum nymphaoides*, *L. peltatum*, *Villarsia nymphaoides* (Water fringe, Yellow floating heart). Rhizomatous, aquatic



*Nymphaoides peltata*

perennial with runners, to 2m (6ft) long, bearing ovate to rounded, mottled, bright mid-green leaves, 5–10cm (2–4in) across. Funnel-shaped, bright golden yellow flowers, 2cm (¾in) across, are produced on long stalks in summer. It is the only species regularly grown outdoors in frost-prone areas. ↔ indefinite. Europe, Asia. \*\*\*

## NYSSA

Tupelo

CORNACEAE/NYSSACEAE

Genus of about 5 species of deciduous trees from woodland and swampland in E. Asia and E. North America. Leaves are simple and alternate. Small, inconspicuous green flowers, borne in clusters in early summer, are followed by small, ovoid blue fruits, about 1cm (½in) long. Grown for their attractive foliage and brilliant autumn colour, they are ideal as specimen trees or in group plantings, and are effective near water.

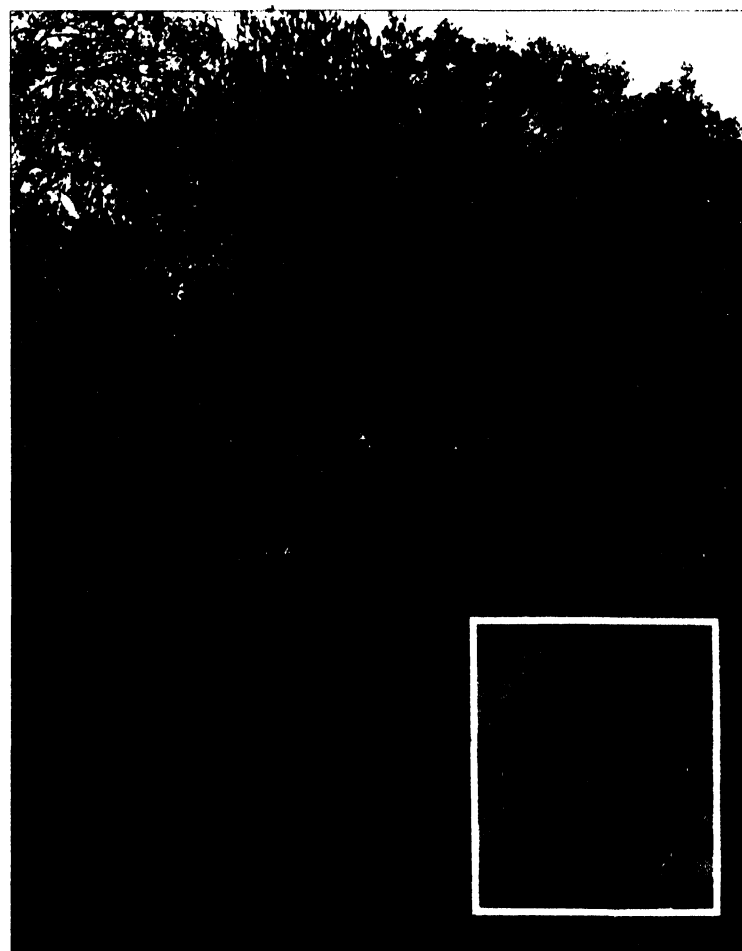
- **HARDINESS** Fully hardy, but do best in areas with hot summers.
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral to acid soil in sun or partial shade, with shelter from cold, dry winds. Plant as small plants, to 30cm (12in) tall, from containers; it is difficult to transplant them successfully. Pruning group 1; in cool-maritime climates, if it is difficult to maintain a leader, grow as multi-stemmed trees.
- **PROPAGATION** Sow seed in a seedbed in early summer, or semi-ripe cuttings in midsummer.
- **PESTS AND DISEASES** Trouble free.



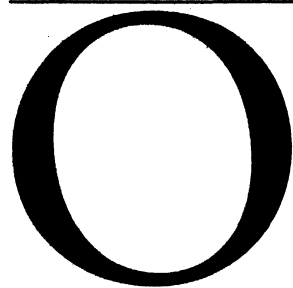
*Nyssa sylvatica*

**N. sinensis** ■ ♀ △ — □ (Chinese tupelo). Broadly conical, deciduous tree, sometimes with several stems. Oblong to elliptic, entire, slenderly tapered, dark green leaves, to 20cm (8in) long, are sparsely hairy and bronze-red when young, turning brilliant shades of orange, red, and yellow in autumn, and becoming nearly hairless when mature. ↔ 10m (30ft). C. China. \*\*\*

**N. sylvatica** ■ △ — □ (Black gum, Sour gum, Tupelo). Broadly conical to columnar, deciduous tree with often drooping lower branches. Bears ovate to obovate, matt or glossy, dark green leaves, to 15cm (6in) long, downy beneath when young, with short, blunt points. Leaves turn vivid orange, yellow, or red in autumn. ‡ 20m (70ft), ↔ 10m (30ft). E. North America. \*\*\*



*Nyssa sinensis* (inset: leaf detail)

▷ Oak see *Quercus*American white see *Quercus alba*Armenian see *Quercus pontica*Black see *Quercus velutina*Black Jack see *Quercus marilandica*Californian black see *Quercus kelloggii*Californian live see *Quercus agrifolia*Canyon see *Quercus chrysolepis*Chestnut-leaved see *Quercus castaneifolia*Chinkapin see *Quercus muehlenbergii*Common see *Quercus robur*Cork see *Quercus suber*Daimio see *Quercus dentata*English see *Quercus robur*Forest see *Casuarina torulosa*Holm see *Quercus ilex*Hungarian see *Quercus frainetto*Kermes see *Quercus coccifera*Lebanon see *Quercus libani*Lucombe see *Quercus x hispanica* 'Lucombeana'Mirbeck's see *Quercus canariensis*Northern pin see *Quercus ellipsoidalis*Oregon see *Quercus garryana*Pedunculate see *Quercus robur*Pin see *Quercus palustris*Red see *Quercus rubra*Scarlet see *Quercus coccinea*Sessile see *Quercus petraea*She see *Casuarina*Shingle see *Quercus imbricaria*Silky see *Grevillea robusta*Swamp white see *Quercus bicolor*Tanbark see *Lithocarpus densiflorus*Turkey see *Quercus cerris*Water see *Quercus nigra*Willow see *Quercus phellos*▷ Oat grass see *Arrhenatherum*Blue see *Helictotrichon sempervirens*

## ▷ Oats.

Golden see *Stipa gigantea*Sea see *Chasmanthium latifolium*Water see *Zizania*▷ Obedient plant see *Physostegia*, *P. virginiana*

## OBREGONIA

## CACTACEAE

Genus of one species of low-growing, simple, sometimes clustering perennial cactus, closely related to *Ariocarpus*, found on periodically dry, rocky hillsides in N.E. Mexico. Its stems are covered by leaf-like, spirally arranged tubercles. Funnel-shaped flowers are produced from the woolly, depressed centre of each crown during daytime in summer; they are followed by white berries containing pear-shaped, slightly curved seeds. Below 10°C (50°F), grow in a temperate greenhouse; in warm, dry climates, use in a desert garden.

• **HARDINESS** Frost tender.*Obregonia denegrii*

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun. From mid-spring to late summer, water moderately and apply a low-nitrogen liquid fertilizer every 4–5 weeks. In autumn, reduce water gradually, then keep completely dry until early spring. Outdoors, grow in sharply drained, neutral to slightly alkaline, gritty, poor, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring or summer.

• **PESTS AND DISEASES** Susceptible to aphids, especially while flowering.

**O. denegrii** ■ Perennial cactus with a thick, tuberous rootstock and flattened-spherical, greyish green or brownish green stems. Triangular tubercles have woolly hairs in the axils, and areoles at their tips, from which a few bristly spines emerge, but quickly fall. In summer, bears solitary, broadly funnel-shaped, very narrow-petalled, white or pale pink flowers, 2–3.5cm (¾–1½in) across, with yellow centres. †7–10cm (3–4in), ↔ 12cm (5in). N.E. Mexico. ♀ (min. 7–10°C/45–50°F)

▷ Ocean spray see *Holodiscus discolor*

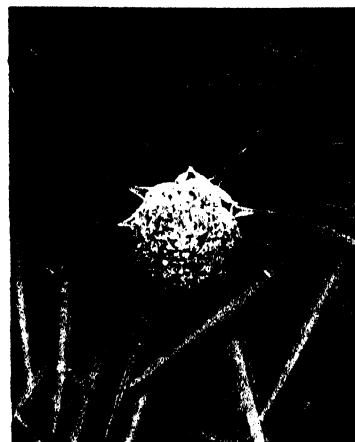
## OCHAGAVIA

## BROMELIACEAE

Genus of 3 species of evergreen, terrestrial perennials (bromeliads) found on exposed, coastal rock faces in Chile. They have almost stemless, spreading rosettes of stiff, spiny-toothed leaves. The spherical inflorescences, produced in summer, sit low in the centres of the rosettes and have conspicuous, narrow bracts and tubular, red or yellow flowers; these are followed by ovoid green berries containing large, spherical brown seeds. Where temperatures regularly drop below 5°C (41°F), grow in a cool greenhouse or as houseplants; in warmer climates, use outdoors in a desert garden.

• **HARDINESS** Frost tender; will sometimes withstand short periods at 0°C (32°F) in a sheltered site.

• **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light with low humidity. In growth, water moderately with soft water (avoiding the crown), and apply a half-strength, low-nitrogen liquid fertilizer every 3–4 weeks; keep dry when dormant. Outdoors, grow in moderately

*Ochagavia carnea*

fertile, humus-rich, gritty, sharply drained soil in full sun. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe.

• **PESTS AND DISEASES** Susceptible to scale insects.

**O. carnea** ■ syn. *O. lindleyana*.

Terrestrial bromeliad with wide-spreading, dense rosettes of 30–50 stiff, very narrow, linear-lance-shaped, spiny-toothed leaves, 50cm (20in) long, tapering to pointed tips; they are bright dark green above, sometimes with grey-white scales, and densely covered with grey-white scales beneath. In summer, produces many tubular, rose-pink flowers, to 5cm (2in) long, in congested, short-stalked, spherical inflorescences, each with a collar of white and pink bracts. †→ 60cm (24in). C. Chile. ♀ (min. 5°C/41°F)

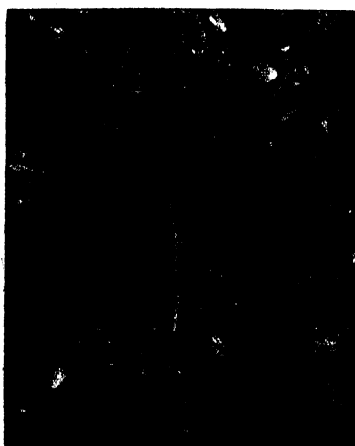
**O. lindleyana** see *O. carnea*.

## OCHNA

Bird's eye bush

## OCHNACEAE

Genus of over 80 species of deciduous or semi-evergreen trees and shrubs from tropical woodland in Africa and Asia, grown for their flowers and fruits. The leathery, often shiny leaves are alternate, simple, and usually minutely toothed. The 5- to 10-petalled, saucer-shaped flowers are solitary, or borne in racemes, panicles, cymes, or umbels. After the petals fall, the calyces and receptacles enlarge and become thick and colourful, contrasting with the shiny, purplish black or black, usually spherical, one-

*Ochna serrulata*

seeded fruits, borne 3–12 on each receptacle. In frost-prone areas, grow in a conservatory or temperate greenhouse; elsewhere, use in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 8; plants under glass need restrictive pruning after flowering.

• **PROPAGATION** Sow seed at 16°C

(61°F) in spring. Root semi-ripe cuttings with bottom heat in summer, or air layer in spring.

• **PESTS AND DISEASES** Red spider mites may infest plants under glass.

**O. multiflora** see *O. serrulata*.

**O. serratifolia** of gardens see *O. serrulata*.

**O. serrulata** ■ □ syn. *O. multiflora*. *O. serratifolia* of gardens (Mickey Mouse plant). Bushy, semi-evergreen shrub or small tree, with bronze shoots covered with close-set, raised, corky dots. Shiny, bright green leaves, 6cm (2½in) long, are narrowly elliptic and finely toothed. Saucer-shaped flowers, to 2cm (¾in) across, each with 5 or 6 spreading, bright yellow petals, are borne singly or in small cymes, mainly in late spring and summer; after the petals fall, the receptacle and sepals turn glossy red. Produces pendent clusters of 5 or 6 spherical, lustrous black fruit.

‡ 1.5–2.5m (5–8ft), ↔ 1–2m (3–6ft). South Africa. ♀ (min. 7°C/45°F)

## OCIMUM

## LABIATAE/LAMIACEAE

Genus of 35 species of aromatic annuals and evergreen perennials and shrubs occurring in hot, dry scrub in tropical Africa and Asia. They have erect, usually branching stems, with linear to almost rounded leaves, borne in opposite pairs. The tubular flowers, usually in whorls of 6, are arranged in loose or dense spikes, and have small to large, occasionally brightly coloured bracts. Most species and cultivars have medicinal or culinary uses; *O. basilicum* (basil) and its cultivars are grown as culinary herbs. Grow as annuals in a herb or vegetable garden.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Grow in light, fertile, well-drained soil in a warm, sheltered site in full sun. Water freely during dry periods in summer. Pinch out flower-heads as soon as they appear, to ensure continued leaf growth.

• **PROPAGATION** Sow seed at 13°C (55°F) in early spring, or sow *in situ* in early summer.

• **PESTS AND DISEASES** May be infested with aphids, and sometimes affected by mildew in hot, dry summers.

**O. basilicum** (Basil, Sweet basil). Erect, bushy, aromatic annual or short-lived perennial. Narrowly oval to elliptic leaves, to 5cm (2in) long, are entire or toothed; sometimes slightly hairy, and bright green, occasionally flushed deep purple. Produces whorls of 6 tubular, 2-lipped, sometimes pink-purple-tinged, white flowers, to 1cm (½in) long, in lax, slightly hairy spikes in



*Ocimum basilicum* 'Dark Opal'

late summer. ‡ 30–60cm (12–24in), ↔ 30cm (12in) if grown as an annual. Tropical and subtropical Asia; widely grown in similar, and Mediterranean climates. ✱. 'Dark Opal' ■ has red-purple leaves and pink flowers. **var. minimum** (Greek bush basil) is compact and rounded, bearing ovate leaves, less than 1cm (½in) long, and flowers 2–3mm (¼–½in) long; ‡ 15–30cm (6–12in). 'Purple Ruffles' has purple leaves, curled and fringed at the margins.

- ▷ **Oconee bells** see *Shortia galacifolia*
- ▷ **Ocotillo** see *Fouquieria splendens*
- ▷ **Octopus tree** see *Schefflera actinophylla*

## X ODONTIODA

ORCHIDACEAE

Hybrid genus of epiphytic, evergreen orchids derived from crosses between *Odontoglossum* and *Cochlidium*; they are vegetatively indistinguishable from *Odontoglossum*. They have ovoid, compressed pseudobulbs, each with 2 linear, mid-green leaves, 20cm (8in) long, at the tip. Erect to arching



✱ *Odontioda* Mount Bingham

racemes, 30–45cm (12–18in) tall, of 12 or more rounded to star-shaped flowers, 8cm (3in) across, often with ruffled or crisped margins, arise from the bases of the pseudobulbs at almost any time of the year, most commonly in spring. The flowers range in colour from pastel shades to deep reds, and are often spotted or marked red or yellow.

- **HARDINESS** Frost tender.
- **CULTIVATION** As *Odontoglossum*.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

✱ **O. City of Birmingham** (x *O. Gold Wood* x *Odontoglossum harryanum*). Epiphytic orchid with yellow flowers marked purple and bronze. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Durham Castle 'Lyoth Supreme'** (x *O. Ingmar* x x *O. Trixon*). Epiphytic orchid producing brilliantly coloured flowers in rich red and mauve shades. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Eric Young** (x *O. Golden Rialto* x *Odontoglossum Niamalto*). Epiphytic orchid producing light yellow flowers, spotted with deeper yellow. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Le Nez Point** (x *O. Brocade* x x *O. Trixon*). Epiphytic orchid with solid, dark red flowers. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Mount Bingham** ■ (x *O. Ingera* x x *O. Marzorka*). Epiphytic orchid with flowers patterned in red and lilac. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Petit Port** ■ (x *O. Colwell* x x *O. Margia*). Epiphytic orchid bearing rich red flowers with pink-, yellow-, or brown-patterned lips. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Red Rum** (x *O. Brocade* x x *O. Ingera*). Epiphytic orchid with flowers richly patterned in red-mauve and purple. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)



✱ *Odontioda* Petit Port

## X ODONTOCIDIUM

ORCHIDACEAE

Hybrid genus of epiphytic, evergreen orchids derived from crosses between *Odontoglossum* and *Oncidium*; they are vegetatively indistinguishable from *Odontoglossum*. They have rounded or ovoid to conical pseudobulbs (all those described are rounded and compressed), each with 2 linear, mid-green leaves, 23cm (9in) long, at the tip. Tall, arching racemes or panicles of 12 or more flowers, 8cm (3in) across, arise from the base. The predominantly yellow, yellow-brown, or russet-red flowers have large, flared lips.

- **HARDINESS** Frost tender.
- **CULTIVATION** As *Odontoglossum*.
- **PROPAGATION** Divide when the plants overflow their containers.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

✱ **O. Artur Elle 'Columbien'** ■ (*Odontoglossum Hambühren Gold* x *Oncidium tigrinum*). Epiphytic orchid bearing yellow flowers, delicately patterned with chestnut-brown, all year round. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. 'Crowborough'** (*Odontoglossum Golden Guinea* x *Oncidium leucochilum*). Epiphytic orchid bearing deep brown and yellow flowers with white lips, mainly in spring. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. 'Purbeck Gold'** (*Odontoglossum Gold Cup* x *Oncidium tigrinum*). Epiphytic orchid bearing deep yellow, brown-spotted flowers, with flared yellow lips, mainly in autumn. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

✱ **O. Tiger Hambühren** ■ (*Odontoglossum Goldrausch* x *Oncidium tigrinum*). Epiphytic orchid bearing rich yellow flowers, heavily spotted and barred with chestnut-brown, mainly in autumn. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

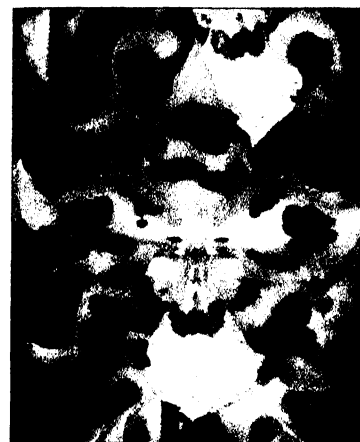
✱ **O. Tigersun 'Orbec'** ■ (*Odontoglossum Sunmar* x *Oncidium*



✱ *Odontocidium* Artur Elle 'Columbien'



✱ *Odontocidium* Tiger Hambühren



✱ *Odontocidium* Tigersun 'Orbec'

*tigrinum*). Epiphytic orchid bearing yellow flowers, lightly marked with chestnut-brown, mainly in autumn. ‡ 45cm (18in), ↔ 30cm (12in). ☼ (min. 10°C/50°F; max. 24°C/75°F)

## ODONTOGLOSSUM

ORCHIDACEAE

Genus of about 200 species of evergreen, epiphytic or lithophytic, rhizomatous orchids from mountainous regions, at altitudes of 2,000–3,000m (7,000–10,000ft), in Central and South America. They produce ovoid or oblong-ellipsoid to conical pseudobulbs, each with 1–3 variably shaped, thinly leathery, mid-green leaves at the tip. Flowers are borne in tall or short, erect or arching racemes or panicles arising from the bases of the pseudobulbs, and are highly variable in colour and shape. Many hybrids have been produced that will flower at almost any time of year, with 12 or more flowers in a raceme.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool-growing orchids. Grow in small pots of epiphytic orchid compost, preferably made with fine-grade bark to suit the fine root system. In summer, provide bright filtered light and high humidity; water and mist freely, and apply fertilizer at every third watering. In winter, provide full light and water sparingly. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides. Hybrids are better retained as one plant; pot on, in late summer or early spring.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

*Odontoglossum crispum*

*O. bictoniense* see *Lemboglossum bictoniense*.

*O. Buttercrisp* (*O. Brimstone Butterfly* x *O. Crispiana*). Epiphytic orchid with ovoid, compressed pseudobulbs and narrowly oval leaves, 15cm (6in) long. Clear yellow flowers, 6cm (2½in) across, with a few brown spots and brown-spotted, white-margined lips, appear at any time of year. ‡ 30cm (12in), ↔ 25cm (10in). ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. cariniferum*. Epiphytic orchid with oblong-ellipsoid, compressed, furrowed pseudobulbs and oblong-elliptic leaves, to 30cm (12in) long. In spring, bears yellow-margined brown flowers, 5cm (2in) across, in erect or arching panicles, 0.6–1.2m (2–4ft) long. ‡ to 1.2m (4ft), ↔ 30cm (12in). ♀ (min. 10°C/50°F; max. 24°C/75°F).

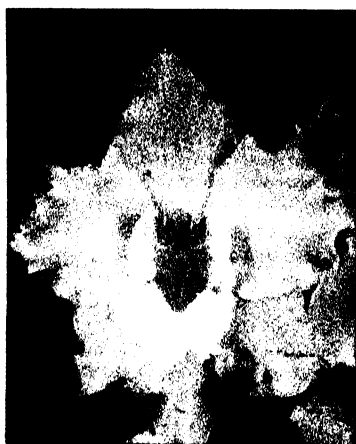
*O. cervantesii* see *Lemboglossum cervantesii*.

*O. cordatum* see *Lemboglossum cordatum*.

*O. crispum* ▣ Epiphytic orchid with ovoid pseudobulbs and linear-elliptic leaves, to 40cm (16in) long. In winter, white flowers, 8cm (3in) across, the lips sometimes yellow and spotted red in the centres, are produced in racemes to 50cm (20in) long. ‡ 50cm (20in), ↔ 25cm (10in). Colombia. ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. grande* see *Rossioglossum grande*.

*O. harryanum*. Epiphytic orchid with slender, ovoid pseudobulbs and elliptic-oblong leaves, to 45cm (18in) long. Flowers, 8cm (3in) across, varying from olive-green to buff or chestnut-brown,

*Odontoglossum Royal Occasion*

with lips lined purplish mauve, appear in racemes to 1–1.2m (3–4ft) long, in winter. ‡ 1–1.2m (3–4ft), ↔ 23cm (9in). Colombia, Peru. ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. odoratum*. Epiphytic orchid with ovoid pseudobulbs and narrowly lance-shaped leaves, to 30cm (12in) long. Star-shaped, fragrant flowers, 6cm (2½in) across, pale to deep yellow, dotted and marked dark maroon or red-brown, are produced in panicles to 75cm (30in) long, in spring. ‡ 75cm (30in), ↔ 20cm (8in). Colombia, Venezuela. ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. rossii* see *Lemboglossum rossii*.

*O. Royal Occasion* ▣ (*O.*

*Ardentissimum* x *O. Pumistor*).

Epiphytic orchid with ovoid pseudobulbs and narrowly oval leaves, 30cm (12in) long. White flowers, 6cm (2½in) across, with deep yellow markings in the centres of the lips, are produced in early summer. ‡ 30cm (12in), ↔ 25cm (10in). ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. Saint Brelade 'Jersey'*

(*Lemboglossum rossii* x *O. Ophyras*).

Epiphytic orchid with ovoid pseudobulbs and narrowly oval leaves, 15cm (6in) long. Highly decorative, pale mauve flowers, 6cm (2½in) across, with deeper mauve or maroon markings and pale mauve lips marked with white and maroon, are produced in late spring. ‡ 30cm (12in), ↔ 25cm (10in). ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. spectatissimum*, syn. *O. triumphans*.

Epiphytic orchid producing ovoid pseudobulbs and narrowly elliptic leaves, 40cm (16in) long. In spring, bears erect or arching racemes, to 90cm (36in) long, of golden yellow flowers, heavily barred and spotted chestnut-brown, 10cm (4in) across. ‡ 90cm (36in), ↔ 20cm (8in). Colombia, Venezuela. ♀ (min. 10°C/50°F; max. 24°C/75°F).

*O. stellatum* see *Lemboglossum stellatum*.

*O. triumphans* see *O. spectatissimum*.

## ODONTONEMA

### ACANTHACEAE

Genus of 26 species of evergreen perennials and shrubs from woodland in tropical America. They are grown for their terminal racemes or panicles of tubular, brightly coloured flowers, which are 2-lipped or symmetrical. The simple, entire leaves are borne in opposite pairs. Where temperatures fall below 13°C (55°F), grow in a warm greenhouse. In warmer climates, grow in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun, and with moderate humidity. During the growing season, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 8; plants under glass need restrictive pruning after flowering.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root greenwood cuttings in early summer, or semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Prone to white-flies and red spider mites under glass.

*O. strictum*. Erect shrub, with robust, sparsely branched, rigid stems and oblong, wavy-margined, glossy, deep green leaves, 10–15cm (4–6in) long, with long, sharp points. In winter and spring, bears tubular, 2-lipped, waxy crimson flowers, 2.5cm (1in) long, in slender, erect, compact panicles, to 30cm (12in) long. ‡ 2m (6ft) or more (if unpruned), ↔ 60–100cm (24–39in). Central America. ♀ (min. 13°C/55°F).

## X ODONTONIA

### ORCHIDACEAE

Hybrid genus of epiphytic, evergreen orchids derived from crosses between *Odontoglossum* and *Miltonia*; they are vegetatively indistinguishable from *Odontoglossum*. They produce ovoid to conical pseudobulbs, each with 2 leaves at the tip. The flowers have large, flat lips and are produced in tall, arching racemes arising from the bases of the pseudobulbs at almost any time of year.

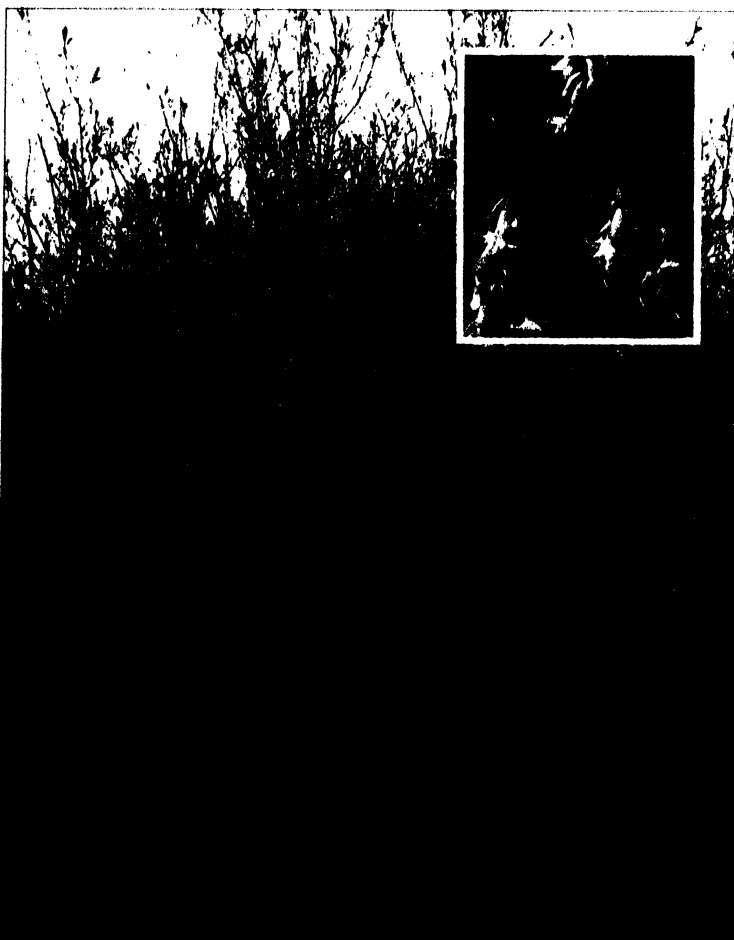
• **HARDINESS** Frost tender.

• **CULTIVATION** As *Odontoglossum*.

• **PROPAGATION** Divide when the plants overflow their containers.

• **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

x *O. Olga* (*Odontoglossum crispum* x x *Odontonia* Thisbe). Epiphytic orchid producing ovoid pseudobulbs and narrowly oval leaves, 30cm (12in) long. White flowers, 8cm (3in) across, with lips marked nut-brown, are borne in tall, arching racemes in winter. ‡ 30cm (12in), ↔ 25cm (10in). ♀ (min. 10°C/50°F; max. 24°C/75°F).

*Oemleria cerasiformis* (inset: flower detail)

## OEMLERIA syn. NUTTALLIA,

OSMARONIA

### ROSACEAE

Genus of one species of deciduous shrub found in forest and canyons in W.

North America. It is grown for its simple, alternate, glossy leaves, and its pendent racemes of bell-shaped flowers, both of which appear very early in the year (it is one of the first plants to come into leaf, often in late winter). Male and female flowers are borne on separate plants and both must be grown to bear the small, black, plum-like fruit. Grow in a shrub border or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in sun or partial shade. In moist soil, vigorously growing plants may sucker extensively; remove excess suckers to restrict growth. Pruning group 1 or 2.

• **PROPAGATION** Sow seed in a seedbed as soon as ripe. Take greenwood cuttings in early summer. Transplant suckers in autumn.

• **PESTS AND DISEASES** May become chlorotic in shallow, chalky soil.

*O. cerasiformis* ▣ syn. *Nuttallia cerasiformis*, *Osmaronia cerasiformis* (Indian plum, Oregon plum, Oso berry). Suckering shrub, forming a thicket of upright, eventually arching shoots. These bear narrowly oblong, or lance-shaped to inversely lance-shaped, glossy, dark green leaves, to 9cm (3½in) long, grey-green and softly hairy beneath. Small, bell-shaped, almond-scented

white flowers are produced in pendent racemes, to 10cm (4in) long, in early spring. They are followed on female plants by ovoid, plum-like, purple-black fruit, 2cm (¾in) long. ‡ 2.5m (8ft) or more, ↔ 4m (12ft). W. North America (British Columbia to California). \*\*\*

## OENANTHE

APIACEAE/UMBELLIFERAE

Genus of about 30 species of moisture-loving, hairless perennials from wet meadows, marshland, and shallow water in the N. hemisphere, South Africa, and Australia. Most have alternate, pinnate leaves and bear compound umbels of small, star-shaped white flowers, each with 5 notched petals. They are suitable for damp soil in a bog garden, or for planting as ground cover near a stream or pool. In frost-prone areas, grow tender species in a cool greenhouse. In some species, all parts may cause severe discomfort if ingested; some species are deadly. *O. javanica* is the exception; it is grown as a vegetable in areas where it grows naturally.

• **HARDINESS** Fully hardy to frost tender; *O. javanica* often survives temperatures to -10°C (14°F).

• **CULTIVATION** Grow in any moderately fertile, preferably moist or wet soil, in full sun or partial shade, although quite dry soil is tolerated, especially in partial shade. Shelter from cold, drying winds. In frost-prone areas, provide a dry winter mulch; take cuttings and overwinter in a cold greenhouse to insure against losses.

• **PROPAGATION** Divide in late spring, as growth begins. Take stem-tip cuttings in spring.

• **PESTS AND DISEASES** Susceptible to aphids, and may be damaged by slugs and snails.

*O. japonica* see *O. javanica*.

*O. javanica*, syn. *O. japonica*.

Spreading perennial with horizontal, rooting stems and celery-like, triangular, pinnate or 2-pinnate leaves, 7–15cm (3–6in) long, with narrowly ovate, toothed, mid-green segments. Compound umbels of star-shaped white flowers, 3mm (⅛in) long, are produced in late summer. ‡ 20–40cm (8–16in), ↔ 90cm (36in). India to Japan, Malaysia, Australia (Queensland). \*\*  
**'Fleming'** is grown for its attractive foliage, which is variegated pink, cream, and white.



*Oenanthe javanica* 'Fleming'

## OENOTHERA

Evening primrose, Sundrops

ONAGRACEAE

Genus of about 125 species of annuals, biennials, and perennials, some with tap roots or fibrous roots and a few with rhizomes or runners. Mostly from North America, with a few from South America, they grow in well-drained, sunny sites, such as mountain slopes, although some are from deserts. They have upright or decumbent stems with alternate, more or less lance-shaped, simple or pinnatifid, entire or toothed stem leaves, and occasionally basal rosettes of slightly larger leaves. Evening primroses are grown for their flowers, which are mainly produced over long periods in summer; they are often fragrant, white, yellow, or pink and are large, saucer- to cup-shaped, sometimes trumpet-shaped. Each flower has a long tube and 4 petals, and is either solitary and axillary, or borne in terminal racemes. Individual flowers open at dawn or dusk and fade quickly. Taller species are suitable for a sunny, mixed or herbaceous border; low-growing ones are better for border edging. *O. acaulis*, *O. caespitosa*, and *O. macrocarpa* are excellent for a scree bed or rock garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in poor to moderately fertile, well-drained, even stony soil in full sun. *O. fruticosa* prefers slightly more fertile soil. Protect rock garden plants and *O. speciosa* from excessive winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame: annuals and perennials in early spring, biennials in early summer; or sow annuals and biennials *in situ* in autumn. *O. glazioviana* self-seeds prolifically. Divide in early spring, or take softwood cuttings of unflowered shoots of perennials from late spring to midsummer. To avoid damage to tap-rooted species, grow on seedlings and cuttings individually in pots before planting out.

• **PESTS AND DISEASES** Prone to slugs, and sometimes affected by leaf spot and mildew. Root rot may be a problem in wet, heavy soil.

*O. acaulis*, syn. *O. taraxacifolia*.

Clump-forming, short-lived perennial with rosettes of inversely lance-shaped, irregularly pinnatifid, mid-green leaves, 12–20cm (5–8in) long, and a few decumbent stems, to 30cm (12in) or more long. In summer, bears 2–5 trumpet-shaped white flowers, to 8cm (3in) across, from the leaf axils; they open at sunset, and turn pink next day. ‡ 15cm (6in), ↔ 20cm (8in). Chile. \*\*\* (borderline)

*O. albicaulis*. Spreading annual, biennial, or short-lived perennial, usually grown as a biennial, with basal rosettes of spoon-shaped to ovate, grey-green leaves, to 5cm (2in) long, and white-hairy stems bearing lance-shaped, pinnatifid leaves. In summer, produces solitary, bowl-shaped, scented flowers, to 8cm (3in) across, which open in the evening and are initially white, then cream, and finally pale pink. ‡ 15–30cm (6–12in), ↔ 30cm (12in). N. America (Rocky Mountains). \*\*\*

*O. berlandieri* see *O. speciosa* 'Rosea'.



*Oenothera fruticosa* 'Fyrverkeri'

*O. biennis* (Evening primrose). Erect, hairy annual or biennial, usually grown as a biennial. Produces large rosettes of oblong to lance-shaped, shallowly toothed, slightly sticky, red-veined, mid-green leaves, 10–30cm (4–12in) long, and lance-shaped stem leaves, to 15cm (6in) long. Bowl-shaped, fragrant flowers, to 5cm (2in) across, initially pale yellow, ageing to dark golden yellow, and opening in the evening, are borne in leafy, spike-like racemes from summer to autumn. Seeds are used to produce evening primrose oil. ‡ 1–1.5m (3–5ft), ↔ 60cm (24in). E. North America; naturalized in many parts of the world. \*\*\*

*O. caespitosa*. Clump-forming biennial or perennial with numerous rosettes of inversely lance-shaped to diamond- or spoon-shaped, entire or irregularly toothed, grey-green leaves, 2–25cm (¾–10in) long. In summer, produces cup-shaped, fragrant white flowers, to 10cm (4in) across, from the rosette leaf axils, several opening at once at sunset; they turn pink with age. ‡ to 20cm (8in). W. USA. \*\*\*

*O. deltoidea* (Desert evening primrose). Erect annual or perennial, branching from the base, with triangularly ovate to lance-shaped, entire to pinnatifid, mid-green leaves, 5–10cm (2–4in) long. Often produces decumbent basal branches in addition to erect stems. In summer, bears solitary, bowl-shaped flowers, 4–8cm (1½–3in) across, initially white then pink, opening in the morning. Needs sharply drained soil. ‡ to 30cm (12in), ↔ 20cm (8in). USA (Arizona), Mexico (Baja California). \*\*

*O. elata* subsp. *hookeri*, syn.

*O. hookeri*. Erect perennial or biennial bearing basal rosettes of lance-shaped, slightly toothed, mid-green leaves, 5–12cm (2–5in) long, and hairy, branching stems with smaller leaves. Throughout summer, bears numerous, cup-shaped flowers, 5–7cm (2–3in) across, initially pale yellow becoming orange-red, which open at dusk in

terminal spikes. ‡ 90cm (36in), ↔ 30cm (12in). W. North America. \*\*\*  
*O. fraseri* see *O. fruticosa* subsp. *glauca*.  
*O. fruticosa*, syn. *O. linearis* (Sundrops). Erect perennial or biennial with branched, softly hairy, red-tinged stems bearing lance-shaped to ovate, toothed, mid-green leaves, 2.5–11cm (1–4½in) long, the basal leaves inversely lance-shaped to obovate. From late spring to late summer, produces racemes of 3–10 saucer- to cup-shaped, deep yellow flowers, 2.5–5cm (1–2in) across, opening during the day. ‡ 30–90cm (12–36in), ↔ 30cm (12in). E. North America. \*\*\*. **'Fireworks'** see **'Fyrverkeri'**. **'Fyrverkeri'** syn. **'Fireworks'**, has purple-brown-flushed leaves, and yellow flowers opening from red buds. subsp. *glauca* syn. *O. fraseri*, *O. glauca*, *O. tetragona*, has broader, only sparsely hairy, sometimes glaucous leaves, red-tinted when young, and light yellow flowers; E. USA.

**'Highlight'** see **'Hoheslicht'**.

**'Hoheslicht'**, syn. **'Highlight'**, produces an abundance of bright yellow flowers; ‡ 60cm (24in). **'Yellow River'** has red stems and large, canary-yellow flowers, 4–6cm (1½–2½in) across.

*O. glauca* see *O. fruticosa* subsp. *glauca*.  
*O. glazioviana*, syn. *O. glazouana*.

Erect biennial or short-lived perennial bearing basal rosettes of ovate-lance-shaped, hairy, mid-green leaves, to 20cm (8in) long, with conspicuous white midribs above, red beneath; slightly smaller leaves are borne on the hairy, unbranched, red-spotted stems. In mid- and late summer, produces racemes of bowl-shaped yellow flowers, 5–8cm (2–3in) across, with red-tinged calyces, opening at dusk. ‡ to 1.5m (5ft), ↔ 60cm (24in). N. America. \*\*\*

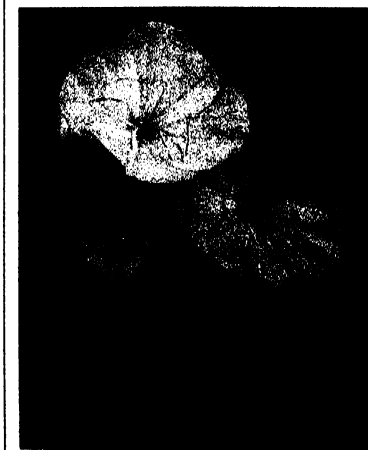
*O. glazouana* see *O. glazioviana*.

*O. hookeri* see *O. elata* subsp. *hookeri*.

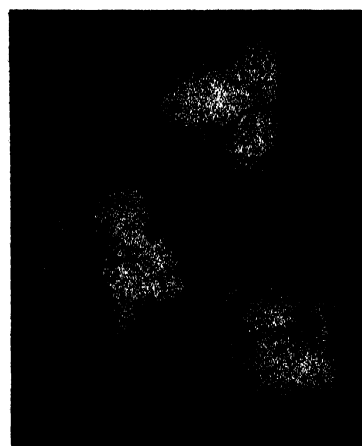
*O. linearis* see *O. fruticosa*.

*O. macrocarpa* syn. *O. missouriensis* (Ozark sundrops).

Vigorous perennial with trailing, hairy, often red-tinted stems, branching from a central rootstock. Leaves are lance-shaped to ovate, toothed, pale to mid-green, 2–8cm (¾–3in) long, with white midribs. From late spring to early autumn, produces a long succession of solitary, cup-shaped, bright golden yellow flowers, to 12cm (5in) across, with red-flecked calyces, remaining open in daytime. ‡ 15cm (6in), ↔ to 50cm (20in). S. Central USA. \*\*\*  
*O. missouriensis* see *O. macrocarpa*.

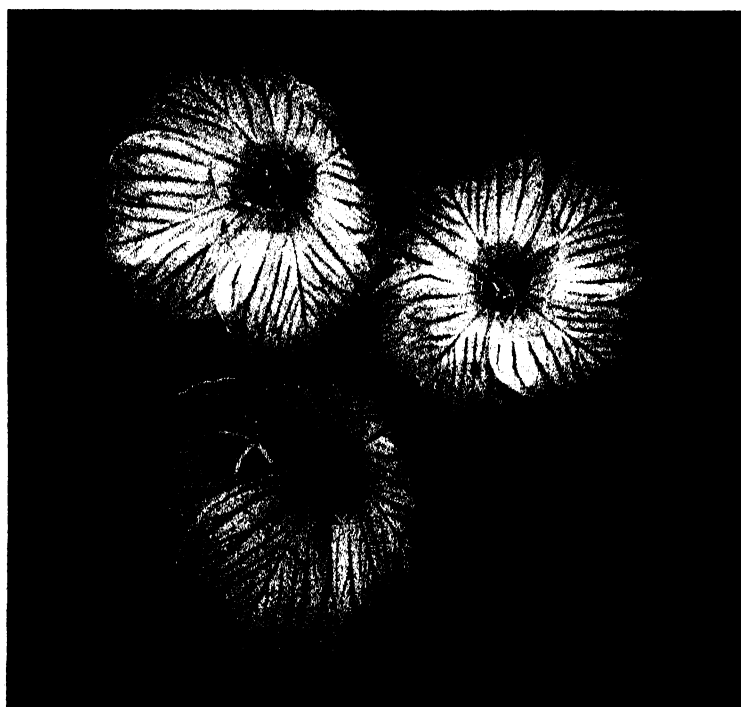


*Oenothera macrocarpa*



*Oenothera perennis*

***O. perennis*** [syn. *O. pumila* (Sundrops). Clump-forming perennial with rosettes of spoon-shaped to inversely lance-shaped, mid-green leaves, 2.5–5cm (1–2in) long. Loose, leafy, upright, few-flowered racemes of funnel-shaped yellow flowers, to 2cm (¾in) across, open during the day in summer.  $\pm$  to 20cm (8in) or more. E. North America. \*\*\*  
***O. pumila*** see *O. perennis*.  
***O. speciosa***. Sometimes invasive perennial, spreading by runners, with basal rosettes of oblong-lance-shaped to lance-shaped, toothed or pinnatifid, mid-green leaves, 2.5–5cm (1–2in) long, and arching stems bearing slightly smaller leaves. Solitary, saucer-shaped to shallowly cup-shaped, very fragrant white flowers, 2.5–6cm (1–2½in) across, sometimes ageing to pink, are produced in long succession from early summer to early autumn, opening during the day.  $\pm$  to 30cm (12in). S.W. USA to Mexico. \*\*\*. 'Childsii' see 'Rosea'. 'Rosea' [syn. *O. berlandieri*, 'Childsii', has smaller white flowers, 4–5cm (1½–2in) across, strongly suffused pink, with deep pink veins and yellow petal bases.



*Oenothera speciosa* 'Rosea'

***O. taraxacifolia*** see *O. acaulis*.  
***O. tetragona*** see *O. fruticosa* subsp. *glauca*.

- ▷ **Oil palm** see *Elaeis*
- African see *E. guineensis*
- ▷ **Oil tree,**
- Karum see *Pongamia pinnata*
- Macassar see *Cananga odorata*
- Poona see *Pongamia pinnata*
- ▷ **Old maid** see *Catharanthus roseus*
- ▷ **Old man** see *Artemisia abrotanum*
- ▷ **Old-man-live-forever** see *Pelargonium cotyledonis*
- ▷ **Old man's beard** see *Clematis*
- ▷ **Old pheasant's eye** see *Narcissus poeticus* var. *recurvus*

## OLEA

Olive

OLEACEAE

Genus of about 20 species of evergreen trees and shrubs often found in dry, rocky places in the Mediterranean and Africa to C. Asia and Australasia. They have opposite, leathery leaves, which may be entire or toothed, and produce terminal or axillary panicles of small, 4-lobed, white or off-white flowers; these are followed by edible, ovoid or spherical fruits. Thriving only in areas with a Mediterranean or similar climate, *O. europaea*, the only species cultivated, is of great economic importance for its fruit (olives) and the oil extracted from them. Grow as a specimen tree or in a border; in frost-prone areas, grow in a cool greenhouse or conservatory, or at the base of a sunny, sheltered wall.  
 • **HARDINESS** Frost hardy.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with additional sharp sand, in full light. During the growing season, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in deep, fertile, sharply drained soil in full sun. Pruning group 1; plants under glass need restrictive pruning in spring.

- **PROPAGATION** Sow seed at 13–15°C (55–59°F) in spring. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** May be infested with scale insects.

***O. europaea*** ♀ (Olive). Slow-growing, evergreen tree, developing a rounded head, with opposite, leathery, elliptic to lance-shaped, irregularly toothed leaves, to 8cm (3in) long, grey-green above, silvery grey-green beneath. Tiny, fragrant, creamy white flowers are borne in axillary panicles, to 5cm (2in) long, in summer, followed by edible, spherical to ovoid green fruit (olives), to 4cm (1½in) long, ripening to black.  $\pm$  to 10m (30ft). Mediterranean. \*\*

▷ **Oleander** see *Nerium*

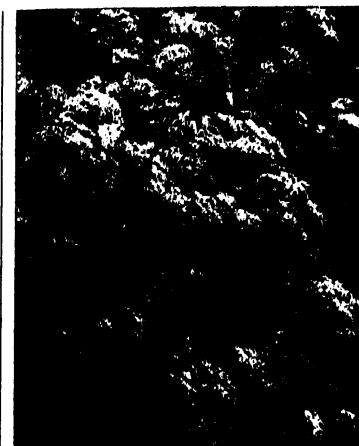
## OLEARIA

Daisy bush

ASTERACEAE/COMPOSITAE

Genus of about 130 species of evergreen shrubs and small trees, and some herbaceous perennials, from a wide variety of habitats, including coastal areas, bogs, forest, riverbanks, and mountain scrub, in Australia. They have generally alternate, occasionally clustered, simple, usually leathery leaves, and are cultivated for their daisy-like flowerheads, often with colourful ray-florets, borne singly, or in corymbs or panicles, in spring or summer. Olearias are suitable for planting in a shrub border, or in a sheltered site if not fully hardy. Some, such as *O. x haastii*, *O. macrodonta*, and *O. traversii*, may be grown as hedges and windbreaks, particularly in coastal areas. In frost-prone climates, grow tender species in a cool or temperate greenhouse.  
 • **HARDINESS** Fully hardy to frost tender.  
 • **CULTIVATION** Outdoors, grow in fertile, well-drained soil in full sun, with shelter from cold, drying winds. Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pruning group 8 for early-flowering species, group 9 for late-flowering species; trim lightly to maintain a compact habit. Most species break freely from old wood and tolerate hard pruning.  
 • **PROPAGATION** Root semi-ripe cuttings in summer, using bottom heat for tender species.  
 • **PESTS AND DISEASES** Trouble free.

***O. albidia*** ♂ (Tanguru). Vigorous, upright shrub or small tree with alternate, oblong to ovate-oblong, wavy-margined leaves, to 10cm (4in) long, dark green above, white-felted beneath. Small, daisy-like white flowerheads, to 7mm (¼in) across, each with 1–5 ray-florets, are borne in panicles, to 5cm (2in) across, in summer.  $\pm$  5m (15ft),  $\pm$  3m (10ft). New Zealand (North Island). \*  
***O. albidia*** of gardens see *O. 'Talbot de Malahide'*.  
***O. avicenniifolia*** ♀ Rounded, bushy shrub or small tree with alternate, elliptic to lance-shaped, dark grey-green leaves, to 10cm (4in) long, pale yellow- or white-felted beneath. Small, daisy-like, fragrant white flowerheads, to 5mm



*Olearia cheesemanii*

(¼in) across, each with usually 1 or 2 ray-florets, are borne in broad corymbs, to 8cm (3in) across, in late summer and early autumn.  $\pm$  3m (10ft),  $\pm$  5m (15ft). New Zealand (South Island, Stewart Island). \*\*\* (borderline)  
***O. cheesemanii*** [syn. *O. rani* of gardens. Upright-branched shrub or small tree with alternate, oblong or elliptic to lance-shaped, slightly toothed, leathery, glossy, dark green leaves, to 9cm (3½in) long, white-felted beneath. Daisy-like white flowerheads, to 9mm (¾in) across, with yellow centres, are borne in large corymbs, to 20cm (8in) across, in mid- and late spring.  $\pm$  4m (12ft),  $\pm$  3m (10ft). New Zealand. \*\*  
***O. ciliata***. Upright shrub with rough shoots and clustered, rigid, linear, deep green leaves, to 1.5cm (½in) long, the margins strongly rolled back. Solitary, long-stalked, daisy-like flowerheads, 2.5cm (1in) across, blue or white with yellow centres, are produced in spring.  $\pm$  30cm (12in),  $\pm$  20cm (8in). Temperate regions of Australia. \*\*  
***O. erubescens***. Upright shrub with alternate, oblong to lance-shaped, toothed, sometimes lobed, glossy, dark green leaves, to 4cm (1½in) long, sometimes red-tinged when young. In late spring and early summer, daisy-like, yellow-centred white flowerheads, 2.5cm (1in) across, appear singly or in clusters of 2–5, forming leafy panicles, to 45cm (18in) long.  $\pm$  1.5m (5ft),  $\pm$  60cm (24in). S.E. Australia. \*\*  
***O. frostii***. Spreading shrub with alternate, obovate, entire or wavy-toothed, grey-green leaves, to 2.5cm (1in) long, covered with star-like hairs.



*Olearia x haastii*



*Olearia macrodonta*

In midsummer, very showy, yellow-centred mauve flowerheads, resembling Michaelmas daisies, to 4cm (1½in) across, are borne singly or in groups of 2 or 3. ‡ 60cm (24in), ↔ 1m (3ft). S.E. Australia (Victoria). \*

*O. gunniana* see *O. phlogopappa*.  
*O. x haastii* ■ (*O. avicenniifolia* x *O. moschata*). Dense, bushy shrub with alternate, oval or ovate, glossy, dark green leaves, to 2.5cm (1in) long, white-felted beneath. Dense corymbs, to 8cm (3in) across, of daisy-like, yellow-centred white flowerheads, to 8mm (⅜in) across, appear in mid- and late summer. ‡ 2m (6ft), ↔ 3m (10ft) or more. Natural hybrid from New Zealand (South Island). \*\*\*  
*O. 'Henry Travers'* ♀ syn. *O. semidentata* of gardens. Rounded shrub with slender, white-felted shoots and alternate, lance-shaped, leathery, grey-green leaves, to 8cm (3in) long, white-felted beneath. Solitary, daisy-like flowerheads, 5cm (2in) across, with purple centres and numerous lilac ray-florets, are produced in early and midsummer. ‡ 2.5m (8ft), ↔ 2m (6ft). Natural hybrid from New Zealand (Chatham Islands). \*\*

*O. ilicifolia* ♂ (Mountain holly). Dense, spreading, bushy shrub or small tree with alternate, stiff and leathery, narrowly oblong, wavy-margined, sharply toothed, grey-green leaves, to 10cm (4in) long. Daisy-like, fragrant white flowerheads, to 1.5cm (½in) across, with yellow centres, are produced in large corymbs, to 10cm (4in) across, in summer. ‡ 5m (15ft). New Zealand. \*\*\* (borderline)

*O. insignis* see *Pachystegia insignis*.

*O. lacunosa*. Rounded, strongly branched shrub with densely grey-woolly branchlets. Bears alternate, slender, linear to linear-oblong, sharp-pointed, leathery leaves, 8–17cm (3–7in) long, dark green with yellow midribs above, silver-hairy to pale brown-hairy beneath. Small, daisy-like white flowerheads, 5mm (¼in) across, with yellow centres, are produced in spherical, corymb-like panicles, to 20cm (8in) across, in summer; they are borne more freely in warm, but not dry climates. ‡ 2–3m (6–10ft), sometimes 4–5m (12–15ft), ↔ 3m (10ft). New Zealand. \*\*

*O. macrodonta* ■ ♀ ♂ (Arorangi). Vigorous, upright shrub or small tree with alternate, holly-like, ovate-oblong, sharply toothed and pointed, glossy, dark green leaves, to 10cm (4in) long, silver-white-felted beneath. In summer, bears large corymbs, to 15cm (6in) across, of daisy-like, fragrant white flowerheads, to 1cm (½in) across, with reddish brown centres. ‡ 6m (20ft), ↔ 5m (15ft). New Zealand. \*\*\* (borderline)

*O. x mollis 'Zennorensis'* ♀ syn. *O. 'Zennorensis'*. Dense, rounded shrub with alternate, lance-shaped, sharply toothed leaves, to 10cm (4in) long, glossy, dark olive-green above, densely white-woolly beneath. Daisy-like white flowerheads, 1.5–2cm (½–¾in) across, with yellow centres, are produced in spherical corymbs, 15–20cm (6–8in) across, in late spring. ‡ 2m (6ft). \*\*\* (borderline)

*Olearia phlogopappa* 'Comber's Pink'

*O. moschata* (Incense plant). Dense, upright, bushy shrub with alternate, obovate to oblong, leathery, musk-scented, grey-tinged green leaves, to 1.5cm (½in) long, densely white-hairy on both surfaces. Produces dense corymbs of 12–30 daisy-like, yellow-centred white flowerheads, each to 1cm (½in) across, in midsummer. ‡ 1–2m (3–6ft), ↔ 1m (3ft). New Zealand (South Island). \*\*

*O. nummulariifolia* ■ Dense, rounded, slow-growing shrub with stout, upright shoots. Bears alternate, small, obovate to rounded, very leathery leaves, to 1cm (½in) long, the margins rolled back, and bright green when young, becoming dark green, and densely white-woolly to buff- or yellow-woolly beneath. Daisy-like, fragrant white flowerheads, 2cm (¾in) across, with cream or pale yellow centres, are produced singly or in clusters of 2 or 3 at the shoot tips in midsummer. ‡ 2m (6ft). New Zealand. \*\*\* (borderline)

*O. phlogopappa*, syn. *O. gunniana*, *O. stellulata* of gardens. Compact, upright shrub with alternate, oblong to narrowly obovate, wavy-margined, shallowly toothed leaves, to 5cm (2in) long, grey-

*Olearia x scilloniensis*

green above, densely white-woolly or grey-white-woolly beneath. Daisy-like, usually white, sometimes blue, mauve, or pink flowerheads, 3cm (1¼in) across, with yellow centres, are freely borne in loose, erect corymbs, to 7cm (3in) across, in spring and early summer. ‡ 2m (6ft). S.E. Australia. \*\*  
 'Comber's Blue' has mid-blue ray-florets. 'Comber's Pink' ■ has pink ray-florets.

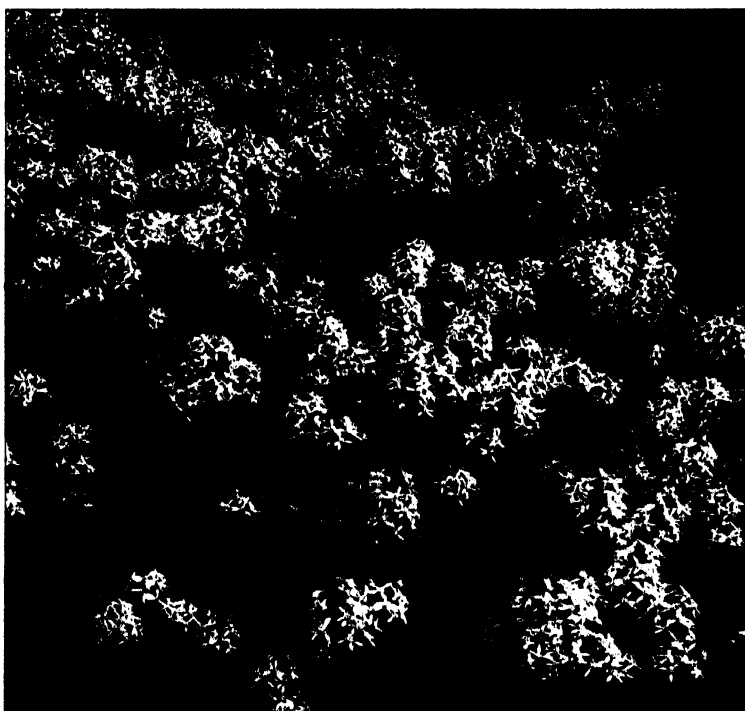
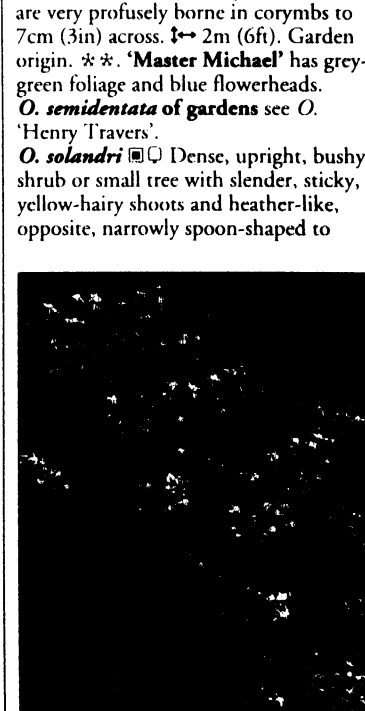
*O. ramulosa* ■ Arching, slender-branched shrub bearing alternate, linear to linear-obovate, dark green leaves, to 1cm (½in) long, the margins rolled back, and densely hairy beneath. Solitary, daisy-like, white, or sometimes blue, mauve, or pink flowerheads, 1.5cm (½in) across, with white centres, are produced in spring, or in late winter under glass. ‡ 1.5m (5ft). Australia. \* (min. 5°C/41°F)

*O. rani of gardens* see *O. cheesemanii*.

*O. x scilloniensis* ■ (*O. lirata* x *O. phlogopappa*). Dense, initially upright then rounded shrub, with alternate, elliptic-oblong, wavy-margined, dark green leaves, to 10cm (4in) long, pale green and densely felted beneath. In late spring, daisy-like white flowerheads, to 6cm (2½in) across, with yellow centres, are very profusely borne in corymbs to 7cm (3in) across. ‡ 2m (6ft). Garden origin. \*\*  
 'Master Michael' has grey-green foliage and blue flowerheads.

*O. semidentata* of gardens see *O. 'Henry Travers'*.

*O. solandri* ■ □ Dense, upright, bushy shrub or small tree with slender, sticky, yellow-hairy shoots and heather-like, opposite, narrowly spoon-shaped to

*Olearia nummulariifolia**Olearia ramulosa**Olearia solandri*



*Olearia* 'Talbot de Malahide' (inset: flower detail)

narrowly obovate or linear, dark green leaves, to 8mm (3/8in) long, densely white- to yellow-felted beneath. Solitary, daisy-like, very strongly fragrant, pale yellow flowerheads, 8mm (3/8in) across, with about 20 tiny florets, are produced from summer to autumn.  $\uparrow \rightarrow$  2m (6ft). New Zealand. \*\*

*O. stellata* of gardens see *O. phlogopappa*.

*O. 'Talbot de Malahide'*  $\square$  syn. *O. albida* of gardens. Dense, upright, bushy shrub with alternate, narrowly ovate, glossy, dark green leaves, to 10cm (4in) long, white- or yellowish-white-felted beneath. Small, daisy-like, fragrant white flowerheads, to 1cm (1/2in) across, each with up to 6 ray-florets and an inconspicuous, brownish yellow centre, are borne in broad corymbs, to 10cm (4in) across, in late summer and early autumn.  $\uparrow$  3m (10ft),  $\leftrightarrow$  5m (15ft). \*\*

*O. traversii*  $\square$  Dense, upright shrub, sometimes a small tree, with stout, angled shoots and opposite, oval to ovate-oblong leaves, to 6cm (2 1/2in) long, glossy, dark green above, white-felted beneath. In early summer, bears relatively inconspicuous, daisy-like, grey-white flowerheads, to 6mm (1/4in)

across, without ray-florets, in panicles to 5cm (2in) long. Useful for coastal hedging.  $\uparrow$  5–10m (15–30ft),  $\leftrightarrow$  3–5m (10–15ft), or more. New Zealand (Chatham Islands). \*\*\* (borderline)

*O. virgata*  $\square$  Arching shrub with smooth, slender, wiry shoots and opposite, narrowly obovate to linear, dark green leaves, to 2cm (3/4in) long, densely white-felted beneath. In summer, small, daisy-like, fragrant, yellowish white flowerheads, 1cm (1/2in) across, each with 3–6 ray-florets and an inconspicuous centre, are profusely borne in opposite clusters, to 4cm (1 1/2in) across, along the branches.  $\uparrow \rightarrow$  5m (15ft). New Zealand. \*\*\* (borderline).

*var. lineata* has pendulous, softly hairy branchlets with linear leaves, to 4cm (1 1/2in) long, the margins strongly rolled back, and flowerheads with 8–14 ray-florets;  $\uparrow$  to 2m (6ft); New Zealand (South Island).

*O. 'Zennorensis'* see *O. x mollis* 'Zennorensis'.

$\triangleright$  *Oleaster* see *Elaeagnus angustifolia*

$\triangleright$  *Olive* see *Olea*, *O. europaea*

Fragrant see *Osmanthus fragrans*

$\triangleright$  *Oliveranthus elegans* see *Echeveria harmsii*

## OLSYNIUM

### IRIDACEAE

Genus of about 12 species of fibrous-rooted, clump-forming perennials, often included in *Sisyrinchium*, found in moist grassland from sea level to subalpine regions in North and South America. They have mostly basal, stem-clasping, linear or lance-shaped leaves, and are grown for their nodding, trumpet-shaped to bell-shaped flowers which are borne in spring. Grow in a shady rock garden, peat bed, or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, humus-rich, moderately fertile soil in partial shade. In an alpine house, use a mix of equal parts loam, leaf mould, and grit.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Young plants take 2 or 3 years to flower.

• **PESTS AND DISEASES** Trouble free.

*O. biflorum*, syn. *Phaiophleps biflora*, *Sisyrinchium odoratissimum*. Slender, clump-forming perennial, with short rhizomes producing upright stems with narrow, rush-like leaves, 4–22cm (1 1/2–9in) long. In late spring or summer, bears cymes of usually 2, occasionally more, trumpet-shaped, fragrant, red-veined, creamy yellow flowers, 2.5cm (1in) long.  $\uparrow$  20–35cm (8–14in),  $\leftrightarrow$  5cm (2in). Argentina (Patagonia). \*\*\*

*O. douglasii*  $\square$  syn. *Sisyrinchium douglasii*, *S. grandiflorum* (Grass widow). Clump-forming perennial with upright, slender, rush-like stems sheathed with linear, greyish green leaves, to 10cm (4in) long. In early spring, nodding, bell-shaped, satin-textured, rich purple flowers, to 2cm (3/4in) long, are borne in several terminal spathes, each with 1–4 flowers.  $\uparrow$  15–30cm (6–12in),  $\leftrightarrow$  to 10cm (4in). W. North America. \*\*\*. *var. album* has white flowers.

## OMPHALODES

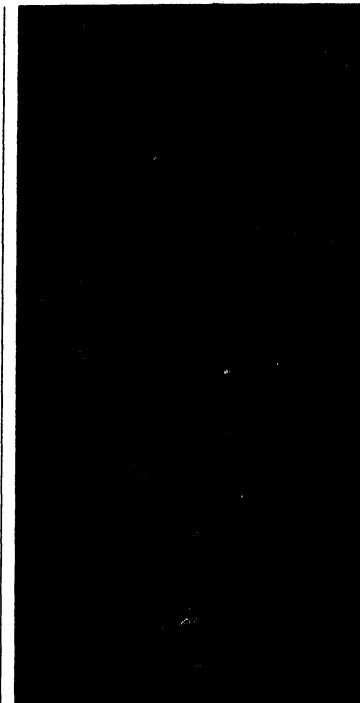
### Navelwort

#### BORAGINACEAE

Genus of about 28 species of annuals, biennials, and perennials, some of which are evergreen or semi-evergreen, from a wide range of habitats in Europe, N. Africa, and Asia. They have clusters of simple leaves either in basal tufts or arranged alternately on stems. In spring and summer, they produce blue or white flowers, similar to forget-me-nots (*Myosotis*), each with a short tube and 5 spreading lobes, usually in terminal racemes or cymes, sometimes singly from the leaf axils. Most are shade-loving, used as ground cover in a border, or rock or woodland garden. Grow *O. luciliae* in a rock garden, scree bed, tufa, or alpine house; use *O. linifolia* in an annual border or for cutting.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Most of the perennials thrive in moist, moderately fertile, humus-rich soil in partial shade. Grow *O. linifolia* in moderately fertile, well-drained soil in sun. Grow *O. luciliae* in tufa, or in very gritty, alkaline soil, in full sun; in an alpine house, use a mix of equal parts loam, leaf mould, and grit, with added limestone chippings.

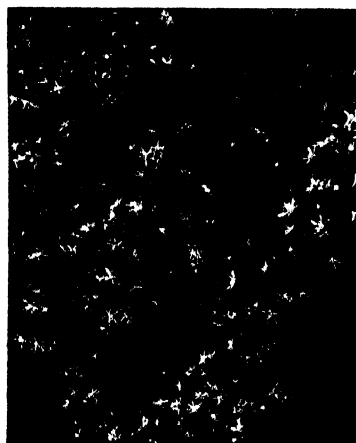


*Omphalodes cappadocica* 'Cherry Ingram'

• **PROPAGATION** Sow seed in spring; sow annuals *in situ*; sow perennials in containers in a cold frame. Divide perennials in early spring.

• **PESTS AND DISEASES** Very susceptible to damage by slugs and snails.

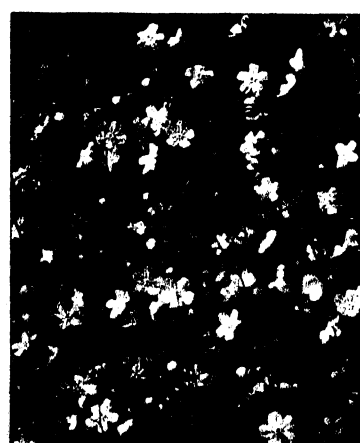
*O. cappadocica*  $\square$   $\square$  Clump-forming, rhizomatous, evergreen perennial with ovate to heart-shaped, pointed, finely hairy, mid-green, basal leaves, to 10cm (4in) long. Produces loose, terminal racemes, to 25cm (10in) long, of 3–12 white-eyed, azure-blue flowers, each to 5mm (1/4in) across, in early spring.  $\uparrow$  to 25cm (10in),  $\leftrightarrow$  to 40cm (16in). Woodland in Turkey. \*\*\*. 'Cherry Ingram'  $\square$  is more compact, with larger, deep blue flowers, 7mm (1/4in) across. 'Starry Eyes' also has larger flowers, to 7mm (1/4in) across, with a central white stripe on each petal. *O. linifolia*  $\square$   $\square$  (Venus's navelwort). Erect annual, branching from the base, with narrowly lance-shaped to spoon-shaped, sparsely white-hairy, glaucous basal leaves, to 10cm (4in) long, and smaller, very narrow, stalkless stem leaves. From spring to summer, produces loose, terminal racemes of



*Olearia virgata*



*Omphalodes cappadocica*



*Omphalodes linifolia*

5–15 tiny, slightly scented, white, or very occasionally pale blue flowers, to 1.5cm (½in) across. Self-seeds readily. †30–40cm (12–16in), ↔ to 15cm (6in). Dry, open sites, often in alkaline soil, in S.W. Europe. \*\*\*

***O. luciliae***. Clump-forming, semi-evergreen perennial with upright to prostrate stems and ovate to elliptic or oblong, pale grey-blue, basal leaves, to 10cm (4in) long. Produces loose, terminal cymes of 3–15 clear light blue flowers, to 8mm (¾in) across, often opening pink, over long periods in summer. May be difficult to establish. †10cm (4in) or more, ↔ to 15cm (6in). Vertical limestone cliffs, generally in shade, in Greece and Turkey. \*\*\*

***O. verna*** (Blue-eyed Mary, Creeping forget-me-not). Clump-forming, stoloniferous, semi-evergreen perennial with heart-shaped, ovate to ovate-lance-shaped, pointed, hairy, mid-green, basal leaves, to 20cm (8in) long. Terminal racemes of 5–20 white-eyed, deep bright blue flowers, to 1cm (½in) across, appear in spring. † to 20cm (8in), ↔ 30cm (12in) or more. Moist woodland in S.E. Alps to N. Apennines and to mountains of Romania. \*\*\*

## OMPHALOGRAMMA

PRIMULACEAE

Genus of about 15 species of usually rhizomatous perennials, related to *Primula*, from the Himalayas and the mountains of China. They are grown for their solitary, horizontally borne, salverform flowers, with long tubes and 6–8 spreading lobes, borne in spring or early summer. The lance-shaped to ovate or elliptic, often white-hairy, primula-like, mid- to dark green leaves are borne in rosettes, and arise from a large, dormant winter bud surrounded by scales. They grow best in cool, moist climates; grow in a peat bed, shady rock garden, or in an alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in cool, moist conditions, in open, moderately fertile, humus-rich, well-drained soil in partial shade. In an alpine house, use a mix of equal parts loam, leaf mould, and grit; move plants to a cool, shady site outdoors during summer.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe.

• **PESTS AND DISEASES** Prone to aphids and whiteflies under glass. Young leaves are susceptible to slug and snail damage.



*Omphalogramma vinciflorum*

***O. vinciflorum*** ■ Rosette-forming perennial, lacking a rhizome but with a large, dormant winter bud. Bears obovate-oblong to oblong, entire to scalloped, hairy, mid-green leaves, to 20cm (8in) long. In spring, produces solitary, salverform flowers, spreading to 5cm (2in) across, with deep violet-purple lobes and darker throats. †20cm (8in), ↔ 10cm (4in). China (Yunnan, Sichuan). \*\*\*

## ONCIDIUM

ORCHIDACEAE

Genus of over 450 species of evergreen, terrestrial, epiphytic, or lithophytic orchids found in a variety of habitats, from sea level to altitudes of 3,000m (10,000ft), in Mexico, Central America, South America, and the West Indies. Some oncidiums are compact with fan-like foliage; others have pseudobulbs that bear either 1 large, rigid leaf or 2 smaller, flexible leaves. The flowers are typically yellow, with prominent lips, and are produced in short or tall racemes or panicles from the bases of the plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow compact species in pots of epiphytic orchid compost; grow those with large, leathery leaves and elongated habit (e.g. *O. flexuosum*) epiphytically on bark or in baskets. In summer, provide high humidity and bright filtered light; those with leathery leaves prefer full light. During the growing season, mist daily and water freely, applying a half-strength fertilizer at every third watering. Provide full light in winter. Keep oncidiums with large pseudobulbs dry in winter; those with small pseudobulbs, or none, require watering all year round. See also p.46.

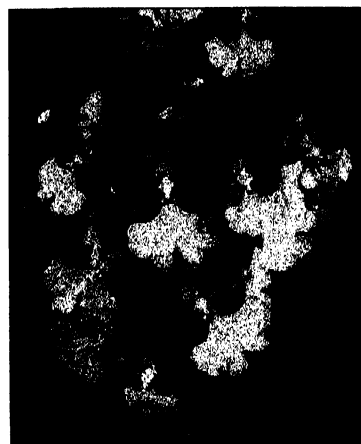
• **PROPAGATION** Divide when the plants overflow their containers, or remove backbulbs (produced by *O. flexuosum* and *O. tigrinum*) and pot up separately.

• **PESTS AND DISEASES** Prone to aphids, mealybugs, and red spider mites.

***O. cavendishianum***. Epiphytic orchid with very small pseudobulbs (sometimes none), each with one elliptic to broadly lance-shaped, rigid, leathery leaf, 15–45cm (6–18in) long. In spring, fragrant, waxy, red-spotted yellow flowers, 4cm (1½in) across, with deep yellow lips, are produced in panicles 1.5m (5ft) or more tall. †60cm (24in), ↔ 30cm (12in). S. Mexico, Guatemala, Honduras. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. crispum***. Epiphytic orchid with ovoid pseudobulbs, each with 2 narrowly lance-shaped, leathery leaves, 20cm (8in) long. Chestnut-brown and yellow-spotted flowers, to 8cm (3in) across, are produced in erect to pendent panicles, to 1.1m (3½ft) long, from autumn to spring. †60cm (24in), ↔ 30cm (12in). Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. Fire Opal*** (*O. Persian Red* × *O. Susan Pereira*). Epiphytic orchid with a fan of overlapping, rigid, flattened, linear-oblong leaves, 10cm (4in) long. Highly decorative flowers, 2.5cm (1in) or more across, in shades of rich pink over creamy white, are produced in long racemes several times during the



*Oncidium flexuosum*

year. †30cm (12in), ↔ 15cm (6in).

♀ (min. 13°C/55°F; max. 30°C/86°F)

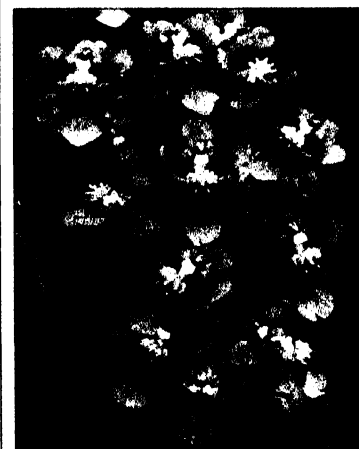
***O. flexuosum*** ■ ♀ (Dancing doll orchid). Epiphytic orchid with ovoid-oblong pseudobulbs, each with 1 or 2 linear, leathery leaves, to 10–20cm (4–8in) long. From autumn to winter, rich canary-yellow flowers, 2cm (¾in) across, with red-brown markings on the sepals and petals, are clustered towards the tips of panicles to 80cm (32in) long. †60cm (24in), ↔ 30cm (12in). S.E. Brazil, Paraguay, Argentina, Uruguay.

♀ (min. 13°C/55°F; max. 30°C/86°F)

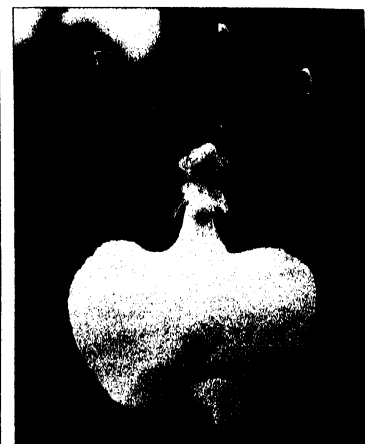
***O. Gypsy Beauty*** (*O. Phyllis Hetfield* × *O. Thelma Beaumont*). Epiphytic orchid with a fan of overlapping, rigid, flattened, linear-oblong leaves, 10cm (4in) long. Highly decorative white and burgundy-red flowers, 2.5cm (1in) or more across, with raspberry lips, are produced in clusters towards the ends of racemes several times during the year. †30cm (12in), ↔ 15cm (6in). ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. longipes***. Epiphytic orchid with slender, oblong-ovoid pseudobulbs, each with 2 oblong, soft leaves, to 15cm (6in) long. In spring, produces short racemes of 2–6 yellow flowers, 3.5cm (1½in) across, heavily spotted and streaked red-brown, with yellow lips. †12cm (5in), ↔ 15cm (6in). S.E. Brazil. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. macranthum***, syn. *Cyrtorchilum macranthum*. Epiphytic orchid with oblong-conical, fleshy pseudobulbs, each with 2 narrowly inversely lance-shaped to oblong leaves, 25–50cm (10–20in) long. Yellow to brown-gold flowers, 8cm (3in) across, with yellowish white



*Oncidium ornithorrhynchum*



*Oncidium tigrinum*

lips bordered violet-purple, are borne in lax, spreading panicles, to 3m (10ft) tall, in summer. †1m (3ft), ↔ 60cm (24in). Colombia, Ecuador, Peru. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. ornithorrhynchum*** ■ ♀ Epiphytic orchid producing ovoid or ellipsoid pseudobulbs, each with 2 linear-lance-shaped to linear-elliptic, soft leaves, 10–40cm (4–16in) long. In autumn, fragrant, white, pink, or purple-pink flowers, 2–2.5cm (¾–1in) across, with darker pink or lilac-pink lips, are produced in strongly arching panicles, to 50cm (20in) long. †15cm (6in), ↔ 23cm (9in). S. Mexico, Guatemala, El Salvador, Costa Rica. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. papilio*** see *Psychopsis papilio*.

***O. pusillum***, syn. *Pygmaorchis pusilla*. Epiphytic orchid with a flattened fan of linear-oblong to oblong-elliptic, fleshy leaves, 6cm (2½in) long. Bears axillary racemes, to 6cm (2½in) long, of 1–4 bright yellow flowers, marked rust-red, to 3cm (1¼in) across, intermittently all year round. †↔ 8cm (3in). Central America, South America, West Indies. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. sphacelatum***. Epiphytic orchid with ribbed, ovoid-ellipsoid pseudobulbs, each with 2 linear-oblong to linear-lance-shaped, semi-leathery leaves, to 1m (3ft) long. In spring, deep yellow flowers, to 3cm (1¼in) across, marked and spotted red-brown, with golden yellow lips, are produced in dense, upright panicles, to 1.5m (5ft) tall. †↔ 60cm (24in). Central America, Venezuela. ♀ (min. 13°C/55°F; max. 30°C/86°F)

***O. tigrinum*** ■ Epiphytic orchid with spherical pseudobulbs, each with 1 or 2 linear-oblong, leathery leaves, 30–50cm (12–20in) long. Fragrant yellow flowers, 5cm (2in) across, with sepals and petals heavily suffused dark red-brown, and with large yellow lips, are produced in long, stout, usually erect panicles, to 1.5m (5ft) tall, in winter. †45cm (18in), ↔ 30cm (12in). Mexico. ♀ (min. 13°C/55°F; max. 30°C/86°F)

▷ **Onion** see *Allium*

**False sea** see *Ornithogalum*

**longibracteatum**

**Nodding** see *Allium cernuum*

**Sea** see *Urginea maritima*

**Wild** see *Allium cernuum*

▷ **Onion couch** see *Arrhenatherum elatius* subsp. *bulbosum* 'Variegatum'

*Onoclea sensibilis*

## ONOCLEA

ATHYRIACEAE/DRYOPTERIDACEAE

Genus of one species of deciduous, terrestrial fern found in damp sites in E. Asia and E. North America. In spring, long-stalked, pinnate or deeply pinnatisect sterile fronds arise singly at short intervals from creeping rhizomes, dying down at the first frost. The fertile fronds are 2-pinnate, with contracted, bead-like black segments curled in to cover the sori, and are borne in late summer, persisting throughout winter. *O. sensibilis* will thrive at the edge of water, or in a damp, shady border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in a sheltered site, in moist, fertile, humus-rich, preferably acid soil, in light dappled shade (the fronds will burn if exposed to too much sun).

• **PROPAGATION** Sow spores at 15–16°C (59–60°F) as soon as ripe, or divide in spring. See also p. 51.

• **PESTS AND DISEASES** Trouble free.

***O. sensibilis*** [♀] (Sensitive fern). Deciduous fern, producing upright then arching, broadly lance-shaped or triangular, pinnate to deeply pinnatisect, pale green sterile fronds, to 1m (3ft) long, in spring; these each have 8–12 pairs of pinnae, which are lobed to wavy-margined or entire. Fertile fronds are borne in late summer, and are stiffly erect, lance-shaped, and 2-pinnate, to 60cm (24in) long; the pinnae are reduced to bead-like black lobes enclosing the sori. The emerging fronds may sometimes be pinkish bronze in spring. †60cm (24in), ↔ indefinite. E. Asia, E. North America. \*\*\*

## ONONIS

Restharrow

LEGUMINOSAE/PAPILIONACEAE

Genus of about 75 species of annuals, perennials, and dwarf shrubs occurring in dry, rocky sites or in grassland, often in alkaline soil, in Europe, the Mediterranean, the Canary Islands, and from N. Africa to Iran. They have alternate, simple or 3-palmate, usually toothed and hairy, clover-like, mostly mid-green leaves, and are grown for their pea-like flowers, borne in panicles, spikes, or racemes in summer. Grow in a rock garden, wall, or sunny bank, or at the front of a mixed or shrub border.

*Ononis fruticosa*

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in a warm, sunny position in moderately fertile, well-drained soil. They may be short-lived, so propagate regularly.

• **PROPAGATION** Sow seed in containers in an open frame in autumn or spring. Take greenwood cuttings of shrubby species in early summer.

• **PESTS AND DISEASES** May be infested with red spider mites under glass.

***O. fruticosa*** [♂] (Shrubby restharrow). Short-lived, deciduous shrub with 3-palmate, leathery leaves, 4cm (1½in) long, composed of leaflets that are oblong-lance-shaped and unevenly toothed. Nodding clusters, 5–8cm (2–3in) long, of pea-like pink flowers, each to 2cm (¾in) long, with dark central markings and paler wings, are borne over long periods in summer. † to 60cm (24in), occasionally to 1m (3ft). S.E. France, C. Pyrenees, C. and E. Spain. \*\*\*

***O. repens*** (Common restharrow). Upright or spreading, often stem-rooting, deciduous subshrub, sometimes with soft spines, bearing ovate, simple or 3-palmate leaves, to 2cm (¾in) long, composed of leaflets that are ovate, hairy, and toothed. Open, leafy racemes of pea-like, pink or pink-purple flowers, each to 2cm (¾in) long, are produced throughout summer. †30–60cm (12–24in), ↔ 50–80cm (20–32in) or more. Europe. \*\*\*

***O. rotundifolia***. Upright, deciduous or semi-evergreen, dwarf shrub with 3-palmate leaves, 3cm (1¼in) long, composed of broadly elliptic to rounded, coarsely toothed, hairy leaflets, the terminal leaflet long-stalked. In summer, produces axillary racemes or panicles of pea-like, pale to deep pink or white flowers, to 2cm (¾in) long, striped darker pink. † to 50cm (20in), ↔ to 30cm (12in). S. Europe (S.E. Spain to E. Austria, C. Italy). \*\*\*

▷ *Onopordum* see *Onopordum*

## ONOPORDUM

syn. ONOPORDON

Cotton thistle, Scotch thistle

ASTERACEAE/COMPOSITAE

Genus of about 40 erect, rosette-forming biennials from steppes, stony slopes, fallow fields, and disturbed ground in Europe, the Mediterranean, and W. Asia. They have simple to pinnatifid or pinnatisect, spiny-toothed leaves covered in cobweb-like, soft grey hair; the leaves are borne alternately on coarse, usually freely branching, mostly white-woolly stems, the leaf bases often continuing down the stems as very conspicuous wings. Large, round flowerheads, typically thistle-like and without ray-florets, are produced singly or in tight clusters at the stem tips in summer. They may be bright purple, blue-violet, rose-pink, or occasionally white, and are attractive to bees. Cotton thistles readily self-seed and may be grown in a large border, or in a semi-wild or gravel garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained, neutral to slightly alkaline soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame or *in situ* in autumn or spring.

• **PESTS AND DISEASES** Slugs and snails may damage the foliage.

***O. acanthium*** [♂] Tap-rooted, rosette-forming biennial with oblong-ovate to lance-shaped or ovate, pinnatifid, spiny-toothed, grey-green leaves, to 35cm (14in) long, sparsely hairy above. In the second year, produces massive, branching, 2- to 4-winged, spiny, hairy, yellow-green stems; in summer, these produce solitary or clustered, round, thistle-like, pale purple or white flowerheads, 4–5cm (1½–2in) across, encased in spine-tipped bracts. † to 3m (10ft), ↔ 1m (3ft). W. Europe to W. and C. Asia. \*\*\*

***O. arabicum*** see *O. nervosum*.

***O. nervosum*** [♀] syn. *O. arabicum*. Tap-rooted, rosette-forming biennial with oblong-lance-shaped, pinnatisect, spiny toothed, silver-grey leaves, to 50cm (20in) long; they have prominent pale veins and are sparsely hairy beneath. In the second year, produces massive, branching, broad-winged, deeply veined, densely hairy, yellow-tinged stems; in summer, these bear clusters of

*Onopordum acanthium*

round, thistle-like, bright purple-red to purple-pink flowerheads, to 3.5cm (1½in) across, encased in spine-tipped bracts. † to 2.5m (9ft), ↔ 1m (3ft). Portugal, Spain. \*\*\*

## ONOSMA

BORAGINACEAE

Genus of about 150 species of biennials and often woody-based perennials found in sunny, rocky sites, often rock crevices, from the Mediterranean to Turkey.

They are grown for their nodding cymes of narrowly tubular to cylindrical-bell-shaped flowers, mainly yellow, pink, red, or white. The simple, alternate leaves are covered in fine hairs, contact with which may irritate skin. Grow in a scree bed, or in a rock or wall crevice; in wet climates, they grow best in an alpine house or cold greenhouse.

• **HARDINESS** Frost hardy; most will withstand temperatures to -10°C (14°F).

• **CULTIVATION** Outdoors, grow in full sun in a very gritty scree bed, or grow plants on their sides in vertical wall or rock crevices. Protect from excessive rainfall. Under glass, grow in a mix of equal parts loam, leaf mould, and grit; avoid wetting the foliage when watering.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Take softwood or greenwood cuttings of shrubs in late spring or early summer.

• **PESTS AND DISEASES** May be infested with aphids or whiteflies under glass.

***O. alborosea*** [♂] Evergreen, clump-forming perennial with white-hairy, branching stems bearing densely white-bristly-hairy, grey-green leaves, which are spoon- to lance-shaped or obovate to oblong, and to 6cm (2½in) long. In summer, produces congested, terminal cymes of nodding, narrowly tubular-bell-shaped white flowers, to 3cm (1¼in) long; the petal tips quickly darken to pink and sometimes mature to deep purple or violet-blue. † to 25cm (10in). S.W. Asia. \*\*\*

***O. frutescens***. Upright perennial with unbranched stems covered with tiny, soft hairs. The bristly-hairy, greyish green leaves, to 7cm (3in) long, are lance-shaped to oblong-lance-shaped or linear, with margins rolled back. In summer, bears cymes of cylindrical-bell-shaped, bright yellow flowers, to 2cm (¾in) long, maturing to orange-brown or reddish brown. †25cm (10in), ↔ to 60cm (24in). Greece, Turkey, Syria. \*\*\*

*Onosma alborosea*

## OOPHYTUM

AIZOACEAE

Genus of 2 species of succulent perennials, similar to *Conophytum*, found in dry, hilly areas in Western Cape, South Africa. They have pairs of erect, thick, soft, fleshy leaves, which join to form ovoid, egg-like "bodies" that wither during the dormant period (the name *Oophytum* means "egg plant"). Solitary, daisy-like flowers are produced from a cleft at the top of each body in late summer. In areas where temperatures drop below 7°C (45°F), grow in a temperate greenhouse; in warm, dry climates, grow in a scree bed, raised bed, or desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts loam to 1 part each sharp sand and leaf mould, in full light with shade from hot sun. Water moderately from late summer to early autumn, and sparingly on warm days from mid-autumn to spring. Keep barely moist when semi-dormant from late spring to midsummer. Outdoors, grow in gritty, poor, humus-rich soil, in full sun with some midday shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 20–25°C (68–77°F), or separate and root complete bodies, in spring or summer.

• **PESTS AND DISEASES** Susceptible to greenflies, especially while flowering.

*O. oviforme*. Clump-forming, succulent perennial with papillose, glossy, olive-green to bright reddish green leaves, united in pairs to form ovoid bodies, 1cm (½in) across. In late summer, bears daisy-like white flowers. 2cm (¾in) across, with purplish pink tips. ‡ 2cm (¾in), ↔ 10cm (4in). South Africa (Western Cape). ☼ (min. 7°C/45°F)

▷ *Operculina tuberosa* see *Merremia tuberosa*

## OPHIPOGON

Lilyturf

CONVALLARIACEAE/LILIACEAE

Genus of about 50 species of evergreen, rhizomatous or tufted perennials, often with swollen, fleshy roots, sometimes also stoloniferous, from shady scrub or woodland in E. Asia, especially China and Japan. They are grown mainly for their dense tufts of somewhat grass-like leaves. Racemes of numerous small, 6-tepalled, semi-spherical to bell-shaped, pinkish white, lilac, or white flowers are produced on leafless stems in summer, followed by spherical to oblong-ellipsoid, glossy, blue or black fruits. Grow as grassy ground cover, for border edging, or in a rock garden or peat bed. In frost-prone areas, grow the less hardy species for seasonal bedding, or in a cool or temperate greenhouse.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Outdoors, grow in moist but well-drained, slightly acid, fertile, humus-rich soil in full sun or partial shade. Top-dress annually with leaf mould in autumn. Under glass, grow in loam-based potting compost (J1 No.2) in full light or bright indirect light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter.



*Ophiopogon jaburan* 'Vittatus' (inset: flower detail)

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring as growth resumes.

• **PESTS AND DISEASES** Slugs may damage young leaves.

*O. jaburan* (Jaburan lily, White lilyturf). Tufted, stoloniferous perennial with strap-shaped, leathery, dark green leaves, to 60cm (24in) long. Short bell-shaped, white, sometimes lilac-tinged flowers, 1cm (½in) long, are produced in racemes, to 15cm (6in) long and occasionally curled, in late summer, followed by oblong-ellipsoid, violet-blue fruit, 1cm (½in) long. ‡ to 60cm (24in), ↔ to 30cm (12in). Japan. ★★.

'Argenteovittatus' see 'Vittatus'.

'Javanensis' see 'Vittatus'. 'Variegatus' see 'Vittatus'. 'Vittatus' ☐ syn. 'Argenteovittatus', 'Javanensis', 'Variegatus', has pale green leaves that are striped and margined cream, yellow, or white. 'White Dragon' has leaves boldly striped with white, almost obliterating the green.

*O. japonicus*. Tuberous-rooted, rhizomatous perennial forming clumps of narrowly linear, curved, rigid, dark green leaves, 20–30cm (8–12in) long. In

summer, bears short racemes, 5–8cm (2–3in) long, of small, bell-shaped, white, occasionally lilac-tinged flowers, 5mm (¼in) across, followed by spherical, blue-black berries, 5mm (¼in) across. ‡ 20–30cm (8–12in), ↔ 30cm (12in). Japan. ★★.

'Kyoto Dwarf' is compact; ‡ to 10cm (4in). 'Silver Dragon' has white-variegated leaves; ‡ to 30cm (12in), ↔ to 15cm (6in).

*O. planiscapus*. Clump-forming, spreading, rhizomatous perennial with strap-shaped, curving, dark green leaves, 10–35cm (4–14in) long. Short bell-shaped, pale purplish white flowers, to 7mm (¼in) long, are borne in racemes, 4–8cm (1½–3in) long, in summer, followed by spherical, fleshy, dark blue-black fruit, 3–5mm (¼–½in) across. ‡ 20cm (8in), ↔ 30cm (12in). ★★.

'Nigrescens' ☐♀ syn. 'Arabicus', 'Black Dragon', 'Ebony Knight', has almost black leaves.

*O. spicatus* see *Liriope spicata*.

## OPHRYS

ORCHIDACEAE

Genus of about 30 species of deciduous, tuberous, terrestrial orchids from Europe, Mediterranean islands, N. Africa, and W. Asia, occurring in habitats ranging from marshes and grassland to woodland and mountainsides. They produce rosettes of oblong-ovate, ovate, or lance-shaped, mid-green leaves. From the rosettes arise erect inflorescences with small, bract-like leaves and racemes of 2–12 flowers; each has 3 spreading sepals, 2 petals, and a large lip, often strikingly coloured and resembling the abdomen of a bee or other insect. *Ophrys* species are suitable for a rock garden or for naturalizing in fine turf; in wet, frost-prone climates, they are best grown in an alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Outdoors, grow in sharply drained, gritty, leafy, humus-rich soil in partial shade. Plant dormant tubers in autumn, at least 5cm (2in)



*Ophrys apifera*

deep. In frost-prone areas, provide a dry winter mulch. In an alpine house, grow in terrestrial orchid compost in bright filtered light. During the growing season, water moderately; keep dry and frost-free when dormant. See also p.46.

• **PROPAGATION** Separate offsets in autumn.

• **PESTS AND DISEASES** Slugs and snails may cause problems.

*O. apifera* ☐ (Bee orchid). Terrestrial orchid with oblong-ovate leaves, 6cm (2½in) long. Erect racemes, to 30cm (12in) tall, of 2–11 flowers, 2.5cm (1in) across, each with green or purplish pink sepals and petals, and a lip marked red-purple and yellow, are borne in mid-spring and early summer. ‡ 30cm (12in), ↔ 15cm (6in). W., S., and C. Europe, N. Africa, W. Asia. ★★.

*O. aranifera* see *O. sphegodes*.

*O. fuciflora* see *O. holoserica*.

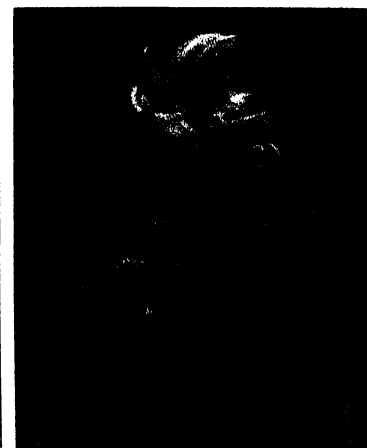
*O. fusca* (Sombre bee orchid).

Terrestrial orchid with oblong-ovate or lance-shaped leaves, 6cm (2½in) long. In mid- and late spring, produces erect racemes, to 30cm (12in) tall, of up to 8 variable green or yellow-green flowers, 5cm (2in) across, each with a yellow- or white-margined, bluish, brown, purple, or purplish red lip. ‡ 30cm (12in), ↔ 15cm (6in). Mediterranean, S.W.

Romania. ★★. **subsp. iricolor** ☐ has racemes of up to 4 flowers, each with



*Ophiopogon planiscapus* 'Nigrescens'



*Ophrys fusca* subsp. *iricolor*

a longer lip that has 2 elongated, iridescent blue patches.

***O. holoserica***, syn. *O. fuciflora* (Late spider orchid). Terrestrial orchid with ovate-oblong leaves, 6cm (2½in) long. From mid-spring to midsummer, produces short, erect racemes, to 30cm (12in) tall, of 2–6 flowers, 3cm (1¼in) across; each has green, bright pink, or white sepals, pink to purple-pink petals, and a dark brown to dark maroon or ochre lip, sometimes with yellow margins. †30cm (12in), ↔ 15cm (6in). W., S.W., and C. Europe. \*\*

***O. lutea***. Terrestrial orchid with ovate leaves, 6cm (2½in) long. Erect racemes, to 30cm (12in) tall, of 2–7 yellow-green flowers, 2.5cm (1in) across, each with a bright yellow lip, dark brown or purplish black in the centre, are borne from mid-spring to early summer. †30cm (12in), ↔ 15cm (6in). Portugal, Mediterranean. \*\*

***O. speculum*** see *O. vernixia*.

***O. sphagodes***, syn. *O. aranifera* (Early spider orchid). Variable, terrestrial orchid with ovate-lance-shaped leaves, 8cm (3in) long. From late spring to midsummer, produces erect racemes, to 45cm (18in) long, of up to 10 flowers, to 2.5cm (1in) across; each has green, occasionally brownish green sepals and petals, and a pale to blackish brown, velvety lip. †↔ 15cm (6in). Europe. \*\*

***O. vernixia***, syn. *O. speculum* (Mirror orchid). Terrestrial orchid with oblong to lance-shaped leaves, 6cm (2½in) long. In late spring and early summer, produces erect racemes, to 30cm (12in) tall, of up to 15 green flowers, 2.5cm (1in) across, with dark brown stripes; the lip is velvety, black- or brown-margined, with glossy, deep blue, yellow-bordered centres. †30cm (12in), ↔ 15cm (6in). Portugal, N. Africa, Mediterranean. \*\*

## OPHTHALMOPHYLLUM

AIZOACEAE

Genus, closely related to *Conophytum*, of 19 species of perennial succulents growing wild in dry, hilly areas of Namibia and South Africa. They bear "bodies" of paired, erect, compressed-cylindrical, very fleshy leaves, united for most of their length, with transparent "windows" on the usually flat tops. Solitary, daisy-like flowers are borne from clefts between the paired lobes, during the day in late summer and autumn. In areas where temperatures drop below 10°C (50°F), grow in a temperate greenhouse; in warm, dry climates, grow in a desert garden or in a scree bed or raised bed.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 2 parts loam to 1 part each sharp sand and leaf mould, in full light. From late spring to early autumn, water sparingly and apply a dilute, low-nitrogen liquid fertilizer every 4–6 weeks. Reduce water from mid- to late autumn; keep completely dry from winter to mid-spring. Outdoors, grow in gritty, poor, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 20–25°C (68–77°F), or separate and root complete bodies, in spring or summer.

• **PESTS AND DISEASES** Trouble free.



*Ophthalmophyllum longum*

***O. longum*** □ syn. *Conophytum longum*. Clump-forming, perennial succulent with grey-green to brown bodies, 2cm (¾in) across, consisting of rounded lobes with translucent dots above and keeled undersides. Daisy-like, white to pale pink flowers, 2cm (¾in) across, are borne in late summer and autumn. †3cm (1¼in), ↔ indefinite. Namibia, South Africa. ☼ (min. 5–7°C/41–45°F)

***O. maughanii***. Clump-forming, perennial succulent producing yellowish green bodies, 2cm (¾in) across, with short, conical lobes. In late summer and autumn, produces daisy-like white flowers, 1.5cm (½in) across. †4cm (1½in), ↔ indefinite. Namibia, South Africa. ☼ (min. 5–7°C/41–45°F)

▷ **Opium poppy** see *Papaver somniferum*

## OPLISMENUS

GRAMINEAE/POACEAE

Genus of 6 species of trailing, annual or perennial grasses from subtropical and tropical forests of Africa, Asia, Polynesia, and Central and South America. They have slender, rooting, leafy stems with flat, lance-shaped to ovate leaves, and bear one-sided racemes of insignificant flowers. Only *O. africanus* 'Variegatus' is of decorative value: in warm areas, it provides excellent ground cover, and is also a useful edging plant; in frost-prone areas, grow as an ornamental plant in a hanging basket in a temperate greenhouse or conservatory.

• **HARDINESS** Frost tender.

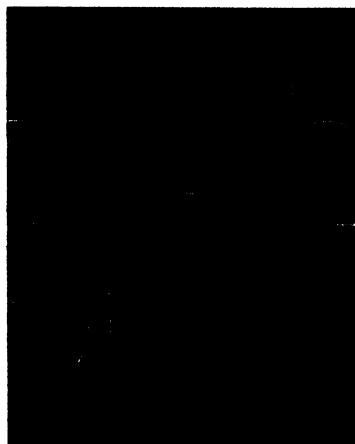
• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered or full light. In growth, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter. Outdoors, grow in any moist but well-drained soil in full sun or partial shade.

• **PROPAGATION** Separate rooted stems in spring; pot up and keep in a propagating case until established.

• **PESTS AND DISEASES** Trouble free.

***O. africanus***, syn. *O. hirtellus*.

Evergreen perennial with wiry stems, spreading and rooting at the nodes, bearing narrowly lance-shaped to ovate, softly hairy, mid-green leaves, to 5cm (2in) long, with long points. Small flowers are produced in one-sided racemes, to 15cm (6in) long, from summer to winter. †15cm (6in), but may form mounds to 90cm (36in),



*Oplismenus africanus* 'Variegatus'

↔ indefinite. Africa, Polynesia, tropical Central and South America. ☼ (min. 5°C/41°F). 'Variegatus' □♀ syn. 'Vittatus', has white-striped leaves, flushed purple-pink.

***O. hirtellus*** see *O. africanus*.

## OPUNTIA

CACTACEAE

Genus of about 200 species of perennial cacti, ranging from alpine and ground-cover plants to bushy and tree-like species, from often very arid regions in North, Central, and South America, and the West Indies. They have usually pad-like and flattened, or sometimes cylindrical, club-shaped, or spherical, segmented branches, with areoles producing spines and glochids (barbed spines); a few species have leaf-like scales, which soon fall. On mature plants, funnel- or bowl-shaped flowers are produced singly from the areoles at the tips or sides of the segments; they appear during the day in spring or summer, and are followed by usually spiny, obovoid or spherical fruits (prickly pears). In a few species, these are edible, and contain large, smooth white seeds in pulp.

Where temperatures drop below 10°C (50°F), grow tender species in a cool or temperate greenhouse. In warmer areas, grow opuntias in a desert garden or in a border with other cacti. They are not suitable as houseplants; contact with the bristles causes intense irritation to skin, and they are difficult to remove.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light or bright filtered light. Large species are best planted directly into a greenhouse border; all dislike root restriction. From early spring to mid-autumn, water freely and apply a balanced liquid fertilizer 3 or 4 times. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained, gritty, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow pre-soaked seed at 21°C (70°F) in spring. Separate and root stem segments. Handle plants using folded newspaper; dispose of it after use.

• **PESTS AND DISEASES** Vulnerable to scale insects and mealybugs.

***O. argentina*** □ Tree-like, perennial cactus with thick, bright green stems, cylindrical branches, and flat, oblong segments, 5–12cm (2–5in) long, each

with pale brown glochids and usually one spine which is red at first, becoming brown. Wide-spreading, funnel-shaped yellow flowers, 3–4cm (1¼–1½in) across, are produced in summer, followed by edible, ovoid, spineless, purplish red fruit, 5cm (2in) long. † to 15m (50ft), ↔ 3m (10ft). N. Argentina. ☼ (min. 7–10°C/45–50°F)

***O. basilaris***. Clump-forming, perennial cactus with velvety, bluish green or pale reddish green stems divided into flat, obovate to nearly rounded segments, 10–20cm (4–8in) long. Brown areoles each have reddish brown glochids and none or 1, rarely up to 5, spines. Bowl-shaped, usually deep purple-red flowers, 6–8cm (2½–3in) across, are borne in summer, followed by spherical to ovoid, dry, velvety, grey-green fruit, 3–4cm (1¼–1½in) long. †1m (3ft), ↔ to 75cm (30in) or more. S. USA, N. Mexico. ☼ (min. 7–10°C/45–50°F)

***O. bergeriana***. Tree-like, perennial cactus with numerous branches divided into flattened, narrowly oblong-oval, pale to fresh green segments, 10–25cm (4–10in) long. Grey areoles each have yellow glochids and 2–5 sheathed, yellow then grey spines. From spring to summer, produces funnel-shaped, bright, deep red flowers, to 6cm (2½in) across, followed by ovoid, spiny red fruit, to 4cm (1½in) long. † to 3.5m (11ft), ↔ 1m (3ft). Origin unknown. ☼ (min. 7–10°C/45–50°F)

***O. chlorotica***. Bushy or tree-like, perennial cactus with pale bluish green stems composed of flattened, rounded to obovate segments, to 20cm (8in) long. Grey areoles each bear yellow glochids and 1–6 or more pale yellow or brown spines, which blacken with age. Broadly funnel-shaped yellow flowers, 7cm (3in) across, flushed red outside, are produced from spring to summer; they are followed by ovoid purple fruit, 4cm (1½in) long, with short spines that are lost as the fruit matures. † to 2m (6ft), ↔ 75cm (30in). USA (California, Nevada, New Mexico), N. Mexico. ☼ (min. 7–10°C/45–50°F)

***O. clavarioides***. Semi-prostrate, tuberous-rooted, many-branched, perennial cactus with stems divided into cylindrical, inversely conical, flat, or fan-shaped, greyish brown segments, 2cm (¾in) or more long. Whitish grey areoles bear leaf-like, deciduous red scales, to 2mm (¼in) long, and each areole has 4–10 minute, fine white spines, but no glochids. In late spring



*Opuntia argentina*



*Opuntia erinacea*

and summer, produces funnel-shaped, brownish green flowers, 6cm (2½in) across, followed by ellipsoid, spineless, greyish brown fruit, 1.5cm (½in) long.  $\pm$  to 10cm (4in). Argentina. ☼ (min. 7–10°C/45–50°F)

***O. cochenillifera***, syn. *Nopalea cochenillifera*. Shrubby or tree-like, perennial cactus with stems composed of flattened, elliptic to obovate, glossy, dark green segments, 8–25cm (3–10in) long. Mid-green areoles produce yellow glochids, and sometimes 1–3 yellow spines, usually none. Narrowly funnel-shaped, bright red flowers, to 4cm (1½in) across, appear in late spring and summer, followed by ellipsoid, fleshy, spineless red fruit, 2.5–4cm (1–1½in) long.  $\pm$  to 4m (12ft),  $\leftrightarrow$  1m (3ft). Mexico. ☼ (min. 7–10°C/45–50°F)

*Opuntia erinacea* var. *ursina*

***O. compressa***, syn. *O. humifusa*. Clump-forming, semi-prostrate, perennial cactus with stems divided into flattened, elliptic to obovate or rounded, greyish green segments, 5–13cm (2–5in) long, often tinged purple, and bearing narrowly wedge-shaped leaves, to 7mm (¼in) long. Brown areoles produce brown glochids, and sometimes 1 or 2 black-tipped white spines. Produces broadly funnel-shaped, bright yellow flowers, 4–6cm (1½–2½in) across, in late spring and summer; they are followed by obovoid, spineless, edible purple or red fruit, 2.5–4cm (1–1½in) long.  $\pm$  10–30cm (4–12in),  $\leftrightarrow$  to 1m (3ft) or more. C. and E. USA. ☼ (min. 3–5°C/37–51°F)

***O. engelmannii*** see *O. ficus-indica*.

***O. engelmannii* of gardens** see *O. phaeacantha*.

***O. erinacea***  $\square$  syn. *O. hystricina*. Clump-forming, perennial cactus producing bluish green stems that are composed of flattened, rounded to broadly obovate segments, 5–10cm (2–4in) long. Brown or white areoles each have yellow glochids and 9 or more thread-like white spines, to 10cm (4in) long. Shallowly bowl-shaped, red, pink, purplish pink, or yellow flowers, 6cm (2½in) across, are produced in summer; they are followed by ovoid, light green, very spiny fruit, to 2cm (¾in) long.  $\pm$  50cm (20in),  $\leftrightarrow$  1.5m (5ft). S.W. USA. ☼ (min. 7–10°C/45–50°F). **var. *ursina***  $\square$  (Grizzly bear cactus) bears oblong-elliptic stem segments with numerous very long, thread-like, deflexed spines, to 10cm (4in) long, and produces orange or pink flowers;

*Opuntia microdasys* var. *albispina*

$\pm$  to 45cm (18in). USA (California, Nevada, Arizona).

***O. falcata***, syn. *Consolea falcata*. Tree-like, perennial cactus with glossy, dark green stems composed of flattened, oblong to lance-shaped segments, to 35cm (14in) long, marked with small tubercles. White areoles each bear a few brownish white glochids and 2–8 needle-like, rough, pale yellow or yellowish brown spines. Bowl-shaped red flowers, 3–5cm (1¼–2in) across, are borne in late spring and summer, and are followed by ovoid, spineless, dark green fruit, to 4cm (1½in) long.  $\pm$  to 1.5m (5ft),  $\leftrightarrow$  75cm (30in). Haiti. ☼ (min. 7–10°C/45–50°F)

***O. ficus-indica***, syn. *O. engelmannii*, *O. megacantha* (Indian fig, Prickly pear). Bushy or tree-like, perennial cactus with stems composed of flattened, obovate to oblong, greyish green or mid-green segments, 10–40cm (4–16in) long, with white areoles producing yellow glochids and usually 1 or 2 spines. Bowl-shaped yellow flowers, 10cm (4in) across, are produced in late spring and summer, and are followed by edible, ovoid, spineless purple fruit, to 10cm (4in) long. Some cultivars have yellow, orange, or red fruit.  $\pm$  to 5m (15ft). Mexico. ☼ (min. 7–10°C/45–50°F)

***O. humifusa*** see *O. compressa*.

***O. hystricina*** see *O. erinacea*.

***O. imbricata***. Variable, many-branched, perennial cactus with cylindrical, mid-green to bluish green stem segments, 10–40cm (4–16in) long, with very prominent tubercles, and cylindrical leaves, 1.5cm (½in) long. Large yellow areoles each bear yellow glochids and 8–30 brown-sheathed, reddish yellow or white spines. Broadly funnel-shaped, purple or red flowers, usually 4–8cm (1½–3in) across, are produced in late spring and summer, followed by nearly spherical, spineless yellow fruit, 3cm (1¼in) long.  $\pm$  to 3m (10ft),  $\leftrightarrow$  1m (3ft). S.W. USA, Mexico. ☼ (min. 7–10°C/45–50°F)

***O. megacantha*** see *O. ficus-indica*.

***O. microdasys***. Bushy, perennial cactus with stems comprising flattened, oblong, obovate, or almost rounded, velvety, pale to mid-green segments, 6–15cm (2½–6in) long; these are thickly dotted with white areoles bearing minute, yellow, white, or reddish brown glochids and usually no spines. Bowl-shaped, bright yellow flowers, 4–5cm (1½–2in) across, often tinged red on the outside, are produced from spring

to summer; they are followed by oblong-ellipsoid, spineless, light purplish red fruit, to 4.5cm (1½in) long.  $\pm$  to 40–60cm (16–24in). N. and C. Mexico. ☼ (min. 7–10°C/45–50°F).

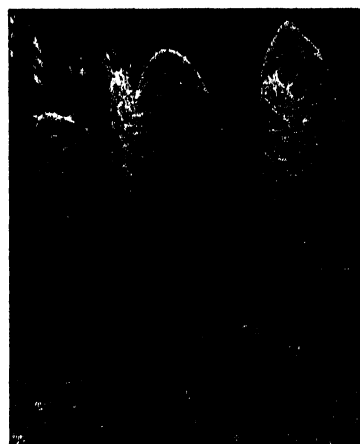
**var. *albispina***  $\square$  has dark green stem pads, white glochids, whitish yellow flowers, and darker purple-red fruit.

**var. *pallida*** (Bunny ears) has thin, greyish green stem segments, 8–15cm (3–6in) long, with yellow areoles and glochids;  $\pm$  to 60cm (24in). **var. *rufida***, syn. *O. rufida*, has reddish brown areoles and glochids, no spines, and bowl-shaped, yellow or orange-yellow flowers;  $\pm$  to 50cm (20in); S. USA, N.W. Mexico.

***O. paraguayensis***. Semi-erect, perennial cactus with glossy, dark green stems composed of flattened, inversely lance-shaped or narrowly elliptic segments, 18–30cm (7–12in) long, with prominent, yellowish white areoles, tufts of yellow glochids, and usually no spines or one pale yellow spine. Broadly bowl-shaped orange flowers, 8cm (3in) across, are produced in late spring and summer, and are followed by conical, spineless, dark purple fruit, to 7cm (3in) long.  $\pm$  to 2m (6ft),  $\leftrightarrow$  1.5m (5ft). Paraguay, Argentina. ☼ (min. 7–10°C/45–50°F)

***O. phaeacantha***, syn. *O. engelmannii* of gardens. Variable, perennial cactus with stems divided into flattened, obovate or rounded, pale to bluish green, sometimes purple-tinged segments, 10–40cm (4–16in) long. Brown areoles each have a tuft of brown glochids and 1–8 sheathed, brown or red-brown spines. Produces broadly funnel-shaped, sulphur-yellow flowers, 5cm (2in) across, sometimes red-tinged inside, in late spring and summer, followed by ovoid, spineless red fruit, to 4cm (1½in) long.  $\pm$  to 1.5m (5ft),  $\leftrightarrow$  to 2m (6ft). S.W. USA, N. Mexico. ☼ (min. 7–10°C/45–50°F)

***O. pycnantha***. Bushy, semi-prostrate, perennial cactus with stems composed of flattened, rounded, slightly softly hairy, dark green segments, 10–18cm (4–7in) long; they are covered with pale brown areoles, each bearing brownish yellow glochids and 3–12 reflexed, yellow or red-brown spines. From spring to summer, produces broadly funnel-shaped, greenish yellow, often red-tinged flowers, 4.5cm (1½in) across; they are followed by ovoid, very prickly, spiny, dull green fruit, 4cm (1½in) long.  $\pm$  to 45cm (18in). Mexico (Baja California). ☼ (min. 7–10°C/45–50°F)



*Opuntia robusta*

***O. robusta*** ■ Variable, shrubby or tree-like, perennial cactus with stems composed of flat, thick, oval to almost rounded, greyish or bluish green segments, to 40cm (16in) across. Brown areoles bear reddish brown glochids and, in each upper areole, 2–12 sheathed white, pale brown, or yellow spines. Shallowly bowl-shaped yellow flowers, 7cm (3in) across, appear in late spring and summer, followed by spherical to ellipsoid, spineless, deep red fruit, 8cm (3in) long. ♂→2m (6ft) or more. C. Mexico. ♀ (min. 7–10°C/45–50°F)

***O. rufida*** see *O. microdasys* var. *rufida*.  
***O. subulata***. Freely branching, tree-like, perennial cactus, with cylindrical, unsegmented, dark green stems, 5–7cm (2–3in) in diameter; they are covered with oblong tubercles and, on the upper stems, semi-cylindrical, sharp-pointed, more or less evergreen leaves, 5cm (2in) or more long. Yellow areoles each have yellow glochids and 1 or 2 pale yellow spines. Cup-shaped red flowers, 7cm (3in) across, are produced from spring to summer, followed by persistent, oblong-ellipsoid, spineless, dark green fruit, 6–10cm (2½–4in) long. ♂ to 4m (12ft), ♀→1.5m (5ft). S. Peru. ♀ (min. 7–10°C/45–50°F)

***O. tunicata*** ■ Densely bushy, freely branching, perennial cactus with whorls of glaucous green stems divided into cylindrical segments, 6–15cm (2½–6in) long. Prominent white areoles have yellow glochids and 6–10 sheathed, off-white or yellow spines. From spring to summer, bears cup-shaped yellow flowers, 3–5cm (1¼–2in) across, followed by spherical to broadly club-



*Opuntia tunicata*



*Opuntia versaffeltii*

shaped, spineless, glaucous green fruit, to 3cm (1¼in) long. ♂60cm (24in), ♀→1m (3ft). C. Mexico. ♀ (min. 7–10°C/45–50°F)

***O. versaffeltii*** ■ Clump-forming, perennial cactus with dull green stems composed of cylindrical segments, 10–20cm (4–8in) or more long, with low tubercles and persistent, cylindrical leaves, to 3cm (1¼in) long. White areoles have yellow glochids and 1–3 or more, hair-like white spines. Cup-shaped, red or orange-red flowers, 4cm (1½in) across, are produced from spring to summer, followed by spherical, spineless red fruit, to 3cm (1¼in) long. ♂15cm (6in), ♀→1m (3ft). Bolivia, N. Argentina. ♀ (min. 7–10°C/45–50°F)  
***O. vestita*** (Cotton-pole cactus). Low-growing, perennial cactus with fragile, warty, pale green stems, and cylindrical segments to 20cm (8in) long. Yellow areoles, the upper ones with cylindrical, more or less evergreen leaves, 1cm (½in) long, each produce white glochids and 4–8 white spines intermingled with many fine white hairs, which envelop the stems. Cup-shaped, dark violet-red flowers, 4cm (1½in) across, are borne in late spring and summer, followed by spherical, spineless red fruit, to 2cm (¾in) long. ♂→1m (3ft). Bolivia. ♀ (min. 7–10°C/45–50°F)

▷ **Orache, Red** see *Atriplex hortensis*

▷ **Orange,**

**Australian mock** see *Pittosporum undulatum*

**Japanese bitter** see *Poncirus trifoliata*

**Japanese mock** see *Pittosporum tobira*

**Mock** see *Philadelphus*, *P. coronarius*

**Osage** see *Maclura pomifera*

**Panama** see *Citrofortunella microcarpa*

**Seville** see *Citrus aurantium*

**Sweet** see *Citrus sinensis*

'Washington'

▷ **Orange ball tree** see *Buddleja globosa*

▷ **Orange blossom, Mexican** see *Choisya*, *C. ternata*

## ORBEA

### ASCLEPIADACEAE

Genus of about 20 species of dwarf, erect to decumbent, mainly clump-forming, leafless, perennial succulents, closely related to *Stapelia*, from semi-arid, hilly, often rocky terrain in E. Africa and South Africa. They have large, warty teeth along the angled stem margins, and produce funnel-shaped, usually 5-lobed, often unpleasantly scented flowers, which attract blue-bottles. The diurnal flowers, borne singly or in few-flowered cymes from summer to autumn, each have a slightly wrinkled, usually flattened corolla, surrounded by a very pronounced, smooth annulus. Below 11°C (52°F), grow in a warm greenhouse; in warm, dry climates, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost, top-dressed with grit. Provide low humidity, with bright filtered light in summer, full light in winter. From spring to early autumn, water moderately, applying a low-nitrogen fertilizer every 3–4 weeks. Keep dry at other times, but water sparingly on warm winter days to prevent shrivelling. Outdoors, grow in gritty, loamy, moderately fertile, humus-rich soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Take stem-segment cuttings in spring and summer.

• **PESTS AND DISEASES** Susceptible to mealybugs and root mealybugs, and to black rot if overwatered.

***O. ciliata***, syn. *Diplocyathus ciliata*. Mat-forming succulent with erect, 4-angled, toothed, mid-green stems, the tips tinged red. In summer, bears solitary, bowl-shaped, pale yellow flowers, to 8cm (3in) across, with dark purple-spotted annuli. ♂5cm (2in), ♀→15cm (6in). South Africa (Northern Cape, Eastern Cape). ♀ (min. 11°C/52°F)

***O. variegata*** ■ syn. *Stapelia variegata* (Starfish cactus, Toad cactus). Variable, clump-forming succulent with erect, obtusely angled, prominently toothed, greyish green stems, often mottled purple. In summer, produces cymes of up to 5 funnel-shaped, flat, densely wrinkled, dark brownish red flowers, 5–9cm (2–3½in) across, patterned white or yellowish white. ♂10cm (4in), ♀→30cm (12in). South Africa (Eastern Cape). ♀ (min. 11°C/52°F)

## ORBEOPSIS

### ASCLEPIADACEAE

Genus of about 10 species of leafless, perennial succulents from dry hillsides in Angola, Mozambique, and South Africa. They have angled, freely branching, usually greyish green stems, and bear umbel-like clusters of star-shaped, malodorous flowers during the day in early summer. In areas where temperatures drop below 10°C (50°F), grow in a warm greenhouse; in warm, dry climates, grow in a desert border.

• **HARDINESS** Frost tender.

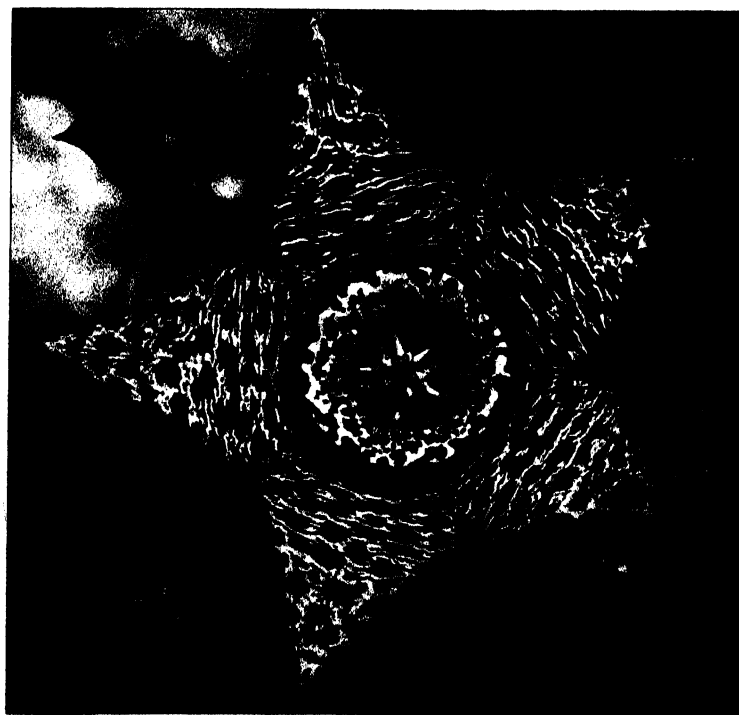
• **CULTIVATION** Under glass, grow in standard cactus compost and top-dress with grit. Provide low humidity and full light with shade from hot sun.

From spring to early autumn, water moderately and apply a low-nitrogen fertilizer every 4 or 5 weeks. Keep dry at other times, but water sparingly on warm winter days to prevent shrivelling. Outdoors, grow in moderately fertile, gritty, loamy, and humus-rich soil, in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Take stem-segment cuttings in spring and summer.

• **PESTS AND DISEASES** Trouble free.

***O. albocastanea***, syn. *Caralluma albocastanea*. Semi-erect, succulent perennial that offsets from the base, producing 4-angled, upward-curving, reddish brown stems with pale spots and large, projecting teeth. In early summer,



*Orbea variegata*

star-shaped flowers, 2.5–3cm (1–1¼in) across, are borne in umbel-like clusters of 3–6; they are green outside with red spots, and cream inside with brownish purple spots, the margins having thick, dark red hairs. They have dark brown coronas. † 8cm (3in), ↔ 18cm (7in). Namibia. ☼ (min. 10°C/50°F)

**O. lutea**, syn. *Caralluma lutea*. Variable, mat-forming, succulent perennial with 4-angled, coarsely toothed, greyish green stems. In early summer, bears dense, umbel-like clusters of 3–26 star-shaped flowers, 4–8cm (1½–3in) across, ranging in colour from reddish brown to maroon or pale lemon-yellow, with yellow-hairy margins and yellow coronas. † 10cm (4in), ↔ 24cm (10in). Southern Africa. ☼ (min. 10°C/50°F)

#### ▷ Orchid,

**Bee** see *Ophrys apifera*

**Butterfly** see *Orchis papilionacea*

**Clown** see *Rossiglossum grande*

**Cradle** see *Anguloa*

**Dancing doll** see *Oncidium flexuosum*

**Early purple** see *Orchis mascula*

**Early spider** see *Ophrys sphegodes*

**Golden chain** see *Dendrochilum*

**Green-veined** see *Orchis morio*

**Heath spotted** see *Dactylorhiza maculata*

**Jewel** see *Goodyera*

**Lady's slipper** see *Cypripedium*, *C. calceolus*

**Late spider** see *Ophrys holoserica*

**Marsh** see *Dactylorhiza*

**Mirror** see *Ophrys vernixia*

**Moth** see *Phalaenopsis*

**Pansy** see *Miltoniopsis*

**Poor man's** see *Schizanthus*, *S. pinnatus*

**Robust marsh** see *Dactylorhiza elata*

**Scorpion** see *Arachnis*

**Shower** see *Congea tomentosa*

**Showy lady's slipper** see

*Cypripedium reginae*

**Slipper** see *Paphiopedilum*

**Sombre bee** see *Ophrys fusca*

**Spider** see *Brassia lawrenceana*

**Spotted** see *Dactylorhiza*

**Swan** see *Cynoches*

**Tiger** see *Rossiglossum grande*

**Tulip** see *Anguloa*

#### ▷ Orchids see p.46

#### ▷ Orchid tree see *Amherstia nobilis*, *Bauhinia variegata*

## ORCHIS

### ORCHIDACEAE

Genus of about 35 species of deciduous, terrestrial orchids from Europe and Asia, mostly occurring in open, grassy places, frequently in poor, dry soil. They have 2 or 3 spherical or ovoid tubers, and rosettes of linear-lance-shaped to oblong-ovate, sometimes purple-spotted, light to dark green leaves. Dense, erect racemes of delicate purple, red, pink, yellow, green, or white flowers, each with a short spur, and sometimes with a pungent odour, are produced from spring to summer. They are suitable for a rock garden or woodland garden, but are usually grown in an alpine house.

• **HARDINESS** Fully hardy to frost hardy.  
• **CULTIVATION** In an alpine house, grow in terrestrial orchid compost in bright filtered light. Water moderately in growth; keep dry and frost-free when dormant. Outdoors, grow in fertile,



*Orchis morio*

well-drained, gritty, humus-rich soil in partial shade. *O. morio* and *O. papilionacea* prefer slightly acid to slightly alkaline soil; *O. mascula* prefers moist, neutral to slightly acid soil. Plant dormant tubers in autumn, at least 8cm (3in) deep. In frost-prone areas, provide a dry winter mulch. See also p.46.

• **PROPAGATION** Separate offsets in spring.

• **PESTS AND DISEASES** Slugs and snails may be troublesome.

**O. elata** see *Dactylorhiza elata*.

**O. maderensis** see *Dactylorhiza foliosa*.

**O. mascula** (Early purple orchid).

Terrestrial orchid with mid-green, often purple-spotted leaves, 15cm (6in) long. From spring to midsummer, bears light to dark purple flowers, 2cm (¾in) long, in erect racemes, to 30cm (12in) tall. † 30cm (12in), ↔ 15cm (6in). Europe. \*\*\*

**O. morio** ☐ (Green-veined orchid).

Terrestrial orchid with pale to mid-green leaves, 6cm (2½in) long. Pale to deep purple flowers, 2cm (¾in) long, with green veins on the cupped sepals, are borne in erect racemes, to 15cm (6in) tall, from spring to midsummer. † 15–30cm (6–12in), ↔ 8cm (3in). Europe to W. Iran. \*\*

**O. papilionacea** (Butterfly orchid). Terrestrial orchid with mid-green leaves, 6cm (2½in) long. In spring and early summer, bears erect racemes, to 15cm (6in) tall, of pale purple to lilac, sometimes reddish brown, darker veined flowers, 2cm (¾in) long, with large, pink-veined lips. † 15–30cm (6–12in), ↔ 8cm (3in). S. Europe to S.W. Asia. \*\*\*

#### ▷ Oregano see *Origanum*, *O. vulgare*

## OREOCEREUS

syn. BORZICACTUS

### CACTACEAE

Genus of about 6 species of mainly columnar, perennial cacti from mountainous regions in South America. The thick, cylindrical, many-ribbed stems, usually branching from the bases, have tubercles and spiny areoles and, in some species, are covered in long hairs. Solitary, tubular-funnel-shaped flowers are produced during the day in summer, usually near the stem tips. Below 10°C (50°F), grow as houseplants or in a warm greenhouse; in warm, dry climates, grow in a desert garden.



*Oreocereus aurantiacus*

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 4 parts standard cactus compost and 1 part limestone chippings, in full light. From spring to summer, water freely; apply a balanced liquid fertilizer monthly. Keep dry at other times.

Outdoors, grow in moderately fertile, slightly alkaline, sharply drained, humus-rich soil in full sun. See also pp.48–49.

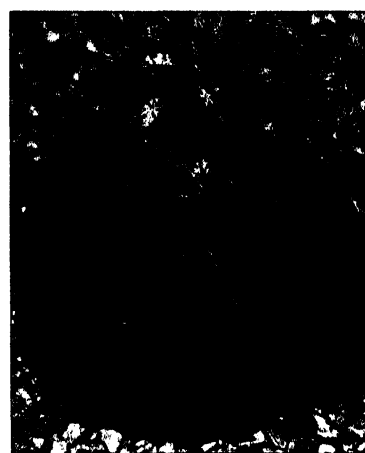
• **PROPAGATION** Sow seed at 21°C (70°F) in spring or summer.

• **PESTS AND DISEASES** Vulnerable to scale insects.

**O. aurantiacus** ☐ syn. *Borzicactus aurantiacus*, *Matucana aurantiaca*.

Solitary or clustering, perennial cactus with spherical to flattened-spherical or short-cylindrical, warty, dark green stems, each with 11–28 ribs. Elliptic areoles bear 16–22 yellow to reddish brown radial spines, but no centrals. In summer, produces solitary, red-throated, bright orange-red or orange-yellow flowers, to 9cm (3½in) long. †↔ 15cm (6in). N. Peru. ☼ (min. 10°C/50°F).

**O. celsianus** ☐ syn. *Borzicactus celsianus*. Slow-growing, clump-forming, perennial cactus with cylindrical, erect stems branching from the bases, each with 10–17 warty ribs. Grey-woolly areoles bear white hairs and yellow to reddish brown spines (7–9 radials and 1–4 much longer centrals). In summer, produces solitary, pale purplish pink flowers, 7–9cm (3–3½in) long, brownish red outside. † 1–3m (3–10ft), ↔ 45cm (18in) or more. Bolivia, N.W. Argentina. ☼ (min. 10°C/50°F)



*Oreocereus celsianus*

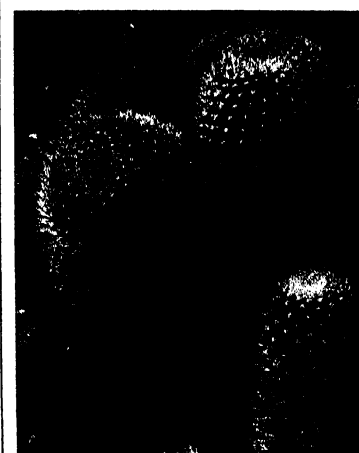
**O. haynei** ☐ syn. *Borzicactus haynei*, *Matucana haynei*. Solitary, occasionally clustering, perennial cactus with spherical to cylindrical, grass-green stems, each with 25–30 ribs and low-set tubercles. Ovoid, thickly set areoles bear yellow wool and spreading, stiff, white to yellowish brown spines (30 or more radials and 3 centrals). Solitary, red and orange to purplish crimson flowers, to 6–7cm (2½–3in) long, are produced in summer. † to 30cm (12in), ↔ 10cm (4in). N. Peru. ☼ (min. 10°C/50°F)

**O. hempelianus**, syn. *Arequipa hempeliana*, *Borzicactus leucotrichus*.

Solitary, perennial cactus with branching, spherical then short-cylindrical, erect or semi-prostrate, greyish green or glaucous green stems, each with 10–20 warty ribs and yellow wool at the tips. White areoles each bear 11–40 spines (8–30 radials and 3–10 longer centrals). Solitary, bright scarlet to purplish red flowers, to 8cm (3in) long, are produced in summer. † to 40cm (16in), ↔ 10cm (4in). Mountains of S. Peru, N. Chile. ☼ (min. 10°C/50°F)

**O. intertexta**, syn. *Matucana intertexta*. Clump-forming, perennial cactus with erect, spherical to short-cylindrical, shiny, dark green stems, each with 14–18 warty ribs, often somewhat spiralled. Elliptic areoles each bear yellow spines, reddish brown beneath (16–18 radials and 3–7 longer centrals). In summer, bears solitary, orange-red flowers, 5–7cm (2–3in) across. †↔ to 15cm (6in). Peru. ☼ (min. 10°C/50°F)

**O. peruviana** see *Oroya peruviana*.



*Oreocereus haynei*

## ORIGANUM

Marjoram, Oregano

LABIATAE/LAMIACEAE

Genus of about 20 species of often rhizomatous, summer-flowering, herbaceous perennials and deciduous and evergreen subshrubs from open habitats, often in mountainous areas of the Mediterranean and S.W. Asia. They have spreading to upright stems bearing simple, aromatic leaves in opposite pairs, and inflorescences in spiked whorls, which are sometimes panicle- or corymb-like. The elongated, tubular or funnel-shaped, 2-lipped flowers are borne amid conspicuous, often brightly coloured bracts, which remain attractive for many weeks. Some *origanums*, *O. dictamnus*, *O. majorana*, *O. onites*, and *O. vulgare* and their cultivars, are used as culinary herbs. Grow smaller species in a rock garden, scree bed, alpine house, or at the front of a border; grow larger ones in a herbaceous border or herb garden. All attract bees and other insects.

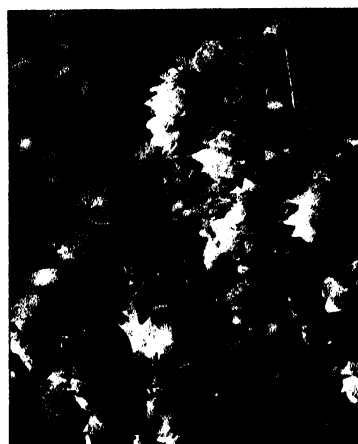
• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Outdoors, grow in full sun in poor to moderately fertile, well-drained, preferably alkaline soil. Grow dwarf perennials and subshrubs in free-draining soil. Some fully hardy species and cultivars resent winter wet, and are best grown in an alpine house; grow in a mix of equal parts loam, leaf mould, and sharp sand. Cut back old, flowered stems in early spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or at 10–13°C (50–55°F) in spring. Divide in spring, or take basal cuttings in late spring.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

**O. amanum** ■♀ Low-spreading, evergreen subshrub with ovate, bright green leaves, to 1.5cm (½in) long, and heart-shaped at the bases. In summer and autumn, curved, funnel-shaped



Origanum 'Kent Beauty'

pink flowers, 4cm (1½in) long, with small spreading lobes, are produced in congested, terminal whorls among green bracts, to 2cm (¾in) long, which become flushed purple-pink with age. †10–20cm (4–8in), ↔ to 30cm (12in). E. Mediterranean, Turkey. \*\*\*

**O. 'Barbara Tingey'**. Dense, mound-forming, semi-evergreen subshrub, similar to *O. rotundifolium*. Produces rounded, bluish green leaves, purple beneath, 2cm (¾in) long. From summer to autumn, nodding whorls of tubular pink flowers, 1.5cm (½in) long and flared at the mouths, are borne among green bracts, 2cm (¾in) long, which age to deep purple-pink. †10cm (4in), ↔ to 20cm (8in). \*\*\*

**O. 'Buckland'**. Upright perennial, with rounded, hairy, grey-green leaves, 1.5cm (½in) long. In summer, whorls of tubular pink flowers, 1.5cm (½in) long, are borne among bracts, 2cm (¾in) long, which are pink from an early age. †20cm (8in), ↔ to 15cm (6in). \*\*\*

**O. dictamnus** (Cretan dittany, Hop marjoram). Dome-forming, evergreen subshrub with arching, branching stems bearing rounded-ovate to rounded, densely white-felted, mid-green,



Origanum laevigatum

sometimes purple-mottled leaves, to 2.5cm (1in) long. In mid- and late summer, bears dense, pendent, panicle-like whorls of small, open funnel-shaped pink flowers, 1cm (½in) long, among hop-like purple bracts, 9–10mm (¾–½in) long. In wet climates, grow in an alpine house. †15cm (6in), ↔ to 20cm (8in). Crete. \*\*

**O. heracleoticum** see *O. vulgare* subsp. *hirtum*.

**O. 'Kent Beauty'** ■ Prostrate, semi-evergreen subshrub with trailing stems clothed in rounded-ovate, bright green leaves, to 2cm (¾in) long. In summer, produces whorls of small, tubular, pale pink to mauve flowers, 1.5cm (½in) long, among deep rose-pink bracts, 2cm (¾in) long. †10cm (4in), ↔ to 20cm (8in). \*\*\*

**O. laevigatum** ■♀ Woody-based perennial with erect, wiry, red-purple stems and ovate to elliptic, dark green leaves, 1.5–2cm (½–¾in) long, hairy only along the midribs beneath. Loose, panicle-like whorls of numerous tubular, scarcely 2-lipped, purplish pink flowers, 1.5cm (½in) long, are produced from late spring to autumn. The flowers have darker purple calyces, surrounded

by red-purple bracts, 1cm (½in) long. † to 50–60cm (20–24in), ↔ 45cm (18in). Turkey, Cyprus. \*\*\*

**'Herrenhausen'** ■♀ has purple-flushed young leaves and winter foliage, and denser whorls of pink flowers; †45cm (18in). **'Hopleys'** has large, deep pink flowers, 2cm (¾in) long, and large bracts, 1.5cm (½in) long, borne in narrow whorls; †60cm (24in).

**O. majorana** (Sweet marjoram).

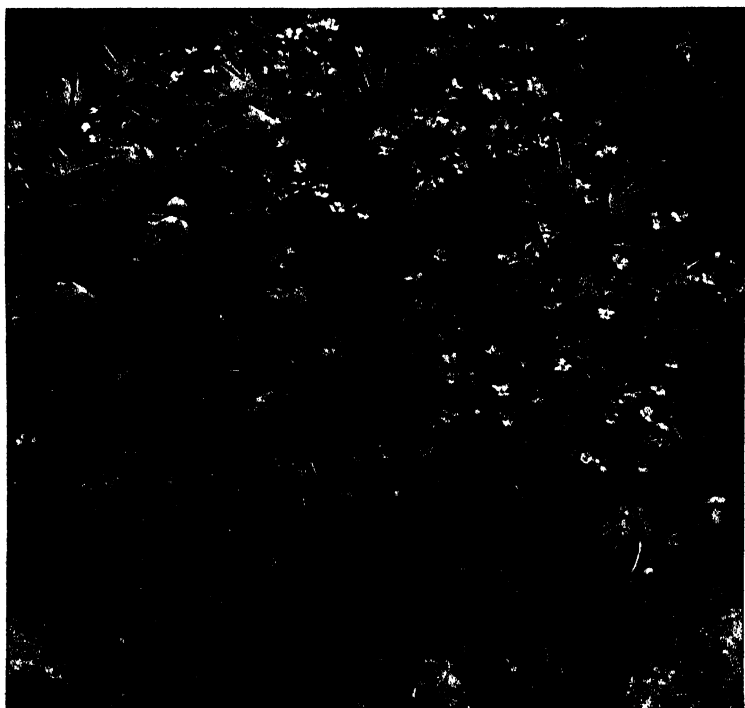
Upright, evergreen subshrub, often grown as an annual or biennial, with branching stems bearing ovate or elliptic, softly hairy, grey-green leaves, 0.3–3cm (¼–1¼in) long. Panicles of tubular, white or pink flowers, 8mm (¾in) long, with grey-green bracts, to 4mm (¼in) long, appear from early to late summer. † to 80cm (32in), ↔ 45cm (18in). S.W. Europe, Turkey. \*\*

**O. microphyllum**. Domed, spreading, evergreen subshrub with ovate, downy grey leaves, to 5mm (¼in) long, on slender branches. In summer, bears loose, panicle-like whorls of tubular, pink to purple flowers, 5mm (¼in) long, among purple bracts, to 4mm (¼in) long. †25cm (10in), ↔ to 30cm (12in). Crete. \*\*

**O. onites**, syn. *Majorana onites* (French marjoram, Pot marjoram). Small, mound-forming, semi-evergreen subshrub with red-hairy stems and ovate to elliptic, bright green leaves, to 2cm (¾in) long, rounded to heart-shaped at the bases. In late summer, produces tubular white flowers, to 6mm (¼in) long, in dense, corymb-like whorls, with green bracts, to 4mm (¼in) long. Popular herb for Mediterranean dishes. †60cm (24in), ↔ 30cm (12in). E. Mediterranean. \*\*

**O. rotundifolium** ♀ Rhizomatous, woody-based perennial or deciduous, rounded subshrub, with rounded to heart-shaped, blue-grey leaves, to 2.5cm (1in) long. Throughout summer, produces nodding, hop-like whorls of small, tubular, pale pink flowers, to 1.5cm (½in) long, among pale lemon-green bracts, to 2.5cm (1in) long. †10–30cm (4–12in), ↔ to 30cm (12in). Turkey, Armenia, Georgia. \*\*\*

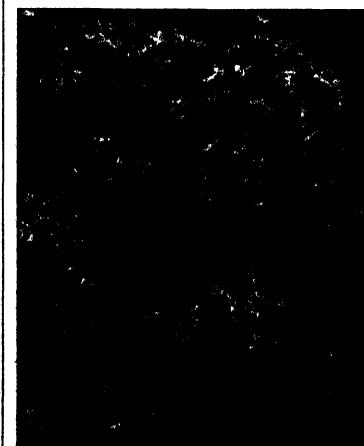
**O. vulgare** ■ (Oregano, Wild marjoram). Bushy, rhizomatous, woody-based perennial with upright to spreading stems bearing very aromatic, rounded to ovate, dark green leaves, to 4cm (1½in) long. From midsummer to early autumn, bears loose panicle- or corymb-like whorls of tubular flowers,



Origanum amanum



Origanum laevigatum 'Herrenhausen'



Origanum vulgare



*Origanum vulgare* 'Aureum'

to 4mm (1/4in) long, varying from deep to pale pink or white, with whorls of leafy, purple-tinted green bracts, to 1cm (1/2in) long. ↑ 30–90cm (12–36in). Europe. \*\*\*. 'Aureum' ■ ♀ (Golden wild marjoram) has golden leaves and pink flowers, and spreads less vigorously than the species; ↔ 30cm (12in). 'Aureum Crispum', syn. 'Curly Gold', is more spreading than the species, with curly golden leaves; ↔ 45cm (18in). 'Compactum' (Compact marjoram) is dense, compact, and dome-forming, with smaller leaves, to 2cm (3/4in) long; ↑ to 15cm (6in), ↔ to 30cm (12in). 'Curly Gold' see 'Aureum Crispum'. 'Gold Tip', syn. 'Variegatum', is like 'Aureum Crispum', but the leaves are yellow only at their tips; ↑ 40cm (16in), ↔ 45cm (18in). 'Heiderose' is upright and bushy in habit, with pink flowers; ↑ to 40cm (16in). subsp. *hirtum*, syn. *O. heracleoticum*, has a compact habit, with hairy leaves, hairy green bracts, and small heads of white flowers; ↑ 30–70cm (12–28in), ↔ 20–45cm (8–18in); Greece, Turkey. 'Variegatum' see 'Gold Tip'.

## ORIXA

RUTACEAE

Genus of one species of deciduous, spreading, dioecious shrub from woodland and thickets in mountainous regions of China, Korea, and Japan. Cultivated for its elegant, aromatic foliage, it is suitable for a shrub border or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in sun or shade. Tolerant of dry soils and exposed positions. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Take semi-ripe cuttings in midsummer.
- **PESTS AND DISEASES** Trouble free.

*O. japonica*. Spreading, slender-branched, deciduous shrub with simple, alternate, obovate to inversely lance-shaped, aromatic, dark green leaves, to 12cm (5in) long, pale yellow in autumn. Cup-shaped, 4-petalled green flowers, to 5mm (1/4in) across, are borne in the leaf axils as the leaves emerge in spring; the males are borne in small panicles, to 3cm (1 1/4in) long, the females singly. Female plants bear 4-lobed brown fruit, 2cm (3/4in) across. ↑ 2.5m (8ft), ↔ 4m (12ft). China, Korea, Japan. \*\*\*

## ORNITHOGALUM

Star-of-Bethlehem

HYACINTHACEAE/LILIACEAE

Genus of 80 species of bulbous perennials found in a variety of habitats, ranging from dry, rocky hillsides to meadows and woodland, in C. and S. Europe, the Mediterranean, former USSR, W. and S.W. Asia, tropical Africa, and South Africa. They are grown for their sometimes corymb-like racemes of often star-, cup-, or funnel-shaped, occasionally scented flowers; usually white, sometimes yellow or orange, they are borne on leafless stems in spring or summer. The leaves are basal, and vary from linear to obovate, sometimes with a silver stripe down the centre. Smaller species are suitable for a rock garden; taller ones for a herbaceous border. In ideal growing conditions, *O. nutans* and *O. umbellatum* may become invasive, but, as with *O. montanum*, are suitable for naturalizing in short turf or beneath shrubs. In frost-prone areas, grow tender species in a cool greenhouse, or grow outdoors and lift in autumn. All parts may cause severe discomfort if ingested, and the sap may irritate skin.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Plant bulbs 10cm (4in) deep. Outdoors, plant fully hardy and frost-hardy species in autumn, in moderately fertile, well-drained soil, in a sunny situation. *O. nutans* and *O. umbellatum* tolerate partial shade. Plant half-hardy species in spring for summer flowering; in growth, water freely and lift after flowering; keep frost-free over winter. Under glass, grow tender species in large containers of loam-based potting compost (J1 No.2), in full light with shade from hot sun. When in growth, water freely; keep dry when dormant, and repot annually in spring. *O. thyrsoides* may be planted under glass in autumn for spring flowering.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Remove offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

*O. arabicum*. Bulbous perennial with basal rosettes of semi-erect, broadly linear, dark green leaves, to 60cm (24in) long. In early summer, bears corymb-like racemes of 6–25 cup-shaped, scented, white or cream flowers, 3cm (1 1/4in) across, each with a conspicuous



*Ornithogalum balansae*



*Ornithogalum lanceolatum*

black ovary. ↑ 30–80cm (12–32in), ↔ 8cm (3in). Mediterranean. \*

*O. balansae* ■ syn. *O. oligophyllum* of gardens. Slender, bulbous perennial with almost prostrate, inversely lance-shaped, glossy, mid-green, basal leaves, to 15cm (6in) long. In early spring, bears corymb-like racemes of 2–5 cup-shaped flowers, 3cm (1 1/4in) across, glistening white inside, bright green outside. ↑ to 8cm (3in), ↔ 10cm (4in). Balkans, Turkey, Georgia. \*\*\*

*O. caudatum* see *O. longibracteatum*.

*O. lanceolatum* ■ Dwarf, bulbous perennial producing basal rosettes of prostrate, lance-shaped, shiny, mid-green leaves, 10–12cm (4–5in) long. In spring, bears compact, almost stemless racemes of 5–13 star-shaped white flowers, 2–3cm (3/4–1 1/4in) across, striped green on the outside. ↑ 5–10cm (2–4in), ↔ 10cm (4in). Turkey, Syria, Lebanon. \*\*\*

*O. longibracteatum*, syn. *O. caudatum* (False sea onion). Bulbous perennial with lax, strap-shaped, semi-succulent, pale green, basal leaves, to 60cm (24in) long. In summer, bears tall racemes of up to 300 bell-shaped white flowers, to 1.5cm (1/2in) across, striped green outside, with bracts extending far beyond the flowers. ↑ 1–1.5m (3–5ft), ↔ 15cm (6in). Tropical Africa, South Africa (Northern Cape, Eastern Cape). \*\*

*O. montanum* ■ Bulbous perennial producing basal rosettes of prostrate, linear, shiny, pale to greyish green leaves, 10–15cm (4–6in) long. In spring, bears corymb-like racemes of 10–20 star-shaped white flowers, 2cm



*Ornithogalum montanum*



*Ornithogalum narbonense*

(3/4in) across, striped green on the outside. ↑ 10–25cm (4–10in), ↔ 10cm (4in). S. Europe, Turkey, Lebanon, Israel. \*\*

*O. narbonense* ■ Bulbous perennial with semi-erect, linear, grey-green, basal leaves, to 60cm (24in) long. Produces upright, narrowly pyramidal racemes of 25–75 star-shaped white flowers, 2cm (3/4in) across, in late spring and early summer. ↑ 30–90cm (12–36in), ↔ 5cm (2in). Mediterranean, Turkey, Caucasus, Iran. \*\*\*

*O. nutans* ♀ Bulbous perennial with semi-erect, strap-shaped, bright mid-green, basal leaves, 30–40cm (12–16in) long, each with a central silver stripe above. In spring, bears one-sided racemes of up to 20 semi-pendent, funnel-shaped, silvery white flowers, 3cm (1 1/4in) across, broadly striped green outside. ↑ 20–60cm (8–24in), ↔ 5cm (2in). Europe, S.W. Asia. \*\*\*

*O. oligophyllum* of gardens see *O. balansae*.

*O. pyramidale*. Bulbous perennial with basal clusters of semi-erect, linear, glossy, mid-green leaves, to 60cm (24in) long, which wither as the flowers open. In late spring and early summer, produces stiff racemes of numerous star-shaped white flowers, 1–2cm (1/2–3/4in) across, striped green on the outside. ↑ 30–120cm (12–48in), ↔ 7cm (3in). C. Europe, Balkans. \*\*\*

*O. pyrenaicum* (Bath asparagus). Bulbous perennial with basal tufts of semi-erect, narrowly linear, grey-green leaves, 20–35cm (8–14in) long, often withering as the flowers open. Long racemes of 25–40 star-shaped, pale yellow flowers, to 1cm (1/2in) across, broadly or narrowly striped green outside, are produced in early summer. ↑ to 1m (3ft), ↔ 10cm (4in). Europe, Turkey, Caucasus. \*\*\*

*O. saundersiae*. Robust, bulbous perennial with erect, strap-shaped, dark green, sometimes greyish green, basal leaves, 60cm (24in) long. In winter or spring, produces dense, corymb-like



*Ornithogalum umbellatum*

racemes of cup-shaped, white or creamy white flowers, 2–3cm (¾–1¼in) across, with black or greenish black ovaries. ‡ to 1m (3ft), ↔ 10cm (4in). South Africa (Northern Transvaal, Eastern Transvaal, KwaZulu/Natal), Swaziland. \*

**O. sintenisii.** Small, bulbous perennial with basal rosettes of nearly prostrate, linear, recurved and often twisted, mid-green leaves, 20–30cm (8–12in) long. In spring, produces almost stemless racemes of 4–12 open star-shaped white flowers, 2cm (¾in) across, striped green on the outside. ‡↔ 10cm (4in). Russia, Georgia, Azerbaijan, Iran. \*\*\*

**O. thyrsoides** (Chincherinchee). Robust, bulbous perennial with semi-erect, linear to narrowly lance-shaped, mid-green, basal leaves, to 30cm (12in) long, with hairy margins, withering before the flowers open. In spring and early summer, bears dense racemes of many cup-shaped white flowers, 2cm (¾in) across, tinted cream or green at the bases. Excellent for cut flowers. ‡ to 70cm (28in), ↔ 10cm (4in). South Africa (Western Cape). \*

**O. umbellatum** (Star-of-Bethlehem). Bulbous perennial with semi-erect, linear, white-veined, mid-green, basal leaves, to 30cm (12in) long, each with a central silver stripe above; the leaves wither as the flowers open in early summer. Produces corymb-like racemes of 6–20 long-stalked, star-shaped white flowers, 2cm (¾in) across, striped green outside. Increases rapidly. ‡ 10–30cm (4–12in), ↔ 10cm (4in). Europe, Turkey, Syria, Lebanon, Israel, N. Africa. \*\*\*

## ORNITHOPHORA

ORCHIDACEAE

Genus of 1 or possibly 2 species of evergreen, epiphytic orchids from Brazil, occurring in warm, moist, forested areas. They have slender, compressed, ovoid pseudobulbs, each with 2 linear leaves at the tip, and a fine mat of aerial roots. Tiny flowers are borne in slender

racemes arising from the bases of the pseudobulbs, and resemble a swarm of insects hovering above the plant.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in epiphytic orchid compost in shallow pots or slatted baskets, or epiphytically on slabs of bark. Provide high humidity and bright filtered light all year. In summer, mist daily, water freely, and apply a quarter-strength fertilizer at every third watering. In winter, water more sparingly, and do not allow to dry out completely. See also p.46.

• **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.

• **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

**O. radicans**, syn. *Sigmatostalix radicans*. Epiphytic orchid with grass-like leaves, 10–18cm (4–7in) long. Intricately patterned, slightly fragrant, white-green or green-yellow flowers, to 8mm (¾in) across, with cream lips, are borne in racemes 7–15cm (3–6in) long, in autumn. ‡ 10cm (4in), ↔ 30cm (12in). Brazil. ☉ (min. 13°C/55°F; max. 30°C/86°F)

▷ **Orobis aureus** see *Lathyrus aureus*

▷ **Orobis vernus** see *Lathyrus vernus*

## ORONTIUM

Golden club

ARACEAE

Genus of one species of marginal aquatic perennial from E. USA. It has large, thick rhizomes producing oblong to narrowly elliptic, submerged, floating, or aerial leaves, and curious, pencil-like spadices that stand well above the water.

Ideal for the margins of an informal pool, it associates well with waterside irises and primulas in early summer.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in deep mud at a pool margin with ample room to spread, or in baskets of loamy soil, in water no



*Orontium aquaticum*

deeper than 45cm (18in), and in full sun to develop the beauty of the glaucous leaves. Remove the short-lived flower spikes when they fade. See also pp.52–53.

• **PROPAGATION** Sow seed as soon as ripe in a cold frame in trays of loam-based seed compost, and cover with no more than 1–3cm (½–1¼in) of water. Divide the rhizomes in spring.

• **PESTS AND DISEASES** Trouble free.

**O. aquaticum** (Golden club). Rhizomatous, marginal aquatic perennial with oblong to narrowly elliptic, submerged, aerial, or floating leaves, to 25cm (10in) long, mid-green and glaucous, often purple-tinted beneath. From late spring to midsummer, bears small, bright yellow flowers near the tops of numerous cylindrical white spadices, 18cm (7in) tall. ‡ 30–45cm (12–18in), ↔ 60–75cm (24–30in). E. USA. \*\*\*

## OROSTACHYS

CRASSULACEAE

Genus of about 10 species of freely offsetting, monocarpic perennials, closely related to *Sedum*, from low to mountainous, rocky areas of Russia, China, North Korea, South Korea, and Japan. They have dense, hemispherical to spherical rosettes of fleshy leaves, and produce erect stems bearing terminal, spike-like racemes or panicles of short-stalked, star-shaped flowers during summer or autumn. The rosettes die after flowering and fruiting. Below 8°C (46°F), grow in a cool greenhouse; in warmer climates, grow in a bed or border with other succulents.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to autumn, water freely and apply a half-strength, balanced liquid fertilizer every 4 weeks. Keep almost dry in winter. Outdoors, grow in poor, well-drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F), or divide offsets, in spring.

• **PESTS AND DISEASES** Susceptible to mealybugs.

**O. cbanetii.** Clump-forming, perennial succulent with a stoloniferous rootstock and compact, basal rosettes of linear, greyish green leaves, 4cm (1½in) long. Dense, pyramidal, spike-like racemes or panicles, to 20cm (8in) long, of star-

shaped white flowers, 1–2cm (½–¾in) across, reddish pink outside, are borne in summer and autumn. ‡ to 20cm (8in) sometimes more, ↔ 10cm (4in). China. ☉ (min. 8°C/46°F)

## OROYA

CACTACEAE

Genus of 2 or 3 species of perennial cacti from dry, stony slopes, screes, and cliffs, at altitudes to 4,000m (13,000ft), in Peru. They have flattened-spherical to very short-cylindrical, rarely offsetting stems with numerous warty ribs and spined areoles. Bell- or funnel-shaped flowers are usually borne in a ring around the crown of each stem in summer, followed by obovoid to ovoid red or yellow berries containing black-coated seeds. Where temperatures drop below 13°C (55°F), grow in a warm greenhouse; in warm, dry climates, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to autumn, water freely and apply half-strength, balanced liquid fertilizer 3 or 4 times. Keep barely moist in winter. Outdoors, grow in sharply drained, neutral to slightly alkaline, poor, humus-rich soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring.

• **PESTS AND DISEASES** Susceptible to aphids while flowering.

**O. neoperuviana** see *O. peruviana*.

**O. peruviana** (syn. *Oreocereus peruviana*, *Oroya neoperuviana*). Perennial cactus producing solitary, dull green or bluish green stems, each with up to 35 rounded ribs notched into long tubercles. Linear areoles bear brownish yellow spines (10–30 radials, in comb-like formation, and up to 6 longer centrals). Bell-shaped, pale carmine-red to vermilion, usually yellow-based flowers, 1.5–3cm (½–1¼in) long, are borne in summer. ‡ 15–20cm (6–8in), occasionally more, ↔ to 15cm (6in). Peru. ☉ (min. 13°C/55°F)

▷ **Orphanidesia** see *Epigaea*

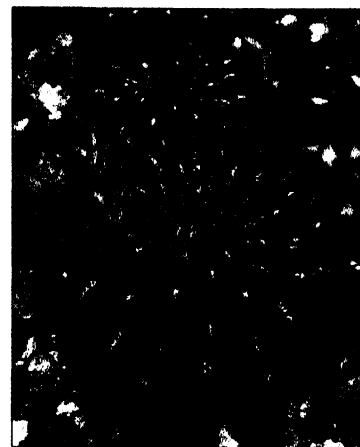
**O. gaultherioides** see

*E. gaultherioides*

▷ **Orpine** see *Sedum telephium*

**Stone** see *S. rupestre*

▷ **Orris root** see *Iris germanica* 'Florentina'



*Oroya peruviana*



# ORTEGOCACTUS

CACTACEAE

Genus of one species of perennial cactus, closely related to *Mammillaria*, from dry areas of S.W. Mexico. It has spherical to short-cylindrical stems, which often offset to form small clusters, with spirally arranged, warty ribs and prominently spined areoles. Solitary, funnel-shaped yellow flowers are produced in summer, followed by orange-yellow or dull red fruit. In areas where temperatures drop below 15°C (59°F), grow in a warm greenhouse; in warm, dry climates, grow in a border with other cacti, or in a raised bed or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to early autumn, water freely and apply half-strength, balanced liquid fertilizer every 4–5 weeks. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained, humus-rich, slightly acid soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in spring.
- **PESTS AND DISEASES** Vulnerable to mealybugs.

*O. macdougallii* ■ syn. *Neobesseyia macdougallii*. Clustering, perennial cactus producing spherical to short-cylindrical, pale greyish green stems, 3–4cm (1¼–1½in) thick, covered with large, diamond-shaped tubercles. White-woolly areoles bear black-tipped, white or totally black spines (7 or 8 radials and 1 shorter central spine). Solitary, funnel-shaped yellow flowers, to 3cm (1¼in) long, the outer tepals tinted purple outside, are produced in summer; they are followed by spherical-ellipsoid, orange-yellow or dull red fruit with black-coated seeds. ↑ to 6cm (2½in), ↔ 12cm (5in). S.W. Mexico. ☿ (min. 15°C/59°F)



*Ortegocactus macdougallii*

# ORTHOPHYTUM

BROMELIACEAE

Genus of about 18 species of mat-forming, evergreen, semi-succulent, terrestrial perennials (bromeliads) from dry, rocky slopes, to 1,200m (4,000ft) high, in E. Brazil. They spread by stolons to form wide rosettes of usually stemless, softly spiny leaves. In summer, they produce varyingly branched inflorescences with leafy bracts and small, dense clusters of slender, tubular, mainly white flowers. In areas where temperatures drop below 15°C (59°F), grow in a warm greenhouse; in warm, dry climates use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light. In the growing season, water moderately with soft water, applying half-strength, balanced liquid fertilizer every 3–4 weeks. Keep plants dry in winter. Outdoors, grow in sharply drained, moderately fertile, humus-rich soil in full sun. See also p.47.
- **PROPAGATION** Sow seed at 27°C (81°F) in early spring. Separate offsets in spring.
- **PESTS AND DISEASES** Susceptible to aphids while flowering.

*O. navioides*, syn. *Cryptanthopsis navioides*. Stemless bromeliad that spreads by stolons to form clustered rosettes of narrowly lance-shaped, finely toothed, sparsely scaly, mid-green leaves, to 30cm (12in) long. In summer, tubular white flowers, to 3cm (1¼in) long, with pale yellowish green sepals and bracts, are produced in few-flowered clusters, sunk in the centre of each rosette. The whole plant often turns bright red or red-purple as the flowers mature. ↑ to 20cm (8in), ↔ to 60cm (24in). E. Brazil. ☿ (min. 15°C/59°F)

*O. saxicola*. Stemless bromeliad, spreading by stolons to form large clusters of rosettes. Narrowly triangular,



*Orthophytum vagans*

toothed, pale bright green leaves, 3–6cm (1¼–2½in) long, are usually thick and fleshy. In summer, produces head-like clusters of thick, fleshy bracts and short-stalked, tubular white flowers, to 2cm (¾in) long, with white-margined green sepals, and petals with 2 basal projections. Both the bracts and the flowers are almost hidden in the rosettes. ↑ 8cm (3in), ↔ indefinite. E. Brazil. ☿ (min. 15°C/59°F)

*O. vagans* ■ Trailing bromeliad with an elongated, branching caudex, the branches rooting down and forming large, spreading groups. Produces loosely rosetted rows of narrowly triangular, deeply channelled, slightly toothed, bright green leaves, to 10cm (4in) long, scaly beneath, turning red-purple with age. In summer, produces stemless inflorescences of red or orange bracts and 15–30 tubular, apple-green flowers, 2cm (¾in) long, with white-woolly sepals, and stalks 5cm (2in) long. ↑ to 20cm (8in), ↔ indefinite. E. Brazil. ☿ (min. 15°C/59°F)

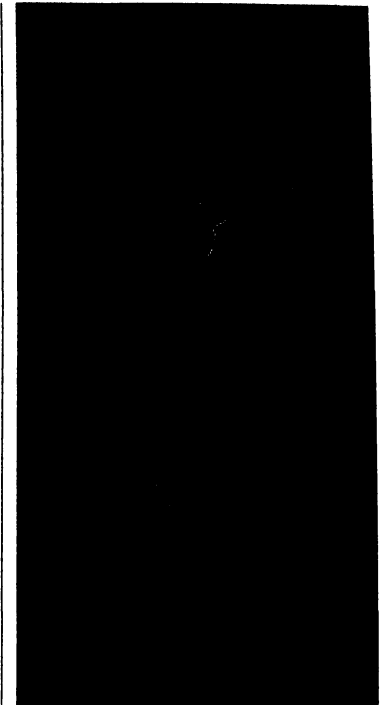
# ORTHROSANTHUS

IRIDACEAE

Genus of 7 species of evergreen perennials occurring in sandy soils in Australia and tropical America. They have narrowly strap-shaped or linear, rigid or arching leaves, arising from short, woody rhizomes. They are grown for their bowl-shaped to open saucer-shaped, 6-tepalled blue flowers, borne in loose, terminal panicles on slender, erect stalks. The flowers are short-lived, but open in succession for 2 weeks or more from late spring to summer. In frost-prone areas grow in a cool greenhouse or conservatory; in warmer areas, grow in a warm, sunny border.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with additional sharp sand and leaf mould, in full light. Water moderately when in growth; keep almost dry when dormant. Repot or top-dress in spring. Outdoors, grow in light, fertile, well-drained, humus-rich soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F), or divide, in spring.
- **PESTS AND DISEASES** Trouble free.

*O. chimboracensis*. Rhizomatous perennial with stiff, leathery, linear, basal leaves, to 40cm (16in) long, rough to the touch. Loose panicles of shallowly



*Orthrosanthus multiflorus*

bowl-shaped, lavender-blue flowers, 4cm (1½in) across, are produced in summer. ↑ 30–60cm (12–24in), ↔ 30cm (12in). Mexico to Peru. \*

*O. multiflorus* ■ Rhizomatous perennial with rigid, linear, basal leaves, to 45cm (18in) long, with smooth margins. From late spring to summer, bears narrow panicles of open saucer-shaped, pale blue to violet-blue flowers, to 4cm (1½in) across. ↑ 60cm (24in), ↔ 30cm (12in). S.W. Australia. \*

# ORYCHOPHRAGMUS

BRASSICACEAE/CRUCIFERAE

Genus of 2 species of annuals or biennials occurring in fallow fields and on wasteland in C. Asia and China. They have thin, pinnatifid, lower leaves and entire stem-clasping leaves. Cross-shaped flowers, with 4-clawed violet petals, are produced in terminal racemes from late spring to summer. Grow outdoors as a bedding annual or biennial, or, for flowers in late winter and early spring, grow as a short-lived container plant in a cool or temperate greenhouse.

- **HARDINESS** Half hardy.
- **CULTIVATION** Outdoors, grow in fertile, well-drained soil in a warm, sunny site. Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water moderately.
- **PROPAGATION** Sow seed *in situ* in spring or early summer or, in frost-free climates, in autumn.
- **PESTS AND DISEASES** Trouble free.

*O. violaceus*. Annual or biennial with an upright habit, and moderately fast-growing, branching stems bearing thin, pinnatifid, pale green basal leaves, 12–15cm (5–6in) or more long, and smaller, entire, pale green stem-clasping leaves. Produces terminal racemes of 5–25 cross-shaped violet flowers, to 2.5cm (1in) across, in late spring and early summer. ↑ 30–60cm (12–24in), ↔ 30cm (12in). China. \*

## ORYZA

Rice

GRAMINEAE/POACEAE

Genus of about 20 species of annual or perennial, rhizomatous grasses with flat, linear leaves, and panicles of laterally compressed spikelets producing rice-grain seeds when ripe. They are native to tropical and subtropical Africa and Asia, and are widely cultivated in subtropical and tropical regions.

*O. sativa* 'Nigrescens' has unusually coloured leaves, and is the only *Oryza* grown for ornamental reasons.

Where temperatures fall below 10°C (50°F), grow in a warm greenhouse or conservatory; in warmer areas, grow as a pond marginal or in a bog garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, provide full light and use loam-based potting compost (J1 No.3) in shallow clay pots, or in fibreglass trays with drainage holes. Keep the soil surface submerged to a depth of about 2.5cm (1in), and refresh water regularly; maintain water temperature at 20–30°C (68–86°F). Drain off as flowerheads form, and keep evenly moist. Algal growth on the soil surface is unsightly but not harmful. Outdoors, grow in very moist, fertile, clay-loam soil, or in pots in shallow water at a pond margin, in full sun.

• **PROPAGATION** Surface-sow seed at 19–24°C (66–75°F) in late winter, in pots standing in containers of water.

• **PESTS AND DISEASES** Trouble free.

*O. sativa* 'Nigrescens'. Loosely tufted annual, rhizomatous grass with strong, erect stems bearing arching, broadly linear, dark brownish purple leaves, to 1m (3ft) long. Produces spikelets in open, arching panicles, 35cm (14in) long, from midsummer to mid-autumn. ‡ 75cm (30in), ↔ 30cm (12in). S.E. Asia. ☞ (min. 10°C/50°F)

## OSBECKIA

MELASTOMATACEAE

Genus of 40–60 species of evergreen perennials, subshrubs, and shrubs from Africa to China, and southwards from Japan to Australia, where they thrive in habitats from grassland to woodland. They are grown for their often showy, 4- or 5-petalled flowers, borne in terminal, leafy panicles or cymes, or sometimes singly, and for their simple, opposite, usually entire, somewhat leathery and bristly-hairy, strongly 3- to 7-veined leaves. Below 13–15°C (55–59°F), grow in a warm greenhouse; in warmer areas, use in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light or full light, with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in fertile, moist but well-drained, humus-rich, neutral to acid soil in partial shade or with some midday shade. Pruning group 9; plants under glass need restrictive pruning in early spring.

• **PROPAGATION** Sow seed at 18°C (64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*O. stellata*. Erect shrub, spreading with age, with moderately branched, finely hairy stems and narrowly ovate, hairy-margined, deep green leaves, 6–15cm (2½–6in) long, with long, sharp points; each leaf has 5–7 prominent veins. Bears loose cymes of 4-petalled, saucer-shaped, blue-purple to reddish lilac, pink, or white flowers, 5cm (2in) across, mainly in summer. ‡ 1.2–1.8m (4–6ft), ↔ 1–1.5m (3–5ft). India to China. ☞ (min. 13°C/55°F)

▷ *Oscularia deltoidea* see *Lampranthus deltoidea*

▷ **Osier,**

**Common** see *Salix viminalis*

**Green** see *Cornus alternifolia*

**Purple** see *Salix purpurea*

## OSMANTHUS

syn. x OSMAREA

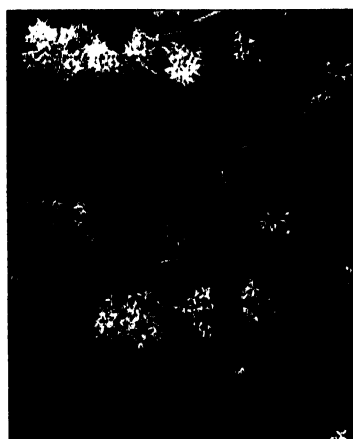
OLEACEAE

Genus of about 15–20 species of evergreen shrubs and small trees from woodland in Asia, the Pacific islands, and S. USA. They are grown for their foliage and flowers: the leaves are lance-shaped to ovate, borne in opposite pairs; the small, tubular, 4-lobed, usually fragrant, white, occasionally yellow or orange flowers are produced in mainly axillary clusters or terminal panicles. The flowers are usually followed by ovoid, blue-black fruits. *Osmanthus* species and cultivars are ideal for a shrub border or woodland garden. *O. delavayi* may be wall-trained; *O. x burkwoodii*, *O. delavayi*, and *O. heterophyllus* are very good for hedging and topiary. In frost-prone areas, grow the tender species in a cool or temperate greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Outdoors, grow in fertile, well-drained soil in sun or partial shade, with shelter from cold, drying winds. Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pruning group 8 for early-flowering species; group 9 for late-flowering species; all tolerate hard pruning. Trim hedges after flowering, or in spring for *O. heterophyllus*.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root



*Osmanthus decorus*

semi-ripe cuttings in summer with bottom heat. Layer in autumn or spring.

• **PESTS AND DISEASES** Trouble free.

*O. armatus*. Dense, rounded shrub with oblong-lance-shaped, sharply spine-toothed, leathery, glossy, dark green leaves, to 15cm (6in) long. Broadly tubular, fragrant, creamy white flowers, with spreading lobes, to 5mm (¼in) across, are borne in axillary clusters in autumn, followed by ovoid, dark violet fruit, to 2cm (¾in) long. ‡ 2.5–5m (8–15ft), ↔ 4m (12ft). W. China. \*\*\*

*O. x burkwoodii* ♀ (♀ *O. decorus* x *O. delavayi*), syn. x *Osmarea x burkwoodii*. Dense, rounded shrub with oval to ovate, slightly toothed, leathery, glossy, dark green leaves, to 5cm (2in) long. Tubular, very fragrant white flowers, the lobes to 5mm (¼in) across, are profusely borne in small, axillary clusters in mid- and late spring. Seldom produces fruit. ‡ 3m (10ft). Garden origin. \*\*\*

*O. decorus* ♀ syn. *Phillyrea decora*. Dense, rounded, spreading shrub with narrowly oval to oblong, pointed, leathery, glossy, dark green leaves, to 12cm (5in) long, very occasionally with a few teeth. Tubular white flowers, the lobes to 8mm (⅜in) across, are borne in dense, axillary clusters in mid-spring, followed by ellipsoid, blue-black fruit, to 1.5cm (½in) long. ‡ 3m (10ft), ↔ 5m (15ft). Georgia, N.E. Turkey. \*\*\*

*O. delavayi* ♀ syn. *Siphonosmanthus delavayi*. Rounded, bushy shrub with arching branches and ovate, finely toothed, leathery, glossy, dark green leaves, to 2.5cm (1in) long. Tubular,



*Osmanthus heterophyllus*  
'Aureomarginatus'

very fragrant white flowers, the lobes to 1cm (½in) across, are produced in axillary and terminal clusters in mid- and late spring, followed by ovoid, blue-black fruit, to 1cm (½in) long. ‡ 2–6m (6–20ft), ↔ 4m (12ft) or more. W. China (Sichuan, Yunnan). \*\*\*

*O. forrestii* see *O. yunnanensis*.

*O. x fortunei* (♀ *O. fragrans* x *O. heterophyllus*). Upright shrub with holly-like, oval to ovate, leathery, glossy, dark green leaves, to 10cm (4in) long, with spiny margins, but spineless towards the tops of mature plants. Tubular, fragrant white flowers, the lobes to 1cm (½in) across, are produced in axillary clusters from late summer to autumn. Seldom produces fruit. ‡ to 2m (6ft), sometimes to 6m (20ft), ↔ 5m (15ft). Garden origin. \*\*\*. 'San José' has narrower, more spiny leaves.

*O. fragrans* ♀ (Fragrant olive, Sweet tea). Vigorous, upright shrub or small tree with oblong to oblong-lance-shaped, leathery, entire or finely toothed, glossy, dark green leaves, 10–12cm (4–5in) long. Tubular, very fragrant white flowers, the lobes to 1cm (½in) across, appear singly or in few-flowered, axillary clusters in autumn, and sometimes in spring and summer; they are followed by ovoid, blue-black fruit, to 1cm (½in) long. ‡ 6m (20ft). Himalayas, China, Japan. \*

f. *aurantiacus* has orange flowers.

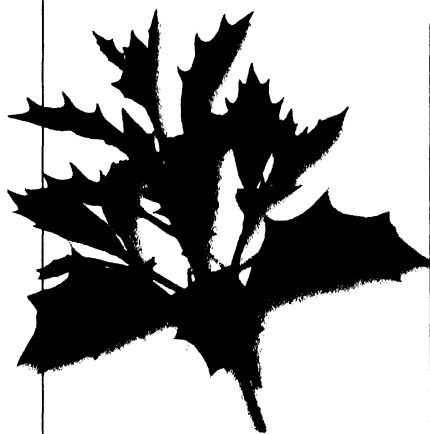
*O. heterophyllus*. Dense, rounded shrub with holly-like, oval to elliptic-oblong, sharply toothed, leathery, glossy, dark green leaves, to 6cm (2½in) long, often spineless on mature plants. Tubular, fragrant white flowers, the lobes to 5mm (¼in) across, are produced in small, axillary clusters from late summer to autumn, followed by ovoid, blue-black fruit, to 1cm (½in) long. ‡ 5m (15ft). Japan, Taiwan. \*\*\*. 'Aureomarginatus' ♀ syn. 'Aureus', has yellow-margined leaves. 'Gulf tide' ♀ is compact, with very spiny leaves; ‡ 2.5m (8ft), ↔ 3m (10ft). 'Myrtifolius' has



*Osmanthus x burkwoodii*



*Osmanthus delavayi*



*Osmanthus heterophyllus* 'Purpureus'

entire, spine-tipped leaves, to 5cm (2in) long;  $\pm$  3m (10ft). 'Purpureus'  $\blacksquare$  has dark blackish purple young leaves. 'Rotundifolius' has small, spineless leaves, to 4cm (1½in) long, rounded at the tips;  $\pm$  3m (10ft).

*O. yunnanensis*  $\square$  syn. *O. forrestii*. Large shrub or small tree, broadly upright at first, later spreading. The oblong to ovate-lance-shaped, spiny-toothed to entire leaves, to 20cm (8in) long, have long, sharp points and are leathery, glossy, dark green, spotted black beneath. Broadly tubular, very fragrant, creamy white flowers, with lobes to 8mm (⅜in) across, are borne in small, axillary clusters in late winter and early spring; they are followed by ovoid, dark purple fruit, to 1.5cm (½in) long, with a white bloom.  $\pm$  10m (30ft) or more. W. China. \*\*\* (borderline)

- ▷ *x Osmarea* see *Osmanthus*
- x O. x burkwoodii* see *O. x burkwoodii*
- ▷ *Osmaronia* see *Oemleria*
- O. cerasiformis* see *O. cerasiformis*

## OSMUNDA

OSMUNDACEAE

Genus of about 12 species of deciduous, terrestrial ferns found in damp places and watersides in all continents except Australasia. Broadly lance-shaped to triangular-ovate or ovate, pinnate, 2-pinnate, or 2-pinnatifid sterile fronds arise from large, erect rhizomes and turn yellow or golden brown in autumn. Distinctive, partially or wholly fertile fronds produce branched clusters of spherical greenish sporangia, which turn rust-brown or blackish on reduced pinnae. Grow in a damp border, or at the margins of a pond or stream.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, fertile, humus-rich, preferably acid soil, in light dappled shade. *O. regalis* prefers a wetter site, but does well in full sun as long as water is plentiful.

• **PROPAGATION** Sow spores at 15–16°C (59–61°F) within 3 days of ripening in summer; they lose viability quickly. Divide clumps from established colonies in autumn or early spring. See also p.51.

• **PESTS AND DISEASES** Trouble free.

*O. cinnamomea* (Cinnamon fern). Deciduous fern bearing "shuttlecocks" of ovate-lance-shaped, pinnate, pale blue-green sterile fronds, 0.6–1.5m (2–5ft) long, with pinnatifid segments,



*Osmunda regalis*

surrounding much narrower, erect fertile fronds, to 1m (3ft) long. The top of each fertile frond is a mass of cinnamon-brown sporangia in summer.  $\pm$  90cm (36in),  $\pm$  60cm (24in). E. North America. \*\*\*

*O. claytoniana* (Interrupted fern). Deciduous fern bearing "shuttlecocks" of ovate-lance-shaped, pinnate, pale blue-green sterile fronds, to 90cm (36in) long, with pinnatifid segments; they surround taller fertile fronds, similar but with some of the middle pinnae reduced and, in summer, covered in sporangia, which are initially blackish, later yellow-green, then rust-brown.  $\pm$  90cm (36in),  $\pm$  60cm (24in). E. North America. \*\*\*

*O. regalis*  $\square$   $\square$  (Flowering fern, Royal fern). Deciduous fern producing dense clumps of broadly triangular-ovate, 2-pinnate, bright green sterile fronds, 1m (3ft) or more long. In summer, partially fertile fronds, to 2m (6ft) long, have tassel-like tips, with brown or rust-coloured sporangia covering the much smaller pinnae. The fibrous rootstock is the source of osmunda fibre, used as a potting compost for orchids.  $\pm$  2m (6ft),  $\pm$  4m (12ft). Temperate and subtropical regions. \*\*\*. 'Cristata' has pinnae and segments with crested tips;  $\pm$  1.2m (4ft). 'Purpurascens' bears attractive red-purple-flushed fronds in spring;  $\pm$  1.2m (4ft). 'Undulata' bears fronds with wavy segments;  $\pm$  1.2m (4ft).

▷ *Oso berry* see *Oemleria cerasiformis*

## OSTEOMELES

ROSACEAE

Genus of 3 species of deciduous, semi-evergreen, or evergreen shrubs or small trees from river valleys in China, Japan, Hawaii, and New Zealand. They have alternate, finely pinnate leaves and terminal corymbs of small, cup-shaped, 5-petalled white flowers, followed by spherical to ovoid, red-brown, black, or blue-black fruits, to 8mm (⅜in) across.



*Osteomeles schweriniae*

They are best grown in a sheltered shrub border or against a wall. In very cold areas, grow in a cool greenhouse.

• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Outdoors, grow in fertile, well-drained soil in full sun or partial shade, sheltered from strong, cold winds. Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*O. schweriniae*  $\square$  Deciduous or semi-evergreen, arching shrub with long, slender shoots and ovate to oblong-ovate, pinnate leaves, to 7cm (3in) long, consisting of 15–31 ovate-oblong leaflets. In early summer, small, cup-shaped white flowers, to 1.5cm (½in) across, are produced in corymbs, to 8cm (3in) across, at the shoot tips; they are followed by spherical, red-brown, later blue-black fruit.  $\pm$  3m (10ft). S.W. China (Yunnan). \*\*

## OSTEOSPERMUM

ASTERACEAE/COMPOSITAE

Genus of about 70 species of evergreen subshrubs, perennials, and annuals, mostly from southern Africa, but also from the Arabian Peninsula, mainly found in grassland, on rocky mountains, or at forest margins. The alternate leaves are linear to broadly obovate, with entire, toothed, or lobed margins.

Osteospermums are grown for their daisy-like, usually white, pink, or yellow flowerheads, sometimes with disc-florets in a contrasting colour, borne singly or in open panicles from late spring to autumn. Numerous cultivars have been selected and named; they have ray-florets varying from deep magenta through deep or pale pink to white or yellow. Grow osteospermums in a border; in frost-prone areas, the half-hardy perennials and subshrubs are best grown as annuals.

• **HARDINESS** Fully hardy to frost tender. Many cultivars will withstand short spells down to -10°C (14°F).

• **CULTIVATION** Grow in light, moderately fertile, well-drained soil in a warm, sheltered site in full sun. Dead-

head regularly to prolong flowering. In frost-prone climates, propagate annually and overwinter in frost-free conditions.

• **PROPAGATION** Sow seed at 18°C (64°F) in spring. Root softwood cuttings in late spring or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Prone to aphids, downy mildew, and *Verticillium* wilt.

*O. barberae* of gardens see *O. jucundum*.

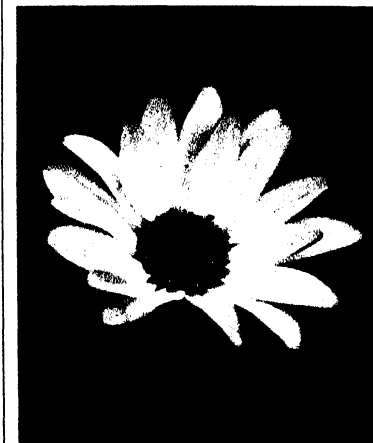
*O. 'Bodegas Pink'*. Semi-upright subshrub with mostly inversely lance-shaped, toothed, mid-green leaves with pale yellow margins. From late spring to autumn, bears solitary, daisy-like flowerheads, 5cm (2in) across, with mauve-pink ray-florets, mauve-purple on the reverse, and dark bluish mauve disc-florets.  $\pm$  45cm (18in). \*

*O. 'Buttermilk'*  $\square$   $\square$  Upright subshrub with mostly inversely lance-shaped, sparsely toothed, mid-green leaves. Solitary, daisy-like flowerheads, 5cm (2in) across, with white-based, primrose-yellow ray-florets, bronze-yellow on the reverse, and dark bluish mauve disc-florets, are borne from late spring to autumn.  $\pm$  60cm (24in). \*\*

*O. 'Cannington Roy'*. Densely spreading subshrub with obovate, sparsely toothed, mid-green leaves. From late spring to autumn, bears solitary, daisy-like flowerheads, 5cm (2in) across, with purple-tipped white ray-florets that age to mauve-pink, mauve-purple on the reverse, and with purple disc-florets. Good ground cover.  $\pm$  15cm (6in),  $\pm$  60cm (24in). \*\*

*O. caulescens*  $\square$  syn. *O. ecklonis* var. *prostratum* of gardens. Prostrate subshrub with inversely lance-shaped, toothed, mid-green leaves, to 10cm (4in) long. From late spring to autumn, bears solitary, daisy-like flowerheads, 5–6cm (2–2½in) across, with white ray-florets, flushed purple on the reverse, and blue-grey disc-florets.  $\pm$  10cm (4in),  $\pm$  60cm (24in). South Africa. \*\*

*O. ecklonis*, syn. *Dimorphotheca ecklonis*. Variable, erect to almost prostrate subshrub with inversely lance-shaped, toothed, grey-green leaves, to 10cm (4in) long. From late spring to autumn, bears solitary, daisy-like flowerheads, 5–8cm (2–3in) across, with white ray-florets, indigo-blue on the reverse, and dark blue disc-florets.  $\pm$  0.6–1.5m (2–5ft),  $\pm$  0.6–1.2m (24–48in). South Africa (Eastern Cape). \*\*\*. 'Blue Streak' has slate-blue disc-florets and



*Osteospermum* 'Buttermilk'

*Osteospermum jucundum*

white ray-florets, slate-blue on the reverse;  $\pm$  60cm (24in). **var. prostratum** of gardens see *O. caulescens*. **O. fruticosum**. Woody-based perennial with erect or decumbent stems and obovate to spoon-shaped, slightly fleshy, entire or minutely toothed, mid-green leaves, to 10cm (4in) long, mainly in basal rosettes. Solitary, daisy-like flowerheads, 6–7cm (2½–3in) across, the ray-florets white with purple bases, the disc-florets purplish violet, are borne from late spring to mid-autumn.  $\pm$  to 60cm (24in),  $\leftrightarrow$  75cm (30in). South Africa (Western Cape, Eastern Cape, KwaZulu/Natal). \*\*  
**O. jucundum**  $\square$   $\nabla$  syn. *Dimorphotheca barberae* of gardens, *O. barberae* of gardens. Neat, clump-forming perennial, spreading by surface rhizomes, with linear to inversely lance-shaped, entire or sparsely toothed, greyish green leaves, 8–10cm (3–4in) long. From late spring to autumn, bears solitary, long-stalked, daisy-like flowerheads, 5cm (2in) across, with mauve-pink to magenta-purple ray-florets, bronze-purple to purple-pink on the reverse, and purple disc-florets that age to gold.  $\pm$  10–50cm (4–20in),  $\leftrightarrow$  50–90cm (20–36in). South Africa

*Osteospermum 'Whirligig'*

(Northern Transvaal, Orange Free State, KwaZulu/Natal), Swaziland, Lesotho. \*\*\* **var. compactum** forms neat, compact mats;  $\pm$  10–20cm (4–8in). **var. compactum 'Blackthorn'**, syn. **var. compactum 'Blackthorn Seedling'**, has dark purple florets.  
**O. 'Nairobi Purple'**  $\square$  syn. *O. 'Tresco Purple'*. Spreading subshrub with broadly obovate to spoon-shaped, sparsely toothed, bright green leaves, and purplish green stems. From late spring to autumn, bears daisy-like, dark purple flowerheads, 5cm (2in) across, with purple ray-florets, flushed white on the reverse, and black disc-florets.  $\pm$  15cm (6in),  $\leftrightarrow$  90cm (36in). \*  
**O. 'Tauranga'** see *O. 'Whirligig'*.  
**O. 'Tresco Purple'** see *O. 'Nairobi Purple'*.  
**O. 'Whirligig'**  $\square$   $\nabla$  syn. *O. 'Tauranga'*. Spreading subshrub with inversely lance-shaped, toothed, grey-green leaves. From late spring to autumn, bears solitary, daisy-like flowerheads, 5–8cm (2–3in) across, with crimped and spoon-shaped white ray-florets, slate-blue or powder-blue on the reverse, and slate-blue disc-florets.  $\pm$  60cm (24in). \*

## OSTROWSKIA

Giant bellflower

CAMPANULACEAE

Genus of one species of tap-rooted perennial from well-drained, stony hillsides in Uzbekistan and Tajikistan. It has thick, unbranched stems which produce whorls of ovate, toothed leaves, and is grown mainly for its racemes of outward-facing, bell-shaped, deep to

pale milky-blue flowers. Grow in a sunny, herbaceous or mixed border.

• **HARDINESS** Fully hardy; young growth may be damaged by late frosts.

• **CULTIVATION** Grow in deep, moderately fertile, moist but well-drained soil in full sun. Dies back soon after flowering; when dormant, protect from wet, and provide a dry winter mulch.

• **PROPAGATION** Sow seed singly in containers in a cold frame as soon as ripe; only seed-leaves are produced in the first year. Take care to avoid root damage when potting on and planting out. May produce flowers in the third or fourth year. Take root cuttings in late autumn; they may be slow to become established.

• **PESTS AND DISEASES** Susceptible to slug damage.

**O. magnifica**  $\square$  Erect, clump-forming perennial with thick, unbranched stems bearing whorls of 4 or 5 ovate, toothed, hairless, somewhat glaucous leaves, 10–15cm (4–6in) long. In early and midsummer, produces few-flowered racemes of outward-facing, open bell-shaped, silver-sheened, pale to deep milky-blue or pale purple flowers, 12–15cm (5–6in) across, veined and suffused lilac.  $\pm$  to 1.5m (5ft),  $\leftrightarrow$  45cm (18in). Uzbekistan, Tajikistan. \*\*\*

## OSTRYA

BETULACEAE/CORYLACEAE

Genus of approximately 10 species of monoecious, deciduous trees occurring in woodland in Europe, Asia, North America, and Central America. They have simple, ovate to ovate-oblong or ovate-lance-shaped leaves, arranged alternately. The flowers are produced in catkins, males and females on the same tree, but only the males are conspicuous. Female catkins develop into hop-like fruits in late summer. They are excellent specimen trees for a woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade. Pruning group 1.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame, or in a seedbed.

• **PESTS AND DISEASES** Trouble free.

**O. carpinifolia**  $\triangle$ – $\square$  (Hop hornbeam). Broadly conical to rounded tree with

hairy shoots and ovate, doubly toothed, lustrous, dark green leaves, to 10cm (4in) long, each with 15–20 pairs of veins; the leaves turn yellow in autumn. Pendulous, yellow male catkins, to 7cm (3in) long, are formed in autumn and open in mid-spring. Hop-like white fruit clusters, 5cm (2in) long, develop in summer and turn brown in autumn.  $\pm$  20m (70ft). S. Europe, Turkey, Syria, Caucasus. \*\*\*

**O. virginiana**  $\square$   $\triangle$  (American hop hornbeam, Ironwood). Conical tree with glandular-hairy shoots and ovate-lance-shaped, sharply, sometimes doubly toothed, dark green leaves, to 12cm (5in) long, each with 11–15 pairs of veins. Pendulous, yellow male catkins, to 5cm (2in) long, are formed in autumn and open in mid-spring; hop-like white fruit clusters, to 5cm (2in) long, develop in summer and turn brown in autumn.  $\pm$  15m (50ft),  $\leftrightarrow$  12m (40ft). E. North America. \*\*\*

## OTHONNA

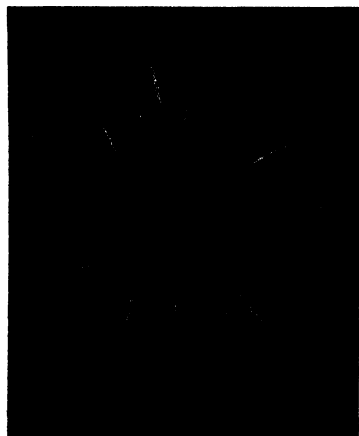
ASTERACEAE/COMPOSITAE

Genus of about 150 species of evergreen or deciduous, shrubby, succulent perennials and small shrubs, often arising from caudices or thick, tuberous rootstocks. They are found in dry, hilly areas of Tunisia, Algeria, Namibia, and South Africa. They have entire or dissected, fleshy leaves, which are lobed or toothed, and terminal, daisy-like, usually yellow, rarely white or purple flowerheads, produced singly or in corymbs from summer to winter. In areas where temperatures drop below 10°C (50°F), grow tender species as houseplants or in a temperate greenhouse; in warm, dry climates, use in a desert border. Grow *O. cheirifolia* in a raised bed or rock garden, or in a sunny border.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. Water moderately during the growing season, more sparingly in winter. Apply a balanced liquid fertilizer 3 or 4 times during summer and autumn. Outdoors, grow in sharply drained, moderately fertile, gritty soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Insert basal or semi-ripe cuttings with bottom heat in late summer. Take basal cuttings of *O. cheirifolia* in early summer.

*Osteospermum 'Nairobi Purple'**Ostrowskia magnifica**Ostrya virginiana**Othonna cheirifolia*



*Othonna herrei*

• **PESTS AND DISEASES** Prone to red spider mites and aphids.

***O. capensis*** (Little pickles). Evergreen, perennial succulent with cylindrical to cylindrical-obovoid, entire, fleshy, pale green leaves, to 2.5cm (1in) long, often clustered on slender, trailing stems. In summer, bears few-flowered corymbs of daisy-like yellow flowerheads, 1cm (½in) across, which open only in sun. Excellent for a hanging basket. ‡ 20cm (8in), ↔ 1m (3ft). South Africa (Eastern Cape). ☀ (min. 5°C/41°F)

***O. cheirifolia*** ■ syn. *Othonnopsis cheirifolia*. Spreading, evergreen shrub with branching stems bearing lance- to spoon-shaped, entire, fleshy, pale grey-green leaves, to 8cm (3in) long. In summer, bears solitary, daisy-like yellow flowerheads, about 4cm (1½in) across. ‡ 30cm (12in), ↔ 60cm (24in). N. Africa. \*\*\*

***O. herrei*** ■ Deciduous, perennial succulent with thickened stems and prominent, woody nodules formed from persistent leaf bases. Bears irregularly obovate, wavy-margined, toothed, fleshy, bluish green leaves, 5cm (2in) long, at the tips of short branches. Produces corymbs of daisy-like yellow flowerheads, 2cm (¾in) across, in late autumn and early winter. ‡↔ 10cm (4in). Namibia, South Africa (Northern Cape). ☀ (min. 7–10°C/45–50°F)

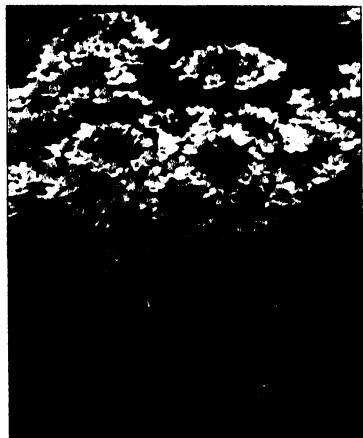
▷ *Othonnopsis cheirifolia* see *Othonna cheirifolia*

## OURISIA

SCROPHULARIACEAE

Genus of approximately 25 species of low-growing, mainly rhizomatous, evergreen or semi-evergreen perennials occurring in alpine regions of Tasmania, New Zealand, South America, and Antarctica. They have mostly radical leaves, which are usually conspicuously veined, but are cultivated for their usually short-tubed flowers, each with 5 spreading lobes, the 3 lower lobes larger than the upper 2. The flowers are produced singly from the leaf axils, or in whorls or racemes on leafless stems. Ourisias grow best in cool, moist climates, and are suitable for a shady rock garden, peat bed, shaded wall, or alpine house.

• **HARDINESS** Fully hardy.  
• **CULTIVATION** Grow in reliably moist, fertile, humus-rich soil in partial shade.



*Ourisia macrophylla*

Rhizomatous species quickly exhaust soil nutrients, so divide and replant them when they begin to deteriorate. In an alpine house, grow in a mix of 1 part each loam and grit with 2 parts leaf mould, and keep slightly moist in winter; they resent a dry atmosphere.

• **PROPAGATION** Sow seed in containers in a cold frame, as soon as ripe or in early spring. Divide rhizomatous species, or separate rooted sections, in spring. Take stem-tip cuttings of *O. microphylla* in early summer.

• **PESTS AND DISEASES** Often damaged by slugs and snails.

***O. caespitosa***. Dwarf, mat-forming, evergreen perennial with broadly ovate-spoon-shaped, entire or notched, grey-green leaves, 4–8mm (¼–⅓in) long. Leafless stems bear up to 5-flowered whorls of tubular, yellow-throated white flowers, to 1.5cm (½in) across, in early summer. ‡ 5cm (2in), ↔ 20cm (8in). New Zealand. \*\*\*. **var. *gracilis*** is more compact, with leaves to 6mm (¼in) long, and solitary flowers; ‡ 3cm (1¼in), ↔ 15cm (6in).

***O. coccinea***. Mat-forming, evergreen perennial with rosettes of broadly

elliptic or oblong, toothed, strongly veined, light green leaves, 3–6mm (¼–¼in) long. Throughout summer, produces loose, terminal racemes of pendent, long-tubed, noticeably 2-lipped scarlet flowers, to 4cm (1½in) long. May spread widely in cool, moist conditions. ‡ 20cm (8in), ↔ 40cm (16in) or more. Chilean Andes. \*\*\*

***O. 'Loch Ewe'***. Vigorous, spreading, evergreen perennial, similar to *O. coccinea*, with tight rosettes of broadly oval, leathery, mid-green leaves, 3–6cm (1¼–2½in) long, heart-shaped at the bases. Dense, spike-like racemes of tubular, clear pale pink flowers, 2.5cm (1in) across, are borne in late spring and early summer. ‡ to 20cm (8in), ↔ 30cm (12in). \*\*\*

***O. macrophylla*** ■ Mat-forming, evergreen, rhizomatous perennial with ovate to rounded-oblong, coarsely veined, bright green leaves, to 22cm (9in) long. Upright stems produce whorled racemes of many yellow-throated white flowers, to 2cm (¾in) across, in summer. ‡ 30cm (12in) or more, ↔ 40cm (16in) or more. New Zealand. \*\*\*

***O. microphylla*** ■ Cushion-forming, semi-evergreen perennial with slender, branching stems clothed in heath-like, pale green leaves, 2mm (⅛in) long, pressed closely to the stems. In late spring and early summer, produces a profusion of solitary, small, tubular, pale pink flowers, 1cm (½in) across, with white centres. ‡ 5cm (2in), ↔ to 15cm (6in). Chile, Argentina. \*\*\*

***O. 'Snowflake'*** ♀ Robust, mat-forming, evergreen perennial, similar to *O. caespitosa*, with obovate, spoon-shaped, glossy, dark green leaves, to 1cm (½in) long. Clusters of tubular white flowers, 1–2cm (½–¼in) across, are produced in summer. ‡ 10cm (4in), ↔ to 25cm (10in). \*\*\*

▷ **Our Lord's candle** see *Yucca whipplei*

▷ **Owl's eyes** see *Huernia zebrina*



*Ourisia microphylla*

## OXALIS

Shamrock, Sorrel

OXALIDACEAE

Genus of about 500 species of fibrous-rooted, bulbous, rhizomatous, or tuberous annuals and perennials, some of which are very invasive weeds. They occur in open habitats or in woodland, and are widely distributed, with many species from southern Africa and South America. Those grown as ornamentals are valued for their palmate, clover-like foliage (some have leaves that fold at night), and for their funnel- to cup- or bowl-shaped, 5-petalled flowers; these are furled umbrella-like in bud, are borne singly or in cymes, sometimes umbel-like, and usually open only in sunlight, closing in dull weather or at night. Woodland species, such as *O. acetosella* and *O. oregana*, are suitable for naturalizing in a shady site. Many of the hardy species from southern Africa and South America, as well as various cultivars, are suitable for a rock garden, raised bed, trough, or alpine house. In frost-prone areas, grow the less hardy species in a temperate or warm greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow hardy woodland species in moist, fertile, humus-rich soil in full or partial shade. Other hardy species need full sun and well-drained, moderately fertile, humus-rich soil. Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in bright filtered light and low humidity. When in growth, water moderately and apply a balanced liquid fertilizer every month. Keep all container-grown plants barely moist when dormant. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in late winter or early spring. Divide in spring; small sections of rhizomatous species root readily with bottom heat.

• **PESTS AND DISEASES** Prone to rust. May be damaged by slugs and snails.

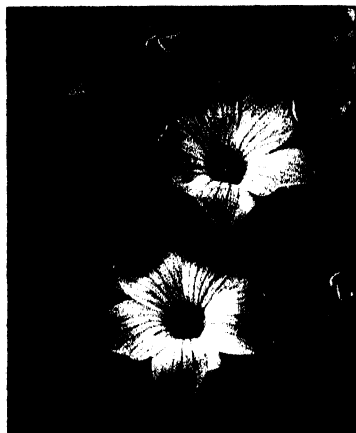
***O. acetosella* var. *purpurascens*** see *O. acetosella* var. *subpurpurascens*.

***O. acetosella* var. *rosea*** see *O. acetosella* var. *subpurpurascens*.

***O. acetosella* var. *subpurpurascens*** ■ syn. *O. acetosella* var. *purpurascens*, *O. acetosella* var. *rosea*. Creeping, mat-forming, rhizomatous perennial



*Oxalis acetosella* var. *subpurpurascens*

*Oxalis adenophylla*

with clover-like, pale green leaves, each with 3 inversely heart-shaped, sparsely hairy leaflets, to 2cm (¾in) long. In spring, bears solitary, cup-shaped, dark-veined, rose-pink flowers, 2cm (¾in) across. † 5cm (2in), ↔ indefinite.

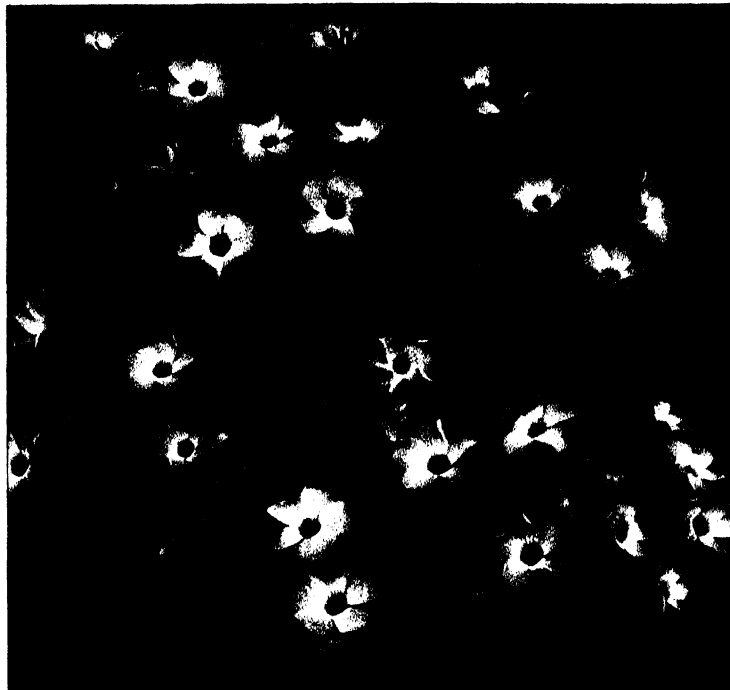
Woodland in N. hemisphere. \*\*\*

***O. adenophylla*** ■ ♀ Clump-forming perennial with fibre-covered bulbs that produce grey-green leaves, each consisting of 9–22 narrowly and inversely heart-shaped leaflets, to 2cm (¾in) long. In late spring, bears solitary, widely funnel-shaped, purplish pink flowers, about 2.5cm (1in) across, with darker veins and purple throats. † 10cm (4in), ↔ to 15cm (6in). Andes, Chile, Argentina. \*\*\*

***O. bowiei***, syn. *O. purpurata* var. *bowiei*. Clump-forming, bulbous perennial with long-stalked, clover-like, leathery leaves, each with 3 rounded to inversely heart-shaped, notched leaflets, 1–2.5cm (½–1in) long, mid-green above, hairy and often purple beneath. Bears loose, umbel-like cymes of 3–12 funnel-shaped, deep purplish pink flowers, to 4cm (1½in) across, with yellow-green tubes, in summer. Very similar to *O. purpurata*, which produces runners and may be invasive. † to 25cm (10in), ↔ to 15cm (6in). South Africa (Western Cape, Eastern Cape, KwaZulu/Natal). \*\*

***O. carnososa*** see *O. megalorrhiza*.

***O. chrysanthra***. Fibrous-rooted, mat-forming perennial with creeping and rooting, slender stems and white-hairy, light green leaves, each divided into 3 triangular to inversely heart-shaped leaflets, 8mm (¼in) long. Produces

*Oxalis depressa**Oxalis enneaphylla* 'Rosea'

solitary, funnel-shaped, bright yellow flowers, 1.5–2cm (½–¾in) across, with red markings at the mouths, throughout summer and into autumn. † 5cm (2in), ↔ 30cm (12in) or more. Brazil. \*\*

***O. deppei*** see *O. tetraphylla*.

***O. depressa*** ■ syn. *O. inops*. Clump-forming, bulbous perennial with short runners and short-stalked, sometimes sparsely hairy and dark-spotted, grey-green leaves, each divided into 3 triangular-obovate leaflets, to 1cm (½in) long. In summer, bears solitary, widely funnel-shaped, deep rose-pink to purple-pink flowers, to 2cm (¾in) across, with yellow tubes. † 5cm (2in), ↔ to 20cm (8in) or more. Southern Africa. \*\*\* (borderline)

***O. enneaphylla*** ♀ Clump-forming perennial with scaly, branching rhizomes, producing tufts of umbrella-like, somewhat fleshy, hairy, blue-grey leaves, each consisting of 9–20 narrowly oblong, pleated leaflets, to 2cm (¾in) long. Solitary, widely funnel-shaped, fragrant, white to deep red-pink flowers, 2–2.5cm (¾–1in) across, are produced in late spring and early summer. † 8cm (3in), ↔ to 15cm (6in). Patagonia, Falkland Islands. \*\*\*. 'Minutifolia' has a more compact habit, with much smaller leaflets, to 1cm (½in) long, and white flowers; † 5cm (2in), ↔ 10cm (4in). 'Rosea' ■ has light purple-pink flowers.

***O. belysarioides***. Semi-evergreen subshrub with upright, branching, leafy stems, bearing light green leaves, glaucous beneath, each with 3 broadly ovate leaflets, to 2.5cm (1in) long. Produces axillary cymes of 3–6 widely funnel-shaped yellow flowers, to 1.5cm (½in) across, in summer. Suitable for a cool greenhouse. † to 1m (3ft), ↔ to 45cm (18in). Central America. \*

***O. berrerae***, syn. *O. succulenta*. Erect, succulent perennial with short-branched, scaly stems. Bears clusters of broad, hairless, mid-green leaves, each with 3 inversely heart-shaped, fleshy leaflets, to 1cm (½in) long, often

slightly hairy beneath, on stalks 2–5cm (¾–2in) long. Short-branched cymes of 5–7 bowl-shaped, red-veined yellow flowers, to 1.5cm (½in) across, appear in summer. † to 30cm (12in), ↔ 21cm (8in). Peru, Chile. ☉ (min. 10°C/50°F)

***O. hirta***. Variable, bulbous perennial with upright or decumbent, leafy stems bearing almost stalkless, hairy, pale green leaves, each with 3 linear to oblong or obovate leaflets, to 1.5cm (½in) long. In autumn and winter, bears solitary, open funnel-shaped, white, red-pink, or purple flowers, 2cm (¾in) across, with yellow throats. Best in a cool greenhouse in frost-prone climates. † 30cm (12in), ↔ 10cm (4in). South Africa (Western Cape). \*\*

***O. inops*** see *O. depressa*.

***O. 'Ione Hecker'*** ♀ Clump-forming, rhizomatous perennial, similar to *O. enneaphylla*, with grey-green leaves, each consisting of 9–15 narrowly oblong leaflets, to 1.5cm (½in) long. In summer, produces solitary, widely funnel-shaped, blue-violet flowers, to 3cm (1¼in) across, conspicuously veined dark purple, and with dark purple throats. † 8cm (3in), ↔ 10cm (4in). \*\*\*

***O. laciniata***, syn. *O. squamosoradicosa*. Tuft-forming, rhizomatous perennial, with tiny bulbils, producing tufts of blue-grey, often purple-margined leaves, each with 8–12 inversely heart-shaped, folded, crinkly-margined leaflets, to 1.5cm (½in) long. Solitary, widely funnel-shaped, scented, violet-blue, lilac-blue, red, pink, or white flowers, with light green throats, and to 2.5cm (1in) across, are produced in late spring and summer. Prefers cool conditions. † 5–10cm (2–4in), ↔ 10cm (4in). Patagonia. \*\*\*

***O. lobata*** ■ syn. *O. perdicaria*. Clump-forming, bulbous perennial with tuberous roots, producing compact clusters of bright green leaves, each with 3 inversely heart-shaped leaflets, 7mm (¼in) long. The leaves, which appear in spring, die down quickly and reappear

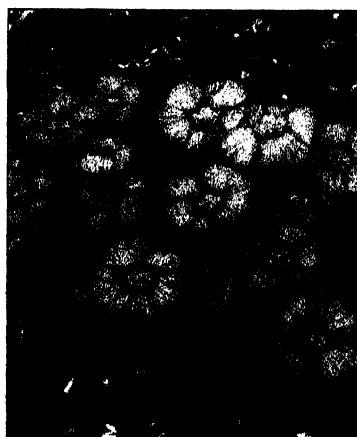
*Oxalis lobata*

in late summer and autumn at the same time as the solitary, funnel-shaped, bright yellow flowers, often dotted and veined red, 1–2cm (½–¾in) across. † to 10cm (4in). Chile. \*\*

***O. megalorrhiza***, syn. *O. carnososa*. Slow-growing, succulent perennial with fleshy rhizomes and few-branched, fleshy stems, later becoming woody. These produce terminal clusters of fleshy, glossy, mid-green leaves, each with 3 inversely heart-shaped leaflets, 1–2cm (½–¾in) long. Umbel-like cymes of 2–5 bowl-shaped yellow flowers, to 2cm (¾in) across, are borne in summer and autumn. † 15cm (6in), to 40cm (16in) with age, ↔ to 20cm (8in). Coastal regions of Galapagos Islands, and Peru, Chile, Bolivia. ☉ (min. 10°C/50°F)

***O. obtusa*** ■ Slowly spreading, mat-forming, bulbous perennial with runners producing bulbils. It is similar to *O. depressa*, but with shorter-stemmed, hairy, grey-green leaves, each with 3 rounded to triangular-obovate leaflets, 0.5–2.5cm (¼–1in) long. Solitary, widely funnel-shaped, rose-pink, brick-red, or yellow flowers, to 2cm (¾in) across, appear in summer. † 5cm (2in), ↔ 20cm (8in). Namibia, South Africa (Eastern Cape, Southern Cape). \*\*

***O. oregana***. Creeping, rhizomatous perennial with hairy, mid-green leaves, each divided into 3 inversely heart-shaped leaflets, 1–3cm (½–1¼in) long. Solitary, cup-shaped, rose-pink, lilac, occasionally white flowers, 2.5cm (1in) across, are produced on slender stems from spring to autumn. † to 20cm (8in), ↔ indefinite. Woodland in W. North America. \*\*\*

*Oxalis obtusa*



*Oxalis tetraphylla*

*O. perdicaria* see *O. lobata*.

*O. purpurata* var. *bowiei* see *O. bowiei*.

*O. purpurea*. Variable, bulbous perennial with clusters of silky, white-hairy, dark green leaves, each with 3 diamond-shaped to rounded or broadly obovate leaflets; these are often deep purple beneath, 2cm (¾in) long, and hairy at the margins and on the surfaces. Solitary, widely funnel-shaped, cream, white, pink, or purple flowers, 3–5cm (1¼–2in) across, are produced in autumn and winter. ↓ 10cm (4in), ↔ 15cm (6in). South Africa (Northern Transvaal, Eastern Transvaal, Eastern Cape), Swaziland. \* \*. 'Ken Aslet' has bright, deep yellow flowers.

*O. squamosoradicosa* see *O. laciniata*.

*O. succulenta* see *O. herreriae*.

*O. tetraphylla* □ syn. *O. deppei* (Good luck plant, Lucky clover). Clump-forming, bulbous perennial with mid-green leaves, each consisting of 4 strap-shaped to inversely triangular, entire or notched leaflets, 2–7cm (¾–3in) long, usually banded purple at the bases. In summer, produces loose, umbel-like cymes of 4–12 widely funnel-shaped, reddish purple flowers, with greenish yellow throats, 2–3cm (¾–1¼in) across. ↑ to 15cm (6in). Mexico. \* \*. 'Iron Cross' □ has leaflets that each have a V-shaped, dark purple band at the base, combining to form a distinctive cross over the 4 leaflets.

*O. versicolor*. Clump-forming, bulbous perennial with mid-green leaves, each divided into 3 wedge-shaped-linear to linear, almost hairless leaflets, 1–2cm (½–¾in) long. A profusion of solitary,

*Oxalis tetraphylla* 'Iron Cross'

funnel-shaped white flowers, 2–3cm (¾–1¼in) across, crimson-margined on the reverse and crimson-striped in bud, are produced from late summer to winter. Suitable for an alpine house. ↓ 8cm (3in), ↔ 20cm (8in) or more. Southern Africa. \*

▷ **Ox eye** see *Heliopsis*

▷ **Oxlip** see *Primula elatior*

## OXYDENDRUM

ERICACEAE

Genus of one species of deciduous, large shrub or small tree from woodland and streamsides in E. North America. It has rusty-red to grey bark, simple, alternate leaves, which turn vivid red in autumn, and cylindrical to urn-shaped white flowers borne in large, terminal panicles. Cultivated for the autumn colour of its foliage and for its flowers, it is best grown in an open glade in a woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained, acid soil, preferably avoiding exposed situations. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take semi-ripe cuttings in summer.

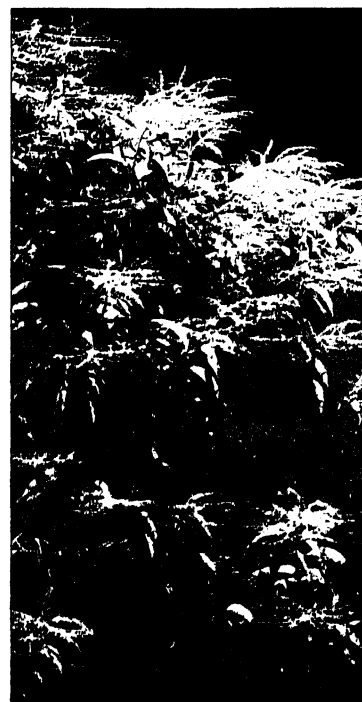
• **PESTS AND DISEASES** Trouble free.

*O. arboreum* □♂ (Sorrel tree, Sourwood). Conical to columnar shrub or tree with elliptic to oblong-lance-shaped, toothed, glossy, dark green leaves, to 20cm (8in) long, turning brilliant shades of red, yellow, and purple in autumn. Cylindrical to urn-shaped white flowers, to 6mm (¼in) long, are produced in large panicles, to 25cm (10in) long, in late summer and early autumn. ↓ 10–15m (30–50ft), ↔ 8m (25ft). E. North America. \* \* \*

▷ **Oxypetalum** see *Tweedia*

*O. caeruleum* see *T. caerulea*

▷ **Oyster plant** see *Mertensia maritima*

*Oxidendrum arboreum*

## OZOTHAMNUS

ASTERACEAE/COMPOSITAE

Genus of about 50 species of evergreen shrubs and woody-based perennials, closely related to *Helichrysum*, from Australia and New Zealand, where they grow in rocky places and on heathland, from the coast to the mountains. They are cultivated for their often aromatic, usually small, heath-like, alternate leaves, and for their solitary or corymb-like flowerheads, displaying white disc-florets. Grow larger species in a shrub border; smaller species are good in a trough, rock garden, or alpine house.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in a sheltered site in full sun. *O. coralloides* and *O. selago* need gritty, sharply drained soil; protect from excessive winter wet. In an alpine house, use a mix of equal parts loam, leaf mould, and grit. Pruning group 8.

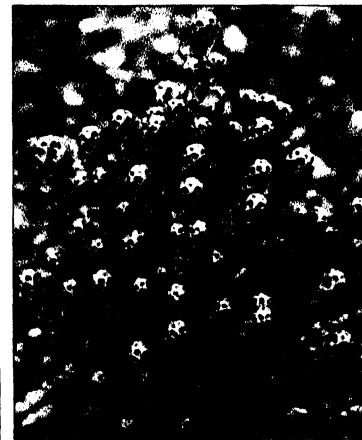
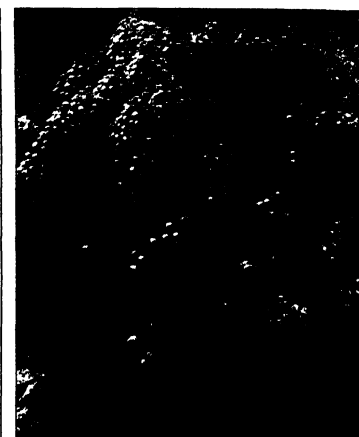
• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*O. coralloides* □ syn. *Helichrysum coralloides*. Compact, rounded shrub with diamond-shaped, scale-like, leathery leaves, 5mm (¼in) long, white-woolly beneath, and pressed flat to the cylindrical branches. Solitary, terminal, yellowish white, cylindrical flowerheads, 6mm (¼in) across, appear in summer. ↑ to 60cm (24in). New Zealand. \* \*

*O. ledifolius* □♀ syn. *Helichrysum ledifolium* (Kerosene bush). Compact, rounded shrub with yellowish green shoots densely covered with oblong-linear, aromatic, dark green leaves, to 1cm (½in) long, yellow-downy beneath, the margins strongly curved under. In early summer, bears white flowerheads, 5mm (¼in) across, in dense, terminal corymbs, 3–5cm (1¼–2in) across. ↑ to 1m (3ft). Australia (Tasmania). \* \*

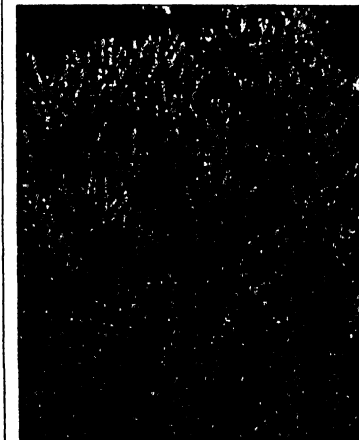
*O. rosmarinifolius* □ syn. *Helichrysum rosmarinifolium*. Compact, upright shrub with rosemary-like, linear, dark green leaves, to 4cm (1½in) long, woolly beneath, the margins curved under. Fragrant white flowerheads, 4mm (¼in) across, red in bud, are borne in dense, terminal corymbs, 4cm (1½in) across, in early summer. ↓ 2–3m (6–10ft), ↔ 1.5m (5ft). S.E. Australia. \* \*. 'Silver Jubilee' ♀ has silvery grey leaves.

*Ozothamnus coralloides**Ozothamnus ledifolius*

*O. selago* □ syn. *Helichrysum selago*.

Dense, upright shrub with rigid shoots densely covered in tiny, ovate to triangular, aromatic leaves, 3mm (¼in) long, pressed flat to the shoots. Terminal, solitary cream flowerheads, 7mm (¼in) across, are produced in summer. ↓ to 40cm (16in), ↔ 25cm (10in). New Zealand (South Island). \* \* \*

*O. thyrsoideus*, syn. *Helichrysum thyrsoideum* (Snow in summer). Upright shrub with linear, aromatic, dark green leaves, to 5cm (2in) long, pressed flat to the shoots. Over a long period in summer, pure white flowerheads, about 4mm (¼in) across, are produced in dense, rounded corymbs, 2cm (¾in) across, at the shoot tips. ↓ to 3m (10ft), ↔ 2m (6ft). S.E. Australia. \* \*

*Ozothamnus rosmarinifolius**Ozothamnus selago*

# P

## PACHYCEREUS

syn. *LOPHOCEREUS*  
CACTACEAE

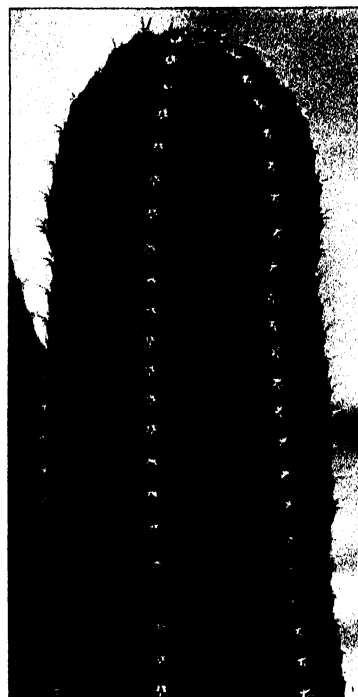
Genus of possibly 9 species of columnar, often tree-like, ribbed, perennial cacti from semi-desert areas of the USA and Mexico. These often massive cacti branch from the bases of the main stems, and have large, spiny, usually scaly areoles, sometimes woolly or bristly in the axils. The nocturnal or diurnal, funnel- or bell-shaped, or short, tubular flowers are produced only on mature plants. The bristly, spherical, fleshy fruits contain large, black-coated seeds. Where temperatures drop below 10°C (50°F), grow in a temperate or warm greenhouse. In warmer climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water moderately and apply a low-nitrogen liquid fertilizer every 4–5 weeks. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take stem-tip cuttings in summer.
- **PESTS AND DISEASES** Vulnerable to scale insects and occasionally mealybugs.

*P. marginatus*. Erect cactus with sometimes sparsely branched, 4- to 7-ribbed, dark green stems, 8–15cm



*Pachycereus pringlei*



*Pachycereus schottii*

(3–6in) across, with grey-white areoles bearing brown to grey spines (5–8 radials, 1 or 2 longer centrals). Produces nocturnal and diurnal, tubular, greenish white or pink flowers, 3–5cm (1¼–2in) across, in summer. ↑ to 3–7m (10–22ft), ↔ 1m (3ft). C. and S. Mexico. ☉ (min. 10°C/50°F)

*P. pecten-aboriginum*. Erect, tree-like cactus with branched, dark bluish green stems, 30cm (12in) thick, each with 10 or 11 acute ribs and grey-white areoles bearing stiff brown spines, fading to grey (8 or 9 radials, 1 or 2 longer centrals). In summer, bears nocturnal and diurnal, funnel-shaped white flowers, 6–8cm (2½–3in) across, with greenish red outer petals. ↑ to 8m (25ft), ↔ 3m (10ft). W. Mexico. ☉ (min. 10°C/50°F)

*P. pringlei* ■ Tree-like cactus with dark blue-green stems, 1m (3ft) or more thick, and erect branches, each with 10–17 rounded ribs. Grey areoles have reddish to dark brown spines, fading to grey (about 20 radials, 1–3 slightly longer centrals). In summer, bears nocturnal, bell- to funnel-shaped white flowers, 8cm (3in) across, with greenish red outer petals. ↑ to 12–15m (40–50ft), ↔ 3m (10ft). N.W. Mexico. ☉ (min. 10°C/50°F)

*P. schottii* ■ syn. *Lophocereus schottii*. Erect, columnar cactus with dull dark green stems, to 10–15cm (4–6in) thick, each with 4–9 ribs. Grey-woolly areoles produce almost black spines, fading to grey (4–7 radials, often 1 central). As the plant matures, a spiny, hairy pseudocephalium forms; in summer, it produces nocturnal, slender, funnel-shaped, red, pink, or white flowers, 3–4cm (1¼–1½in) across, green outside, with an unpleasant smell. ↑ 7m (22ft), ↔ 3m (10ft). USA (S. Arizona), N.W. Mexico. ☉ (min. 10°C/50°F).

'*Monstrosus*' has misshapen stems, irregular ribs, and spineless areoles; ↑ to 3m (10ft), ↔ 1m (3ft).

*P. weberi*. Tree-like cactus producing glaucous, blue-green stems, 20cm (8in) or more thick, and erect, 8- to 10-ribbed

branches. White-woolly areoles each produce up to 13 spines (6–12 yellowish white, later reddish brown or black radials, 1 longer grey central). In mid-summer, bears nocturnal, funnel-shaped white flowers, yellowish white outside, to 10cm (4in) long. ↑ 10m (30ft), ↔ 3m (10ft) or more. S. Mexico. ☉ (min. 10°C/50°F)

## PACHYCORMUS

ANACARDIACEAE

Genus of one species of very variable, slow-growing, deciduous, perennial succulent from desert or semi-desert areas of Mexico. Grey- or silver-barked branches bear pinnate, feathery leaves. Dense, terminal racemes of tiny, cup-shaped flowers are produced by day in summer. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse. In warmer climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2), with added grit, in full light. From mid-spring until the leaves fall, water freely and apply a balanced liquid fertilizer every 6–8 weeks. Keep just moist at other times. Outdoors, grow in sharply drained, moderately fertile soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Young growth is vulnerable to red spider mites.

*P. discolor* ■ (Elephant tree). Free-branching succulent. The trunk and branches are very swollen, and both contain sponge-like wood and white latex. Pinnate, mid-green leaves, to 8cm (3in) long, consist of 6–8 oval, slightly toothed or lobed leaflets, hairy towards the tips. In summer, bears lax, dense racemes of cup-shaped, white to yellow or red flowers, to 6mm (¼in) long. ↑ 4m (12ft), ↔ 45cm (18in) or more. N.W. Mexico. ☉ (min. 15°C/59°F)



*Pachycormus discolor*

## PACHYCYMBIUM

ASCLEPIADACEAE

Genus of about 30 species of leafless, perennial succulents, formerly classified under *Caralluma*, from mostly hilly terrain in the Arabian Peninsula, E. Africa, Zimbabwe, and South Africa.

They have erect or prostrate, 4-angled or rounded, prominently toothed stems, and produce compact cymes of diurnal, bell- or cup-shaped flowers, usually near the stem tips, in summer. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse. In warmer climates, use in a desert garden.

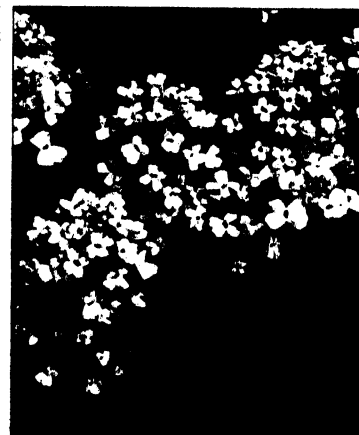
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2), with added grit or sharp sand, in full light. From mid-spring to early autumn, water moderately and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Keep just moist at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take stem-tip cuttings in spring or early summer.
- **PESTS AND DISEASES** Prone to ant damage while flowering.

*P. dummeri*, syn. *Caralluma dummeri*. Erect, spreading succulent with 4-angled or slightly rounded, greyish green stems, 1.5cm (½in) thick, with dark red stripes. In summer, produces cymes of 1–4, sometimes up to 6, bell-shaped, olive-green to dark green flowers, 4cm (1½in) across, with tapering, spreading lobes, hairy inside, smooth outside. ↑ 10cm (4in), ↔ to 15cm (6in). Uganda, Kenya, Tanzania. ☉ (min. 10°C/50°F)

## PACHYPHRAGMA

BRASSICACEAE/CRUCIFERAE

Genus of one species of semi-evergreen, rhizomatous perennial found in moist beech woods in N.E. Turkey and the Caucasus. It produces long-stalked, basal leaves, glossy, dark green at first, becoming duller. Broad, terminal corymbs of 4-petalled white flowers appear just as the leaves develop; the stems later elongate so that the flattened fruit are held above the foliage. A slow-growing, ground-cover plant, *P. macrophyllum* is suitable for planting beneath trees and deciduous shrubs.



*Pachyphragma macrophyllum*

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist, leafy soil, preferably in partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring. Take basal stem cuttings in late spring.
- **PESTS AND DISEASES** Slugs may be a problem.

*P. macrophyllum* ■ syn. *Thlaspi macrophyllum*. Semi-evergreen perennial with ovate to rounded, scalloped leaves, 2.5–10cm (1–4in) long, produced in basal clusters that partially persist over winter. Flat corymbs of cross-shaped, 4-petalled, unpleasantly scented white flowers, 2cm (¾in) across, with pale green veins, are borne in early spring, followed by distinctive, flat, inversely heart-shaped fruit. ↑20–40cm (8–16in), ↔60–90cm (24–36in). Caucasus, N.E. Turkey. \*\*\*

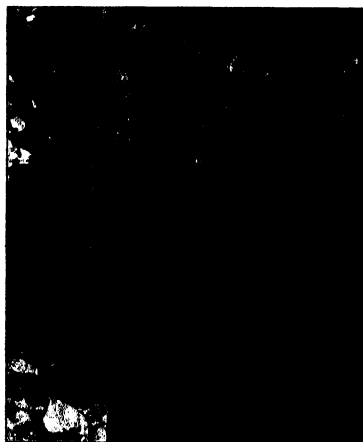
## PACHYPHYTUM

CRASSULACEAE

Genus of 12 or more species of rosette-forming, perennial succulents from arid areas of Mexico, closely resembling *Echeveria*, with which it hybridizes. The semi-erect, usually branching, spreading stems become decumbent with age, and bear variably shaped, swollen, fleshy, mid- to dark or grey-green, frequently white-frosted leaves. Racemes of diurnal, bell-shaped flowers are borne on fleshy, sometimes sparsely branched stems, mainly in spring. Where temperatures drop below 7°C (45°F), grow in a temperate greenhouse. In warmer climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light, with shade from hot sun. In the growing season, water moderately and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Keep almost dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun, with some midday shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take leaf or stem-tip cuttings in spring or summer.
- **PESTS AND DISEASES** Trouble free.

*P. compactum* ■ Compact succulent with short-stemmed rosettes of oblong to lance-shaped, white-frosted, dark green leaves, 2–3cm (¾–1¼in) long,



*Pachyphytum compactum*

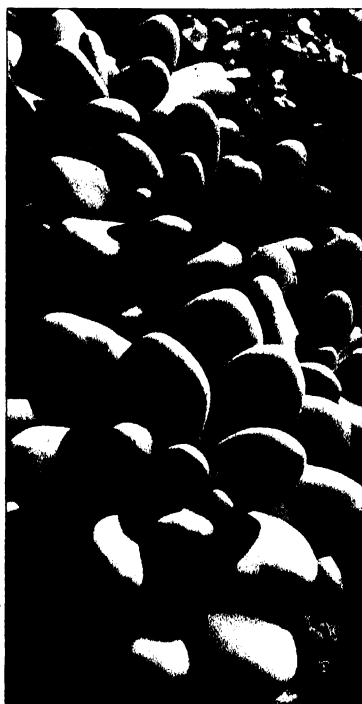


*Pachyphytum longifolium*

sometimes tinged red-purple, with rounded, angular margins. Racemes of 3–10 pendent, blue-tipped, orange-red flowers, 1cm (½in) long, with pink or green calyces, develop in spring. ↑10–15cm (4–6in), ↔30cm (12in) or more. Mexico. ♀ (min. 7°C/45°F)

*P. hookeri*. Clump-forming, long-stemmed succulent with scattered, almost cylindrical, pointed, mid-green leaves, to 5cm (2in) long, with a blue-grey to white bloom; they are slightly flattened on the upper surfaces, with blunt to rounded margins. Racemes of 5–18 yellowish pink flowers, to 1.5cm (½in) long, flushed pale purple-red, with green-tipped pink sepals, are borne in spring. ↑60cm (24in), ↔indefinite. Mexico. ♀ (min. 7°C/45°F)

*P. longifolium* ■ Rosette-forming succulent with inversely lance-shaped, grey-green leaves, 6–11cm (2½–4½in) long, with a blue-glaucous bloom, blunt or pointed at the tips, and grooved beneath. Racemes of 10–50 white flowers, 1cm (½in) long, strongly suffused red, develop mainly in spring, but also irregularly throughout the year. ↑15cm (6in) or more, ↔20cm (8in) or more. Mexico. ♀ (min. 7°C/45°F)



*Pachyphytum oviferum*

*P. oviferum* ■ (Sugar-almond plant). Clump-forming succulent producing short-stemmed rosettes of obovoid, white-frosted, light green leaves, 2–5cm (¾–2in) long, flushed lavender-blue. Racemes of 10–15 vivid orange-red or greenish red flowers, 1.5cm (½in) long, with pale blue-white calyces, are borne from winter to spring. ↑10–12cm (4–5in), ↔30cm (12in) or more. Mexico. ♀ (min. 7°C/45°F)

## PACHYPODIUM

APOCYNACEAE

Genus of 13 species of shrubby or tree-like, perennial succulents from mostly arid regions of Namibia, South Africa, and Madagascar. Many have swollen, irregularly shaped caudices and very thick, thorny stems. Leaves are simple, entire, and variably shaped; they are usually deciduous but may persist in cultivation. Diurnal, salverform to funnel- or bell-shaped flowers are borne usually in terminal clusters, in summer. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse. In warmer climates, use in a desert garden or as focal points on a lawn.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From late spring to early autumn, water moderately and apply a low-nitrogen liquid fertilizer every 4–5 weeks. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or take stem-tip cuttings, in late spring.
- **PESTS AND DISEASES** Susceptible to aphids while flowering.

*P. baronii*. Tree-like succulent with a massive, stout, thorny caudex and thick, thorny stems bearing obovate to elliptic, tapering, greyish green leaves, to 15cm (6in) long. Salverform, bright red flowers, to 6cm (2½in) across, develop

in summer. ↑3m (10ft), ↔to 1m (3ft). N. Madagascar. ♀ (min. 15°C/59°F)

*P. bispinosum*. Shrubby succulent with a rugged, partly underground caudex and thin, thorny, fleshy branches bearing lance-shaped to narrowly lance-shaped, roughly hairy, mid-green leaves, 4–8cm (1½–3in) long. Broadly bell-shaped, pink to purple flowers, 3cm (1¼in) across, with recurving white lobes, are produced in summer. ↑45cm (18in), ↔18cm (7in). South Africa (Eastern Cape). ♀ (min. 15°C/59°F)

*P. densiflorum*. Shrubby, slow-growing succulent with a thorny caudex, short stem, and short, thick, thorny branches. The obovate to oblong-ovate leaves, to 10cm (4in) long, are mid- to dark green, grey-felted beneath. In summer, bears salverform, bright yellow flowers, to 3cm (1¼in) across, each with prominent yellow anthers forming a cone. ↑to 45cm (18in), ↔12cm (5in) or more. Madagascar. ♀ (min. 15°C/59°F)

*P. geayi*. Tree-like succulent with a thorny caudex, branching near the top with age. Thorny branches bear linear, greyish green leaves, to 40cm (16in) long, silver-grey-hairy beneath. Salverform, pure white flowers, 8cm (3in) across, are produced in summer. ↑to 8m (25ft), ↔to 2m (6ft). S.W. Madagascar. ♀ (min. 15°C/59°F)

*P. lamerei* ■ Tree-like succulent with a thick caudex branching near the top, with thorns generally in groups of 3. Bears terminal clusters of linear to lance-shaped, shining, dark green leaves, 25–40cm (10–16in) long. Salverform, yellow-throated, creamy white flowers, to 11cm (4½in) across, are borne in summer. ↑to 6m (20ft), ↔2m (6ft). S. and S.W. Madagascar. ♀ (min. 15°C/59°F)

*P. namaquanum*. Tree-like succulent with a thick, fleshy, thorny, caudex-like trunk, rarely branching, with spirally arranged tubercles, and thorns in groups of 3. Produces terminal rosettes of lance-shaped, slightly hairy, pale green leaves, 12cm (5in) long, with wavy, crisped



*Pachypodium lamerei*

*Pachypodium succulentum*

margins. In summer, bears tubular, yellow-green and purple-red flowers, striped yellow inside, to 2cm (¾in) long. ↓ to 2.5m (8ft), ↔ 1.5m (5ft). S. Namibia, South Africa (Northern Cape). ☼ (min. 15°C/59°F)

**P. rosulatum.** Variable, shrubby succulent with a spherical or irregularly shaped, thorny caudex, branching stems, and elliptic, mid- to dark green leaves, to 8cm (3in) long, slightly hairy above. Salverform yellow flowers, to 1.5cm (½in) across, with rounded, flat lobes, are produced in summer. ↓ to 1.5m (5ft), ↔ 1m (3ft) or more. Madagascar. ☼ (min. 15°C/59°F). **var. horombense** has inflated, bell-shaped flowers.

**P. succulentum** ☼ Shrubby succulent with a mainly underground caudex. Strong, sturdy branches bear paired thorns and narrowly lance-shaped, minutely hairy, mid- to dark green leaves, to 6cm (2½in) long. Salverform, pink, white, sometimes red-striped, or red flowers, 4cm (1½in) across, with narrow, spreading lobes, develop in summer. ↑ to 60–90cm (24–36in). South Africa (Orange Free State to Western Cape and Eastern Cape). ☼ (min. 15°C/59°F)

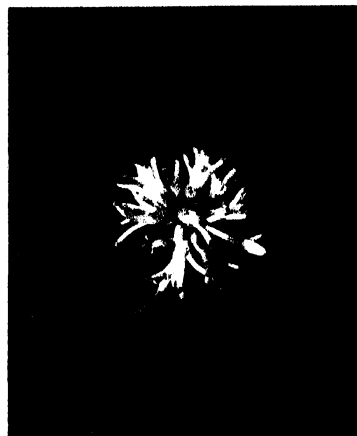
## PACHYSANDRA

BUXACEAE

Genus of 4 species of evergreen or semi-evergreen perennials and subshrubs occurring in woodland in China and Japan. They have often rhizome-like, fleshy green stems and upright branches with alternate, broadly ovate to obovate, entire or coarsely toothed, grey- to dark green leaves clustered at their tips. Terminal or axillary spikes of small, unisexual, petalless flowers (the females greenish white, the males with white stamens) are produced in spring or early summer. Cultivated for their foliage, they are useful as ground cover in a shrub border or woodland garden. They spread freely, especially in moist, humus-rich soil.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any but very dry soil in full or partial shade.
- **PROPAGATION** Divide in spring. Root softwood cuttings in early summer.
- **PESTS AND DISEASES** May be damaged by slugs and snails.

**P. terminalis** ☼♀ Spreading, evergreen perennial with obovate, coarsely toothed, glossy, dark green leaves, to 10cm (4in)

*Pachysandra terminalis*

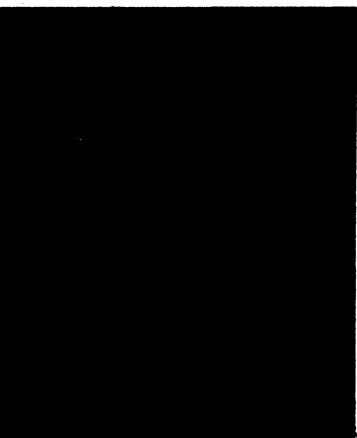
long, clustered at the ends of short, smooth stems. Produces tiny white male flowers in spikes, 2–3cm (¾–1¼in) long, in early summer. ↓ 20cm (8in), ↔ indefinite. N. China, Japan. \*\*\*. **'Green Carpet'** is more compact, with smaller, finely toothed leaves, to 7cm (3in) long; ↓ 15cm (6in), ↔ to 60cm (24in). **'Variegata'** ♀ is slower-growing, and produces attractive white-margined leaves; ↓ 25cm (10in), ↔ to 60cm (24in).

## PACHYSTACHYS

ACANTHACEAE

Genus of 12 species of evergreen perennials and shrubs, closely allied to *Justicia*, from woodland or rainforest in the West Indies and tropical Central and South America. They are cultivated for their tubular, 2-lipped flowers, borne in erect, terminal spikes with large, overlapping, usually brightly coloured bracts. Leaves are opposite and simple, ovate to lance-shaped, and mid- to dark green. Where temperatures drop below 10–15°C (50–59°F), grow in a warm or temperate greenhouse, or as houseplants. In warmer areas, use in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with high humidity. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Water moderately in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 8; may need restrictive pruning under glass.

*Pachystachys coccinea**Pachystachys lutea*

- **PROPAGATION** Root softwood cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Whiteflies and red spider mites may be troublesome under glass.

**P. cardinalis** see *P. coccinea*.

**P. coccinea** ☼ syn. *Jacobinia coccinea*, *Justicia coccinea*, *P. cardinalis* (Cardinal's guard). Erect shrub producing robust, simple or sparsely branched stems and ovate-elliptic, strongly veined, lightly wrinkled, dark green leaves 15–20cm (6–8in) long. In winter, tubular, strongly 2-lipped scarlet flowers, 5cm (2in) long, are borne in terminal spikes, 15cm (6in) long, with 4-ranked, pale green bracts. ↓ to 2m (6ft) or more, ↔ 60–90cm (24–36in). West Indies, N. South America. ☼ (min. 13°C/55°F)

**P. lutea** ☼♀ (Lollipop plant). Erect shrub with moderately to sparsely branched stems and narrowly ovate, elliptic, or lance-shaped, slender-pointed, strongly veined, mid- to deep green leaves, 8–15cm (3–6in) long. In spring and summer, produces tubular, strongly 2-lipped white flowers, 4–5cm (1½–2in) long, borne in terminal spikes, 10cm (4in) long, with 4-ranked, bright golden yellow bracts. ↓ to 1m (3ft), ↔ 45–75cm (18–30in). Peru. ☼ (min. 13°C/55°F)

## PACHYSTEGIA

ASTERACEAE/COMPOSITAE

Genus of one species of evergreen shrub, related to *Olearia*, occurring on cliffs and riverbanks and in rocky places from sea level to mountains in New Zealand. It has alternate, simple leaves, and bears terminal or axillary, solitary flowerheads, to 6cm (2½in) across, with white ray-florets and yellow disc-florets. Grown for its foliage and showy flowers, it is suitable for a rock garden.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun; shelter from cold, drying winds. Pruning group 1.

- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**P. insignis**, syn. *Olearia insignis* (Marlborough rock daisy). Spreading shrub with stout, white- or brown-felted shoots and oval to obovate, glossy, dark green leaves, to 15cm (6in) long, grey-green when young, and clustered at the tips of the shoots. In summer, bears long-stalked, daisy-like, solitary white flowerheads, to 6cm (2½in) across, with yellow centres. ↓ 90cm (36in), ↔ 1.2m (4ft). New Zealand (South Island). \*\*

▷ *Pachystima* see *Paxistima*

## X PACHYVERIA

CRASSULACEAE

Hybrid genus of mainly rosetted, sometimes clump-forming, perennial succulents, the result of crosses between *Pachyphytum* and *Echeveria*. They have alternate, fleshy, light to mid- or grey-green leaves in very variable shapes, sometimes forming rosettes. Diurnal, bell- or star-shaped flowers are borne in one-sided cymes, in spring or summer. Where temperatures drop below 7°C (45°F), grow in a temperate greenhouse. In warmer areas, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light, with shade from hot sun. From mid-spring to late summer, water moderately and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Keep almost dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun, with some midday shade. See also pp.48–49.
- **PROPAGATION** Take leaf or stem-tip cuttings in spring or summer.
- **PESTS AND DISEASES** Susceptible to mealybugs, especially while flowering.

× **P. glauca** ☼ syn. *Echeveria* × *fruticosa*. Rosetted, offsetting succulent with semi-cylindrical, red-tipped, blue-green, white-frosted leaves, to 6cm (2½in) long, with darker markings. Pendent, star-shaped yellow flowers, 1.5cm (½in) long, with recurving red tips, open in terminal, one-sided cymes in spring. ↓ 30cm (12in), ↔ indefinite. ☼ (min. 7°C/45°F)

▷ *Pacific grindelia* see *Grindelia stricta*

× *Pachyveria glauca*

# PAEONIA

Peony

PAEONIACEAE

Genus of 30 or more species of clump-forming herbaceous perennials and deciduous, sometimes suckering shrubs or subshrubs ("tree peonies") found in meadows, scrub, and rocky places from Europe to E. Asia, and in W. North America. They are grown for their large, brightly coloured, sometimes fragrant, showy flowers and bold, dissected leaves. Some bear pod-like fruits, each with 2-5 lobes and large, red or black seeds. Herbaceous peonies, with tuberous rootstocks, comprise the majority of species and cultivars; most cultivars are derived from *P. lactiflora*. Tree peonies have woody stems, often with lax branches.

Peonies have mid- to dark green, sometimes silver-, bluish, or grey-green leaves; these are 2-ternate or occasionally pinnate, with few to many, usually oval to obovate, sometimes linear, entire or lobed leaflets, occasionally softly hairy, especially on the veins beneath.

Peony flowers are usually erect and solitary, or sometimes borne several to a stem. They are saucer-, cup-, or bowl-shaped, sometimes spherical when first open, and each single flower has 5 green sepals and 5-10 brightly coloured petals. Most have a crowded central boss of usually cream or yellow stamens; those with double flowers have either no stamens or a few hidden among the petals. The flowers can be divided into 4 major groups: single, semi-double, double, and anemone-form (see panel). In the descriptions below, flower sizes of herbaceous cultivars are defined as: "small", 5-10cm (2-4in) across; "medium-sized", 10-15cm (4-6in) across; "large", 15-20cm (6-8in) across; or "very large", over 20cm (8in) across. Tree peonies have single to double flowers, 5-30cm (2-12in) across.

Peonies are long-lived plants but they often resent disturbance. Most flower in

early summer (only exceptions to this are indicated in the descriptions below). They are ideal for a mixed, herbaceous, or shrub border. If ingested, all parts can cause mild stomach upset.

• **HARDINESS** Fully hardy to frost hardy; young foliage and flower buds may be damaged by late spring frosts.

• **CULTIVATION** Grow in deep, fertile, humus-rich, moist but well-drained soil in full sun or partial shade. Shelter tree peonies from cold, drying winds. Large-flowered cultivars may need support. Pruning group 1 for tree peonies.

• **PROPAGATION** Sow seed in containers outdoors in autumn or early winter (may take 2 or 3 years to germinate). Divide herbaceous peonies in autumn or early spring, or take root cuttings in winter. Take semi-ripe cuttings of tree peonies in summer, or graft in winter.

• **PESTS AND DISEASES** Susceptible to viruses, eelworms, and swift moth larvae. Honey fungus may cause rapid death. Peony grey mould blight (peony wilt) may destroy shoots and buds.

*P. 'Albert Crousse'*. Herbaceous perennial with deep green leaves and large, double, frilly, rose-pink flowers, flecked with carmine-red in the centres; the outer petals are spreading, the inner ones crowded and ruffled.  $\pm$  85-90cm (34-36in). \*\*\*

*P. albiflora* see *P. lactiflora*.

*P. 'Alice Harding'*. Herbaceous perennial with mid-green leaves and large, double, fragrant, creamy white, amber-tinted flowers with slightly frilled petals, the inner ones incurved.  $\pm$  80-100cm (32-39in). \*\*\*

*P. 'America'*. Herbaceous perennial with mid-green leaves and large, single, bowl-shaped, deep crimson flowers, with broad, slightly frilled petals.  $\pm$  0.9-1.1m (3-3½ft). \*\*\*

*P. anomala*. Herbaceous perennial with dark green leaves, grey-green beneath, each with 9 narrow-oblong, pinnatifid leaflets, with bristly veins above. Bears single, cup-shaped, bright reddish purple flowers, 7-10cm (3-4in) across, with rounded, wavy petals and golden yellow stamens.  $\pm$  50-60cm (20-24in). Kyrgyzstan, China (E. Tien Shan Mountains). \*\*\*

*P. 'Argosy'*  $\square$  syn. *P. x lemoinei* 'Argosy'. Compact, deciduous shrub (tree peony) with mid-green leaves deeply divided into pointed lobes. Bears single, cup-shaped, lemon-yellow flowers, marked crimson-purple at the bases, 18cm (7in) across. Difficult to propagate.  $\pm$  2m (6ft). \*\*\*

*P. arietina* see *P. mascula* subsp. *arietina*.

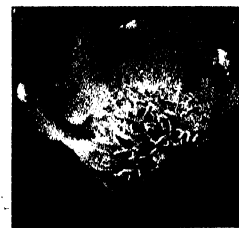
*P. 'Artemis'*. Upright, sparsely branched, deciduous shrub (tree peony) with red-tinged shoots and dark green, red-stalked leaves, blue-green beneath, deeply cut into pointed lobes. Single, cup-shaped, silky yellow flowers, 15cm (6in) across, are borne in late spring.  $\pm$  2m (6ft),  $\pm$  1.5m (5ft). \*\*\*

*P. 'Auguste Dessert'*  $\square$  Herbaceous perennial with deep green leaves, turning crimson in autumn, and large, semi-double to double, carmine-red flowers, flushed salmon-pink, the silver margins slightly ruffled and uneven.  $\pm$  70-80cm (28-32in). \*\*\*

*P. 'Avant Garde'*  $\square$  Herbaceous perennial with abundant mid-green



*Paeonia* 'Auguste Dessert'



*Paeonia* 'Avant Garde'



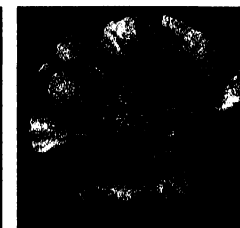
*Paeonia* 'Ballerina'



*Paeonia* 'Baroness Schröder'



*Paeonia* 'Bowl of Beauty'



*Paeonia cambessedesii*

leaves and large, single, bowl-shaped, rose-pink, darker-veined flowers, with yellow stamens. Good for cutting.  $\pm$  90-100cm (36-39in). \*\*\*

*P. 'Ballerina'*  $\square$  Herbaceous perennial with deep green leaves, turning red in autumn, and large, double, pink, lilac-flushed flowers, fading almost to white; the outer petals are broad and incurved, the inner ones narrower, curved, and ruffled at the tips.  $\pm$  90-100cm (36-39in). \*\*\*

*P. 'Baroness Schröder'*  $\square$  Free-flowering herbaceous perennial with deep green leaves, and large, double, pale pink flowers that fade to white; the outer petals are broad and spreading, the inner ones crowded and incurved, with ruffled margins.  $\pm$  90-100cm (36-39in). \*\*\*

*P. 'Barrymore'*. Herbaceous perennial with mid-green leaves and large, anemone-form flowers with pale pink outer petals, fading to pure white as the buds open, and golden yellow petaloids.  $\pm$  80-90cm (32-36cm). \*\*\*

*P. 'Bowl of Beauty'*  $\square$   $\square$  Herbaceous perennial with mid-green leaves. Produces very large, anemone-form, carmine-red, pink-tinted flowers with dense, creamy white centres consisting

of many crowded, narrow petaloids.  $\pm$  80-100cm (32-39in). \*\*\*

*P. broteroi*. Herbaceous perennial with semi-glossy, mid-green leaves, glaucous beneath, each with 9 leaflets, the lower leaves cut into 2 or 3 narrow, pointed lobes, the upper leaves unlobed. In late spring and early summer, bears single, cup-shaped, pink flowers, 10-13cm (4-5in) across, with oval petals and yellow stamens.  $\pm$  40-50cm (16-20in). Portugal, W. and S. Spain. \*\*\*

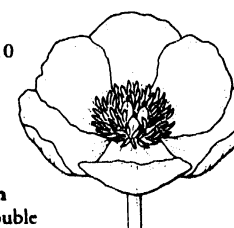
*P. 'Bunker Hill'*. Herbaceous perennial with deep green leaves and large, double, bright red flowers with ruffled petals.  $\pm$  70-75cm (28-30in). \*\*\*

*P. cambessedesii*  $\square$   $\square$  (Majorcan peony). Herbaceous perennial, usually flushed overall with red or purple, especially when young. Purple-veined leaves, dark green above, reddish purple beneath, are each divided into 9 pointed, lance-shaped, elliptic, or ovate leaflets. Produces single, bowl-shaped, deep pink flowers, 6-10cm (2½-4in) across, with wavy-margined petals and yellow stamens with red filaments, in mid- and late spring.  $\pm$  45-55cm (18-22in). Balearic Islands (Majorca). \*\*\*

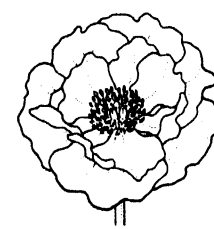
*P. 'Captivation'*. Herbaceous perennial with deep green leaves. Produces very

## PEONY FLOWER FORMS

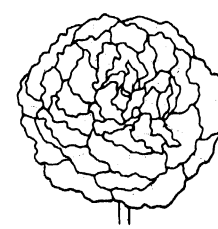
Peony flowers may be saucer-, cup-, or bowl-shaped, in one of the following forms: **single** - with a whorl of 5-10 broad, overlapping, often slightly incurved petals, and a large, central boss of stamens; **semi-double** - like single peonies, but with 2 or 3 whorls of similar petals; **double** - large, spherical flowers, with narrower, overlapping, often crowded, ruffled petals filling the centres, and stamens inconspicuous or absent; or **anemone-form** (also known as imperial or Japanese) - single or semi-double flowers, with the stamens replaced by narrow, crowded, petal-like structures, known as petaloids (or staminodes).



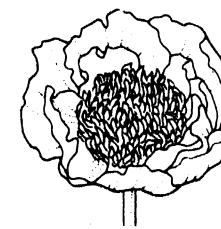
SINGLE



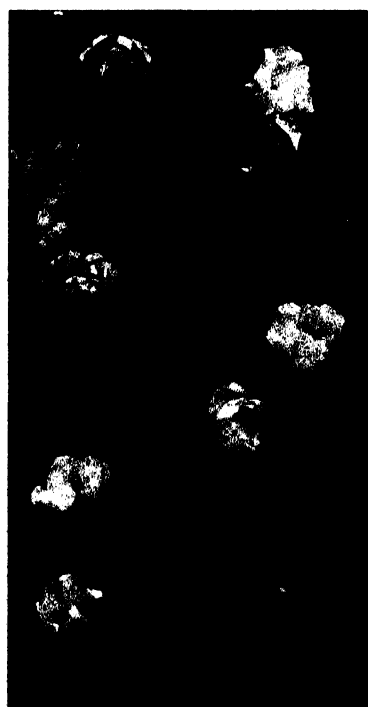
SEMI-DOUBLE



DOUBLE

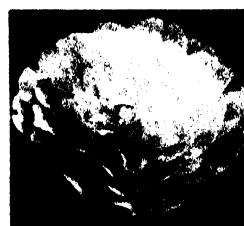
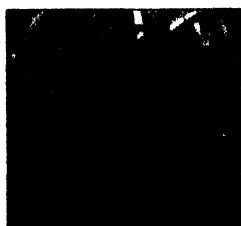
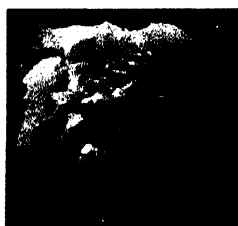
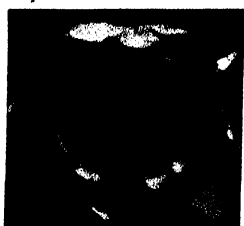
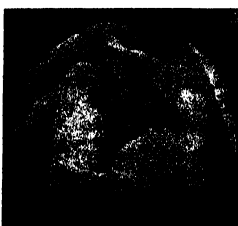
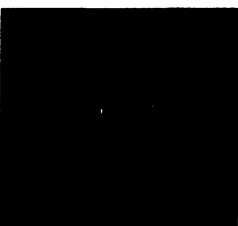
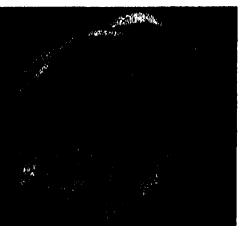
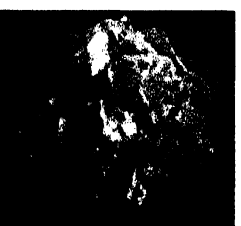


ANEMONE-FORM



*Paeonia* 'Argosy'

P

*Paeonia* 'Cornelia Shaylor'*Paeonia delavayi**Paeonia* 'Duchesse de Nemours'*Paeonia* 'Evening World'*Paeonia* 'Globe of Light'*Paeonia* 'Instituteur Doriai'*Paeonia* 'Kelway's Supreme'*Paeonia* 'Krinkled White'*Paeonia* 'Laura Dessert'*Paeonia lutea* var. *ludlowii**Paeonia* 'Magic Orb'*Paeonia mlokosewitschii**Paeonia* 'Mme Louis Henri'*Paeonia obovata* var. *alba**Paeonia officinalis* 'Crimson Globe'*Paeonia officinalis* 'Rubra Plena'*Paeonia peregrina**Paeonia potaninii* var. *trollioides**Paeonia* 'Sarah Bernhardt'*Paeonia* 'Shirley Temple'*Paeonia* 'Sir Edward Elgar'

large, single, bowl-shaped, cherry-red flowers with a silver sheen.  $\pm$  0.9–1.1m (3–3½ft). \*\*\*

*P. 'Carnival'*. Herbaceous perennial with deep green leaves. Produces large, double, carmine-red flowers, each with a central mass of dissected, ruffled, cream and rose-pink petals.  $\pm$  80–90cm (32–36in). \*\*\*

*P. 'Cheddar Cheese'*. Herbaceous perennial with mid-green leaves. Bears large, double flowers with incurving, ivory-white inner petals and shorter, slightly ruffled yellow outer petals.  $\pm$  90–100cm (36–39in). \*\*\*

*P. 'Chocolate Soldier'*. Herbaceous perennial with deep green leaves, flushed bronze when young. Bears large, satiny, deeply cupped, semi-double, deep purple-red flowers with golden stamens.  $\pm$  90–100cm (36–39in). \*\*\*

*P. corallina* see *P. mascula*.

*P. 'Cornelia Shaylor'*  $\square$  Herbaceous perennial with deep green foliage. Bears large, fragrant, double flowers, opening rose-pink but soon fading to bluish white, with dense, ruffled central petals.  $\pm$  80–90cm (32–36in). \*\*\*

*P. 'Dayspring'*. Herbaceous perennial with mid-green leaves and medium-sized, single, cup-shaped, fragrant, pale pink flowers, borne several to a stem.  $\pm$  60–70cm (24–28in). \*\*\*

*P. decora* see *P. peregrina*.

*P. 'Defender'*  $\square$  Herbaceous perennial with glossy, deep green leaves and medium-sized, single, cup-shaped, deep crimson flowers, with golden yellow stamens.  $\pm$  90–100cm (36–39in). \*\*\*

*P. delavayi*  $\square$  Upright, sparsely branched, deciduous shrub (tree peony) with 2-pinnate, dark green leaves, blue-green beneath, the leaflets deeply cut into pointed lobes. Bears horizontal to nodding, single, cup-shaped, rich dark red flowers, 10cm (4in) across.  $\pm$  2m (6ft),  $\pm$  1.2m (4ft). China. \*\*\*. var. *ludlowii* see *P. lutea* var. *ludlowii*.

*P. 'Double Cherry'* see *P. suffruticosa* 'Yae-zakura'.

*P. 'Dresden'*. Vigorous herbaceous perennial with stout stems and deep green leaves that turn red in autumn. Produces large, single, bowl-shaped, ivory-white flowers, flushed rose-pink.  $\pm$  80–85cm (32–34in). \*\*\*

*P. 'Duchesse de Nemours'*  $\square$   $\square$  syn. *P. 'Mrs. Gwyn Lewis'*. Robust herbaceous perennial with deep green leaves. Bears large, fragrant, double, pure white flowers, flushed green in bud, with spreading outer petals and dense, unevenly ruffled, yellow-based inner petals.  $\pm$  70–80cm (28–32in). \*\*\*

*P. emodi*  $\square$  (Himalayan peony). Herbaceous perennial with erect to arching stems and dark green leaves, each divided into 9 narrow, sometimes 2- or 3-lobed, elliptic leaflets. Semi-pendent, single, cup-shaped, pure white flowers, 10–17cm (4–7in) across, with golden yellow stamens, are borne several to a stem in late spring.  $\pm$  60–80cm (24–32in). W. Himalayas. \*\*\*

*P. 'Emperor of India'*. Herbaceous perennial with deep green foliage and large, anemone-form, rich dark red flowers with golden yellow petaloids.  $\pm$  85–90cm (34–36in). \*\*\*

*P. 'Evening World'*  $\square$  Herbaceous perennial with mid-green leaves. Bears large, anemone-form flowers with

spreading, soft pink outer petals and narrow, paler flesh-pink petaloids.

$\pm$  90–100cm (36–39in). \*\*\*

*P. 'Félix Crousse'*  $\square$  syn. *P. 'Victor Hugo'*. Herbaceous perennial with deep green leaves and large, fragrant, double, deep crimson-pink flowers, with darker centres and ruffled, silver-margined petals.  $\pm$  70–75cm (28–30in). \*\*\*

*P. 'Festiva Maxima'*  $\square$  Herbaceous perennial with strong, erect stems and abundant mid-green foliage. Bears very large, fragrant, double white flowers, with loosely arranged, irregularly margined petals, the inner petals with crimson marks at their bases.

$\pm$  90–100cm (36–39in). \*\*\*

*P. 'Flamingo'*. Herbaceous perennial with deep green leaves, turning red in autumn. Bears large, double, clear salmon-pink flowers.  $\pm$  75–85cm (30–34in). \*\*\*

*P. 'Flight of Cranes'* see *P. suffruticosa* 'Renkaku'.

*P. 'Floral Rivalry'* see *P. suffruticosa* 'Hana-kisoi'.

*P. 'Gay Lady'*. Herbaceous perennial with deep green leaves. Bears medium-sized, single, cup-shaped, vivid deep rose-red flowers with wide-spreading petals.  $\pm$  80–90cm (32–36in). \*\*\*

*P. 'Globe of Light'*  $\square$  Herbaceous perennial with mid-green leaves. Bears large, fragrant, anemone-form, rose-pink flowers with golden yellow petaloids.  $\pm$  90–100cm (36–39in). \*\*\*

*P. humilis*, syn. *P. officinalis* subsp. *humilis*, *P. officinalis* subsp. *microcarpa*. Herbaceous perennial with hairy stems and leaf-stalks, and mid-green leaves, pale green and densely hairy beneath, each with 9 leaflets deeply cut into narrowly elliptic to oblong lobes. Bears single, bowl- or cup-shaped, purple-red flowers, 10–13cm (4–5in) across, with yellow stamens.  $\pm$  70–80cm (28–32in). S.W. Europe. \*\*\*

*P. 'Instituteur Doriai'*  $\square$  Herbaceous perennial with deep green foliage, turning red in autumn. Produces large, anemone-form, velvety, crimson-red flowers with broad, ruffled, silver-margined pink petaloids.  $\pm$  90–100cm (36–39in). \*\*\*

*P. japonica* of gardens see *P. lactiflora*.

*P. 'Kamada Brocade'* see *P. suffruticosa* 'Kamada-nishiki'.

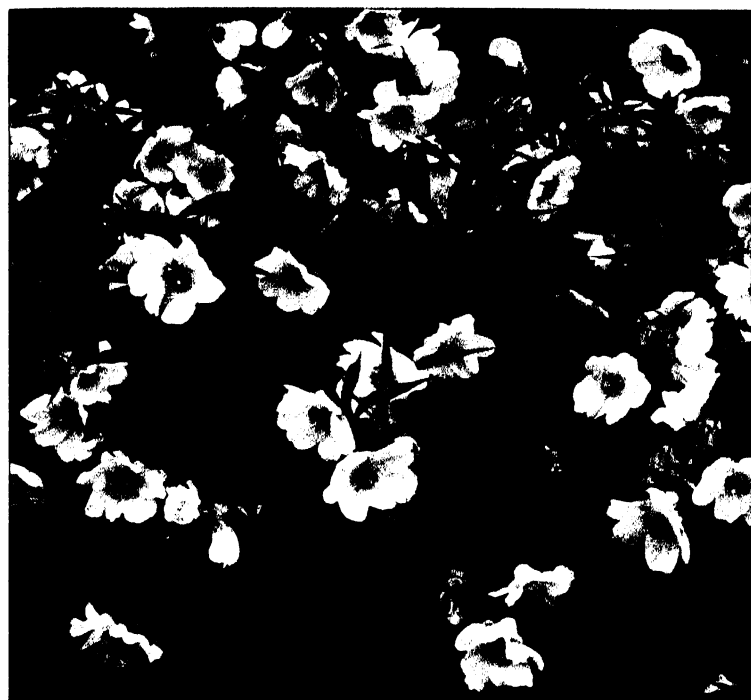
*P. 'Karl Rosenfield'*. Herbaceous perennial with hairy stems and leaf-stalks, and mid-green leaves with leaflets deeply cut into narrowly elliptic to oblong lobes. Bears large, double, bright deep red flowers, 10–13cm (4–5in) across.  $\pm$  70–80cm (28–32in). \*\*\*

*P. 'Kelway's Majestic'*. Herbaceous perennial with deep green leaves. Bears large, anemone-form, fragrant, bright crimson-pink flowers, with slightly ruffled, silver- or gold-flecked, lilac-pink petaloids.  $\pm$  90–100cm (36–39in). \*\*\*

*P. 'Kelway's Supreme'*  $\square$  Robust herbaceous perennial with mid-green foliage. Bears large, fragrant, double or semi-double, pale pink flowers, fading to white, with broad, overlapping petals, often borne in clusters over a long period.  $\pm$  90–100cm (36–39in). \*\*\*

*P. 'Knighthood'*. Herbaceous perennial with deep green leaves. Produces large, double, intense wine-red flowers with narrow, crowded, slightly ruffled petals.  $\pm$  70–80cm (28–32in). \*\*\*



*Paeonia emodi*

**P. 'Krinkled White'** ■ Herbaceous perennial with mid-green leaves and strong stems bearing large, single, cup-shaped white, occasionally pink-flushed flowers, with slightly ruffled petals and golden yellow stamens.  $\pm$  75–80cm (30–32in). \*\*\*

**P. 'Kronos'**. Upright, sparsely branched, deciduous shrub (tree peony) with red-tinged shoots and red-stalked, dark green leaves, blue-green beneath, deeply cut into pointed lobes. Semi-double, dark red, blue-tinged flowers, 15cm (6in) across, are borne in late spring.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**P. lactiflora**, syn. *P. albiflora*, *P. japonica* of gardens. Herbaceous perennial with erect, red-mottled stems and dark green leaves, each with 9 elliptic or lance-shaped, rough-margined leaflets, paler and slightly hairy beneath. In early and midsummer, bears usually solitary, single, cup- or bowl-shaped, fragrant, white to pale pink flowers, 7–10cm (3–4in) across, with pale yellow stamens.  $\pm$  50–70cm (20–28in). Russia (E. Siberia), Mongolia, N. and W. China, Tibet. \*\*\*

**P. 'Laura Dessert'** ■ ♀ Herbaceous perennial with pale to mid-green leaves. Bears large, fragrant, double flowers with spreading, pink-flushed, creamy white outer petals and pale canary-yellow, incurving inner petals.  $\pm$  70–75cm (28–30in). \*\*\*

**P. x lemoinei** (*P. lutea* x *P. suffruticosa*). Upright to spreading, sparsely branched, deciduous shrub (tree peony) with dark green leaves, deeply divided into pointed lobes. Single to double, cup-shaped flowers, 15–20cm (6–8in) across, are white to yellow, often with orange, red, or pink marks.  $\pm$  1.5m (5ft). Garden origin. \*\*\*. **'Argosy'** see *P. 'Argosy'*. **'L'Espérance'** see *P. 'L'Espérance'*. **'Mme Louis Henri'** see *P. 'Mme Louis Henri'*. **'Souvenir de Maxime Cornu'** see *P. 'Souvenir de Maxime Cornu'*. **P. 'L'Espérance'**, syn. *P. x lemoinei* **'L'Espérance'**. Upright, deciduous shrub (tree peony) with mid-green leaves, each

with several deep, pointed lobes. Bears single, cup-shaped, primrose-yellow flowers, 20cm (8in) across, carmine-red at the bases, with red filaments and golden yellow anthers.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**P. lobata** see *P. peregrina*.

**P. lutea**. Upright, sparsely branched, deciduous shrub (tree peony) with dark green leaves, blue-green beneath, each with 9 leaflets, deeply cut into pointed lobes. Bears horizontal to nodding, single, cup-shaped, vivid yellow flowers, 6cm (2½in) across.  $\pm$  1.5m (5ft). S.W. China. \*\*\*. **var. ludlowii** ■ ♀ syn. *P. delavayi* var. *ludlowii*, is more widely grown and more vigorous than the species, with bright green foliage and larger flowers, to 12cm (5in) across, borne in late spring;  $\pm$  2.5m (8ft); S.E. Tibet. **'Superba'** has bronze young foliage, and pink-flushed yellow flowers with red filaments and orange anthers.

**P. 'Magic Orb'** ■ Herbaceous perennial producing deep green leaves, turning red in autumn. Bears large, fragrant, double flowers with broad, vivid rose-pink outer petals and narrower, more ruffled, incurved, pink-suffused, creamy white inner petals.  $\pm$  90–100cm (36–39in). \*\*\*

**P. 'Magnificent Flower'** see *P. suffruticosa* **'Hana-daigin'**.

**P. mascula** ■ syn. *P. corallina*. Erect herbaceous perennial with leaves divided into 9 broadly ovate, obovate, or elliptic leaflets, bluish green above, paler green beneath. Cup- to bowl-shaped flowers are single, deep purplish red, sometimes rose-pink, 7–13cm (3–5in) across, with deep yellow stamens.  $\pm$  60–100cm (24–39in). S. Europe. \*\*\*. **subsp. arietina**, syn. *P. arietina*, has narrower, often lobed leaflets, hairy beneath, and reddish pink flowers;  $\pm$  50–75cm (20–30in). E. Europe, Turkey. **subsp. arietina** **'Northern Glory'** has grey-green leaves and deep pink-purple flowers;  $\pm$  60–70cm (24–28in).

**P. mlokosewitschii** ■ ♀ (Caucasian peony). Erect herbaceous perennial with

bluish green leaves, each divided into 9 broadly elliptic, ovate, or obovate, blunt, sometimes red-margined leaflets, paler and slightly hairy beneath. In late spring and early summer, bears single, bowl-shaped, lemon-yellow flowers, 10–12cm (4–5in) across, with broad, oval petals and pale yellow stamens.  $\pm$  65–90cm (26–36in). Caucasus. \*\*\*

**P. 'Mme Louis Henri'** ■ syn. *P. x lemoinei* **'Mme Louis Henri'**. Upright, deciduous shrub (tree peony) with mid-green leaves divided into pointed lobes. Bears semi-double, warm orange-yellow flowers, to 17cm (7in) across, heavily flushed orange-red.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**P. 'Monsieur Jules Elie'** ♀ Herbaceous perennial with deep green leaves and very large, rounded, double, deep rose-red flowers with a silver sheen.  $\pm$  90–100cm (36–39in). \*\*\*

**P. 'Mother of Pearl'**. Herbaceous perennial with attractive, pale bluish green, often red-margined leaves and large, single, cup-shaped, pink-flushed, pale yellow flowers.  $\pm$  70–75cm (28–30in). \*\*\*

**P. 'Mrs. Gwyn Lewis'** see *P. 'Duchesse de Nemours'*.

**P. obovata** ♀ Herbaceous perennial with erect stems and large, deep green leaves, each with 9 uneven, broadly elliptic leaflets, pale grey-green and slightly hairy beneath. Bears single, cup-shaped, white to purplish red flowers, 7–10cm (3–4in) across, with yellow anthers and green-white or purple filaments.  $\pm$  60–70cm (24–28in). China. \*\*\*. **var. alba** ■ produces white flowers with purple filaments;  $\pm$  70–90cm (28–36in).

**P. officinalis** (Common peony). Herbaceous perennial with erect stems, slightly hairy at first, and deep green leaves, each divided into 9 leaflets with elliptic to oblong lobes, paler and sometimes hairy beneath. Single, cup-shaped, shiny, deep red or rose-pink flowers, 10–13cm (4–5in) across, with yellow stamens, are borne in early and midsummer.  $\pm$  60–70cm (24–28in). Europe. \*\*\*. **'Alba Plena'** has large, double white flowers, sometimes flushed pink, the slightly ruffled petals spreading to reveal the carpels at the centre of each flower;  $\pm$  70–75cm (28–30in). **'China Rose'** has dark green leaves and single, deeply cup-shaped, deep salmon-pink flowers with golden yellow stamens;  $\pm$  45–50cm (18–20in). **'Crimson Globe'** ■ produces single, garnet-red

flowers with golden yellow stamens;  $\pm$  70–85cm (28–34in). **subsp. humilis** see *P. humilis*. **'James Crawford Weguelin'** has bowl-shaped, garnet-red flowers with yellow stamens. **subsp. microcarpa** see *P. humilis*. **'Rosea Superba Plena'** has large, double, deep rose-pink flowers with slightly ruffled petals. **'Rubra Plena'** ■ ♀ has leaves with deep green leaflets, divided into broad, oval segments, and large, double, vivid crimson flowers with satiny, ruffled petals;  $\pm$  70–75cm (28–30in).

**P. peregrina** ■ syn. *P. decora*, *P. lobata*. Herbaceous perennial with erect stems and stiff, lustrous, deep green leaves, each with 9 notched or deeply lobed leaflets, bristly on the veins above, usually hairless beneath. Single, bowl-shaped, glistening, deep red flowers, 10–13cm (4–5in) across, with yellow stamens, are borne in late spring and early summer.  $\pm$  50–60cm (20–24in). S. Europe. \*\*\*. **'Otto Froebel'** ♀ syn. **'Sunshine'**, produces deep vermilion flowers with deep yellow stamens. **'Sunshine'** see **'Otto Froebel'**.

**P. potaninii**. Low-growing, deciduous subshrub (tree peony), spreading by suckers, bearing 2-pinnate, dark green leaves with slender lobes. Produces nodding, single, cup- or bowl-shaped, deep maroon-red flowers, 5cm (2in) across, with red filaments.  $\pm$  60cm (24in),  $\leftrightarrow$  1.5m (5ft) or more. W. China. \*\*\*. **f. alba** has white flowers with green filaments. **var. trollioides** ■ produces deeply cup-shaped yellow flowers in late spring.

**P. 'Président Poincaré'**. Herbaceous perennial with deep green leaves, turning red in autumn. Bears large, fragrant, double, deep crimson flowers with ruffled petals in the centres.  $\pm$  90–100cm (36–39in). \*\*\*

**P. rockii** see *P. suffruticosa* **subsp. rockii**.

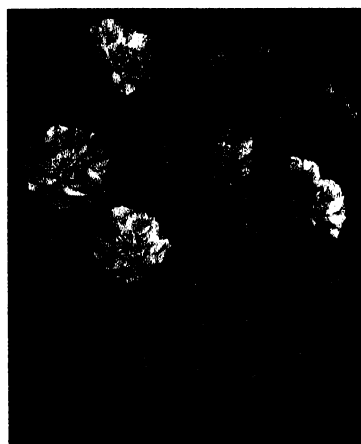
**P. 'Sarah Bernhardt'** ■ ♀ Robust herbaceous perennial with erect stems, mid-green leaves, and very large, double, fragrant, rose-pink flowers, the inner petals with ruffled and silvered margins.  $\pm$  90–100cm (36–39in). \*\*\*

**P. 'Savage Splendour'**. Upright, sparsely branched, deciduous shrub (tree peony) with mid-green leaves, bluish green beneath, deeply cut into pointed lobes. In late spring or early summer, bears large, solitary, single, cup-shaped white flowers, flushed rose- or lavender-pink.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**P. 'Shirley Temple'** ■ Herbaceous perennial with deep green leaves. Bears large, double, rose-pink flowers, fading to buff-white, with whorled petals, the innermost paler, narrower, and loosely arranged.  $\pm$  80–85cm (32–34in). \*\*\*

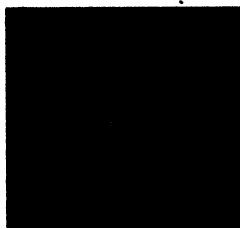
**P. 'Silver Flare'**. Herbaceous perennial with deep green leaves and large, single, deeply cup-shaped, fragrant, carmine-red flowers, with silver-margined petals and golden yellow stamens.  $\pm$  90–100cm (36–39in). \*\*\*

**P. 'Sir Edward Elgar'** ■ Herbaceous perennial with glossy, dark green leaves, turning red in autumn. Bears abundant large, single, cup-shaped, dark brownish crimson flowers with lemon-yellow stamens.  $\pm$  70–80cm (28–32in). \*\*\* **P. x smouthii** (*P. lactiflora* x *P. tenuifolia*). Erect herbaceous perennial with bright green leaves, each divided into 9 leaflets with many, very narrow

*Paeonia mascula*



*Paeonia* 'Souvenir de Maxime Cornu'



*Paeonia suffruticosa* 'Cardinal Vaughan'



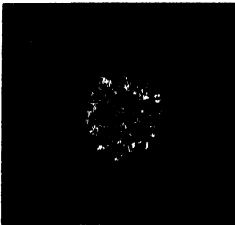
*Paeonia suffruticosa* 'Godaishu'



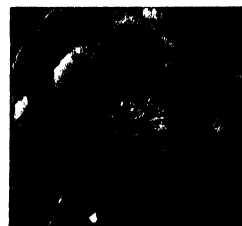
*Paeonia suffruticosa* 'Reine Elisabeth'



*Paeonia suffruticosa* subsp. *rockii*



*Paeonia tenuifolia*



*Paeonia veitchii*



*Paeonia* 'White Wings'



*Paeonia wittmanniana*

segments. In late spring, bears single, cup-shaped, fragrant, bright red flowers, 7–10cm (3–4in) across, with yellow stamens. A sterile hybrid.  $\pm$  60–80cm (24–32in). Garden origin. \*\*\*

**P. 'Souvenir de Maxime Cornu'** ■ syn. *P. x lemoinei* 'Souvenir de Maxime Cornu'. Upright, deciduous shrub (tree peony) with mid-green leaves divided into pointed lobes. Bears double, very fragrant, golden yellow flowers, 20cm (8in) across, the ruffled petal margins strongly suffused dull reddish orange.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**P. suffruticosa** (Moutan). Upright, sparsely branched, deciduous shrub (tree peony) with dark green leaves, blue-green beneath, each with 9 elliptic or ovate leaflets, deeply cut into pointed lobes. In late spring and early summer, bears single, cup- to bowl-shaped, sometimes scented, white, pink, red, or purple flowers, 15–30cm (6–12in) across, some with maroon marks at the bases.  $\pm$  to 2.2m (7ft). China. \*\*\*

**'Banksii'** has double, purple-red flowers with white tips. **'Cardinal Vaughan'** ■ has semi-double, ruby-purple flowers.

**'Five Continents'** see 'Godaishu'.

**'Godaishu'** ■ syn. 'Five Continents', has semi-double white flowers. **'Hana-daigin'**, syn. *P. 'Magnificent Flower'*, has double, violet-purple flowers.

**'Hana-kisoi'**, syn. *P. 'Floral Rivalry'*, has semi-double, shell-pink flowers.

**'Joseph Rock'** see subsp. *rockii*.

**'Kamada-nishiki'**, syn. *P. 'Kamada Brocade'*, has double, reddish mauve flowers. **'Mrs. William Kelway'** produces double white flowers. **'Reine Elisabeth'** ■ has semi-double to double, salmon-pink flowers tinged red, with ruffled margins. **'Renkaku'**, syn. *P. 'Flight of Cranes'*, has dense, double white flowers with deep yellow stamens.

**subsp. rockii** ■ syn. 'Joseph Rock', 'Rock's Variety', *P. rockii*, has semi-

double white flowers, marked deep maroon at the bases. **'Rock's Variety'** see subsp. *rockii*. **'Yae-zakura'**, syn. *P. 'Double Cherry'*, has double, soft pink flowers.

**P. tenuifolia** ■ Herbaceous perennial with deep green leaves, pale and grey-green beneath, with many pointed, linear segments. In late spring and early summer, bears single, cup-shaped, deep red flowers, 7–9cm (3–3½in) across, with yellow stamens.  $\pm$  50–70cm (20–28in). S.E. Europe to S. Russia. \*\*\* **'Plena'** has long-lasting, double, rich red flowers.

**P. veitchii** ■ Herbaceous perennial with hairless stems and deep green leaves, each divided into 9 lance-shaped, pointed leaflets, hairy along the veins above, pale grey-green and hairless beneath. Usually solitary, semi-pendent, single, cup-shaped, white or pink to pale magenta-pink flowers, 7–9cm (3–3½in) across, with pale lemon stamens, open widely in late spring and early summer.  $\pm$  50–60cm (20–24in). W. China. \*\*\* **f. alba** has white flowers with yellow stamens;  $\pm$  70–75cm (28–30in).

**var. woodwardii** is shorter, with hairy stems and leaves hairy beneath, and bears rose-pink flowers;  $\pm$  30–40cm (12–16in).

**P. 'Victor Hugo'** see *P. 'Félix Crousse'*.

**P. 'White Wings'** ■ Herbaceous perennial with glossy, deep green leaves, red in autumn. Large, single, deeply cup-shaped, fragrant, yellowish white flowers have broad, slightly ruffled petals.  $\pm$  75–85cm (30–34in). \*\*\*

**P. 'Whitley Major'** ♀ Herbaceous perennial with deep green leaves flushed reddish brown. Bears large, single, cup-shaped, ivory-white flowers with broad, wide-spreading petals and yellow stamens.  $\pm$  80–85cm (32–34in). \*\*\*

**P. wittmanniana** ■ Herbaceous perennial with stiff, hairless stems and

shiny, dark green leaves with broadly ovate to broadly elliptic leaflets, paler and downy beneath. In late spring and early summer, bears deeply cup-shaped to almost hemispherical, single, primrose-yellow flowers, 10–13cm (4–5in) across, with yellow anthers and red filaments.  $\pm$  80–110cm (32–42in). N.W. Caucasus. \*\*\*

▷ **Pagoda flower** see *Clerodendrum paniculatum*

▷ **Pagoda tree** see *Plumeria*

**Japanese** see *Sophora japonica*

▷ **Paint brush, White** see *Haemanthus albiflos*

▷ **Painted drop-tongue** see *Aglaonema crispum*

▷ **Painted leaf** see *Euphorbia cyathophora*

▷ **Painted net leaf** see *Fittonia*

▷ **Palas** see *Butea monosperma*

## PALIURUS

### RHAMNACEAE

Genus of about 8 species of spiny, deciduous or evergreen shrubs and trees occurring in dry and rocky places in woodland and at stream margins from S. Europe to E. Asia. The glossy, mid- to dark green leaves are alternate, ovate to broadly ovate, entire or toothed, often with heart-shaped bases. Star-shaped, 5-petalled, yellowish green flowers are produced in small, axillary cymes. The fruits are large, flat, winged discs.

Reputed to have been used for Christ's "crown of thorns", *P. spina-christi* is cultivated for its foliage, small flowers, and unusual fruit. Grow in a shrub border or against a wall; can be used for hedging in regions with hot summers.

• **HARDINESS** Frost hardy, but may be harder in areas with very hot summers.

• **CULTIVATION** Grow in full sun in any well-drained soil. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take softwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**P. spina-christi** ■ (Christ's thorn, Jerusalem thorn). Bushy, deciduous shrub with slender, thorny shoots and ovate, 3-veined, glossy, bright dark green leaves, to 4cm (1½in) long. Small cymes of tiny, star-shaped yellow flowers are produced in summer, followed by woody fruit, to 2.5cm (1in) across, each with a rounded green wing, turning brown.  $\pm$  4m (12ft),  $\leftrightarrow$  3m (10ft). S. Europe to N. China. \*\*



*Paliurus spina-christi*

▷ **Palm,**

**African oil** see *Elaeis guineensis*

**Alexander** see *Archontophoenix alexandrae*, *Psychosperma elegans*

**Areca** see *Chrysalidocarpus lutescens*

**Australian fan** see *Livistona australis*

**Australian ivy** see *Schefflera actinophylla*

**Bangalow** see *Archontophoenix cunninghamiana*

**Barbel** see *Acanthophoenix*

**Betel nut** see *Areca catechu*

**Blue fan** see *Brahea armata*

**Blue hesper** see *Brahea armata*

**Bottle** see *Beaucarnea recurvata*, *Hyophorbe*, *H. lagenicaulis*

**Broom** see *Thrinax parviflora*

**Burmese fish-tail** see *Caryota mitis*

**Butterfly** see *Chrysalidocarpus lutescens*

**Cabbage** see *Cordyline*, *Livistona australis*

**Canary Island date** see *Phoenix canariensis*

**Cardboard** see *Zamia furfuracea*

**Chilean wine** see *Jubaea*

**Chinese fan** see *Livistona chinensis*

**Christmas** see *Veitchia merrillii*

**Chusan** see *Trachycarpus fortunei*

**Clustered fish-tail** see *Caryota mitis*

**Coquito** see *Jubaea chilensis*

**Date** see *Phoenix dactylifera*

**Desert fan** see *Washingtonia filifera*

**Doum** see *Hyphaene*, *H. coriacea*

**Dwarf fan** see *Chamaerops*

**Everglades** see *Acoelorrhaphe wrightii*

**Fern** see *Cycas*, *C. circinalis*

**Fiji fan** see *Pritchardia pacifica*

**Fish-tail** see *Caryota*

**Florida silver** see *Coccothrinax argentea*

**Gingerbread** see *Hyphaene thebaica*

**Golden feather** see *Chrysalidocarpus lutescens*

**Grey goddess** see *Brahea armata*

**Hesper** see *Brahea*

**Honey** see *Jubaea chilensis*

**Illawarra** see *Archontophoenix cunninghamiana*

**Jaggery** see *Caryota urens*

**Japanese sago** see *Cycas revoluta*

**Jelly** see *Butia capitata*

**Kentia** see *Howea forsteriana*

**Key** see *Thrinax morrisii*

**King** see *Archontophoenix*

**Lady** see *Rhapis*

**Latan** see *Latania*

**Lipstick** see *Cyrtostachys lakka*

**Macaw fat** see *Elaeis guineensis*

**Manila** see *Veitchia merrillii*

**Mexican fern** see *Dioon edule*

**Miniature date** see *Phoenix roebelenii*

**Miniature fan** see *Rhapis excelsa*

**Miniature fish-tail** see *Chamaedorea metallica*

**Needle** see *Rhapidophyllum*

**New Zealand cabbage** see *Cordyline australis*

**Northern bangalow** see *Archontophoenix alexandrae*

**Oil** see *Elaeis*

**Palmyra** see *Borassus flabellifer*

**Panama hat** see *Carludovica palmata*

**Parlour** see *Chamaedorea elegans*

**Peach** see *Bactris gasipaes*

**Petticoat** see *Copernicia macroglossa*

**Piccabeen** see *Archontophoenix cunninghamiana*

**Porcupine** see *Rhapidophyllum hystrix*

## ▷ Palm cont.

- Princess** see *Dictyosperma*  
**Pygmy date** see *Phoenix roebelenii*  
**Queen** see *Syagrus romanzoffiana*  
**Red fan** see *Livistona mariae*  
**Reed** see *Chamaedorea seifrizii*  
**Royal** see *Roystonea*  
**Ruffle** see *Aiphanes*  
**Sago** see *Caryota urens*, *Cycas*, *C. circinalis*  
**San Jose hesper** see *Brahea brandegeei*  
**Saw** see *Acoelorrhaphe*  
**Saw cabbage** see *Acoelorrhaphe wrightii*  
**Sealing wax** see *Cyrtostachys lakka*  
**Sentry** see *Howea*  
**Silver saw** see *Acoelorrhaphe wrightii*  
**Snake** see *Amorphophallus*, *A. konjac*  
**Solitaire** see *Ptychosperma elegans*  
**Spine** see *Aiphanes caryotifolia*  
**Spiny club** see *Bactris*  
**Sugar** see *Arenga pinnata*  
**Talipot** see *Corypha umbraculifera*  
**Thatch** see *Coccothrinax*, *Thrinax*, *T. parviflora*  
**Thatch leaf** see *Howea forsteriana*  
**Thread** see *Washingtonia robusta*  
**Toddy** see *Borassus flabellifer*, *Caryota urens*  
**Umbrella** see *Hedyscepe*  
**Walking stick** see *Linospadix monostachya*  
**Wax** see *Copernicia*  
**Weddell** see *Lytocaryum weddellianum*  
**Wine** see *Borassus flabellifer*, *Caryota urens*  
**Yellow** see *Chrysalidocarpus*  
**Zamia** see *Cycas media*  
 ▷ **Palmetto** see *Sabal*  
**Blue** see *Rhapidophyllum hystrix*  
**Cabbage** see *Sabal palmetto*  
**Common blue** see *Sabal palmetto*  
**Dwarf** see *Sabal minor*  
**Scrub** see *Sabal minor*  
**Texas** see *Sabal mexicana*  
 ▷ **Palmito do campo** see *Syagrus flexuosa*  
 ▷ **Palms** see p.50

## PAMIANTHE

## AMARYLLIDACEAE

Genus of 2 or 3 species of evergreen or deciduous, bulbous perennials from moist, sandy but rocky areas at altitudes of 1,000–2,000m (3,250–7,000ft) in South America. They have false stems formed from the bases of the strap-shaped, keeled leaves, and are grown for their umbels of large, fragrant white spring flowers, resembling daffodils (*Narcissus*), each with 6 spreading outer tepals and an inner "cup". In frost-prone areas, grow in a temperate or warm greenhouse. In warmer regions, grow among small shrubs or in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Plant in late summer or early autumn, with the neck of each bulb just above soil level. Under glass, grow in loam-based potting compost (J1 No.2), with added grit and well-rotted organic matter, in full light. When in growth, water moderately and apply a balanced liquid fertilizer every month. Water sparingly at other times. Outdoors, grow in moderately fertile, moist but sharply drained soil in full sun.
- **PROPAGATION** Sow seed at 16–21°C (61–70°F) when ripe. Remove offsets in autumn.
- **PESTS AND DISEASES** Trouble free.

**P. peruviana** ■ Deciduous, bulbous perennial with a false stem formed by the bases of the semi-erect, strap-shaped, mid-green leaves, 50cm (20in) long, with rounded keels. In spring, produces terminal umbels of 2–4 large, strongly fragrant flowers, 12cm (5in) across, with spreading, creamy white outer petals and bell-shaped, split white "cups" with green central stripes. ↑ to 1.2m (4ft), ↔ 30cm (12in). Peruvian Andes. ☞ (min. 15°C/59°F)

- ▷ **Pampas grass** see *Cortaderia*, *C. selloana*
- ▷ **Panamiga** see *Pilea involucreta*

*Pancratium illyricum*

## PANCRACTIUM

## Sea lily

## AMARYLLIDACEAE

Genus of about 16 species of bulbous perennials found in sandy or rocky sites from the Canary Islands, W. Africa to Namibia, and the Mediterranean to tropical Asia. They have 2-ranked, linear to strap-shaped, basal leaves, and produce terminal umbels of showy, fragrant flowers, each with 6 spreading outer petals and a central "cup". Grow against a warm, sunny wall or, in frost-prone areas, in a cool greenhouse.

- **HARDINESS** Half hardy to frost tender. Half-hardy species may withstand occasional temperatures to -5°C (23°F).
- **CULTIVATION** Plant bulbs 15–20cm (6–8in) deep when dormant. Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in deep containers or in a greenhouse border, in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly. Keep dry in summer when dormant. Water sparingly in autumn and winter. Outdoors, grow in any sharply drained soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) when ripe, or remove offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

**P. illyricum** ■ Bulbous perennial with semi-erect, broad, strap-shaped, mid-green, glaucous, basal leaves, to 50cm (20in) long. Bears umbels of 10–15 white flowers, 8cm (3in) across, in late spring and early summer. ↑ 40cm (16in), ↔ 15cm (6in). Corsica, Sardinia. \*

**P. maritimum** (Sea daffodil). Bulbous perennial with long-necked bulbs and semi-erect, narrow, strap-shaped, grey-green, basal leaves, to 50cm (20in) long. Bears umbels of up to 6 fragrant white flowers, to 10cm (4in) across, in late summer. ↑↔ 30cm (12in). Coastal S.W. Europe, Mediterranean. \*

## PANDANUS

## Screw pine

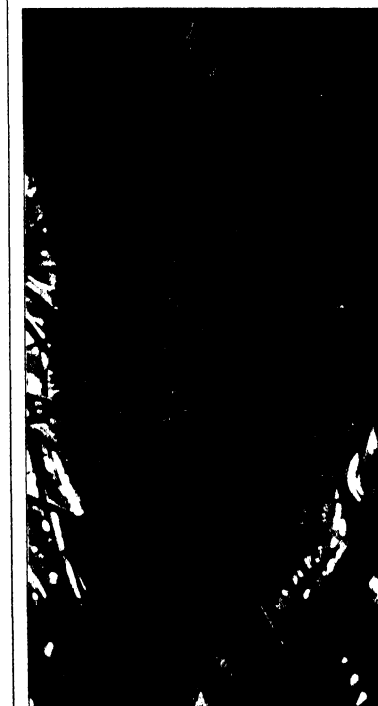
## PANDANACEAE

Genus of 250 or more species of dioecious, evergreen shrubs and trees occurring in dry and moist sites throughout tropical regions of Africa, India, Asia, Australasia, and the Pacific islands. The sparsely branched stems of mature plants are often supported by

stilt roots. Screw pines are grown for their attractive foliage: the linear, light to dark green leaves are tough and usually spiny-toothed, and borne in 3 spiralling ranks forming terminal rosettes. The small and petalless male and female flowers are produced on separate plants, males in slender, often branched spikes, and females in short, dense, cone-like heads, which develop into small, fruits resembling pineapples when fertilized. Where temperatures fall below 13°C (55°F), grow young plants in a warm greenhouse or as houseplants. In warmer regions, use as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added leaf mould and charcoal, in full light, with moderate to high humidity. From spring to summer, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed at 18°C (64°F) as soon as ripe or in spring, first soaking them for 24 hours. Remove suckers or offsets in spring.
- **PESTS AND DISEASES** Scale insects and red spider mites may cause problems under glass.

**P. odoratissimus** see *P. tectorius*.  
**P. sanderi**. Slow-growing, suckering shrub that seldom branches and rarely flowers. Bears rosettes of arching, linear, minutely spiny yellow leaves, 45–75cm (18–30in) long, becoming green with pale yellow stripes when mature. ↑ 1m (3ft), ↔ 0.75–1.5m (30–60in). Malaysia, possibly Indonesia (Timor). ☞ (min. 13°C/55°F). 'Roehrsianus' is more robust, and produces leaves to 1m (3ft) long.  
**P. tectorius** ■ ✱ syn. *P. odoratissimus*. Many-branched, upright tree with thick stilt roots. Whorls of robust branches bear rosettes of linear, long-pointed,

*Pamianthe peruviana**Pandanus tectorius*

stiffly leathery, bluish green leaves, 1–1.5m (3–5ft) long, with spines along the margins and midribs beneath. Each male flower spike, 20–30cm (8–12in) long, is branched and sheathed in a fragrant white spathe; female flower-heads are small and solitary, about 5cm (2in) across. Flowers are borne mainly in summer, followed by spherical to broadly ovoid fruit, 15–25cm (6–10in) long; they may be yellow or light green flushed red. † 3–6m (10–20ft), ↔ 2–4m (6–12ft). S.E. Asia, Pacific islands. ♀ (min. 13°C/55°F). **var. bulbosus** is larger, with fleshier fruit; widely grown in the Pacific; † 4–6m (12–20ft). **var. laevis** ♀ has spineless leaves.

▷ **Panda plant** see *Philodendron bipinnatifolium*

## PANDOREA

BIGNONIACEAE

Genus of 6 species of woody-stemmed, evergreen, twining climbers, rarely shrubs, related to *Tecomaria* and *Tecoma*. They are found in rainforest from sea level to 3,000m (10,000ft) in Malaysia, Papua New Guinea, Australia, and New Caledonia, and are grown for their attractive flowers and foliage. Leaves are opposite or whorled, pinnate, and mid- or dark green, each with up to 7 pairs of leaflets. The fragrant, tubular flowers, each with 5 broad, spreading, petal lobes, the upper 2 smaller than the lower 3, are borne usually in terminal, cyme-like panicles or racemes. In mild climates, they are suitable for a pergola or arch, and look especially effective cascading from a tree. In frost-prone areas, grow in a cool greenhouse.

• **HARDINESS** Frost tender; but *P. jasminoides* and *P. pandorana* may survive temperatures around 0°C (32°F) for short periods, if the wood has been well-ripened in summer.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water

moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Provide support for climbing stems. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root greenwood cuttings with bottom heat in summer. Layer in spring.

• **PESTS AND DISEASES** Susceptible to red spider mites and aphids under glass.

**P. jasminoides** □ syn. *Bignonia jasminoides* (Bower plant). Vigorous, twining climber with wiry, branching stems, and pinnate leaves composed of 5–9 ovate to lance-shaped, glossy, bright green leaflets, 2.5–5cm (1–2in) long. Tubular flowers with spreading lobes, 4–5cm (1½–2in) across, are white, flushed crimson-pink in the throats, and freely produced in small, cyme-like panicles from spring to summer. † 5m (15ft) or more. Australia (Queensland, New South Wales). ♀ (min. 5°C/41°F). **'Alba'** has pure white flowers. **'Lady Di'** has white flowers with creamy yellow, sometimes orange-yellow throats.

**'Rosea'** has pink flowers with deeper pink throats. **'Rosea Superba'** ♀ produces large pink flowers, to 6cm (2½in) long, with purple-spotted, deep pink throats.

**P. lindleyana** see *Clytostoma callistegioides*.

**P. pandorana**, syn. *Bignonia pandorana*, *Tecoma australis* (Wonga wonga vine). Strong-growing, twining climber with slender, branching stems. Pinnate leaves have usually 6 pairs of ovate to broadly lance-shaped, mid-green leaflets, 3–10cm (1¼–4in) long, deeply and narrowly lobed when young, entire or sometimes scalloped when mature. Tubular, creamy yellow flowers spotted and streaked reddish purple, 1.5–3cm (½–1¼in) across, with spreading lobes, are borne in terminal and axillary cyme-like racemes in winter and spring. † 6m (20ft) or more. E. Australia (including Tasmania), Papua New Guinea, Pacific islands. ♀ (min. 5°C/41°F).

**P. ricasoliana** see *Podranea ricasoliana*.

## PANICUM

Crab grass

GRAMINEAE/POACEAE

Genus of about 470 annual or perennial, deciduous or evergreen grasses occurring in open grassland or woodland, often in rocky, moist limestone soil, in tropical areas worldwide, in Europe, and in temperate North America. The leaves are thread-like in bud, usually becoming flat and linear-ovate, and may be light to mid-green, grey-green, or purple. In late summer and autumn, they bear finely branching panicles or racemes of 2-flowered spikelets. Ornamental species are valued mainly for their light, airy flowerheads, suitable for cutting and drying; some species, such as millet (*P. miliaceum*), are also valuable fodder crops. Grow in a sunny, mixed or herbaceous border.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide perennials



*Panicum capillare*

between mid-spring and early summer.

• **PESTS AND DISEASES** Trouble free.

**P. capillare** □ (Witch grass). Lax, loosely tufted annual with clumps of flat, linear to narrowly lance-shaped, mid-green leaves, to 30cm (12in) long. In late summer and autumn, produces dense panicles, to 45cm (18in) long, of tiny, greenish brown spikelets on hair-fine branchlets. † 60–100cm (24–39in), ↔ 60cm (24in). North America. \*

**P. miliaceum** (Millet). Erect, clump-forming annual with flat, narrow, lance-shaped, mid-green, sometimes purple-flushed leaves, to 40cm (16in) long. Produces rigid, intricately branched panicles, to 30cm (12in) long, of slightly pendent, purple-tinged green flowers, borne in small spikelets, to 6mm (¼in) long, in late summer. † to 90cm (36in), ↔ to 23cm (9in). C., S., and E. Europe. \*\*\*. **'Violaceum'**, syn. *P. violaceum*, has purple-violet leaves and spikelets.

**P. violaceum** see *P. miliaceum* **'Violaceum'**.

**P. virgatum** (Switch grass). Narrowly upright, rhizomatous, deciduous, perennial grass forming clumps of purple to glaucous, mid-green stems that bear upright, flat, linear, mid-green leaves, to 60cm (24in) long. Leaves turn yellow in autumn and light brown in winter. Produces broad, diffuse, weeping panicles, to 50cm (20in) long, of tiny, purple-green spikelets in early autumn. † 1m (3ft), ↔ 75cm (30in). S. Canada, USA to Central America. \*\*\*. **'Hänsel Herms'**, syn. **'Haense Herms'**, has a fountain-like habit, and rich reddish purple autumn foliage. **'Heavy Metal'** has stiffer, more erect, metallic blue-grey leaves, turning yellow in autumn. **'Strictum'** is narrowly upright, with leaves that turn bright yellow in autumn; † 1.2m (4ft), ↔ 60cm (24in).

▷ **Pansy** see *Viola*, *V. x wittrockiana*

**Mountain** see *V. lutea*

**Wild** see *V. tricolor*

▷ **Panther lily** see *Lilium pardalinum*

## PAPAVER

Poppy

PAPAVERACEAE

Genus of 70 species of annuals, biennials, and perennials occurring in a wide range of habitats from lowlands to high mountains; most are from C. and S. Europe and temperate Asia, a few from South Africa, Australia, W. North America, and subarctic regions. Some annuals are common weeds of arable fields. The usually unbranched, wiry, sometimes hairy stems, which exude latex if damaged, produce a few alternate, mostly radical leaves, which may be simple and toothed, or pinnate to 3-pinnate, pinnatifid, or pinnatisect, bristly or smooth, and grey-green or light to dark green. The short-lived flowers are wide-spreading, bowl-, cup-, or saucer-shaped, usually 4-petalled, and brightly coloured, sometimes with basal marks or spots. They are borne singly or in panicles or racemes, the buds often pendent, and are followed by distinctive "pepper-pot" seed pods. Most larger species are spectacular plants for a mixed or herbaceous border; several of the smaller poppies are suitable for a rock garden or an annual border.

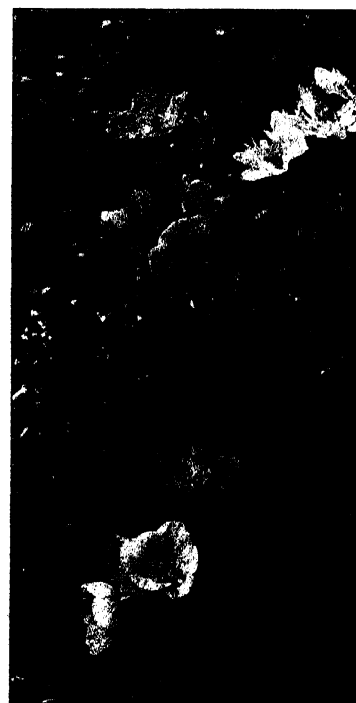
• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in deep, fertile, well-drained soil in full sun, except *P. alpinum* and its cultivars, which require very sharply drained soil.

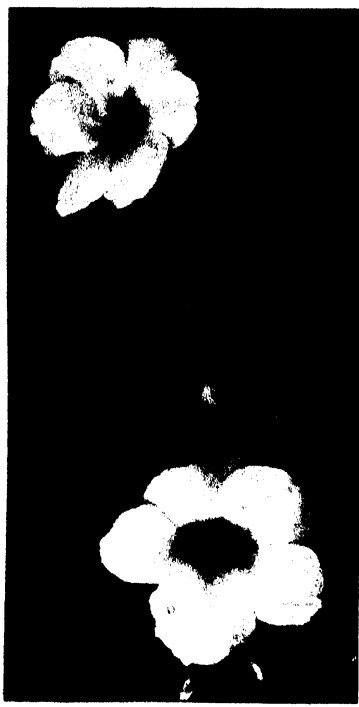
• **PROPAGATION** Sow seed in spring; for annuals and biennials, sow seed *in situ*; for perennials, sow seed in containers in a cold frame. Divide perennials in spring, or take root cuttings from them in late autumn or early winter.

• **PESTS AND DISEASES** Prone to aphids, pedicel necrosis and fungal wilts, and, in damp conditions, downy mildew.

**P. alpinum** □ (Alpine poppy). Tuft-forming, short-lived perennial with variable, 2- or 3-pinnate, sometimes pinnatisect, hairy, grey-green leaves, to



*Papaver alpinum*



*Pandorea jasminoides*

*Papaver atlanticum*

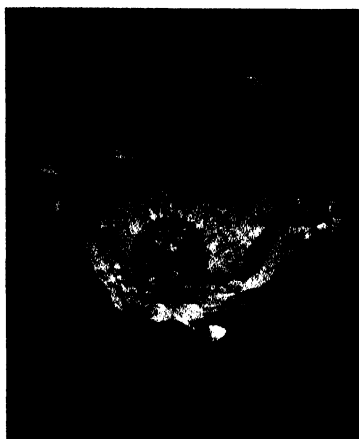
20cm (8in) long, with linear segments. Solitary, cup- to saucer-shaped, white, yellow, orange, or red flowers, to 4cm (1½in) across, are produced in summer. The name *P. alpinum* is often used to include a range of plants that are now considered distinct species. †15–20cm (6–8in), ↔ 10cm (4in). Europe (Pyrenees, Alps, Carpathian Mountains). \*\*\*.

\*\*\*. **subsp. *burseri*** see *P. burseri*.

**subsp. *rhaeticum*** see *P. rhaeticum*.

***P. atlanticum*** ■ Erect, clump-forming, short-lived perennial with oblong to lance-shaped, coarsely toothed, mid-green leaves, to 15cm (6in) long, very hairy, particularly beneath. In summer, bears solitary, saucer-shaped, soft orange flowers, to 5cm (2in) across, with very hairy sepals. †30cm (12in), ↔ 15cm (6in). Morocco. \*\*\*.

***P. bracteatum*** ♀ Upright, clump-forming, bristly perennial producing pinnatisect, mid-green leaves, 25–45cm (10–18in) long, with lance-shaped, toothed segments. In early summer, bears solitary, bowl-shaped, blood-red flowers, 10–18cm (4–7in) across, with 4–6 petals, each with a large, elongated black spot at the base. Similar to *P. orientale* but with taller, stiffer stems,

*Papaver fauriei*

sepal-like bracts below the flowers, and longer spots on the petals. † to 1.2m (4ft), ↔ 90cm (36in). N. Iran. \*\*\*.

***P. burseri***, syn. *P. alpinum* subsp. *burseri*. Tuft-forming, almost hairless, semi-evergreen, short-lived perennial with 2- or 3-pinnate, grey-green leaves, to 20cm (8in) long, consisting of linear to lance-shaped segments. In summer, produces solitary, saucer-shaped white flowers, to 4cm (1½in) across, with yellow stamens. †15cm (6in), ↔ 10cm (4in). Europe (Alps, Carpathian Mountains). \*\*\*.

***P. commutatum*** ♀ Erect, branching annual with oval to oblong, pinnatisect, downy, mid-green leaves, to 15cm (6in) long, with lance-shaped segments. Solitary, bowl-shaped, brilliant red flowers, to 8cm (3in) across, spotted black at the petal bases, are borne on softly grey-hairy stems in summer. † to 45cm (18in), ↔ 15cm (6in). Greece (Crete), Turkey, Caucasus, N. Iran. \*\*\*.

***P. croceum***, syn. *P. nudicaule* of gardens (Arctic poppy, Icelandic poppy). Erect, tuft-forming, hairy perennial, usually grown as a biennial, producing oval, pinnatifid to pinnatisect, densely hairy,

*Papaver* 'Fireball'

blue-green leaves, 3–15cm (1¼–6in) long, with oblong segments. Solitary, bowl-shaped, occasionally double, fragrant, yellow or white, sometimes orange or pale red flowers, to 8cm (3in) across, are borne on short, hairy stalks in summer. † to 30cm (12in), ↔ to 15cm (6in). Subarctic regions. \*\*\*.

**'Champagne Bubbles'** has large flowers, to 12cm (5in) across, in a range of mostly pastel shades, including red, bronze-yellow, apricot-yellow, pink, and yellow; † to 45cm (18in). **'Garden Gnome'** is dwarf, with flowers mainly in bright shades, including orange-red, yellow, pink, salmon-pink, and white. **'Summer Breeze'** ■ bears orange, golden yellow, yellow, or white flowers over a very long flowering period; †30–35cm (12–14in). **'Wonderland'** is dwarf, with large, short-stalked, white, orange, yellow, or red flowers, and is ideal in containers; † to 25cm (10in).

***P. dubium*** (Long-headed poppy). Upright, slender-stemmed, hairy annual with pinnatisect, blue-green leaves, 10–15cm (4–6in) long, with ovate segments. Throughout summer, produces solitary, saucer-shaped, pale scarlet or pinkish red flowers, to 7cm

(3in) across, sometimes marked black at the petal bases. † to 60cm (24in), ↔ to 20cm (8in). Europe, W. Asia. \*\*\*.

***P. fauriei*** ■ syn. *P. miyabeianum* of gardens. Compact, mound-forming, short-lived perennial, similar to *P. alpinum*, bearing pinnate, grey-green leaves, to 15cm (6in) long, with lance-shaped, deeply lobed leaflets. Solitary, bowl-shaped, pale yellow or greenish yellow flowers, 2–3cm (¾–1¼in) across, are produced in summer. † to 10cm (4in). Russia (N. Kurile Islands), Japan. \*\*\*.

***P. 'Fireball'*** ■ syn. *P. 'Nanum Flore Pleno'*. Upright, densely hairy perennial, spreading freely by runners, bearing lance-shaped, conspicuously toothed, bristly, mid-green leaves, to 20cm (8in) long. Solitary, hemispherical, semi-double to double, orange-scarlet flowers, 3–4cm (1¼–1½in) across, with narrow petals, are produced from late spring to midsummer. † to 30cm (12in). \*\*\*.

***P. lateritium***. Clump-forming, upright perennial with very hairy, oblong, deeply toothed, mid-green leaves, to 20cm (8in) long. Branching stems produce bowl-shaped, deep orange flowers, to 5cm (2in) across, usually solitary but occasionally in pairs, in mid- and late summer. †40cm (16in), ↔ 30cm (12in). Turkey. \*\*\*.

***P. miyabeianum*** of gardens see *P. fauriei*.

*P. fauriei*.

***P. 'Nanum Flore Pleno'*** see *P. 'Fireball'*.

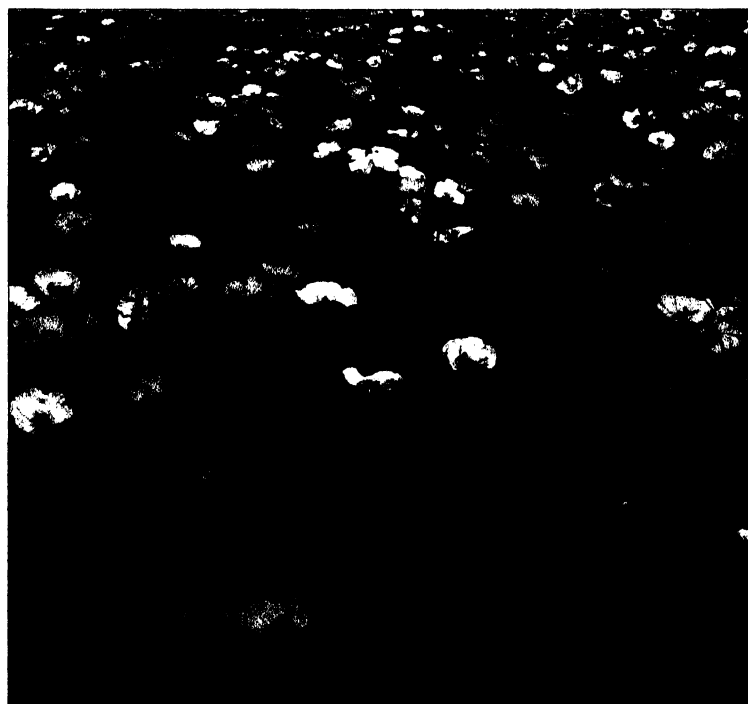
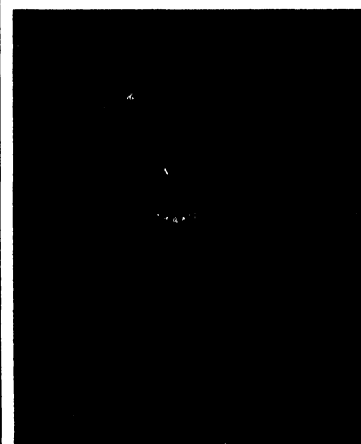
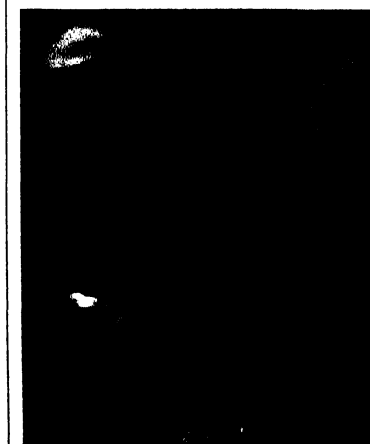
*P. 'Fireball'*.

***P. nudicaule*** of gardens see *P. croceum*.

***P. orientale*** (Oriental poppy). Clump-forming perennial, spreading by runners, with erect, white-bristly stems and pinnatisect, mid-green leaves, to 30cm (12in) long, with lance-shaped, toothed segments. From late spring to midsummer, bears solitary, cup-shaped, orange-scarlet flowers, 10–16cm (4–6in) across, with no bracts; the 4–6 petals have large, bluish black or white basal spots, broader than they are long. †45–90cm (18–36in), ↔ 60–90cm (24–36in). Caucasus, N.E. Turkey, N. Iran. \*\*\*. Most plants grown in gardens as cultivars of *P. orientale* are hybrids with *P. bracteatum* and the closely related *P. pseudoorientale*; they are listed here for easy reference.

**'Allegra'** ■ has bright orange-scarlet flowers with bold, black basal marks.

**'Beauty of Livermere'** ■ ♀ has large, crimson-scarlet flowers, to 20cm (8in) across, with a black mark at the base of each petal; †0.9–1.2m (3–4ft), ↔ 90cm

*Papaver croceum* 'Summer Breeze'*Papaver orientale* 'Allegra'*Papaver orientale* 'Beauty of Livermere'

*Papaver orientale* 'Black and White'

(36in). 'Black and White' ■ ♀ produces white flowers with a crimson-black mark at the base of each petal. 'Cedric Morris' ■ ♀ has grey-hairy leaves and very large, soft pink flowers, to 16cm (6in) across, the frilled petals each with a black basal mark. 'Indian Chief' produces deep mahogany-red flowers without spots. 'May Queen' bears double, orange-red flowers with slightly quilled, unmarked petals. 'Mrs. Perry' ♀ has pale salmon-pink flowers with black basal marks. 'Perry's White' has white flowers with maroon-purple centres. 'Picotée' produces pure white flowers with creased petals that have broad, frilled, orange-pink margins. *P. rhaeticum*, syn. *P. alpinum* subsp. *rhaeticum*. Tufted perennial, similar to *P. alpinum*, bearing pinnate, finely hairy, grey-green leaves, to 8cm (3in) long, composed of ovate to lance-shaped segments. Solitary, bowl-shaped, golden yellow or orange flowers, to 5cm (2in) across, are produced in summer. ‡ 15cm (6in), ↔ 10cm (4in). Pyrenees. \*\*\* *P. rhoeas* (Corn poppy, Field poppy, Flanders poppy). Erect, branching, sparsely hairy annual with oblong, pinnatifid to pinnatisect, downy, light green leaves, to 15cm (6in) long, with lance-shaped segments. Solitary, bowl-shaped, brilliant red flowers, to 8cm (3in) across, sometimes marked black at the petal bases, are borne on short, downy stalks in summer. ‡ to 90cm (36in), ↔ to 30cm (12in). Eurasia, N. Africa; also widely naturalized. \*\*\*. 'Fairy Wings' see 'Mother of Pearl'. 'Mother of Pearl' ■ syn. 'Fairy Wings', produces dove-grey, soft pink, or lilac-

*Papaver rhoeas* 'Mother of Pearl'

blue flowers, with some paler zoning. **Shirley Series** ■ cultivars have single, semi-double, or double flowers in yellow, pink, orange, or sometimes red, always unmarked at the bases; they need careful selection to maintain the true stock. **Shirley Series** 'Reverend Wilks' has single and semi-double flowers in red, pink, or white, with some picotees and bicolours. *P. rupifragum*. Erect, clump-forming perennial with obovate, toothed or lobed, mid-green leaves, to 15cm (6in) long. In summer, produces solitary, bowl-shaped, pale brick-red flowers, to 8cm (3in) across. Similar to *P. atlanticum* except that leaves are hairy only on margins and veins beneath, and sepals are hairless. May self-seed freely. ‡ 45cm (18in), ↔ 20cm (8in). Spain. \*\*\* *P. somniferum* ♀ (Opium poppy). Erect annual with oblong, deeply lobed, glaucous, blue-green leaves, to 12cm (5in) or more long. In summer, leafy stems bear solitary, bowl-shaped, pink, mauve-purple, red, or white flowers, to 10cm (4in) across, sometimes with dark spots at the petal bases. They are followed by large, blue-green seed pods that are good for dried arrangements. All parts may cause mild stomach upset if ingested. ‡ to 1.2m (4ft), ↔ to 30cm (12in). Origin unknown; very widely cultivated and naturalized. \*\*\*. 'Hen and Chickens' is grown primarily for its seed heads, with very large pods surrounded by clusters of much smaller capsules. 'Paeony Flowered' ■ has large, double, frilly flowers in red, purple, pink, salmon-pink, maroon-red,

*Papaver somniferum* 'Paeony Flowered'

or white. 'White Cloud' produces double white flowers. *P. trinitifolium*. Erect, branching, hairless or sparsely hairy biennial. In the first year, forms a basal rosette of 3 or 4 ovate to oblong, pinnatisect, glaucous, blue-green leaves, to 7cm (3in) long, with linear segments covered in short yellow hairs. In the summer of the second year, many-branched, leafy stems produce solitary, cup-shaped, orange-pink flowers, to 5cm (2in) across. ‡ to 30cm (12in), ↔ 15cm (6in). E. and S. Turkey. \*\*\*

▷ **Paperbark** see *Melaleuca*

▷ **Paper bush** see *Edgeworthia*

▷ **Paper mulberry** see *Broussonetia papyrifera*

▷ **Paper rush, Egyptian** see *Cyperus papyrus*

## PAPHIOPEDILUM

Slipper orchid

ORCHIDACEAE

Genus of about 60 species of evergreen, mainly terrestrial orchids, some epiphytic or lithophytic, occurring at sea level to over 2,000m (7,000ft), from India to China, S.E. Asia, and Papua New Guinea. They are sympodial, lack pseudobulbs, and produce short stems bearing strap-shaped, lance-shaped, or elliptic to ovate, leathery, sometimes mottled, grey to pale, mid-, or dark green leaves. Each shoot ends in a distinctive solitary flower, or a raceme of 2–8 flowers, each with an upright upper sepal, 2 spreading petals, and 2 lateral sepals united under a variably shaped lip or "pouch". Many hybrids have been developed. Contact with foliage may aggravate skin allergies.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in terrestrial orchid compost, with added crushed bark and dolomitic limestone chips, in pots that constrict the roots. In summer, provide high humidity and bright filtered light, water freely, and apply fertilizer at every third watering. Do not mist. In winter, provide full light and water sparingly; do not allow the compost to dry out completely between waterings. See also p.46.

• **PROPAGATION** Not suitable for division, although cuttings or offshoots may be rooted successfully.

• **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

*P. appletonianum* ■ Terrestrial orchid with elliptic, mottled, mid-green and purple leaves, to 20cm (8in) long. Solitary flowers, 12cm (5in) across, with slender green and rose-pink petals, pale green, darker veined upper sepals, and light brown pouches, appear in winter and spring. ‡ 30cm (12in), ↔ 15cm (6in). Laos, Thailand, Cambodia.

• (min. 13°C/55°F; max. 30°C/86°F)

*P. argus*. Terrestrial orchid with oblong-lance-shaped, pale green leaves with darker mottling, 12–20cm (5–8in) long. In spring, bears solitary flowers, 10cm (4in) across, with dark purple-spotted, off-white petals, pink at the tips; upper sepals have dark green or purple veining; dark green-veined pouches are red above the lips, yellow beneath. ‡ 30cm (12in), ↔ 15cm (6in). Philippines. • (min. 13°C/55°F; max. 30°C/86°F)

*P. bellatulum* ■ Terrestrial orchid with rigid, leathery, elliptic to strap-shaped leaves, mottled green and grey, to 20cm (8in) long. Solitary, almost stemless, rounded, white or pale yellow flowers, 9cm (3½in) across, with large, dark red spots, are produced in spring. ‡ 12cm (5in), ↔ 15cm (6in). Burma, Thailand. • (min. 13°C/55°F; max. 30°C/86°F)

*P. buckhursti* 'Mont Millais' ■ (*P. Greenville* x *P. Spring Vigil*). Terrestrial orchid with strap-shaped to ovate, mid-green leaves, 15cm (6in) long. Solitary yellow flowers, 12cm (5in) across, with white upper sepals, are usually produced in winter. ‡ 30cm (12in), ↔ 20cm (8in). • (min. 13°C/55°F; max. 30°C/86°F)

*P. callosum* ■ Terrestrial orchid with strap-shaped to elliptic, greyish green leaves, to 25cm (10in) long, with dark green mottling. In spring, bears solitary, maroon and green flowers, 7–9cm (3–3½in) across, with white-striped maroon upper sepals and maroon lips. ‡ 30cm (12in), ↔ 15cm (6in). Thailand, Cambodia, S. Vietnam. • (min. 13°C/55°F; max. 30°C/86°F)

*P. delenatii* ♀ Terrestrial orchid with rigid, leathery, elliptic to strap-shaped leaves, 10–15cm (4–6in) long, mottled green and grey above, deep purple beneath. In spring, bears almost stalkless white flowers, 8cm (3in) across, with pink lips, singly or in pairs. ‡ 20cm (8in), ↔ 15cm (6in). C. Vietnam. • (min. 13°C/55°F; max. 30°C/86°F)

*P. Delroisi* (*P. delenatii* x *P. rothschildianum*). Terrestrial orchid with semi-rigid, strap-shaped, linear, purplish green leaves, 15cm (6in) long, lightly mottled greyish green and mid-green. In spring, bears richly coloured pink flowers, 10cm (4in) across, singly or in racemes. ‡ to 30cm (12in). • (min. 13°C/55°F; max. 30°C/86°F)

*P. fairrieianum* ■ Terrestrial orchid with strap-shaped, dark green leaves, 9–15cm (3½–6in) long. In autumn, bears solitary, purple-veined, pale green-white flowers, 6–8cm (2½–3in) across, with greenish yellow lips suffused purple brown. ‡ to 15cm (6in). Himalayas, N.E. India (Sikkim), Bhutan. • (min. 10°C/50°F; max. 30°C/86°F)

*P. Freckles* ■ (*P. Burleigh Mohur* x *P. F.C. Puddle*). Terrestrial orchid with strap-shaped, mid-green leaves, 15cm (6in) long. In early winter, bears solitary cream flowers, 12cm (5in) across, spotted purple-brown, with pink-flushed lips. ‡ 30cm (12in), ↔ 20cm (8in). • (min. 13°C/55°F; max. 30°C/86°F)

*Papaver orientale* 'Cedric Morris'*Papaver rhoeas* Shirley Series



*Paphiopedilum fairrieianum*

***P. Goultenianum* 'Album'** (P. *callosum* x P. *curtisii*). Terrestrial orchid with broadly ovate, mottled, grey-green and dark green leaves, 10cm (4in) long. Solitary, lime-green and white flowers, 10cm (4in) across, with striped upper sepals, are usually borne in spring. ‡ 30cm (12in), ↔ 20cm (8in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. haynaldianum*** Terrestrial or lithophytic orchid with strap-shaped, light green leaves, to 40cm (16in) long. Racemes of up to 6 slender flowers, to 13cm (5in) across, with green petals

tipped and spotted rose-pink, and with spotted upper sepals and greenish brown pouches, are borne in spring. ‡ 45cm (18in), ↔ 30cm (12in). Philippines. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. hirsutissimum***. Terrestrial orchid with linear to strap-shaped, mid-green leaves, to 45cm (18in) long. Solitary flowers, to 14cm (5½in) across, with green and rose-mauve petals, green upper sepals, shaded brown, and greenish brown pouches, are borne in spring. ‡ 15cm (6in), ↔ 20cm (8in). N.E. India, S. China, Thailand. ☼ (min. 10°C/50°F; max. 30°C/86°F)

***P. insigne*** Terrestrial orchid with linear to lance-shaped, yellowish green leaves, 20–30cm (8–12in) long. Solitary flowers, 7–10cm (3–3½in) across, with yellow-bronze petals and pouches, and pale green-yellow, spotted upper sepals, appear from autumn to spring. ‡ 15cm (6in), ↔ 25cm (10in). E. Himalayas. ☼ (min. 10°C/50°F; max. 30°C/86°F)

***P. Joanne's Wine*** (P. *Maudiae* x P. *Vintner's Treasure*). Terrestrial orchid with broadly ovate, greyish green leaves, 10cm (4in) long, with dark mottling. In spring, bears solitary flowers, 10cm (4in) across, mostly dark purple and light green. ‡ 23cm (9in), ↔ 20cm (8in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. Lyric 'Glendora'*** (P. *Lucid* x P. *Paeony*). Terrestrial orchid with strap-shaped to ovate, mid-green leaves, 15cm (6in) long. Solitary, rounded flowers, 12cm (5in) across, with deep red and green petals, and white upper sepals with dark red centres, are usually produced in winter. ‡ 30cm (12in), ↔ 20cm (8in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. Maudiae*** (P. *callosum* x P. *laurenceanum*). Terrestrial orchid with attractive, ovate leaves, mottled light and dark green, 12cm (5in) long.

Solitary, green-and-white-striped flowers, 10cm (4in) across, are borne in spring or summer. ‡ 30cm (12in), ↔ 15cm (6in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***'Coloratum'*** has wine-red flowers with striped upper sepals and greenish white centres.

***P. Miller's Daughter*** (P. *Chantal* x P. *Dusty Miller*). Terrestrial orchid with strap-shaped to ovate, mid-green leaves, 15cm (6in) long. Solitary white flowers, 10cm (4in) across, with pink veins and spots, are usually produced in spring. ‡ 23cm (9in), ↔ 20cm (8in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. niveum*** Terrestrial orchid with rigid, leathery, elliptic to strap-shaped leaves, 10–15cm (4–6in) long, mottled green and grey. Solitary, powder-white flowers, 8cm (3in) across, with small red spots, are borne in summer. ‡ 15cm (6in). S. Thailand, N. Malaysia. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. rothschildianum***. Terrestrial orchid with semi-rigid, elliptic to strap-shaped, shiny, mid-green leaves, to 50cm (20in) long. In spring and summer, produces racemes of 2–6 flowers, to 20cm (8in) across, with thin, purple-spotted cream petals, white upper sepals, spotted and striped dark purple, and purplish brown, yellow-rimmed pouches. ‡ 60cm (24in), ↔ 45cm (18in). N. Borneo. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. Silvara 'Jancis'*** (P. *F.C. Puddle* x P. *Sungrove*). Terrestrial orchid with narrowly ovate, mid-green leaves, 15cm (6in) long. Solitary white flowers, 10cm (4in) across, with upper sepals peppered orange-brown, are usually borne in spring. ‡ 23cm (9in), ↔ 20cm (8in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. sukhakulii*** Terrestrial orchid with narrowly elliptic, mottled, dark grey and mid- and dark green leaves, to 15cm (6in) long. In autumn, bears

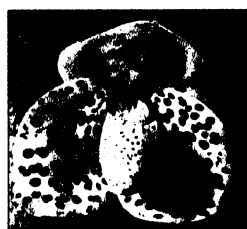
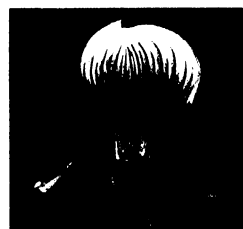
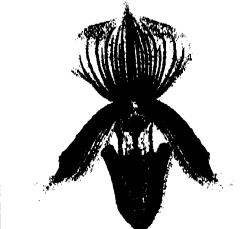
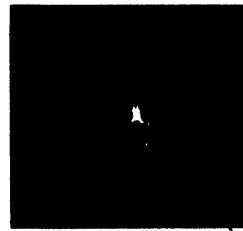
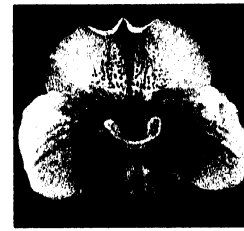
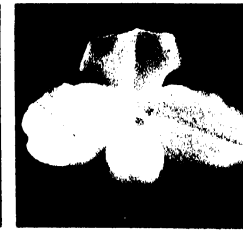
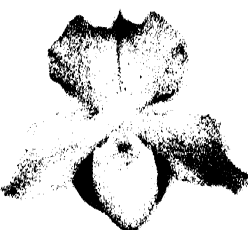
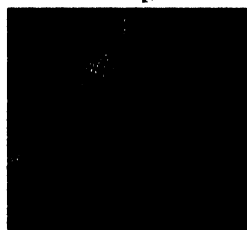
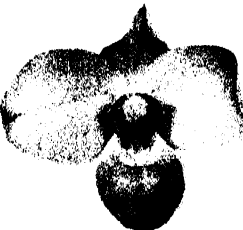
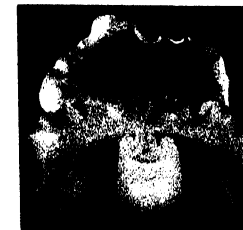
solitary flowers, 10–12cm (4–5in) across. They have green petals, heavily spotted purplish black, green-striped white upper sepals, and reddish brown pouches. ‡ 15cm (6in). Thailand. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. Vanda M. Pearman*** (P. *bellatum* x P. *delenatii*). Terrestrial orchid with elliptic to strap-shaped leaves, to 25cm (10in) long, mottled grey and dark green above, purple beneath. From spring to summer, white flowers, 9cm (3½in) across, with pink-flushed pouches, are borne singly or in pairs. ‡ 20cm (8in), ↔ 18cm (7in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. venustum*** Terrestrial orchid with ovate-lance-shaped leaves, to 25cm (10in) long, mottled grey-green and purple. From winter to spring, bears solitary flowers, 8cm (3in) across, with green and rose-red, maroon-spotted petals, green-striped white upper sepals, and yellowish green to reddish brown, prominently veined pouches. ‡ 15cm (6in). Himalayas. ☼ (min. 10°C/50°F; max. 30°C/86°F)

***P. villosum*** Terrestrial orchid with strap-shaped, dull mid-green leaves, 25–40cm (10–16in) long. Solitary, glossy, red-brown flowers, 8cm (3in) across, with green and brown upper sepals and light yellow-bronze to green pouches, appear from winter to spring. ‡ 15cm (6in). N.E. India, Burma, Thailand, Laos. ☼ (min. 13°C/55°F; max. 30°C/86°F)

***P. Vintage Harvest 'Applemint'*** (P. *Chianti* x P. *Golden Acres*). Terrestrial orchid with strap-shaped, dark green leaves, 15cm (6in) long. In winter, bears solitary, green-yellow flowers, 12cm (5in) across, with cream margins on the upper sepals, turning gold. ‡ 30cm (12in), ↔ 20cm (8in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

*Paphiopedilum appletonianum**Paphiopedilum bellarulum**Paphiopedilum* Buckhurst 'Mont Millais'*Paphiopedilum callosum**Paphiopedilum* Freckles*Paphiopedilum* Goultenianum 'Album'*Paphiopedilum haynaldianum**Paphiopedilum* Joanne's Wine*Paphiopedilum* Lyric 'Glendora'*Paphiopedilum* Maudiae 'Coloratum'*Paphiopedilum* Miller's Daughter*Paphiopedilum niveum**Paphiopedilum* Silvara 'Jancis'*Paphiopedilum sukhakulii**Paphiopedilum* Vanda M. Pearman*Paphiopedilum venustum**Paphiopedilum villosum**Paphiopedilum* Vintage Harvest 'Applemint'

- ▷ **Paprika** see *Capsicum annuum*  
 ▷ **Papyrus** see *Cyperus papyrus*  
 ▷ **Parachute plant** see *Ceropegia sandersonii*

## PARADISEA

Paradise lily, St. Bruno's lily  
 ASPHODELACEAE/LILIACEAE

Genus of 2 species of clump-forming perennials occurring in subalpine or damp meadows and woodland in S. Europe. They have short rhizomes with clustered, fleshy roots and linear, hairless, greyish green, basal leaves. They are cultivated for their loose racemes, borne on slender stems, of trumpet-shaped, 6-repalled, fragrant flowers, which are excellent for cutting. Grow in a mixed or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, fertile, moist but well-drained soil in full sun or dappled shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide after flowering, or in early spring.
- **PESTS AND DISEASES** Slugs may be a problem.

**P. liliastrum.** Clump-forming perennial producing short rhizomes and grass-like leaves, 12–25cm (5–10in) long. One-sided racemes of white flowers, 3–6cm (1¼–2½in) long, with conspicuous yellow anthers, are borne in late spring or early summer. ‡ 30–60cm (12–24in), ↔ 30cm (12in). Mountains of S. Europe. \*\*\*. 'Major' has larger flowers, 5–6cm (2–2½in) long.  
**P. lusitanicum.** Upright, clump-forming perennial with basal rosettes of linear leaves, 30–40cm (12–16in) long. Racemes of 20–25 white flowers, 2cm (¾in) long, are borne in summer. ‡ 80–120cm (32–48in), ↔ 30–40cm (12–16in). Portugal, Spain. \*\*\*

- ▷ **Paradise flower** see *Solanum wendlandii*



Paradisea liliastrum 'Major'

## PARAHEBE syn. DERWENTIA

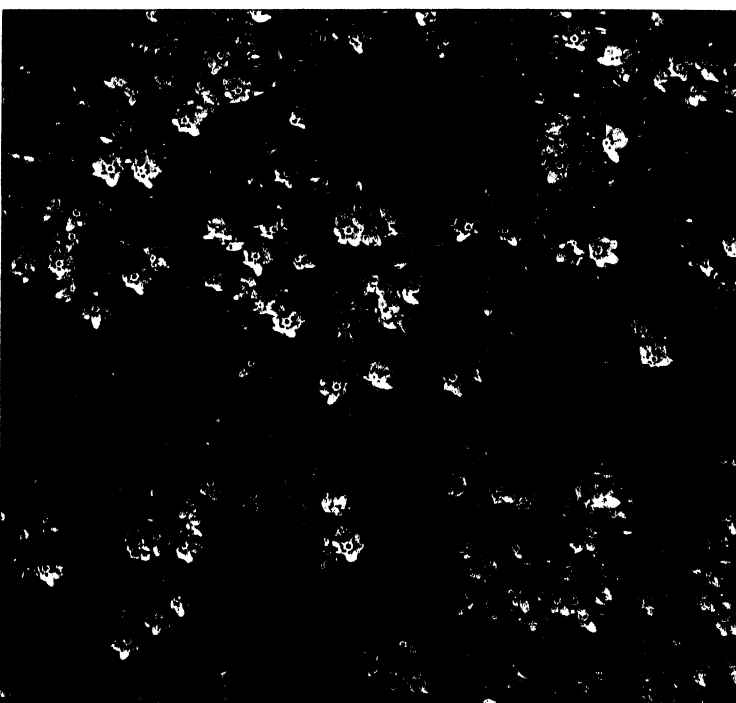
SCROPHULARIACEAE

Genus of about 30 species of evergreen or semi-evergreen subshrubs and perennials, often classified under *Hebe* or *Veronica*. Most are from Australia and New Zealand, with a few from Papua New Guinea, occurring mainly in sunny and dry, stony habitats or scree. They have woody-based stems, and produce opposite, usually more or less ovate, toothed, mid- to dark green or blue-green leaves, stalkless or with very short stalks. They are cultivated for their erect, axillary racemes of small, saucer-shaped, usually white, pink, lilac, or blue flowers, frequently with contrasting markings; each flower has 4, rarely 5, often pointed, unequal petals. Often mat-forming or decumbent, they are effective tumbling over walls or large rocks, or growing through shrubs, and are also suitable for a gravel bed.

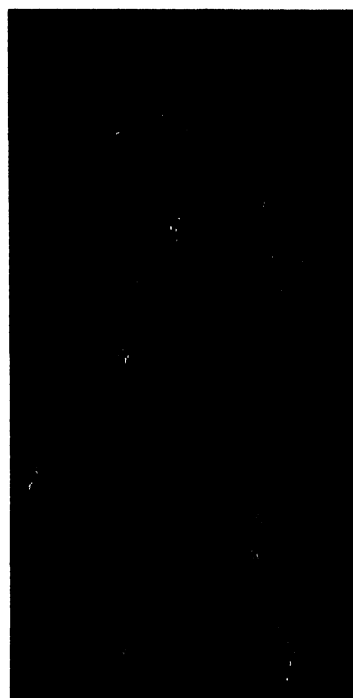
- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in full sun. In frost-prone climates, shelter from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Take semi-ripe cuttings in early or midsummer.
- **PESTS AND DISEASES** Slugs may eat young growth.

**P. x bidwillii** 'Kea'. Prostrate, mat-forming, evergreen subshrub with oblong to obovate, leathery, dark green leaves, to 6mm (¼in) long. Produces short, slender racemes of saucer-shaped, crimson-veined white flowers, to 8mm (¾in) across, in summer. ‡ 10cm (4in), ↔ 15cm (6in). \*\*\*

**P. catarractae** Decumbent or upright, evergreen subshrub with ovate to elliptic or lance-shaped, shallowly to sharply toothed, dark green leaves, to 4cm (1½in) long, tinged purple when young. In summer, produces racemes



Parahebe catarractae



Parahebe perfoliata

of saucer-shaped, purple-veined white flowers, 1cm (½in) across, with red eyes. ‡ 30–50cm (12–20in). New Zealand. \*\*\*

**P. hookeriana.** Mat-forming, evergreen subshrub with crowded, overlapping, broadly ovate to oblong or oval, deeply toothed, leathery, sparsely hairy, mid-green leaves, to 1.5cm (½in) long. Saucer-shaped, white to lavender-blue flowers, to 1cm (½in) across, each usually with a crimson eye, are borne in racemes in summer. ‡ 15cm (6in), ↔ 50cm (20in). New Zealand (North Island). \*\*\*

**P. lyallii.** Variable, prostrate, stem-rooting, semi-evergreen shrub with rounded to ovate, leathery, toothed to scalloped, dark green leaves, to 1cm

(½in) long. In early summer, bears dense racemes of saucer-shaped, usually purple-veined, white to pink flowers, 1cm (½in) across, with red eyes. ‡ 25cm (10in), ↔ 50cm (20in). New Zealand. \*\*\*

**P. perfoliata** syn. *Veronica perfoliata* (Digger's speedwell). Woody-based, evergreen perennial with arching, spreading stems. Bears pairs of broadly ovate, toothed, slightly leathery, glaucous, blue- or grey-green leaves, 5cm (2in) long, overlapping at the bases, each pair arranged at right-angles to the next pair. In late summer, produces racemes of saucer-shaped blue flowers, 6–10mm (¼–½in) across. ‡ 60–75cm (24–30in), ↔ 45cm (18in). S.E. Australia. \*\*

- ▷ **Parapara** see *Pisonia umbellifera*

## PARAQUILEGIA

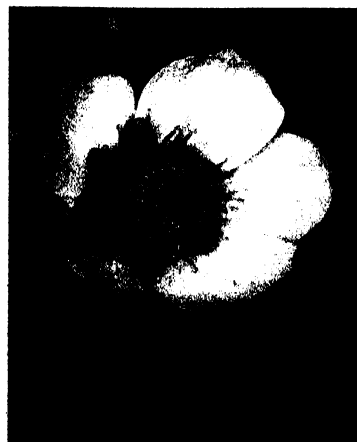
RANUNCULACEAE

Genus of 4–6 species of tufted perennials occurring in rock crevices and scree in the Himalayas and mountains of C. Asia and China. They are grown for their solitary, short-stalked, cup-shaped flowers, produced in spring, and for their fern-like, ternate to 3-ternate, often grey or blue-green leaves, arranged alternately. These attractive alpine plants are suitable for a scree bed, trough, or alpine house, but may be difficult to establish; they grow best in climates with cool summers and cold, dry winters.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Outdoors, grow in poor, sharply drained, alkaline soil in full sun. Protect from winter wet. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass, and prone to damage by slugs and snails.

**P. anemonoides** syn. *P. grandiflora*. Tufted perennial producing long-stalked, 2- or 3-ternate, blue-green leaves, 3cm (1¼in) long, with many, deeply lobed segments. In late spring, produces violet-blue, purple-blue, or pale lilac, occasionally white flowers, 2.5cm (1in) across, with golden nectaries and yellow anthers. ‡ 10–10cm (4in). C. Asia, Himalayas, W. China. \*\*\*

**P. grandiflora** see *P. anemonoides*.



Paraquilegia anemonoides

- ▷ *Paraserianthes* see *Albizia*  
*P. lophantha* see *A. lophantha*  
 ▷ *Parasol tree*, Chinese see *Firmiana simplex*  
 ▷ *Parilla*, Yellow see *Menispermum canadense*

## PARIS syn. DAISWA

TRILLIACEAE

Genus of about 20 species of rhizomatous perennials occurring in woodland from Europe to the Caucasus, and from the Himalayas to E. Asia. Erect stems each bear a whorl of 4 or more very variable, lance-shaped to ovate, mid- or dark green leaves, just below a solitary, terminal, wheel-shaped, spider-like, or star-shaped flower, with protruding stamens. The flowers are followed by fleshy, capsular fruits with shiny, black or red seeds; these may cause mild stomach upset if ingested. Suitable for a woodland or peat garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, fertile, leafy soil in full or partial shade. Leave plants undisturbed to increase year by year.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Divide after the foliage has died down.
- **PESTS AND DISEASES** Slugs may attack rhizomes and young growth.

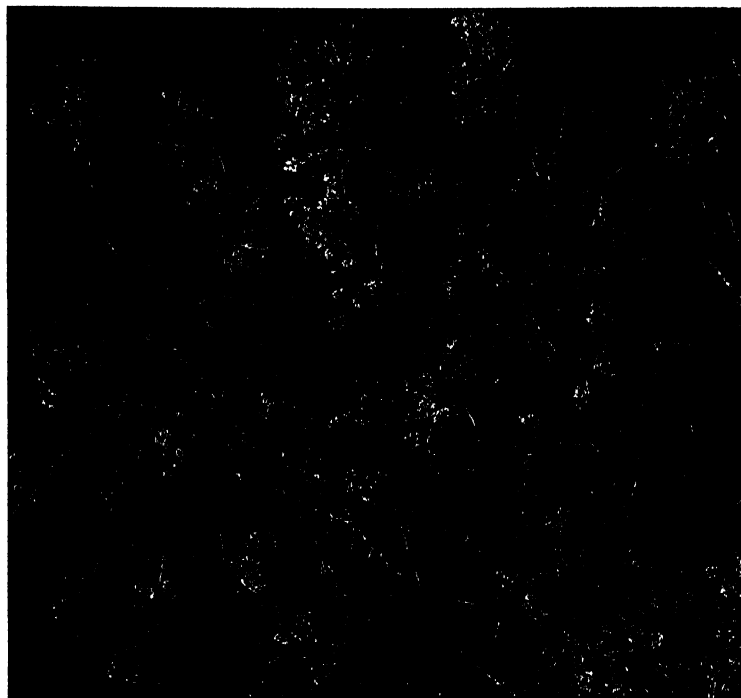
*P. polyphylla*, syn. *Daiswa polyphylla*. Slowly spreading perennial with short rhizomes and erect, smooth stems, each producing a whorl of 6–12 oblong to inversely lance-shaped, mid-green leaves, 8–18cm (3–7in) long, rounded at the bases. Solitary, spider-like flowers, each consisting of 4–8 narrow green outer tepals, 2.5–10cm (1–4in) long, and thread-like, yellowish green inner tepals, to 10cm (4in) long, with numerous stamens, are borne in summer. Angled, almost spherical green capsules, to 2cm (¾in) across, split to reveal shiny red seeds when ripe, †60–90cm (24–36in), ↔ 30cm (12in). Himalayas to Burma, Thailand, W. China. \*\*\*

*P. quadrifolia*. Upright perennial with creeping rhizomes and erect stems, each with a whorl of usually 4, sometimes 5 or 6, ovate, mid-green leaves, 5–15cm (2–6in) long. In late spring, bears solitary, star-shaped flowers, 4–7cm (1½–3in) across, with mid-green outer tepals, white inner tepals, and twice as many stamens as inner tepals. Bears blue-black, spherical, berry-like capsules, 1cm (½in) across. †15–40cm (6–16in), ↔ 30cm (12in). Eurasia. \*\*\*

## PARKINSONIA

CAESALPINIACEAE/LEGUMINOSAE

Genus of more than 12 species of deciduous or evergreen shrubs and trees from dry savannah or scrubland in the drier regions of Africa, S. North America, and Central America. They are grown for their attractive flowers and delicate foliage. The branches have pairs of spines at each node, and bear alternate, 2- or 3-pinnate leaves with very small, light to mid- or yellow-green leaflets. The mostly yellow, red-spotted flowers, with spreading, clawed petals, are borne in short, usually axillary racemes from the upper leaf nodes, followed by leathery or woody, pea-like

*Parkinsonia aculeata*

Pods. Grow as specimen trees. In frost-prone areas, grow in a cool or temperate greenhouse.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with low humidity. From spring to summer, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass, after flowering.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*P. aculeata* ■♀ (Jerusalem thorn). Small, spreading, often weeping, deciduous tree, or occasionally large shrub, bearing spiny green stems and branchlets. Slender, 2-pinnate, stalkless, mid-green leaves, to 30cm (12in) long, have distinctive flat midribs and many tiny, ovate to oblong leaflets, 2–5mm (¼–¼in) long, often quickly deciduous; they fold up at night. In spring, bears racemes of 2–15 cup-shaped, bright yellow flowers, to 2cm (¾in) across, with orange-spotted standard petals and orange-red stamens. †to 10m (30ft), ↔ 5–8m (15–25ft). S. USA, Mexico; widely naturalized in tropical and subtropical regions. ☀ (min. 5°C/41°F)

## PARNASSIA

Bog star, Grass of Parnassus

PARNASSIACEAE/SAXIFRAGACEAE

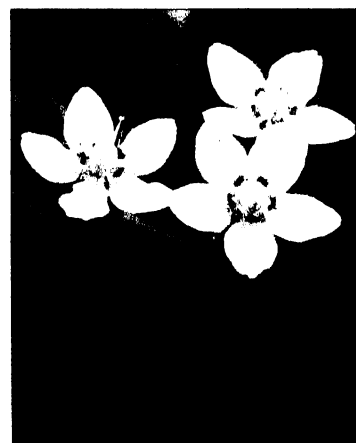
Genus of 15 species of herbaceous perennials found in bogs in temperate regions in the N. hemisphere. They produce basal rosettes of broadly ovate, heart-, or kidney-shaped, mid- to dark green leaves. They are grown for their large, solitary, bowl- or saucer-shaped, white to pale yellow flowers, with yellow, nectar-bearing stamens, borne on upright stems in spring,

summer, or early autumn. Grow in wet soil in a rock garden or bog garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, poor to moderately fertile, wet but not stagnant soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn; keep moist. Divide in autumn or spring.
- **PESTS AND DISEASES** Susceptible to slug and snail damage.

*P. fimbriata*. Rosette-forming perennial with kidney-shaped, mid-green basal leaves, 2–5cm (¾–2in) long, and long-stalked, broadly ovate stem leaves, 2cm (¾in) long. Solitary, bowl-shaped white flowers, 3–4cm (1¼–1½in) across, are borne in late summer and early autumn. †↔ 20–60cm (8–24in). North America (Alaska to California). \*\*\*

*P. palustris* ■ (Grass of Parnassus). Rosette-forming perennial with ovate, heart-shaped, pale green leaves, to 3cm (1¼in) long. Slender stems bear solitary, green-veined white flowers, 2.5cm (1in) across, with yellow nectar glands, in late spring and early summer. †20cm (8in), ↔ 10cm (4in). N. temperate regions. \*\*\*

*Parnassia palustris*

## PAROCHETUS

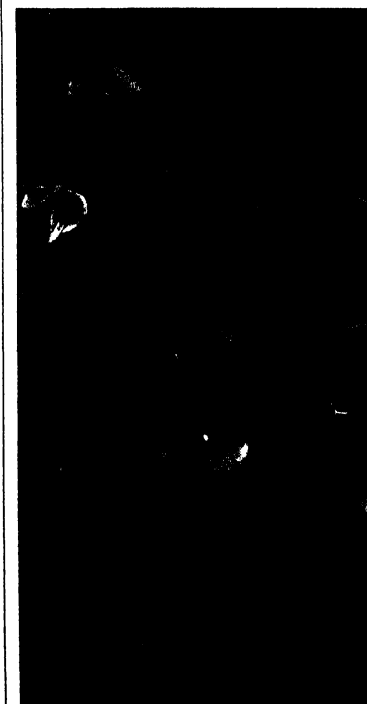
LEGUMINOSAE/PAPILIONACEAE

Genus of 2 species (often confused in cultivation) of trailing, deciduous or evergreen perennials found in montane habitats in E. Africa, the Himalayas to Sri Lanka, S.W. China, and S.E. Asia. They are grown for their clover-like leaves and bright blue, occasionally white, pea-like flowers. Grow in a rock garden or alpine house. *P. africana* is ideal in a hanging basket.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in any moist but well-drained soil in partial shade, but protect from winter wet. Plants may be short-lived, so propagate regularly and overwinter young plants under glass. In an alpine house, grow in a mix of equal parts loam-based potting compost (J1 No.2), leaf mould, and grit.
- **PROPAGATION** Divide in spring, or separate rooted runners when in growth.
- **PESTS AND DISEASES** May be damaged by slugs and snails.

*P. africana* ■ (Shamrock pea).

Prostrate, mat-forming, non-tuberous, evergreen perennial with freely rooting stems. Each leaf has 3 inversely heart-shaped, rich dark green leaflets, to 3cm (1¼in) long, with bold, dark brown horseshoe markings. Solitary or paired, bright blue flowers, 2.5cm (1in) across, are borne mainly from late autumn to late spring. †10cm (4in), ↔ 60–100cm (24–39in). Mountains of E. Africa. \*  
*P. communis* ♀ Prostrate, tuberous-rooted, deciduous perennial with trailing stems. Leaves are divided into 3 inversely heart-shaped, mid-green leaflets, to 2cm (¾in) long, with irregular bronze-brown horseshoe markings. Produces a succession of solitary or paired, bright blue flowers, 2.5cm (1in) across, in late summer and autumn. †10cm (4in), ↔ 30cm (12in) or more. Himalayas to Sri Lanka, S.W. China, S.E. Asia. \*\*\*

*Parochetus africana*

# PARODIA syn. ERIOCACTUS, NOTOCACTUS, WIGGINSIA

CACTACEAE

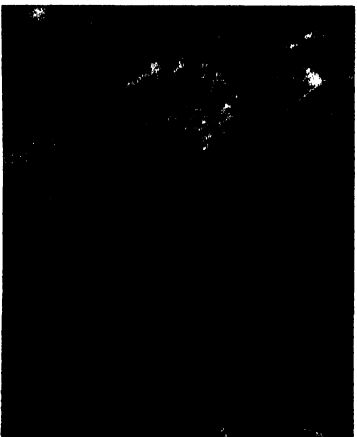
Genus of 35–50 species of simple or clustering, mainly spherical, many-ribbed, spiny, perennial cacti, sometimes becoming columnar and sometimes offsetting from the bases. The genus includes many species transferred from *Eriocactus*, *Notocactus*, and *Wigginsia*. They occur mainly in the highlands of Colombia, Brazil, Bolivia, Paraguay, Argentina, and Uruguay. Solitary, diurnal, bell- to funnel-shaped flowers develop near or at the crowns. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse. In warmer climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full or bright filtered light. From mid-spring to late summer, water moderately and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Keep barely moist at other times. Outdoors, grow in sharply drained, moderately fertile soil in full sun, with some midday shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or summer.
- **PESTS AND DISEASES** Vulnerable to mealybugs and, while flowering, aphids.

***P. brevihamata*** ■ *syn. Notocactus brevihamatus*. Simple or clustering cactus producing spherical, olive-green stems, each with 20–26 closely set ribs, rounded tubercles, white to yellow areoles, and yellow, later brownish



*Parodia brevihamata*



*Parodia chrysacanthion*



*Parodia erinacea*

yellow spines (about 16 radials, 1–4 slightly longer centrals). Funnel-shaped, lemon-yellow, sometimes red-tinted flowers, 4cm (1½in) across, are borne in spring.  $\uparrow$  to 6cm (2½in). S. Brazil.  $\ominus$  (min. 10°C/50°F)

***P. chrysacanthion*** ■ Simple cactus producing a spherical to depressed-spherical, pale green stem with about 24 spirally arranged, warty ribs, and the crown covered with thick yellow wool. Yellowish white areoles bear yellow spines (30–40 fine radials, 1 or more centrals). Funnel-shaped yellow flowers, 2cm (¾in) across, develop in spring.  $\uparrow$  8–12cm (3–5in),  $\leftrightarrow$  10cm (4in). N. Argentina.  $\ominus$  (min. 10°C/50°F)

***P. claviceps***, *syn. Notocactus claviceps*. Simple or clustering cactus producing spherical to short-cylindrical, dark green stems, each with 23–30 ribs. White areoles bear wide-spreading, semi-pendent, yellow spines (5–8 radials, 1–3 centrals). Funnel-shaped, sulphur-yellow flowers, 5cm (2in) across, appear in summer.  $\uparrow$  10–50cm (4–20in),  $\leftrightarrow$  12cm (5in). S. Brazil.  $\ominus$  (min. 10°C/50°F)

***P. concinna***, *syn. Eriocactus apricus, Notocactus apricus, N. concinnus*. Simple cactus producing a flattened-spherical, 15- to 32-ribbed, dark green stem with a woolly crown, white areoles, and white, pale yellow, brown, or red-brown spines (10–12 radials, 4–6 or more, longer, slightly darker centrals). Funnel-shaped, red-tipped, deep lemon-yellow flowers, 5–8cm (2–3in) across, are produced in spring.  $\uparrow$  to 6cm (2½in),  $\leftrightarrow$  10cm (4in). S. Brazil, Uruguay.  $\ominus$  (min. 10°C/50°F)

***P. erinacea*** ■ *syn. Wigginsia erinacea, W. vorwerkiana*. Freely offsetting cactus



*Parodia haselbergii*



*Parodia leninghausii*

with spherical to short-cylindrical, light to dark green stems, 6–30cm (2½–12in) thick, each with 15–30 spiralling ribs, grey areoles, and off-white, grey, or brown spines (2–12 radials, 1 longer central). In summer, bears funnel-shaped, glossy yellow flowers, 4cm (1½in) across.  $\uparrow$  15cm (6in) or more,  $\leftrightarrow$  25cm (10in). S. Brazil, Uruguay, N.E. Argentina.  $\ominus$  (min. 10°C/50°F)

***P. graessneri***, *syn. Notocactus graessneri*. Simple cactus producing a spherical, dark green stem with an angled, spiny crown and 50–60 heavily warty ribs. White areoles bear both pale to golden yellow and pale brown to white spines (about 55 radials, 5 or 6 centrals). In spring, bears funnel-shaped, pale yellow-green flowers, 2cm (¾in) across.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  10cm (4in). S. Brazil.  $\ominus$  (min. 10°C/50°F)

***P. haselbergii*** ■ *syn. Notocactus haselbergii* (Scarlet ball cactus). Simple cactus, rarely offsetting from the base, with a spherical, greyish green stem, to 15cm (6in) thick, with a woolly crown set at an angle, and with 30–60 or more ribs. White-woolly areoles produce yellowish white to yellow spines (25–60 radials, 3–5 slightly longer centrals).



*Parodia mammulosa*

Funnel-shaped, bright orange-red or orange-yellow flowers, 1.5cm (½in) across, appear from winter to spring.  $\uparrow$  4–15cm (1½–6in),  $\leftrightarrow$  18cm (7in) in clusters. S. Brazil.  $\ominus$  (min. 10°C/50°F)

***P. leninghausii*** ■ *syn. Eriocactus leninghausii*. Simple or clustering cactus with spherical, later columnar, mid-green stems, each to 10cm (4in) thick, with a woolly crown set at an angle, and with 30–35 ribs. White-woolly areoles bear pale yellow, deeper yellow, or pale brown spines (15–20 or more radials, 3 or 4 centrals). Funnel-shaped, bright yellow or lemon flowers, 4–5cm (1½–2in) across, are borne in summer.  $\uparrow$  to 60cm (24in),  $\leftrightarrow$  20cm (8in) in clusters. S. Brazil.  $\ominus$  (min. 10°C/50°F)

***P. liliputana*** *see Blossfeldia liliputana*.

***P. magnifica***, *syn. Notocactus magnifica*. Simple, sometimes clustering cactus with spherical, later columnar, 11- to 15-ribbed, bluish green stems, to 15cm (6in) thick. Grey-felted areoles bear yellow or brown spines (12–15 or more radials, up to 12 longer centrals). Funnel-shaped, sulphur-yellow flowers, 5cm (2in) across, develop in summer.  $\uparrow$  7–15cm (3–6in),  $\leftrightarrow$  to 45cm (18in). S. Brazil.  $\ominus$  (min. 10°C/50°F)

***P. mammulosa*** ■ *syn. Notocactus mammulosus, N. submammulosus*. Simple cactus producing a spherical, dark green stem with a woolly crown and 13–21 heavily warty ribs. White areoles bear white, off-white, grey, or pale brown spines (6–25 radials, 2–4 longer centrals). Funnel-shaped, pale to golden yellow flowers, 3.5–5cm (1½–2in) across, with bold red stigmas, develop in summer.  $\uparrow$  10–13cm (4–5in),  $\leftrightarrow$  6cm (2½in). S. Brazil, Uruguay, N.E. Argentina.  $\ominus$  (min. 10°C/50°F)

***P. microsperma***, *syn. P. mutabilis* var. *sanguiniflora, P. sanguiniflora*. Simple cactus producing a depressed-spherical to spherical, sometimes cylindrical, mid-green stem with 15–21 warty ribs. White areoles bear white and red to brown spines (10–25 radials, 3 or 4 longer centrals). Funnel-shaped, yellow

or red flowers, 3.5cm (1½in) across, are borne from spring to summer. †20cm (8in), ↔ 10cm (4in). N. Argentina. ♀ (min. 10°C/50°F)

***P. mutabilis***, syn. *Notocactus mutabilis*. Simple cactus producing a spherical, glaucous, mid-green stem with a white-woolly, brown-spiny crown and 25 or more, spirally arranged, warty ribs. White-woolly areoles bear white and yellow, reddish brown, or orange-brown spines (20–50 fine, almost hair-like, radials, 4–10 strong, sometimes hooked centrals). Funnel-shaped, golden yellow flowers, 3–5cm (1¼–2in) across, are produced from spring to summer. †↔ 8cm (3in). N. Argentina. ♀ (min. 10°C/50°F). **var. *sanguiniflora*** see *P. microperma*.

***P. nivosa*** ■ Simple cactus producing a spherical to short-cylindrical, dull green stem with a white-woolly crown and 16–20 spirally arranged, warty ribs. White-felted areoles have white spines (15–20 radials, 3–5 longer centrals). Funnel-shaped, brilliant red flowers, 3cm (1¼in) across, develop in spring. †15cm (6in), ↔ 6cm (2½in). N. Argentina. ♀ (min. 10°C/50°F)

***P. ocampoii***. Clustering cactus with spherical to short-cylindrical, 13- to 20-ribbed, dark green stems, 6cm (2½in) thick, with grey areoles and pale reddish brown spines (8 or 9 radials, 1 smaller central). Funnel-shaped, golden yellow flowers, 3cm (1¼in) across, are borne from spring to summer. †7–20cm (3–8in), ↔ 15cm (6in). C. Bolivia. ♀ (min. 10°C/50°F)

***P. ottonis***, syn. *Notocactus ottonis*. Variable, simple, later clustering cactus with spherical or cylindrical, 6- to 15-ribbed, light or dark green or bluish or purplish green stems, 5–15cm (2–6in) thick, each with a white-woolly crown. Pale brown-woolly areoles produce off-white to yellow and brown spines (10–18 radials, 3–6 centrals). Funnel-shaped, deep yellow, rarely orange-red flowers, 4–6cm (1½–2½in) across, are borne in summer. †3–15cm (1¼–6in), ↔ 18cm (7in). S. Brazil, S. Paraguay, N.E. Argentina, Uruguay. ♀ (min. 10°C/50°F)

***P. penicillata*** ♀ syn. *Notocactus penicillata*. Simple, spherical, later cylindrical cactus producing a mid-green stem with about 17–20 spiralling ribs and close-set tubercles. Brown-woolly areoles bear white, off-white, pale yellow, or pale brown spines (about 40 radials, 10–20 centrals). In summer,



*Parodia rutilans*

bears funnel-shaped, orange-yellow or vermilion-red flowers, 5cm (2in) across. †30cm (12in), ↔ 12cm (5in). N. Argentina. ♀ (min. 10°C/50°F)

***P. rutilans*** ■ syn. *Notocactus rutilans*. Simple cactus producing a spherical to cylindrical, bluish dark green stem with a slightly sunken, white-woolly crown and 18–24 spirally arranged ribs. White-woolly areoles produce reddish brown and brown-tipped white spines (14–16 radials, 2 slightly longer centrals). In summer, bears funnel-shaped flowers, 3–4cm (1¼–1½in) across, with pink-tipped petals and yellowish white throats. †↔ 5cm (2in). N. Uruguay. ♀ (min. 10°C/50°F)

***P. sanguiniflora*** see *P. microperma*.

***P. schumanniana***. Usually simple cactus producing a spherical to cylindrical, mid-green stem with 21–48 straight, acute ribs. White-woolly areoles bear golden yellow, brown, or reddish brown, later grey spines (about 4 radials, 3 or 4 shorter centrals). Produces funnel-shaped, lemon to golden yellow flowers, 4.5–7cm (1¾–3in) across, in summer. † to 1.8m (6ft), ↔ 30cm (12in). S. Paraguay, N.E. Argentina. ♀ (min. 10°C/50°F)

***P. scopa***, syn. *Notocactus scopa* (Silver ball cactus). Simple or clustering cactus with spherical to cylindrical, 25- to 40-ribbed, dark green stems with spiny, woolly crowns. Grey areoles bear white, pale yellow, red, or brown spines (35–40 or more radials, 3 or 4 longer centrals). Funnel-shaped, bright yellow flowers, 4cm (1½in) across, appear in summer. †5–50cm (2–20in), ↔ 10cm (4in). S. Brazil, Uruguay. ♀ (min. 10°C/50°F)

## PARONYCHIA

*Whitlow-wort*

CARYOPHYLLACEAE/ILLECEBRACEAE

Genus of about 50 species of annuals and evergreen, mat-forming perennials found mainly in hot, dry habitats around the Mediterranean and in N. Africa, with some in North America. They have linear to lance-shaped, silvery green leaves and dense, axillary cymes of very small, cup-shaped flowers surrounded by conspicuous, translucent silver bracts. Cultivated for their flowers and foliage, they are good carpeting plants for a rock garden.

• **HARDINESS** Fully hardy to half hardy.  
• **CULTIVATION** Grow in sharply drained, poor to moderately fertile soil in full sun.



*Parodia nivosa*

- **PROPAGATION** Divide in spring. Take stem-tip cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

***P. capitata***, syn. *P. nivea*. Vigorous, mat-forming perennial with linear-lance-shaped to oblong, silvery grey-green leaves, to 6mm (¼in) long. In summer, bears tiny green flowers in cymes to 1cm (½in) across, enclosed by ornamental, ovate, silvery, papery bracts. †5cm (2in), ↔ to 30cm (12in). Mediterranean. \*\*\*

***P. kapela* subsp. *serpyllifolia***. Very compact, mat-forming perennial with ovate to lance-shaped or elliptic, silvery bluish green leaves, to 4mm (¼in) long. In summer, bears tiny, greenish white flowers in cymes to 2cm (¾in) across, enclosed by silvery white, papery bracts. † to 5cm (2in), ↔ to 20cm (8in). Mediterranean. \*\*\*

***P. nivea*** see *P. capitata*.

▷ **Parrot feather** see *Myriophyllum aquaticum*

## PARROTIA

HAMAMELIDACEAE

Genus of one species of deciduous tree occurring in forests in the Caucasus and N. Iran. *P. persica* is cultivated for its simple, alternate, rich green foliage, attractively coloured in autumn, for its peeling bark, and for its petalless flowers with bright red stamens, borne in dense clusters along the branches in late winter or early spring. Grow as a specimen tree, or in an open site in woodland.

- **HARDINESS** Fully hardy, but flower buds may be damaged by harsh frosts.
- **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in full sun or partial shade. Grow in acid soil for best autumn colour. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take green-wood cuttings in early summer, or semi-ripe cuttings in mid- and late summer.
- **PESTS AND DISEASES** Trouble free.

***P. persica*** ■ ♀ ♂ (Persian ironwood). Dense, spreading, short-trunked tree with peeling, grey and fawn bark when mature. Obovate, glossy, rich green leaves, to 12cm (5in) long, turn yellow, orange, and red-purple in autumn. Tiny, spider-like red flowers are borne in spherical clusters, 1cm (½in) across, in late winter or early spring, before the leaves. †8m (25ft), ↔ 10m (30ft). Caucasus, N. Iran. \*\*\*. 'Pendula' ♀ is very compact and weeping. †1.5m (5ft), ↔ 3m (10ft).

## PARROTIOPSIS

HAMAMELIDACEAE

Genus of one species of deciduous shrub found in forests in the W. Himalayas. It is cultivated for its showy flowerheads of petalless flowers, each with 20 or more yellow stamens surrounded by large bracts. Leaves are simple and arranged alternately. Grow as a specimen shrub.

- **HARDINESS** Fully hardy; but late frosts may damage flowerheads.
- **CULTIVATION** Grow in deep, fertile, preferably lime-free, moist but well-drained soil in full sun or partial shade. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take green-wood cuttings in early summer, or semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

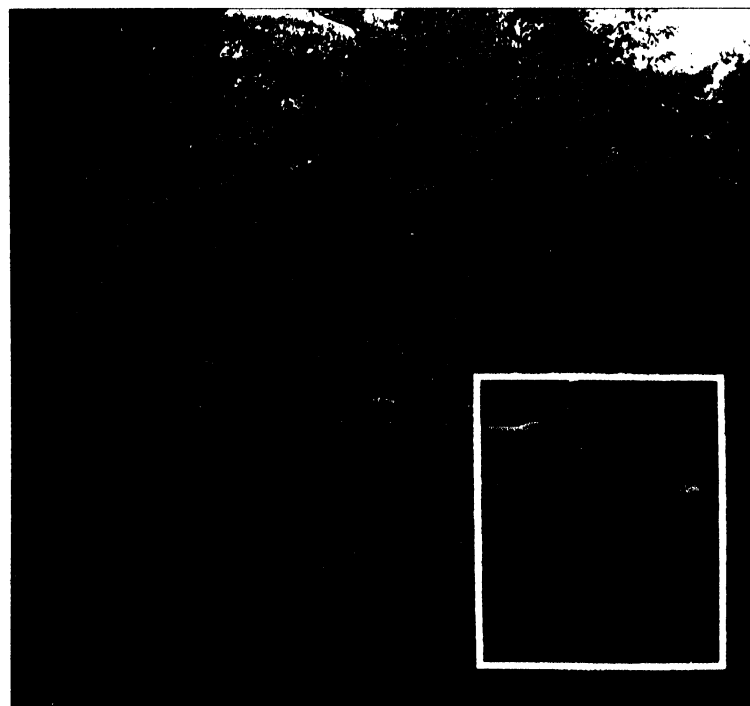
***P. jacquemontiana*** ♀ Upright shrub, or sometimes small tree, with very broadly ovate to ovate, mid-green leaves, to 10cm (4in) long. From mid-spring to early summer, bears spider-like flowerheads, to 5cm (2in) across, consisting of yellow-anthered stamens surrounded by conspicuous white bracts. †6m (20ft), ↔ 4m (12ft). W. Himalayas. \*\*\*

▷ **Parrot leaf** see *Alternanthera ficoidea*

▷ **Parrot's beak** see *Lotus berthelotii*

▷ **Parrot's bill** see *Clanthus puniceus*

▷ **Parrot's flower** see *Heliconia psittacorum*



*Parrotia persica* (inset: leaf detail)

- ▷ **Parsley** see *Petroselinum*, *P. crispum*  
**Cow** see *Anthriscus sylvestris*  
**French** see *Petroselinum crispum* var. *neapolitanum*  
**Hamburg** see *Petroselinum crispum* var. *tuberosum*  
**Italian** see *Petroselinum crispum* var. *neapolitanum*

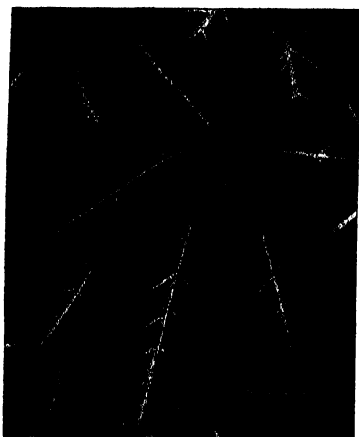
## PARTHENOCISSUS

Virginia creeper

VITACEAE

Genus of about 10 species of deciduous tendril climbers found in forests in the Himalayas, E. Asia, and North America. Some species are twining, but more commonly they cling by disc-like suckers on the tips of tendrils. They are grown for their lobed or fully divided, palmate leaves, usually brightly coloured in autumn. Clusters of inconspicuous flowers, with 5, sometimes 4, short, thick green petals, are produced in summer, and may be followed by dark blue or black berries, to 8mm (½in) across. Grow through a large tree or use to cover a wall or fence. The foliage of wall-grown plants often harbours a variety of wildlife. The berries may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy; *P. henryana* is frost hardy if not grown against a wall.
- **CULTIVATION** Grow in any fertile, well-drained soil in shade or sun; *P. henryana* usually colours best in partial shade. Young plants may need support initially. Pruning group 11, in early winter and, if necessary, also in summer.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take



*Parthenocissus henryana*



*Parthenocissus thomsonii*



*Parthenocissus tricuspidata*

softwood cuttings in early summer, greenwood cuttings in midsummer, or hardwood cuttings in winter.

- **PESTS AND DISEASES** Trouble free.

*P. henryana* [♀] syn. *Vitis henryana* (Chinese Virginia creeper). Woody climber with palmate, dark green leaves composed of 3–5 oval, toothed leaflets, to 12cm (5in) long, conspicuously veined white, and sometimes pink in the centres, turning bright red in autumn. ‡ 10m (30ft). China. \*\*\* (borderline)  
*P. quinquefolia* ♀ syn. *Vitis quinquefolia* (Virginia creeper). Vigorous, woody climber with palmate, dull, mid-green leaves composed of usually 5 oval, sharply toothed leaflets, to 10cm (4in) long, turning brilliant red

in autumn. ‡ 15m (50ft) or more. E. North America. \*\*\*

*P. striata* see *Cissus striata*.

*P. thomsonii* [♂] syn. *Cayratia thomsonii*, *Vitis thomsonii*. Woody climber with palmate, dark green leaves consisting of usually 5 oval, sharply toothed leaflets, to 10cm (4in) long, reddish purple when young, turning purple-green in summer and bright red in autumn. ‡ 10m (30ft). China, Himalayas. \*\*\*  
*P. tricuspidata* [♀] (Boston ivy). Vigorous, woody climber with variable, broadly ovate, deeply toothed, bright green leaves, to 20cm (8in) long, either 3-lobed or with 3 ovate leaflets, turning brilliant red to purple in autumn. ‡ 20m (70ft). China, Korea, Japan. \*\*\*

'Beverley Brook' has purple-tinged summer foliage, turning brilliant red in autumn. 'Lowii' [♂] has small, deeply 3- to 7-lobed leaves, 10cm (4in) long. 'Veitchii' [♂] syn. *Ampelopsis veitchii*, has dark red-purple foliage in autumn.

▷ **Partridge berry** see *Mitchella*, *M. repens*

▷ **Pasque flower** see *Pulsatilla vulgaris*  
**Alpine** see *P. alpina*  
**Eastern** see *P. patens*



*Parthenocissus tricuspidata* 'Veitchii'

## PASSIFLORA

Granadilla, Passion flower

PASSIFLORACEAE

Genus of more than 400 species of mostly evergreen tendril climbers, and a few annuals, perennials, shrubs, and trees. They occur usually in tropical woodland, on rocks, and in grassland, mainly in tropical North, Central, and South America, and also in tropical Asia, Australia, New Zealand, and the Pacific islands. The leaves are usually alternate, simple or 2- to 9-lobed (mainly 3- or 5-lobed), elliptic to rounded or broadly ovate, and often with prominent nectar glands on the margins or stalks. The exotic flowers are mostly produced singly, sometimes in racemes, from the upper leaf axils. Each has a wide, tubular base and 10, sometimes 5 tepals, that spread out flat, reflex, or form a saucer or bowl shape. A stalk in the centre of each flower bears the ovary and stamens, and is surrounded by one or several rings of fleshy filaments (the corona). The ovoid to spherical, edible, usually yellow fruits are very variable in size. Hardy species are ideal for clothing a wall or trellis. In frost-prone areas, grow tender species in a cool to warm greenhouse. In warmer climates, train over a pergola or arch, or through a tree.

- **HARDINESS** Fully hardy to frost tender.

*P. 'Amethyst'*, *P. manicata*, and *P. 'Star of Bristol'* may survive temperatures down to 0°C (32°F) if the wood has been well-ripened in summer.

- **CULTIVATION** Under glass, plant in a greenhouse border or in large tubs of loam-based potting compost (JI No.3) in full light, with shade from hot sun. Water freely when in growth, sparingly in winter. Top-dress annually in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun or partial shade, with shelter from cold, drying winds. Pruning group 11 or 12, if necessary, in early spring.

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Take semi-ripe cuttings in summer. Layer in spring or autumn.

- **PESTS AND DISEASES** Prone to viruses, especially cucumber mosaic virus, and to red spider mites, whiteflies, mealybugs, and scale insects under glass.

*P. alata* ♀ (Maracuja de refresco, Winged-stem passion flower). Robust climber with sparsely branched, 4-



*Passiflora* 'Amethyst'



winged stems and broadly ovate or oblong-ovate, sometimes finely toothed, rich to light green leaves, 8–15cm (3–6in) long. From spring to late summer, bears nodding, fragrant, bowl-shaped, bright carmine-red flowers, 10–12cm (4–5in) across, with curved outer tepals, opening from light crimson buds; coronas have purple, red, and white zones. Bears ovoid to pear-shaped, yellow fruit, 10–15cm (4–6in) long. ‡ to 6m (20ft) or more. Peru to E. Brazil. ☼ (min. 5–7°C/41–45°F)

***P. x alatocaerulea*** (*P. alata* x *P. caerulea*) syn. *P. x belotii*, *P. 'Empress Eugenie'*. Vigorous climber with slender, 4- or 5-winged, often red-tinted stems. Mid-green leaves, 14cm (5½in) long, each have 3 deep, ovate lobes, the central one largest. From summer to autumn, bears fragrant, bowl-shaped white flowers, 11–13cm (4½–5in) across, the longer inner tepals tinted or dotted purple or red; coronas have blue, purple, and white zones. ‡ 5m (15ft) or more. Garden origin. ☼ (min. 5°C/41°F)

***P. x allardii*** (*P. caerulea* 'Constance Elliott' x *P. quadrangularis*). Vigorous, woody tendril climber with 3-lobed, dark green leaves, to 15cm (6in) long. Bowl-shaped, pink-flushed white flowers, to 10cm (4in) or more across, with coronas banded purple, red, and white, are produced from summer to autumn. Bears ovoid, bright orange fruit, to 6cm (2½in) long, without seeds. ‡ 10m (30ft). Garden origin. \*

***P. 'Amethyst'*** ☼♀ syn. *P. amethystina* of gardens, *P. 'Lavender Lady'*, *P. violacea* of gardens. Vigorous climber with smooth, slender stems and deeply 3-lobed, membranous, rich green leaves, 6–8cm (2½–3in) long. In late summer and autumn, bears bowl-shaped, purple to purple-blue flowers, to 11cm (4½in) across, with green anthers, tepals that reflex as the flower fades, and darker corona filaments. Bears ellipsoid orange fruit, to 6cm (2½in) long. ‡ 4m (12ft) or more. Garden origin. ☼ (min. 5°C/41°F)

***P. amethystina* of gardens** see *P. 'Amethyst'*.  
***P. antioquiensis*** ☼♀ syn. *Tacsonia van-volkemii* (Red banana passion flower). Vigorous climber with slender, branched stems and finely toothed, deeply 3-lobed, mid- to deep green leaves, 10–15cm (4–6in) long, downy beneath, each lobe with a slender point; occasionally produces simple, ovate to lance-shaped leaves. Bears long-tubed, bright rose-red, rarely pink flowers, to



*Passiflora caerulea*

14cm (5½in) across, with small violet coronas, mainly in summer. Ellipsoid yellow fruit, to 10cm (4in) long, have a delicate flavour. ‡ 5m (15ft) or more. Colombia. ☼ (min. 5–7°C/41–45°F)

***P. x belotii*** see *P. x alatocaerulea*.

***P. caerulea*** ☼♀ (Blue passion flower). Fast-growing climber with moderately branching, slender, 4-angled, grooved stems bearing rich green leaves, to 10cm (4in) long, divided almost to the base into 3–9, usually 5, oblong lobes. From summer to autumn, bears bowl-shaped, white, sometimes pink-tinted flowers, 7–10cm (3–4in) across, with purple-, blue-, and white-zoned coronas. Ovoid, orange-yellow fruit, to 6cm (2½in) long, are edible but not flavoursome. ‡ 10m (30ft) or more. C. and W. South America. \*\*  
**'Constance Elliott'** ☼♀ has fragrant white flowers with pale blue or white filaments. **'Grandiflora'** has flowers to 15cm (6in) across.

***P. x caeruleoracemosa*** ☼♀ (*P. caerulea* x *P. racemosa*). Variable, vigorous climber with branching, slender, smooth stems and deeply 3- to 5-lobed, rich green leaves, 12–15cm (5–6in) long. From summer to autumn, bears bowl-shaped, red-purple flowers, 10–13cm



*Passiflora caerulea* 'Constance Elliott'



*Passiflora x caeruleoracemosa*

(4–5in) wide, with spreading corona filaments, deep purple to black at the bases and white above. Produces ovoid green fruit, to 6cm (2½in) long. ‡ 6m (20ft) or more. Garden origin. ☼ (min. 5°C/41°F). **'Eynsford Gem'** is shrubby, with pink-mauve flowers and white filaments.

***P. coccinea*** ☼ syn. *P. fulgens*, *P. velutina* (Red granadilla). Vigorous climber with very slender, smooth, red to purple stems, and oblong-ovate, mid-green leaves, 6–14cm (2½–5½in) long, with soft, red-brown hairs and large, lobe-like teeth. From midsummer to autumn, produces saucer-shaped scarlet flowers, 8–10cm (3–4in) across; coronas have purple, pale pink, and white zones. Spherical to ovoid, finely white-woolly fruit, 5cm (2in) long, ripen orange or yellow with darker stripes. ‡ 4m (12ft) or more. N.W. South America. ☼ (min. 10–13°C/50–55°F)

***P. edulis*** (Passion fruit, Purple granadilla). Vigorous, woody climber with 3-lobed, toothed, glossy, mid-green leaves, to 20cm (8in) long. In summer, bears bowl-shaped white flowers, 7cm (3in) across, green beneath, with wavy, purple-zoned white coronas and ovoid,

yellow to purple fruit, 5cm (2in) long. ‡ 5m (15ft). Brazil. ☼ (min. 16°C/61°F)

***P. 'Empress Eugenie'*** see *P. x alatocaerulea*.

***P. x exoniensis*** ♀ (*P. antioquiensis* x *P. mollissima*) syn. *Tacsonia x exoniensis*. Robust climber with branching, slender stems. Downy, rich green leaves, 10cm (4in) long, each have 3 wide-spreading, narrowly lance-shaped, toothed lobes. In summer, produces semi-pendent, long-tubed flowers, 10–13cm (4–5in) wide, dark pink in bud, opening to rose-pink, with short white coronas. Bears banana-shaped fruit, to 9cm (3½in) long, yellow when ripe. ‡ 6m (20ft) or more. Garden origin. ☼ (min. 5°C/41°F)

***P. fulgens*** see *P. coccinea*.

***P. incarnata*** (Maypops). Tendril climber with deeply 3- to 5-lobed, finely toothed, dark green leaves, to 15cm (6in) long. Bowl-shaped, scented, pale purple to nearly white flowers, 8cm (3in) across, with purple and white coronas, are produced in summer, followed by ovoid yellow fruit, to 6cm (2½in) long. ‡ 2m (6ft). E. USA. \*\*\*

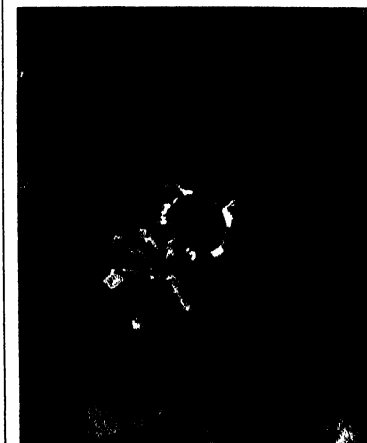
***P. 'Lavender Lady'*** see *P. 'Amethyst'*.  
***P. manicata*** ☼ Robust climber with branching, angular stems bearing glossy,



*Passiflora antioquiensis*



*Passiflora coccinea*



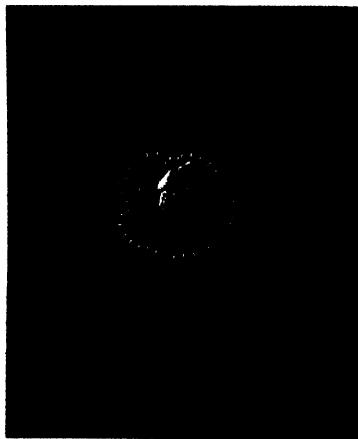
*Passiflora manicata*

*Passiflora quadrangularis*

rich green leaves, to 10cm (4in) long, with 3 broad, ovate, sharply toothed lobes, densely woolly beneath. From spring to autumn, produces saucer-shaped, bright red flowers, 10cm (4in) across, white at the bases, with short, purple-blue and white coronas. Bears ovoid, glossy, deep green fruit, to 5cm (2in) long, 1.3m (10ft). N. South America. ☼ (min. 5–7°C/41–45°F)

***P. mollissima*** ♀ syn. *Tacsonia mollissima* (Banana passion flower). Fast-growing climber with moderately branching, slender, downy stems. Softly white-downy, ovate-oblong, mid-green leaves, 10cm (4in) long, have heart-shaped bases and 3 broad, toothed lobes. From midsummer to late autumn, bears pendent, long-tubed, bowl-shaped, pink to coral-pink flowers, 6–9cm (2½–3½in) across; the inner 5 tepals are shorter and darker-tinted than the outer 5, and the corona is reduced to a purple, warty ring. Produces oblong-ovoid, flavoursome yellow fruit, to 8cm (3in) long, 1.5m (15ft) or more. N. South America. ☼ (min. 7°C/45°F)

***P. organensis***. Woody climber with variable, 2-lobed, rarely 3-lobed, usually broadly wedge-shaped, mid-green leaves,

*Passiflora racemosa*

2–4cm (¾–1½in) long, flecked cream and pink above, purple beneath. In summer, bears bowl-shaped, cream to dark purple flowers, 5cm (2in) across, with similarly coloured coronas. Produces spherical, yellow-green fruit, to 1.5cm (½in) across, 1.25m (8ft). Brazil. ☼ (min. 16°C/61°F)

***P. quadrangularis*** ♂♀ (Giant granadilla). Strong-growing, tuberous-rooted climber with sparsely branched, 4-angled, winged stems and broadly ovate, rich green leaves, 10–25cm (4–10in) long, with abrupt, slender points. From midsummer to autumn, bears nodding, fragrant, bowl-shaped, pale to deep red flowers, to 12cm (5in) across; they have massive coronas of wavy filaments, 6cm (2½in) long, banded red-purple and white with pink, red, or violet mottling. Greenish yellow to orange, oblong-ovoid fruit, 20–30cm (8–12in) long, have sweetly acid pulp, 1.5m (50ft) or more. Central and South America, West Indies. ☼ (min. 13°C/55°F)

***P. racemosa*** ♂♀ (Red passion flower). Vigorous, woody climber with slender, angled stems. The leathery, glossy, mid-green leaves, to 10cm (4in) long, are ovate and simple, or with 3 oblong lobes. Bowl-shaped, bright red flowers, 12cm (5in) across, with purple and white coronas, are borne in pendent racemes, to 30cm (12in) long, in summer and autumn. Produces oblong, deep green fruit, to 8cm (3in) long, becoming paler as they ripen, 1.5m (15ft). Brazil. ☼ (min. 16°C/61°F)

***P. sanguinea*** see *P. vitifolia*.

***P. 'Star of Bristol'*** ♀ Vigorous climber with sparsely branched, slender stems, and rounded, 3- to 5-lobed, dark green leaves, 8–10cm (3–4in) long, the central lobe longest. From summer to autumn, bears saucer- or star-shaped, rich mauve flowers, 10–11cm (4–4½in) across, with darker, spreading coronas. Bears ovoid, bright orange fruit, 5cm (2in) long, 1.2m (12ft). ☼ (min. 5–7°C/41–45°F)

***P. velutina*** see *P. coccinea*.

***P. violacea*** of gardens see *P. 'Amethyst'*.

***P. vitifolia***, syn. *P. sanguinea*. Vigorous climber with moderately branching, slender, downy, reddish brown stems. Glossy, dark green leaves, 7–14cm (3–5½in) long, have 3 ovate, toothed or scalloped lobes, minutely hairy on the veins. From early summer to autumn, bears bowl-shaped, glowing, bright red flowers, 12–19cm (5–7in) across, with coronas of short, pale red or white filaments and longer, dark red or yellow ones. Produces ovoid, downy, yellow-green fruit, 6cm (2½in) long, with white mottling, 1.5m (15ft) or more. Nicaragua to Peru. ☼ (min. 13°C/55°F)

▷ **Passion flower** see *Passiflora*

**Banana** see *P. mollissima*

**Blue** see *P. caerulea*

**Red** see *P. racemosa*

**Red banana** see *P. antioquiensis*

**Winged-stem** see *P. alata*

▷ **Passion fruit** see *Passiflora edulis*

## PATERSONIA

IRIDACEAE

Genus of 13–18 species of tufted, evergreen, rhizomatous perennials occurring in dry grassland or scrub in Borneo, New Guinea, and Australia. They are cultivated for their short-lived, iris-like, blue or purple, occasionally yellow or white flowers, with 3 broad, spreading outer tepals and 3 smaller, erect inner tepals, the inner ones sometimes absent. They are produced few to many in each inflorescence, on erect to spreading stems in spring or summer. Fans of linear, mid- to grey-green leaves arise from the bases of the stems. In frost-prone areas, grow in a cool greenhouse or conservatory. In warmer areas, grow in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit, in full light. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in light, fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F), or divide, in autumn.

• **PESTS AND DISEASES** Trouble free.

***P. glabrata***. Rhizomatous perennial with very narrow, mid-green leaves, to 30cm (12in) long. Purple flowers, to

*Patersonia sericea*

3.5cm (1½in) long, are produced in summer on stems 15cm (6in) long, 1 to 30cm (12in), 23cm (9in). Australia (Victoria, New South Wales, Queensland). ☼ (min. 5°C/41°F)

***P. occidentalis***. Tuft-forming, rhizomatous perennial with few or many mid-green leaves, to 40cm (16in) long. In spring and summer, purple or deep blue flowers, 3.5cm (1½in) long, are borne on stems to 50cm (20in) long, 1 to 50cm (20in), 30cm (12in). Australia (Western Australia). ☼ (min. 5°C/41°F)

***P. sericea*** ♂ Rhizomatous perennial with very rigid, erect, mid-green leaves, 55cm (22in) long. Deep purple-blue flowers, 3.5cm (1½in) long, are produced on woolly stems, to 50cm (20in) long, in summer, 1.3m (12in), 23cm (9in). Australia (Victoria, New South Wales, Queensland). ☼ (min. 5°C/41°F)

***P. umbrosa***. Rhizomatous perennial with rigid, mid-green leaves, 60–100cm (24–39in) long. In summer, produces blue flowers, 3–4cm (1¼–1½in) long, on stems 80cm (32in) long, 1 to 1m (3ft), 30cm (12in). Australia (Western Australia). ☼ (min. 5°C/41°F). f. *xanthina* has yellow flowers.

## PATRINIA

VALERIANACEAE

Genus of about 15 species of clump-forming herbaceous perennials occurring in grassy mountain habitats in Siberia and Japan. They are cultivated for their long-stemmed, sometimes corymb-like panicles of small, 5-lobed, cup-shaped, yellow or white flowers, produced in summer. The leaves are mainly basal, ovate to rounded, lobed, palmate, or pinnate, rarely entire, and mid- to dark green. Grow in a woodland garden or rock garden, in a mixed or herbaceous border, or as ground cover.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, humus-rich, moist soil in partial or deep shade.

*Patrinia triloba* var. *palmata*

## PATRINIA

- **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Divide in spring.
- **PESTS AND DISEASES** Young leaves may be damaged by slugs and snails.

**P. triloba.** Clump-forming, stoloniferous perennial with palmately 3- to 5-lobed, mid-green leaves, 6–10cm (2½–4in) across, turning yellow in autumn. In mid- and late summer, branching, red-tinted stems produce panicles, to 10cm (4in) across, of small, fragrant, cup-shaped yellow flowers, each with a short tube and 5 spreading lobes. †20–50cm (8–20in), ↔ 15–30cm (6–12in). Japan. \*\*\*. **var. palmata** ■ has flowers with short spurs.

## PAULOWNIA

### SCROPHULARIACEAE

Genus of 6 species of deciduous trees occurring in woodland in E. Asia. They produce stout shoots and usually large, hairy, opposite, ovate or 3- to 5-lobed, mid- or yellow-green leaves, often with heart-shaped bases. The flower buds are formed in autumn, and open, before the leaves appear, to bell- to trumpet-shaped, foxglove-like flowers, borne in terminal panicles. Grown for their habit, attractive foliage, and showy flowers, they are fine specimen trees for a lawn. They grow and flower best in climates with long, hot summers. In frost-prone areas, grow as pollards, which will produce very large, ornamental leaves.

- **HARDINESS** Fully hardy; young plants may be damaged by frost.
- **CULTIVATION** Grow in fertile, well-

drained soil in full sun. In frost-prone areas, shelter from cold, drying winds. Unripened growth and exposed flower buds may be damaged by late frosts. Pruning group 1, or group 7 if larger leaves are desired.

- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Take root cuttings in winter. Over-winter young plants under glass in their first year.

- **PESTS AND DISEASES** Canker, honey fungus, leaf spot, and powdery mildew may cause problems.

**P. fortunei** □ Broadly columnar tree with stout shoots and ovate, mid-green leaves, to 20cm (8in) long, glossy above and densely hairy beneath. Fragrant flowers, 10cm (4in) long, pale purple outside and creamy white with purple spots inside, are produced in upright panicles in late spring. †↔ 8m (25ft). China, Taiwan. \*\*\*

**P. imperialis** see *P. tomentosa*.

**P. tomentosa** ■ ♀ □ syn. *P. imperialis* (Empress tree, Foxglove tree, Princess tree). Fast-growing, broadly columnar tree with stout shoots and ovate, sometimes shallowly lobed, bright light green leaves, to 30cm (12in) long, hairy above, densely hairy beneath. Fragrant, pinkish lilac flowers, 5cm (2in) long, with purple and yellow marks inside, are borne in upright panicles in late spring. Very tolerant of atmospheric pollution. †12m (40ft), ↔ 10m (30ft). China. \*\*\*

▷ *Paulotis wrightii* see *Acoelorrhaphe wrightii*



*Paulownia tomentosa* (inset: flower detail)

## PAVETTA

### RUBIACEAE

Genus of about 350 species of evergreen shrubs, subshrubs, and trees, related to *Ixora*, found in grassland, thickets, and woodland in tropical and subtropical Africa and Asia. They are grown for their variable, simple leaves, opposite or in whorls of 3, often membranous with tiny black glands, and for their small, tubular flowers with 4 spreading petal lobes (cylindrical to salverform or funnel-shaped), borne in terminal cymes or corymbs. Where temperatures fall below 7°C (45°F), grow in a temperate or warm greenhouse. In warmer regions, grow in a shrub border.

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light with shade from hot sun, and with high humidity. In spring and summer, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.

- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root semi-ripe cuttings in summer, with bottom heat.

- **PESTS AND DISEASES** Trouble free.

**P. caffra** see *P. capensis*.

**P. capensis**, syn. *P. caffra*. Bushy, erect then spreading shrub with white-downy stems and obovate, mid-green leaves, to 5cm (2in) long, with pointed tips. Dense, flattened corymbs, 2.5–4cm (1–1½in) across, of white flowers, 2cm (¾in) long, appear in summer, followed by spherical, glossy black fruit, to 1cm (½in) across. †↔ 1–2m (3–6ft). South Africa (Western Cape, Eastern Cape). ♀ (min. 7°C/45°F)

## PAVONIA

### MALVACEAE

Genus of about 150 species of evergreen perennials, subshrubs, and shrubs, often occurring on sandy soils in tropical and subtropical regions of Africa, Asia, the Pacific islands, and North and South America. They are grown for their brightly coloured flowers, solitary, axillary, or borne in terminal, spherical clusters or panicles, mainly in summer. Petals are spreading, or form a tube surrounded by a bell- or cup-shaped calyx, with a whorl of hairy bracts beneath; the stamens and anthers are often protruding. Most have alternate, linear to broadly ovate or oblong, light to dark green leaves, each with a bract-like stipule at the base of the leaf-stalk. In subtropical and tropical gardens, grow among shrubs or in a border. In cooler areas, grow in a warm greenhouse.

- **HARDINESS** Frost tender.

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light, with high humidity. When in growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, humus-rich, well-drained soil in full sun or partial shade. Pruning group 1; may need restrictive pruning under glass.

## PAXISTIMA

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Red spider mites and whiteflies may be troublesome.

**P. x gledhillii** (*P. mackoyana* x *P. multiflora*) syn. *P. intermedia* of gardens. *P. multiflora* of gardens. Sparsely branched shrub with pointed, elliptic to lance-shaped, glossy, light green leaves, 10–15cm (4–6in) long, with linear to lance-shaped stipules. In late summer, bears solitary, dark purple flowers, to 3cm (1¼in) long, enclosed in almost cylindrical, hairy calyces with grey-pink teeth, and each with a whorl of red bracts beneath; the stamens have red filaments and chalky, lilac-blue anthers. †to 2m (6ft), ↔ 1m (3ft). Garden origin. ♀ (min. 16–18°C/61–64°F)

**P. intermedia** of gardens see *P. x gledhillii*.

**P. multiflora** of gardens see *P. x gledhillii*.

▷ **Pawpaw** see *Asimina triloba*

## PAXISTIMA

### CELASTRACEAE

Genus of 2 species of low-growing, evergreen shrubs found in rocky sites on mountains and in coniferous woodland in North America. They are grown for their small, opposite, linear to ovate or oblong, sometimes finely toothed, leathery leaves. Tiny, cross-shaped, 4-petalled, greenish white or white flowers, solitary or in axillary clusters, are produced in summer. Grow as ground cover in a rock garden or peat terrace.

- **HARDINESS** Fully hardy.

- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or light dappled shade.

- **PROPAGATION** Take semi-ripe cuttings in summer. Remove rooted suckers in spring or autumn.

- **PESTS AND DISEASES** Trouble free.

**P. canbyi.** Spreading, branching, stem-rooting shrub with stalkless, linear-oblong, sometimes finely toothed, glossy, dark green leaves, to 2cm (¾in) long, with incurved margins. Bears short, pendent clusters of greenish white flowers, 5mm (¼in) across, in summer. †40cm (16in), ↔ to 1m (3ft). C. North America. \*\*\*

▷ **Pea,**

**Balloon** see *Sutherlandia frutescens*

**Black coral** see *Kennedia nigricans*

**Blue** see *Clitoria ternatea*

**Bush** see *Pultenaea procumbens*

**Chickling** see *Lathyrus sativus*

**Coral** see *Hardenbergia*, *Kennedia*

**Dusky coral** see *Kennedia rubicunda*

**Everlasting** see *Lathyrus*, *L.*

*grandiflorus*, *L. latifolius*

**Glory** see *Chianthus formosus*, *C. puniceus*

**Heart** see *Cardiospermum*

*halicacabum*

**Lord Anson's blue** see *Lathyrus*

*nervosus*

**Perennial** see *Lathyrus latifolius*, *L. sylvestris*

**Persian everlasting** see *Lathyrus*

*rotundifolius*

▷ **Pea cont.**

- Purple coral** see *Hardenbergia violacea*  
**Shamrock** see *Parochetus africana*  
**Sturt's desert** see *Chianthus formosus*  
**Swan river** see *Brachysema celsianum*  
**Sweet** see *Lathyrus odoratus*  
▷ **Peace lily** see *Spathiphyllum*, *S. wallisii*  
▷ **Peach** see *Prunus persica*  
▷ **Peacock flower** see *Tigridia*, *T. pavonia*  
▷ **Peacock plant** see *Calathea makoyana*  
▷ **Peas** see *Pyrus*  
**Common** see *Pyrus communis*  
**Prickly** see *Opuntia ficus-indica*  
**Snow** see *Pyrus nivalis*  
▷ **Pearl berry** see *Margyricarpus pinnatus*  
▷ **Pearl bush** see *Exochorda*  
▷ **Pearl everlasting** see *Anaphalis*  
▷ **Pearl plant** see *Haworthia pumila*  
▷ **Pearlwort** see *Sagina*  
▷ **Pea shrub, Russian** see *Caragana frutex*  
▷ **Pea tree** see *Caragana arborescens*  
▷ **Pecan** see *Carya illinoensis*  
▷ **Pectinaria pillansii** see *Stapeliopsis pillansii*

## PEDILANTHUS

EUPHORBACEAE

Genus of about 14 species of variable, bushy, succulent shrubs and small trees occurring mainly in low, rocky terrain in Mexico, Central and South America, the West Indies, and Florida, USA. Many species branch from the roots to form clumps. The fleshy, narrow to broadly ovate, light to mid-green, sometimes white-mottled leaves are usually quickly deciduous. Terminal or axillary cymes of flower-like, tubular bract-cups are borne during the day in summer. Where temperatures drop below 10°C (50°F), grow as houseplants or in a warm greenhouse. In warmer areas, use in a desert garden or shrub border. The stems and leaves contain a milky sap that may cause stomach upset if ingested.

- **HARDINESS** Frost tender.



758 *Pedilanthus tithymaloides* 'Variegatus'

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added well-rotted organic matter and sharp sand, in bright filtered light. In spring and summer, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in moderately fertile, sharply drained soil in full sun or partial shade. See also pp.48-49.

• **PROPAGATION** Sow seed at 19-24°C (66-75°F) in spring. Take stem-tip cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**P. bracteatus.** Bushy, succulent shrub, branching freely from the base, with straight stems. Deciduous, ovate to inversely lance-shaped, white-powdery, mid-green leaves, 10cm (4in) or more long, are keeled beneath, with blunt or pointed tips. In summer, produces green bract-cups, 1.5cm (½in) long, with crimson glands. † 1-3m (3-10ft), ↔ 45cm (18in). N.W. Mexico. ☀ (min. 10°C/50°F)

**P. tithymaloides.** Upright, bushy, clump-forming, succulent shrub with thin, woody or fleshy, zigzagged stems. Evergreen or deciduous, ovate to elliptic, mid-green leaves, to 8cm (3in) long, are keeled and slightly hairy or powdery beneath. In summer, produces fleshy red bract-cups, to 1.5cm (½in) long, yellow-green at the bases. † 2m (6ft), ↔ to 1m (3ft). USA (Florida) to Venezuela, West Indies. ☀ (min. 10°C/50°F).

'**Variegatus**' ☀ has variably shaped leaves, to 15cm (6in) long, with white or pink variegation; ↔ to 45cm (18in).

## PEDIOCACTUS

CACTACEAE

Genus of about 6 species of simple or clustering, spherical, perennial cacti occurring in rocky terrain in W. and S. USA. The spiny stems have spiralling, tuberculate ribs. Bell-shaped flowers are produced near or at the stem tips, followed by spherical, pink or greenish yellow fruits. Where temperatures drop below 2°C (36°F), grow as houseplants or in a cool greenhouse. In warmer areas, grow in a raised bed or desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water moderately and apply a low-nitrogen fertilizer every 6-8 weeks. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. See also pp.48-49.

• **PROPAGATION** Sow seed at 19-24°C (66-75°F) in spring.

• **PESTS AND DISEASES** Susceptible to mealybugs early in the growing season.

**P. simpsonii.** Simple or clustering cactus with spherical to ovoid, mid-green stems, each with 12 ribs, and white-woolly areoles bearing fine spines (15-25 white radials and 5-10 slightly longer, reddish brown centrals). In spring, white, pink, magenta, yellow, or yellow-green flowers, 1-3cm (½-1¼in) long, are borne singly or in clusters by day. † 12-15cm (5-6in), ↔ to 15cm (6in). W. USA. ☀ (min. 2°C/36°F)

▷ **Peepul** see *Ficus religiosa*

## PELARGONIUM

GERANIACEAE

Genus of about 230 species of mainly evergreen perennials, succulents, subshrubs, and shrubs, commonly but incorrectly known as geraniums. They occur in a variety of habitats, from mountains to deserts, mostly in South Africa. The many cultivars, derived from about 20 species, are popular garden plants; few species are grown. Leaves are variable, but are usually alternate, palmately lobed or pinnate, sometimes aromatic, often on long stalks. Erect stems bear 5-petaled flowers in terminal, umbel-like clusters (pseudumbels) referred to in this account as "clusters". The flowers are saucer- or star-shaped, trumpet- or funnel-shaped, or "butterfly"-shaped (the upper 2 petals larger than the lower 3); they are usually borne from spring to summer, although many will flower throughout the year if kept above 7-10°C (45-50°F).

In frost-prone areas, use in containers outside in summer or as bedding plants, and overwinter in a cool greenhouse or conservatory. In frost-free areas, grow in a sunny border. Use scented-leaved cultivars as edging for a border or alongside a path. For winter flowers, grow in a temperate greenhouse or as houseplants. Contact with the foliage may occasionally aggravate skin allergies.

Most cultivars belong to one of the following 6 horticultural groups.

**Angel**

Very bushy, evergreen perennials and subshrubs, derived mainly from *P. crispum*. They have rounded, sometimes scented, mid-green leaves, 2-3cm (¾-1¼in) long, and clusters of small,

single flowers of the regal type (see panel), to 3cm (1¼in) across, in shades of pink, purple, mauve, or white.

**Ivy-leaved**

Trailing, evergreen perennials with lobed, sometimes pointed, stiff, fleshy, usually mid-green leaves, 2.5-12cm (1-5in) long, very similar to those of ivy (*Hedera helix*). Some cultivars have short-jointed stems. Clusters of single to double flowers, to 4cm (1½in) across, are produced in shades of red, pink, mauve, purple, or white.

**Regal**

Bushy, evergreen perennials and shrubs, some with short-jointed stems. The leaves are rounded, sometimes lobed or partially toothed, and mid-green, 5-9cm (2-3½in) long. Clusters of single, rarely double flowers, to 4cm (1½in) across, are produced in single or combined shades of red, pink, purple, orange, white, or reddish black.

**Scented-leaved**

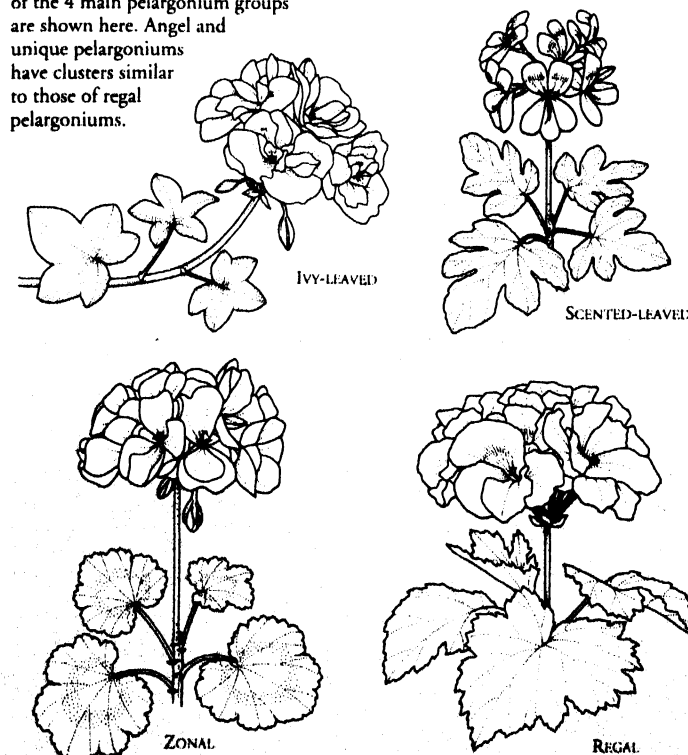
Shrubby, evergreen perennials and shrubs grown mainly for their attractive leaves, which release scent when brushed; each cultivar has a distinct perfume. Leaves are mainly mid-green, sometimes variegated, or gold or silver, and are very variable in shape and size, usually 1.5-12cm (½-5in) long, sometimes toothed, lobed, or deeply incised. They bear clusters of small, single flowers, to 2.5cm (1in) across, in shades of mauve, pink, purple, or white.

**Unique**

Shrubby, evergreen perennials with rounded or lobed, sometimes incised, mid-green leaves, 5-14cm (2-5½in) across, often with a pungent scent when crushed. They produce clusters of trumpet-shaped, single, white, pink, red, purple, or orange flowers of the regal type (see panel), to 3cm (1¼in) across.

## PELARGONIUM GROUPS

Leaves and flower clusters (pseudumbels) of the 4 main pelargonium groups are shown here. Angel and unique pelargoniums have clusters similar to those of regal pelargoniums.





*Pelargonium* 'Apple Blossom Rosebud'

# **Zonal**

Erect, bushy, succulent-stemmed, evergreen perennials, some with short-jointed stems, derived mainly from *P. inquinans* and *P. zonale*. The leaves are rounded, 4–14cm (1½–5½in) across, light to deep green, often bicoloured or multi-coloured, with zones of dark bronze-green or maroon. Flowers are single, semi-double, or double, to 2.5cm (1in) across, in shades of scarlet, purple, pink, white, orange, or rarely yellow. Rain may damage the blooms of some double-flowered cultivars; these should be grown under glass. As bedding plants, most grow to 60cm (24in) tall; dwarf cultivars are 12–20cm (5–8in) tall, miniature cultivars to 12cm (5in) tall.

There are 2 main groups of zonal pelargoniums: the seed-raised bedding types, mainly comprising the single-flowered F1 hybrids, which flower in the first year and come true to colour and type when raised from seed; and the large-flowered cultivars propagated only from cuttings, which are ideal container plants in a conservatory or as houseplants, or outdoors in frost-free periods.

Zonal pelargoniums can be separated into the following groups:

**Cactus-flowered** – Flowers, resembling those of cactus dahlias, are single or double, the petals twisted into quills.

**Double- and semi-double-flowered** – Flowers normally comprise 6 or more open petals.

**Fancy-leaved** – These are grown mainly for their foliage, which may be silver or gold tricoloured (silver or gold, usually with white and green), bronze and gold, almost black, or butterfly-leaved with a distinct hue in the leaf centre. Flowers are often small and single, rarely double.

**Formosum hybrids** – Flowers are flat, single or double, with narrow petals. Leaves are deeply incised.

**Rosebud** – Flowers are double, with rosebud-like centres (the central petals remaining unopened).

**Single-flowered** – Flowers usually have no more than 5 petals.

**Stellar** – Flowers are irregularly star-shaped, single or double: the bottom 3 petals are wedge-shaped and broad, the top 2 are much narrower and toothed. The leaves have pointed lobes and, in some cultivars, dark zones, often in the centres.

• **HARDINESS** Mostly frost tender; there are 1 or 2 hardy species from Turkey.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in full light, with shade from hot sun and good ventilation. Water moderately during growth; apply a balanced liquid fertilizer every 10–14 days in spring and early summer, and a high-potash fertilizer when in flower. Water sparingly in winter. If kept at 7–10°C (45–50°F), plants may flower over winter. Otherwise, cut back by up to two-thirds and keep almost dry.

Outdoors, grow in fertile, neutral to alkaline, well-drained soil. Most prefer full sun; regal cultivars prefer partial shade, and zonals tolerate some shade. Lift bedding plants in autumn and overwinter in dry, frost-free conditions; cut back top-growth by one-third and repot in late winter as new growth resumes. Dead-head all pelargoniums regularly.

• **PROPAGATION** Sow seed of species and F1 zonal pelargoniums at 13–18°C (55–64°F) in late winter and early spring. Take softwood cuttings in spring, late summer, or early autumn.

• **PESTS AND DISEASES** Susceptible to vine weevils, leafhoppers, root mealybugs, aphids, caterpillars, western flower thrips, sciarid flies, grey mould (*Botrytis*), and black leg. Zonal pelargoniums are particularly prone to rust, and regal pelargoniums to whiteflies.

**P. 'Abel Carrière'**. Ivy-leaved pelargonium producing semi-double, light purple flowers, with very dark purple feathering on the upper petals, in clusters 8–9cm (3–3½in) across. ‡45–50cm (18–20in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. abrotanifolium**. Bushy, erect, evergreen, woody-stemmed subshrub. Rounded, finely divided, grey-green leaves, to 1.5cm (½in) long, have linear lobes and smell like southernwood (*Artemisia abrotanum*). Star-shaped, white or pink flowers, 1.5cm (½in) across, are produced in clusters of up to 5, to 5cm (2in) across, from spring to summer. ‡30–40cm (12–16in), ↔ 25–30cm (10–12in). South Africa (Orange Free State, Northern Cape, Western Cape, Eastern Cape). ♀ (min. 2°C/36°F)

**P. acetosum** ■ Erect, evergreen perennial with succulent stems bearing obovate, toothed, fleshy, grey-green leaves, 2–6cm (¾–2½in) long, sometimes margined red. From spring to summer, star-shaped, salmon-pink flowers, 2–3.5cm (¾–1½in) across, with long, narrow petals, are borne in sparse clusters, 6–7cm (2½–3in) across. ‡50–60cm (20–24in), ↔ 20–25cm (8–10in). South Africa (Eastern Cape). ♀ (min. 2°C/36°F)

**P. 'Action'**. Semi-double-flowered zonal pelargonium. Deep pink flowers, with white centres and a small red blaze on each petal, are produced in clusters 9–10cm (3½–4in) across. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'After Glow'**. Single-flowered zonal pelargonium producing pale pink flowers, each with a wide coral-pink ring in the centre, in clusters, 9–10cm (3½–4in) across. ‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Alberta'** ■ Single-flowered zonal pelargonium bearing bicoloured coral-pink and white flowers in clusters 9–10cm (3½–4in) across. ‡40–50cm (16–20in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Alice Crousse'** ■ Short-jointed ivy-leaved pelargonium with double, bright cerise-pink flowers borne in clusters 9cm (3½in) across. ‡25–30cm (10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Amethyst'** ■ Vigorous, short-jointed ivy-leaved pelargonium. Semi-double purple flowers are produced in clusters 9–10cm (3½–4in) across; the upper petals are marked with deep purple and white feathering. ‡25–30cm

(10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Ann Hoysted'** ■ Vigorous regal pelargonium bearing clusters, 13–14cm (5–5½in) across, of deep red flowers with almost black upper petals. ‡35–45cm (14–18in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Aphrodite'**. Semi-double-flowered zonal pelargonium producing abundant foliage. Strong stems bear clusters, 10–11cm (4–4½in) across, of pure white flowers. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Apple Blossom Rosebud'** ■ Rosebud zonal pelargonium bearing bicoloured white and pink flowers in clusters to 8cm (3in) across. ‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Aroma'**. Scented-leaved pelargonium with small, rounded, sweet-smelling, grey-green leaves. Bears white flowers in sparse clusters, 2–2.5cm (¾–1in) across. ‡20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Ashfield Serenade'** ■ Bushy, single-flowered zonal pelargonium with short, thick stems bearing clusters, 9–10cm (3½–4in) across, of mauve flowers with white-based, pink upper petals. ‡25–30cm (10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

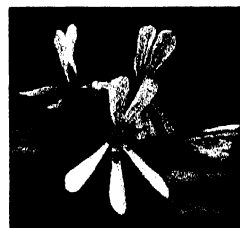
**P. 'Atomic Snowflake'**. Bushy, scented-leaved pelargonium producing large, 3-lobed, mid-green leaves with yellow variegation and a lemon-rose fragrance. Produces mauve flowers in clusters 2–2.5cm (¾–1in) across. ‡45–50cm (18–20in), ↔ 25–30cm (10–12in).

♀ (min. 2°C/36°F)

**P. 'Attar of Roses'** ■ Scented-leaved pelargonium with 3-lobed, rose-scented leaves. Produces mauve flowers in clusters, 2.5–3cm (1–1¼in) across. ‡50–60cm (20–24in), ↔ 25–30cm (10–12in). ♀ (min. 2°C/36°F)

**P. 'Attraction'**. Cactus-flowered zonal pelargonium producing double, rose-pink flowers, with red streaks, in clusters, to 7cm (3in) across. ‡20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

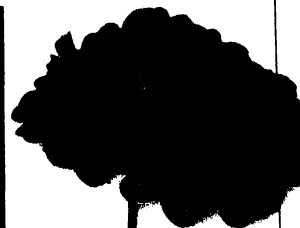
**P. 'Autumn Festival'** ■ Bushy, short-jointed regal pelargonium bearing clusters, 9–10cm (3½–4in) across, of bicoloured salmon-pink and white



*Pelargonium acetosum*



*Pelargonium* 'Alberta'



*Pelargonium* 'Alice Crousse'



*Pelargonium* 'Amethyst'



*Pelargonium* 'Ann Hoysted'



*Pelargonium* 'Autumn Festival'

flowers with mahogany, feather-like markings in the centres. ‡25–30cm (10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Avanti Series'** Early-flowering, seed-raised, single-flowered zonal pelargoniums with clusters, 10cm (4in) across, of flowers in white or shades of pink, salmon-pink, or red; also available as a mixture. ‡35cm (14in), ↔ 25cm (10in). ♀ (min. 2°C/36°F)

**P. 'Barbe Bleu'** Ivy-leaved pelargonium with double, purple-black flowers, fading to wine-red in full sun, in clusters 9–10cm (3½–4in) across. ‡50–60cm (20–24in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Belinda Adams'** ♀ Miniature, double-flowered zonal pelargonium bearing clusters, 7cm (3in) across, of white flowers flushed pink. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Ben Franklin'** ♀ Fancy-leaved zonal pelargonium with rounded silver leaves. Bears clusters, 8–9cm (3–3½in) across, of double, rose-pink flowers. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Bird Dancer'** ♂ Dwarf, stellar zonal pelargonium with dark-zoned leaves. Bears single flowers, with pale pink lower petals and salmon-pink upper petals, in clusters to 8cm (3in) across. ‡15–20cm (6–8in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Blazonry'** ♂ Fancy-leaved zonal pelargonium producing rounded, deep cream leaves with rose-pink, mid-green, and purple zones. Single red flowers are borne in clusters 8cm (3in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Bredon'** ♂ Bushy regal pelargonium bearing clusters, 9–10cm (3½–4in) across, of deep wine-red flowers with a purple-black feathered blaze on each petal. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Brockbury Scarlet'** ♂ Cactus-flowered zonal pelargonium. Single scarlet flowers are produced in clusters to 8cm (3in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Brookside Primrose'** ♂ Miniature, fancy-leaved zonal pelargonium with



*Pelargonium carnosum*

dark brown butterfly markings in the centre of each rounded leaf. Double, light pink flowers are borne in clusters 7cm (3in) across. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Butterfly Lorelei'** Fancy-leaved zonal pelargonium with yellow butterfly markings in the centre of each rounded leaf. Double, pale salmon-pink flowers are borne in clusters to 8cm (3in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Caligula'** ♂ Miniature, double-flowered zonal pelargonium with almost black leaves. Produces clusters, 5–6cm (2–2½in) across, of scarlet flowers. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Capen'** Bushy, semi-double-flowered zonal pelargonium bearing clusters, 9–10cm (3½–4in) across, of coral-red flowers. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Carisbrooke'** ♂ Regal pelargonium with clusters, 9–10cm (3½–4in) across, of pale rose-pink flowers, feathered and blazed wine-red on the upper petals. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. carnosum** ♂ Deciduous, perennial succulent with a smooth, swollen stem, 5cm (2in) thick, and fleshy branches, erect and swollen at the joints. Ovate-oblong, pinnate, stalked, slightly hairy, grey-green, very variable leaves, 7–14cm (3–5½in) long, have lobed segments

with scalloped margins. Clusters, 4cm (1½in) across, of 2–8 star-shaped, white to pale yellow-green flowers, 1cm (½in) across, are borne in summer. ‡40cm (16in), ↔ 25cm (10in). Namibia, South Africa (Northern Cape, Western Cape, Eastern Cape). ♀ (min. 10°C/50°F)

**P. 'Celebration'** Vigorous, semi-double-flowered zonal pelargonium producing clusters, 8cm (3in) across, of bicoloured scarlet and white flowers. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. Century Series** ♀ Compact, seed-raised, single-flowered zonal pelargoniums bearing flowers in shades of red, pink, or white, in clusters to 15cm (6in) across, early in the season. ‡ to 45cm (18in), ↔ 30cm (12in). ♀ (min. 2°C/36°F)

**'Century Hot Pink'** ♂ has very bright pink flowers.

**P. Challenge Series** Compact, seed-raised, single-flowered zonal pelargoniums with clusters to 12cm (5in) across, of flowers in white or shades of red or pink. ‡ to 30cm (12in). ♀ (min. 2°C/36°F)

**P. 'Charlotte Brontë'** Fancy-leaved zonal pelargonium with rounded, golden yellow, green, and red leaves. Single, salmon-pink flowers are borne in clusters 6–7cm (2½–3in) across. ‡25–30cm (10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. Cheerio Series** Seed-raised, single-flowered zonal pelargoniums bearing flowers in white or shades of pink, salmon-pink, red, or violet, in clusters 10cm (4in) across. ‡ to 30–40cm (12–16in). ♀ (min. 2°C/36°F)

**P. 'Chelsworth'** Miniature, double-flowered zonal pelargonium bearing clusters, 7cm (3in) across, of pinkish orange flowers. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Chew Magna'** Regal pelargonium with clusters, 9–10cm (3½–4in) across, of pale pink flowers, each petal with a deep red feathered blaze. ‡ to 30–40cm (12–16in). ♀ (min. 2°C/36°F)

**P. 'Clorinda'** ♂ Vigorous, scented-leaved pelargonium with 3-lobed, cedar-scented leaves. Bears rose-pink flowers in clusters 7cm (3in) across. ‡45–50cm (18–20in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Coddendam'** ♂ Miniature, double-flowered zonal pelargonium bearing

orange-red flowers in clusters 7cm (3in) across. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Contrast'** ♂ Fancy-leaved zonal pelargonium with rounded, golden yellow, green, and red leaves. Single scarlet flowers are produced in clusters to 8cm (3in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Cophorne'** ♀ Vigorous scented-leaved pelargonium with large-lobed leaves exuding an exotic, spicy scent. Bears clusters, 8–9cm (3–3½in) across, of mauve flowers with purple feathering on the upper petals. ‡45–50cm (18–20in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. cotyledonis** (Old-man-live-forever). Bushy, deciduous, perennial succulent with short, rough, swollen stems, to 3cm (1¼in) thick. Rounded, rich deep green leaves, 1.5–2cm (½–¾in) long, are heart-shaped at the bases. Clusters, to 6cm (2½in) across, of 5–15 rounded, pure white flowers, to 1.5cm (½in) across, are borne in late spring and early summer. ‡30cm (12in), ↔ 15cm (6in). St. Helena. ♀ (min. 10°C/50°F)

**P. 'Creamery'** Short-lived, double-flowered zonal pelargonium with pointed leaves. Pale yellow flowers, in clusters 6–7cm (2½–3in) across, colour best when grown in partial shade. ‡25–30cm (10–12in), ↔ 10–15cm (4–6in). ♀ (min. 2°C/36°F)

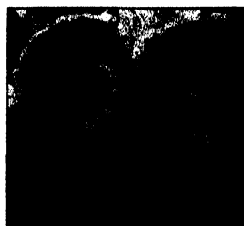
**P. crispum 'Variegatum'** ♂ ♀ (Variegated lemon-scented pelargonium). Upright scented-leaved pelargonium with cream-margined, mid-green leaves, that release a lemon fragrance when brushed. Pale mauve flowers are produced in clusters, 2–2.5cm (¾–1in) across. ‡35–45cm (14–18in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. cucullatum** ♂ Shrubby, evergreen perennial with cup-shaped, softly hairy mid-green leaves, to 8cm (3in) long. Bears abundant trumpet-shaped, mauve-purple flowers, to 5cm (2in) across, in clusters 8–9cm (3–3½in) across, from spring to summer. ‡60–90cm (24–36in), ↔ 20–25cm (8–10in). South Africa (Western Cape). ♀ (min. 2°C/36°F)

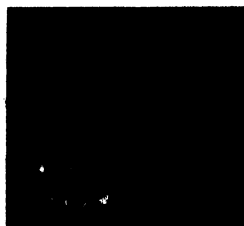
**P. 'Dale Queen'** ♂ Bushy, single-flowered zonal pelargonium producing short-jointed stems. Bears clusters,



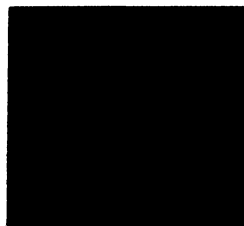
*Pelargonium 'Bird Dancer'*



*Pelargonium 'Blazonry'*



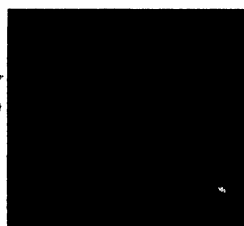
*Pelargonium 'Bredon'*



*Pelargonium 'Brockbury Scarlet'*



*Pelargonium 'Brookside Primrose'*



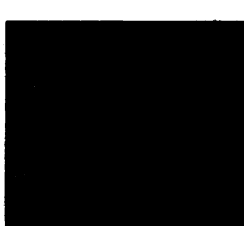
*Pelargonium 'Caligula'*



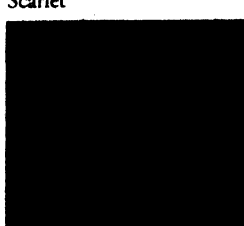
*Pelargonium 'Carisbrooke'*



*Pelargonium Century Series 'Century Hot Pink'*



*Pelargonium 'Clorinda'*



*Pelargonium 'Coddendam'*



*Pelargonium 'Contrast'*



*Pelargonium crispum 'Variegatum'*



9cm (3½in) across, of pale pink flowers, with darker pink centres. ‡ 30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Dame Anna Neagle'** ♀ Fancy-leaved zonal pelargonium (incorrectly registered as dwarf) producing rounded gold leaves with wide bronze zones. Double, light pink flowers are borne in clusters 6–7cm (2½–3in) across. ‡ 20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Davina'**. Miniature, double-flowered zonal pelargonium. Bears clusters, 7cm (3in) across, of salmon-pink flowers, flushed and veined deeper salmon-pink. ‡ 10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Dolly Vardon'** ♀ Fancy-leaved zonal pelargonium with rounded, white, red, and green leaves. Bears single scarlet flowers in clusters 7cm (3in) across. ‡ 25–30cm (10–12in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. Dynamo Series.** Seed-raised, single-flowered zonal pelargoniums bearing white, deep scarlet, deep rose-pink, or salmon-pink flowers in clusters 12cm (5in) across. ‡ 40cm (16in), ↔ 30cm (12in). ♀ (min. 2°C/36°F)

**P. 'Easter Greeting'** ♀ Low-growing regal pelargonium. Light cerise-pink flowers, with a wine-red blaze on each petal, are borne in clusters 7–9cm (3–3½in) across. ‡ 25–30cm (10–12in), ↔ 13–18cm (5–7in). ♀ (min. 2°C/36°F)

**P. echinatum.** Shrubby, tuberous-rooted, deciduous, perennial succulent with an erect, swollen stem bearing a few grey branches, 1cm (½in) thick, covered with spiny stipules. Heart-shaped, scalloped, grey-green leaves, to 3cm (1¼in) long, with 3–5 shallow lobes, are hairy above, more so beneath. In spring and early summer, produces clusters, to 10cm (4in) across, of 3–8 small, star-shaped, white to pink flowers, 3cm (1¼in) across, with dark red marks on the upper petals. ‡ 30cm (12in) or more, ↔ to 30cm (12in). South Africa (Northern Cape). ♀ (min. 10°C/50°F)

**P. 'Edmund Lachenal'**. Double-flowered zonal pelargonium with scarlet-based, deep crimson flowers in clusters 10–11cm (4–4½in) across. ‡ 40–45cm (16–18in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. Elite Series.** Compact, sturdy, seed-raised, single-flowered zonal pelargoniums, most with attractive leaf zoning, producing clusters, 12cm (5in) across, of flowers in white, salmon-pink, or shades of red or pink. ‡ 25–35cm (10–14in). ♀ (min. 2°C/36°F)

**P. 'Elizabeth Angus'**. Single-flowered zonal pelargonium bearing clusters, 8–9cm (3–3½in) across, of salmon-pink flowers, each with a small white eye. ‡ 25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Emma Hössle'** see P. 'Frau Emma Hössle'

**P. 'Fair Ellen'** ♀ Scented-leaved pelargonium with deeply lobed leaves that have a strong, spicy perfume. Bears clusters, 5–6cm (2–2½in) across, of purple-pink flowers with toothed petals. ‡ 30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Fenton Farm'**. Dwarf, fancy-leaved zonal pelargonium with rounded gold leaves. Tiny, single, white-eyed purple flowers are produced in clusters 4.5–5cm (1¾–2in) across. ‡ 15–20cm (6–8in), ↔ 10–12cm (4–5in). ♀ (min. 2°C/36°F)

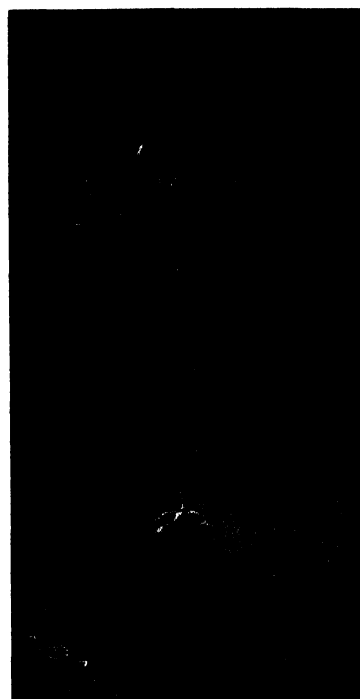
**P. 'Filicifolium'**. Scented-leaved pelargonium producing fern-like leaves with a balsam scent. Pale mauve flowers are borne in small clusters, 2–2.5cm (¾–1in) across. ‡ 25–30cm (10–12in) or more, ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Flower of Spring'** ♀ Fancy-leaved zonal pelargonium with rounded silver leaves. Bears single scarlet flowers in clusters 7cm (3in) across. ‡ 45–60cm (18–24in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. x fragrans** see P. 'Fragrans'

**P. 'Fragrans'** ♀ syn. P. x fragrans, P. Fragrans Group. Bushy scented-leaved pelargonium with pine-scented, grey-green foliage. Bears clusters, 2.5–3cm (1–1¼in) across, of white flowers. ‡ 20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. Fragrans Group** see P. 'Fragrans'. **P. 'Fragrans Variegatum'**. Bushy scented-leaved pelargonium producing pine-scented, grey-green leaves with cream and white variegation. Bears clusters, 2.5–3cm (1–1¼in) across, of white flowers. ‡ 20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)



*Pelargonium* 'Golden Staph'

**P. 'Fraicher Beauty'** ♀ Double-flowered zonal pelargonium bearing white flowers in clusters, to 13cm (5in) across; the petals have very fine red margins. ‡ 30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Francis Parrett'** ♀ Miniature, double-flowered zonal pelargonium producing purple-pink flowers in clusters 7cm (3in) across. ‡ 10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Frau Emma Hössle'**, syn. P. 'Emma Hössle'. Very bushy, dwarf, double-flowered zonal pelargonium. Mid-pink flowers, with white-based upper petals, are borne in clusters 6–7cm (2½–3in) across. ‡ 15–20cm (6–8in), ↔ 10–12cm (4–5in). ♀ (min. 2°C/36°F)

**P. 'Freckles'** ♀ Seed-raised, single-flowered zonal pelargonium. Produces clusters, 12cm (5in) across, of bright rose-pink flowers, each with a small white eye, and with a darker rose-pink mark at the base of each petal. ‡ to 30cm (12in). ♀ (min. 2°C/36°F)

**P. 'Friesdorf'**. Dwarf, fancy-leaved zonal pelargonium with rounded, almost black leaves and narrow-petalled, single crimson flowers in clusters 7cm (3in) across. ‡ 15–20cm (6–8in), ↔ 10–12cm (4–5in). ♀ (min. 2°C/36°F)

**P. 'Frills'**. Miniature, double-flowered zonal pelargonium with pale salmon-pink flowers borne in clusters 4–4.5cm (1½–1¾in) across. ‡ 10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Gilbert West'**. Vigorous, single-flowered zonal pelargonium bearing clusters, 9–10cm (3½–4in) across, of magenta flowers; the upper petals have white bases. ‡ 40–50cm (16–20in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Golden Brilliantissimum'**. Fancy-leaved zonal pelargonium producing rounded leaves with orange, mid-green, and dark wine-red zones. Double, cherry-red flowers are borne in clusters to 8cm (3in) across. ‡ 25–30cm (10–12in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Golden Lilac Mist'**. Bushy, fancy-leaved zonal pelargonium with rounded, bronze-zoned gold leaves. Double, lavender-pink flowers are borne in clusters 7cm (3in) across. ‡ 25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Golden Staph'** ♀ Stellar zonal pelargonium with bronze-zoned leaves. Single, orange-red flowers are borne in clusters to 8cm (3in) across. ‡ 25–30cm (10–12in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Graveolens' of gardens** ♀ (Rose geranium, Sweet-scented geranium). Vigorous, bushy, erect scented-leaved pelargonium with slightly rough, lobed and cut, mid-green leaves, which have a pungent lemon-rose scent. Sterile mauve flowers are borne in clusters 2.5–3cm (1–1¼in) across. ‡ 45–60cm (18–24in), ↔ 20–40cm (8–16in). ♀ (min. 2°C/36°F)

**P. 'Hans Rigler'**. Vigorous, semi-double-flowered zonal pelargonium producing brilliant scarlet flowers in clusters 10cm (4in) across. ‡ 30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

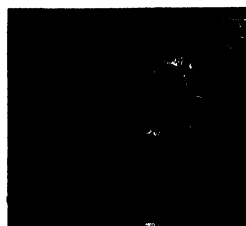
**P. 'Happy Thought'** ♀ Fancy-leaved zonal pelargonium bearing rounded leaves, each with a greenish yellow butterfly marking in the centre. Single,



*Pelargonium cucullatum*



*Pelargonium* 'Dale Queen'



*Pelargonium* 'Dolly Vardon'



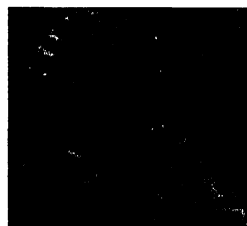
*Pelargonium* 'Easter Greeting'



*Pelargonium* 'Fair Ellen'



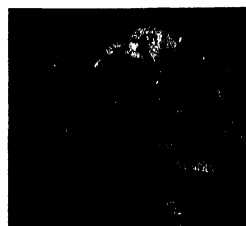
*Pelargonium* 'Flower of Spring'



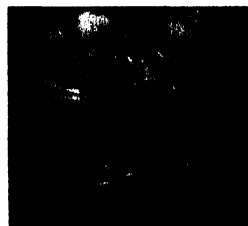
*Pelargonium* 'Fragrans'



*Pelargonium* 'Fraicher Beauty'



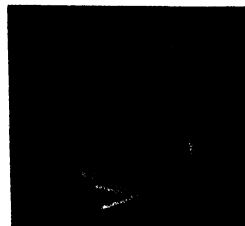
*Pelargonium* 'Francis Parrett'



*Pelargonium* 'Freckles'



*Pelargonium* 'Graveolens' of gardens



*Pelargonium* 'Happy Thought'

light crimson flowers are produced in clusters 8–9cm (3–3½in) across. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Horizon Series'** ■ Compact, bushy, seed-raised, single-flowered zonal pelargoniums with strongly zoned foliage. Flowers in white or shades of pink or red are borne in clusters, to 12cm (5in) across, early in the season. Has good wet-weather tolerance. ‡ to 30cm (12in), ↔ 25cm (10in). ♀ (min. 2°C/36°F). **'Horizon Scarlet'** produces dark, strongly zoned leaves and scarlet flowers.

**P. 'Icecrystal'**. Semi-double-flowered zonal pelargonium. Bears clusters, to 13cm (5in) across, of white-eyed, lavender-blue flowers with a purple dot on each petal. ‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

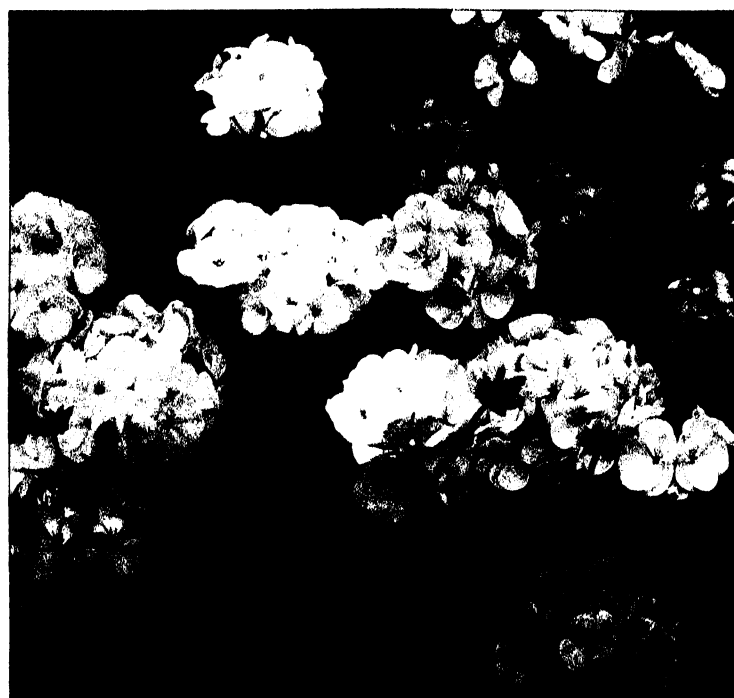
**P. 'inquinans'**. Erect, evergreen perennial producing soft, woody stems and rounded, mid-green leaves, 5–6cm (2–2½in) across; they stain fingers red when handled. Saucer-shaped scarlet flowers, 4cm (1½in) across, are borne in clusters, 9cm (3½in) across, from spring to summer. One of the original parents of zonal pelargoniums. ‡60–90cm (24–36in), ↔ 20–25cm (8–10in). South Africa (Eastern Transvaal, KwaZulu/Natal, Eastern Cape). ♀ (min. 2°C/36°F)

**P. 'Irene'** ■ Vigorous, semi-double-flowered zonal pelargonium bearing light cerise-red flowers in clusters 11cm (4½in) across. ‡40–45cm (16–18in), ↔ 25–30cm (10–12in). ♀ (min. 2°C/36°F)

**P. 'Isobell'**. Bushy, semi-double-flowered zonal pelargonium producing bright red flowers in clusters 9–10cm (3½–4in) across. ‡25–30cm (10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Ivalo'** ■ Bushy, short-jointed, semi-double-flowered zonal pelargonium. Produces clusters, 9–10cm (3½–4in) across, of lavender-pink flowers with purple feathering and marking, and white-based upper petals. ‡25–30cm (10–12in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Jackie'**, syn. *P. 'Jackie Gall'*. Very bushy, slow-growing, short-jointed ivy-leaved pelargonium with small leaves. Bears clusters, 9cm (3½in) across, of



*Pelargonium* Horizon Series

rosebud-like, double, pale lavender-pink flowers. ‡15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Jackie Gall'** see *P. 'Jackie'*.

**P. 'Just William'**. Miniature, double-flowered zonal pelargonium with bright red flowers in clusters 6–7cm (2½–3in) across. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)

**P. 'Lachsball'** ■ Vigorous, semi-double-flowered zonal pelargonium bearing clusters, 10cm (4in) across, of deep salmon-pink flowers with tiny white eyes. ‡45–50cm (18–20in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lachskönigin'** ■ Short-jointed ivy-leaved pelargonium with semi-double, rosy salmon-pink flowers borne in clusters 11cm (4½in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lady Plymouth'** ■ Scented-leaved pelargonium with eucalyptus-scented, silver-margined leaves. Lavender-pink flowers are borne in clusters 3–3.5cm (1¼–1½in) across.

A variant of *P. 'Graveolens'* of gardens. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lavender Grand Slam'** ■ Bushy regal pelargonium. Produces clusters, 9–10cm (3½–4in) across, of mauve flowers, the upper petals with purple markings and black-purple feathering. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lavender Sensation'**. Bushy regal pelargonium bearing frilly, lavender-pink flowers, with plum markings, in clusters 11–12cm (4½–5in) across. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'L'Élégante'** ■ Ivy-leaved pelargonium with silver-green leaves that turn cream-variegated, mid-green, and purple if kept very dry. Single white flowers are borne in clusters to 8cm (3in) across. ‡20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lemon Fancy'**. Scented-leaved pelargonium with rough-textured, toothed leaves with a citrus fragrance.

Produces mauve flowers in clusters 3–3.5cm (1¼–1½in) across. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Leopard'**. Vigorous, bushy ivy-leaved pelargonium producing clusters, 9–10cm (3½–4in) across, of semi-double, purple-pink flowers with wine-red splashes on the upper petals. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Leslie Judd'** ■ Regal pelargonium with pale salmon-pink flowers, feathered wine-red on each petal, borne in clusters 9–10cm (3½–4in) across. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lila Mini Cascade'**. Thin-stemmed ivy-leaved pelargonium with single, lilac-pink flowers borne in clusters 8–9cm (3–3½in) across. ‡45–50cm (18–20in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Lilian Pottinger'**. Scented-leaved pelargonium with irregular, 3-lobed, toothed, grey-green leaves exuding a camphor-pine fragrance. White flowers are produced in clusters 2.5–3cm (1–1¼in) across. ‡20–25cm (8–10in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

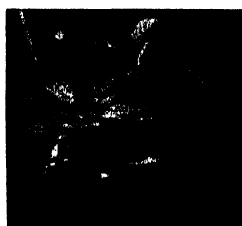
**P. 'Lord Bute'**. Regal pelargonium producing dark reddish black flowers, the petals with dark red margins, in clusters to 10cm (4in) across. ‡45cm (18in), ↔ 30cm (12in). ♀ (min. 2°C/36°F)

**P. 'Lovely'**. Bushy, single-flowered zonal pelargonium. Produces clusters, to 8cm (3in) across, of two-toned, salmon-pink flowers. ‡20–25cm (8–10in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Mabel Grey'** ■ Scented-leaved pelargonium with deeply cut, rough-textured leaves with a very strong lemon scent. Produces purple flowers in clusters 5cm (2in) across. ‡30–35cm (12–14in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Magda'**. Double-flowered zonal pelargonium producing clusters, 8cm (3in) across, of pale pink flowers, spotted and streaked scarlet. ‡25–30cm (10–12in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Mauritania'** ■ Single-flowered zonal pelargonium. White flowers, tinged rose-pink in the centres, are produced in clusters 9cm (3½in) across.



*Pelargonium* 'Irene'



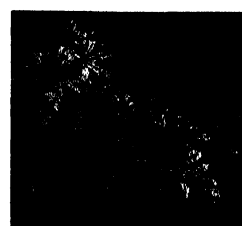
*Pelargonium* 'Ivalo'



*Pelargonium* 'Lachsball'



*Pelargonium* 'Lachskönigin'



*Pelargonium* 'Lady Plymouth'



*Pelargonium* 'Lavender Grand Slam'



*Pelargonium* 'L'Élégante'



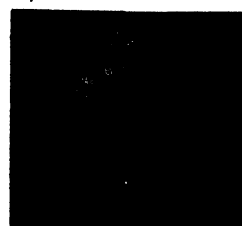
*Pelargonium* 'Leslie Judd'



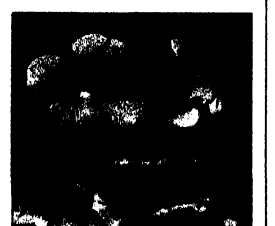
*Pelargonium* 'Mabel Grey'



*Pelargonium* 'Mauritania'



*Pelargonium* 'Mr. Everaarts'



*Pelargonium* 'Mr. Henry Cox'

‡25–30cm (10–12in), ↔ 12–15cm (5–6in). ☼ (min. 2°C/36°F)  
**P. 'Mauve Beauty'**. Slow-growing, short-jointed ivy-leaved pelargonium with double, mauve-pink flowers borne in clusters to 8cm (3in) across.  
‡20–25cm (8–10in), ↔ 12–15cm (5–6in). ☼ (min. 2°C/36°F)  
**P. 'Mauve Salter Bevis'**. Cactus-flowered zonal pelargonium bearing single, lavender-pink flowers in clusters to 8cm (3in) across. ‡25–30cm (10–12in), ↔ 12–15cm (5–6in). ☼ (min. 2°C/36°F)  
**P. 'Miss Wackles'**. Miniature, double-flowered zonal pelargonium producing mid-green leaves with dark brown zones. Produces cerise-red flowers in clusters 4.5–5cm (1¾–2in) across. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ☼ (min. 2°C/36°F)  
**P. 'Mme Crousse'** ♀ Very long-jointed ivy-leaved pelargonium with semi-double, pale pink flowers borne in clusters to 7cm (3in) across. ‡50–60cm (20–24in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. 'Mme Fournier'** ☼ Miniature, single-flowered zonal pelargonium with purple-black leaves and stems. Scarlet flowers are borne in clusters 4.5–5cm (1¾–2in) across. ‡10–12cm (4–5in), ↔ 7–10cm (3–4in). ☼ (min. 2°C/36°F)  
**P. 'Mr. Everaarts'** ☼ Bushy, dwarf, double-flowered pelargonium with bright red-pink flowers borne in clusters 5–6cm (2–2½in) across. ‡15–20cm (6–8in), ↔ 10–12cm (4–5in). ☼ (min. 2°C/36°F)  
**P. 'Mr. Henry Cox'** ☼ syn. *P. 'Mrs. Henry Cox'*. Fancy-leaved zonal pelargonium with rounded, golden yellow leaves marked with mid-green, dark purple, and red. Single pink flowers, with small white eyes, are borne in clusters 7cm (3in) across. ‡25–30cm (10–12in), ↔ 10–12cm (4–5in). ☼ (min. 2°C/36°F)  
**P. 'Mrs. Henry Cox'** see *P. 'Mr. Henry Cox'*.  
**P. 'Mrs. Pollock'** ☼ Fancy-leaved zonal pelargonium with rounded, golden yellow leaves marked with brownish purple, pink, and mid-green. Single, pinkish orange flowers are borne in clusters 7cm (3in) across. ‡25–30cm (10–12in), ↔ 12–15cm (5–6in). ☼ (min. 2°C/36°F)

**P. 'Mrs. Quilter'** ☼ Fancy-leaved zonal pelargonium bearing rounded gold leaves with wide bronze zones. Single, pale pink flowers are borne in clusters 7cm (3in) across. Leaf colour deepens in full sun. ‡30–40cm (12–16in), ↔ 12–15cm (5–6in). ☼ (min. 2°C/36°F)  
**P. 'Mr. Wren'**. Bushy, single-flowered zonal pelargonium with white flowers, overlaid orange, borne in clusters 7cm (3in) across. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. Multibloom Series** ☼ ♀ Seed-raised, single-flowered zonal pelargoniums with abundant flowers in white or shades of pink or red, some with white eyes, borne in clusters 8–12cm (3–5in) across. Early flowering over a long period; good wet-weather tolerance. ‡25–30cm (10–12in), ↔ 30cm (12in). ☼ (min. 2°C/36°F)  
**P. odoratissimum**. Bushy, spreading, evergreen perennial with rounded, light green leaves, 4–5cm (1½–2in) across, with a scent reminiscent of stored apples. Produces clusters, 2.5–3cm (1–1¼in) across, of 3–10 star-shaped white flowers, to 1.5cm (½in) across, from spring to summer. ‡20–25cm (8–10in), ↔ 45–60cm (18–24in). South Africa (KwaZulu/Natal, Northern Transvaal, Eastern Cape, Western Cape). ☼ (min. 2°C/36°F)  
**P. 'Old Spice'** ☼ Bushy, erect scented-leaved pelargonium with rounded, spicy-scented leaves. Bears white flowers in clusters 3–3.5cm (1¼–1½in) across. ‡25–30cm (10–12in), ↔ 12–15cm (5–6in). ☼ (min. 2°C/36°F)  
**P. 'Orange Appeal'** ☼ Seed-raised, single-flowered zonal pelargonium with clear, bright orange flowers borne in clusters to 7cm (3in) across. ‡30–40cm (12–16in), ↔ 30cm (12in). ☼ (min. 2°C/36°F)  
**P. 'Orange Ricard'**. Vigorous, semi-double-flowered zonal pelargonium bearing orange flowers in clusters, 10cm (4in) across. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ☼ (min. 2°C/36°F)  
**P. Orbit Series**. Very early flowering, seed-raised, single-flowered zonal pelargoniums that branch from the base and have fine leaf zoning. Produces large clusters 12–14cm (5–5½in) across, of flowers in white or shades of pink, orange, or red. ‡ to 35cm (14in), ↔ 25cm (10in). ☼ (min. 2°C/36°F).

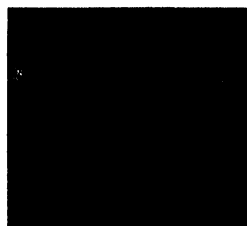


*Pelargonium 'Mme Fournier'*

**'Cherry Orbit'** is upright, with purple-zoned leaves and cherry-red flowers.  
**P. 'Palais'**. Vigorous, semi-double-flowered zonal pelargonium bearing pale salmon-pink flowers in clusters 11cm (4½in) across. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ☼ (min. 2°C/36°F)  
**P. 'Paton's Unique'** ☼ ♀ Vigorous unique pelargonium bearing coral-red and pale pink flowers, with small white eyes, in clusters 4–4.5cm (1½–1¾in) across. The leaves release a pungent scent when bruised. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. 'Paul Humphries'** ☼ Bushy, double-flowered zonal pelargonium bearing clusters, 7cm (3in) across, of dark cerise-red flowers, the lower petals tinged purple. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. 'Penve'**. Semi-double-flowered zonal pelargonium with bright magenta-purple flowers with white centres, borne in clusters 10–11cm (4–4½in) across.

‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ☼ (min. 2°C/36°F)  
**P. Pinto Series** see *P. Pulsar Series*.  
**P. 'Pixie Rose'** ☼ Stellar zonal pelargonium producing single, rose-red flowers, with small white eyes, in clusters 8–9cm (3–3½in) across.  
‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. 'Polka'** ☼ Vigorous unique pelargonium with clusters, 10cm (4in) across, of orange-red flowers, marked and feathered deep purple on the upper petals; lower petals are pinkish orange. ‡45–50cm (18–20in), ↔ 20–25cm (8–10in). ☼ (min. 2°C/36°F)  
**P. 'Prince of Orange'**. Erect, thin-stemmed scented-leaved pelargonium with small, rounded, orange-scented leaves. Bears mauve flowers in clusters 2.5–3cm (1–1¼in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. Pulsar Series**, syn. *P. Pinto Series*. Seed-raised, single-flowered zonal pelargoniums with strongly zoned foliage. Flowers, in white or shades of pink or red, including bicolors, are borne in clusters 12–14cm (5–5½in) across. ‡30–35cm (12–14in), ↔ 30cm (12in). ☼ (min. 2°C/36°F). **'Pulsar Scarlet'** ☼ has deep red flowers.  
**P. 'Purple Emperor'** ☼ Regal pelargonium with clusters, 9–10cm (3½–4in) across, of light purple-pink flowers, heavily blazed and feathered deep wine-red on each petal. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ☼ (min. 2°C/36°F)  
**P. 'Purple Wonder'** ☼ Vigorous, semi-double-flowered zonal pelargonium with cerise-purple flowers borne in clusters 9cm (3½in) across. ‡40–45cm (16–18in), ↔ 20–25cm (8–10in). ☼ (min. 2°C/36°F)  
**P. radens**. Vigorous, upright, bushy, evergreen subshrub with triangular, deeply 2-pinnatifid, rough, strongly aromatic, grey-green leaves, 6cm (2½in) long, consisting of oblong segments with margins rolled under. Produces star-shaped, pale to purple-pink flowers, 1.5cm (½in) across, in 2- to 6-flowered clusters, to 6cm (2½in) across, in late spring and summer. ‡30–45cm (12–18in), ↔ 20–30cm (8–12in). South Africa (Western Cape, Eastern Cape). ☼ (min. 2°C/36°F)

P



*Pelargonium 'Mrs. Pollock'*



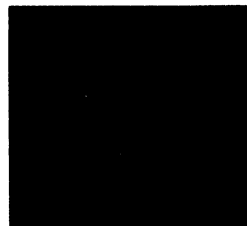
*Pelargonium 'Mrs. Quilter'*



*Pelargonium Multibloom Series*



*Pelargonium 'Old Spice'*



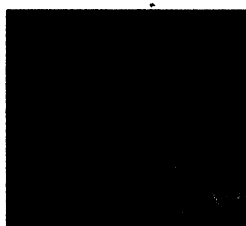
*Pelargonium 'Orange Appeal'*



*Pelargonium 'Paton's Unique'*



*Pelargonium 'Paul Humphries'*



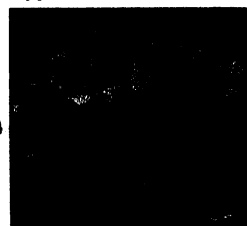
*Pelargonium 'Pixie Rose'*



*Pelargonium 'Polka'*



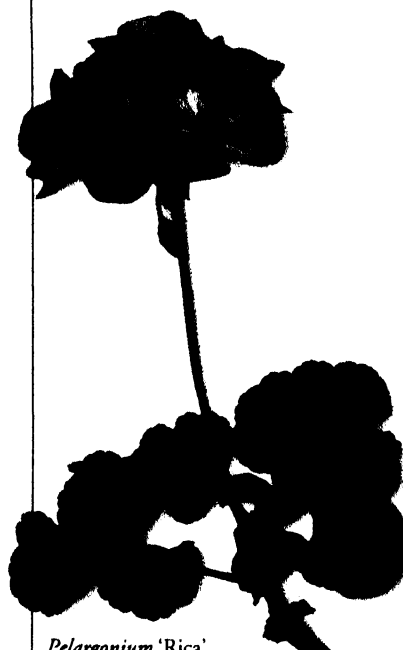
*Pelargonium 'Pulsar Series' 'Pulsar Scarlet'*



*Pelargonium 'Purple Emperor'*



*Pelargonium 'Purple Wonder'*



*Pelargonium* 'Rica'

**P. 'Rica'** ■ Bushy, semi-double-flowered zonal pelargonium bearing clusters, 10–11cm (4–4½in) across, of deep rose-pink flowers with large white eyes. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. Ringo 2000 Series.** Seed-raised, single-flowered zonal pelargoniums with very dark zoning on the leaves. Flowers, in white, shades of pink or red, or mixtures, are produced in clusters, 12–14cm (5–5½in) across. ‡30–40cm (12–16in), ↔ 25–35cm (10–14in). ♀ (min. 2°C/36°F)

**P. 'Rio'.** Single-flowered zonal pelargonium with clusters, to 12cm (5in) across, of rose-pink flowers with a large crimson dot on each petal. ‡30–35cm (12–14in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Robe'** ■ Vigorous, semi-double-flowered zonal pelargonium bearing cerise-crimson flowers in clusters to 8cm (3in) across. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Rober's Lemon Rose'.** Vigorous, scented-leaved pelargonium with pinnatifid, grey-green leaves, rose-scented with lemon undertones. Produces mauve flowers in clusters

4–4.5cm (1½–1¾in) across. ‡45–50cm (18–20in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Rollisson's Unique'** ■ Unique pelargonium with clusters, 7cm (3in) across, of red-purple flowers with deep purple and white feathering on the upper petals. ‡40–45cm (16–18in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Roulette'** ■ Vigorous, ivy-leaved pelargonium with semi-double, bicoloured light crimson and white flowers borne in clusters 9cm (3½in) across. May temporarily revert to plain crimson in hot weather. ‡50–60cm (20–24in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Royal Oak'.** Scented-leaved pelargonium with dark green leaves, shaped like oak leaves, with dark central marks, and exuding an exotic, spicy scent. Bears mauve flowers in clusters 2.5–3cm (1–1¼in) across. ‡30–40cm (12–16in), ↔ 25–30cm (10–12in). ♀ (min. 2°C/36°F)

**P. 'Sovereign'.** Bushy, fancy-leaved zonal pelargonium with rounded bronze and gold leaves. Double red flowers are produced in clusters 7cm (3in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Samantha Stamps'.** Dwarf, fancy-leaved zonal pelargonium with rounded, bronze-zoned gold leaves. Bears double, pink-flushed white flowers in clusters 8cm (3in) across. ‡20cm (8in), ↔ 15cm (6in). ♀ (min. 2°C/36°F)

**P. 'Sandra Haynes'.** Bushy, free-flowering regal pelargonium bearing light crimson flowers in clusters 10cm (4in) across. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Saxifragoides'.** Slow-growing, trailing, possibly ivy-leaved pelargonium with small, succulent leaves. Produces tiny, double, mauve and white flowers in clusters 2.5–3cm (1–1¼in) across. ‡15–20cm (6–8in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Schöne Helena'** ■ Semi-double-flowered zonal pelargonium with clusters, 10–11cm (4–4½in) across, of pale salmon-pink flowers, creamy white towards the petal margins. ‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Sefton'** ■ Regal pelargonium with clusters, 10cm (4in) across, of

cerise-red flowers, each petal with a deep red blaze and feathering. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. Sensation Series.** Seed-raised, single-flowered zonal pelargoniums, flowering very early and over a long season, with good wet-weather tolerance. Produce clusters, 10–12cm (4–5in) across, of flowers in shades of pink, orange, or red, some with white eyes, including mixtures. ‡to 30cm (12in), ↔ 25cm (10in). ♀ (min. 2°C/36°F). 'Sensation Rose' has rose-pink flowers.

**P. sibthorpiiifolium.** Stemless perennial arising from a caudex-like base. Stalked, heart-shaped, scalloped, dark green leaves, to 2cm (¾in) long, have minute, soft hairs. Clusters, to 4cm (1½in) across, of 2–6 rounded white flowers, 1.5cm (½in) across, marked and lined red, are borne in early summer. ‡to 15cm (6in). Namibia, South Africa (Northern Cape). ♀ (min. 10°C/50°F)

**P. 'Snowdrift'.** Short-jointed ivy-leaved pelargonium with double white flowers borne in clusters 7cm (3in) across. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

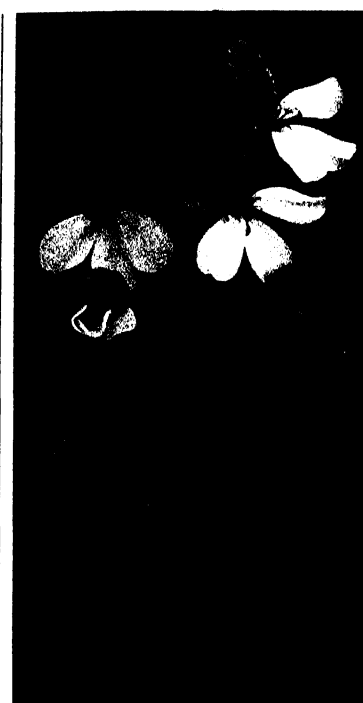
**P. 'Sophie Koniger'.** Semi-double-flowered zonal pelargonium with coral-pink flowers borne in clusters 9cm (3½in) across. ‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Spellbound'.** Vigorous regal pelargonium with clusters, 10–11cm (4–4½in) across, of pink flowers, overlaid wine-red on the upper petals. ‡30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Spitfire'.** Cactus-flowered zonal pelargonium with silver leaves. Single scarlet flowers are borne in clusters 5–6cm (2–2½in) across. ‡25–30cm (10–12in), ↔ 12–15cm (5–6in). ♀ (min. 2°C/36°F)

**P. 'Splendide'** ■ Slow-growing, short-branching pelargonium. Butterfly-shaped flowers, 2–3cm (¾–1¼in) across, are borne singly or in clusters, 10–12cm (4–5in) across. Dark red upper petals each have a black spot at the base; lower petals are white, sometimes stained red. ‡25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)

**P. 'Standout'.** Vigorous, single-flowered zonal pelargonium producing white-



*Pelargonium* 'Splendide'

centred, coral-pink flowers in clusters 9–10cm (3½–4in) across. ‡45–50cm (18–20in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Summer Showers'.** Ivy-leaved pelargonium bearing single flowers in rose-pink, plum-pink, lavender-blue, or white, in clusters to 12cm (5in) across. ‡to 60cm (24in), ↔ trailing to 90cm (36in). ♀ (min. 2°C/36°F)

**P. 'Super Nova'.** Stellar zonal pelargonium with double, lilac-pink flowers in clusters 7cm (3in) across. ‡30–40cm (12–16in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Sweet Mimosa'.** Vigorous, scented-leaved pelargonium with deeply lobed, sweet-scented leaves and clusters, 7cm (3in) across, of pink flowers. ‡45–50cm (18–20in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)

**P. 'Tavira'** ■ Slow-growing, short-jointed ivy-leaved pelargonium. Semi-double, light cerise-red flowers, feathered wine-red, are produced in clusters to 8cm (3in) across. ‡30–40cm



*Pelargonium* 'Robe'



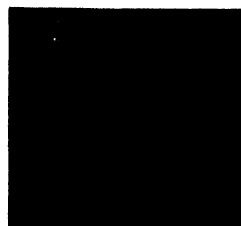
*Pelargonium* 'Rollisson's Unique'



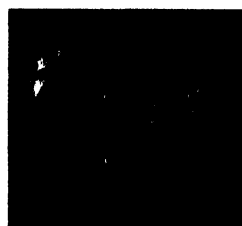
*Pelargonium* 'Roulette'



*Pelargonium* 'Schöne Helena'



*Pelargonium* 'Sefton'



*Pelargonium* 'Tavira'



*Pelargonium* 'The Boar'



*Pelargonium* 'Timothy Clifford'



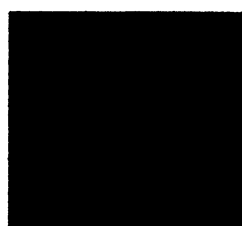
*Pelargonium* 'Tip Top Duet'



*Pelargonium tomentosum*



*Pelargonium* Tornado Series



*Pelargonium* 'Voodoo'



*Pelargonium* Video Series

(12–16in), ↔ 20–25cm (8–10in).  
 ♀ (min. 2°C/36°F)  
**P. tetragonum.** Shrubby, deciduous, perennial succulent with 3- or 4-angled, erect, smooth, fleshy, pale green stems and broadly heart-shaped, 5-lobed, scalloped, mid-green leaves, 5cm (2in) long. In summer, butterfly-shaped, cream to pale pink flowers, 6cm (2½in) long, with purple-red veins, are borne usually in pairs. ↑ 70cm (28in), ↔ 50cm (20in). South Africa (Eastern Cape, Western Cape). ♀ (min. 10°C/50°F)  
**P. 'The Boar'** ♀ Lax, trailing, evergreen perennial producing rounded, mid-green leaves, 6cm (2½in) long, with dark purple-black centres. From spring to summer, bears masses of single, salmon-pink flowers in long-stalked, loose clusters, 7–9cm (3–3½in) across. ↑ 50–60cm (20–24in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)  
**P. 'Timothy Clifford'** ♀ Miniature zonal pelargonium with very dark green, almost black foliage. Bears double, salmon-pink flowers in clusters 4.5–5cm (1¾–2in) across. ↑ 10–12cm (4–5in), ↔ 7–10cm (3–4in). ♀ (min. 2°C/36°F)  
**P. 'Tip Top Duet'** ♀ Angel pelargonium bearing clusters, 4.5–5cm (1¾–2in) across, of very pale pink flowers, the lower petals veined and margined mauve, the upper petals feathered and blazed red-purple. ↑ 30–40cm (12–16in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)  
**P. tomentosum** ♀ (Peppermint-scented geranium). Vigorous, evergreen perennial with heart-shaped, lobed, velvety, peppermint-scented, mid-green leaves, 4–6cm (1½–2½in) long, on scrambling stems. Clusters, 4.5–5cm (1¾–2in) across, of 4–15 butterfly-shaped white flowers, 1.5cm (½in) across, are produced from spring to summer. ↑ 75–90cm (30–36in), ↔ 60–75cm (24–30in). South Africa (Western Cape). ♀ (min. 2°C/36°F)  
**P. Tornado Series** ♀ Neat, compact, early-flowering, seed-raised ivy-leaved pelargoniums. Single lilac or white flowers, in clusters 10–12cm (4–5in) across, are borne on trailing stems. ↑ to 25cm (10in), ↔ 20cm (8in). ♀ (min. 2°C/36°F)  
**P. triste.** Tuberous-rooted herbaceous perennial producing finely pinnate, trailing, mid-green leaves, 18cm (7in) long. From spring to summer, bears clusters, 3–3.5cm (1¼–1½in) across, of 6–20 star-shaped, freesia-scented, nocturnal flowers, 2–3cm (¾–1¼in)

across, in yellow, green, or pink, either in combination or with reddish black. ↑ 15–20cm (6–8in), ↔ 45–50cm (18–20in). South Africa (Western Cape, Northern Cape). ♀ (min. 2°C/36°F)  
**P. 'Vancouver Centennial'** ♀ Stellar zonal pelargonium with bronze and brown leaves. Single orange-red flowers are borne in clusters 7cm (3in) across. ↑ 25–30cm (10–12in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)  
**P. Video Series** ♀ Very dwarf and compact, seed-raised, single-flowered zonal pelargoniums with dark green, strongly zoned foliage. Bear clusters, 8–10cm (3–4in) across, of flowers in shades of pink, or red, salmon-pink, or mixtures. ↑ 20cm (8in), ↔ 18cm (7in). ♀ (min. 2°C/36°F)  
**P. 'Voodoo'** ♀ Unique pelargonium bearing clusters, 7cm (3in) across, of light wine-red flowers, blazed purple-black on each petal. ↑ 50–60cm (20–24in), ↔ 20–25cm (8–10in). ♀ (min. 2°C/36°F)  
**P. 'Wood's Surprise'.** Compact, slow-growing ivy-leaved pelargonium with marbled, cream and mid-green leaves. Bears semi-double, lilac-pink flowers, with white centres, in clusters 5–6cm (2–2½in) across. ↑ 20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)  
**P. 'Yale'.** Long-jointed, trailing ivy-leaved pelargonium producing semi-double red flowers in clusters to 10cm (4in) across. ↑ 20–25cm (8–10in), ↔ 15–20cm (6–8in). ♀ (min. 2°C/36°F)  
 ▷ **Pelargonium, Variegated lemon-scented** see *Pelargonium crispum* 'Variegatum'  
 ▷ **Pelican's beak** see *Lotus berthelotii*

**PELLAEA**  
 ADIANTACEAE  
 Genus of about 80 species of deciduous or evergreen, terrestrial ferns occurring usually in sheltered sites in semi-desert regions, mainly in South Africa and South America, but also in Canada, the USA, and Australasia. Pinnate or 2-pinnate fronds arise from an erect rhizome in spring. Sori are produced around the segment margins. Grow in a terrace or rock garden. In cool climates, grow tender species in a cool to warm greenhouse.  
 • **HARDINESS** Frost hardy to frost tender.  
 • **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, with some midday shade. In frost-prone areas, grow beneath an overhanging rock and protect with a dry winter mulch.  
 • **PROPAGATION** Sow spores at 13–18°C (55–64°F) when ripe. See also p. 51.  
 • **PESTS AND DISEASES** Trouble free.

**P. rotundifolia** ♀ (Button fern). Evergreen fern producing a tuft of narrowly oblong, pinnate, leathery, dull dark green fronds, 15–30cm (6–12in) long, with red-flushed midribs, and narrowly oblong to rounded pinnae with finely scalloped margins. Prefers moist, acid soil. ↑ to 30cm (12in), ↔ 40cm (16in). Australia, New Zealand. \* \*

▷ **Pellionia** see *Elatostema*  
**P. daveauana** see *E. repens*  
**P. pulchra** see *E. pulchra*  
**P. repens** see *E. repens*

## PELTANDRA

*Arrow arum*

ARACEAE

Genus of 4 species of rhizomatous, monoecious, marginal aquatic perennials from marshland in E. North America. They have decorative, arrow-shaped or spear-shaped, glossy, mid- or dark green leaves. Tiny male and female flowers are produced on spadices, each surrounded by a longer, sometimes wavy-margined, green or white spathe; they are followed by clusters of green or red berries. Grow these creeping plants on the muddy banks of a wildlife pool or a bog garden; their horizontal surface rhizomes help to stabilize the soil. May become invasive.  
 • **HARDINESS** Fully hardy.  
 • **CULTIVATION** Grow in full sun, in the margins of a pond or in baskets of loamy soil in water to 20cm (8in) deep.  
 • **PROPAGATION** Divide in spring.  
 • **PESTS AND DISEASES** Trouble free.

**P. alba** see *P. sagittifolia*.

**P. sagittifolia.** syn. *P. alba* (White arrow arum). Aquatic perennial producing arrow-shaped, bright green leaves, to 15cm (6in) long, on stalks to 50cm (20in) long. White spathes, 7–10cm (3–4in) long, which open widely, are borne in early summer, followed by red berries. ↑ 45cm (18in), ↔ 60cm (24in). S.E. USA. \* \* \*

**P. undulata** see *P. virginica*.

**P. virginica** ♀ syn. *P. undulata* (Green arrow arum). Aquatic perennial with narrowly arrow-shaped, strongly veined, mid-green leaves, 30cm (12in) long, borne on stalks to 45cm (18in) long. Green spathes, 20cm (8in) long, which open only slightly, have wavy, yellow or white margins; they are produced in early summer, and are followed by green berries. ↑ 90cm (36in), ↔ 60cm (24in). E. and S.E. USA. \* \* \*

▷ **Peltiphyllum** see *Darmera*

**P. peltatum** see *D. peltata*



*Peltandra virginica*

## PELTOBOYKINIA

SAXIFRAGACEAE

Genus of 2 species of rhizomatous perennials from mountain woodland in S. Japan. They have peltate, lobed or deeply cut, toothed, glossy, olive- to mid-green leaves: the basal leaves have long leaf-stalks; the stem leaves become progressively smaller and almost stalkless up the stem. Short-lived, small, open bell-shaped, pale greenish yellow flowers are borne in terminal cymes in summer. Grow as ground cover or as foliage plants in a moist, shady position.  
 • **HARDINESS** Fully hardy.  
 • **CULTIVATION** Grow in moist, moderately fertile, humus-rich soil in partial shade.  
 • **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in autumn or spring.  
 • **PESTS AND DISEASES** Trouble free.

**P. tellimoides.** syn. *Boykinia tellimoides*. Clump-forming perennial with rounded to heart-shaped, shallowly lobed, finely toothed, olive- to mid-green leaves, to 30cm (12in) long. Bears pale greenish yellow flowers, 6–10mm (¼–½in) across, in early summer. ↑ to 90cm (36in), ↔ 75cm (30in). Japan. \* \* \*

## PELTOPHORUM

CAESALPINIACEAE/LEGUMINOSAE

Genus of 9 species of evergreen trees, related to *Caesalpinia*, occurring in open savannah and dense woodland in tropical regions worldwide. Cultivated mainly as foliage plants, they have often large, alternate, 2-pinnate leaves. Yellow flowers, each with 5 frilled, spreading petals, are produced in racemes or panicles from the uppermost leaf axils. Where temperatures drop below 7°C (45°F), grow in a temperate greenhouse. In warmer climates, grow as specimen or shade trees.  
 • **HARDINESS** Frost tender.  
 • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; needs restrictive pruning under glass.  
 • **PROPAGATION** Sow pre-soaked or scarified seed at 18–21°C (64–70°F) in spring.  
 • **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

**P. pterocarpum** ♀ (Flame tree, Yellow flamboyant tree). Fast-growing tree, wide-spreading and freely branching, with rust-red-downy stems. Large, 2-pinnate, deep green leaves are composed of 8–20 pairs of elliptic-oblong leaflets, 2cm (¾in) long. In summer, produces ascending racemes, to 45cm (18in) long, of fragrant, bright yellow flowers, 4cm (1½in) across, with obovate, crinkly petals, each with a central brownish red mark. Elliptic to oblong, winged, purple-brown seed pods are 8–10cm (3–4in) long. ↑ 15m (50ft), ↔ 8–10m (25–30ft). Sri Lanka to Malaysia and N. Australia (coast). ♀ (min. 7°C/45°F)

## PENIOCEREUS

## CACTACEAE

Genus (now incorporating the genus *Nyctocereus*) of 20 species of thin-stemmed, climbing or prostrate, perennial cacti, sometimes with thick, tuberous roots. They are found in semi-arid areas of S.W. USA, Mexico, and Central America. The branching, ribbed stems usually have only a few spines, and bear axillary, sometimes terminal, solitary, trumpet-shaped flowers, with wide-spreading petals, which open at night in summer. Where temperatures drop below 13°C (55°F), grow in a warm greenhouse. In warmer climates, grow in a desert garden or against a wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 4 parts standard cactus compost and 1 part well-rotted organic matter in full light, with shade from hot sun. From spring to summer, water freely and apply a low-nitrogen fertilizer every 6–8 weeks. Keep barely moist at other times. Outdoors, grow in sharply drained, moderately fertile soil in full sun, with some midday shade. Stake tall species. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in early spring.

• **PESTS AND DISEASES** Vulnerable to mealybugs and aphids, especially while flowering.

*P. serpentinus*, syn. *Nyctocereus serpentinus*. Climbing or slightly pendent cactus, sometimes branching from the base. Mid-green stems, 5cm (2in) thick, have 10–17 rounded ribs, with areoles bearing about 12 white or brown spines. White flowers, red outside, 15–20cm (6–8in) long, are borne in summer. ‡ 2–3m (6–10ft), ↔ 1m (3ft) or more. Mexico. ☉ (min. 13°C/55°F)

P

## PENNISETUM

## GRAMINEAE/POACEAE

Genus of approximately 120 species of rhizomatous or stoloniferous, clump-forming, annual and perennial grasses found in woodland and savannah in tropical, subtropical, and warm-temperate zones worldwide. They have linear leaves, and are grown for their feathery, spike-like panicles of clustered, oblong to lance-shaped spikelets, borne in summer and autumn, which are useful for both fresh and dried arrangements. Grow in a mixed border.

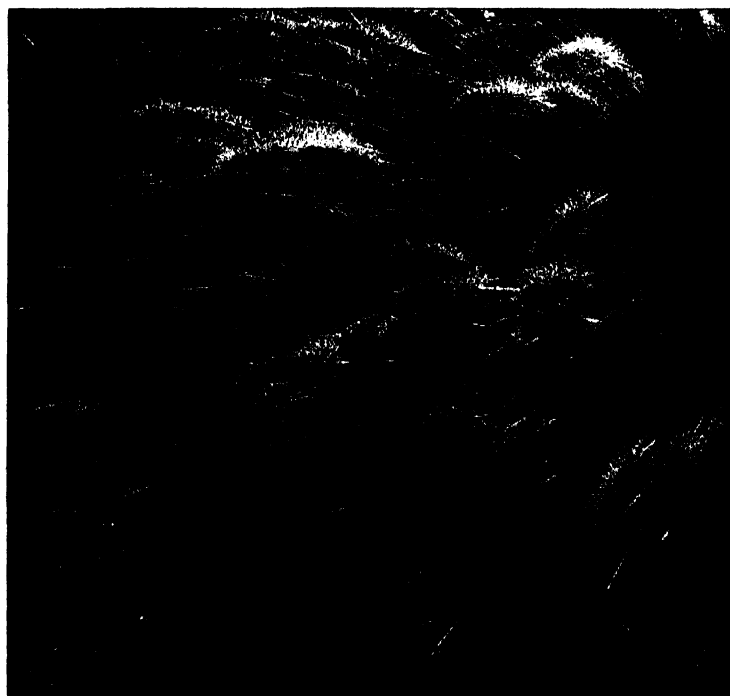
• **HARDINESS** Most are hardy to -10°C (14°F). *P. setaceum* is frost hardy. Some are frost tender.

• **CULTIVATION** Grow in preferably light, moderately fertile, well-drained soil in full sun. Cut back dead top-growth by early spring. In frost-prone areas, protect with a dry winter mulch.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring. Divide in late spring or early summer.

• **PESTS AND DISEASES** Trouble free.

*P. alopecuroides*, syn. *P. compressum* (Fountain grass). Clump-forming, densely tufted, evergreen perennial grass with flat, linear, pointed, mid- to dark green leaves, 30–60cm (12–24in) long. In summer and autumn, bears bristly,



*Pennisetum alopecuroides* 'Hameln'

yellow-green to dark purple spikelets in cylindrical to narrowly oblong panicles, to 20cm (8in) long. ‡ 0.6–1.5m (2–5ft), ↔ 0.6–1.2m (2–4ft). E. Asia to W. Australia. \*\*

• **'Hameln'** is compact and early flowering, with greenish white spikelets, grey-brown when mature, in panicles to 12cm (5in) long. Dark green leaves, to 15cm (6in) long, turn golden yellow in autumn.

*P. compressum* see *P. alopecuroides*.

*P. longistylum* see *P. villosum*.

*P. macrourum*. Densely tufted, clump-forming, evergreen perennial grass with flat or rolled, linear, mid-green leaves, to 60cm (24in) long. In late summer and early autumn, bears pale green, long-bristled spikelets, turning pale brown to purple when mature, in cylindrical, erect or inclined, dense panicles, to 30cm (12in) long. ‡ to 1.8m (6ft), ↔ 1.2m (4ft). Southern Africa. \*\*

*P. orientale* ♀ Mound-forming, densely tufted, deciduous perennial grass with upright or arching, narrowly linear, dark green leaves, to 10cm (4in) long. In mid- and late summer, bears softly long-bristled, pink spikelets in long, narrow panicles, to 14cm (5½in) long, resembling bottle brushes. ‡ 60cm (24in), ↔ 75cm (30in). C. and S.W. Asia to N. India. \*\*

*P. rueppellii* see *P. setaceum*.

*P. setaceum*, syn. *P. rueppellii* (Fountain grass). Mound-forming, densely tufted, deciduous perennial grass, often grown as an annual, with upright, narrowly linear, flat or rolled, rough-textured, mid-green leaves, to 30cm (12in) long. From mid-summer to early autumn, bears pink to purplish pink spikelets in plumed, long-bristled, upright to nodding, narrow panicles, to 30cm (12in) long. ‡ 1m (3ft), ↔ 45cm (18in). Tropical Africa, S.W. Asia, Arabian Peninsula. \*\*

• **'Atropurpureum'** see 'Purpureum'.

• **'Burgundy Giant'** is larger, and is suffused deep burgundy-purple throughout; produces pendulous panicles more than 30cm (12in) long; ‡ 1.5m (5ft), ↔ 60cm (24in). **'Purpureum'**, syn.

'Atropurpureum', has dark purple leaves and deep crimson flowers.

*P. villosum* ■ syn. *P. longistylum* (Feathertop). Loosely tufted, deciduous perennial grass, often grown as an annual, with upright or arching stems bearing flat or folded, narrowly linear, mid-green leaves, to 15cm (6in) long, and with long hairs just below the flowerheads. In late summer and early autumn, produces cylindrical to almost spherical, plume-like panicles, to 11cm (4½in) long, with soft, feathery pale green or white bristles, becoming purple when mature. ‡ 60cm (24in). Mountains of N.E. tropical Africa. \*\*

▷ **Pennyroyal** see *Mentha pulegium*

▷ **Pennywort** see *Hydrocotyle*



*Pennisetum villosum*

## PENSTEMON

## SCROPHULARIACEAE

Genus of approximately 250 species of deciduous, semi-evergreen, or evergreen perennials and subshrubs occurring in a variety of habitats, from open plains to subalpine and alpine areas, in North and Central America. Leaves are stalked or stalkless, usually linear to lance-shaped, and borne in opposite pairs or whorls, or sometimes alternately on the upper parts of the shoots. They are grown for their racemes or panicles of tubular, tubular-bell-shaped, or tubular-funnel-shaped, 2-lipped flowers; the upper lip is usually 2-lobed, the lower lip 3-lobed.

Numerous, bushy, free-flowering cultivars have been developed; most are semi-evergreen with persistent basal growth, and produce racemes or panicles of foxglove-like flowers from early summer to mid-autumn. Other leaf and flower characteristics are very variable: in the descriptions below, leaves are defined simply as narrow or large, and flowers as small or large. Narrow leaves are linear-lance-shaped to lance-shaped, to 7cm (3in) long; large leaves are elliptic to narrowly ovate, usually 12cm (5in) or more long. Small flowers are 2.5–3cm (1–1¼in) long; large flowers are 5–7cm (2–3in) long.

Grow larger species and cultivars in a border or as bedding and smaller ones in a rock garden or at the front of a border.

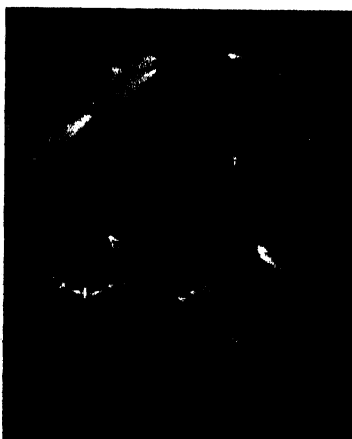
• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow border perennials in fertile, well-drained soil in full sun or partial shade; grow shrubby and dwarf species in poor to moderately fertile, very gritty, sharply drained soil in full sun. In frost-prone areas, protect border perennials with a dry winter mulch. Unless seed is needed, dead-head after flowering to maintain vigour.

• **PROPAGATION** Sow seed in late winter or spring; sow seed of rock garden plants in containers in a cold frame; sow seed of border perennials at 13–18°C (55–64°F). Take softwood cuttings in early summer or semi-ripe cuttings in midsummer. Divide in spring.

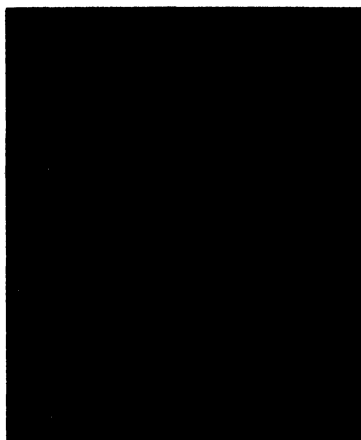
• **PESTS AND DISEASES** May be damaged by slugs and snails, and infested with chrysanthemum cecidworm. Powdery mildew may be a problem.

*P. 'Alice Hindley'* ■ ♀ Large-leaved perennial bearing large, tubular-bell-shaped, pale lilac-blue flowers, white



*Penstemon* 'Alice Hindley'





*Penstemon* 'Andenken an Friedrich Hahn'

inside, tinged mauve-pink outside, from midsummer to early or mid-autumn. ‡ 90cm (36in), ↔ 45cm (18in). \*\*

***P. 'Andenken an Friedrich Hahn'*** [♀] syn. *P. 'Garnet'*. Vigorous, bushy, narrow-leaved perennial bearing small, tubular-bell-shaped, deep wine-red flowers from midsummer to early or mid-autumn. ‡ 75cm (30in), ↔ 60cm (24in). \*\*\* (borderline)

***P. 'Apple Blossom'*** [♀] Narrow-leaved perennial bearing small, tubular-bell-shaped, pale pink flowers, with white throats, from midsummer to early or mid-autumn. ‡ 45–60cm (18–24in). \*\*\* (borderline)

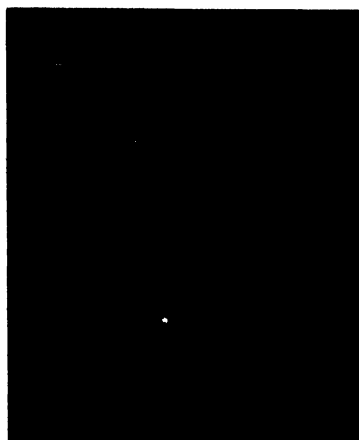
***P. 'Barbara Barker'*** see *P. 'Beech Park'*.

***P. barbatus*** [♂] syn. *Chelone barbata* (Beardlip penstemon). Erect perennial with semi-evergreen basal rosettes and deciduous stems bearing lance-shaped to linear, entire, sometimes glaucous, mid-green leaves, to 20cm (8in) long. From early summer to early autumn, bears long panicles of pendent, tubular red flowers, tinged pink to carmine-red, 3–4cm (1¼–1½in) long, the reflexed lower lips with yellow beards, the upper ones projecting over them. ‡ 1.8m (6ft) or more, ↔ 30–50cm (12–20in). W. USA to Mexico. \*\*\*

***P. barrettiae***. Bushy, clump-forming, semi-evergreen perennial with deciduous stems. Ovate to elliptic-ovate, toothed, glaucous, pale green leaves, 4–6cm (1½–2½in) long, are tinged red. In early summer, bears dense racemes of tubular-bell-shaped, lilac-purple flowers, 3.5cm (1½in) long. ‡ 20–40cm (8–16in), ↔ 25cm (10in). N.W. USA. \*\*\*



*Penstemon* 'Apple Blossom'



*Penstemon barbatus*

***P. 'Beech Park'*** ♀ syn. *P. 'Barbara Barker'*. Large-leaved perennial with large, tubular-bell-shaped, pink and white flowers borne from midsummer to early or mid-autumn. ‡ 75cm (30in), ↔ 45cm (18in). \*\*

***P. 'Burford Seedling'*** see *P. 'Burgundy'*.

***P. 'Burgundy'*** [♂] syn. *P. 'Burford Seedling'*. Large-leaved perennial bearing large, tubular-bell-shaped, wine-red flowers, with white styles and stigmas and white-marked, lighter red throats, from midsummer to early or mid-autumn. ‡ 90cm (36in), ↔ 45cm (18in). \*\*

***P. campanulatus***, syn. *P. pulchellus*. Upright, semi-evergreen perennial with wiry stems bearing narrowly linear to lance-shaped, toothed, dark green leaves, to 10cm (4in) long. Loose racemes of tubular-bell-shaped, pinkish purple or violet flowers, to 3cm (1¼in) long, are borne in early summer. It is a parent of many hybrids. ‡ 30–60cm (12–24in), ↔ 45cm (18in). Mexico, Guatemala. \*\*

***P. cardwellii*** [♂] Spreading, sometimes stem-rooting, evergreen subshrub with elliptic, finely toothed, mid-green leaves, to 4cm (1½in) long. In early summer, bears few-flowered, raceme-like panicles of slender, tubular-funnel-shaped, deep purple flowers, to 2.5cm (1in) long. ‡ 10–20cm (4–8in), ↔ 30cm (12in). USA (Washington, Oregon). \*\*\* (borderline)

***P. 'Charles Rudd'***. Narrow-leaved perennial with purple stems and small, tubular-bell-shaped, magenta-purple



*Penstemon* 'Burgundy'



*Penstemon cardwellii*

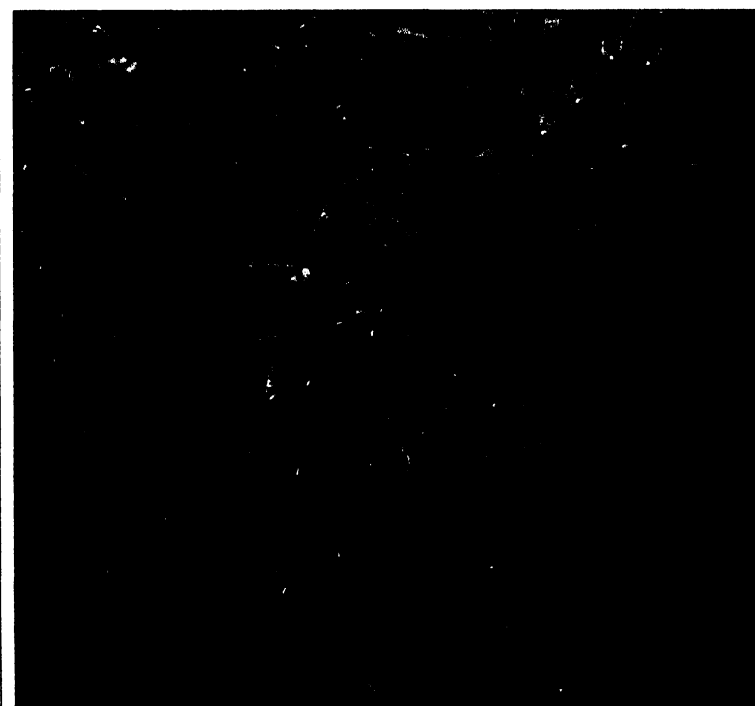
flowers, with white throats, borne from midsummer to early or mid-autumn. ‡ 60cm (24in), ↔ 45cm (18in). \*\*\*

***P. 'Chester Scarlet'*** [♀] Large-leaved perennial bearing large, tubular-bell-shaped scarlet flowers from midsummer to mid-autumn. ‡ 60cm (24in), ↔ 45cm (18in). \*

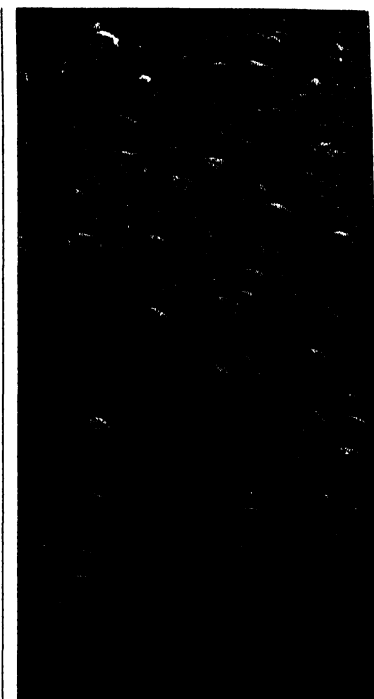
***P. davidsonii***. Prostrate, evergreen subshrub with rounded-elliptic, leathery, entire, mid-green leaves, to 1.5cm (½in) long. In late spring and early summer, bears raceme-like panicles of tubular-funnel-shaped, deep pink to purple flowers, to 4cm (1½in) long. ‡ 20cm (8in), ↔ 40cm (16in). Coastal W. USA. \*\*\* (borderline). var. *menziesii* see *P. menziesii*.

***P. diffusus*** see *P. serrulatus*.

***P. digitalis***. Vigorous perennial producing semi-evergreen basal rosettes and deciduous or semi-evergreen stems often marked reddish purple. Leaves are inversely lance-shaped, entire or sparsely toothed, mid-green, and 10–15cm (4–6in) long. Panicles of tubular-bell-shaped white flowers, 2.5cm (1in) long, sometimes flushed very pale violet, with purple lines inside, are borne from early



*Penstemon* 'Chester Scarlet'



*Penstemon* 'Evelyn'

to late summer. ‡ to 1m (3ft), ↔ 45cm (18in). E. and S.E. USA. \*\*\*.

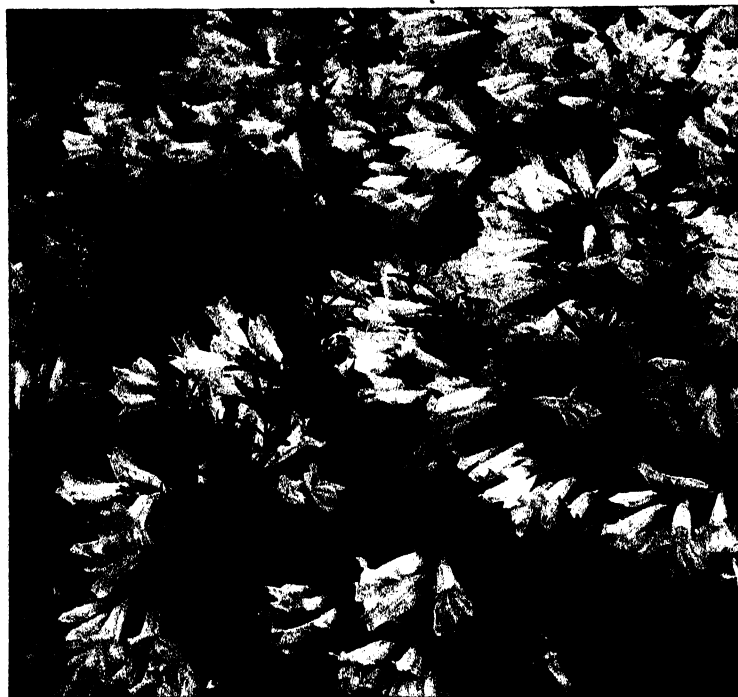
**'Husker's Red'** has maroon-red young leaves and pink-tinted white flowers; ‡ 50–75cm (20–30in), ↔ 30cm (12in).

**'Woodville White'** has white flowers.

***P. eatonii*** (Eaton's firecracker).

Upright, woody-based, evergreen or semi-evergreen perennial with lance-shaped-oblong, leathery, mid-green or blue-green leaves, the basal leaves to 15cm (6in) long, the stem leaves shorter. In late summer, bears erect, one-sided panicles of tubular, bright scarlet flowers, 2.5cm (1in) long. ‡ 30–100cm (12–39in), ↔ 30–35cm (12–14in). USA (California to Nevada and Utah). \*\*

***P. 'Evelyn'*** [♀] Bushy, narrow-leaved perennial. Small, tubular, rose-pink

*Penstemon fruticosus* subsp. *scouleri* f. *albus*

flowers, paler inside and marked with darker pink lines, are borne from midsummer to early or mid-autumn. ‡ 45–60cm (18–24in), ↔ 30cm (12in). \*\*\*

**P. 'Firebird'** see *P. 'Schoenholzeri'*.  
**P. fruticosus** (Shrubby penstemon). Evergreen, spreading, semi-upright subshrub with lance-shaped to elliptic, toothed, glossy, mid-green leaves, to 5cm (2in) long. Dense racemes of tubular-funnel-shaped, purplish blue flowers, 2.5–3.5cm (1–1½in) long, are borne in late spring and early summer. ‡ to 40cm (16in). N. USA. \*\*\* (borderline).  
**subsp. scouleri** ♀ syn. *P. scouleri*, has pale to deep purple flowers, to 5cm (2in) long, in summer; W. Canada, N.W. USA. **subsp. scouleri** f. *albus* ♀ bears white flowers; ‡ to 30cm (12in).

**P. 'Garnet'** see *P. 'Andenken an Friedrich Hahn'*.

**P. 'George Home'** ♀ Narrow-leaved perennial with small, tubular-bell-shaped, wine-red flowers, with white throats, the white extending over the lips, borne from midsummer to early or mid-autumn. ‡ 75cm (30in), ↔ 45cm (18in). \*\*\* (borderline)

*Penstemon heterophyllus*

**P. heterophyllus** ♂ (Foothill penstemon). Evergreen subshrub with linear to lance-shaped, entire, mid-green or bluish green leaves, 2–5cm (¾–2in) long, narrowing at the bases. In summer, produces racemes of tubular-funnel-shaped, pinkish blue flowers, 2.5–3.5cm (1–1½in) long, with blue or lilac lobes. ‡ 30–50cm (12–20in). USA (California). \*\*\* (borderline).  
**'Heavenly Blue'** has blue flowers.

**subsp. purdyi** is compact, with loose racemes of sky-blue flowers; ‡ to 20cm (8in). **'True Blue'** is more lax, with racemes of pure bright blue flowers; ‡ to 40cm (16in).

**P. 'Hidcote Pink'** ♀ Narrow-leaved perennial bearing small, tubular, pale pink flowers, with spreading lobes marked with crimson lines inside, from midsummer to early or mid-autumn. ‡ 60–75cm (24–30in), ↔ 45cm (18in). \*\*\* (borderline)

**P. hirsutus**. Spreading to upright, evergreen subshrub with lance-shaped, toothed, dark green leaves, to 10cm (4in) long. In summer, produces loose racemes of tubular-funnel-shaped, pale violet flowers, 2–5cm (¾–2in) long, with white throats. ‡ 40–80cm

*Penstemon hirsutus* var. *pygmaeus**Penstemon isophyllus*

(16–32in), ↔ 30–60cm (12–24in). N.E. North America. \*\*\*. **'Purpureus'** produces bright clear purple flowers.

**var. pygmaeus** ♂ is compact and mat-forming, with purple-tinted leaves, 8cm (3in) long; ‡ 10cm (4in).

**P. 'Hopley's Variegated'**. Large-leaved perennial producing mid-green leaves with creamy yellow margins. Bears large, tubular-bell-shaped, lilac-blue flowers with white throats, from midsummer to early or mid-autumn. A variegated version of *P. 'Alice Hindley'*. ‡ 60cm (24in), ↔ 45cm (18in). \*\*

**P. isophyllus** ♀ Erect, sometimes spreading, evergreen subshrub with lance-shaped, purple-tinged, mid-green leaves, 3–5cm (1¼–2in) long. From early to late summer, produces tubular-bell-shaped, red to deep pink flowers, 4cm (1½in) long, slightly suffused white, in one-sided racemes, to 30cm (12in) long. ‡ to 70cm (28in), ↔ 45cm (18in). Mexico. \*

**P. 'King George V'**. Narrow-leaved perennial bearing small, tubular-bell-shaped, bright red flowers, with red-marked white throats, from midsummer to early or mid-autumn. ‡ 60cm (24in), ↔ 45cm (18in). \*\*

**P. linarioides**. Spreading, semi-evergreen subshrub with many slender, upright shoots bearing linear, mid-green leaves, to 2.5cm (1in) long. In summer, produces narrow, spike-like racemes of narrowly tubular-funnel-shaped, pale to deep purple flowers, 1.5–2cm (½–¾in) long, with darker streaks in the throats. ‡ 50cm (20in), ↔ 25cm (10in). USA (New Mexico, Arizona). \*\*\* (borderline)

*Penstemon* 'Maurice Gibbs'*Penstemon newberryi*

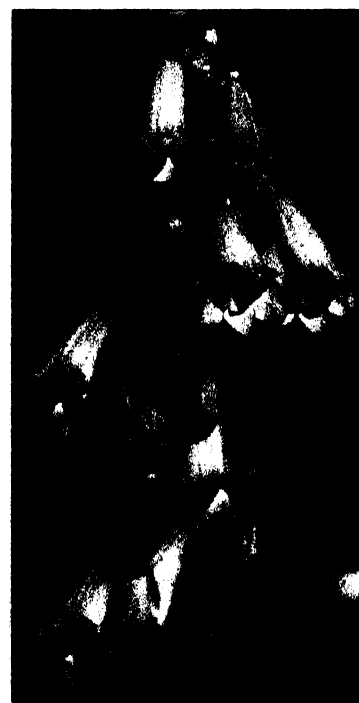
**P. 'Maurice Gibbs'** ♂ ♀ Large-leaved perennial bearing large, tubular-bell-shaped, cerise-red flowers, with white throats, from midsummer to early or mid-autumn. ‡ 75cm (30in), ↔ 45cm (18in). \*\*

**P. menziesii**, syn. *P. davidsonii* var. *menziesii*. Creeping, mat-forming, semi-evergreen subshrub with elliptic to rounded, minutely toothed, mid-green leaves, to 1.5cm (½in) long. Bears few-flowered racemes of tubular-funnel-shaped, violet-purple flowers, to 3.5cm (1½in) long, in summer. ‡ 15cm (6in), ↔ 20cm (8in). W. Canada, N.W. USA. \*\*\* (borderline)

**P. 'Midnight'**. Large-leaved perennial bearing large, tubular-bell-shaped, dark indigo-blue flowers from midsummer to early or mid-autumn. ‡ 90cm (36in), ↔ 45cm (18in). \*\*

**P. 'Mother of Pearl'**. Narrow-leaved perennial. From midsummer to early or mid-autumn, produces small, tubular-bell-shaped, pearl-mauve flowers, tinted pink and white, with white throats and red lines. ‡ to 75cm (30in), ↔ 45cm (18in). \*\*\* (borderline)

**P. 'Myddelton Gem'**. Large-leaved perennial with pale green leaves. From

*Penstemon* 'Pennington Gem'

*Penstemon pinifolius* 'Mersea Yellow'

midsummer to early or mid-autumn, produces large, tubular-bell-shaped, pinkish purple flowers, with white throats. ↑75cm (30in), ↔45cm (18in). \*\*

***P. newberryi*** [E] Evergreen, mat-forming subshrub with elliptic to ovate, minutely toothed, leathery, dark green leaves, 1.5–4cm (½–1½in) long. In early summer, produces dense racemes of tubular-funnel-shaped, deep red-pink flowers, to 3cm (1¼in) long. ↑25cm (10in), ↔30cm (12in). USA (Nevada, California). \*\*\*. ***f. humilior*** is more compact than the species; ↑15cm (6in), ↔20cm (8in).

***P. 'Pennington Gem'*** [E] Narrow-leaved perennial. Large, tubular-bell-shaped, mid-pink flowers, with white throats and purple anthers, are borne from midsummer to early or mid-autumn. ↑to 75cm (30in), ↔45cm (18in). \*\*

***P. pinifolius*** [E] Spreading, evergreen subshrub with crowded, needle-like, pale to mid-green leaves, 1–2.5cm (½–1in) long. In summer, produces loose, terminal, spike-like racemes of narrowly tubular, bright scarlet flowers, each 2.5cm (1in) long. ↑40cm (16in), ↔25cm (10in). S. USA, Mexico. \*\*\* (borderline). **'Mersea Yellow'** [E] has bright deep yellow flowers.

***P. 'Pink Endurance'***. Upright, woody-based, large-leaved perennial with long, spike-like racemes of small, tubular-funnel-shaped, white-throated, rose-pink flowers, produced in summer. ↑40cm (16in), ↔30cm (12in). \*\*\* (borderline)

***P. pulchellus*** see *P. campanulatus*.

*Penstemon* 'Schoenholzeri'*Penstemon serrulatus*

***P. rupicola*** [E] (Rock penstemon). Prostrate, evergreen subshrub producing elliptic to rounded, leathery, toothed, thick, blue-green leaves, to 2cm (¾in) long. Tubular-funnel-shaped, deep reddish pink flowers, 2.5–3.5cm (1–1½in) long, are borne in late spring or early summer. ↑to 10cm (4in), ↔45cm (18in). Coastal W. USA.

\*\*\* (borderline). **'Diamond Lake'** is more robust, with pink flowers, 3.5cm (1½in) long. **'Pink Dragon'** is more compact, with pale salmon-pink flowers; ↑20cm (8in), ↔30cm (12in).

***P. 'Schoenholzeri'*** [E] syn. *P. 'Firebird'*. Narrow-leaved perennial

bearing large, tubular-bell-shaped scarlet flowers, 7cm (3in) long, from midsummer to early or mid-autumn. ↑75cm (30in), ↔60cm (24in). \*\*

***P. scouleri*** see *P. fruticosus* subsp. *scouleri*.

***P. serrulatus*** [E] syn. *P. diffusus* (Cascade penstemon). Spreading, semi-evergreen subshrub with ovate to lance-shaped or elliptic, toothed, glossy, dark green leaves, 2–9cm (¾–3½in) long. Broad, dense, one-sided panicles of narrowly tubular-bell-shaped, pinkish purple flowers, to 2.5cm (1in) long, are borne in late summer. ↑50cm (20in), ↔30cm (12in). USA (Alaska to Oregon). \*\*\*

***P. 'Six Hills'***. Prostrate, evergreen subshrub with rounded, fleshy, grey-green leaves, to 2.5cm (1in) long. In late spring and early summer, produces small, tubular-funnel-shaped, lavender-blue flowers. ↑15cm (6in), ↔20cm (8in). \*\*\*

***P. 'Snow Storm'*** see *P. 'White Bedder'*.

*Penstemon* 'Sour Grapes'*Penstemon* 'Stapleford Gem'

***P. 'Sour Grapes'*** [E] Large-leaved perennial. Large, tubular-bell-shaped, greyish blue flowers, suffused rich purple and tinged green, are borne from midsummer to early or mid-autumn. ↑60cm (24in), ↔45cm (18in). \*\*

***P. 'Stapleford Gem'*** [E] Large-leaved perennial. Large, tubular-bell-shaped, lilac-purple flowers are borne from midsummer to early or mid-autumn; upper lips are pale pink-lilac; lower lips and throats are white with purple lines. ↑to 60cm (24in), ↔45cm (18in). \*\*\*

***P. venustus*** (Lovely penstemon). Evergreen subshrub with almost stalkless, lance-shaped to oblong, minutely toothed, bluish green leaves, to 8cm (3in) long. Spike-like panicles of tubular-funnel-shaped, pale to deep violet flowers, 2cm (¾in) long, are borne in early summer. ↑40–100cm (16–39in), ↔30cm (12in). N.W. USA. \*\*\* (borderline)

***P. 'White Bedder'*** [E] syn. *P. 'Snow Storm'*. Large-leaved perennial bearing large, tubular-funnel-shaped white flowers, becoming pink-tinged, with brown anthers, from midsummer to early or mid-autumn. ↑60cm (24in), ↔45cm (18in). \*\*

*Penstemon* 'White Bedder'

## ▷ Penstemon,

**Beardlip** see *Penstemon barbatus*

**Cascade** see *Penstemon serrulatus*

**Foothill** see *Penstemon heterophyllus*

**Lovely** see *Penstemon venustus*

**Rock** see *Penstemon rupicola*

**Shrubby** see *Penstemon fruticosus*

## PENTACHONDRA

### EPACRIDACEAE

Genus of 3 species of prostrate, evergreen shrubs occurring in boggy meadows in Australia, Tasmania, and New Zealand. They are grown for their heath-like, linear to ovate or elliptic, mid- or dark green leaves, and for their solitary, axillary, small, tubular flowers; the colourful, berry-like fruits are seldom produced in cultivation. They are suitable for a rock garden or peat bank, but grow best in cool climates with mild winters; they are difficult to cultivate in hot, dry conditions.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***P. pumila***. Procumbent shrub with crowded, obovate, hairy, purplish green leaves, to 5mm (¼in) long. In early summer, produces white flowers, to 6mm (¼in) long, with recurving lobes, occasionally followed by orange-red fruit. ↑8cm (3in), ↔30cm (12in). Australia, New Zealand. \*\*

## PENTAGLOTTIS

### Green alkanet

### BORAGINACEAE

Genus of one species of evergreen perennial, related to *Anchusa*, occurring in damp, shady habitats, and in hedgerows and woodland margins, in S.W. Europe; it is naturalized in the UK and Belgium. It is valued for its flowers, which resemble forget-me-nots, borne in spring and early summer. The simple leaves are long-stalked in basal rosettes, and stalkless along the branching, erect or ascending stems. Grow in a wild or woodland garden, or in a wildflower border; may self-seed freely.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, damp soil in partial or deep shade. Dead-head after flowering to prevent self-seeding.

• **PROPAGATION** Sow seed in containers in a cold frame when ripe or in early spring. Divide in early spring; the roots are brittle and any pieces left in the soil will sprout freely.

• **PESTS AND DISEASES** Trouble free.

***P. sempervirens***, syn. *Anchusa sempervirens* (Green alkanet). Bristly, tap-rooted perennial with erect to ascending stems arising from a basal rosette of pointed, ovate to ovate-oblong, mid-green leaves, 10–40cm (4–16in) long; stem leaves are smaller. From spring to early summer, bears leafy cymes of bright blue flowers, to 1cm (½in) across, each with a short tube and 5 spreading lobes. ↑to 70–100cm (28–39in). S.W. Europe. \*\*\*

## PENTAS

RUBIACEAE

Genus of up to 40 species of mainly evergreen perennials, biennials, and shrubs from forest margins and scrub in the Arabian Peninsula, tropical Africa, and Madagascar. They are grown for their flat or domed corymbs of salverform flowers, each with 5 spreading petals, which last well as cut flowers. Leaves are ovate to elliptic or lance-shaped, mostly mid-green, and opposite or whorled, on prostrate or erect stems, to 2m (6ft) long. In frost-prone climates, grow in a temperate greenhouse, or in containers outdoors in summer. In warmer areas, grow in a bed or border, or in containers on a patio.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added leaf mould and sharp sand, in bright filtered light. During growth, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 9, in late winter; plants under glass need restrictive pruning.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Take softwood cuttings at any time of year.

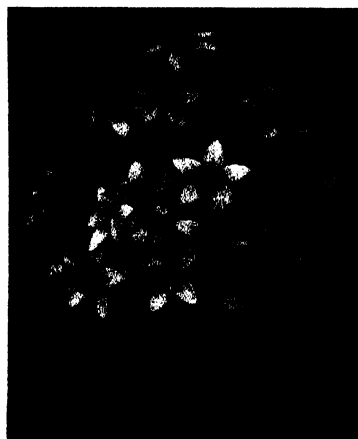
• **PESTS AND DISEASES** Aphids and red spider mites may be troublesome.

**P. 'California Lavender'.** Dwarf, shrubby perennial with ovate to elliptic or lance-shaped leaves, to 15cm (6in) long. Large, flat corymbs of pale lavender flowers, to 2cm (¾in) across, are borne in summer. ↑ 35cm (14in), ↔ 45cm (18in). ☀ (min. 7°C/45°F)

**P. 'California Pink'.** Compact herbaceous perennial with elliptic to lance-shaped leaves, 8–15cm (3–6in) long. In summer, bears flat corymbs of pink flowers, to 2cm (¾in) across. ↑ 40cm (16in). ☀ (min. 7°C/45°F)

**P. carnea** see *P. lanceolata*.

**P. lanceolata** ☐ syn. *P. carnea* (Egyptian star cluster, Star cluster). Erect or prostrate, woody-based evergreen perennial or subshrub with ovate to elliptic or lance-shaped, hairy leaves, to 15cm (6in) long. From spring to autumn, bears flat or domed corymbs of long-tubed, pink, magenta, blue, lilac, or white flowers, to 1.5cm (½in) across. ↑ 2m (6ft), ↔ 1m (3ft). Yemen to tropical E. Africa. ☀ (min. 7°C/45°F).



Pentas lanceolata



Pentas lanceolata 'Kermesina'

**'Avalanche'** has white-variegated leaves and white flowers. **'Kermesina'** ☐ has red-throated, deep pink flowers. **'New Look'** ☐ has dark green leaves and light pink flowers. **subsp. quartiniana** has short-tubed, pink to red flowers.

**P. 'Orchid Star'.** Erect, shrubby perennial with elliptic or lance-shaped, light green leaves, 8–15cm (3–6in) long. Bears domed corymbs of lilac flowers, to 2cm (¾in) across, in summer. ↑ 45cm (18in), ↔ 50cm (20in). ☀ (min. 7°C/45°F)

**P. 'Tu-tone'.** Compact, subshrubby perennial with elliptic or lance-shaped leaves, 8–15cm (3–6in) long. Large, domed corymbs of pink, red-centred flowers, 1–2cm (½–¾in) across, are borne in summer. ↑ 1m (3ft), ↔ 60cm (24in). ☀ (min. 7°C/45°F)



Pentas lanceolata 'New Look'

▷ **Peony** see *Paeonia*

**Caucasian** see *P. mlokosewitschii*

**Common** see *P. officinalis*

**Himalayan** see *P. emodi*

**Majorcan** see *P. cambessedesii*

## PEPEROMIA

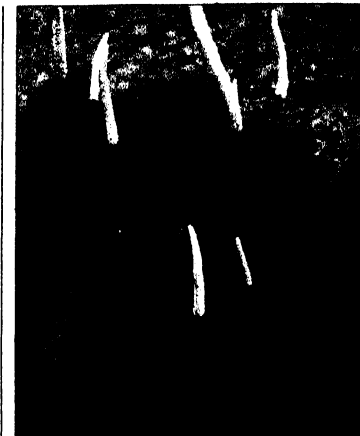
PIPERACEAE

Genus of 1,000 or more species of evergreen, sometimes succulent, rosette-forming or erect perennials, some with trailing stems. They occur in tropical and subtropical regions worldwide, in habitats varying from high-altitude cloud forest to near-desert conditions.

All have small, short-lived root systems, but absorb water from the atmosphere and store it in their leaf cells. They are grown mainly for their fleshy, often long-stalked, elliptic to ovate or heart-shaped, usually alternate leaves, sometimes in whorls or panicles. Small, white or greenish white flowers are produced in upright, sometimes branched and panicle-like spikes. Flowering is erratic but mainly in late summer. In frost-prone areas, grow in a warm greenhouse or as houseplants; grow trailing species in a hanging basket, and small species in a bottle garden. In tropical areas, grow as ground cover or in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.1) in bright indirect light when in active growth, and in full light in winter. Water moderately in summer, sparingly in winter, preferably with tepid, soft water. From spring to summer, maintain moderate to high



Peperomia caperata

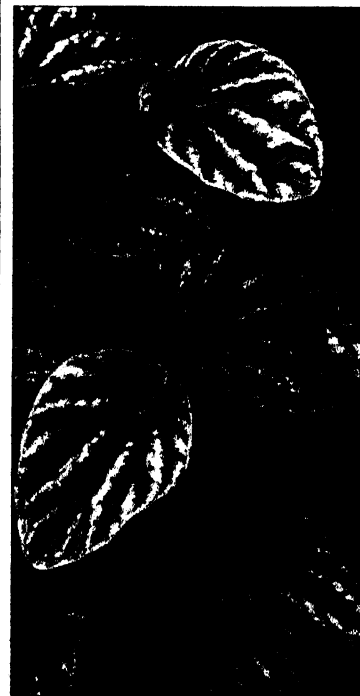
humidity, mist twice daily, and apply a balanced liquid fertilizer monthly. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade. Most species tolerate poor light, and many of the thicker-leaved species will survive in dry conditions for some time.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) when ripe. During growth, take softwood, leaf, or leaf bud cuttings, or remove offsets of rosetted variants.

• **PESTS AND DISEASES** Trouble free.

**P. argyreia** ♀ syn. *P. sandersii* (Watermelon peperomia). Upright, rosette-forming perennial with heart-shaped, leathery, deep green, silver-striped leaves, 5–9cm (2–3½in) long, with long red stems. Bears small green flowers in spikes 5–8cm (2–3in) long. ↑ 20cm (8in), ↔ 15cm (6in). N. South America. ☀ (min. 15°C/59°F)

**P. caperata** ☐ Mound-forming perennial with rosettes of long-stemmed, deeply corrugated, heart-shaped, dark green leaves, 2.5–4cm (1–1½in) long. Tiny white flowers are borne in spikes 5–8cm (2–3in) long. ↑ 20cm (8in). Brazil. ☀ (min. 15°C/59°F). **'Emerald Ripple'** ♀ has deep green leaves with



Peperomia caperata 'Luna Red'

*Peperomia clusiifolia*

darker stripes along the veins. 'Little Fantasy' ♀ is dwarf, with dark green leaves; ♂→ 8cm (3in). 'Luna Red' ■ has dark crimson leaves and stems.

'Tricolor' is slow-growing, and has pale green leaves with wide cream margins and central pink markings.

*P. clusiifolia* ■ Stiff, erect perennial with obovate, slightly concave, mid-green leaves, 4–11cm (1½–4½in) long, often purple-tinged when young. Pale green flowers are borne in spikes

12–19cm (5–7in) long. ♂→ 25cm (10in), ♀→ 15cm (6in). Brazil. ☼ (min. 15°C/59°F). 'Variegata' has red-margined, cream-variegated, mid-green leaves.

*P. dolabriformis* (Prayer peperomia). Robust, erect perennial, becoming woody with age, with succulent, purse-shaped, bright green leaves, 4–5cm (1½–2in) long; the 2 halves of each leaf are folded upwards and fused along the dark green margins. Leafy stems produce panicle-like spikes, 3–7cm (1¼–3in) long, of white flowers. ♂→ 25cm (10in), ♀→ 20cm (8in). Peru. ☼ (min. 15°C/59°F)

*P. fraseri*, syn. *P. resediflora* (Flowering peperomia). Upright, rosette-forming perennial with stiff, heart-shaped, shiny, dark green leaves, 2.5–4.5cm (1–1¾in) long, pale green beneath with red veins. Leafy stems bear panicle-like spikes, to 40cm (16in) long, of white flowers. The only species grown also for its flowers. ♂→ 40cm (16in), ♀→ 20cm (8in). Ecuador, Colombia. ☼ (min. 15°C/59°F)

*P. glabella* ■ (Wax privet peperomia). Spreading perennial with trailing stems and broadly elliptic to slightly obovate, mid-green leaves, 4–6cm (1½–2½in)

*Peperomia glabella*

long, dotted with black glands. Green flowers are borne in spikes 8–12cm (3–5in) long. ♂→ 15cm (6in), ♀→ 30cm (12in). West Indies, Central and South America. ☼ (min. 15°C/59°F).

'Variegata' has leaves with creamy yellow margins.

*P. griseoargentea*, syn. *P. hederifolia* (Ivy-leaf peperomia). Rosette-forming perennial with heart-shaped, silvery grey leaves, 3–6cm (1¼–2½in) long, tinged copper along the veins. Green flowers are borne in spikes 5–9cm (2–3½in) long. ♂→ 20cm (8in), ♀→ 15cm (6in). Brazil. ☼ (min. 15°C/59°F)

*P. hederifolia* see *P. griseoargentea*.

*P. incana* (Felted peperomia). Stiff, semi-erect perennial, later spreading, with succulent, broadly ovate, grey-green leaves, 3–6cm (1¼–2½in) long, covered in white-woolly hairs. Produces green flowers with purple anthers, in spikes 15–20cm (6–8in) long. ♂→ 30cm (12in). S.E. Brazil. ☼ (min. 15°C/59°F)

*P. maculosa* (Radiator plant). Robust, erect perennial, becoming untidy as it grows larger, with ovate, shiny, dark green leaves, 12–15cm (5–6in) long, on long stems. Bears spikes, 20cm (8in) or more long, of dark purple flowers. ♂→ 20cm (8in). West Indies, Panama, N. South America. ☼ (min. 15°C/59°F)

*P. magnoliifolia* see *P. obtusifolia*.

*P. marmorata* ■ syn. *P. verschaffeltii* (Sweetheart peperomia). Rosette-forming perennial with heart-shaped, dull, mid- or bluish green leaves, 7–12cm (3–5in) long, striped silver-grey, with indented veins. Bears green flowers in spikes to 9cm (3½in) long. ♂→ 25cm (10in). S. Brazil. ☼ (min. 15°C/59°F)

'Silver Heart' has pale green leaves with broad silver stripes. *P. metallica* (Red tree). Erect, bushy perennial with elliptic, dark red leaves, 2–3cm (¾–1¼in) long, each with a broad silver band down the centre. Bears red flowers in spikes 3–4cm (1¼–1½in) long. ♂→ 20cm (8in), ♀→ 15cm (6in). Peru. ☼ (min. 15°C/59°F)

*P. nivalis*. Variable, creeping or erect, succulent perennial with fleshy stems containing aniseed-scented sap. Boat-shaped, keeled, fleshy, bright green leaves, 1.5cm (½in) long, white or white flushed pink beneath, are densely crowded at the tips of the stems. Tiny, dull yellow flowers develop in very compressed spikes, to 1.5cm (½in) long. ♂→ 10–15cm (4–6in), ♀→ indefinite. Peru. ☼ (min. 8°C/46°F)

*P. nummulariifolia* see *P. rotundifolia*.

*Peperomia marmorata**Peperomia obtusifolia* 'Variegata'

*P. obtusifolia* ♀ syn. *P. magnoliifolia* (Pepper face). Stiff, upright perennial with elliptic, leathery, dull green leaves, 5–15cm (2–6in) long. White flowers are borne in spikes 9–12cm (3½–5in) long. ♂→ 25cm (10in). ☼ (min. 15°C/59°F).

'Green and Gold' has leaves with golden yellow margins. 'Variegata' ■ has leaves with wide, white or yellow margins.

*P. orba*, syn. *P. 'Princess Astrid'*. Erect, bushy perennial with ovate, succulent, softly hairy, grey-green leaves, 4–5cm (1½–2in) long, each with a broad silver stripe down the centre. Bears green flowers in spikes 8–12cm (3–5in) long. ♂→ 15cm (6in), ♀→ 20cm (8in). Origin unknown. ☼ (min. 15°C/59°F). 'Pixie', syn. 'Teardrop', is a dwarf cultivar, with leaves 2–3cm (¾–1¼in) long. Propagate from the smaller shoots. It may revert, producing larger leaves; shoots bearing these should be cut out as they appear. ♂→ 8cm (3in), ♀→ 10cm (4in). 'Teardrop' see 'Pixie'.

*P. 'Princess Astrid'* see *P. orba*.

*P. resediflora* see *P. fraseri*.

*P. rotundifolia*, syn. *P. nummulariifolia* (Creeping buttons). Creeping, usually epiphytic, succulent perennial with slender, fleshy stems, often covered with minute, fine hairs or bristles, and bearing rounded to broadly elliptic, fleshy, bright green leaves, 1cm (½in) long. Produces short spikes, 1cm (½in) long, of yellowish white flowers. ♂→ 3cm (1¼in), ♀→ 25cm (10in). South Africa, West Indies, Central and South America. ☼ (min. 10°C/50°F)

*P. rubella*. Erect, branching perennial, becoming untidy with age, with whorls of 4 or 5 elliptic, pale-veined, pale to deep green leaves, to 1.5cm (½in) long, red beneath, giving a copper tinge to the foliage. Green flowers are borne in spikes 2–5cm (¾–2in) long. ♂→ 20cm (8in), ♀→ 25cm (10in). West Indies. ☼ (min. 15°C/59°F)

*P. sandersii* see *P. argyrea*.

*P. scandens* ♀ (False philodendron). Trailing perennial with heart-shaped, pale green leaves, 5–7cm (2–3in) long. Produces green flowers in spikes 12–14cm (5–5½in) long. ♂→ 20cm (8in), ♀→ 50cm (20in). Mexico to South America. ☼ (min. 15°C/59°F).

'Variegata' produces leaves with broad yellow margins, but tends to revert to plain green.

*P. velutina*. Upright, bushy perennial with broadly elliptic, fleshy, velvety, dark green leaves, 2–4.5cm (¾–1¾in)

long, with pale veins, and red beneath. Green flowers are produced in spikes 9–10cm (3½–4in) long. ♂→ 30cm (12in), ♀→ 20cm (8in). Ecuador. ☼ (min. 15°C/59°F)

*P. verschaffeltii* see *P. marmorata*.

*P. verticillata*. Erect, fleshy perennial with rounded to obovate leaves (variable on the same plant), pale green above, red-pink beneath, 0.8–3cm (⅜–1¼in) long, and borne in whorls of 5 at the nodes. Leaves and the lower parts of stems are softly white-hairy. Green flowers are borne in spikes, 2–2.5cm (¾–1in) long. ♂→ 50cm (20in), ♀→ 45cm (18in). W. Indies. ☼ (min. 10°C/50°F)

## ▷ *Peperomia*,

Felted see *Peperomia incana*

Flowering see *Peperomia fraseri*

Ivy-leaf see *Peperomia griseoargentea*

Prayer see *Peperomia dolabriformis*

Sweetheart see *Peperomia*

*marmorata*

Watermelon see *Peperomia argyrea*

Wax privet see *Peperomia glabella*

## ▷ *Pepper* see *Capsicum*, *Piper*

Bell see *Capsicum annuum* Grossum Group

Black see *Piper nigrum*

Cayenne see *Capsicum annuum*

Longum Group

Cherry see *Capsicum annuum*

Cerasiforme Group

Chilli see *Capsicum*, *C. annuum*,

*C. annuum* Longum Group

Cone see *Capsicum annuum*

Conioides Group

Japan see *Zanthoxylum piperitum*

Mountain see *Drimys lanceolata*

Red cone see *Capsicum annuum*

Fasciculatum Group

White see *Piper nigrum*

▷ *Pepper bush*, *Sweet* see *Clethra*, *C. alnifolia*

▷ *Pepper face* see *Peperomia obtusifolia*

▷ *Peppermint*,

Mount Wellington see *Eucalyptus*

*coccifera*

Narrow-leaved black see *Eucalyptus*

*nicholii*

Sydney see *Eucalyptus piperita*

▷ *Pepper tree* see *Schinus molle*

Brazilian see *S. terebinthifolius*

▷ *Pepperwort* see *Marsilea*

▷ *Perennials* see pp.38–39

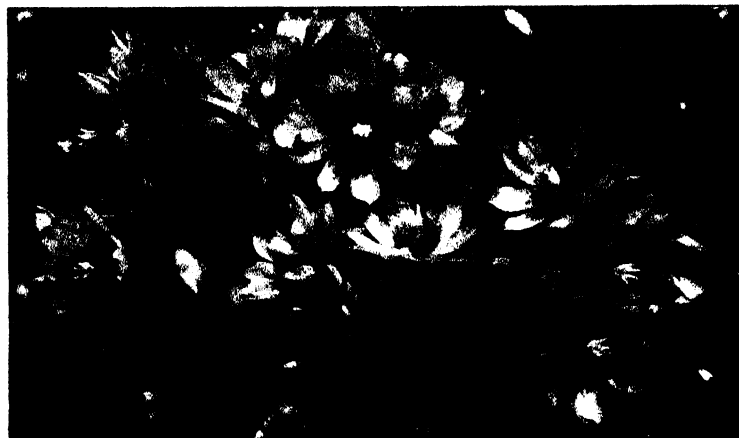
## PERESKIA

### CACTACEAE

Genus of 16 species of tree-like, scandent, or shrubby, perennial cacti occurring in wooded, often hilly regions of the USA (Florida), Mexico, Central America, tropical South America to N. Argentina, and the West Indies. They have spiny, slightly fleshy branches; some become woody with age. Some have tuberous roots. The fleshy, lance-shaped to rounded or oblong leaves are usually evergreen (deciduous in species with a dormant period). Bowl-shaped flowers, solitary or borne in axillary or terminal corymbs or panicles, open by day from spring to autumn. Where temperatures drop below 10–15°C (50–59°F), grow in a temperate or warm greenhouse. In warm, dry climates, use in a desert garden or courtyard garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light,

*Pereskia aculeata*

with shade from the hottest sun. From mid-spring to late summer, water moderately and apply a low-nitrogen fertilizer every 5–6 weeks. Water sparingly in winter. Provide support for stems of climbing species. Outdoors, grow in moderately fertile, sharply drained soil in light dappled shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. From late spring to summer, take cuttings of stem sections.

• **PESTS AND DISEASES** Susceptible to mealybugs and, while flowering, aphids.

**P. aculeata** ■ (Barbados gooseberry). Vigorous, scandent, deciduous cactus producing spiny, fleshy stems and lance-shaped or elliptic to ovate, soft, dark green leaves, to 11cm (4½in) long. Brown areoles bear 1–3 yellowish brown spines. In autumn, produces panicles of long-lasting, scented, creamy white flowers, to 5cm (2in) across, with orange-red stamens. †8–10m (25–30ft), ↔ indefinite. USA (Florida), West Indies, Paraguay to S. Brazil. ♀ (min. 15°C/59°F). 'Godseffiana', syn. var. *godseffiana*, has glossy, peach-coloured leaves when young, often purplish red beneath; †2–3m (6–10ft), ↔ 1m (3ft).

**P. amapola** see *P. nemorosa*.

**P. argentina** see *P. nemorosa*.

**P. grandiflorus** see *P. grandifolia*.

**P. grandifolia** ■ syn. *P. grandiflorus*, *Rhodocactus grandifolius*. Shrubby, erect, evergreen cactus with thick, spiny stems and narrowly elliptic, ovate, or obovate to lance-shaped leaves, 9–23cm (3½–9in) long. Brown areoles bear up to 8 almost black spines. Corymbs of

*Pereskia grandifolia*

bright pink to purple-pink flowers, 3–5cm (1¼–2in) across, with white-based petals, are produced from spring to autumn. †to 5m (15ft), ↔ 1m (3ft). Brazil. ♀ (min. 15°C/59°F)

**P. nemorosa**, syn. *P. amapola*, *P. argentina*, *P. sacharosa* of gardens. Shrubby, often tree-like, erect, evergreen cactus with smooth green branches and lance-shaped leaves, to 12cm (5in) long. Greyish white areoles bear 3 or more red spines. From spring to summer, bears corymbs of white or pink flowers, 8cm (3in) across. Often confused with *P. sacharosa*. †6–8m (20–25ft), ↔ 1m (3ft). S. Brazil, Paraguay, Argentina, Uruguay. ♀ (min. 15°C/59°F)

**P. sacharosa** of gardens see *P. nemorosa*.

## PEREZIA

ASTERACEAE/COMPOSITAE

Genus of about 35 species of upright, tufted, sometimes rhizomatous perennials, and occasionally shrubs and annuals, found in open scree in the mountains of South America. The alternate leaves are entire, toothed, or pinnatifid or pinnatisect with toothed and often spiny margined lobes. Daisy- or thistle-like flowerheads are borne singly or in terminal cymes or panicles. Grow in a scree bed or an alpine house; they are intolerant of winter wet.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, humus-rich, gritty, sharply drained soil in full sun. Protect from winter wet. In an alpine house, grow in a mix of equal parts loam-based potting compost (J1 No.1) and grit.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Take semi-ripe cuttings in early summer.

• **PESTS AND DISEASES** Aphids, white-flies, and red spider mites may be a problem under glass.

**P. linearis**. Tufted, hairy-stemmed perennial with dark green leaves, to 3cm (1¼in) long, fringed with fine hairs; basal leaves are narrowly lance-shaped to spoon-shaped, stem leaves are lance-shaped. Bears solitary, short-stemmed, deep blue flowerheads, 2.5cm (1in) or more across, in winter or early spring. †10cm (4in), ↔ 15cm (6in). S. Andes. \*\*\*

▷ **Perfoliate Alexanders** see *Smyrniolum perfoliatum*

## PERICALLIS

ASTERACEAE/COMPOSITAE

Genus of 15 species of perennials and subshrubs, sometimes grown as annuals, occurring in forests and on slopes and rocky outcrops in the Canary Islands, Madeira, and the Azores. They are grown for their daisy-like flowerheads, solitary or borne in corymbs, appearing from winter to early autumn. Stems are upright to spreading, simple or branching. Leaves are simple, rounded to broadly lance-shaped or arrow-shaped, arranged alternately or in basal rosettes. In frost-prone areas, grow in a cool greenhouse or as houseplants. In warmer climates, grow in a shrub border or use as summer bedding.

• **HARDINESS** Frost tender.

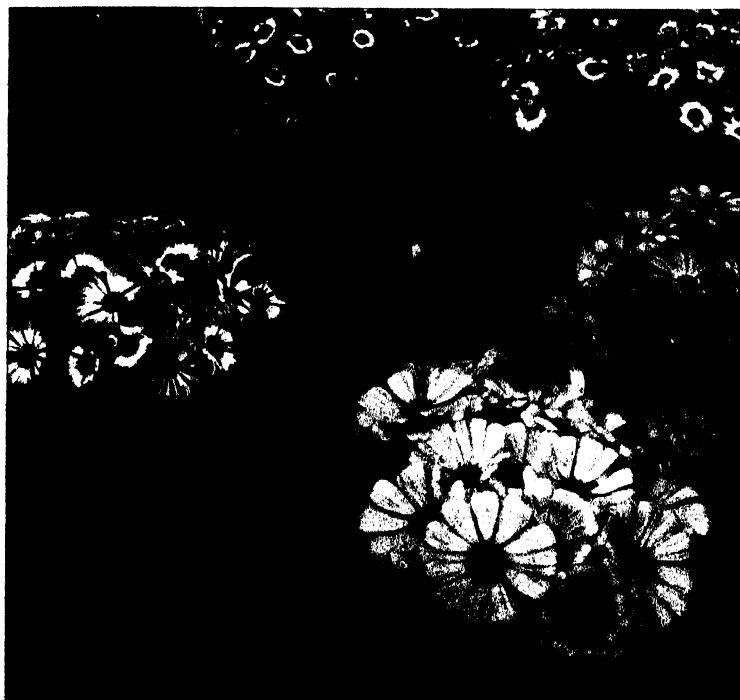
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. During growth, water moderately and apply a balanced liquid fertilizer every 2 weeks. Outdoors, grow in fertile, well-drained soil, in full sun with midday shade, or in partial shade. Remove spent blooms to prolong flowering; discard plants when flowering has ceased.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) from spring to midsummer. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Susceptible to aphids, red spider mites, thrips, white-flies, and chrysanthemum leaf miner.

**P. x hybrida**, syn. *Cineraria cruentus* of gardens, *C. x hybrida*, *Senecio cruentus*, *S. x hybridus* (Florists' cineraria).

Cushion-forming or loosely branched perennial, often grown as an annual, with alternate, ovate, triangular-heart-shaped, mid- to deep green leaves, 25–30cm (10–12in) long. From winter to spring, bears loose, terminal and axillary corymbs, 2.5–8cm (1–3in) across, of flowerheads in single colours and bicolours, in pink, red, blue, white, magenta, lavender-blue, and copper.

*Pericallis x hybrida* 'Spring Glory'

†45–60cm (18–24in), ↔ 25–60cm (10–24in). Garden origin. ♀ (min. 7°C/45°F). 'Brilliant' has large flowerheads, 5cm (2in) across, in a mixture of white, blue, deep red, copper, and rose-pink, and bicolours. 'Chloe' is an early-flowering mixture, with flowerheads in shades of blue, carmine-red, and pink, and bicolours. **Cindy Series** cultivars are compact; flowerheads are in single colours, as well as in a mixture of blue, carmine-red, copper, and pink; †20cm (8in), ↔ 30cm (12in). 'Royalty' is late-flowering, with flowerheads in sky-blue, cherry-red, lilac with a white eye, and bicolours. 'Spring Glory' ■ is compact and early-flowering, with abundant flowerheads in blue, copper, carmine-red, and pink, as well as bicolours; †20cm (8in), ↔ 25cm (10in). 'Star Wars' is compact, with flowerheads in a mixture of white, blue, rose-pink, carmine-red, and purple; ideal for small containers; †15cm (6in), ↔ 20cm (8in).

## PERILLA

LABIATAE/LAMIACEAE

Genus of 6 species of erect, bushy, aromatic annuals, with 4-angled stems, found in variable habitats, usually in woodland, from India to Japan. They are cultivated for their opposite, simple, usually ovate, mid- or dark green leaves, often flushed or variegated red or bronze. Whorls of insignificant, 2-lipped, 5-lobed, bell-shaped flowers, each encased in a prominent, 2-lipped calyx, are borne in upright spikes in late summer and autumn. *P. frutescens* and its cultivars are the most commonly grown; their decorative, often purple and frilly foliage contrasts well with the flowers of summer bedding plants.

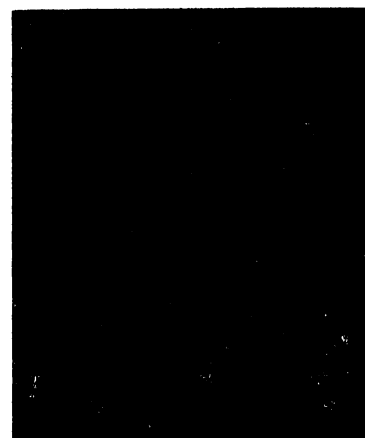
• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring.

• **PESTS AND DISEASES** Trouble free.





*Perilla frutescens* var. *crispa*

***P. frutescens*.** Vigorous, hairy annual with broadly ovate, pointed, deeply toothed, long-stalked, mid-green, sometimes purple-flecked leaves, to 12cm (5in) long. Whorls of tiny white flowers are borne in spikes, to 10cm (4in) long, in summer. ↑ to 1m (3ft), ↔ to 30cm (12in). Himalayas to E. Asia. \*\*\*. **var. *crispa*** ☐ ♀ syn. var. *nankinensis*, has attractive, dark purple or dark bronze, sometimes dark green leaves with frilly margins. **var. *nankinensis*** see var. *crispa*.

## PERIPLOCA

ASCLEPIADACEAE

Genus of 11 species of deciduous or evergreen shrubs and climbers found in woodland, in thickets, and on riverbanks in the Mediterranean, tropical Africa, and E. Asia. They are grown for their attractive, lance-shaped to broadly ovate leaves, borne in opposite pairs. Small, star-shaped flowers are produced in terminal or axillary corymbs or cymes. Train *P. graeca*, the most commonly grown species, on wires against a wall, or grow over a pergola, trellis, or similar support. The fruits and sap may cause stomach upset if ingested.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in any well-drained soil in a warm, sheltered site in full sun. Support climbing stems. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***P. graeca*** (Silk vine). Twining, deciduous climber with ovate, glossy, dark green leaves, to 10cm (4in) long. Star-shaped, unpleasantly scented, 5-lobed flowers, 2.5cm (1in) across, greenish yellow outside and purple-brown inside, are borne in long-stalked corymbs of up to 12, in mid- and late summer. They are followed by slender seed pods, to 12cm (5in) long, which open to release silky-tufted seeds. ↑ 9m (28ft). S.E. Europe, S.W. Asia. \*\*

▷ **Periwinkle** see *Vinca*  
**Greater** see *Vinca major*  
**Lesser** see *Vinca minor*  
**Madagascar** see *Catharanthus*, *C. roseus*

▷ **Pernettya** see *Gaultheria*  
***P. mucronata*** see *G. mucronata*  
***P. prostrata*** see *G. myrsinoides*  
***P. tasmanica*** see *G. tasmanica*

## PEROVSKIA

LABIATAE/LAMIACEAE

Genus of 7 species of deciduous subshrubs occurring in rocky sites from C. Asia to the Himalayas, grown for their foliage and flowers. They have opposite, often finely cut and deeply divided, lance-shaped to ovate or oblong, aromatic, grey-green leaves. Terminal panicles of small, tubular, 2-lipped blue flowers are produced in late summer and early autumn. Grow in a mixed or herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in full sun. They tolerate dry, chalky soil and coastal conditions. Pruning group 6.
- **PROPAGATION** Root softwood cuttings in late spring, or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***P. atriplicifolia*.** Upright subshrub with grey-white shoots and ovate, deeply cut and lobed, grey-green leaves, to 5cm (2in) long. Small, tubular, violet-blue flowers are borne in tall panicles, to 30cm (12in) long, in late summer and early autumn. ↑ 1.2m (4ft), ↔ 1m (3ft). Afghanistan. \*\*\*

***P. 'Blue Spire'*** ☐ ♀ Upright subshrub with grey-white stems bearing ovate, very deeply divided, silver-grey leaves, to 5cm (2in) long. Tubular, violet-blue flowers, in panicles to 30cm (12in) long, are very profusely borne in late summer and early autumn. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

***P. 'Hybrida'*.** Upright subshrub with grey-white shoots and ovate, deeply cut, grey-green leaves, to 5cm (2in) long. In late summer and early autumn, bears tubular, dark lavender-blue flowers in tall panicles, to 40cm (16in) long. ↑ 1m (3ft), ↔ 75cm (30in). \*\*\*

▷ **Persian shield** see *Strobilanthes dyerianus*



*Perovskia* 'Blue Spire'

## PERSICARIA

syn. ACONOGONON, BISTORTA, TOVARA

POLYGONACEAE

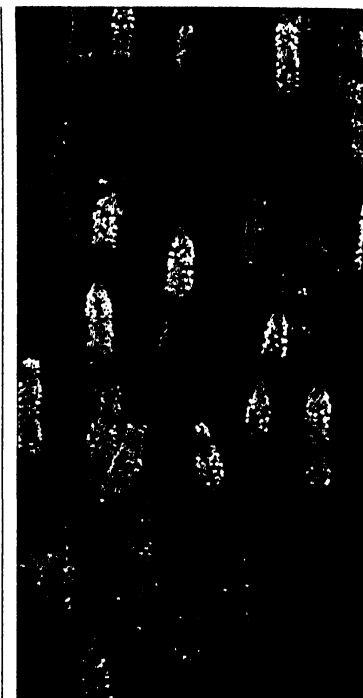
Genus of 50–80 species of annuals, often rhizomatous or stoloniferous perennials, and rarely subshrubs. They may be evergreen, semi-evergreen, or deciduous; some have attractive autumn leaf colour. They are found in a variety of habitats worldwide. Often spreading and sometimes invasive, they have usually fleshy stems and simple, entire, variably shaped, often conspicuously veined leaves comprising long-stalked basal leaves and fewer, smaller, alternate, stalkless leaves on the stems. Spikes or panicles of small, usually long-lasting, funnel-, bell-, or cup-shaped, white, pink, or red flowers are followed by distinctive, usually brownish red, 3-angled or ovoid fruits. Some of the larger perennials are undemanding plants for a border, or as ground cover, and are suitable for naturalizing in a meadow or woodland garden. Grow smaller species in a large rock garden, or at the front of a border. Contact with all parts may irritate skin; the sap may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any moist soil in full sun or partial shade. *P. bistorta* tolerates dry soil.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide perennials in spring or autumn.
- **PESTS AND DISEASES** *P. campanulata* may attract blackfly; *P. virginiana* 'Painter's Palette' may suffer slug or snail damage.

***P. affinis***, syn. *Polygonum affine*. Mat-forming, evergreen perennial with elliptic-lance-shaped, dark green leaves, 5–15cm (2–6in) long, turning red-bronze in autumn. From midsummer to mid-autumn, bears spikes, 5–8cm (2–3in) long, of cup-shaped, bright



*Persicaria affinis* 'Donald Lowndes'



*Persicaria affinis* 'Superba'

rose-red flowers, to 5mm (¼in) long, fading to pale pink; flowers turn brown with age, providing colour during winter. ↑ to 25cm (10in), ↔ 60cm (24in) or more. Himalayas. \*\*\*. **'Darjeeling Red'** ♀ has large leaves, to 15cm (6in) long, and flowers that open pink and turn red when mature; ↔ 50cm (20in). **'Dimity'** has dense spikes of light pink flowers; leaves turn red in autumn; ↑ 10cm (4in), ↔ 45cm (18in). **'Donald Lowndes'** ☐ ♀ has pointed leaves, and produces dense spikes of pale pink flowers, becoming darker when mature; ↑ to 20cm (8in), ↔ 30cm (12in). **'Superba'** ☐ ♀ is vigorous, and has pale pink flowers, becoming deep pinkish red, with red calyces; leaves turn rich brown in autumn.



*Persicaria bistorta* 'Superba'

***P. amplexicaulis***, syn. *Bistorta amplexicaulis*, *Polygonum amplexicaule* (Bistort). Robust, clump-forming, semi-evergreen perennial with ovate-lance-shaped, pointed, mid-green leaves, to 25cm (10in) long; they are slightly puckered and prominently veined above, downy beneath. Long-stalked, narrow spikes, to 10cm (4in) long, of narrowly bell-shaped, bright red to purple or white flowers, 5mm (1/4in) long, are borne from midsummer to early autumn.  $\pm$  to 1.2m (4ft). Himalayas. \*\*\*. 'Arun Gem' is low-growing, and produces pendent spikes of dark pink flowers with bronze tips;  $\pm$  30cm (12in),  $\leftrightarrow$  90cm (36in). 'Firetail'  $\nabla$  has bright red flowers.

'Inverleith' forms mounds of dark green leaves, and produces short spikes of dark red flowers;  $\pm$  to 45cm (18in).

***P. bistorta***, syn. *Polygonum bistorta* (Bistort). Vigorous, clump-forming, leafy, hairless, semi-evergreen perennial with broadly ovate, pointed, boldly veined, mid-green leaves, 10–30cm (4–12in) long. Narrowly bell-shaped, pale pink or white flowers, 5mm (1/4in) long, are borne in short, dense, cylindrical spikes, 5–7cm (2–3in) long,



*Persicaria macrophylla*

from early summer to mid-autumn.  $\pm$  75cm (30in),  $\leftrightarrow$  90cm (36in). Europe, N. and W. Asia. \*\*\*. **subsp. *carnea***, syn. *Polygonum carneum*, has deeper pink flowers borne in more spherical spikes;  $\pm$  45–70cm (18–28in),  $\leftrightarrow$  45cm (18in); Caucasus, N. and E. Turkey.

'Superba'  $\nabla$  has dense, spherical spikes of soft pink flowers, freely borne over a long period;  $\pm$  to 90cm (36in).

***P. campanulata***  $\nabla$  syn. *Polygonum campanulatum*. Clump-forming, stoloniferous, deciduous or semi-evergreen perennial with sparse, lance-shaped to elliptic-ovate basal leaves, to 15cm (6in) long, and numerous stem leaves; all are hairy, with conspicuous veins, and mid-green above, white or light brown beneath. From midsummer to early autumn, slender stems bear loose, short-stalked panicles, 15cm (6in) long, of bell-shaped, fragrant, pink or white flowers, 5mm (1/4in) long.  $\pm$  to 90cm (36in). N. India, N. Burma, S.W. China. \*\*\*. 'Southcombe White' has white flowers.

***P. capitata***, syn. *Polygonum capitatum*. Branching, stem-rooting, evergreen to deciduous perennial with ovate to elliptic, dark green leaves, to 5cm (2in) long, each with a purple V-shaped band. Bears bell-shaped pink flowers, 2–3mm (1/16–1/8in) long, in dense, rounded, short-stemmed panicles, to 1.5cm (1/2in) across, in summer. Good ground cover; may be invasive.  $\pm$  8cm (3in),  $\leftrightarrow$  50cm (20in) or more. Himalayas. \*\*

***P. macrophylla***  $\nabla$  syn. *Polygonum macrophyllum*, *P. sphaerostachyum*. Rosette-forming, semi-evergreen perennial with woody crowns and lance-



*Persicaria tenuicaulis*

shaped, boldly veined, mid-green leaves, to 20cm (8in) long. Dense, cylindrical spikes, 1cm (1/2in) long, of bell-shaped, pink to red flowers, 5mm (1/4in) long, are borne from early summer to early autumn.  $\pm$  to 30cm (12in). Himalayas to S.W. China. \*\*\*

***P. milletii***  $\nabla$  syn. *Polygonum milletii*. Clump-forming, erect, semi-evergreen perennial with linear-lance-shaped, pointed, dark green leaves, to 30cm (12in) long, with prominent midribs and long sheaths. From early summer to late autumn, bears dense, cylindrical spikes, to 4cm (1 1/2in) long, of bell-shaped crimson flowers, 6mm (1/4in) long. Similar to *P. macrophylla*, but longer-flowering.  $\pm$  to 60cm (24in). Himalayas to S.W. China. \*\*\*

***P. orientale***, syn. *Polygonum orientale* (Kiss-me-over-the-garden-gate, Prince's feather, Princess feather). Erect, stout-stemmed, branching, hairy annual with broadly ovate, pointed, mid-green leaves, 10–20cm (4–8in) long, heart-shaped at the bases. Bell-shaped, pink to rose-red or white flowers, to 4mm (1/4in) long, are borne in dense, branching, pendent spikes, 2–8cm (3/4–3in) long, in late summer and autumn.  $\pm$  to 1.2m (4ft),  $\leftrightarrow$  to 60cm (24in). E. and S.E. Asia, Australia. \*\*\*

***P. tenuicaulis***  $\nabla$  syn. *Polygonum tenuicaule*. Slow-growing, mat-forming, deciduous or semi-evergreen perennial with ovate-elliptic, dark green leaves, 3–8cm (1 1/4–3in) long. Bears short, dense spikes, about 3.5cm (1 1/2in) long, of bell-shaped, fragrant white flowers, 3mm (1/8in) long, in late spring.  $\pm$  5cm (2in),  $\leftrightarrow$  15cm (6in). Japan. \*\*\*



*Persicaria virginiana* 'Painter's Palette'

***P. vacciniifolia***  $\nabla$  syn. *Polygonum vacciniifolium*. Creeping, semi-evergreen perennial with branching, red-tinted stems bearing ovate-elliptic, glossy, mid-green leaves, to 2.5cm (1in) long, turning red in autumn. Bell-shaped, deep pink flowers, 4–6mm (1/8–1/4in) long, are produced in narrow, upright spikes, to 8cm (3in) long, in late summer and autumn.  $\pm$  20cm (8in),  $\leftrightarrow$  50cm (20in) or more. Himalayas. \*\*\*

***P. virginiana***, syn. *Polygonum virginianum*, *Tovara virginiana*. Upright herbaceous perennial with ovate to elliptic, mid-green leaves with dark green markings, 8–25cm (3–10in) long. In late summer and early autumn, produces slender, very loose, terminal and axillary spikes, 10–30cm (4–12in) long, of cup-shaped green flowers, 2–3mm (1/16–1/8in) across, turning red.  $\pm$  40–120cm (16–48in),  $\leftrightarrow$  60–140cm (24–56in). Himalayas, Japan, E. North America. \*\*\*. 'Painter's Palette'  $\nabla$  produces variegated leaves with central V-shaped brown marks, yellow patches, deep pinkish red tints, and red midribs and stalks.

▷ **Persimmon**,  
Chinese see *Diospyros kaki*  
Japanese see *Diospyros kaki*

## PETASITES

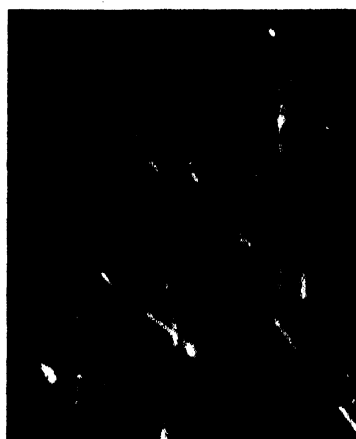
Butterbur, Sweet coltsfoot

ASTERACEAE/COMPOSITAE

Genus of about 15 species of dioecious, rhizomatous perennials from Europe, Asia, and North America, some found in mountainous regions, others in swampy sites, by streams, and in moist woodland. They have long-stalked, heart- to kidney-shaped basal leaves and smaller, short-stalked or stalkless, scale-like stem leaves. Thick stems bear purple, white, or yellow flowerheads, which usually consist of a mixture of disc-florets, ray-florets, and thread-like florets (some fertile, some sterile); they



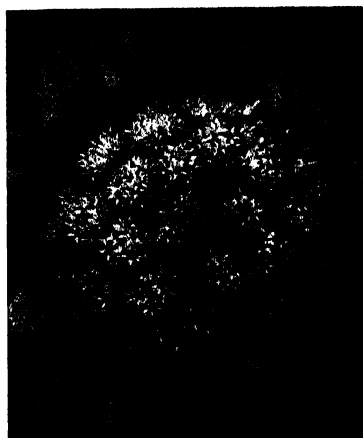
*Persicaria campanulata*



*Persicaria milletii*



*Persicaria vacciniifolia*



*Petasites japonicus*

are borne singly or in dense corymbs, racemes, or panicles. Individual plants are either male or female. Grown for their large leaves, they provide good ground cover beside a stream or pool, or in a wild garden, although they may become invasive. The flowers provide early nectar for bees.

- **HARDINESS** Fully hardy to frost hardy. Below -10°C (14°F), new growth of *P. fragrans* may die above ground, but the rhizomes will usually survive.
- **CULTIVATION** Grow in deep, humus-rich, fertile soil that is permanently moist but not stagnant, in partial or full shade. *P. fragrans* tolerates drier soil.
- **PROPAGATION** Divide in spring or autumn.
- **PESTS AND DISEASES** Trouble free.

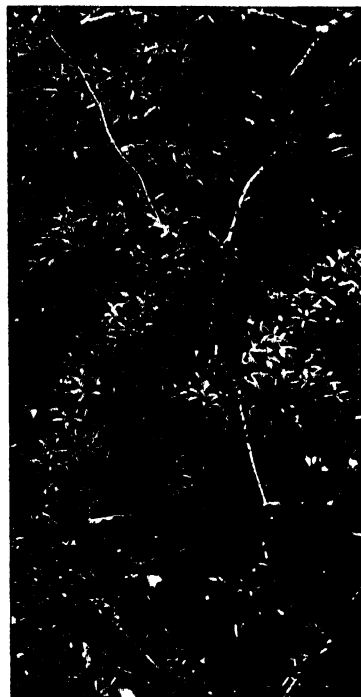
*P. fragrans* (Winter heliotrope). Spreading perennial with fleshy rhizomes and kidney-shaped, toothed, basal leaves, to 12cm (5in) across, hairy beneath, borne on stalks to 30cm (12in) long. Short, lax panicles of about 10 strongly vanilla-scented, pale lilac to purple flowerheads, 1cm (½in) across, appear with the leaves from midwinter to early spring. ‡ to 30cm (12in), ↔ 1.5m (5ft). C. Mediterranean. \* \* \*

*P. japonicus* ☐ Rhizomatous perennial with kidney-shaped, irregularly toothed, basal leaves, to 80cm (32in) across, hairy beneath, borne on stalks 1m (3ft) long. Densely clustered corymbs of yellowish white flowerheads, to 1.5cm (½in) across, with oblong bracts below, are borne before the leaves in late winter and early spring. May become invasive. ‡ 1.1m (3½ft) ↔ 1.5m (5ft). China, Korea, Japan. \* \* \*

## PETREA

VERBENACEAE

Genus of 30 species of deciduous or semi-evergreen climbers, shrubs, and small trees found in woodland from Mexico to tropical South America. They are grown for their salverform flowers, each with 5 petal lobes, produced in terminal racemes or from the uppermost leaf axils, sometimes forming panicles. Simple, elliptic leaves, with prominent veins, are borne in whorls or opposite pairs. Where temperatures fall below 10–13°C (50–55°F), grow in a warm or temperate greenhouse. In warmer areas, grow in open beds, in borders, or as specimen plants; climbing species look spectacular cascading from a tree.



*Petrea volubilis*

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Support climbing stems. Pruning group 11, in late winter or early spring.
- **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer. Layer or air layer in late winter.
- **PESTS AND DISEASES** Scale insects, mealybugs, and red spider mites may be a problem under glass.

*P. kobautiana*. Woody-stemmed, semi-evergreen climber producing branching, twining stems and stalkless, oblong-elliptic, dark green leaves, 5–20cm (2–8in) long, with heart-shaped bases. Bears erect to nodding panicles, to 60cm (24in) long, of small, salverform, violet to white flowers, from late winter to summer. ‡ to 10m (30ft). West Indies. ☼ (min. 10°C/50°F).

*P. volubilis* ☐ (Purple wreath, Queen's wreath). Woody-stemmed, semi-evergreen climber with branching, twining stems and short-stalked, oblong-elliptic leaves, 10–20cm (4–8in) long, deep green above, paler beneath. Bears erect to arching panicles, 20–35cm (8–14in) long, of small, salverform, amethyst to deep violet flowers, with lilac calyx lobes, from late winter to summer. ‡ to 12m (40ft). Mexico, Central America, Lesser Antilles. ☼ (min. 10°C/50°F). 'Albiflora' has white flowers.

## PETROCALLIS

BRASSICACEAE/CRUCIFERAE

Genus of 2 species of cushion-forming perennials occurring at high altitudes in limestone scree and rocks in the Alps, Pyrenees, and Carpathian mountains. They have palmately 3- to 5-lobed leaves, produced in compact rosettes. Corymbs of 4-petalled flowers are borne

on short leafless stems in spring. Grow in an alpine house, scree bed, or trough; they are intolerant of winter wet.

- **HARDINESS** Fully hardy.
- **CULTIVATION** In an alpine house, grow in a mix of 1 part each loam and leaf mould to 2 parts grit. Outdoors, grow in sharply drained, very gritty, poor soil in full sun. Provide protection from winter wet.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Root rosettes as cuttings in early summer.
- **PESTS AND DISEASES** Aphids, white-flies, and red spider mites may be troublesome under glass.

*P. pyrenaica*. Cushion-forming evergreen perennial with dense rosettes of 3-lobed, grey-green leaves, to 6mm (¼in) long. Short-stemmed corymbs of cross-shaped, vanilla-scented, pink-purple, rarely white flowers, to 1cm (½in) across, are borne in spring. ‡ 5cm (2in), ↔ 10cm (4in). Europe (Alps, Pyrenees, Carpathian Mountains). \* \* \*

## PETROCOSMEA

GESNERIACEAE

Genus of about 30 species of evergreen perennials occurring on shady rocks in the mountains of Asia. They produce rosettes of variably shaped, usually lance-shaped to nearly rounded, felted leaves, and are grown for their 5-lobed, tubular to bell-shaped flowers produced in few-flowered, umbel-like clusters in spring. In frost-prone areas, grow in an alpine house or cold greenhouse. In frost-free climates, grow on a shady wall or in a rock crevice.

- **HARDINESS** Half hardy; may be hardy to -2°C (28°F) in a cold greenhouse.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added grit and leaf mould, in bright indirect light. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in gritty, moderately fertile, humus-rich soil in partial shade.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe. Take leaf cuttings in summer.
- **PESTS AND DISEASES** Susceptible to slugs and snails, aphids, and whiteflies.

*P. kerrii* ☐ Rosette-forming perennial with downy, ovate-lance-shaped to oblong, rich green leaves, to 10cm (4in)



*Petrocosmea kerrii*

long. In summer, produces short-stemmed, umbel-like clusters of 1–3 short-tubed white flowers, to 1cm (½in) across, with 2-lobed upper lips and 3-lobed lower lips, and yellow throats. ‡ 8cm (3in), ↔ 15cm (6in). Thailand. \*

## PETROPHILE

PROTEACEAE

Genus of about 40 species of evergreen shrubs, allied to *Isopogon*, occurring on heathland, in woodland, and on cliffs, in rocky or sandy soil in Australia. The alternate leaves are linear to broadly triangular, simple, lobed, or pinnate or 2-pinnate, and rigidly leathery. They are cultivated for their unusual flowers, borne in dense spikes or cone-like clusters, surrounded by small bracts, from winter to spring. Each flower is tubular in bud, then splits open to the base into 4 rolled sepals, each with a stamen attached. When the flowers fade, the bracts enlarge and become woody, enclosing the seed pods. In frost-prone areas, grow in a well-ventilated cool greenhouse. In warmer climates, use in a shrub border.

- **HARDINESS** Frost tender, although may survive short spells at 0°C (32°F).
- **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.1), grit or perlite, and peat or coir, in full light. When in growth, water moderately and apply a phosphate-free liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in poor, neutral to acid, well-drained, sandy or gritty soil that is low in phosphates and nitrates. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 18°C (64°F) in spring. Take semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Prone to *Phytophthora* root rot when grown in moist soil and high humidity.

*P. linearis*. Moderately bushy shrub with wiry stems bearing sickle-shaped, flat, thick, grey-green leaves, 3–8cm (1¼–3in) long, with rounded margins. In spring, produces terminal, ovoid heads, to 5cm (2in) long, of pink flowers, 2.5cm (1in) long; the flowers open to reveal swollen yellow stigmas that turn orange when mature. ‡ to 1m (3ft), ↔ to 80cm (32in). Australia (Western Australia). ☼ (min. 5–7°C/41–45°F)

▷ *Petrophyton* see *Petrophytum*

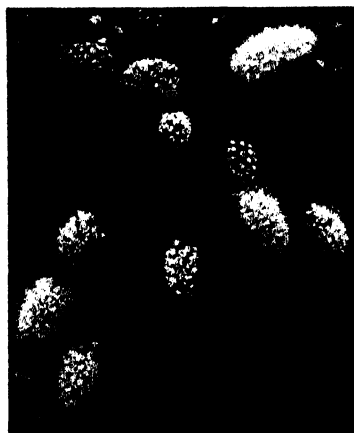
## PETROPHYTUM

syn. PETROPHYTON

Rock spiraea

ROSACEAE

Genus of 3 species of evergreen subshrubs, related to *Spiraea*, occurring in scree or rock crevices in the mountains of W. North America. They are grown for their short, dense, spike-like racemes of tiny, fluffy, cup-shaped flowers, each with 5 overlapping petals, produced in summer, and for their neat, compact habit. They form dense mats or mounds of short, prostrate, branching shoots with densely packed, entire, inversely lance-shaped to spoon-shaped, leathery, hairy leaves. Grow in crevices in a rock

*Petrophytum hendersonii*

garden, or in tufa, in a trough, or in an alpine house.

- **HARDINESS** Fully hardy in very well-drained soil.
- **CULTIVATION** Grow in poor to moderately fertile, sharply drained, preferably slightly alkaline soil in full sun. In an alpine house, grow in a mix of 1 part each loam and leaf mould and 2 parts grit.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Take semi-ripe cuttings in early summer. Remove offsets in spring.
- **PESTS AND DISEASES** Aphids and red spider mites may be troublesome under glass.

***P. caespitosum***. Mat-forming subshrub with dense tufts of spoon-shaped, silky-haired, bluish green leaves, to 1cm (½in) long. Tiny, cup-shaped, creamy white flowers, with prominent stamens, are produced in conical, spike-like racemes, to 10cm (4in) long, in summer. †5cm (2in), ↔ 30cm (12in). USA (Rocky Mountains). \*\*\*

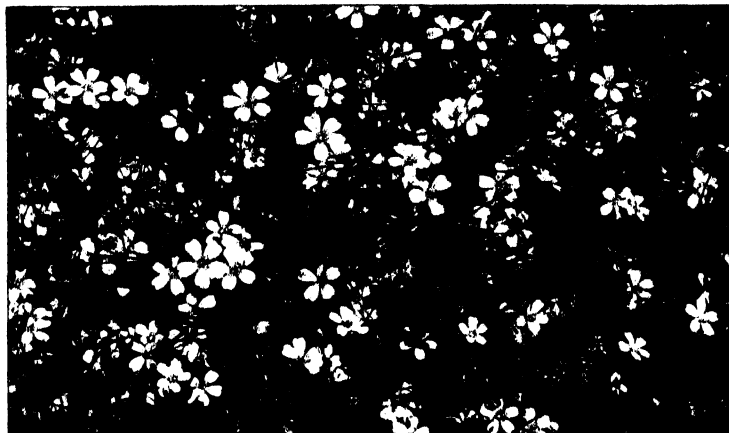
***P. hendersonii*** ■ Dome-forming subshrub with branched stems bearing hairy, spoon-shaped, blue-green leaves, to 2cm (¾in) long. In summer, bears tiny, cup-shaped, white to creamy white flowers in dense, conical, spike-like racemes, to 8cm (3in) long. †10cm (4in), ↔ 20cm (8in). N.W. USA. \*\*\*

## PETRORHAGIA

CARYOPHYLLACEAE

Genus of about 30 species of annuals and perennials, allied to *Gypsophila* and *Dianthus*, occurring in rocky and sandy habitats in S. and C. Europe. They produce wiry stems, swollen at the nodes, and bear linear to lance-shaped or oblong, sometimes keeled leaves. They are cultivated for their terminal panicles or cymes of 5-petalled, salverform, white, sometimes pink or yellow flowers, borne in summer. Grow in a sunny position on a bank, in a rock garden, or against a wall.

- **HARDINESS** Fully hardy in well-drained soil.
- **CULTIVATION** Grow in any poor to moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take stem-tip cuttings in early summer.
- **PESTS AND DISEASES** May be damaged by slugs and snails.

*Petrorhagia saxifraga*

***P. saxifraga*** ■ ♀ syn. *Tunica saxifraga* (Tunic flower). Mat-forming perennial with linear, pointed, grass-like, rich green leaves, about 1cm (½in) long. Delicate cymes of small, salverform, white or pink flowers, 1cm (½in) across, with darker veining, are borne over long periods in summer. C. and S. Europe. †10cm (4in), ↔ 20cm (8in). \*\*\*. 'Rosette' is more compact, with double pink flowers; †8cm (3in), ↔ 15cm (6in)

## PETROSELINUM

Parsley

APIACEAE/UMBELLIFERAE

Genus of 3 species of biennials, with thick rootstocks, occurring in fallow fields and on rocky slopes and waste ground in Mediterranean Europe. The solid, ridged stems bear triangular, pinnate to 3-pinnate, mid-green leaves with toothed leaflets. Terminal, compound umbels of tiny, star-shaped, white or greenish yellow flowers, sometimes tinged red, are produced in the second year, followed by small, ovoid fruits. *P. crispum* (parsley) is grown as a culinary flavouring or garnish, and is widely naturalized in temperate regions; many cultivars are available. Parsley is usually grown as an annual, as the leaves become coarser in the second year. The tuberous-rooted Hamburg parsley (*P. crispum* var. *tuberosum*) is used as a root vegetable. Grow in a herb garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. For best culinary yield, in winter in frost-prone areas, overwinter

*Petroselinum crispum* 'Afro'

in a cold greenhouse or provide cloche protection.

- **PROPAGATION** Sow seed *in situ* from spring to late summer, and keep well watered until germinated. In frost-prone areas, protect late sowings with cloches.
- **PESTS AND DISEASES** Carrot fly larvae may damage roots, and celery fly larvae may tunnel into leaves. The foliage may be affected by leaf spots and by viruses, some transmitted by aphids.

***P. crispum*** (Parsley). Hairless, clump-forming biennial producing triangular, 3-pinnate, shiny, bright green leaves, divided into ovate, toothed segments, each to 3cm (1¼in) long. In summer of the second year, bears tiny, star-shaped, yellow-green flowers in flat-topped, terminal umbels, 1.5–4cm (½–1½in) across. †80cm (32in), ↔ 60cm (24in). S. Europe. \*\*\*. 'Afro' ■ is upright, with tightly curled, dark green leaves. 'Clivi' is a compact, dwarf cultivar with dark green leaves; †20cm (8in), ↔ 30cm (12in). var. *neapolitanum* (French parsley, Italian parsley) has leaves with flat segments, and a stronger flavour. var. *tuberosum* (Hamburg parsley) produces enlarged, edible roots; †to 35cm (14in), ↔ 30cm (12in).

## PETTERIA

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of deciduous shrub, related to *Laburnum*, occurring in mountain scrub in the Balkans, grown for its dense, erect, terminal racemes of fragrant, yellow, pea-like flowers, produced in late spring and summer. It has long-stalked, 3-palmate leaves arranged alternately. Grow in a mixed or shrub border. The seeds may cause stomach upset if ingested.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, fertile soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Take greenwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

***P. ramentacea*** (Dalmatian laburnum). Upright shrub with 3-palmate, dark green leaves, to 9cm (3½in) long, lighter beneath, comprising elliptic to rounded leaflets. Fragrant yellow flowers, to 2cm (¾in) long, are produced in dense, upright racemes, to 8cm (3in) long, in late spring and early summer. †2m (6ft), ↔ 1m (3ft). Balkans. \*\*\*

## PETUNIA

SOLANACEAE

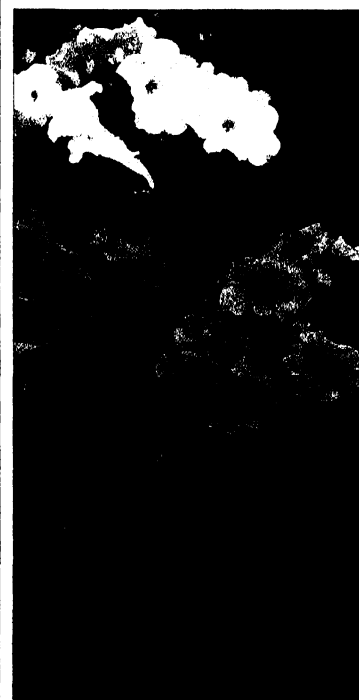
Genus of about 40 species of spreading to erect, branching, sticky-hairy annuals and perennials from stony slopes, steppes, and disturbed ground in South America. Simple, ovate to lance-shaped, mid- to dark green leaves are mostly alternate; upper leaves may be opposite. Showy, solitary, 5-lobed, fluted, single or double, saucer- or trumpet-shaped flowers are borne in the upper leaf axils.

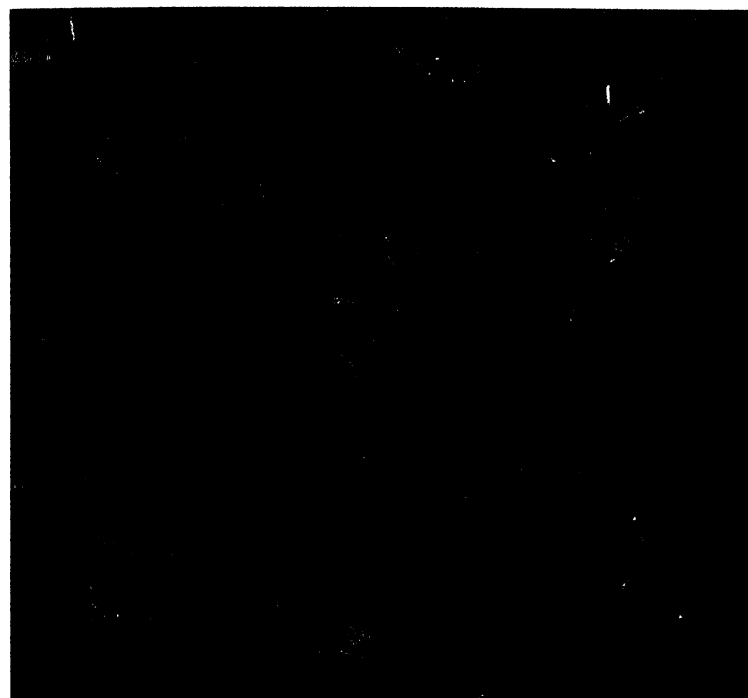
Many cultivars have been produced, derived primarily from *P. axillaris*, *P. integrifolia*, and *P. violacea*. Although perennials, they are grown as annuals, and are particularly useful in coastal gardens or in poor soil. The flowers, 3–10cm (1¼–4in) across, are borne from late spring to late autumn, in a variety of colours, mainly pink, red, pale yellow, violet-blue, or white. Some have dark veining, central white "stars", "halos" (throats in contrasting colours), or picotee margins. Leaves are usually 5–12cm (2–5in) long.

The cultivars are divided into two groups. **Grandiflora** petunias have very large flowers, generally to 10cm (4in) across. Many are susceptible to rain damage, and are best grown in sheltered hanging baskets and containers.

**Multiflora** petunias are bushier than **Grandiflora** petunias, with smaller flowers, to 5cm (2in) across, produced in greater quantity. They are usually more tolerant of wet weather, and are ideal for summer bedding or in a mixed border; individual plants may carpet an area up to 1m (3ft) across.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) in full light. When in growth, water freely and apply a high-potassium fertilizer every 2 weeks. Outdoors, grow in light, well-drained soil in full sun, with shelter from wind. Dead-head to prolong flowering.

*Petunia* Carpet Series



*Petunia* 'Purple Wave'

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or mid-spring. Take softwood cuttings in summer; in frost-prone areas, overwinter young plants under glass.
- **PESTS AND DISEASES** Aphids and slugs may be troublesome. May be affected by fungal foot rot, and by a very wide range of viruses, including alfalfa mosaic virus, tomato spotted wilt virus, tobacco mosaic virus, and potato viruses.

**P. Aladdin Series** ■ Grandiflora petunias producing flowers in a range of colours, including strong shades of red and salmon-pink. † to 30cm (12in), ↔ 30–90cm (12–36in). \*

**P. Carpet Series** ■ Multiflora petunias, very compact and spreading, producing flowers in a colour range that includes strong reds and oranges. Ideal for ground cover. † 20–25cm (8–10in), ↔ 30–90cm (12–36in). \*

**P. Celebrity Series.** Compact, early-flowering Grandiflora petunias with blooms in a large range of colours, including shades of blue, pink, or red, or pale tones of pink, yellow, or white, some with attractive dark veining. † 23–30cm (9–12in), ↔ 30–90cm (12–36in). \*. 'Pink Morn' has pink flowers with pale creamy yellow throats.

**P. Daddy Series.** Early-flowering Grandiflora petunias bearing large, heavily veined flowers in pastel to deep pink, salmon-pink, purple, or lavender-blue. † to 35cm (14in), ↔ 30–90cm (12–36in). \*. 'Sugar Daddy' ■ has purple flowers with dark veins.

**P. Dream Series.** Grandiflora petunias bearing white, pink, salmon-pink, magenta, or red flowers. Good wet-weather tolerance for Grandiflora cultivars. † 30–40cm (12–16in), ↔ 30–90cm (12–36in). \*. 'Salmon Dream' has salmon-pink flowers.

**P. Duo Series.** Multiflora petunias with double flowers in a colour range that includes pink, lavender-pink, red, and burgundy, some with dark veining and some bicolours. Tolerant of wet

weather, but best in containers or under glass. † to 30cm (12in), ↔ 30–90cm (12–36in). \*. 'Peppermint' ■ has pink flowers with darker rose-pink veining.

**P. Flash Series.** Compact, early-flowering Grandiflora petunias in a range of colours, including rose-pink, salmon-pink, coral-pink, scarlet, red, sky-blue, blue, and white, all with creamy yellow throats; bicolours are also available. † 23–40cm (9–16in), ↔ 30–90cm (12–36in). \*

**P. Horizon Series.** Multiflora petunias with flowers in a colour range, including

white, blue, salmon-pink, and red, as well as "halo" cultivars, which have throats in white or shades of red or pink. † 25–35cm (10–14in), ↔ 30–90cm (12–36in). \*. 'Horizon Red Halo' ■ has red flowers with white throats.

**P. Hula Hoop Series.** Early-flowering Grandiflora petunias with blooms in blue, purple, red, or rose-pink, all with broad, ruffled white margins; also available as a mixture. † 30cm (12in), ↔ 35cm (14in). \*

**P. Merlin Series.** Multiflora petunias, very compact and remaining dwarf throughout the season, with flowers mainly in red, rose-pink, or blue, with some picotees. † 20–25cm (8–10in), ↔ 30–90cm (12–36in). \*

**P. Mirage Series** ♀ Multiflora petunias producing large flowers, to 7cm (3in) across, in white or shades of blue, pink, red, or purple, some with darker veining or with central stars. Good wet-weather tolerance. † to 30cm (12in), ↔ 30–90cm (12–36in). \*. 'Mirage Lavender' ■ has deep lavender-blue flowers.

**P. Picotee Series.** Grandiflora petunias bearing flowers in rich blue, purple, red, or rose-pink, all with broad, ruffled white margins. † 23–40cm (9–16in), ↔ 30–90cm (12–36in). \*. 'Picotee Rose' ■ is compact, with deep rose-pink, white-margined flowers; † to 20cm (8in), ↔ 45cm (18in).

**P. Polo Series.** Compact Multiflora petunias with flowers in a range of plain, strong colours, some with veining and some bicolours. Extremely tolerant of wet weather. † to 25cm (10in), ↔ 30–90cm (12–36in). \*

**P. Primetime Series** ■ Multiflora petunias with flowers in a range of 24 colours and 5 mixtures (one of the broadest ranges for a Multiflora series); colours include white or shades of blue, pink, salmon-pink, or red, some with

dark veins or central stars, or picotee margins. † to 35cm (14in), ↔ 30–90cm (12–36in). \*. 'Red Veined' has rose-pink flowers with red veining.

**P. 'Purple Wave'** ■ Multiflora petunia with a spreading habit and vibrant magenta flowers. Use as ground cover or in hanging baskets. † 45cm (18in), ↔ 30–90cm (12–36in). \*

**P. Supercascade Series.** Grandiflora petunias, very free-flowering over a long period, producing huge flowers, to 12cm (5in) across, in white and blue, lilac-pink, rose-pink, salmon-pink, or deep red. † to 30cm (12in), ↔ 30–90cm (12–36in). \*

**P. Surfinia Series.** Grandiflora petunias, more vigorous and branching than other cultivars, with flowers in white and shades of pink, magenta, red, lavender-blue, and blue. They are very free-flowering, with good wet-weather tolerance, and have a trailing habit ideal for hanging baskets. Available only as young plants, propagated from soft-wood cuttings. † 23–40cm (9–16in), ↔ 30–90cm (12–36in). \*. 'Surfinia Purple' ■ has magenta flowers with purple veining.

**P. Ultra Series.** Early-flowering Grandiflora petunias, compact but spreading, with good wet-weather tolerance. They produce large flowers in a range of 17 colours, including white and shades of blue, pink, and red, or a mixture, some with central stars. † 25–30cm (10–12in), ↔ 30–90cm (12–36in). \*. 'Rose Star' ■ has rose-pink flowers, each with a broad, white central star, creating a striped effect.

▷ *Peucedanum graveolens* see *Anethum graveolens*

## PHACELIA

*Scorpion weed*

HYDROPHYLLACEAE

Genus of about 150 species of usually erect annuals, biennials, and perennials from variable habitats, including stony slopes, scrub, and woodland, in North and South America. The usually pinnate, sometimes simple leaves are broadly ovate to elliptic or linear, and mostly alternate, the lower ones sometimes opposite. They produce terminal cymes, racemes, or panicles of tubular, bell-shaped, or bowl-shaped, blue, violet, white, or yellow flowers, each with 5 narrow, spreading lobes, and with prominent styles and stamens. The annual species are suitable for a border or a wildlife garden; their nectar-rich flowers attract bees and other insects. Grow *P. sericea* in an alpine house or scree bed; it resents winter wet. Contact with foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow annuals in any fertile, well-drained soil in full sun. Outdoors, grow *P. sericea* in gritty, sharply drained soil in full sun. Protect it from winter wet; in an alpine house, grow in a mix of equal parts loam, leaf mould, and grit.

• **PROPAGATION** Sow seed of annuals *in situ* in spring or early autumn. Sow seed of *P. sericea* in containers in a cold frame in autumn.

• **PESTS AND DISEASES** *P. sericea* is susceptible to aphids and red spider mites under glass.



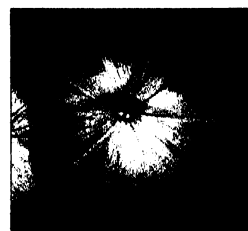
*Petunia* Aladdin Series



*Petunia* Daddy Series 'Sugar Daddy'



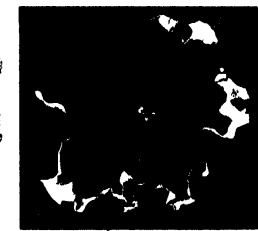
*Petunia* Duo Series 'Peppermint'



*Petunia* Horizon Series 'Horizon Red Halo'



*Petunia* Mirage Series 'Mirage Lavender'



*Petunia* Picotee Series 'Picotee Rose'



*Petunia* Primetime Series



*Petunia* Surfinia Series 'Surfinia Purple'



*Petunia* Ultra Series 'Rose Star'

*Phacelia campanularia*

***P. campanularia*** ■ (Californian bluebell). Erect, compact, intricately branched, glandular-hairy, aromatic annual with simple, ovate to elliptic, coarsely toothed, dark green leaves, to 5cm (2in) long. Lax cymes of upturned, spreading, bell-shaped, dark blue, occasionally white flowers, to 2.5cm (1in) across, are borne in late spring and summer. † 15–30cm (6–12in), ↔ 15cm (6in). USA (S. California). \*\*\*

***P. grandiflora***. Vigorous, erect, glandular-hairy annual with simple, broadly ovate to elliptic, irregularly toothed, mid-green leaves, to 20cm (8in) long. Produces erect, densely flowered cymes of upturned, spreading, bell-shaped, lilac-blue or white flowers, to 2cm (¾in) across, in summer. † to 90cm (36in), ↔ 30cm (12in). USA (S. California). \*\*\*

***P. sericea***. Rosette-forming biennial or short-lived perennial with silvery, silky-hairy, deeply pinnatifid leaves, to 10cm (4in) long, with oblong-lance-shaped lobes. Short, dense, panicle-like cymes of bell-shaped, indigo-blue flowers, 6–8mm (¼–⅓in) across, with pale blue anthers and protruding stamens, are produced in summer. † to 55cm (22in), ↔ 10cm (4in). USA (Rocky Mountains). \*\*\*

***P. tanacetifolia***. Erect, hairy annual, with pinnatifid to 2-pinnatifid or pinnate, mid-green leaves, to 25cm (10in) long, composed of lance-shaped lobes or pinnae. Dense, curved racemes of spreading, bell-shaped, blue or lavender-blue flowers, to 1.5cm (½in) across, are produced in summer. † to 1.2m (4ft), ↔ 45cm (18in). USA (California) to Mexico. \*\*\*

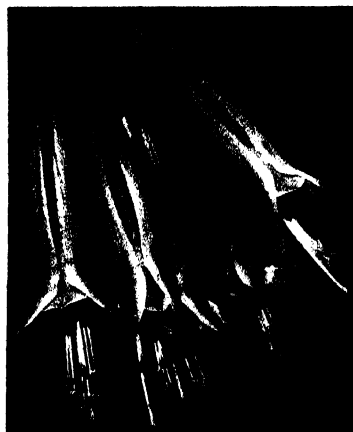
## PHAEDRANASSA

Queen lily

AMARYLLIDACEAE

Genus of about 6 species of bulbous perennials from meadows and rocky slopes at high altitudes in South America. They are grown for their colourful, tubular or narrowly funnel-shaped, pendent flowers, borne in terminal umbels of 3–11, from spring to summer. The leaves are basal, lance-shaped to elliptic, and up to 40cm (16in) long, developing with or after the flowers. In frost-prone areas, grow in a cool or temperate greenhouse. In warmer climates, grow in a warm, sunny position in a border.

• **HARDINESS** Frost tender, but will

*Phaedranassa carmioli*

occasionally withstand temperatures to 0°C (32°F) for short periods.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand and leaf mould, in full light. When in growth, water moderately and apply a balanced liquid fertilizer every month. Keep just moist when dormant in autumn and winter. Outdoors, grow in moderately fertile, well-drained soil that does not dry out in summer.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) when ripe. Remove offsets in autumn.

• **PESTS AND DISEASES** Trouble free.

***P. carmioli*** ■ Bulbous perennial producing erect, lance-shaped, mid-green, basal leaves, to 40cm (16in) long, developing with the flowers. From spring to summer, bears umbels of 4–10 pendent, tubular, shiny crimson flowers, 3.5–4.5cm (1½–1¾in) long, with green and yellow tips, and with conspicuous, protruding white anthers. † 50–70cm (20–28in), ↔ 8cm (3in). South America. ♀ (min. 7°C/45°F)

***P. dubia***. Bulbous perennial producing erect, elliptic, mid-green, basal leaves, to 50cm (20in) long, with the flowers. In summer, produces umbels of 7–9 pendent, tubular, green-tipped, purple-pink flowers, 4.5–5cm (1¾–2in) long, with protruding stamens. † 50–70cm (20–28in), ↔ 8cm (3in). Peru. ♀ (min. 7°C/45°F)

***P. tunguraguae***. Bulbous perennial with ovoid bulbs and erect, lance-shaped or inversely lance-shaped, glossy, dark green, basal leaves, 30–40cm (12–16in) long, developing after the flowers. Bears umbels of 6–8 pendent, tubular, green-tipped, coral-red flowers, to 3cm (1¼in) long, in summer. † 50–70cm (20–28in), ↔ 8cm (3in). Ecuador. ♀ (min. 7°C/45°F)

***P. viridiflora***. Bulbous perennial with erect, narrow, bright green, basal leaves, to 40cm (16in) long, appearing with the flowers. Umbels of 3–5 pendent, tubular, yellow and green flowers, 2.5cm (1in) long, are borne in summer. † 60cm (24in), ↔ 8cm (3in). Ecuador, possibly Peru. ♀ (min. 7°C/45°F)

▷ *Phaedranthus buccinatorius* see *Distictis buccinatoria*

▷ *Phaioppleps biflora* see *Olsynium biflorum*

▷ *Phaioppleps nigricans* see *Sisyrinchium striatum*

## PHAIUS

ORCHIDACEAE

Genus of about 30 species of deciduous to evergreen, terrestrial and epiphytic orchids from lowland and montane forests in Africa, Madagascar, Asia, Indonesia, N. Australia, and the Pacific islands. They have spherical to ovoid, sometimes stem-like pseudobulbs, each with 3–10 large, folded, lance-shaped to elliptic, mid-green leaves, arranged alternately. Colourful, often spectacular flowers, with entire or lobed lips and spreading petals, are produced in tall, upright, axillary, many-flowered racemes from near the bases of the plants.

• **HARDINESS** Frost tender.

• **CULTIVATION** Intermediate-growing orchids. Grow in terrestrial orchid compost in deep containers that allow room for the copious root system. In summer, provide high humidity and bright filtered light, and water freely, applying fertilizer at every third watering. Once the leaves are fully developed, mist twice daily. In winter, water sparingly and provide full light. See also p.46.

• **PROPAGATION** Divide when the plants "overflow" their containers (take care when dividing to avoid damaging the clustered pseudobulbs).

• **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be troublesome.

***P. flavus***, syn. *P. maculatus*. Semi-evergreen orchid with conical pseudobulbs and lance-shaped, mid-green leaves, to 60cm (24in) long, with yellow and white spots. Racemes of fragrant yellow flowers, 8cm (3in) across, with red-brown markings on the lips, are produced in spring. † 1m (3ft), ↔ 60cm (24in). India, Thailand, Malaysia, Indonesia (Java). ♀ (min. 15°C/59°F; max. 30°C/86°F)

***P. maculatus*** see *P. flavus*.

***P. tankervilleae*** ■ Semi-evergreen orchid with ovoid pseudobulbs and several elliptic to lance-shaped, pointed, mid-green leaves, to 1m (3ft) long. In summer, produces racemes of nodding, fragrant, red-brown flowers, 8cm (3in) across, with pink to purplish red lips; throats are yellow and purplish red inside, silvery outside. † 1m (3ft). C. China, N. India, Sri Lanka through S.E. Asia to Australia. ♀ (min. 15°C/59°F; max. 30°C/86°F)

*Phaius tankervilleae*

## PHALAENOPSIS

Moth orchid

ORCHIDACEAE

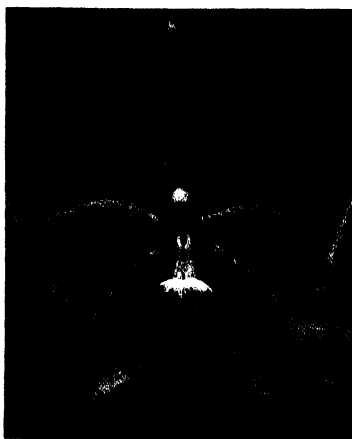
Genus of approximately 50 species of mostly evergreen, mainly epiphytic, monopodial orchids occurring from sea level to lowland forests in the Himalayas, S.E. Asia, and N. Australia. They each have a short, upward-growing, stem-like rhizome, lacking pseudobulbs and producing 3–6 broadly obovate or oval, upright or semi-pendent, fleshy, mid- to dark green, sometimes mottled leaves. Flowers, in simple or branched racemes, are produced from the bases of the leaves, often throughout the year, remaining in bloom for many months. Many hybrids have been produced.

• **HARDINESS** Frost tender.

• **CULTIVATION** Warm-growing orchids. Grow epiphytically on slabs of bark, or in epiphytic orchid compost in a slatted basket to allow the aerial roots to hang outside. Provide high humidity and bright filtered light all year. From spring to autumn, water freely, mist daily, and apply a balanced fertilizer monthly. In winter, water sparingly, keeping the foliage dry. Support the racemes of flowers to prevent kinking, and cut back flowered stems to a lower node to encourage production of further flowers. See also p.46.

• **PROPAGATION** Not suitable for division, although cuttings or offshoots may be rooted successfully.

• **PESTS AND DISEASES** Red spider mites, aphids, and mealybugs may be a problem.

*Phalaenopsis Allegría**Phalaenopsis cornu-cervi*



*Phalaenopsis Doris*

**P. Allegria** ■ (*P. Alice Gloria* x *P. Wilma Hughes*). Epiphytic orchid with semi-pendent, broadly oval leaves, 30cm (12in) or more long. Numerous large, rounded, heavy, pure white flowers, to 12cm (5in) across, appear in pendent racemes, 1m (3ft) long, throughout the year. ↓ 1m (3ft), ↔ 45cm (18in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. amabilis** ♀ Epiphytic orchid with semi-pendent, broadly oval leaves, 15–50cm (6–20in) long. Numerous white flowers, 6–10cm (2½–4in) across, with yellow-margined lips and red throat markings, appear in pendent, simple or branched racemes, 1m (3ft) long, from autumn to early spring. ↑↔ 30cm (12in). Philippines, Indonesia to Australia (N.E. Queensland). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. cornu-cervi** ■ Epiphytic orchid with oblong-ovate leaves, to 25cm (10in) long. Star-shaped, fragrant, waxy, yellow-green flowers, 5cm (2in) across, overlaid with red-brown, are borne in succession throughout the year, in short, branched or simple racemes, 15cm (6in) long, ↓ 15cm (6in), ↔ 20cm (8in). Burma, S.E. Asia. ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. Doris** ■ (*P. Elizabethae* x *P. Katherine Siegwart*). Epiphytic orchid with semi-pendent, broadly oval, grey-green leaves, 30cm (12in) long. Pink flowers, 8cm (3in) across, with purple-red lips, are borne in arching racemes, 1m (3ft) long, throughout the year. ↑↔ 30cm (12in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. equestris** ♀ Epiphytic orchid with oblong-ovate leaves, to 20cm (8in) long.

*Phalaenopsis Lipperose*

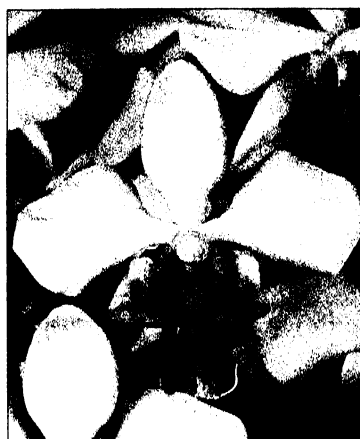
From spring to winter, bears simple or branched, erect to arching racemes, 35cm (14in) long, of small, rose-pink flowers, 2cm (¾in) across, with deep pink or purple lips, streaked dark red. ↑↔ 20cm (8in). Philippines, Taiwan. ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. Esmé Hennessy** (*P. Anna Queen* x *P. Pekoe*). Vigorous epiphytic orchid with semi-pendent, broadly oval leaves, 30cm (12in) or more long. White flowers, 8cm (3in) across, with faint yellow markings and crimson lips, appear in pendent racemes, 1m (3ft) long, mainly in winter. ↑↔ 30cm (12in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. Golden Horizon 'Sunrise'** ■ (*P. Barbara Freed Saltzman* x *P. Golden Buddha*). Epiphytic orchid with broadly oval leaves, to 25cm (10in) long. Fleishy, creamy yellow flowers, 6cm (2½in) across, with red-brown stripes and orange-red lips, are borne throughout the year in short racemes, 15cm (6in) long. ↓ 15cm (6in), ↔ 30cm (12in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. Henriette Lecoufle 'Boule de Neige'** (*P. Lachesis* x *P. Ramona*). Epiphytic orchid with semi-pendent, broadly oval leaves, 30cm (12in) long. Produces large, pure white flowers, 10–12cm (4–5in) across, in pendent racemes, 1m (3ft) long, mainly in winter. ↓ 1m (3ft), ↔ 30cm (12in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. Lipperose** ■ (*P. Ruby Wells* x *P. Zada*). Epiphytic orchid with semi-pendent, broadly oval leaves, 30cm (12in) long. Pink flowers, 10cm (4in) across, with red lips, appear throughout the year in many-flowered, pendent

*Phalaenopsis stuartiana*

racemes, 1m (3ft) long. ↓ 1m (3ft), ↔ 30cm (12in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. lueddemanniana**. Epiphytic orchid with oblong-ovate leaves, to 30cm (12in) long. In summer, full, rounded, fragrant, waxy white flowers, 5cm (2in) across, with brownish purple bands and pink to purple lips, are borne in succession in short, simple or branched racemes, 15cm (6in) long. ↓ 15cm (6in), ↔ 20cm (8in). Philippines. ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. schilleriana** ■ Epiphytic orchid with semi-pendent, broadly elliptic, fleshy leaves, to 45cm (18in) long, dark green spotted with silver-grey above, purple beneath. Numerous rose-pink flowers, 5cm (2in) or more across, with white or yellow lips spotted reddish purple, appear in branching racemes, 1m (3ft) long, in winter and spring. ↓ 60cm (24in), ↔ 30cm (12in). Philippines. ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. stuartiana** ■ ♀ Epiphytic orchid with semi-pendent, broadly oval, mid-green leaves, 35cm (14in) long, mottled grey-green above, purple beneath. In winter, bears branching racemes, 1m (3ft) long, of white flowers, 8cm (3in) across, with yellow marks and brownish red spots on the lower sepals and lips. ↓ 60cm (24in), ↔ 30cm (12in). Philippines. ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. violacea**. Epiphytic orchid with broadly oblong leaves, 20–25cm (8–10in) long. In spring and summer, star-shaped, fragrant, waxy, rich violet-purple, yellow, and white flowers, 6cm (2½in) across, with reddish purple lips,

are borne in succession in short racemes, 15cm (6in) long. ↓ 15cm (6in), ↔ 30cm (12in). Malaysia, Indonesia (Sumatra), Borneo. ♀ (min. 18°C/64°F; max. 30°C/86°F)

**P. Yukimai** ■ (*P. Grace Palm* x *P. Musashino*). Epiphytic orchid with broadly oval leaves, 20cm (8in) long. White flowers, 8cm (3in) across, with yellow-tinted, sometimes purple-red lips, appear in racemes 30cm (12in) tall, throughout the year. ↑↔ 30cm (12in). ♀ (min. 18°C/64°F; max. 30°C/86°F)

## PHALARIS

GRAMINEAE/POACEAE

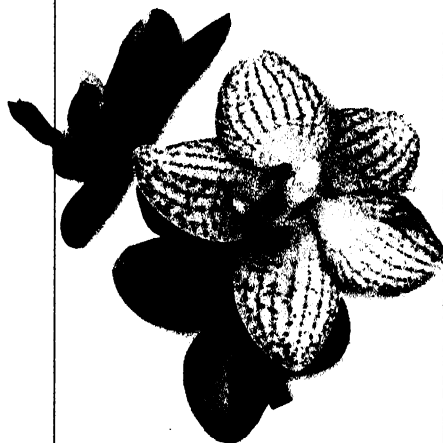
Genus of about 15 species of tufted, annual grasses or spreading rhizomatous, perennial grasses found in extremely variable habitats in temperate regions, from dry slopes to moist lake margins. They produce compact panicles of ovate spikelets, each with 1–3 flowers. Leaves are pale to mid-green, usually broadly linear and flat, with short points. *P. arundinacea* and its cultivars need to be controlled if grown in a mixed or herbaceous border, but are good as ground cover, or planted at the side of a pond or stream.

• **HARDINESS** Fully hardy to frost hardy.  
• **CULTIVATION** Grow in any soil in full sun or partial shade. Cut back dead foliage in early spring. On variegated cultivars, which may otherwise revert to plain green after midsummer, cut down all but the new young shoots in early summer to encourage fresh growth.

• **PROPAGATION** Divide from mid-spring to midsummer.

• **PESTS AND DISEASES** Trouble free.

**P. arundinacea** (Reed canary grass, Ribbon grass). Erect, evergreen, rhizomatous, perennial grass with flat, linear, short-pointed, mid-green leaves, to 35cm (14in) long, occasionally striped yellow. In early and midsummer, bears narrow panicles, to 17cm (7in) long, of pale green spikelets, fading to buff with age. ↑ to 1.5m (5ft) in flower, ↔ indefinite. Eurasia, Southern Africa, North America. \*\*\*. 'Feesey', syn. 'Mervyn Feesey', is flushed pink at the stem bases, and has light green leaves with broad white stripes, and panicles with a faint purplish flush; less invasive than the species. 'Mervyn Feesey' see 'Feesey'. **var. picta** ■ ♀ (Gardeners' garters) has a number of variants with white-striped leaves; ↑ to 1m (3ft).

*Phalaenopsis Golden Horizon 'Sunrise'**Phalaenopsis schilleriana**Phalaenopsis Yukimai**Phalaris arundinacea* var. *picta*

- ▷ *Phanera* see *Bauhinia corymbosa*
- ▷ *Phanerophlebia* see *Cyrtomium*
- P. falcata* see *C. falcatum*
- P. fortunei* see *C. fortunei*
- ▷ *Pharbitis* see *Ipomoea*
- P. hederacea* see *I. hederacea*
- P. purpurea* see *I. purpurea*
- ▷ *Phaseolus caracalla* see *Vigna caracalla*
- ▷ *Pheasant's eye* see *Adonis annua*
- Old see *Narcissus poeticus* var. *recurvus*

## PHEBALIUM

RUTACEAE

Genus of 45 species of evergreen trees and shrubs occurring in woodland or open, moist and dry habitats in Australia and New Zealand. They are grown for their foliage and flowers. The simple, alternate, often aromatic, light to dark green leaves are linear to rounded or oblong, sometimes cylindrical. Small, tubular, star- or bell-shaped, 4- or 5-petalled flowers are usually borne singly or in axillary and terminal, umbel-like clusters. Where temperatures regularly fall below 5°C (41°F), grow in a cool greenhouse. In milder climates, grow at the back of a border, or use as a barrier or hedge.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in neutral to slightly acid, moderately fertile, humus-rich, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass after flowering.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

**P. squameum** ♀ (Bowie-bowie, Satinwood). Large shrub or small tree, erect and lightly to moderately branched if unpruned. Elliptic to oblong-lance-shaped, leathery leaves, 3–10cm (1¼–4in) long, are mid- to deep green above, silver-white scaly with translucent oil glands beneath. In spring or early summer, bears umbel-like clusters of star-shaped white flowers, 8–10mm (⅜–½in) across, with prominent stamens. † 3–6m (10–20ft), ↔ 1.5–3m (5–10ft). Australia (Queensland to Tasmania). ☀ (min. 5°C/41°F)

## PHEGopteris

Beech fern

THELYPTERIDACEAE

Genus of 3 or 4 species of deciduous, terrestrial ferns found on shady banks and rocks in high rainfall areas throughout the N. hemisphere and in S.E. Asia. The pinnate to 2-pinnate or pinnatifid fronds, with pinnatifid or pinnatisect pinnae, arise at random from each erect to creeping rhizome, their fronds turning at right-angles to the light. Round sori, without protective indusia, are produced in 2 rows on the undersides of the frond segments. Beech ferns are ideal for growing in a moist, shady border, or among rocks where the soil does not dry out.

*Phegopteris connectilis*

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, reliably moist soil, preferably in deep shade.
- **PROPAGATION** Sow spores at 15°C (59°F) as soon as ripe. Divide in spring. See also p.51.
- **PESTS AND DISEASES** Trouble free.

**P. connectilis** ■ syn. *Thelypteris phegopteris* (Beech fern). Deciduous fern bearing long-stalked, arrow-shaped to triangular, pinnate, pale green fronds, 30cm (12in) long, with oblong or linear to lance-shaped, deeply pinnatifid pinnae, composed of oblong segments. The lowest pair of pinnae point forwards and downwards. † 30cm (12in), ↔ indeterminate. N. hemisphere. \*\*\*

**P. decursive-pinnata**. Deciduous fern producing tufts of narrowly lance-shaped, pinnate or 2-pinnatifid, pale green fronds, to 80cm (32in) long, each tapering gradually to a stalk up to 20cm (8in) long. Pinnae are entire and linear, occasionally pinnatifid. † 80cm (32in), ↔ 40cm (16in). E. Asia. \*\*\*

**P. hexagonoptera**, syn. *Thelypteris hexagonoptera* (Broad beech fern). Deciduous fern with long-stalked, triangular, pinnate-pinnatifid fronds, 40cm (16in) long. Similar to *P. connectilis*, but fronds and pinnae are broader, and the lowest pair of pinnae do not point forwards or downwards. † 40cm (16in), ↔ indeterminate. E. North America. \*\*\*

## PHELLODENDRON

RUTACEAE

Genus of 10 species of deciduous, dioecious trees found in moist stream margins in the mountains of E. Asia. They have opposite, pinnate, dull yellowish green to dark green leaves. Small, cup-shaped green male and female flowers are borne in clusters on separate plants in summer, and both must be grown to produce the dark blue-black, spherical fruits, 1cm (½in)

across. Grown for their habit and aromatic foliage, usually giving fine autumn colour, they are best used as specimen trees in a garden large enough to accommodate their spreading habit. They thrive in areas with hot summers.

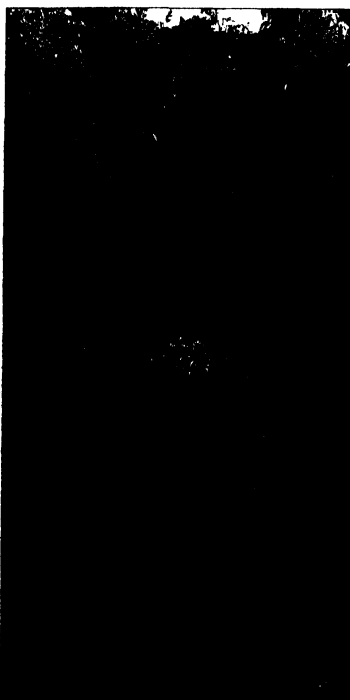
- **HARDINESS** Fully hardy, but young growth may be damaged by late frosts.
- **CULTIVATION** Grow in deep, fertile, well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Root heeled semi-ripe cuttings in midsummer.
- **PESTS AND DISEASES** Trouble free.

**P. amurense** ♀ (Amur cork tree). Spreading tree with stout shoots, and with thick, corky, pale grey-brown bark when mature. Bears pinnate leaves, to 35cm (14in) long, with up to 13 ovate to lance-shaped, glossy, dark green leaflets, glaucous beneath, turning yellow in autumn. † to 14m (46ft), ↔ 15m (50ft). N.E. Asia. \*\*\*

**P. chinense** ■ ♀ Spreading tree with stout shoots and thin, dark grey-brown bark. Bears pinnate leaves, to 40cm (16in) long, with up to 13 oblong to lance-shaped leaflets, yellow-green above, light green and downy beneath, turning yellow in autumn. † 10m (30ft), ↔ 12m (40ft). C. China. \*\*\*

**P. lavallei** ♀ Spreading tree with stout shoots and slightly corky, pale grey-brown bark when mature. Bears pinnate leaves, to 35cm (14in) long, with up to 11 oval to lance-shaped, tapered, matt, mid-green leaflets, downy on the veins beneath, turning yellow in autumn. † 10m (30ft), ↔ 12m (40ft). Japan. \*\*\*

**P. sachalinense** ♀ Spreading tree with stout shoots and thin, finely channelled, dark brown bark. Bears pinnate leaves, to 30cm (12in) long, with up to 13 ovate-oblong leaflets, dull green above, smooth and blue-green beneath, turning yellow in autumn. † 10m (30ft), ↔ 12m (40ft). Russia (Sakhalin), Korea, Japan. \*\*\*

*Phellodendron chinense*

## PHILADELPHUS

Mock orange

HYDRANGEACEAE/PHILADELPHACEAE

Genus of about 40 species of mainly deciduous shrubs found in scrub and on rocky hillsides from E. Europe to the Himalayas, E. Asia, and North and Central America. They are cultivated for their usually fragrant, 4-petalled, cup- or bowl-shaped, sometimes cross-shaped, single, semi-double, or double flowers, produced singly or in racemes, panicles, or cymes. The leaves are simple, mostly ovate, and usually mid-green, arranged in opposite pairs. Grow in a shrub border, or as specimen plants in a woodland garden; larger species and cultivars may be used for screening. Grow *P. mexicanus* against a wall; in frost-prone climates, grow in a cool greenhouse.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in any moderately fertile, well-drained soil in full sun or partial shade. *P. microphyllus* needs full sun. Under glass, grow in loam-based potting compost (J1 No.3) in full light or bright filtered light. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Keep just moist in winter. Pruning group 2.
- **PROPAGATION** Take softwood cuttings in summer, or hardwood cuttings in autumn or winter.
- **PESTS AND DISEASES** Powdery mildew and aphids may be a problem.

**P. 'Avalanche'**. Upright, spreading, deciduous shrub with arching branches and elliptic, entire leaves, to 2.5cm (1in) long. Racemes of up to 7 single, cup-shaped, fragrant white flowers, 2.5cm (1in) across, are borne profusely in mid- and late summer. † to 1.5m (5ft), ↔ 3m (10ft). \*\*\*

**P. 'Beauclerk'** ■ ♀ Slightly arching, deciduous shrub with broadly ovate, toothed leaves, to 6cm (2½in) long. Large, single, cup-shaped white flowers, 5cm (2in) across, with slightly pink-flushed centres, are borne singly or in racemes of 3–5, in early and mid-summer. † to 2.5m (8ft). \*\*\*

**P. 'Belle Etoile'** ♀ Arching, deciduous shrub with narrowly ovate, tapered, entire leaves, to 9cm (3½in) long. Single, cup-shaped, very fragrant white flowers, 5cm (2in) across, marked pale purple in the centres, are freely borne singly or in 3- to 5-flowered racemes,

*Philadelphus 'Beauclerk'*



*Philadelphus* 'Boule d'Argent'

in late spring and early summer. † 1.2m (4ft), ↔ 2.5m (8ft). \*\*\*

**P. 'Boule d'Argent'** ■ Arching, compact, bushy, deciduous shrub with broadly ovate, entire, dark green leaves, to 6cm (2½in) long. In early and midsummer, slightly fragrant, semi-double to double, milk-white flowers, 4.5cm (1¾in) across, are profusely borne in racemes of 5–7. †↔ 1.5m (5ft). \*\*\*

**P. 'Bouquet Blanc'** ■ Upright, deciduous shrub with ovate, nearly entire leaves, to 5cm (2in) long. Double to semi-double, fragrant white flowers, 2.5cm (1in) across, are borne singly, in pairs, or in racemes of 3–5, in early or midsummer. † 2m (6ft), ↔ 1.5m (5ft). \*\*\*

**P. 'Buckley's Quill'** ■ Upright, deciduous shrub with ovate, entire, dark green leaves, to 8cm (3in) long. Double, fragrant white flowers, 2.5cm (1in) across, each with about 30 quill-like petals, are produced singly or in racemes of 3–5, in early or midsummer. † 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**P. 'Burfordensis'** ■ Vigorous, upright, deciduous shrub with ovate, toothed, dark green leaves, to 11cm (4½in) long. Large, single, cup-shaped, slightly fragrant white flowers, to 7cm (3in)



*Philadelphus* 'Burfordensis'

across, are profusely borne in racemes of 5–9, in early and midsummer. † 3m (10ft), ↔ 2m (6ft). \*\*\*

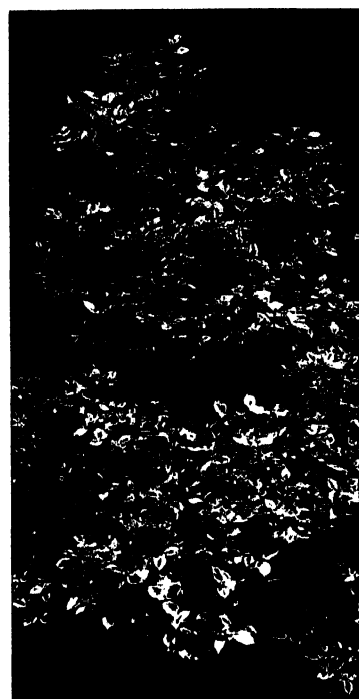
**P. coronarius** (Mock orange). Broadly upright, deciduous shrub with ovate, shallowly toothed leaves, to 10cm (4in) long. Short, terminal racemes of 5–9 cup-shaped, single, very fragrant, creamy white flowers, 2.5cm (1in) across, are produced in early summer. † 3m (10ft), ↔ 2.5m (8ft). S. Europe, Caucasus. \*\*\*

**'Aureus'** ♀ has golden yellow leaves, turning yellow-green in summer; foliage of flowering shoots may burn in full sun; † 2.5m (8ft), ↔ 1.5m (5ft).

**'Variegatus'** ■ ♀ has leaves with broad white margins, and white flowers; † 2.5m (8ft), ↔ 2m (6ft)

**P. 'Dame Blanche'** ■ Compact, arching, bushy, deciduous shrub with peeling, dark blackish brown bark and ovate, entire, dark green leaves, to 2cm (¾in) long. Semi-double to nearly double, fragrant, pure white flowers, to 2cm (¾in) across, are freely borne, usually in pairs or in 3- to 5-flowered racemes, in early or midsummer. †↔ 2m (6ft). \*\*\*

**P. delavayi.** Upright, deciduous shrub with arching branches and ovate,



*Philadelphus coronarius* 'Variegatus'

tapered, sometimes toothed, dark green leaves, to 10cm (4in) or more long. In early or midsummer, bears racemes of 5–9 single, cup-shaped, very fragrant, pure white flowers, 4cm (1½in) across, often purple-flushed on the backs of the sepals. † 3m (10ft), ↔ 2.5m (8ft). W. China, S.E. Tibet, N. Burma. \*\*\*

**f. melanocalyx** ■ syn. *P. purpurascens*, has white flowers with dark purple sepals.

**P. 'Girandole'**. Upright, deciduous shrub with ovate leaves, to 5cm (2in) long, nearly entire or each with 1–6 teeth on both margins. Dense, double, fragrant, creamy white flowers, to 4cm (1½in) across, are borne in racemes of up to 7, in early and midsummer. †↔ 1.5m (5ft). \*\*\*

**P. 'Glacier'**. Upright, deciduous shrub with small, ovate, toothed leaves, to 4cm (1½in) long. Dense racemes of up to 9 double, fragrant white flowers, 2.5cm (1in) across, are borne in midsummer. †↔ 1.5m (5ft). \*\*\*

**P. 'Innocence'**. Upright, deciduous shrub with arching branches and ovate, entire leaves, to 5cm (2in) long, strongly mottled yellow. Single, or sometimes semi-double, cup-shaped, very fragrant white flowers, 3–3.5cm (1¼–1½in)



*Philadelphus delavayi* f. *melanocalyx*

across, usually in 3-flowered racemes, are produced in early or midsummer. † 3m (10ft), ↔ 2m (6ft). \*\*\*

**P. 'Lemoinei'** ■ Upright, deciduous shrub with arching branches and ovate, tapered leaves, to 5cm (2in) long, each with 2 or 3 teeth on both margins. Small, single, cup-shaped, extremely fragrant, pure white flowers, 2.5cm (1in) across, are profusely borne in racemes of 3–5, in early or midsummer. †↔ 1.5m (5ft). \*\*\*

**P. lewisii.** Spreading, deciduous shrub with arching branches and ovate, sometimes finely toothed, bright green leaves, to 10cm (4in) long. Racemes of 5–11 unscented or slightly fragrant, single, cup-shaped, pure white flowers, 4cm (1½in) across, are profusely borne in early or midsummer. †↔ 3m (10ft). W. North America (British Columbia to California). \*\*\*

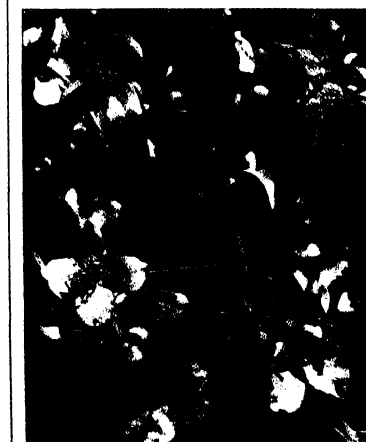
**P. magdalenae.** Spreading, bushy, deciduous shrub with ovate, short-pointed, entire leaves, to 6cm (2½in) long. Single, cup-shaped, slightly fragrant, pure white flowers, 2.5cm (1in) across, are borne in racemes of up to 11, in late spring and early summer. †↔ 4m (12ft). W. China. \*\*\*



*Philadelphus* 'Buckley's Quill' (inset: flower detail)



*Philadelphus* 'Dame Blanche'



*Philadelphus* 'Lemoinei'

*Philadelphus* 'Manteau d'Hermine'

**P. 'Manteau d'Hermine'** ☐♀ Bushy, compact, deciduous shrub with arching shoots and elliptic, pointed, entire, pale to mid-green leaves, to 2.5cm (1in) long. Produces double, very fragrant, creamy white flowers, 4cm (1½in) across, usually in racemes of 3, in early and midsummer. †75cm (30in), ↔ 1.5m (5ft). \*\*\*

**P. mexicanus.** Spreading, evergreen shrub with pendent, bristly shoots and ovate, sometimes sparsely toothed leaves, to 11cm (4½in) long. Single, cup-shaped, strongly rose-scented, creamy white flowers, to 4cm (1½in) across, are borne singly or in racemes of 3, in summer. †↔ 2m (6ft) or more. Mexico, Guatemala. \* **'Rose Syringa'** has flowers with conspicuous purple-pink markings in the centres.

*Philadelphus* 'Virginal'

**P. microphyllus** ☐ Compact, upright, deciduous shrub with peeling, dark chestnut-brown bark and small, elliptic, entire, glossy, mid-green leaves, to 2cm (¾in) long. Solitary or paired, single, cross-shaped, very fragrant, pure white flowers, 2.5cm (1in) across, are borne in early and midsummer. †↔ 1m (3ft). S.W. USA. \*\*\*

**P. 'Mont Blanc'.** Upright, deciduous shrub with ovate, sparsely toothed leaves, to 3cm (1¼in) long. Single, cross-shaped, fragrant, pure white flowers, to 2.5cm (1in) across, are profusely borne singly or in racemes of up to 5, in early summer. †↔ 1m (3ft). \*\*\*

**P. purpurascens** see *P. delavayi* f. *melanocalyx*.

**P. 'Silberregen',** syn. *P. 'Silver Showers'*. Rounded, deciduous shrub

with upright, arching shoots and ovate, entire leaves, to 4cm (1½in) long. Solitary, single, cup-shaped, strawberry-scented, pure white flowers, 4cm (1½in) across, are profusely borne in early summer. †1.2m (4ft), ↔ 1.5m (5ft).

\*\*\*

**P. 'Silver Showers'** see *P. 'Silberregen'*.

**P. subcanus.** Erect, deciduous shrub with smooth, grey-brown bark, later peeling, and ovate or ovate-lance-shaped, finely toothed leaves, 4–14cm (1½–5½in) long. In early summer, bears racemes of 5–20 or more shallowly cup-shaped, slightly fragrant white flowers, 2.5–3cm (1–1¼in) across. †6m (20ft), ↔ 2–3m (6–10ft). S.W. China. \*

**P. 'Sybille'** ♀ Arching, deciduous shrub with broadly ovate, entire leaves, to 5cm (2in) long. In early or midsummer, single, cup-shaped, very fragrant white flowers, to 5cm (2in) across, with conspicuous purple marks in the centres, are profusely borne singly or in racemes of 3–5. †1.2m (4ft), ↔ 2m (6ft). \*\*\* **P. 'Virginal'** ☐♀ Vigorous, upright, deciduous shrub with ovate, entire, dark green leaves, to 8cm (3in) or more long. Double, very fragrant, pure white flowers, 5cm (2in) across, are produced in loose racemes of 5–9, in early or midsummer. †3m (10ft) or more, ↔ 2.5m (8ft). \*\*\*

## X PHILAGERIA

LILIACEAE/PHILESIACEAE

Hybrid genus of one evergreen shrub, derived from crosses between *Philesia* and *Lapageria*. It is cultivated for its pendent, tubular flowers, produced in summer, and has entire, leathery leaves, arranged alternately. In frost-prone climates, grow in a cool greenhouse. In warmer areas, grow on a moist, shady bank or against a shaded wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) compost with added sharp sand, in bright indirect light. When in growth, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, reliably moist, acid soil in partial shade. Support climbing stems. Pruning group 12, in spring.

• **PROPAGATION** Layer in autumn.

• **PESTS AND DISEASES** Trouble free.

× **P. veitchii** (*Lapageria rosea* × *Philesia magellanica*). Twining or scrambling, evergreen shrub producing oblong, 3-veined, glossy, dark green leaves, to 4cm (1½in) long. Pendent, tubular, bright rose-pink flowers, 5cm (2in) long, are borne singly from the leaf axils in summer. †3–4m (10–12ft). ☼ (min. 2°C/36°F).

## PHILESIA

PHILESIACEAE

Genus of one species of evergreen shrub occurring in moist forest in Chile. The alternate leaves are leathery and scale-like. Grown for its showy, trumpet-shaped flowers, produced from the leaf axils in summer and autumn, it is suitable for a moist, shady position.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-

drained, acid soil in partial shade. Does not tolerate hot, dry conditions. Pruning group 9.

• **PROPAGATION** Take semi-ripe cuttings in summer, or remove suckers in spring.

• **PESTS AND DISEASES** Trouble free.

**P. magellanica.** Erect, suckering shrub or, in mild, moist areas, root climber, with oblong, rigid, dark green leaves, to 4cm (1½in) long, blue-white beneath. Trumpet-shaped, waxy, crimson-pink flowers, to 6cm (2½in) long, are borne singly in the leaf axils from midsummer to autumn. †1m (3ft), ↔ 2m (6ft). Chile. \*\*

## PHILLYREA

OLEACEAE

Genus of 4 species of evergreen shrubs and trees occurring in woodland and rocky places from the Mediterranean to S.W. Asia. Grown for their habit and foliage, they have opposite, linear to ovate-elliptic, yellow-green to dark green leaves. The 4-lobed, salverform white flowers are borne in axillary cymes, followed by spherical or ovoid, blue-black fruits. Grow in a shrub border or woodland garden, or as specimen plants. In frost-prone areas, grow against a sheltered wall.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil, ideally in full sun, with shelter from cold, dry winds. Tolerates partial shade. Pruning group 1 or 8.

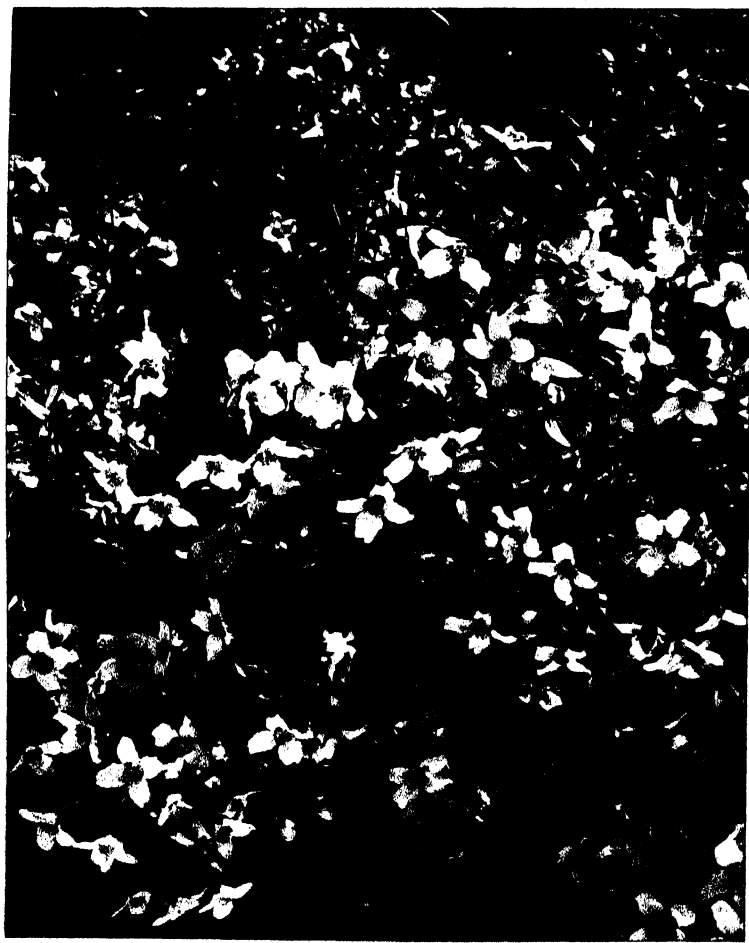
• **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Whiteflies may be troublesome.

**P. angustifolia.** Dense, bushy shrub with narrowly linear, dark green leaves, to 6cm (2½in) long. Inconspicuous, fragrant, greenish white flowers are produced in cymes, 1cm (½in) across, in late spring and early summer, followed by spherical, blue-black fruit, 5mm (¼in) across. †↔ 3m (10ft). Mediterranean. \*\*\*

**P. decora** see *Osmanthus decorus*.

**P. latifolia** ☐ Dense, rounded shrub or small tree with oval, glossy, dark green leaves, to 6cm (2½in) long. Inconspicuous, fragrant, greenish white flowers are borne in cymes, 1cm (½in) across, in late spring and early summer, followed by spherical, blue-black fruit, 5mm (¼in) across. †↔ to 9m (28ft). Mediterranean, S.W. Asia. \*\*\*

*Phillyrea latifolia**Philadelphus microphyllus*

## PHILODENDRON

ARACEAE

Genus of up to 500 species of often epiphytic, evergreen shrubs, root climbers, or small trees from variable habitats, usually rainforest, in the USA (Florida), Mexico, the West Indies, and Central and tropical South America. They are grown for their leathery, glossy leaves, which may be simple, pinnatifid, or pinnatisect, ovate to oblong, heart-, arrow-, or broadly spear-shaped, and toothed or entire; they are borne alternately, or in tufts or rosettes. Seed-raised species often have a distinct juvenile stage, with leaves quite unlike those of mature plants. Inflorescences, comprising tiny, petalless flowers borne on spadices and enclosed by spathes, are produced intermittently. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse or as houseplants. In warmer areas, train climbing species through a palm tree or against a wall, and grow large shrubs as specimen plants. Small epiphytes are suitable for a large hanging basket. All parts may cause severe discomfort if ingested; contact with sap may irritate skin.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered or indirect light. During the growing season, water freely and apply a balanced liquid fertilizer every month. In summer, mist twice daily. Water sparingly in winter. Support climbing stems with a moss pole. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in dappled or partial shade. Pruning group 1 for shrubs; group 11 for climbers, in spring; plants under glass may need restrictive pruning.

• **PROPAGATION** Surface-sow seed at 19–24°C (66–75°F) in spring. Take stem-tip or leaf bud cuttings in summer. Layer or air layer in spring.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*P. andreanum* see *P. melanochrysum*.

*P. angustisectum* ♀ syn. *P. elegans*. Sparsely branched climber with ovate, pinnatisect, reflexed leaves, 30–60cm (12–24in) long, each with 16–32 slender, finger-like lobes, glossy, deep green above, paler beneath. Green spathes, 15cm (6in) long, are yellow inside, with pink-flushed margins. ‡ 5m (15ft). Colombia. ☉ (min. 15°C/59°F)



*Philodendron bipinnatifidum*



*Philodendron melanochrysum*

*P. auritum* of gardens see *Syngonium auritum*.

*P. bipennifolium*, syn. *P. panduriforme* (Fiddleleaf, Panda plant). Sparsely branched climber with ovate to arrow-shaped, reflexed, lustrous, deep green leaves, 30–45cm (12–18in) long, each with 5 broad lobes, the terminal one longest. Bears greenish cream spathes, to 11cm (4½in) long. ‡ to 5m (15ft) or more. S.E. Brazil. ☉ (min. 15°C/59°F)

*P. bipinnatifidum* ♂♀ syn. *P. selloum* (Tree philodendron). Tree-like shrub, usually with a single, robust, erect stem, reclining with age. Very long-stalked, reflexed leaves, to 1m (3ft) long, are broadly ovate, heart-shaped at the bases, and deeply pinnatisect, with many narrow, wavy-margined, semi-glossy, rich green lobes. Green to red-purple spathes, 30cm (12in) long, are cream with red margins inside. ‡ to 5m (15ft). S.E. Brazil. ☉ (min. 15°C/59°F). 'German Selloum' has narrower leaf lobes. 'Variegatum' has leaves splashed yellow to light green.

*P. cordatum* (Heart leaf). Fast-growing, moderately to sparsely branched, slender-stemmed climber with glossy, deep green leaves, 30–45cm (12–18in)



*Philodendron scandens*

long, ovate-triangular, reflexed, and heart-shaped at the bases, the lower lobes touching or overlapping. Produces green spathes, 10–15cm (4–6in) long. ‡ 3–6m (10–20ft). S.E. Brazil. ☉ (min. 15°C/59°F)

*P. domesticum*, syn. *P. hastatum* of gardens (Elephant's ear). Usually sparsely branched climber with narrowly triangular to arrow-shaped, reflexed, bright green leaves, 45–60cm (18–24in) long, with wavy margins. Spathes are 12–18cm (5–7in) long, green on the outside, cherry-red inside. ‡ 3–6m (10–20ft). Origin unknown. ☉ (min. 15°C/59°F)

*P. elegans* see *P. angustisectum*.

*P. erubescens* ♀ (Blushing philodendron, Red-leaf philodendron). Sturdy-stemmed climber with red-purple stems when young. Ovate-triangular, glossy, dark green leaves, 25–40cm (10–16in) long, heart-shaped at the bases, are coppery red-purple beneath, with purple-tinged stalks. Bears red-purple spathes, 15cm (6in) long, crimson inside, with an unusual aroma. ‡ 3–6m (10–20ft). Colombia. ☉ (min. 15°C/59°F). 'Burgundy' ♀ is slower-growing, with smaller, red-flushed leaves, to 30cm (12in) long.

*P. hastatum* of gardens see *P. domesticum*.

*P. imbe*, syn. *P. sellowianum*. Robust climber with long aerial roots and red-purple stems bearing ovate-oblong to arrow-shaped, reflexed leaves, to 35cm (14in) long; they have a parchment-like texture and are glossy, mid- to dark green above, often flushed or tinted red beneath. Spathes, 15cm (6in) long, are cream and green. ‡ 3–5m (10–15ft). S.E. Brazil. ☉ (min. 15°C/59°F)

*P. laciniatum* see *P. pedatum*.

*P. melanochrysum* ♂ syn. *P. andreanum* (Black gold philodendron, Velour philodendron). Sparsely branched climber. Bears narrowly ovate to oblong-lance-shaped, reflexed to pendent, velvety blackish green leaves, to 1m (3ft) long, with pale green veins; they have short, slender points and heart-shaped bases (the lobes touch or just overlap). Juvenile plants have much smaller, broader, coppery red leaves. Produces green and white spathes, to 20cm (8in) long. ‡ 3–6m (10–20ft). Colombia. ☉ (min. 15°C/59°F)

*P. micans* see *P. scandens* f. *micans*.

*P. oxycardium* see *P. scandens* subsp. *oxycardium*.

*P. panduriforme* see *P. bipennifolium*.

*P. pedatum*, syn. *P. laciniatum*. Robust, moderately branching climber. Reflexed, pinnatifid, glossy, deep green leaves, to 45cm (18in) long, are ovate to arrow-shaped, with 5–7 narrowly triangular lobes, the 2 basal lobes sometimes lobed and pointing backwards. Bears green and white spathes, red-flushed at the bases and cream inside, 10–13cm (4–5in) long. ‡ 3–5m (10–15ft). Venezuela to Brazil. ☉ (min. 15°C/59°F)

*P. scandens* ♂♀ (Heart leaf, Sweetheart plant). Fast-growing climber producing sparsely to moderately branching, slender stems. Glossy, deep green leaves, sometimes red-purple beneath, are up to 30cm (12in) long on mature plants, 10–15cm (4–6in) long on juveniles; they are rounded, heart-shaped at the bases, and reflexed, with abruptly tapered, slender-pointed tips. Bears

green spathes, 15–20cm (6–8in) long, white inside, sometimes red-tinted at the bases. Good as a houseplant. ‡ 3–6m (10–20ft). Mexico, West Indies, S.E. Brazil. ☉ (min. 15°C/59°F). f. *micans*, syn. *P. micans*, has bronze leaves, red-tinted beneath, with larger, overlapping basal leaf lobes. subsp. *oxycardium*, syn. *P. oxycardium*, has young leaves flushed bronze-brown; E. Mexico. *P. selloum* see *P. bipinnatifidum*. *P. sellowianum* see *P. imbe*. *P. trifoliatum* see *Syngonium auritum*.

▷ **Philodendron,**

**Black gold** see *Philodendron melanochrysum*

**Blushing** see *Philodendron erubescens*

**False** see *Peperomia scandens*

**Red-leaf** see *Philodendron erubescens*

**Tree** see *Philodendron bipinnatifidum*

**Velour** see *Philodendron melanochrysum*

## PHLEBODIUM

POLYPODIACEAE

Genus of 10 species of semi-evergreen ferns occurring on trees and rocks in the USA (Florida), Mexico, West Indies, and Central and tropical South America. They have thick, creeping rhizomes, densely covered with golden brown scales, and large, pinnate or pinnatifid, sometimes glaucous fronds. Spores are formed in groups, in one or more rows parallel to the midribs. In frost-prone climates, grow in a warm greenhouse or as houseplants; they are very effective in hanging baskets. In warmer regions, grow in a warm, sheltered border.

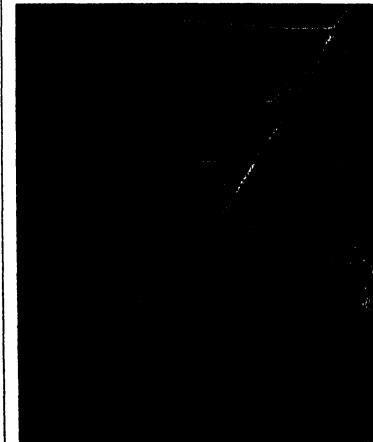
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in 1 part each loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide full light or bright filtered light. During growth, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun or light dappled shade.

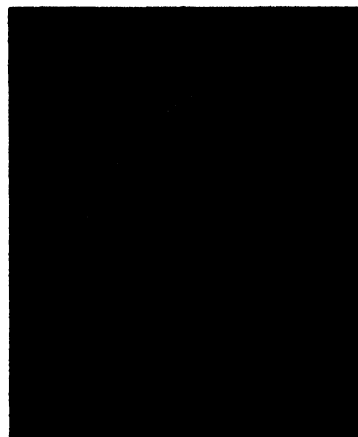
• **PROPAGATION** Sow spores at 19–24°C (66–75°F) as soon as ripe. Divide rhizomes in spring. See also p. 51.

• **PESTS AND DISEASES** Scale insects may be a problem.

*P. aureum* ♂♀ syn. *Polypodium aureum* (Golden polypody, Hare's foot fern, Rabbit's foot fern). Large, creeping



*Phlebodium aureum*

*Phlebodium aureum* 'Mandaianum'

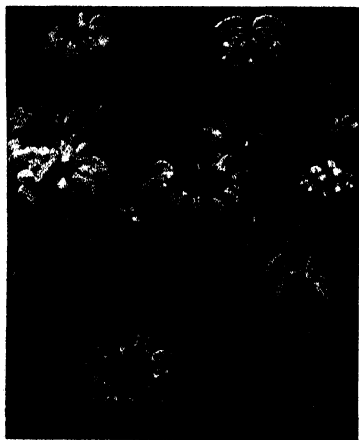
fern with arching, ovate to oblong or triangular, deeply pinnatifid, glaucous, grey-green fronds, to 1.5m (5ft) long, each with up to 35 narrowly linear to lance-shaped, oblong, or strap-shaped, wavy-margined segments.  $\downarrow$  75cm (30in),  $\leftrightarrow$  to 1.5m (5ft). USA (Florida), Mexico, West Indies, Central and tropical South America.  $\bullet$  (min. 10°C/50°F). **var. *areolatum***, syn. '*Glaucum*', has leathery fronds, 60cm (24in) long, with a more pronounced glaucous bloom. '*Glaucum*' see **var. *areolatum***. '*Mandaianum*'  $\bullet$  (Blue fern) has slightly lobed fronds with wavy margins.

## PHLOMIS

LABIATAE/LAMIACEAE

Genus of about 100 species of sage-like herbaceous perennials and evergreen shrubs or subshrubs found in rocky sites in Europe, North Africa, and Asia. Leaves are opposite, lance-shaped to ovate, light to grey-green, often with star-shaped hairs. They are grown for their foliage and showy, tubular, dead nettle-like, often hooded, white, yellow, or lilac flowers, borne in dense, axillary whorls on tall, erect stems; they are effective massed in a border. In frost-prone areas, grow against a wall. *P. lanata* is suitable for a rock garden. In winter, seed heads of herbaceous species may be left for their ornamental effect.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any fertile, well-drained soil in full sun; *P. russeliana* and *P. samia* tolerate some shade. Pruning group 8 or 9.
- **PROPAGATION** Sow seed at 13–18°C

*Phlomis cashmeriana*

(55–64°F) in spring. Divide perennials in spring (preferably) or in autumn. Take softwood cuttings of shrubs in summer.

- **PESTS AND DISEASES** Leafhoppers may be troublesome.

***P. bovei* subsp. *maroccana***, syn. *P. samia* subsp. *maroccana*. Erect, sticky-hairy perennial with elliptic to oblong, scalloped, grey-green basal leaves, 6–8cm (2½–3in) long, heart-shaped at the bases, and smaller stem leaves.

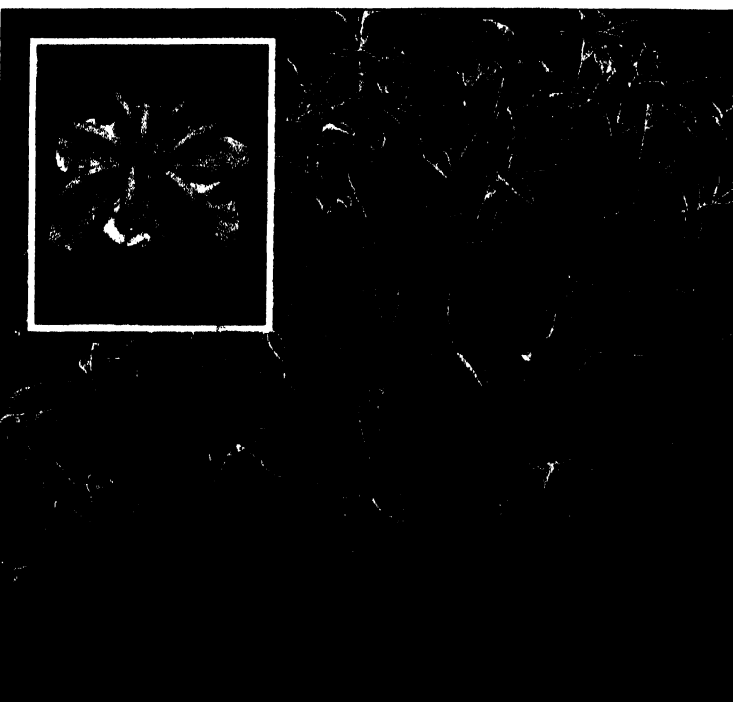
Purple-pink flowers, 4–4.5cm (1½–1¾in) long, with purple spots inside, white-woolly outside, are borne in summer. Similar to *P. samia* but more robust.  $\downarrow$  to 1.5m (5ft),  $\leftrightarrow$  1m (3ft). Mountains in Morocco. \*\*\*

***P. cashmeriana***  $\bullet$  Erect, densely woolly perennial with ovate to lance-shaped basal leaves, 10–25cm (4–10in) long, yellow-grey above, paler beneath, and smaller stem leaves. In midsummer, hooded, lilac-purple flowers, 2.5cm (1in) long, are borne from the upper leaf axils.  $\downarrow$  to 90cm (36in),  $\leftrightarrow$  60cm (24in). India (Kashmir), W. Himalayas. \*\*\*

***P. chrysophylla***  $\bullet$  Rounded, evergreen shrub with stout, spreading branches and elliptic to broadly ovate, grey-green leaves, to 6cm (2½in) long, turning golden green in late summer. Golden yellow flowers, 3cm (1¼in) long, are produced in early summer.  $\downarrow$  1m (3ft),  $\leftrightarrow$  1.2m (4ft). S.W. Asia. \*\*\*

***P. 'Edward Bowles'***. Upright, evergreen subshrub with large, heart-shaped, wrinkled, grey-green leaves, 15cm (6in) long, woolly beneath. Bears sulphur-yellow flowers, 3cm (1¼in) long, paler on the hoods, in early and midsummer.  $\downarrow$  1m (3ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

***P. fruticosa***  $\bullet$   $\bullet$  (Jerusalem sage). Mound-forming, evergreen shrub with upright shoots and sage-like, ovate-lance-shaped, wrinkled, grey-green leaves, to 10cm (4in) long, woolly beneath. In early and midsummer, bears dark golden yellow flowers, 3cm (1¼in) long.  $\downarrow$  1m (3ft),  $\leftrightarrow$  1.5m (5ft). E. Mediterranean. \*\*\* (borderline)

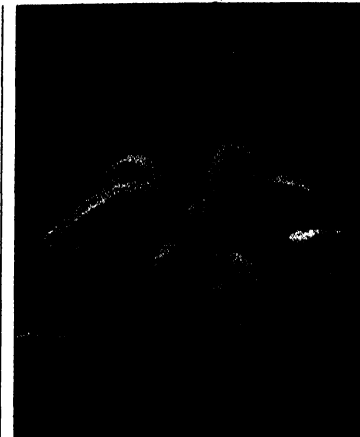
*Phlomis fruticosa* (inset: flower detail)*Phlomis italica*

***P. italica***  $\bullet$  Upright, evergreen shrub bearing oblong-lance-shaped, grey-woolly leaves, to 5cm (2in) long. Lilac-pink flowers, 2cm (¾in) long, are borne in midsummer.  $\downarrow$  30cm (12in),  $\leftrightarrow$  60cm (24in). Balearic Islands. \*\*\*

***P. lanata***. Compact, mound-forming, evergreen shrub bearing oblong to rounded, deeply veined, scaly, sage-green leaves, to 2.5cm (1in) long. Golden yellow flowers, 2cm (¾in) long, covered with brown hairs, are produced in summer.  $\downarrow$  50cm (20in),  $\leftrightarrow$  75cm (30in). Greece (Crete). \*\*\*

***P. longifolia***. Spreading, evergreen shrub with white-woolly young shoots and lance-shaped, deeply veined, bright green leaves, to 7cm (3in) long, grey-woolly beneath. Dark yellow flowers, to 4cm (1½in) long, with calyx teeth to 3mm (¼in) long, are produced in summer.  $\downarrow$  1.2m (4ft),  $\leftrightarrow$  2m (6ft). S.W. Asia. \*\*\* **var. *bailanica*** has ovate leaves, and flowers with longer calyx teeth, 3–6mm (¼–¼in) long.

***P. purpurea***  $\bullet$  Upright, evergreen shrub with woolly shoots and lance-shaped, leathery, grey-green leaves, to 10cm (4in) long, with star-shaped hairs above, woolly beneath. Purple to pink,

*Phlomis purpurea*

occasionally white flowers, 2.5cm (1in) long, are produced in summer.  $\downarrow$  to 60cm (24in). Spain, Portugal. \*\*\*

***P. russeliana***  $\bullet$   $\bullet$  syn. *P. samia* of gardens, *P. viscosa* of gardens. Erect, hairy perennial, less woolly than *P. cashmeriana* (so appears greener), with mid-green leaves: basal leaves are ovate, 6–20cm (2½–8in) long, heart-shaped at the bases; stem leaves are smaller and scalloped. Hooded, pale yellow flowers, 2.5–3.5cm (1–1½in) long, are borne from late spring to early autumn, mainly in early summer. Often confused with *P. samia*.  $\downarrow$  to 90cm (36in),  $\leftrightarrow$  75cm (30in). Turkey, Syria. \*\*\*

***P. samia***. Erect perennial producing ovate, scalloped, woolly basal leaves, 10–20cm (4–8in) long, heart-shaped at the bases, and mid-green above, grey beneath, and with smaller stem leaves. Hooded lilac flowers, 3–3.5cm (1¼–1½in) long, tinged rose-pink, especially on the lips, are borne from early to late summer.  $\downarrow$  to 1m (3ft),  $\leftrightarrow$  80cm (32in). S.E. Europe, Turkey. \*\*\* **subsp. *maroccana*** see *P. bovei* subsp. *maroccana*.

***P. samia* of gardens** see *P. russeliana*. ***P. viscosa* of gardens** see *P. russeliana*.

*Phlomis russeliana*



## PHLOX

POLEMONIACEAE

Genus of 67 species of evergreen or herbaceous, low-growing or cushion-forming to erect perennials, as well as a few annuals and shrubs, found mostly in North America (one from Siberia, Russia). They are grown for their showy flowers, borne mainly in terminal corymbs or panicle-like cymes, sometimes singly. The flowers are salverform, occasionally funnel-shaped, each with a narrow, tubular base opening to 5 flat, ovate petal lobes, sometimes in a star-shaped arrangement. Leaves are simple, entire, linear to ovate, light to dark green, and often in opposite pairs, the upper leaves sometimes alternate. Mat- and cushion-forming species, from dry, rocky habitats, flower in spring or early summer; grow in a rock garden or alpine house, in a dry wall, or as edging. Woodland species are mainly trailing, and usually flower in early summer; grow in shady sites. The taller "border" phlox are mostly from moist riverside habitats, and produce large corymbs of flowers, usually in midsummer, which are good for cutting. Annuals, from dry rocky slopes and coastal sands, flower from late spring to autumn, and are useful for bedding.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow annuals in any fertile, well-drained soil in full sun. Perennials and shrubs have varying needs, which may be grouped as set out below. Cut back all tall herbaceous species to the ground in autumn. Dead-head *P. maculata* and *P. paniculata* to prolong flowering. Stake tall cultivars.

1. Grow in fertile, moist soil in full sun or partial shade.  
2. Grow in humus-rich, fertile, moist but well-drained soil in partial shade.  
3. Grow in well-drained, fertile soil in full sun, or in dappled shade in low rainfall areas.  
4. Grow in gritty, sharply drained, poor to moderately fertile soil in full sun. In an alpine house, grow in a mix of equal parts loam, leaf mould, and sharp sand.

• **PROPAGATION** Sow seed of annuals at 13–18°C (55–64°F) in early spring; sow seed of perennials in containers in a cold frame when ripe or in spring. Divide *P.*

*carolina*, *P. maculata*, and *P. paniculata*, and their cultivars, in autumn or spring. Insert basal cuttings in spring, or take root cuttings in early autumn or winter. Take softwood cuttings of non-flowering stems of cushion-forming perennials in spring. Detach rooted pieces of stem from trailing perennials in spring or early autumn.

• **PESTS AND DISEASES** Susceptible to leafy gall, stem eelworms, powdery mildew, and leaf spot.

*P. adsurgens* ♀ Creeping, stem-rooting, semi-evergreen perennial with prostrate to ascending stems bearing stalkless, rounded to narrowly ovate, light to mid-green leaves, to 2.5cm (1in) long. In late spring and early summer, bears open cymes of salverform, broad-petalled, salmon-pink flowers, to 2.5cm (1in) across, with paler centres. Cultivation group 2. †↔ 30cm (12in). N.W. USA. \*\*\*. 'Red Buttes' has deep pink flowers with large, overlapping petal lobes. 'Wagon Wheel' has salmon-pink flowers with very narrow petal lobes, resembling the spokes of a wheel.

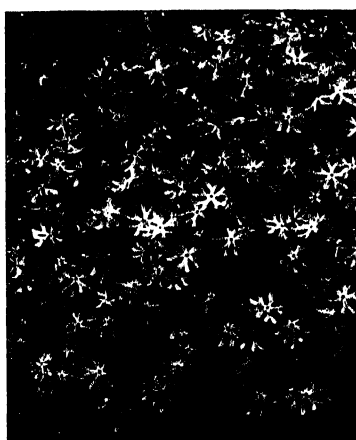
*P. amoena* 'Variegata' see *P.*

*x procumbens* 'Variegata'.

*P. bifida* (Sand phlox). Mound-forming, evergreen perennial with hairy, needle-like, linear leaves, to 6cm (2½in) long. In spring and early summer, bears abundant cymes of salverform, fragrant, deep lavender-blue to white flowers, 2cm (¾in) across, with star-shaped, very deeply cleft petal lobes. Cultivation group 3 or 4. † to 20cm (8in), ↔ 15cm (6in). C. USA. \*\*\*. 'Colvin's White' has pure white flowers.

*P. bryoides*. Cushion-forming, evergreen perennial with hairy, overlapping, lance-shaped leaves, to 5mm (¼in) long. In late spring and early summer, bears solitary, stalkless, salverform, pure white flowers, 1cm (½in) across, towards the shoot tips. May become lax and fail to flower freely in cultivation. Cultivation group 4. † 2–5cm (¾–2in), ↔ 15cm (6in). High altitudes in USA (Oregon, W. Montana to Nevada, W. Nebraska). \*\*\*.

*P. carolina* (Thick-leaf phlox). Upright and spreading herbaceous perennial bearing thick, lance-shaped to ovate-oblong leaves, 13cm (5in) long. In summer, produces cymes of salverform,



*Phlox bifida*

purple to pink, rarely white flowers, to 2cm (¾in) across. Cultivation group 1. † 1.2m (4ft), ↔ 45cm (18in). C. and E. USA. \*\*\*. 'Bill Baker' produces bright green leaves, to 15cm (6in) long, and bears pink flowers, to 2.5cm (1in) across, in early summer; † 45cm (18in), ↔ 30cm (12in).

*P. 'Chattahoochee'* ♀ Short-lived, prostrate, branching, semi-evergreen perennial with purple-tinted stems and lance-shaped leaves, 2–5cm (¾–2in) long, purple-flushed when young. Bears cymes of salverform, lavender-blue flowers, 2–2.5cm (¾–1in) across, with conspicuous red-purple eyes, over long periods in summer and early autumn. Cultivation group 2. † 15cm (6in), ↔ 30cm (12in). \*\*\*.

*P. divaricata* ♀ (Blue phlox, Wild sweet William). Spreading, stem-rooting, semi-evergreen perennial with ovate, hairy leaves, to 5cm (2in) long, narrower on the flowering stems. In early summer, produces open cymes of salverform, lavender-blue to pale violet and white flowers, 2–3cm (¾–1¼in) across, with notched or unnotched petal lobes. Cultivation group 2. † to 35cm (14in), ↔ 50cm (20in). Woodland in Canada, E. USA. \*\*\*. 'Dirigo Ice' has clear, pale blue flowers. subsp.

*laphamii* has pale to deep lilac-blue flowers with narrow petal lobes.

*P. douglasii*. Mound-forming, evergreen perennial densely covered with stiff, narrowly lance-shaped, dark green

leaves, to 1cm (½in) long. In late spring or early summer, produces salverform, white, lavender-blue, or pink flowers, 1.5cm (½in) across, singly or in twos or threes. Cultivation group 3. † to 20cm (8in), ↔ 30cm (12in). USA (S. Washington to California). \*\*\*.

'Boothman's Variety' ♀ produces violet-pink flowers with dark eyes.

'Crackerjack' ♀ is more compact, with reddish magenta flowers; † to 12cm (5in), ↔ to 20cm (8in). 'Iceberg' ♀ has white flowers, sometimes faintly tinged blue. 'Red Admiral' ♀ bears deep crimson flowers. 'Violet Queen' is compact, with deep violet-purple flowers; † to 10cm (4in), ↔ to 15cm (6in). 'Waterloo' has crimson flowers.

*P. drummondii* (Annual phlox). Erect to spreading, bushy, hairy annual with very variable, narrowly inversely lance-shaped to nearly ovate, almost stalkless, stem-clasping leaves, 2.5–8cm (1–3in) long. In late spring, produces cymes of salverform, hairy, purple, pink, red, lavender-blue, or white flowers, to 2.5cm (1in) across, often pale inside, with contrasting marks at the bases of the petal lobes. † 10–45cm (4–18in), ↔ to 25cm (10in) or more. USA (E. Texas). \*\*\*. 'African Sunset' has dusky to deep red flowers. 'Chanal' is spreading, but still compact, and bears double, almost rose-like pink flowers.

'Dwarf Beauty' is early flowering, with abundant, very large blooms, to 3cm (1¼in) or more across, in colours including rose-pink, crimson-red, yellow, violet-blue, and white; ↔ 40cm (16in) or more. 'Petticoat' is dwarf, with very small flowers, to 1.5cm (½in) across, available as a mixture of cream, rose-pink, salmon-pink, and carmine-pink, including bicolors; flowers late, but over a long season; † to 10cm (4in).

Cultivars in **Ethnic Pastel Shades Series** are ground-hugging, compact, and very uniform, with flowers in a range of pink and white shades. **Palona Series** cultivars are dwarf and bushy, forming spherical plants, with flowers in white, light blue, violet, salmon-pink, rose-pink, carmine-red, or crimson, some with contrasting eyes. **Palona Series** 'Light Salmon' has pale salmon-pink flowers. 'Promise Pink' has semi-double, deep salmon-pink flowers. 'Sternenzauber' syn. 'Twinkle', has



*Phlox adsurgens* 'Wagon Wheel'



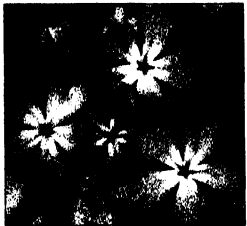
*Phlox carolina* 'Bill Baker'



*Phlox* 'Chatahoochee'



*Phlox divaricata* 'Dirigo Ice'



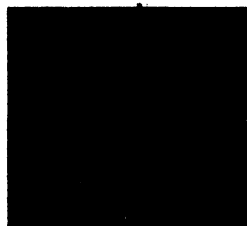
*Phlox divaricata* subsp. *laphamii*



*Phlox douglasii* 'Boothman's Variety'



*Phlox douglasii* 'Crackerjack'



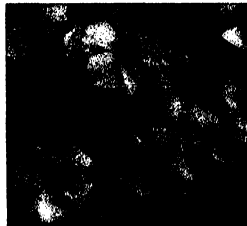
*Phlox douglasii* 'Red Admiral'



*Phlox drummondii* 'African Sunset'



*Phlox drummondii* 'Chanal'



*Phlox drummondii* Palona Series 'Light Salmon'



*Phlox drummondii* 'Sternenzauber'



Phlox nana 'Arroya'

tiny flowers, to 2cm (¾in) across, in shades including salmon-pink, rose-pink, and carmine-pink, as well as picotees; petal lobes are often fringed and pointed, appearing star-like.

'Twinkle' see 'Sternenzauber'.

**P. 'Emerald Cushion'**. Compact, mound-forming, evergreen perennial, similar to *P. subulata*, with linear to elliptic, light green leaves, to 2cm (¾in) long. In late spring and early summer, bears cymes of salverform, pale violet flowers, 2–2.5cm (¾–1in) across, with narrow, notched petal lobes. Cultivation group 3. † 8cm (3in), ↔ 20cm (8in). \*\*\*

**P. 'Fuller's White'**. Clump-forming, semi-evergreen perennial, similar to, but more compact than *P. divaricata*, with ovate leaves, to 5cm (2in) long. In early summer, upright stems bear cymes of salverform, pure white flowers, 2–2.5cm (¾–1in) across, with notched petal lobes. Cultivation group 2. † ↔ to 20cm (8in). \*\*\*

**P. hoodii**. Dwarf, tuft-forming, evergreen perennial with hairy, lance-shaped leaves, to 1cm (½in) long. Bears solitary, salverform, white to pale violet flowers, 1cm (½in) across, in late spring and early summer. Cultivation group 4. † 5cm (2in), ↔ 10cm (4in). USA (Rocky Mountains). \*\*\*

**P. 'Kelly's Eye'** ■♀ Vigorous, mound-forming, evergreen perennial, similar to *P. douglasii*, with narrowly lance-shaped, dark green leaves, to 1.5cm (½in) long.

In late spring and early summer, bears cymes of salverform, very pale pink flowers, 1.5cm (½in) across, with red-purple eyes. Cultivation group 3. † 10cm (4in), ↔ 30cm (12in) or more. \*\*\*

**P. maculata** (Meadow phlox). Erect herbaceous perennial with hairy stems, often red-spotted, and linear to ovate, smooth leaves, 6–13cm (2½–5in) long. In early and midsummer, bears narrowly conical, panicle-like cymes of salverform, fragrant, violet, pink, or white flowers, 2–2.5cm (¾–1in) across. Cultivation group 1. † to 90cm (36in), ↔ 45cm (18in). E. USA. \*\*\*

**'Alpha'** ♀ produces lilac-pink flowers. **'Omega'** ■♀ has white flowers with lilac-red eyes.

*P. mesoleuca* see *P. nana* subsp. *ensifolia*.

*P. 'Millstream'* see *P. x procumbens* 'Millstream'.

**P. nana** (Santa Fe phlox). Deciduous or semi-evergreen perennial, spreading by runners, with trailing or upright shoots, to 20cm (8in) long, sparsely covered with linear to lance-shaped, downy, grey-green leaves, to 4cm (1½in) long. Produces abundant solitary, salverform, bright pink, purple, or white, rarely pale yellow flowers, to 2.5cm (1in) across, from summer to autumn. Cultivation group 4. † to 20cm (8in), ↔ to 30cm (12in). S.W. USA, Mexico. \*\*\*

**'Arroya'** ■ bears brilliant magenta flowers, with small white eyes, over long periods in summer. subsp. *ensifolia*,

syn. *P. mesoleuca*, produces white-eyed, soft pink, purple, soft yellow, or white flowers; slower-growing than the species, with shorter shoots, and more difficult to grow. **'Mary Maslin'** ■ has vivid scarlet flowers with yellow eyes. **'Paul Maslin'** has pale yellow flowers with deep purple eyes. **'Tangelo'** has brilliant orange-red flowers with yellow eyes.

*P. nivalis* ■ (Trailing phlox).

Decumbent, evergreen perennial with trailing shoots, to 30cm (12in) long, and hairy, lance-shaped leaves, 2.5cm (1in) long. Bears cymes of salverform, purple, pink, or white flowers, to 1.5cm (½in) across, in summer. Cultivation group 3. † 20cm (8in), ↔ 30cm (12in). C. USA. \*\*\* **'Camla'** has very pale pink, almost white flowers.

*P. paniculata* (Perennial phlox). Erect herbaceous perennial with ovate or lance-shaped to elliptic, toothed, thin leaves, 5–13cm (2–5in) long. Panicle-like cymes of salverform, fragrant, white or pale to dark lilac flowers, 1.5–2.5cm (½–1in) across, are borne from summer to early or mid-autumn. Cultivation group 1. † 1.2m (4ft), ↔ 60–100cm (24–39in). E. USA. \*\*\* **'Aida'** has crimson flowers with purple eyes.

**'Amethyst'** ♀ produces violet flowers.

**'Balmoral'** ■ is vigorous, with large trusses of pink flowers; † 90cm (36in).

**'Blue Boy'** is strong-growing, and bears mauve-blue flowers with white eyes; † 90cm (36in).

**'Brigadier'** ■♀ has orange-tinged, pinkish red flowers, and deep green leaves. **'Bright Eyes'** ♀ has clear pale pink flowers with red eyes.

**'Eva Cullum'** ■ is very free-blooming, producing bright deep pink flowers with darker pink centres. **'Eventide'** ■♀ has lavender-blue flowers; † 90cm (36in).

**'Fujiyama'** ■♀ has white flowers; † to 75cm (30in). **'Graf Zeppelin'** ■ has white flowers with red centres.

**'Hampton Court'** ■ has dark green foliage and mauve-blue flowers.

**'Harlequin'** ■ has leaves with broad, ivory-white margins, and produces reddish purple flowers.

**'Le Mahdi'** ♀ produces deep bluish purple flowers with darker eyes; † 1.1m (3½ft). **'Mia Ruys'** ■ bears large white flowers, to 3cm (1¼in) across; † 60cm (24in).

**'Mother of Pearl'** ■♀ has pink-tinted white flowers; † 75cm (30in). **'Norah Leigh'** ■ has extensively white-

variegated leaves and small, pale lilac flowers, 1.5cm (½in) across, with deeper lilac-pink centres; † 90cm (36in).

**'Orange Perfection'** bears deep orange flowers. **'Prince of Orange'** ♀ has orange-red flowers; † to 80cm (32in).

**'Prospero'** ♀ has pale lilac flowers with almost white petal margins; † to 90cm (36in).

**'Sandringham'** has pale pink flowers with deeper pink centres and widely spaced petal lobes. **'Sir John Falstaff'** has deep salmon-pink flowers with wine-red eyes.

**'Starfire'** has dark green leaves and deep crimson-red flowers; † 90cm (36in).

**'White Admiral'** ♀ bears white flowers; † 90cm (36in). **'Windsor'** ■♀ has reddish pink flowers with purple-pink eyes.

*P. x procumbens* (*P. stolonifera* x *P. subulata*). Decumbent, mat-forming, semi-evergreen perennial with inversely lance-shaped to elliptic, glossy leaves, 2.5cm (1in) long. Bears open, flat cymes of salverform, bright purple flowers, 2cm (¾in) across, in early summer. Cultivation group 2 or 3. † 10cm (4in), ↔ 30cm (12in). Garden origin. \*\*\*

**'Millstream'** ♀ syn. *P. 'Millstream'*, bears a profusion of deep lavender-pink flowers.

**'Variegata'**, syn. *P. amoena* 'Variegata', has leaves with cream margins, and bears deep pink flowers.

*P. stolonifera* (Creeping phlox).

Stoloniferous, spreading herbaceous perennial with obovate, dark green leaves, to 5cm (2in) long. In early summer, upright stems produce open cymes of salverform, pale to deep purple flowers, to 3cm (1¼in) across. Cultivation group 2. † 10–15cm (4–6in), ↔ 30cm (12in) or more. Woodland in C. USA. \*\*\*

**'Ariane'** ■ has pale green leaves, and white flowers, 3cm (1¼in) or more across, with star-shaped petal lobes and small yellow eyes.

**'Blue Ridge'** ♀ bears clear pale blue flowers. **'Mary Belle Frey'** has pink flowers.

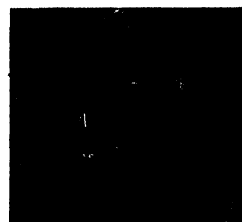
*P. subulata* (Moss phlox). Dense, evergreen perennial forming cushions or mats of hairy, linear to elliptic, bright green leaves, 0.6–2cm (¼–¾in) long. Salverform, purple or red, sometimes violet-purple, lilac, pink, or white flowers, 1.5–2.5cm (½–1in) across, often with star-shaped petal lobes, are produced in few-flowered cymes, rarely singly, in late spring and early summer. Cultivation group 3. † 5–15cm (2–6in),



Phlox 'Kelly's Eye'



Phlox maculata 'Omega'



Phlox nana 'Mary Maslin'



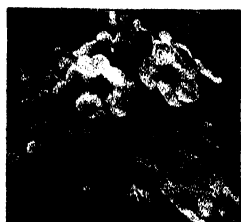
Phlox nivalis



Phlox paniculata 'Balmoral'



Phlox paniculata 'Brigadier'



Phlox paniculata 'Eva Cullum'



Phlox paniculata 'Eventide'



Phlox paniculata 'Fujiyama'



Phlox paniculata 'Graf Zeppelin'



Phlox paniculata 'Hampton Court'



Phlox paniculata 'Harlequin'

*Phlox paniculata* 'Windsor'

↔ 50cm (20in) or more. E. to C. USA.  
 \*\*\*. 'Amazing Grace' has a lax habit, and bears pale pink flowers with deep pinkish purple eyes. 'G.F. Wilson' is vigorous and cushion-forming, and produces deep lavender-blue flowers. 'Marjorie' is mat-forming, and bears very large, narrow-petalled, deep pink flowers, 3cm (1¼in) across, each with a darker pink band around a yellow eye. 'McDaniel's Cushion' is vigorous, cushion-forming, and very free-flowering, with very large, very deep pink flowers, to 3.5cm (1½in) across. 'Scarlet Flame' is vigorous and mat-forming, with deep scarlet flowers.

'Temiskaming' is slow-growing and cushion-forming, with small, deep magenta flowers, 1.5cm (½in) across.

#### ▷ Phlox

**Annual** see *Phlox drummondii*  
**Blue** see *Phlox divaricata*  
**Creeping** see *Phlox stolonifera*  
**Meadow** see *Phlox maculata*  
**Moss** see *Phlox subulata*  
**Mountain** see *Linanthus grandiflorus*  
**Perennial** see *Phlox paniculata*  
**Sand** see *Phlox bifida*  
**Santa Fe** see *Phlox nana*  
**Thick-leaf** see *Phlox carolina*  
**Trailing** see *Phlox nivalis*

*Phlox paniculata* 'Mia Ruys'*Phlox paniculata* 'Mother of Pearl'*Phlox paniculata* 'Norah Leigh'*Phlox stolonifera* 'Ariane'*Phlox subulata* 'G. F. Wilson'*Phlox subulata* 'Marjorie'

## PHOENIX

ARECACEAE/PALMAE

Genus of 17 species of single- and cluster-stemmed palms occurring in tropical and subtropical forest or low scrub thickets in the Canary Islands, Africa, Crete (Greece), and W. and S. Asia to the Philippines. They have linear to ovate or oblong, pinnate leaves, usually borne in dense, terminal clusters. The bowl-shaped, 3-petalled, cream to yellow flowers are produced in panicles from the lower axils, followed by yellow, orange, red, brown, or black fruits. In frost-prone climates, grow in a warm greenhouse or as houseplants. In warmer areas, use as specimen plants on a lawn.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. Pot on or top-dress in spring. When in growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun, with some midday shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.

• **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*P. canariensis* ♀ (Canary Island date palm). Medium-sized palm with a stout, columnar trunk marked with oblong leaf scars wider than they are long. Spreading to broadly arching leaves, 4–6m (12–20ft) long, consist of many linear, bright mid- to deep green leaflets, set in a single plane. Bowl-shaped, cream to yellow flowers are borne in pendent panicles, 1–1.2m (3–4ft) long, in summer. Fruit are cylindrical to ellipsoid, and yellow flushed red, 2cm (¾in) long, with edible, sweet, but almost dry flesh. ↑ to 15m (50ft), ↔ 12m (40ft). Canary Islands. ☼ (min. 10–16°C/50–61°F)  
*P. dactylifera* ♀ (Date palm). Tall, sometimes suckering palm producing a columnar trunk usually clad with old leaf bases, at least towards the top. Leaves, 4–6m (12–20ft) long, are composed of many linear, greyish green leaflets, the lowest ones reduced to spines, arranged in various planes giving a 3-dimensional effect. Bowl-shaped cream flowers appear in long-stalked panicles, 1.5–2m (5–6ft) long, in spring or summer. Ellipsoid to cylindrical, edible, sweet, fleshy, yellow to reddish brown fruit, 2.5–7cm (1–3in) long, are very variable both in texture and flavour. ↑ to 30m (100ft), ↔ 6–12m (20–40ft). Probably N. Africa and W. Asia. ☼ (min. 10–16°C/50–61°F)  
*P. humilis* see *P. loureirii*  
*P. loureirii* \* syn. *P. humilis*. Small palm, often with clustered stems, bearing leaves to 2m (6ft) long or more, composed of linear, glaucous, bright mid-green leaflets, clustered along the midribs. Bowl-shaped cream flowers appear in panicles, to 1m (3ft) long, usually in summer, followed by ovoid, dry-fleshed, red to black fruit, 1.5–2cm (½–¾in) across. ↑ 2–5m (6–15ft), ↔ 2–4m (6–12ft). Sri Lanka, India to S. China. ☼ (min. 10–16°C/50–61°F)  
*P. reclinata* \* Small, clustering palm with ascending or leaning, slender

*Phoenix reclinata*

stems clad with fibrous, red-brown leaf remains. Leaves, to 2.5m (8ft) long, are composed of many linear, mid- to deep green leaflets, usually arranged in several planes. Bowl-shaped cream flowers are produced in panicles, to 1.5m (5ft) long, usually in summer, followed by cylindrical-ellipsoid, edible but dry, orange-red to black fruit, to 2cm (¾in) across. ↑ to 10m (30ft). Tropical Africa. ☼ (min. 10–16°C/50–61°F)  
*P. roebelenii* ♀ (Miniature date palm, Pygmy date palm). Small, sometimes clustering palm, often with a narrow skirt of dead leaves. Living leaves, 1–1.2m (3–4ft) long, have many linear, bright deep green leaflets, sometimes with flattened, scale-like hairs beneath. Bowl-shaped cream flowers appear in panicles, to 45cm (18in) long, usually in summer, followed by ellipsoid, edible black fruit, to 1cm (½in) long. ↑ 2m (6ft) or more, ↔ to 2.5m (8ft). Laos. ☼ (min. 10–16°C/50–61°F)

## PHORMIUM

AGAVACEAE/PHORMIACEAE

Genus of 2 species of evergreen perennials found in scrub and swamps, and on hillsides and riverbanks, in areas ranging from coasts to mountains in New Zealand. They form clumps of large, linear, keeled leaves, each folded into a V-shape at the base, and ranging in colour from yellow-green to dark green, with many fine stripes. Cultivars often have attractive, coloured or variegated foliage. Abundant small, tubular, 6-petalled flowers are produced in erect panicles on leafless stems in summer. They provide a focal point in a border, by a building, or at the edge of a lawn, and are ideal for a coastal garden.  
 • **HARDINESS** Frost hardy to half hardy; may tolerate temperatures to -12°C (10°F) if given a deep, dry winter mulch.  
 • **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. In frost-prone areas, provide a deep, dry mulch in winter.  
 • **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Divide in spring.  
 • **PESTS AND DISEASES** Mealybugs may be a problem.

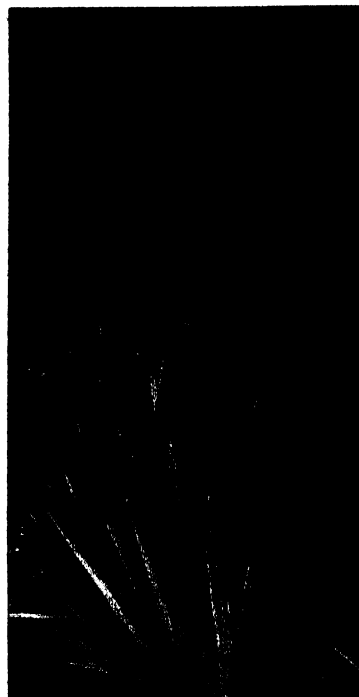
*P. colensoi* see *P. cookianum*.

*P. cookianum* ♀ syn. *P. colensoi* (Mountain flax). Clump-forming perennial with broad, arching, linear, light to yellowish green leaves, to 1.5m (5ft) long. Tubular, yellow-green



*Phormium cookianum* subsp. *hookeri*  
'Tricolor'

flowers, to 4cm (1½in) long, are borne in upright panicles, 2m (6ft) long, in summer. † to 2m (6ft), ↔ 3m (10ft). New Zealand. \*\* subsp. *hookeri* 'Cream Delight' ♀ has leaves with broad bands of creamy yellow in the centres and narrower bands towards the margins. subsp. *hookeri* 'Tricolor' ♂♀ has leaves conspicuously margined creamy yellow and red. 'Maori Chief', a hybrid of *P. cookianum*, has pink- and red-striped bronze leaves. 'Maori Sunrise', a hybrid of *P. cookianum*, produces slender, apricot-and-pink-striped leaves with bronze margins. 'Variegatum' has light green leaves with cream to lime-green stripes and margins. *P. 'Sundowner'* ♂♀ Clump-forming perennial with broad, upright, bronze-green leaves, to 1.5m (5ft) long, with dark rose-pink margins. Tubular, yellow-green flowers, to 4cm (1½in) long, are borne in upright panicles, 2m (6ft) long, in summer. †↔ to 2m (6ft). \*\* *P. tenax* ♂♀ (New Zealand flax). Clump-forming perennial with rigid, upright, linear leaves, to 3m (10ft) long, dark green above, blue-green beneath. Stout, red-purple panicles, to 4m (12ft)



*Phormium tenax*

long, of tubular, dull red flowers, 5cm (2in) long, are borne in summer. † 4m (12ft), ↔ 2m (6ft). New Zealand. \*\* 'Aurora', a hybrid of *P. tenax*, has arching bronze leaves striped red, salmon-pink, and yellow; †↔ 1.2m (4ft). 'Bronze Baby', a dwarf hybrid of *P. tenax*, produces bronze leaves, pendent at the tips; †↔ 60–80cm (24–32in). 'Dazzler' ♂ a hybrid of *P. tenax*, has arching bronze leaves with red, orange, and pink stripes; † 1m (3ft), ↔ 1.2m (4ft). 'Variegatum' ♀ produces leaves with creamy yellow stripes at the margins. 'Veitchianum' has leaves with broad, creamy white stripes. *P. 'Yellow Wave'* ♀ Clump-forming perennial producing broad, arching, yellow-green leaves, to 1m (3ft) long,



*Phormium* 'Sundowner'



*Phormium tenax* 'Dazzler'

longitudinally striped mid-green. Tubular, dull red flowers, 5cm (2in) long, in stout, red-purple panicles, to 4m (12ft) long, are borne in summer. † 4m (12ft), ↔ 2m (6ft). \*\*

## PHOTINIA

syn. *HETEROMELES*, *STRANVAESIA*  
ROSACEAE

Genus of about 60 species of deciduous or evergreen shrubs and trees found in woodland and thickets from the Himalayas to E. and S.E. Asia. Leaves are alternate, lance-shaped to broadly ovate, and mid- or dark green; evergreen leaves are attractive and glossy, often brightly coloured in shades of red when young; deciduous leaves often colour well in autumn. The small, 5-petalled flowers are saucer- to cup-shaped, and are borne in dense, terminal and axillary, corymb-like panicles, followed by spherical or ovoid, usually red fruits, 0.5–1cm (¼–½in) across. Grow deciduous species in a woodland garden, or as specimens on a lawn; grow evergreens in a shrub border or among other trees and shrubs. Use *P. x fraseri* cultivars for hedging. In frost-prone areas, grow evergreen shrubs against a wall or in the shelter of trees.

• **HARDINESS** Fully hardy to frost hardy. The early growth of *P. serratifolia* may be damaged by late frosts.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. *P. beauverdiana* and *P. villosa* need acid to neutral soil. Protect frost-hardy species from cold, drying winds. Pruning group 1.



*Photinia davidiana* 'Palette'

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings with bottom heat in summer.

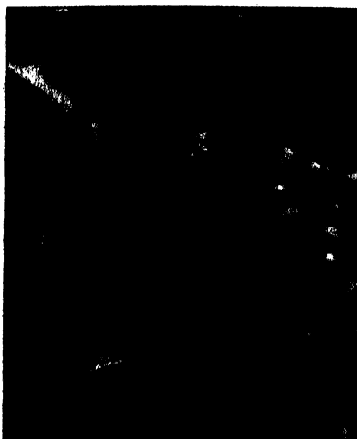
• **PESTS AND DISEASES** May be affected by fireblight. Susceptible to leaf spot and powdery mildew.

*P. beauverdiana* ♀♂ Spreading, deciduous tree with elliptic to obovate, dark green leaves, to 12cm (5in) long, turning red in autumn. In late spring, bears small white flowers in corymb-like panicles, to 5cm (2in) across, followed by ovoid red fruit. † to 10m (30ft), ↔ 6m (20ft). W. China. \*\*\*

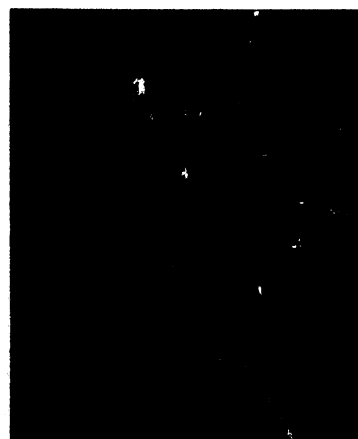
*P. davidiana* ♂♀ syn. *Stranvaesia davidiana*. Upright, evergreen tree or shrub with elliptic to inversely lance-shaped, tapered, dark green leaves, to 12cm (5in) long; older leaves turn red in autumn. In midsummer, small white flowers are produced in corymb-like panicles, 7cm (3in) across, followed by spherical, bright red fruit. † 8m (25ft), ↔ 6m (20ft). China, Vietnam. \*\*\*

'Palette' ♂ is slow-growing and shrubby, with leaves boldly marked creamy white; † 5m (15ft), ↔ 3m (10ft). var. *undulata* 'Fructu Luteo' has yellow fruit.

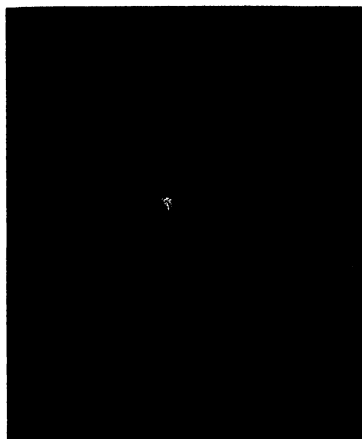
*P. x fraseri* ♂ (*P. glabra* x *P. serratifolia*). Upright, evergreen shrub or small tree with inversely lance-shaped to elliptic, leathery, dark green leaves, 10–20cm (4–8in) long, bronze to bright red when young. In mid- and late spring, produces small white flowers in corymb-like panicles, to 15cm (6in) across. †↔ 5m (15ft). Garden origin. \*\* 'Birmingham' ♂ is bushy-headed,



*Photinia davidiana*



*Photinia x fraseri* 'Red Robin'



Photinia glabra 'Rubens'

spreading, and often many-stemmed, with oblong to obovate leaves, bright purple-red when young; sometimes bears spherical red fruit. 'Red Robin' ♀ is compact, with bright red young foliage.

**P. glabra.** Dense, rounded, evergreen shrub with elliptic to obovate, dark green leaves, to 9cm (3½in) long, red when young. In early summer, bears flattened, corymb-like panicles, 10cm (4in) across, of small white flowers, followed by spherical red fruit, turning black. ♂→3m (10ft). Japan. \*\*\*. 'Rubens' ♀ has bright red young foliage.

**P. nussia** ♀ syn. *Stranvaesia nussia*. Spreading, often rather spiny, evergreen tree with oblong to obovate, leathery, glossy, dark green leaves, to 10cm (4in) long, paler beneath. In midsummer, bears small white flowers in flattened, corymb-like panicles, to 10cm (4in) across, followed by spherical, downy, orange-red fruit. ♂→6m (20ft). Himalayas to S.E. Asia. \*\*

**P. 'Redstart'** ♀♀ Upright, evergreen shrub or small tree bearing oblong to elliptic, dark green leaves, to 11cm (4½in) long, bronze-red when young, on red shoots. Small white flowers, in

dense, corymb-like panicles, 10cm (4in) across, appear in early summer before spherical, yellow-flushed, orange-red fruit. ♂5m (15ft), ♀→3m (10ft). \*\*\*

**P. serratifolia** ♀ syn. *P. serrulata*.

Spreading, evergreen tree with peeling, grey and red-brown bark when mature. Oblong to inversely lance-shaped, glossy, shallowly but sharply toothed, dark green leaves, to 20cm (8in) long, are red when young. Bears small white flowers, in flattened, corymb-like panicles, 10–18cm (4–7in) across, in late spring and early summer, followed by spherical red fruit. ♂10–12m (30–40ft), ♀→8m (25ft). China. \*\*

**P. serrulata** see *P. serratifolia*.

**P. villosa** ♀♀ Spreading, deciduous tree, sometimes shrubby, with elliptic to obovate, dark green leaves, to 7cm (3in) long, bronze when young, turning orange and red in autumn. Small white flowers in flattened, corymb-like panicles, 4cm (1½in) across, appear in late spring, before ovoid red fruit. ♂→5m (15ft). China, Korea, Japan. \*\*\*

## PHRAGMIPEDIUM

ORCHIDACEAE

Genus of 15–20 species of large, evergreen, mainly terrestrial, occasionally lithophytic or epiphytic orchids from Mexico and Central and South America, often found in between rocks or near rivers at low altitudes. They have robust, fleshy, clustered shoots with fibrous roots, but lack pseudobulbs. Leaves are leathery, strap-shaped, often mid-green, and arranged in 2 ranks. Upright stems, arising from the centre of each shoot, bear one or several often brightly coloured flowers in terminal racemes or panicles; some have very long petals, and each has a significant, slipper-shaped lip.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in containers that restrict the roots. In summer, provide bright filtered light and high humidity, and apply fertilizer



Phragmipedium Sedenii

at every third watering. In winter, provide full light, with some midday shade, water sparingly, and apply fertilizer every 6–8 weeks. See also p.46.

• **PROPAGATION** Divide clustered shoots by separating offshoots before growth begins in late winter or early spring.

• **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**P. besseae.** Terrestrial or lithophytic orchid with 6–10 strap-shaped, leathery leaves, to 20cm (8in) long. Bright scarlet flowers, 6cm (2½in) across, are borne singly or in short, upright racemes in spring. ♂→15cm (6in). Ecuador, Peru. ♀ (min. 14°C/57°F; max. 30°C/86°F)

**P. caudatum.** Epiphytic or lithophytic orchid with usually 6–9 strap-shaped, blunt-tipped, leathery, light green leaves, to 60cm (24in) long. In summer, bears upright racemes of very large flowers, 10–15cm (4–6in) across, with very narrow, ribbon-like, dark reddish to greenish brown, pendent petals, 60cm (24in) long, off-white to yellow-green sepals veined darker green or orange, and deep pinkish white lips with pink or brown veins and yellow rims. ♂→60cm (24in). Mexico to Peru. ♀ (min. 14°C/57°F; max. 30°C/86°F)

**P. longifolium.** Terrestrial orchid with about 6 strap-shaped, leathery leaves, to 1m (3ft) long, with sharp-pointed tips. In autumn, bears racemes of pale yellow-green flowers, 15cm (6in) across, with wavy, purple-margined petals, dark green-veined sepals, and purple-flushed lips. ♂→60cm (24in). Costa Rica, Panama, Colombia, Ecuador. ♀ (min. 14°C/57°F; max. 30°C/86°F)

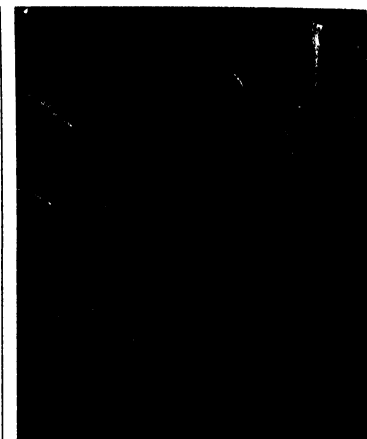
**P. Sedenii** ♀ (*P. longifolium* × *P. schlimii*). Terrestrial orchid with strap-shaped leaves, to 30cm (12in) long. Erect racemes of rounded, ivory-white flowers, 6cm (2½in) across, flushed and margined rose-pink, with twisted petals and rose-pink lips, appear sporadically throughout the year. ♂→60cm (24in). ♀ (min. 14°C/57°F; max. 30°C/86°F)

## PHRAGMITES

Reed

GRAMINEAE/POACEAE

Genus of approximately 4 species of rhizomatous, perennial reed grasses widely distributed in fen, marsh, and riverside habitats in temperate and tropical zones worldwide. They have robust stems bearing deciduous, flat, linear, mid- or slightly grey-green leaves.



Phragmites australis 'Variegatus'

From late summer to mid- or late autumn, they produce large, plumed, silky-hairy panicles of 3- to 11-flowered spikelets, which are useful for dried arrangements. *P. australis*, the only species commonly grown, is vigorous and invasive, especially at the water's edge. Grow in naturalistic lakeside plantings with ample space. Where space is limited, grow in large containers sunk in water to restrict growth.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, reliably moist, deep soil in full sun. Cut back dead stems by late winter.

• **PROPAGATION** Divide from early spring to early summer.

• **PESTS AND DISEASES** Trouble free.

**P. australis**, syn. *P. communis* (Common reed, Norfolk reed).

Vigorous, rhizomatous reed grass with robust stems bearing flat, linear, long-pointed, greyish green leaves, to 60cm (24in) long, turning golden russet in autumn. From late summer to mid-autumn, bears spikelets in plume-like, silky-hairy, glistening, dark brownish purple panicles, to 45cm (18in) long. ♂ to 3m (10ft) in flower, ♀→indefinite. Tropical and temperate regions worldwide. \*\*\*. 'Variegatus' ♀ is less invasive, and has leaves striped golden yellow, fading almost to white.

**P. communis** see *P. australis*.

## PHUOPSIS

syn. CRUCIANELLA

RUBIACEAE

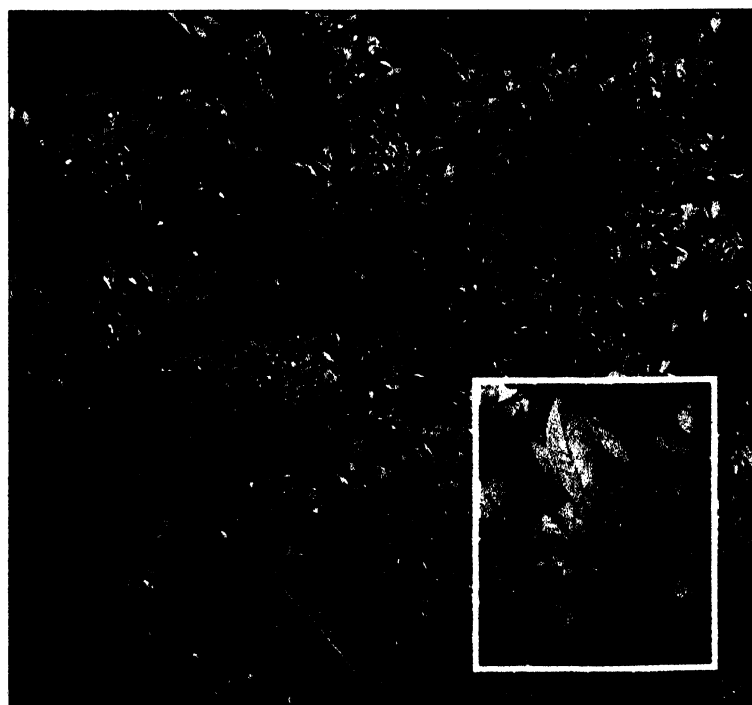
Genus of one species of mat-forming, stem-rooting perennial found in open sites on hillsides in the Caucasus Mountains and N.E. Iran. It produces whorls of narrowly elliptic leaves, and is cultivated for its abundant clusters of small, tubular-funnel-shaped, scented flowers, each with 5 spreading petal lobes, borne at the tips of the stems in summer. Grow as ground cover on a bank, in a rock garden, or at the front of a border.

• **HARDINESS** Fully hardy.

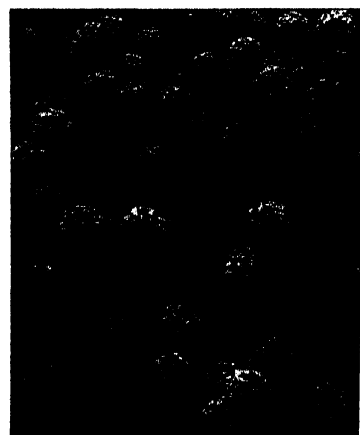
• **CULTIVATION** Grow in moderately fertile, gritty, moist but well-drained soil in full sun or partial shade. Cut back after flowering to maintain a compact shape.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Divide or take stem-tip cuttings from spring to early summer.

• **PESTS AND DISEASES** Trouble free.



Photinia villosa (inset: leaf detail)

*Phuopsis stylosa*

***P. stylosa*** ■ syn. *Crucianella stylosa*. Mat-forming perennial with slender, branching stems bearing whorls of 6–8 pointed, narrowly elliptic, musk-scented, pale green leaves, 1.5–2.5cm (½–1in) long. Produces rounded heads of many tiny, tubular-funnel-shaped pink flowers, 1.5–2cm (½–¾in) long, over long periods in summer. ‡15cm (6in), ↔50cm (20in) or more. Caucasus, N.E. Iran. \*\*\*

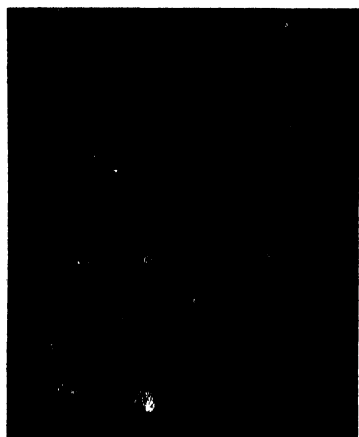
## PHYGELIUS

SCROPHULARIACEAE

Genus of 2 species of evergreen shrubs or subshrubs found on wet slopes and streambanks in South Africa. They are cultivated for their panicles of showy, tubular flowers, each with 5 recurved lobes, borne over a long period in summer and often into autumn. The ovate to lance-shaped, dark green leaves are mostly in opposite pairs, the upper leaves sometimes alternate. Grow in a shrub border or herbaceous border, or against a wall. Where temperatures regularly drop below 0°C (32°F), treat as herbaceous perennials. They may spread extensively by suckers, given ideal conditions.

• **HARDINESS** Frost hardy. *P. capensis* is hardy to -10°C (14°F).

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. Dead-head to encourage further flowering. In frost-prone areas, shelter from cold, drying winds, and provide a dry winter mulch. If grown as herbaceous perennials, cut back to the bases in spring; otherwise, pruning group 9.

*Phygelius aequalis**Phygelius aequalis* 'Yellow Trumpet'

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Take softwood cuttings in late spring. Remove rooted suckers in spring. Overwinter young plants under glass in frost-prone areas.

• **PESTS AND DISEASES** Figwort weevils and capsid bugs may be a problem.

***P. aequalis*** ■ Upright, suckering shrub with ovate, dark green leaves, to 11cm (4½in) long. In summer, produces upright panicles, to 25cm (10in) long, of nodding, dusky pink flowers, to 6cm (2½in) or more long, with crimson lobes and yellow throats. ‡1m (3ft). South Africa. \*\*.

**'Yellow Trumpet'** ■ has pale green leaves, and bears pale creamy yellow flowers.

***P. capensis*** ♀ (Cape figwort). Upright, suckering shrub with ovate, dark green leaves, to 9cm (3½in) long. In summer, bears upright panicles, to 60cm (24in) long, of yellow-throated orange flowers, to 5cm (2½in) long, with orange-red lobes; the flowers turn back towards the stems. ‡1.2m (4ft), ↔1.5m (5ft). South Africa. \*\*\*.

**'Coccineus'** has scarlet flowers.

***P. x rectus*** (*P. aequalis* x *P. capensis*). Upright, suckering shrub with ovate,

*Phygelius x rectus* 'African Queen'*Phygelius x rectus* 'Moonraker'

dark green leaves, to 10cm (4in) long. In summer, bears pale red flowers, to 6cm (2½in) long, in panicles 15–30cm (6–12in) long. ‡1 to 1.5m (5ft). Garden origin. \*\*\*.

**'African Queen'** ■ bears pendent, pale red flowers, with orange-red lobes and yellow mouths, in upright panicles, 30cm (12in) or more long; ‡1m (3ft), ↔1.2m (4ft).

**'Devil's Tears'** has pendent, deep red-pink flowers, turning back towards the stems, with orange-red lobes and yellow throats.

**'Moonraker'** ■ has slightly downward-curved, pale creamy yellow flowers.

**'Pink Elf'** produces slender, pale pink flowers, with spreading, dark crimson lobes, in panicles to 15cm (6in) long; ‡75cm (30in), ↔90cm (36in).

**'Salmon Leap'** ■ has deeply lobed orange

*Phygelius x rectus* 'Salmon Leap'

flowers, turning slightly back towards the stems, in panicles to 45cm (18in) long; ‡1.2m (4ft), ↔1.5m (5ft).

**'Winchester Fanfare'** has pendent, dusky, red-pink flowers.

## PHYLICA

Cape myrtle

RHAMNACEAE

Genus of about 150 species of heath-like, evergreen shrubs occurring in a range of habitats from seashores to rocky mountain slopes, mainly in South Africa but also in Madagascar and Tristan da Cunha. Leaves are small, alternate, often densely borne, usually narrow, simple, and entire, often with rolled margins. Each tiny flower either has 5 sometimes petal-like sepals and no petals, or has modified petals forming bristles or filaments. Where temperatures fall below 5°C (41°F), grow in a cool greenhouse. In warmer areas, use in a shrub border, or as a hedge or low windbreak.

• **HARDINESS** Frost tender, but may survive temperatures near 0°C (32°F) in a sheltered site, if the wood has been well ripened in summer.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light; ventilate well. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Keep just moist in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained, ideally neutral to acid soil in full sun. Pruning group 10, after flowering; clip hedges after flowering or in midsummer.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Take greenwood cuttings in early summer.

• **PESTS AND DISEASES** Trouble free.

***P. plumosa***, syn. *P. pubescens*.

Moderately bushy, downy shrub with wiry stems. Linear to lance-shaped, mid-green leaves, 1–3cm (½–1¼in) long, have rolled margins, and are dotted with glands above, long-hairy beneath. In spring, bears plume-like inflorescences of tiny, cup-shaped, dark brown flowers, surrounded by leaf-like bracts, 2–3cm (¾–1¼in) long, densely clothed in long, brownish white hairs. ‡1–2m (3–6ft), ↔0.75–1.5m (1½–5ft). South Africa.

☼ (min. 5°C/41°F)

***P. pubescens*** see *P. plumosa*.

▷ *Phyllanthus nivosus* see *Breynia disticha*



## X PHYLLIOPSIS

## ERICACEAE

Hybrid genus of dwarf, evergreen shrubs, derived from crosses between *Phyllodoce* and *Kalmiopsis*. They are grown for their bell-shaped flowers, borne in spring. The stems are upright, bearing simple, alternate, glossy leaves. Grow in a peat bed, or in a shady site in a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, acid, reliably moist soil in deep or partial shade. Pruning group 10, after flowering.
- **PROPAGATION** Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

✕ *P. hillieri* 'Pinocchio'. Upright shrub with branching, hairy shoots. Oblong-ovate, glossy, dark green leaves, 2cm (¾in) long, have margins slightly rolled under. Bears erect, terminal racemes of 5-lobed, widely bell-shaped, red-purple flowers, 1cm (½in) across, in late spring. ‡ 20cm (8in), ↔ to 30cm (12in). \*\*\*

▷ *Phyllitis* see *Asplenium*  
*P. scolopendrium* see *A. scolopendrium*

▷ *Phyllocactus biformis* see *Disocactus biformis*

▷ *Phyllocactus eichlamii* see *Disocactus eichlamii*

## PHYLLOCLADUS

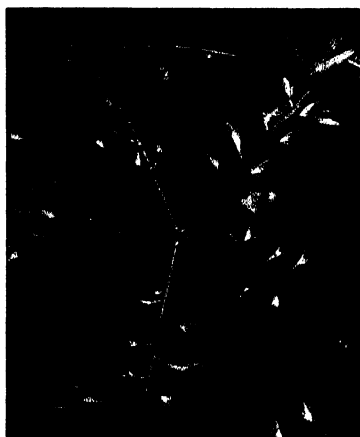
Celery pine

## PHYLLOCLADACEAE/PODOCARPACEAE

Genus of 5 species of monoecious or dioecious, evergreen, coniferous trees and shrubs found in forests in Indonesia, Malaysia, the Philippines, Tasmania (Australia), and New Zealand. They have 2 kinds of shoots: normal shoots that produce radial, reduced, scale-like, non-functioning leaves, and flattened, modified shoots that form leaf-like, photosynthesizing elements called "phylloclades", which resemble the leaves of celery. Female cones each bear one to several seeds within fleshy, cup-like arils, usually on the edges of the phylloclades. Male cones are catkin-like, borne in terminal groups. Celery pines are unusual specimen plants, and are attractive in spring with their colourful male cones. In frost-prone areas, grow half-hardy species in a cool greenhouse.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added leaf mould, in full light. When in growth, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in any well-drained soil in full sun.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*P. trichomanoides* □ ◊ (Tanekaha). Pyramidal tree with smooth, grey-black bark and whorled branches. Pinnate phylloclades, to 30cm (12in) long, each with 7–15 diamond-shaped segments, are reddish brown when young, then mid-green. In spring, produces spherical, dark blue or black female cones, 2cm (1in) long, and catkin-like,



*Phyllocladus trichomanoides*

cylindrical purple male cones, 1cm (½in) long, ripening red then yellow, borne in clusters of 5–10. ‡ to 12m (40ft) or more, ↔ to 6m (20ft) or more. New Zealand. \*

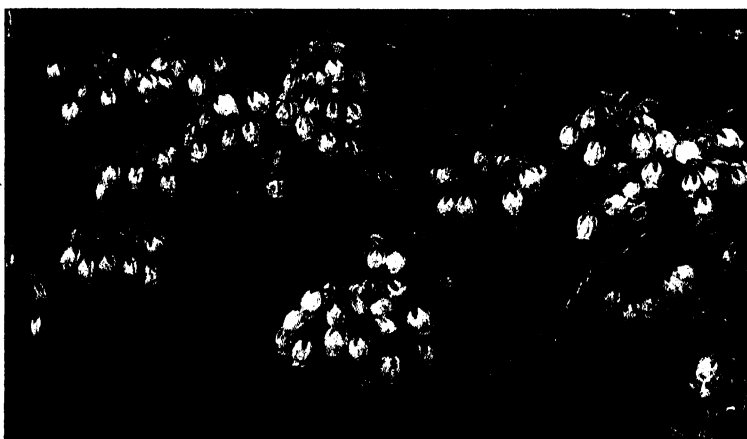
## PHYLLODOCE

## ERICACEAE

Genus of 8 species of spreading or erect, evergreen shrubs and subshrubs from alpine and arctic habitats in the N. hemisphere. Leaves are alternate, linear, leathery, downy beneath, with rolled, toothed margins. Bell-, urn-, or pitcher-shaped, nodding or horizontally held flowers are borne in terminal racemes or umbel-like clusters, sometimes solitary. Grow in a peat bed or rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, acid soil in partial shade. Pruning group 10, after flowering.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in early spring. Take semi-ripe cuttings in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*P. aleutica*. Decumbent or scrambling, mat-forming shrub with linear, minutely toothed, bright dark green leaves, 1.5cm (½in) long, softly yellow-downy and with a central white line beneath. In late spring and early summer, bears pendent, umbel-like clusters of urn-shaped, pale yellow-green flowers, to 8mm (⅜in) long. ‡ to 20cm (8in), ↔ 25cm (10in). Japan, Russia (Sakhalin, Kurile Islands, Kamchatka), USA (Alaska). \*\*\*



*Phyllodoce empetriformis*



*Phyllodoce x intermedia* 'Drummondii'

*P. caerulea* ♀ syn. *P. taxifolia*. Upright shrub with linear, fine-toothed, glossy, dark green leaves, to 1cm (½in) long, downy beneath. Pitcher-shaped, purplish pink flowers, 1cm (½in) long, are produced singly or in umbel-like clusters, in late spring and summer. ‡ 15–22cm (6–9in), ↔ 30cm (12in). Europe, Asia, USA. \*\*\*

*P. empetriformis* □ Loose, mat-forming shrub with linear, glossy, bright green leaves, 1.5cm (½in) long, with glandular-toothed margins, downy beneath. Bears umbel-like clusters of long-stalked, bell-shaped, purple-pink to rose-red flowers, 9mm (⅜in) long, in late spring and early summer. ‡ 30cm (12in), ↔ to 40cm (16in). W. North America. \*\*\*

*P. x intermedia* (*P. aleutica* var. *glanduliflora* x *P. empetriformis*). Bushy, low-spreading subshrub with linear, glossy, fine-toothed, dark green leaves, 1.5cm (½in) long, downy beneath. In mid-spring, bears umbel-like clusters of pendent, urn-shaped to narrowly bell-shaped, reddish purple to pink flowers, to 6mm (¼in) long, on slender red stalks. ‡ 15–23cm (6–9in), ↔ 35cm (14in). \*\*\*. 'Drummondii' □ has deep red-purple flowers.

*P. nipponica* ♀ Erect subshrub with linear, dark green leaves, to 1cm (½in) long, with white-downy midribs beneath, and minutely glandular-toothed, rolled margins. Loose, umbel-like clusters of pendent, bell-shaped, white, sometimes pink-tinged flowers, 7mm (¼in) long, are borne on upright, red-tinted stalks in late spring and early summer. ‡ to 20cm (8in). Japan. \*\*\*

*P. taxifolia* see *P. caerulea*.

## PHYLLOSTACHYS

## GRAMINEAE/POACEAE

Genus of about 80 species of medium-sized to large, evergreen bamboos occurring in deciduous woodland and groves in E. Asia and the Himalayas. They have a branching habit and spreading rhizomes, although in cool-temperate climates they usually form compact clumps. The canes are hollow and grooved, and often zigzag from node to node on young plants. Leaves are yellow-green or light to dark green, narrowly lance-shaped, and tessellated. Valued for their elegant form and foliage, some also for their subtly coloured canes, they are suitable for growing in containers outdoors, as specimen plants, or in groups among shorter shrubs in a border. They thrive in a woodland garden, and may also be used to create a screen.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun or dappled shade. In containers, use loam-based potting compost (J1 No.3), and apply a balanced liquid fertilizer monthly. In frost-prone climates, shelter from cold, drying winds.
- **PROPAGATION** Divide in spring.
- **PESTS AND DISEASES** Emerging young shoots may be damaged by slugs.

*P. aurea* ♀ (Fishpole bamboo, Golden bamboo). Clump-forming, stiffly upright bamboo with grooved canes, bright mid-green at first, becoming brown-yellow when mature; there are cup-shaped swellings beneath each node, and the lower nodes are asymmetrical, distorted, and often densely crowded. Bears narrowly lance-shaped, yellowish to golden green leaves, to 15cm (6in) long. ‡ 2–10m (6–30ft), ↔ indefinite. S.E. China. \*\*\*. 'Violascens' see *P. violascens*.

*P. aureosulcata* (Yellow-groove bamboo). Clump-forming bamboo producing rough, brownish green canes, often zigzagged at the bases, with yellow grooves and striped sheaths. Leaves are narrowly lance-shaped and mid-green, to 17cm (7in) long. ‡ 3–6m (10–20ft), ↔ indefinite. N.E. China. \*\*\*.

var. *aureocaulis* □ has sulphur-yellow canes, occasionally with green stripes near the bases; C. China. 'Spectabilis' has thick yellow canes with green grooves.

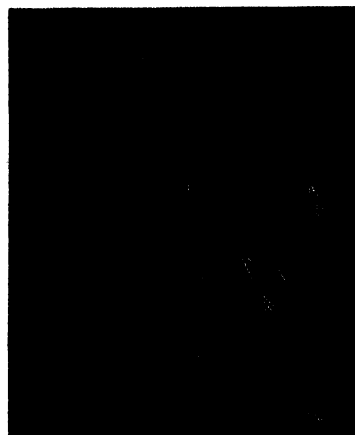


*Phyllostachys aureosulcata* var. *aureocaulis*



*Phyllostachys bambusoides*

***P. bambusoides*** [Giant timber bamboo]. Clump-forming bamboo with thick, shiny, deep green canes and large, thick leaf sheaths with kinked bristles. Bears broadly lance-shaped, glossy, dark green leaves, to 20cm (8in) long. 3–8m (10–25ft), ↔ indefinite. China, possibly also Japan. \*\*\*. **'Allgold'** [syn. 'Holo-chrysa', 'Sulphurea' of gardens, produces rich golden yellow canes, sometimes striped green; occasionally has yellow-striped leaves. **'Holo-chrysa'** see 'Allgold'. **'Sulphurea'** of gardens see 'Allgold'. **'Violascens'** see *P. violascens*. ***P. flexuosa*** [Zigzag bamboo]. Clump-forming bamboo with slightly ribbed, slender, arching canes, often zigzagged between the nodes, bright green at first, turning yellow-brown to almost black with age, and with a waxy white bloom below the nodes. Bears narrowly lance-shaped, fresh green leaves, to 15cm (6in) long, which retain their colour throughout winter. 2–10m (6–30ft), ↔ indefinite. China. \*\*\*. ***P. glauca*** see *P. violascens*. ***P. 'Henonis'*** see *P. nigra* var. *henonis*. ***P. nigra*** [Black bamboo]. Clump-forming bamboo with arching, slender green canes that turn lustrous black in



*Phyllostachys flexuosa*

their second or third year. Produces abundant lance-shaped, dark green leaves, 4–13cm (1½–5in) long. 3–5m (10–15ft), ↔ 2–3m (6–10ft). E. and C. China. \*\*\*. **'Boryana'** has green to yellowish green canes with purple-brown marks. var. ***henonis*** [syn. *P. 'Henonis'*], has bright green canes, turning yellow-green when mature, and glossy leaves, downy and rough when young. ***P. violascens***, syn. *P. aurea* 'Violascens', *P. bambusoides* 'Violascens', *P. glauca*. Clump-forming then spreading bamboo with swollen green canes, finely striped purple, becoming violet. Bears narrowly lance-shaped, glossy, dark green leaves, to 12cm (5in) long, glaucous beneath. 3 to 5m (16ft) or more, ↔ 2m (6ft) or more. China. \*\*\*



*Phyllostachys nigra*



*Phyllostachys nigra* var. *henonis*

## X PHYLLOTHAMNUS

### ERICACEAE

Hybrid genus of one upright, evergreen shrub, derived from crosses between *Phyllo-doce* and *Rhodothamnus*, grown for its heath-like, alternate, linear leaves and its funnel-shaped flowers, borne in late spring and early summer. Grow in a peat garden or shady rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in acid, humus-rich, moderately fertile, moist but well-drained soil in partial shade. Shelter from cold, drying winds. Pruning group 10, after flowering.
- **PROPAGATION** Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

✕ ***P. erectus*** (*Phyllo-doce empetriformis* x *Rhodothamnus chamaecistus*). Evergreen shrub with linear, glossy, dark green leaves, to 1.5cm (½in) long. Produces terminal clusters of 2–10 widely funnel-shaped, deep rose-pink flowers, 1cm (½in) across, in late spring and early summer. 25cm (10in), ↔ to 30cm (12in). Garden origin. \*\*\*

▷ *Phyodina* see *Callisia*

## PHYSALIS

Ground cherry

### SOLANACEAE

Genus of about 80 species of upright, bushy, sometimes rhizomatous annuals and perennials found in sunny or lightly shaded, well-drained habitats worldwide, although mostly in the Americas. They have alternate or whorled, entire or pinnatifid, mid-green leaves. Tiny, inconspicuous, bell-shaped flowers, with star-shaped mouths, are produced singly (rarely in small clusters) from the leaf axils; they are followed by spherical, bright red, yellow, or purple, sometimes edible berries, enclosed in decorative, papery, orange to scarlet calyces. In some species, the calyces skeletonize, and persist throughout winter with the berries inside, remaining attractive; they can be used in dried arrangements. They are suitable for a border, although they may become invasive. All parts of *P.*

*alkekengi*, except the fully ripe fruit, may cause mild stomach upset if ingested; contact with foliage may irritate skin.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun or partial shade. Cut stems for drying as the calyces begin to colour.
- **PROPAGATION** Sow seed of perennials in containers in a cold frame in spring; sow seed of annuals *in situ* in mid-spring. Divide in spring.
- **PESTS AND DISEASES** Caterpillars may be a problem.

***P. alkekengi*** [Chinese lantern, Japanese lantern]. Vigorous, spreading, rhizomatous perennial with triangular-ovate to diamond-shaped leaves, to 12cm (5in) long. Nodding, bell-shaped cream flowers, 2cm (¾in) long, with star-shaped mouths, are produced from the leaf axils in midsummer, followed by large, bright orange-scarlet berries enclosed in papery red calyces, to 5cm



*Physalis alkekengi*

(2in) across. 60–75cm (24–30in), ↔ 90cm (36in) or more. C. and S. Europe, W. Asia to Japan. \*\*\*. var. ***franchetii*** has broadly ovate leaves, and tiny, solitary, creamy white flowers, to 6mm (¼in) long.

## PHYSARIA

Bladderpod

### BRASSICACEAE/CRUCIFERAE

Genus of 14 species of rosette-forming, often short-lived perennials occurring mainly in the mountains of W. North America, usually in rocky sites and open screes. They are cultivated for their unusual, bladder-like seed pods and their attractive symmetrical rosettes of obovate to lance-shaped, mid-green, often silver-hairy leaves. Raceme-like clusters of 4-petalled, cross-shaped yellow flowers are borne in summer, followed by the inflated seed pods. Grow in a scree bed or alpine house; they are intolerant of excessive winter wet.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, gritty, sharply drained soil in full sun. Protect from winter wet. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe.
- **PESTS AND DISEASES** Prone to damage by slugs and snails. May be infested with aphids and red spider mites under glass.

***P. didymocarpa***. Rosette-forming perennial with obovate, silver-grey leaves, 1.5–4cm (½–1½in) long, with a suede-like texture. In summer, bears open clusters of cross-shaped, bright yellow flowers, 2cm (¾in) across, followed by large, inflated, grey-hairy seed pods, 1cm (½in) long. 8–10cm (3–4in), ↔ to 15cm (6in). W. North America. \*\*\*

## PHYSOCARPUS

### ROSACEAE

Genus of about 10 species of deciduous shrubs occurring in thickets and on rocky slopes in E. Asia and North America. They have peeling bark and alternate, ovate to rounded or kidney-shaped, palmately lobed, mid- or dark green leaves. They are cultivated for their foliage and dense, terminal corymbs of small, cup-shaped white flowers, borne in early summer. Grow in a shrub border.



*Physocarpus opulifolius* 'Dart's Gold'

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in preferably acid, fertile, moist but well-drained soil in full sun or partial shade. May become chlorotic if grown in shallow chalk soil. Pruning group 1 or 2.
- **PROPAGATION** Sow seed in containers outdoors in spring or autumn. Take greenwood cuttings in summer. Remove rooted suckers in autumn or spring.
- **PESTS AND DISEASES** Trouble free.

*P. opulifolius*, syn. *Spiraea opulifolius* (Ninebark). Compact, thicker-forming shrub, spreading by suckers, with arching branches and broadly ovate, 3-lobed, doubly toothed, mid-green leaves, to 8cm (3in) long. Small, cup-shaped, pink-tinged white flowers are produced in dense corymbs, 5cm (2in) across, in early summer, followed by clusters of bladder-like, green-flushed red fruit, 6mm (¼in) long. ↑ 3m (10ft), ↔ 5m (15ft). E. North America. \*\*\*.

'Dart's Gold' ■ ♀ has bright yellow young foliage; ↑ 2m (6ft), ↔ 2.5m (8ft).

## PHYSOPLEXIS

CAMPANULACEAE

Genus of one species of tuft-forming, deciduous perennial found in rock crevices in the Alps. Clusters of unusual, bottle-shaped flowers arise from basal tufts of ovate to heart-shaped, toothed leaves. Grow in an alpine house, rock crevice, or scree bed; they are intolerant of winter wet.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in gritty, poor to moderately fertile, sharply drained,



*Physoplexis comosa*

preferably alkaline soil in full sun, with some midday shade. Protect from winter wet. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit.

- **PROPAGATION** Sow seed in containers in an open frame in autumn.
- **PESTS AND DISEASES** Very susceptible to damage by slugs and snails.

*P. comosa* ■ ♀ syn. *Phyteuma comosum*. Tufted, deciduous perennial with ovate to heart-shaped, deeply toothed, mid- to dark green leaves, 2–5cm (¾–2in) long. In late summer, bears terminal clusters of 10–20 bottle-shaped, pale violet flowers, to 2cm (¾in) across, with inflated bases and narrow "necks", and with tapered, deep violet tips. ↑ 8cm (3in), ↔ to 10cm (4in). Europe (Alps). \*\*\*

## PHYSOSTEGIA

Obedient plant

LABIATAE/LAMIACEAE

Genus of about 12 species of erect, hairless, deciduous, rhizomatous perennials occurring in moist, sunny sites in E. North America. They have square stems and alternate pairs of variable, often toothed leaves. Almost stalkless, tubular, 2-lipped, purple, pink, or white flowers, with flattish upper lips, 3-lobed lower lips, and tubular calyces, are borne in sometimes branched racemes, mainly in summer. The flowers will remain in a new position if they are moved on the stalks, hence the common name. Grow in a border; good for cut flowers.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in fertile, reliably moist soil in full sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in winter or early spring before new growth.
- **PESTS AND DISEASES** Slugs may cause damage. Fungal and bacterial rots may affect damaged rhizomes.

*P. speciosa* see *P. virginiana*.

*P. virginiana*, syn. *P. speciosa* (False dragonhead, Obedient plant). Spreading



*Physostegia virginiana* 'Variegata'



*Physostegia virginiana* 'Vivid'

perennial with lance-shaped, elliptic, or spoon-shaped, sharply toothed, mid-green leaves, to 13cm (5in) long. Bears racemes of deep purple or bright lilac-pink, sometimes white flowers, 2–3cm (¾–1¼in) long, with inflated mouths, from midsummer to early autumn. ↑ to 1.2m (4ft), ↔ 60cm (24in) or more. E. North America. \*\*\*.

'Bouquet Rose' has pale, lilac-pink flowers. 'Galadriel' is dwarf, with pale pink-purple flowers; ↑ to 45cm (18in). subsp. *speciosa* 'Variegata' see 'Variegata'. 'Summer Snow' ♀ produces white flowers with green calyces; ↑ to 60cm (24in).

'Variegata' ■ syn. subsp. *speciosa* 'Variegata', produces greyish green leaves with white margins, and magenta-pink flowers. 'Vivid' ■ ♀ forms dense clumps, and bears bright purple-pink flowers; ↑ 30–60cm (12–24in), ↔ 30cm (12in).

## PHYTEUMA

Horned rampion

CAMPANULACEAE

Genus of about 40 species of tuft- or clump-forming perennials from open mountain habitats, meadows, and light woodland in Europe and Asia. They have simple, often toothed basal leaves and erect stems with smaller leaves. They are cultivated for their terminal spikes or rounded clusters of stalkless, tubular, narrowly 5-lobed flowers, borne in summer, each flowerhead with a collar of leafy bracts. Grow in a sunny site in a rock garden or at the front of a border.

- **HARDINESS** Fully hardy.



*Phyteuma scheuchzeri*

- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn.
- **PESTS AND DISEASES** Prone to damage by slugs and snails.

*P. comosum* see *Physoplexis comosa*.

*P. humile*. Compact, tuft-forming perennial with linear-lance-shaped, sparsely toothed basal leaves, 5–10cm (2–4in) long, and a few shorter stem leaves. In summer, bears violet-blue flowers in rounded clusters, to 2.5cm (1in) across, with linear bracts. ↑ 15cm (6in), ↔ 20cm (8in). Europe (C. and S.W. Alps). \*\*\*

*P. scheuchzeri* ■ Tuft-forming perennial with linear-lance-shaped, sparsely toothed basal leaves, 5–15cm (2–6in) long, and shorter stem leaves. In summer, bears rounded clusters, 2.5cm (1in) across, of violet-blue flowers with linear bracts. ↑ 40cm (16in), ↔ 30cm (12in). Europe (Alps, Apennines). \*\*\*

## PHYTOLACCA

Pokeweed

PHYTOLACCACEAE

Genus of about 25 species of perennials, shrubs, and trees found in open fields or woodland in tropical and subtropical areas of Africa, Asia, and North to South America. They are grown for their attractive autumn foliage colour and their decorative fruits. Leaves are alternate, ovate to elliptic, and entire, and most of the perennial species have coloured stems. Racemes or panicles of small, shallowly cup-shaped, petalless flowers are followed by spherical, dark red to blackish purple berries. Grow in a large border, light woodland, or a water-side planting. All parts may cause severe discomfort if ingested; the fruit of *P. americana* may be lethal if eaten. Contact with the sap may irritate skin.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in any fertile, moist soil in full sun or partial shade.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring.
- **PESTS AND DISEASES** *P. americana* may be a carrier of several viruses, such as yellows, mosaic, and ringspot.

*P. americana* ■ syn. *P. decandra* (Pokeweed, Red ink plant). Erect, unpleasant-smelling perennial with branching, red-marked stems and fleshy roots. Ovate to lance-shaped, mid-green



*Phytolacca americana*

leaves, 15–30cm (6–12in) long, are purple-tinged in autumn. From mid-summer to early autumn, bears white to pink flowers, 8mm (3/8in) across, in racemes 20cm (8in) long; these elongate to 30cm (12in), and are sometimes pendent when bearing the blackish maroon berries (highly toxic if ingested). ‡ to 4m (12ft), ↔ 1m (3ft). E. North America to Mexico. \*\*\*

*P. clavigera* see *P. polyandra*.

*P. decandra* see *P. americana*.

*P. polyandra*, syn. *P. clavigera*. Erect, shrubby perennial with stems becoming vivid crimson. Ovate to elliptic, mid-green leaves, to 30cm (12in) long, turn yellow in autumn. In late summer, purplish pink flowers, 8mm (3/8in) across, are produced in erect, compact racemes, to 18cm (7in) long, elongating to 30cm (12in) long when bearing the dense masses of black berries. ‡ 2m (6ft), ↔ 60cm (24in). China. \*\*\*

## PICEA

Spruce

PINACEAE

Genus of 30–40 species of monoecious, evergreen, coniferous trees occurring in forest in cool-temperate regions of the N. hemisphere. They have whorled branches and needle-like leaves set singly around the shoots. The woody, oval to oblong-cylindrical female cones, terminal on main shoots and sideshoots, are erect at flowering, later pendent; they ripen in a season from green or red when young, to purple or brown when mature. Ovoid, yellow to red-purple male cones ‡ 2–3cm (3/4–1 1/4in) long, are borne in spring on the previous year's shoots. Spruces are useful for shelter planting or as specimen trees; several cultivars are dwarf or slow-growing.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in any deep, moist but well-drained, ideally neutral to acid soil in full sun. *P. omorika* tolerates alkaline soils; *P. morrisonicola* needs shelter from cold, drying winds.



*Picea abies*

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Graft cultivars in winter. Take ripewood cuttings of dwarf cultivars in late summer.

• **PESTS AND DISEASES** Adelgids may cause galls, and aphids may cause needle loss. Red spider mites may be troublesome. Susceptible to honey fungus.

*P. abies* ♀ ♂ (Christmas tree, Norway spruce). Conical tree when young, columnar when mature, with red-brown bark and orange-brown shoots. Produces blunt, 4-sided, dark green leaves, to 2.5cm (1in) long, pointing forwards and upwards on the shoots, and cylindrical, deep green, later brown female cones, 10–20cm (4–8in) long. The most commonly cultivated spruce. ‡ 20–40m (70–130ft), ↔ 6m (20ft). S. Scandinavia to C. and S. Europe. \*\*\*. 'Acrocona' ♂ is small, with pendent branches, and produces abundant cones even on young plants; ‡ 1–3m (3–10ft), ↔ 3–4m (10–12ft). 'Gregoryana' is a bushy, dwarf shrub, with a tight, rounded habit; ‡ 80cm (32in). 'Nidiformis' ♀ is a spreading, slow-growing, bushy shrub with a hollow "nest" in the centre; ‡ to 1.5m (5ft), ↔ 3–4m (10–12ft). 'Ohlendorffii' ♂ is a very slow-growing, rounded, bushy shrub, becoming more conical, with short leaves, to 8mm (3/8in) long; ‡ 3m (10ft), ↔ 2–5m (6–15ft). 'Reflexa' ♂ is prostrate, unless trained on a stem, when it becomes pendent and weeping; ‡ to 15cm (6in), ↔ indefinite.

*P. asperata* ♀ ♂ (Dragon spruce). Conical or columnar tree with scaly, purplish grey bark and thick, ridged, yellow-brown shoots, turning ash-grey. Stout, curved, 4-sided, glaucous, blue-green to dark green leaves, 1–2.5cm (1/2–1in) long, point upwards on the shoots. Cylindrical, green, later light brown female cones are 5–15cm (2–6in) long. ‡ 25m (80ft), ↔ 6m (20ft). W. China. \*\*\*

*P. brachytyla* ♂ (Sargent spruce). Conical tree, becoming domed in old age, with cracked grey bark and slender, white or pale brown shoots. Pendent branchlets bear flattened, glossy, mid-green leaves, white beneath, 1–2.5cm (1/2–1in) long, spreading at the sides of the shoots. Bears cylindrical, green, later dark brown female cones, 6–15cm (2 1/2–6in) long. ‡ 25m (80ft), ↔ 6–8m (20–25ft). C. to W. China. \*\*\*

*P. breweriana* ♀ ♂ (Brewer spruce). Slow-growing, columnar tree with level



*Picea abies* 'Ohlendorffii'



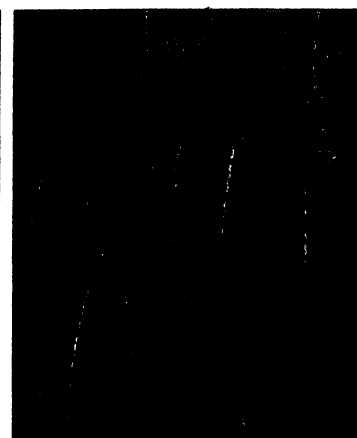
*Picea abies* 'Reflexa'

branches, grey bark, becoming scaly, and pendent side branchlets. Stout, blunt, flattened leaves, glossy, deep green above, whitish green beneath, 2.5–3.5cm (1–1 1/2in) long, are arranged radially on the shoots. Cylindrical, red-brown female cones are 7–14cm (3–5 1/2in) long. ‡ 10–15m (30–50ft), ↔ 3–4m (10–12ft). USA (N. California, S. Oregon). \*\*\*

*P. engelmannii* ♂ (Engelmann spruce). Conical tree with short branches, scaly, red-brown bark, and pale brown shoots. Flexible, slender, 4-sided, bluish green to steel-blue leaves, 1.5–3cm (1/2–1 1/4in) long, are arranged radially, pointing slightly forwards along the shoots. Ovoid to cylindrical, stalkless, light brown female cones, 2.5–7cm (1–3in) long, have flexible scales. ‡ 20–40m



*Picea asperata* (inset: leaf detail)



*Picea breweriana*

(70–130ft), ↔ to 5m (15ft). North America (Rocky Mountains). \*\*\* *P. glauca* ♂ (White spruce). Narrowly or broadly conical tree with ash-grey bark, becoming scaly, and buff-white shoots. Four-sided, blue-green leaves, 1–2cm (1/2–3/4in) long, are spreading at the sides of the shoots, overlapping above. Ovoid, green, later light brown female cones are 4–6cm (1 1/2–2 1/2in) long. ‡ to 50m (160ft), ↔ 3–6m (10–20ft). Canada, N. USA. \*\*\*. *var. albertiana* 'Conica' ♂ ♀ syn. 'Albertiana Conica', is a neat, cone-shaped, dwarf, bushy shrub; ‡ 2–6m (6–20ft), ↔ 1–2.5m (3–8ft).

*P. jezoensis* subsp. *hondoensis* ♂ (Hondo spruce). Conical tree, becoming gaunt in old age, with large, spreading branches, fissured grey bark, and dense,

*Picea glauca* var. *albertiana* 'Conica'

pendent, white or pale brown shoots. Bears flattened, overlapping, glossy, dark green leaves, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, bright silver beneath. Cylindrical, green, later pale reddish brown female cones, 4–6cm ( $\frac{1}{2}$ – $\frac{2}{3}$ in) long, have thin, stiff scales.  $\uparrow$  30m (100ft),  $\leftrightarrow$  to 8m (25ft). Japan (Honshu). \*\*\*

***P. likiangensis***  $\Delta$  (Lijiang spruce). Broadly conical tree with fissured or scaly grey bark and stout, pale brown shoots. Flattened, bluish green leaves, to 1.5cm ( $\frac{1}{2}$ in) long, overlap above the shoots, and spread below. Cylindrical, bright reddish purple, later brown female cones are 7–15cm (3–6in) long. Early-flowering if planted in poor, sandy soil.  $\uparrow$  30m (100ft),  $\leftrightarrow$  6–9m (20–28ft). S. and W. China, S.E. Tibet. \*\*\*

***P. mariana***  $\Delta$  (Black spruce). Conical tree with scaly, grey-brown bark and brown shoots with reddish brown hairs, the lower shoots often layering to form a skirt. Blunt, 4-sided, bluish green leaves are 0.5–2cm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) long. Ovoid, green, later grey-brown female cones, 2–3.5cm ( $\frac{3}{4}$ –1 $\frac{1}{2}$ in) long, persist on the tree for 2–3 years.  $\uparrow$  10–20m (30–70ft),  $\leftrightarrow$  2–3m (6–10ft). Canada, N.E. USA. \*\*\*. '**Nana**'  $\square$   $\Delta$  is a rounded, bushy, dwarf shrub with bluish grey foliage;  $\uparrow$  to 50cm (20in).

***P. morrisonicola***  $\square$   $\Delta$  (Taiwan spruce). Conical tree with pink-brown or grey-brown bark and very slender, ash-grey shoots. Slender, 4-sided, grass-green leaves, to 1.5cm ( $\frac{1}{2}$ in) long, lie flat on top of the shoots and are spreading below. Oblong-cylindrical purple female cones are 5–7cm (2–3in) long.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  to 5m (15ft). Taiwan. \*\*

*Picea mariana* 'Nana'*Picea morrisonicola*

***P. omorika***  $\square$   $\Delta$  (Serbian spruce). Narrow, spire-like tree with pendent branches ascending at the tips, brown bark cracking into square plates, and orange-brown shoots with black hairs. Flattened, dark to blue-green leaves, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, white beneath, lie flat at the sides of the shoots and are spreading below. Bears ovate-oblong, red-brown, later brown female cones, 3–7cm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) long.  $\uparrow$  20m (70ft),  $\leftrightarrow$  2–3m (6–10ft). Bosnia, Serbia (Drina River valley). \*\*\*. '**Gnom**' is a dense, broadly conical, dwarf shrub;  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  1m (3ft).

***P. orientalis***  $\Delta$   $\Delta$  (Caucasian spruce, Oriental spruce). Broadly columnar tree, conical when young, with smooth, pink-grey bark, becoming cracked with age, and hairy, grey-brown shoots. Very

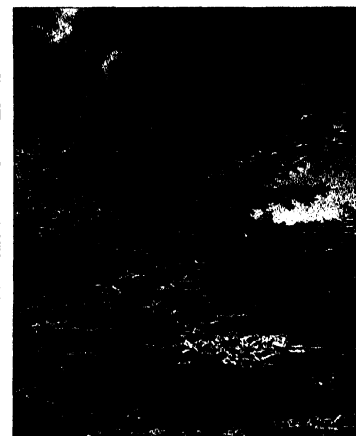
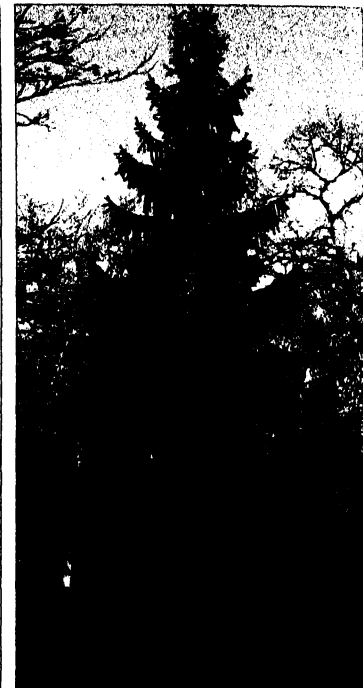
*Picea omorika**Picea orientalis* 'Skylands'

short, blunt, 4-sided, dark green leaves, 6–8mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) long, are arranged radially on the shoots. Male cones are deep red. Ovoid-conical, dark purple, later brown female cones are 6–10cm (2 $\frac{1}{2}$ –4in) long.  $\uparrow$  30m (100ft),  $\leftrightarrow$  6–8m (20–25ft). Caucasus, N.E. Turkey. \*\*\*. '**Aurea**'  $\Delta$  has bright creamy gold young foliage for 6 weeks in spring.

'**Skylands**'  $\square$  is similar to 'Aurea', but the creamy gold colour lasts all year.

***P. pungens***  $\Delta$   $\Delta$  (Colorado spruce). Conical to columnar tree with scaly, purplish grey bark and stout, orange-brown shoots. Stiff, stout, sharp-pointed, 4-sided, bluish grey-green leaves, 1.5–3cm ( $\frac{1}{2}$ –1 $\frac{1}{4}$ in) long, arranged radially on the shoots, curve upwards, and are covered in glaucous wax. Cylindrical, green, later pale brown female cones are 7–12cm (3–5in) long, with flexible scales.  $\uparrow$  15m (50ft),  $\leftrightarrow$  to 5m (15ft). USA (S. Rocky Mountains from Wyoming to Colorado). \*\*\*. '**Hoopsii**'  $\Delta$  has glaucous, blue-white foliage. '**Koster**'  $\square$   $\Delta$  has glaucous, silvery blue foliage. '**Montgomery**' is a slow-growing, dwarf shrub, with grey-blue leaves and a broad, conical habit;  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  1m (3ft). '**Mrs. Cesarini**' is dwarf, with blue-green leaves;  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  1.5m (5ft).

***P. purpurea***  $\Delta$   $\Delta$  (Purple-cone spruce). Columnar or conical tree with flaky, orange-brown bark and slender, densely hairy, buff-white shoots. Slightly flattened, glossy, mid-green leaves, grey-white beneath, 7–12mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) long, lie flat on top of the shoots and are spreading below. Ovoid, purple, later purple-brown female cones are 2.5–4cm

*Picea pungens* 'Koster'*Picea smithiana*

(1–1 $\frac{1}{2}$ in) long.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  to 5m (15ft). N.W. China. \*\*\*

***P. sitchensis***  $\Delta$  (Sitka spruce). Narrowly conical tree with wide-spreading branches when old, purple-brown bark becoming grey, and white shoots. Sharp-pointed, flattened, dark green leaves, white beneath, 2–2.5cm ( $\frac{3}{4}$ –1in) long, overlap above the shoots, and spread below. Cylindrical, green, later pale brown female cones are 5–10cm (2–4in) long.  $\uparrow$  25–50m (80–160ft),  $\leftrightarrow$  6–12m (20–40ft). Coastal W. North America (Alaska to California). \*\*\*

***P. smithiana***  $\square$   $\Delta$   $\Delta$  (Morinda spruce). Conical then columnar tree with spreading branches, pendent branchlets, scaly grey bark, and pale brown shoots. Sparse, incurved, 4-sided, dark green leaves, to 4cm (1 $\frac{1}{2}$ in) long, are arranged radially. Cylindrical, green, later bright brown female cones are 10–20cm (4–8in) long.  $\uparrow$  20–30m (70–100ft),  $\leftrightarrow$  6–9m (20–28ft). E. Afghanistan to W. Nepal. \*\*\*

▷ **Pick-a-back plant** see *Tolmiea*

▷ **Pickrel weed** see *Pontederia*, *P. cordata*

▷ **Pickles, Little** see *Othonna capensis*

## PICRASMA

SIMARUBACEAE

Genus of 8 species of deciduous trees occurring in forest in E. and S.E. Asia, the West Indies, Central America, and tropical South America. They have alternate, pinnate leaves, each with a terminal leaflet, and produce axillary, umbel-like panicles of bowl-shaped flowers. *P. quassioides*, the most commonly grown species, is valued for its autumn foliage colour; grow in an open position in a woodland garden, or at a woodland margin.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun or partial shade. In frost-prone climates, shelter from cold, drying winds. Pruning group 1.

*Picrasma quassioides*

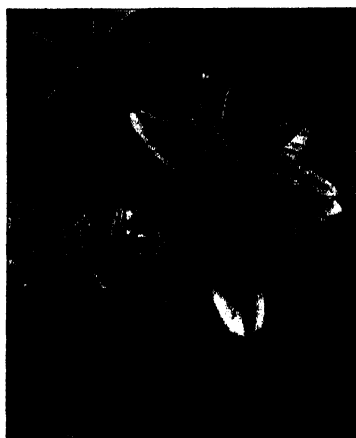
- **PROPAGATION** Sow seed in containers in a cold frame in autumn.
- **PESTS AND DISEASES** Trouble free.

*P. ailanthoides* see *P. quassioides*.  
*P. quassioides* [Q] syn. *P. ailanthoides* (Quassia). Upright tree with pinnate leaves, to 35cm (14in) long, composed of 9–15 ovate, sharply toothed, glossy, mid-green leaflets, turning yellow, orange, and red in autumn. Tiny, bowl-shaped green flowers are produced in umbel-like panicles, to 15cm (6in) long, in early summer.  $\pm$  8m (25ft). N. India, Nepal, Bhutan, China, Korea, Japan. \*\*\*

## PIERIS

ERICACEAE

Genus of 7 species of evergreen shrubs occurring in forest and on hillsides in the Himalayas, E. Asia, North America, and the West Indies. They are grown for their alternate or whorled, oblong or lance-shaped to obovate, glossy, mid-to dark green leaves, often attractively coloured when young, and their terminal panicles of small, urn-shaped flowers, 5–9mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) long, usually

*Pieris formosa* var. *forrestii* 'Wakehurst'

borne in spring. Grow in a shrub border, or in a peat or woodland garden. Leaves may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy to frost hardy; young growth may be damaged by late frosts.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, acid soil in full sun or light shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 8.

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Take greenwood cuttings in early summer, or semi-ripe cuttings in mid-to late summer, with bottom heat.

- **PESTS AND DISEASES** Leaf spot and *Phytophthora* root rot may be a problem.

*P. 'Bert Chandler'*. Conical shrub with lance-shaped, finely toothed leaves, to 10cm (4in) long, bright pink when young, turning creamy yellow and white, then dark green. Small white flowers are produced only rarely, in pendent panicles to 10cm (4in) long, in spring.  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

*P. 'Brouwer's Beauty'*. Dense, erect shrub with obovate to oblong-lance-

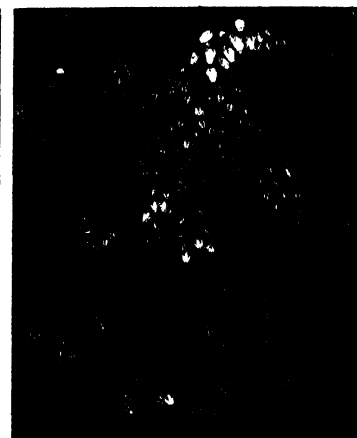
*Pieris formosa* 'Henry Price'

shaped, lightly toothed, glossy, dark green leaves, 3–8cm ( $\frac{1}{4}$ –3in) long. In spring, bears white flowers in semi-erect or pendent, terminal panicles, 5–12cm (2–5in) long.  $\pm$  to 3m (10ft),  $\leftrightarrow$  to 2m (6ft). \*\*\*

*P. floribunda* [Q] Compact, rounded shrub with elliptic-ovate, toothed, glossy, dark green leaves, to 8cm (3in) long. White flowers, opening from greenish white buds, are borne in erect, terminal panicles, to 12cm (5in) long, at the shoot-tips, in early and mid-spring.  $\pm$  2m (6ft),  $\leftrightarrow$  3m (10ft). S.E. USA. \*\*\*

*P. 'Forest Flame'* ♀ Compact, upright shrub with slender, inversely lance-shaped, finely toothed, glossy, dark green leaves, to 12cm (5in) long, bright red when young, turning pink, then creamy white, and finally green. White flowers, in erect then pendent, terminal panicles, to 15cm (6in) long, are borne in mid- and late spring.  $\pm$  4m (12ft),  $\leftrightarrow$  2m (6ft). \*\*

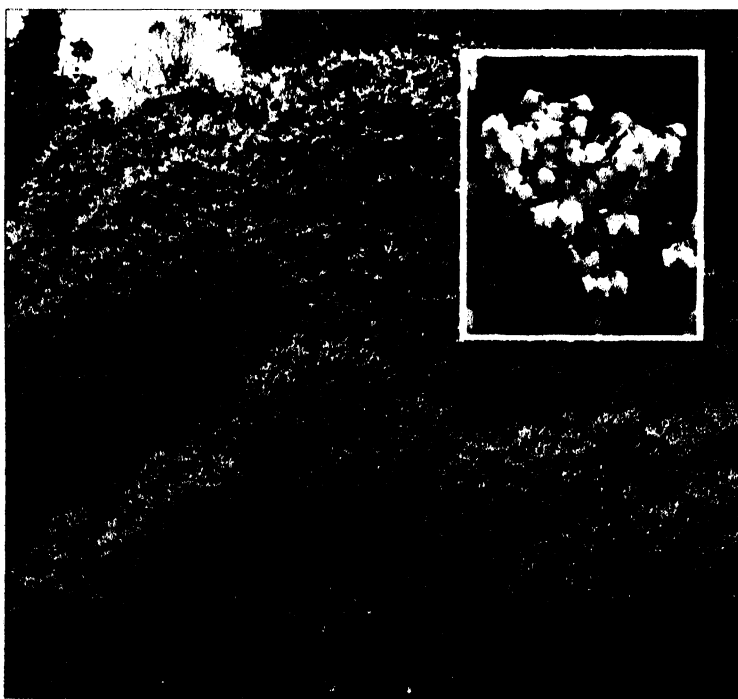
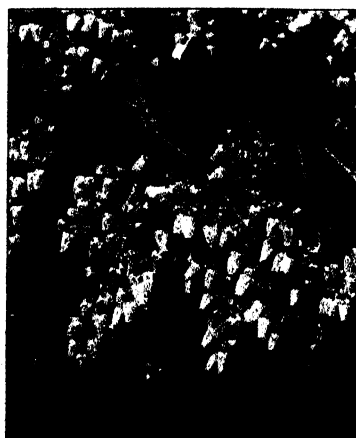
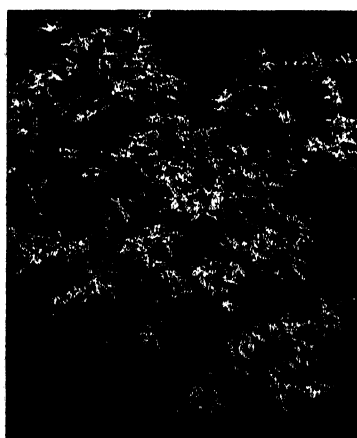
*P. formosa*. Upright, often suckering, large shrub with oblong, finely toothed, glossy, dark green leaves, to 10cm (4in) long, bronze when young. White flowers are produced in large, semi-erect to pendent, terminal panicles, to 15cm (6in) long, in mid- and late spring.  $\pm$  5m (15ft),  $\leftrightarrow$  4m (12ft). China, Himalayas. \*\* var. *forrestii* 'Charles Michael' has red young growth, and produces large flowers, 9–11mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) long, in large panicles, to 18cm (7in) long. var. *forrestii* 'Jermyns' ♀ is spreading, with arching branches and dark red young foliage; produces pendent panicles of white flowers opening from

*Pieris japonica* 'Blush'

dark red buds;  $\pm$  2.5m (8ft). var. *forrestii* 'Wakehurst' [Q] ♀ has brilliant red young foliage. 'Henry Price' [Q] has deeply veined, very dark green leaves, dark bronze-red when young.

*P. japonica* [Q] Compact, rounded shrub with narrowly obovate to elliptic, toothed, glossy, mid-green leaves, to 9cm ( $\frac{3}{2}$ in) long. White flowers are produced in pendent or semi-erect, terminal panicles, to 15cm (6in) long, clustered at the tips of the shoots, in late winter and spring.  $\pm$  4m (12ft),  $\leftrightarrow$  3m (10ft). E. China, Taiwan, Japan. \*\*\*

'Blush' [Q] ♀ has very dark green leaves and pink-flushed white, later all-white flowers, opening from dark pink buds. 'Christmas Cheer' has pink-stalked, crimped white flowers, with deep rose-red tips. 'Daisen' has red flowers, opening from dark pink buds, and

*Pieris japonica* 'Flamingo'*Pieris floribunda* (inset: flower detail)*Pieris japonica**Pieris japonica* 'Scarlett O'Hara'



*Pieris japonica* 'White Cascade'

fading to pink. 'Debutante' is compact and low-growing, with white flowers in dense, erect panicles, to 12cm (5in) long;  $\pm$  1m (3ft). 'Dorothy Wyckoff' produces deeply veined, very dark green leaves, turning bronze in cold weather, and purple-red buds, opening pale pink, later turning white. 'Firecrest' ♀ has deeply veined, dark green leaves, 10cm (4in) long, bright red when young;  $\pm$  2m (6ft); \* \*. 'Flamingo' ■ has dark red buds, opening dark pink. 'Grayswood' has brownish red new growth, narrow, dark green leaves, and white flowers borne in long, dense panicles, to 18cm (7in) or more. 'Little Heath' ♀ is dwarf and compact, with leaves to 3cm (1¼in) long, pink-flushed when young, and with silvery white margins;  $\pm$  60cm (24in). 'Mountain Fire' ♀ has red young leaves, turning glossy chestnut-brown. 'Purity' ♀ is compact, and produces white flowers in upright panicles, and pale green leaves when young;  $\pm$  1m (3ft). 'Scarlett O'Hara' ■ has white flowers borne in dense panicles. 'Valley Valentine' ♀ has large panicles of dark dusky red flowers. 'White Cascade' ■ has white flowers in long panicles, 18cm (7in) or more long, borne over a long period. *P. nana*, syn. *Arctericia nana*. Wiry-stemmed, slow-spreading, cushion-forming, dwarf shrub with ovate-elliptic, leathery, toothed, dark green leaves, to 1cm (½in) long, in pairs or whorls of 3, tinted red-bronze in winter. In late spring and early summer, produces fragrant white flowers in pendent, terminal panicles, to 6cm (2½in) long.  $\pm$  8cm (3in),  $\pm$  to 30cm (12in). Russia (Kamchatka), Japan. \* \* \*

- ▷ Pigeon berry see *Duranta erecta*  
 ▷ Pignut see *Carya glabra*  
 ▷ Pikake see *Jasminum sambac*

## PILEA

URTICACEAE

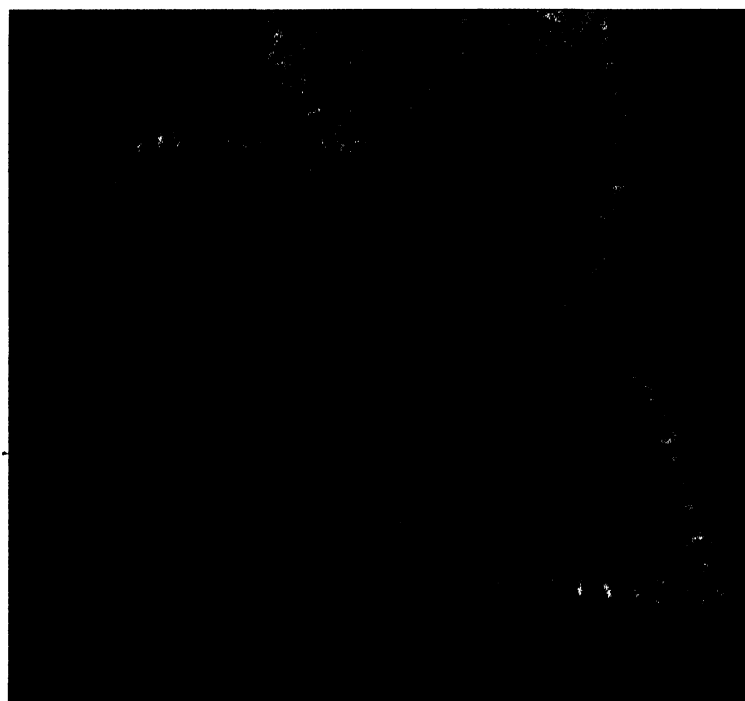
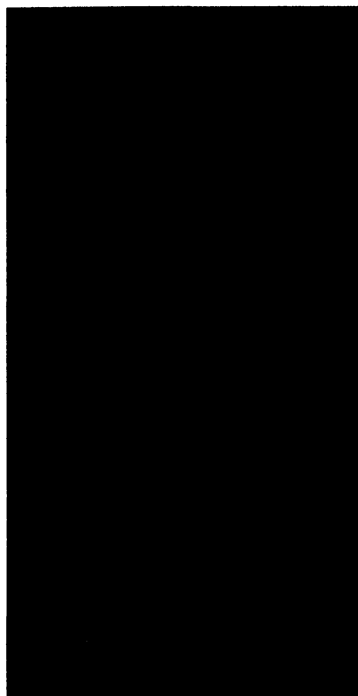
Genus of about 600 erect or creeping, semi-succulent annuals and evergreen perennials, sometimes woody at the bases, found in rainforest throughout tropical regions worldwide, except Australia. Stems may be branched or unbranched. They are cultivated for their textured, occasionally fleshy, attractively marked, opposite leaves, which are very variable in shape and colour. They also produce wispy, usually insignificant, unisexual, 3- or 4-tepalled

*Pilea cadierei*

flowers in cymes or panicles, or sometimes singly, from the leaf axils. In frost-prone areas, grow in a warm greenhouse or as houseplants; use trailing species in a hanging basket. In warmer climates, grow as ground cover in a damp, shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in shallow pans of loamless potting compost in bright indirect light, with high humidity. During the growing season, water moderately, allowing the surface to dry out between waterings, and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in any reliably moist soil in partial or deep shade.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Divide or detach rosettes in spring. Root stem-tip cuttings with bottom heat in spring.
- **PESTS AND DISEASES** May be affected by powdery mildew.

*P. cadierei* ■ ♀ (Aluminium plant). Erect perennial with branches becoming woody at the bases. The obovate to oblong-inversely-lance-shaped, toothed, dark green leaves, 8cm (3in) long, each

*Pilea involucrata**Pilea microphylla*

have 4 rows of raised silver patches on the upper surface.  $\pm$  30cm (12in),  $\pm$  16–21cm (6–8in). Vietnam. ♀ (min. 15°C/59°F). 'Minima' ♀ is compact;  $\pm$  15cm (6in).

*P. grandifolia*. Rounded to upright, shrubby perennial producing ovate, coarsely toothed, glossy, dark or bronze-green leaves, 10–20cm (4–8in) long, with pointed tips, sometimes puckered between the veins.  $\pm$  to 1.5m (5ft),  $\pm$  to 80cm (32in). Jamaica. ♀ (min. 10°C/50°F).

*P. involucrata* ■ syn. *P. mollis* (Friendship plant, Panamiga). Trailing or creeping perennial producing tight rosettes of virtually stalkless, ovate to obovate, toothed, dark green leaves, 6cm (2½in) long, with bronze-flushed,

*Pilea nummulariifolia*

quilted surfaces, sometimes with paler margins.  $\pm$  3cm (1¼in),  $\pm$  to 30cm (12in). Central and South America. ♀ (min. 15°C/59°F). 'Moon Valley' ♀ is more upright and open in habit, and produces ovate, toothed, fresh green leaves, to 10cm (4in) long, with deep purple sunken veins;  $\pm$  30cm (12in).

*P. microphylla* ■ (Artillery plant). Densely branching, succulent annual or short-lived perennial with thick, almost erect, fleshy, hairless stems; these bear unequal pairs of obovate to rounded, semi-succulent, bright green leaves, to 1cm (½in) long, with blunt or pointed tips, or rounded leaves, to 3mm (⅛in) long.  $\pm$  30cm (12in). USA (Florida), Mexico, West Indies, South America. ♀ (min. 15°C/59°F).

*P. mollis* see *P. involucrata*.

*P. nummulariifolia* ■ (Creeping Charlie). Trailing or creeping perennial with frequently branching stems, rooting at the nodes. Rounded, deeply quilted, light green leaves, 2cm (¾in) long, fold inwards slightly at the midribs.  $\pm$  15cm (6in),  $\pm$  60cm (24in). West Indies, tropical South America. ♀ (min. 15°C/59°F).

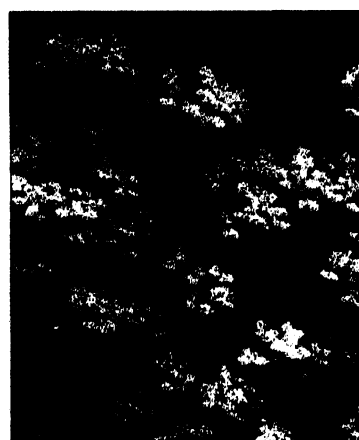
*P. peperomioides* ♀ Open-bushy, erect, perennial succulent with thick, fleshy stems covered with persistent stipules. Produces spirally arranged, long-stalked, elliptic to almost rounded, succulent, pale green leaves, 9cm (3½in) long.  $\pm$  30cm (12in) or more. China (Yunnan). ♀ (min. 10°C/50°F).

## PILEOSTEGIA

HYDRANGEACEAE

Genus of 4 species of woody, evergreen root climbers, related to *Hydrangea* and *Schizophragma*, occurring on forest trees and cliffs in India and E. Asia. They have opposite, obovate to oblong, mid-green leaves, and produce dense, terminal, corymb-like panicles of small, cup- or star-shaped, 4- or 5-petalled, creamy white flowers, in late summer and autumn. *P. viburnoides*, the most commonly cultivated species, is valued for its foliage and flowers. Grow on a large tree trunk or a wall.

- **HARDINESS** Hardy to at least -10°C (14°F).
- **CULTIVATION** Grow in fertile, well-drained soil in sun or shade. Pruning group 11, in early spring.
- **PROPAGATION** Root semi-ripe cuttings in summer. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

*Pileostegia viburnoides*

***P. viburnoides*** [♀] syn. *Schizophragma viburnoides*. Evergreen climber with oblong, leathery, dark green leaves, to 15cm (6in) long. Small, star-shaped, creamy white flowers, with prominent stamens, are borne in dense panicles, to 15cm (6in) across, in late summer and autumn. ‡6m (20ft). India, China, Taiwan. ★★

▷ **Pilewort** see *Ranunculus ficaria*

▷ **Pilgerodendron uviferum** see *Libocedrus uvifera*

▷ **Pilosocereus senilis** see *Cephalocereus senilis*

## PILOSELLA

ASTERACEAE/COMPOSITAE

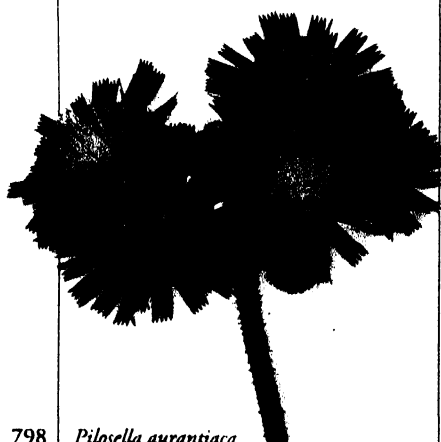
Genus of about 20 hairy, rhizomatous or stoloniferous herbaceous perennials from a variety of habitats in Eurasia and North Africa, including grassland, sand dunes, dry slopes, and open woodland. The ovate to narrowly lance-shaped or spoon-shaped, entire or toothed leaves are usually in basal rosettes, sometimes with smaller stem leaves. Greenish yellow or yellow to orange-red, rarely white or red, dandelion-like flowerheads are borne singly or in terminal clusters on usually leafless stems in summer. Grow in a wild garden or meadow, or on dry walls and banks.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor to moderately fertile, well-drained or dry soil in full sun or partial shade.

• **PROPAGATION** Sow seed in containers outdoors. Divide in autumn or spring.

• **PESTS AND DISEASES** Trouble free.

798 *Pilosella aurantiaca*

***P. aurantiaca*** [♂] syn. *Hieracium aurantiacum*, *H. brunneocroceum* (Fox and cubs, Orange hawkweed). Stoloniferous perennial with basal rosettes of elliptic to lance-shaped, bluish green leaves, to 20cm (8in) long. In summer, black-hairy stems bear dense clusters of 8–10 orange-red or orange-brown flowerheads, 1.5cm (½in) across. ‡to 20cm (8in), ↔ 90cm (36in). Grassy places in Europe. ★★

## PILOSOCEREUS

CACTACEAE

Genus of 60 species of tree-like or bushy, perennial cacti, branching from the stems or the bases, found in warm, humid, moist areas of Mexico, Central and South America, and the West Indies. The many ribs have spiny, generally densely woolly, hairy areoles, sometimes as long as 5cm (2in), the wool forming skeins covering the ribs. In summer, nocturnal, tubular to bell-shaped flowers are borne from pseudocephaliums, from prominent areoles, or at the crowns, followed by fleshy, fig-like fruits. Below 15°C (59°F), grow in a warm greenhouse. In warmer areas, use as a focal point on a lawn or in a courtyard.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water freely and apply a balanced liquid fertilizer every 6–8 weeks. Keep just moist at other times. Outdoors, grow in gritty, moderately fertile, sharply drained soil in full sun. See also pp.48–49.

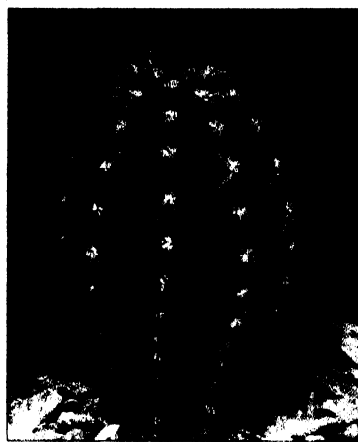
• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.

• **PESTS AND DISEASES** Vulnerable to mealybugs, and to ants if planted out.

***P. leucocephalus*** see *P. palmeri*.

***P. palmeri*** [♂] syn. *P. leucocephalus*. Tree-like cactus with a blue-green stem, 5–10cm (2–4in) thick, with 7–9 rounded ribs. The areoles bear dark brown or greyish black spines (8–12 radials, 1 or 2 longer centrals), pale brown or yellow at first. Some areoles become covered with woolly grey hairs, borne more densely at the crown, forming a pseudocephalium. Pinkish purple flowers, 8cm (3in) long, purple-brown outside, are borne in summer. ‡to 6m (20ft), ↔ 1m (3ft). E. Mexico, Central America. ☀ (min. 15°C/59°F)

▷ **Pilot plant** see *Silphium laciniatum*

*Pilosocereus palmeri*

## PIMELEA

THYMELAEACEAE

Genus of about 80 species of evergreen shrubs and subshrubs found in scrub, rocky places, and grassland from coastal areas to mountains in Australasia. Those commonly cultivated usually have opposite pairs of ovate to oblong leaves. Tubular, sometimes fragrant flowers, each with 4 spreading lobes, are borne in flat to almost spherical, terminal heads, surrounded by often colourful bracts. They are followed in some species by white, red, green, or black fruits (one-seeded drupes or nuts). In frost-prone areas, grow in containers outdoors and bring under cover in winter, or grow in a cool greenhouse. In warmer climates, grow in a border or a rock garden.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost with added sharp sand, in full light. During growth, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter.

Outdoors, grow in fertile, well-drained, neutral to acid soil in full sun. Pruning group 8.

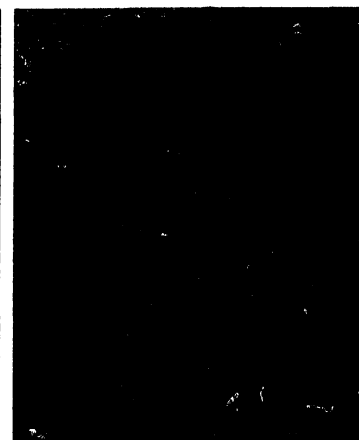
• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites may be a problem in dry conditions under glass.

***P. ferruginea*** [♂] Bushy, domed shrub, at least when young. Densely borne, glossy, mid-green leaves, to 1cm (½in) long, are ovate to oblong, with rolled margins. In late spring and early summer, bears almost spherical heads, to 4cm (1½in) across, of slender-tubed, white-hairy, rose-pink flowers, 8mm (⅓in) across, surrounded by pink to red bracts. ‡1–2m (3–6ft), ↔ 1–1.5m (3–5ft). Australia (Western Australia). \*

***P. prostrata*** [♂] Compact, spreading shrub with dark shoots and densely clustered, ovate, grey-green, often red-margined, leathery leaves, to 6mm (¼in) long. In summer, bears flat heads, to 2cm (¾in) across, of tubular, fragrant white flowers, to 6mm (¼in) across, followed by tiny, fleshy, white or red fruit. ‡20cm (8in), ↔ 50cm (20in). New Zealand. ★★

***P. traversii***. Upright shrub with densely overlapping, oblong, leathery, grey-

*Pimelea ferruginea**Pimelea prostrata*

green, often red-margined leaves, to 1cm (½in) long. Flat heads, 2cm (¾in) across, of up to 20 silky-hairy, tubular, white or pink flowers, 6–8mm (¼–⅓in) across, are borne in summer. ‡↔ 50cm (20in). New Zealand. ★★

▷ **Pimpernel** see *Anagallis*  
**Blue** see *A. monellii*

## PIMPINELLA

APIACEAE/UMBELLIFERAE

Genus of about 150 species of annuals, biennials, and perennials occurring in rough grassland, hedgerows, and woodland in Europe, N. Africa, Asia, and South America. Most have hairy stems, with simple or pinnate leaves, and bear compound umbels of tiny, star-shaped, usually white or yellow, sometimes pink or purple flowers, followed by ovoid-oblong to nearly spherical fruits. Most are suitable for naturalizing in a wild garden; *P. major* 'Rosea' is also effective in a border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any, but preferably fertile, moist soil in full sun or partial shade.

*Pimpinella major* 'Rosea'

## PIMPINELLA

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Prick out into deep containers, to avoid damage to the tap roots when transplanting later.
- **PESTS AND DISEASES** Susceptible to aphids, slugs, and snails, and to powdery mildew in dry conditions.

**P. major.** Erect perennial producing triangular to rounded, pinnate, mid-green basal leaves, to 18cm (7in) long, each with 7–13 ovate to lance-shaped, lobed or toothed leaflets, 2–8cm (¾–3in) long, and smaller stem leaves. In mid- and late spring, ridged stems bear tiny, white, greenish white, or pink flowers in compound umbels, 6cm (2½cm) across. ↑ to 1.2m (4ft), ↔ 60cm (24in). Europe to Caucasus. \*\*\*.

**'Rosea'** ■ has both deep pink and pale pink flowers, in early and midsummer.

▷ **Pinang** see *Areca catechu*

## PINANGA

ARACEAE/PALMAE

Genus of about 120 species of single- or cluster-stemmed palms occurring in undergrowth in dense, tropical rain-forest at low to medium altitudes from the Himalayas to S. China, S.E. Asia, and Papua New Guinea. Simple or pinnate, variably shaped, light to dark green leaves are borne in terminal tufts above distinct crownshafts. Bowl-shaped, 3-petalled flowers are produced in spikes or panicles (erect at first, then becoming pendent) arising from the bases of the crownshafts. In frost-prone areas, grow in a warm greenhouse. In lowland, tropical areas, plant in a shady site near other trees or in a courtyard.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added peat and sharp sand, in bright filtered to low light. Pot on or top-dress in spring. During growth, water freely and apply a balanced liquid fertilizer monthly. Water moderately in winter. Outdoors, grow in fertile, moist but well-drained soil in dappled to deep shade.
- **PROPAGATION** Sow seed at 24°C (75°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

**P. patula** ■ ★ Small, cluster-stemmed palm with erect, smooth, cane-like stems with swollen bases. Irregularly pinnate



*Pinanga patula*

leaves, to 1.5m (5ft) long, each have 16–36 lance-shaped, bright green leaflets. Bowl-shaped green flowers, turning red with age, are borne in recurved panicles, to 1cm (½in) across, usually in summer. ↔ to 2.5m (8ft). Indonesia (Sumatra), Borneo. ☼ (min. 16–18°C/61–64°F)

- ▷ **Pincushion** see *Leucospermum*
- Catherine's** see *L. catherinae*
- ▷ **Pincushion flower** see *Isopogon*
- dubius**, *Scabiosa*, *S. atropurpurea*
- ▷ **Pine** see *Pinus*
- Aleppo** see *Pinus halepensis*
- Ancient** see *Pinus longaeva*
- Armand** see *Pinus armandii*
- Arolla** see *Pinus cembra*
- Australian** see *Casuarina*
- Austrian** see *Pinus nigra*
- Beach** see *Pinus contorta*
- Bhutan** see *Pinus wallichiana*
- Big-cone** see *Pinus coulteri*
- Bishop** see *Pinus muricata*
- Blue** see *Pinus wallichiana*
- Bosnian** see *Pinus leucodermis*
- Bristle cone** see *Pinus aristata*
- Canary Islands** see *Pinus canariensis*
- Celery** see *Phyllocladus*
- Chilean** see *Araucaria araucana*
- Chinese red** see *Pinus tabulaeformis*
- Cook** see *Araucaria columnaris*
- Corsican** see *Pinus nigra* subsp. *laricio*
- Coulter** see *Pinus coulteri*
- Cowtail** see *Cephalotaxus harringtoniana*
- Cypress** see *Callitris*
- Digger** see *Pinus sabiniana*
- Dwarf mountain** see *Pinus mugo*
- Dwarf Siberian** see *Pinus pumila*
- Eastern white** see *Pinus strobus*
- European black** see *Pinus nigra*
- Foxtail** see *Pinus balfouriana*
- Holford** see *Pinus x holfordiana*
- Hoop** see *Araucaria cunninghamii*
- Jack** see *Pinus banksiana*
- Japanese black** see *Pinus thunbergii*
- Japanese red** see *Pinus densiflora*
- Japanese umbrella** see *Sciadopitys verticillata*
- Japanese white** see *Pinus parviflora*
- Jeffrey** see *Pinus jeffreyi*
- Kauri** see *Agathis*, *A. australis*
- King William** see *Athrotaxis selaginoides*
- Knobcone** see *Pinus attenuata*
- Korean** see *Pinus koraiensis*
- Lacebark** see *Pinus bungeana*
- Limber** see *Pinus flexilis*
- Lodgepole** see *Pinus contorta*, *P. contorta* var. *latifolia*
- Macedonian** see *Pinus peuce*
- Maritime** see *Pinus pinaster*
- Mexican weeping** see *Pinus patula*
- Mexican white** see *Pinus ayacahuite*
- Monterey** see *Pinus radiata*
- Montezuma** see *Pinus montezumae*
- Moreton Bay** see *Araucaria cunninghamii*
- Mountain** see *Pinus uncinata*
- New Caledonian** see *Araucaria columnaris*
- Norfolk Island** see *Araucaria heterophylla*
- Oyster bay cypress** see *Callitris rhomboidea*
- Pitch** see *Pinus rigida*
- Ponderosa** see *Pinus ponderosa*
- Prince's** see *Chimaphila*
- Radiata** see *Pinus radiata*
- Red** see *Pinus resinosa*

▷ **Pine cont.**

- Scots** see *Pinus sylvestris*
- Screw** see *Pandanus*
- Shore** see *Pinus contorta*
- Stone** see *Pinus pinea*
- Swiss stone** see *Pinus cembra*
- Tasman celery** see *Phyllocladus aspleniifolius*
- Tasmanian cypress** see *Callitris oblonga*
- Umbrella** see *Pinus pinea*
- Western white** see *Pinus monticola*
- Western yellow** see *Pinus ponderosa*
- Weymouth** see *Pinus strobus*
- ▷ **Pineapple** see *Ananas*
- Red** see *A. bracteatus*
- Wild** see *A. bracteatus*
- ▷ **Pineapple flower** see *Eucomis*
- Giant** see *E. pallidiflora*
- ▷ **Pineapple guava** see *Acca sellowiana*

## PINELLIA

ARACEAE

Genus of about 6 species of tuberous perennials found in deciduous forest, in cultivated fields, and at roadsides in China, Korea, and Japan. The simple, 3-palmate or pedate, basal leaves are rounded to ovate-lance-shaped or heart-shaped. Usually long, fine, black, green, or dark purple spadices, protruding from cylindrical spathes, are produced in summer. Grow in a peat bed or rock garden.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Plant tubers 10–15cm (4–6in) deep in spring. Grow in fertile, humus-rich, well-drained soil in full sun or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets in autumn or early spring, or detach bulbils in late summer.
- **PESTS AND DISEASES** Trouble free.

**P. pedatisecta.** Tuberous perennial bearing pedate, mid-green leaves, each with 7–11 ovate to lance-shaped segments, 18cm (7in) long. Yellow-green spathes, 10–18cm (4–7in) long, each concealing a yellow-green spadix, rise above the leaves in summer. ↑ 18cm (7in), ↔ 8cm (3in). N. and W. China, Japan. ★★

**P. ternata.** Tuberous perennial with 3-palmate, mid-green leaves, composed of ovate-elliptic to oblong segments, 3–12cm (1¼–5in) long. Produces slightly hooded green spathes, to 7cm (3in) long, each with a protruding, slender green spadix, in summer. ↑ to 20cm (8in), ↔ 5cm (2in). China, Korea, Japan. ★★

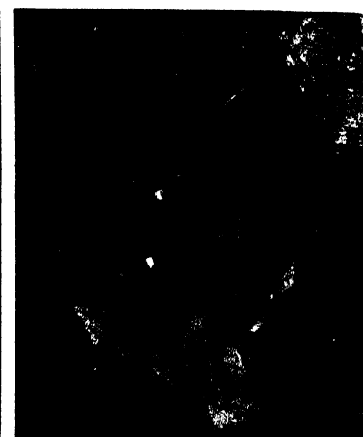
## PINGUICULA

Butterwort

LENTIBULARIACEAE

Genus of about 45 species of spring- or summer-flowering, insectivorous perennials from boggy habitats widely distributed in the N. hemisphere and in South America. They have rosettes of mucilage-secreting, lance-shaped to almost rounded leaves, and leafless stems bearing solitary, spurred, 2-lipped, trumpet-shaped flowers, the upper lip 2-lobed, the lower with 3 widely spreading lobes. Some species die back to resting buds in winter. The sticky leaves trap insects, which are then digested; under

## PINGUICULA



*Pinguicula moranensis*

glass, butterworts may be used to assist in controlling aphids and whiteflies. In frost-prone areas, grow tender species as houseplants or in a temperate greenhouse. Hardy species are suitable for an alpine house or as bog plants.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in a mixture of equal parts chopped peat and sphagnum moss, with added broken clay pots, in bright filtered light. During growth, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in poor, peaty, permanently moist soil in full sun or partial shade.
- **PROPAGATION** Surface-sow seed on damp sphagnum moss at 13–18°C (55–64°F), as soon as ripe. Divide in late winter.
- **PESTS AND DISEASES** Slugs and snails may be troublesome.

**P. grandiflora.** Rosette-forming perennial with resting buds in winter. Obovate-oblong, sticky, pale green leaves are 3–4.5cm (1¼–1½in) long. During summer, trumpet-shaped, spurred, dark blue flowers, 2.5cm (1in) across, with widely spreading lobes and white throats, are borne on slender stems. ↑ 15cm (6in), ↔ 10cm (4in). W. Europe. \*\*\*

**P. moranensis** ■ Rosette-forming perennial with ovate, sticky, dull pale green leaves, 6–10cm (2½–4in) long, with inrolled, purple-green margins. Trumpet-shaped, deep carmine-red flowers, to 3cm (1¼in) across, are borne on slender stems in summer. ↑ 15cm (6in), ↔ 10cm (4in). Mexico. ☼ (min. 7°C/45°F)

▷ **Pink** see *Dianthus*

- Alpine** see *Dianthus alpinus*
- Carthusian** see *Dianthus carthusianorum*
- Cheddar** see *Dianthus gratianopolitanus*
- Chinese** see *Dianthus chinensis*
- Deptford** see *Dianthus armeria*
- Fringed** see *Dianthus monspessulanus*
- Ground** see *Linanthus dianthiflorus*
- Indian** see *Dianthus chinensis*
- Maiden** see *Dianthus deltoides*
- Sea** see *Armeria*
- Swamp** see *Helonias bullata*
- ▷ **Pink shower** see *Cassia javanica*
- ▷ **Piñon**,  
**Mexican** see *Pinus cembroides*
- Rocky mountain** see *Pinus edulis*
- Single-leaf** see *Pinus monophylla*

## PINUS

Pine

PINACEAE

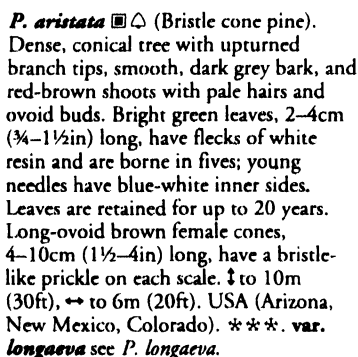
Genus of approximately 120 species of monoecious, evergreen, coniferous trees or shrubs, widely distributed in forests of the N. hemisphere from the Arctic Circle to Central America, Europe, N. Africa, and S.E. Asia. The bark is often fissured, and in some species is divided into irregular, plate-like sections. Pines have small bundles of 2–5, rarely 1 or 6–8, needle-like, light to dark green or yellow-green to bluish or grey-green leaves, which usually persist for 2–4 years, sometimes for longer. The winter buds are usually cylindrical or ovoid, and often resinous. Female cones take 2, or occasionally 3 years to ripen; the seeds are winged in most species. Male cones are yellow and catkin-like, clustered at the shoot bases. Pines are useful as specimen trees, and for shelter and windbreaks; some cultivars and slow-growing species are suitable for a rock garden.

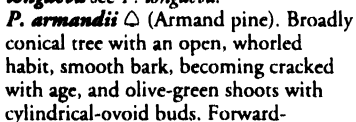
• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in any well-drained soil in full sun. The 5-needled species may be short-lived in shallow, chalk soil.

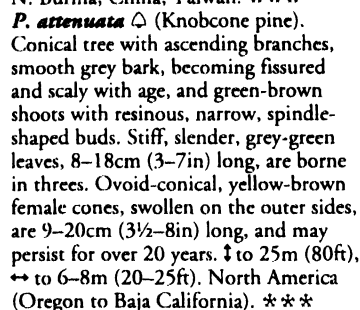
• **PROPAGATION** Sow seed of species in containers in a cold frame in spring. Graft cultivars in late winter.

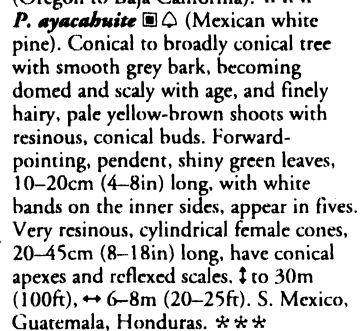
• **PESTS AND DISEASES** Prone to adelgids, aphids, sawfly larvae, honey fungus, pine shoot moth, and various needle cast diseases. Some 5-needled pines are susceptible to white pine blister rust.

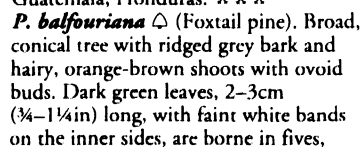
*P. aristata*  (Bristle cone pine). Dense, conical tree with upturned branch tips, smooth, dark grey bark, and red-brown shoots with pale hairs and ovoid buds. Bright green leaves, 2–4cm (¾–1½in) long, have flecks of white resin and are borne in fives; young needles have blue-white inner sides. Leaves are retained for up to 20 years. Long-ovoid brown female cones, 4–10cm (1½–4in) long, have a bristle-like prickle on each scale. ↑ to 10m (30ft), ↔ to 6m (20ft). USA (Arizona, New Mexico, Colorado). \*\*\*. **var. *longaeva*** see *P. longaeva*.

*P. armandii*  (Armand pine). Broadly conical tree with an open, whorled habit, smooth bark, becoming cracked with age, and olive-green shoots with cylindrical-ovoid buds. Forward-

pointing, pendent, shiny, deep green leaves, 10–20cm (4–8in) long, with white inner sides and curved at the bases, are borne in fives. Cylindrical-conical female cones, 12–20cm (5–8in) long, have wingless seeds. ↑ 15–20m (50–70ft), ↔ 6–8m (20–25ft). Tibet, N. Burma, China, Taiwan. \*\*\*

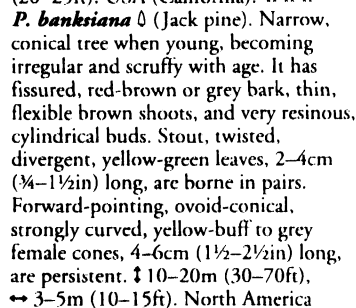
*P. attenuata*  (Knobcone pine). Conical tree with ascending branches, smooth grey bark, becoming fissured and scaly with age, and green-brown shoots with resinous, narrow, spindle-shaped buds. Stiff, slender, grey-green leaves, 8–18cm (3–7in) long, are borne in threes. Ovoid-conical, yellow-brown female cones, swollen on the outer sides, are 9–20cm (3½–8in) long, and may persist for over 20 years. ↑ to 25m (80ft), ↔ to 6–8m (20–25ft). North America (Oregon to Baja California). \*\*\*

*P. ayacahuite*  (Mexican white pine). Conical to broadly conical tree with smooth grey bark, becoming domed and scaly with age, and finely hairy, pale yellow-brown shoots with resinous, conical buds. Forward-pointing, pendent, shiny green leaves, 10–20cm (4–8in) long, with white bands on the inner sides, appear in fives. Very resinous, cylindrical female cones, 20–45cm (8–18in) long, have conical apices and reflexed scales. ↑ to 30m (100ft), ↔ 6–8m (20–25ft). S. Mexico, Guatemala, Honduras. \*\*\*

*P. balfouriana*  (Foxtail pine). Broad, conical tree with ridged grey bark and hairy, orange-brown shoots with ovoid buds. Dark green leaves, 2–3cm (¾–1¼in) long, with faint white bands on the inner sides, are borne in fives,

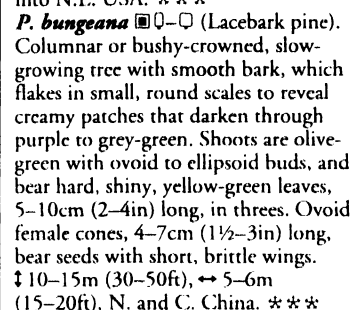
*Pinus bungeana*

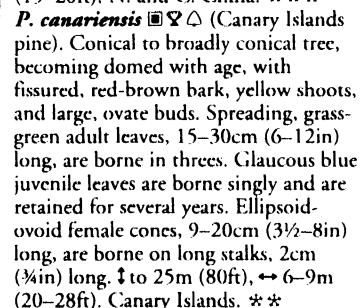
and retained for 10–20 years. Oblong-cylindrical, purple-brown female cones, 8–14cm (3–5½in) long, have a short prickle on each scale. Similar to *P. aristata*, but does not have flecks of resin on its leaves. ↑ 15m (50ft), ↔ 6–8m (20–25ft). USA (California). \*\*\*

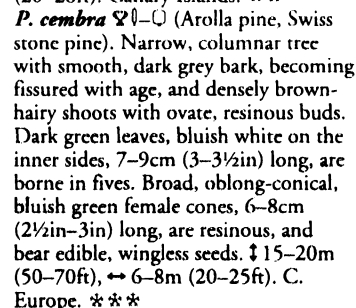
*P. banksiana*  (Jack pine). Narrow, conical tree when young, becoming irregular and scruffy with age. It has fissured, red-brown or grey bark, thin, flexible brown shoots, and very resinous, cylindrical buds. Stout, twisted, divergent, yellow-green leaves, 2–4cm (¾–1½in) long, are borne in pairs. Forward-pointing, ovoid-conical, strongly curved, yellow-buff to grey female cones, 4–6cm (1½–2½in) long, are persistent. ↑ 10–20m (30–70ft), ↔ 3–5m (10–15ft). North America

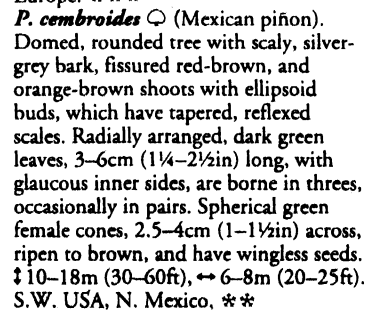
*Pinus coulteri*

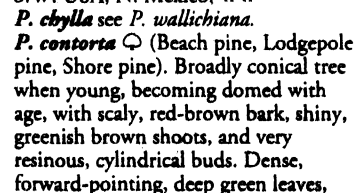
(Yukon Territory to Atlantic), south into N.E. USA. \*\*\*

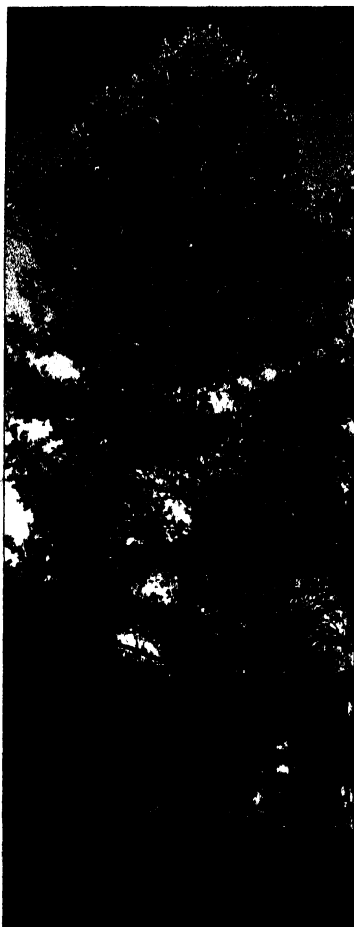
*P. bungeana*  (Lacebark pine). Columnar or bushy-crowned, slow-growing tree with smooth bark, which flakes in small, round scales to reveal creamy patches that darken through purple to grey-green. Shoots are olive-green with ovoid to ellipsoid buds, and bear hard, shiny, yellow-green leaves, 5–10cm (2–4in) long, in threes. Ovoid female cones, 4–7cm (1½–3in) long, bear seeds with short, brittle wings. ↑ 10–15m (30–50ft), ↔ 5–6m (15–20ft). N. and C. China. \*\*\*

*P. canariensis*  (Canary Islands pine). Conical to broadly conical tree, becoming domed with age, with fissured, red-brown bark, yellow shoots, and large, ovate buds. Spreading, grass-green adult leaves, 15–30cm (6–12in) long, are borne in threes. Glauous blue juvenile leaves are borne singly and are retained for several years. Ellipsoid-ovoid female cones, 9–20cm (3½–8in) long, are borne on long stalks, 2cm (¾in) long. ↑ to 25m (80ft), ↔ 6–9m (20–28ft). Canary Islands. \*\*

*P. cembra*  (Arolla pine, Swiss stone pine). Narrow, columnar tree with smooth, dark grey bark, becoming fissured with age, and densely brown-hairy shoots with ovate, resinous buds. Dark green leaves, bluish white on the inner sides, 7–9cm (3–3½in) long, are borne in fives. Broad, oblong-conical, bluish green female cones, 6–8cm (2½–3in) long, are resinous, and bear edible, wingless seeds. ↑ 15–20m (50–70ft), ↔ 6–8m (20–25ft). C. Europe. \*\*\*

*P. cembroides*  (Mexican piñon). Domed, rounded tree with scaly, silver-grey bark, fissured red-brown, and orange-brown shoots with ellipsoid buds, which have tapered, reflexed scales. Radially arranged, dark green leaves, 3–6cm (1¼–2½in) long, with glaucous inner sides, are borne in threes, occasionally in pairs. Spherical green female cones, 2.5–4cm (1–1½in) across, ripen to brown, and have wingless seeds. ↑ 10–18m (30–60ft), ↔ 6–8m (20–25ft). S.W. USA, N. Mexico. \*\*

*P. chylla* see *P. wallichiana*.  
*P. contorta*  (Beach pine, Lodgepole pine, Shore pine). Broadly conical tree when young, becoming domed with age, with scaly, red-brown bark, shiny, greenish brown shoots, and very resinous, cylindrical buds. Dense, forward-pointing, deep green leaves,

*Pinus aristata**Pinus ayacahuite**Pinus canariensis*



*Pinus densiflora* 'Umbraculifera'

4–5cm (1½–2in) long, are borne in pairs. Long-conical, yellow-brown to brown female cones, 2.5–7cm (1–3in) long, have reflexed scales, and are persistent. ‡ to 25m (80ft), ↔ to 8m (25ft). Coastal N.W. North America. \*\*\*. **var. latifolia** △ (Lodgepole pine) has a conical habit, flakier bark, and brighter green, spreading leaves, 6–9cm (2½–3½in) long, with ovoid cones, 4cm (1½in) long; Rocky Mountains. **'Spaan's Dwarf'** is dwarf, with a sloping trunk and an open habit, with erect branches; leaves are 1.5cm (½in) long; ‡↔ 75cm (30in). **P. coulteri** ■ ♀ △ (Big-cone pine, Coulter pine). Domed tree with grey bark, becoming black-grey and fissured, and brown, glaucous shoots with long, cylindrical to ovoid buds. Radially arranged, stiff, grey-green or bluish green leaves, 20–30cm (8–12in) long, are borne in threes. Massive, ovoid, yellow-brown female cones, 20–35cm (8–14in) long, have stout, forward-pointing spines and large, wingless seeds. ‡ to 25m (80ft), ↔ 8–10m (25–30ft). USA (California), Mexico (Baja California). \*\*\*. **P. densiflora** △ (Japanese red pine). Broadly conical to rounded tree, becoming flat-topped, with reddish brown bark, flaky in the upper crown, grey and fissured at the base. The whitish pink shoots have slightly resinous, ovoid buds. Slender, bright green leaves, 8–12cm (3–5in) long, are borne in pairs. Bears long-ovoid, yellow-brown female cones, 3–6cm (1¼–2½in) long. ‡ 15–25m (50–80ft), ↔ 5–7m (15–22ft). N.E. Asia, Japan. \*\*\*.



*Pinus x balfordiana*

**'Alice Verkade'** is a globe-shaped, dwarf selection with bright green leaves; it grows only about 7cm (3in) per year; ‡ 50cm (20in) or more, ↔ 1m (3ft) (when mature). **'Ja-nome'** see 'Oculus Draconis'. **'Oculus Draconis'**, syn. **'Ja-nome'**, is a large shrub or small tree with two distinctive yellow bands ("dragon's eyes") on each leaf. Bears blue-green female cones. **'Tagyosho'** see 'Umbraculifera'. **'Umbraculifera'** ■ △ syn. **'Tagyosho'**, is a slow-growing, rounded to broadly spreading tree with a domed or umbrella-shaped crown; ‡ 4m (12ft), ↔ 6m (20ft).

**P. edulis** △ (Rocky Mountain piñon). Compact, irregular, domed tree with silvery grey bark, orange, bloomed shoots, and ovoid buds. The dark green leaves, 3–6cm (1¼–2½in) long, glaucous on the inner sides, are borne mainly in pairs, and persist for 3–9 years. Spherical, pale brown or green-brown female cones are 3cm (1¼in) long, with wingless seeds. The piñon seeds, or pine kernels, of commerce come mainly from this species. ‡ 6–15m (20–50ft), ↔ 6–8m (20–25ft). S.W. USA. \*\*\*.

**P. excelsa** see *P. wallichiana*.

**P. flexilis** △ (Limber pine). Broadly conical tree, later domed at the top, with smooth grey bark, later fissured; very pliant, hairy green shoots have broadly cylindrical to ovoid buds. Dark green leaves, 4–9cm (1½–3½in) long, are produced in tight bundles of five, and persist for 5–6 years. Long-ovoid, yellow-ochre female cones are 7–15cm (3–6in) long, with wingless seeds. Male cones are red. ‡ 15–20m (50–70ft), ↔ 6–9m (20–28ft). Rocky Mountains from Alberta to Arizona. \*\*\*.

**P. griffithii** see *P. wallichiana*.

**P. halepensis** △–□ (Aleppo pine). Conical tree, becoming rounded with age, with scaly, red-brown bark, glaucous grey shoots, and ovate buds with reflexed scales. Slender, sparse, bright green leaves, 6–11cm (2½–4½in) long, are borne in pairs. Long-ovoid, red-brown female cones are 5–12cm (2–5in) long. ‡ to 20m (70ft), ↔ to 6m (20ft). Mediterranean. \*\*\*.

**P. heldreichii** var. **leucodermis** see *P. leucodermis*.

**P. x balfordiana** ■ △ (*P. ayacahuite* x *P. wallichiana*) (Holford pine). Broadly conical tree with grey-brown bark, becoming fissured, and with hairy shoots and cylindrical-conical buds. Blue-green leaves, to 10–20cm (4–8in) long, are borne in fives. Ellipsoid green female cones, 25–30cm (10–12in) long, ripen to buff or yellow-brown. Differs from *P. ayacahuite* in having less reflexed cone scales and smaller seeds, and from *P. wallichiana* in having hairy shoots and wider cones. ‡ to 30m (100ft), ↔ 6–8m (20–25ft). Garden origin. \*\*\*.

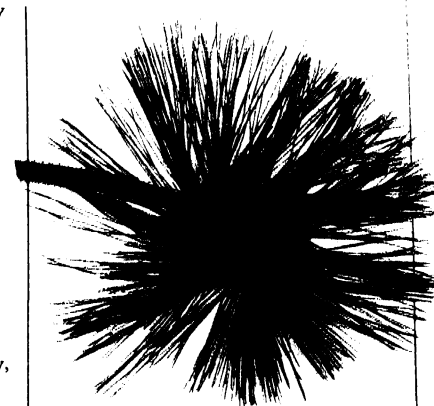
**P. insignis** see *P. radiata*.

**P. jeffreyi** ■ ♀ △ (Jeffrey pine). Broadly conical tree with smooth, deeply fissured black bark and stout, glaucous, grey-green shoots with long, oblong-conical buds. Grey-green or bluish green leaves, 12–26cm (5–10in) long, are borne in threes. Long-ovoid, yellow-grey female cones, 13–30cm (5–12in) long, have rounded bases. ‡ 25–35m (80–120ft), ↔ 6–8m (20–25ft). North America (Oregon to Baja California). \*\*\*.

**P. koraiensis** △ (Korean pine). Broadly conical tree with smooth, dark grey bark, becoming scaly with age, and green shoots with dense, orange-brown hairs and ovoid to cylindrical buds. Shiny, deep green leaves with silvery white bands on the inner sides, are borne in fives, and are 6–12cm (2½–5in) long. Long-conical, bright green female cones, 9–16cm (3½–6in) long, have large, free-tipped scales and large, wingless seeds. ‡ to 20m (70ft), ↔ to 8m (25ft). Pacific Russia, Korea, N.E. China. \*\*\*.

**P. leucodermis** ♀ △ syn. *P. heldreichii* var. **leucodermis** (Bosnian pine). Narrow, long-conical tree with scaly, ash-grey bark, glaucous shoots becoming white, and broad, non-resinous, ovoid buds. Dense, forward-pointing, very rigid, dark green leaves, 7–9cm (3–3½in) long, are borne in pairs. Long-conical female cones, 5–10cm (2–4in) long, are cobalt-blue in early summer, ripening to brown. ‡ 15–20m (50–70ft), ↔ 5–6m (15–20ft). Balkans. \*\*\*. **'Compact Gem'** is dense, with dark green-black leaves growing 2.5cm (1in) per year.

**P. longaeva** △ syn. *P. aristata* var. **longaeva** (Ancient pine). Small, conical, dense-crowned tree, becoming gnarled in old age, with scaly, dark brown bark, hairy, red-brown shoots, and ovoid-conical buds. Shiny, grey-green leaves, 2.5–3cm (1–1¼in) long, with white inner sides, are borne mainly in fives (some in threes or fours). A few older leaves bear flecks of resin. Ovoid, rust-red female cones, 6–10cm (2½–4in) long, have a small, fragile prickly on each scale. Formerly confused with *P.*

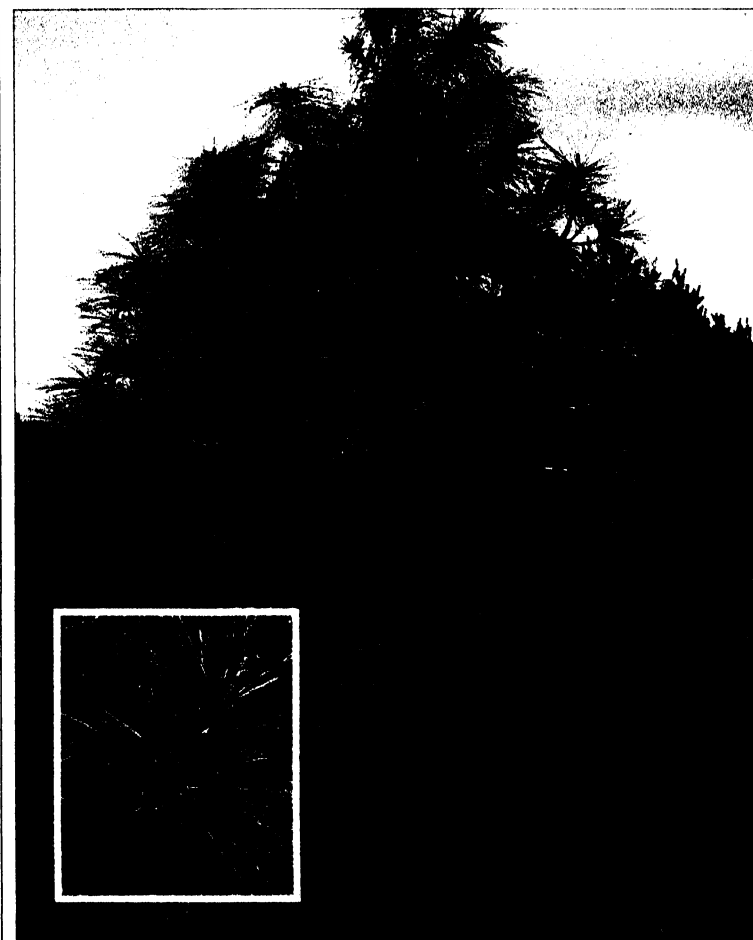


*Pinus montezumae*

**aristata**, both have living specimens over 4,700 years old. ‡ to 10m (30ft), ↔ to 6m (20ft). USA (White Mountains of California). \*\*\*.

**P. monophylla** □ (Single-leaf piñon). Slow-growing shrub or small tree with a domed crown, smooth, brown or grey bark, becoming fissured with age, and orange shoots with cylindrical-conical buds. Long-persistent, grey-green leaves, 2–5cm (¾–2in) long, are mainly produced singly, and are round in section (occasionally set in pairs and then half-moon-shaped in section). Ovoid, yellow-buff female cones, 8cm (3in) long, have large, wingless seeds. ‡ 5–10m (15–30ft), ↔ to 6m (20ft). S.W. USA. \*\*\*.

**P. montezumae** ■ △ (Montezuma pine). Broadly conical tree, becoming



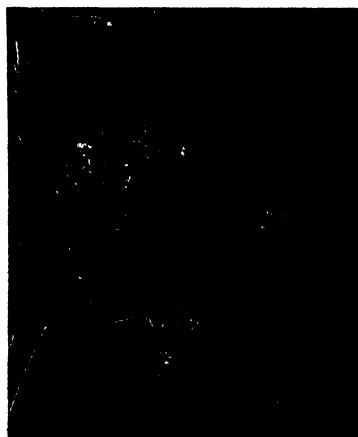
*Pinus jeffreyi* (inset: leaf detail)

*Pinus mugo* 'Mops'

domed when old; it has fissured, grey-brown bark, very stout, rough brown shoots, and ovoid-acute buds. Fresh green, pendent leaves, 15–30cm (6–12cm) long, are produced in fives, rarely in sixes or sevens. Bears ovoid to ovoid-conical, yellow to rust-brown female cones, 13–20cm (5–8in) long.  $\uparrow$  15–30m (50–100ft),  $\leftrightarrow$  6–9m (20–28ft). C. and S. Mexico to Guatemala. \* \* (borderline)

*P. monticola*  $\Delta$  (Western white pine). Narrowly conical tree when young, becoming columnar with age. It has smooth, dark grey bark, becoming plate-like, and brownish green shoots with rust-brown hairs and cylindrical to globose buds. Pale green leaves, 7–10cm (3–4in) long, with bluish green inner sides, are borne in fives. Narrowly conical female cones, 15–30cm (6–12in) long, are green to purple-green when young, yellow-brown when mature.  $\uparrow$  25–40m (80–130ft),  $\leftrightarrow$  6–8m (20–25ft). North America (British Columbia to California). \* \* \*

*P. mugo*  $\Delta$  (Dwarf mountain pine). Shrub or rounded to broadly spreading tree with thick, ascending or spreading branches, scaly grey bark, green shoots, becoming brown, and very resinous, ovoid-oblong buds. Well-spaced, dark to bright green leaves, 3–8cm (1¼–3in) long, are borne in pairs. Ovoid to long-conical, dark brown female cones are 2–6cm (¾–2½in) long and symmetrical at maturity.  $\uparrow$  to 3.5m (11ft),  $\leftrightarrow$  to 5m (15ft). C. Europe. \* \* \*. 'Gnom' is a squat shrub when young, becoming more rounded. 'Mops'  $\Delta$  is almost spherical, with green leaves; it grows

*Pinus muricata**Pinus nigra*

approximately 6cm (2½in) per year.

**subsp. uncinata** see *P. uncinata*.

*P. muricata*  $\Delta$   $\Delta$ – $\Delta$  (Bishop pine). Conical tree, becoming broadly domed or columnar with age, with fissured, dark grey bark, orange-brown shoots, and conical to cylindrical buds. Stiff, grey-green or blue-green leaves, 10–15cm (4–6in) long, are borne in pairs, occasionally threes. Oblique, ovoid-conical, nut-brown female cones, 7–9cm (3–3½in) long, have stout spines on the outer scales and persist for 20–30 years. Northern populations in California have blue-green foliage and are faster-growing in cultivation.  $\uparrow$  to 20m (70ft)  $\leftrightarrow$  6–9m (20–28ft). USA (California). \* \* \*

*P. nigra*  $\Delta$   $\Delta$ – $\Delta$  (Austrian pine, European black pine). Domed tree with

dense, spreading branches, fissured dark brown or black bark, brown shoots, and broadly ovoid, abruptly sharp-pointed buds with papery scales. Dense, straight, rigid, dark green leaves, 8–16cm (3–6in) long, are borne in pairs. Long-ovoid, yellow-brown female cones are 6–8cm (2½–3in) long.  $\uparrow$  to 30m (100ft),  $\leftrightarrow$  6–8m (20–25ft). Austria, N. Italy to the Balkans. \* \* \*. **subsp. laricio**  $\Delta$  syn. var. *maritima* (Corsican pine), is a narrowly conical tree, becoming columnar with age, with dark grey bark, yellow-brown shoots, and narrowly conical, tapered buds. Flexible, well-spaced, grey-green or green leaves are 11–18cm (4½–7in) long;  $\uparrow$  to 40m (130ft),  $\leftrightarrow$  to 10m (30ft). France (Corsica), S. Italy (including Sicily). var. *maritima* see subsp. *laricio*.

*P. parviflora*  $\Delta$   $\Delta$  (Japanese white pine). Conical or columnar tree, often with a spreading crown, with scaly, purplish brown bark, greyish brown shoots, and ovoid buds. Deep green leaves, 2–6cm (¾–2½in) long, with whitish blue inner sides, are borne in fives. Ovoid-oblong, red-brown female cones, 5–7cm (2–3in) long, have short-winged seeds.  $\uparrow$  10–20m (30–70ft),  $\leftrightarrow$  6–8m (20–25ft). Japan. \* \* \*

'Adcock's Dwarf'  $\Delta$  is dense and slow-growing, with short, grey-green leaves, 1.5–2.5cm (½–1in) long. f. *glauca*, syn. 'Glauc', is the most common variant in cultivation; it is small and spreading, with twisted, glaucous foliage.

*P. patula*  $\Delta$   $\Delta$  (Mexican weeping pine). Rounded to broadly spreading tree with scaly, reddish brown bark, pale green-brown, glaucous shoots, and

*Pinus patula*

cylindrical buds. Slender, pendent, shiny, light green leaves, 15–30cm (6–12in) long, are borne in threes, rarely fours or fives. Stalkless, long-conical, yellow to chestnut-brown female cones are 6–10cm (2½–4in) long. Frost tender when young.  $\uparrow$  15–20m (50–70ft),  $\leftrightarrow$  6–10m (20–30ft). C. Mexico. \* \*

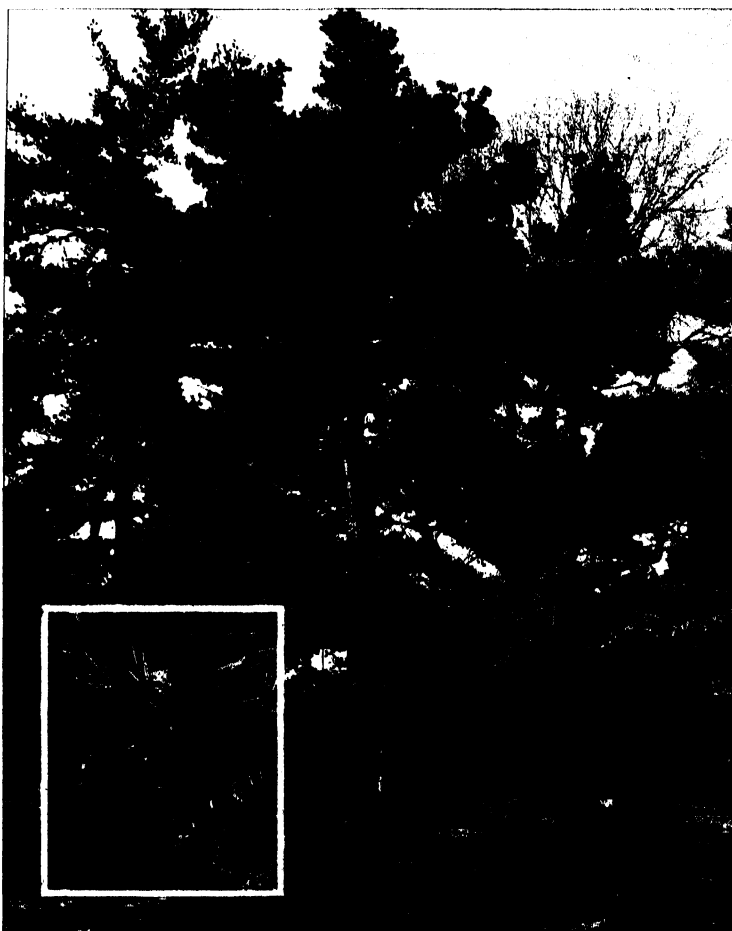
*P. peuce*  $\Delta$  (Macedonian pine). Conical or columnar tree with smooth, grey-green bark, becoming fissured with age, and green, slightly glaucous shoots with ovoid-conical buds. Stiff, grey-green leaves, 7–9cm (3–3½in) long, are borne in fives. Cylindrical-conical green female cones, ripening brown, are 7–16cm (3–6in) long. Tolerates a wide variety of conditions, including very poor soils and harsh climates.  $\uparrow$  25m (80ft),  $\leftrightarrow$  to 6–8m (20–25ft). S. Balkans to N. Greece. \* \* \*

*P. pinaster*  $\Delta$  (Maritime pine). Conical tree, becoming domed, with deeply fissured, orange-brown to purple bark, brown shoots, and spindle-shaped buds that have reflexed scales. Paired, well-spaced, stout, stiff, grey-green leaves are 10–25cm (4–10in) long. Long-ovoid green female cones, 8–22cm (3–9in) long, ripen to chestnut-brown.  $\uparrow$  to 20m (70ft),  $\leftrightarrow$  6–8m (20–25ft). S.W. Europe, Mediterranean. \* \* \*

*P. pinea*  $\Delta$  (Stone pine, Umbrella pine). Conical tree when young, becoming domed, with stout, radiating branches, plate-like, orange-brown bark, orange-brown shoots, and ovate buds. Well-spaced, twisted, glossy green adult leaves, 12–15cm (5–6in) long, are borne in pairs. Solitary, glaucous blue juvenile leaves are retained for several years. Ovoid, shining brown female cones, 12cm (5in) long, ripen in the third year and have wingless seeds.  $\uparrow$  15–20m (50–70ft),  $\leftrightarrow$  6–12m (20–40ft). Mediterranean. \* \* \*

*P. ponderosa*  $\Delta$ – $\Delta$  (Ponderosa pine, Western yellow pine). Conical tree, becoming columnar, with deeply fissured bark with smooth, broad plates, and stout, green-brown shoots with oblong-cylindrical buds. Dense, rigid, grey-green leaves, 10–25cm (4–10in) long, are borne in threes, rarely pairs or fives. Ovoid or long-ovoid purple female cones, 6–16cm (2½–6in) long, age to brown.  $\uparrow$  25–35m (80–120ft),  $\leftrightarrow$  6–8m (20–25ft). Rocky Mountains from British Columbia to California. \* \* \*

*P. pumila* (Dwarf Siberian pine). Spreading, low shrub with branches that are flexible and bend down in cold

*Pinus parviflora* (inset: cone detail)



*Pinus peuce*

weather, and hairy, green-brown shoots with cylindrical-conical buds. Dark green leaves, 4–6cm (1½–2½in) long, with bright blue inner sides, are borne in fives. Ovoid female cones, violet-purple when young, becoming red- or yellow-brown, are 3–6cm (1¼–2½in) long, with wingless seeds. Male cones are bright red in spring. †↔ 2–6m (6–20ft). Russia (Siberia) to Japan, N.E. China. \*\*\*. '**Compacta**' is a rounded bush with very dense, grey-green leaves, 5–8cm (2–3in) long, grey-white beneath; †↔ 2–3m (10ft).

*P. radiata* ♀♂-□ syn. *P. insignis* (Monterey pine, Radiata pine). Narrow, conical tree, becoming broadly domed, with heavily ridged black bark, grey-green shoots, and cylindrical buds. Slender, shining, bright green leaves, 10–15cm (4–6in) long, are borne in threes. Very oblique, ovoid, glossy, yellow-brown female cones, 8–15cm (3–6in) long, with 20 swollen outer scales, persist for 20–30 years. Widely planted in forestry throughout the world. †25–40m (80–130ft), ↔ 8–12m (25–40ft). USA (California). \*\*\*

*P. resinosa* △ (Red pine). Conical tree with upswept branches, flaky red bark in

*Pinus pumila* 'Compacta'

the upper crown, scaly, pink-grey bark at the base, and stout, orange to red-brown shoots with ovoid to narrowly conical buds. Yellow-green leaves, 10–15cm (4–6in) long, are produced in pairs and persist for 4–5 years; they snap if bent. Long-ovoid female cones, 4–6cm (1½–2½in) long, are chestnut-brown. Male cones are purple. †15–25m (50–80ft), ↔ 6–8m (20–25ft). North America (Nova Scotia to West Virginia). \*\*\*

*P. rigida* △ (Pitch pine). Conical or ovoid tree, becoming irregular, with fissured, dark grey bark, grey-brown shoots, and cylindrical to ovoid-oblong buds. Thick, stiff, grey-green leaves, 7–14cm (3–5½in) long, are borne in threes. Ovoid-conical, yellow-brown female cones, 3–9cm (1¼–3½in) long, often persist for several years. †to 20m (70ft), ↔ 5–7m (15–22ft). North America (Maine and Ontario south to Georgia). \*\*\*

*P. sabiniana* △-□ (Digger pine). Conical or domed tree with fissured grey bark, grey-bloomed shoots, and narrow, cylindrical buds. Flexible, sparse, blue-green or grey-green leaves, 15–30cm (6–12in) long, are borne in threes.

Ovoid, dark brown female cones, 10–25cm (4–10in) long, each have a hooked spine and wingless seeds. †to 20m (70ft), ↔ 5–6m (15–20ft). USA (California). \*\*\*

*P. strobus* △-□ (Eastern white pine, Weymouth pine). Slender, conical tree with upswept branches when young, becoming more columnar. It has smooth grey bark, which becomes black and cracked, and slender, olive-brown shoots with ovoid-oblong buds. Slender, grey-green leaves, 8–14cm (3–5½in) long, are borne in fives. Cylindrical, tapered green female cones, ripening to brown, are 8–15cm (3–6in) long. †to 35m (120ft), ↔ 6–8m (20–25ft). North America (Newfoundland to Georgia). \*\*\* '**Fastigiata**' ♀ has a narrow, columnar crown of ascending branches.

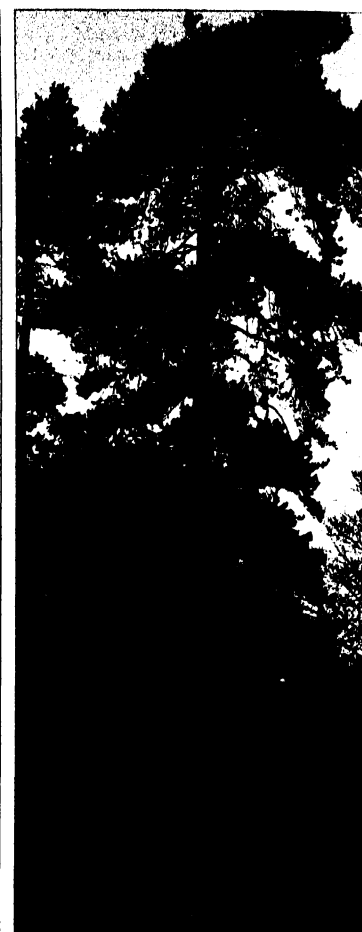
*P. sylvestris* □♀△-□ (Scots pine). Conical to columnar-conical tree, becoming domed, with flaky, red-brown or orange bark in the upper crown, ridged, purple-grey bark at the base, and green-brown shoots with oblong-ovate buds. Twisted, blue-green or yellow-green leaves, 5–7cm (2–3in) long, are borne in pairs. Ovoid-conical green female cones, 3–7cm (1¼–3in) long, ripen to grey or red-brown. †15–30m (50–100ft), ↔ 6–9m (20–28ft). Europe (excluding the far north), temperate Asia. \*\*\*. '**Argentea**' see 'Edwin Hillier'. '**Aurea**' ♀ has bright golden yellow foliage in winter, resuming normal colour in spring; †10–15m (30–50ft). '**Beuvronensis**' ♀ is a dwarf, rounded bush, to 1m (3ft) high. '**Edwin Hillier**', syn. 'Argentea', bears bright, silvery blue leaves. '**Fastigiata**' ♀ is narrow and has an upright habit, with ascending branches; †to 8m (25ft), ↔ 1–3m (3–10ft). '**Gold Coin**' is a slow-growing shrub with intense golden foliage; †to 2m (6ft). '**Nana**' see 'Watereri'. '**Watereri**', syn. 'Nana', is a slow-growing, small tree with an upright habit; †4m (12ft), ↔ 7m (22ft).

*P. tabulaformis* △-□ (Chinese red pine). Conical tree when young, becoming flat-topped when old. It has scaly, red-brown bark in the upper crown, fissured grey bark at the base, and yellow-brown shoots with ovoid-conical buds. The leaves, 9–15cm (3½–6in) long, are produced in pairs. Broadly ovoid-conical, dark brown female cones are 4–9cm (1½–3½in) long. †to 15–20m (50–70ft), ↔ 6–10m (20–30ft). N. China. \*\*\*

*P. thunbergiana* see *P. thunbergii*.

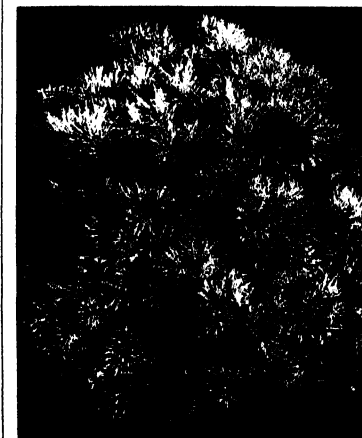
*P. thunbergii* △ syn. *P. thunbergiana* (Japanese black pine). Conical tree, becoming rounded, with dark purplish grey bark, yellow-brown shoots, and cylindrical-ovoid buds covered with silky white scales. Thick, dark grey-green leaves, 7–15cm (3–6in) long, are borne in pairs. Long-ovoid, green-brown female cones are 4–7cm (1½–3in) long. Tolerates salt spray. †15–25m (50–80ft), ↔ 6–8m (20–25ft). N.E. China, Japan, Korea. \*\*\*

*P. uncinata* △ syn. *P. mugo* subsp. *uncinata* (Mountain pine). Conical, upright tree, becoming domed with age; it produces scaly, grey-pink bark, orange-brown shoots, and very resinous, small, ovoid buds. Stiff, dark green leaves, 6cm (2½in) long, are produced in pairs. Ovoid, strongly oblique, pale

*Pinus sylvestris*

brown female cones are 4–6cm (1½–2½in) long. †15–20m (50–70ft), ↔ 6–8m (20–25ft). Alps to Spain. \*\*\*

*P. wallichiana* ♀♂△-□ syn. *P. chylla*, *P. excelsa*, *P. griffithii* (Bhutan pine, Blue pine). Conical tree when young, developing a broad, domed crown. It has smooth grey bark, becoming scaly and dark brown, and stout, olive-green shoots with cylindrical-conical buds. Arching to pendent, grey-green to glaucous blue leaves are 11–20cm (4½–8in) long, and produced in fives. Ellipsoid green female cones, 10–30cm (4–12in) long, ripening to brown, have forward-pointing scales. †20–35m (70–120ft), ↔ 6–12m (20–40ft). Himalayas from Afghanistan to N.E. India. \*\*\*

*Pinus pinea* (inset: cone detail)*Pinus sylvestris* 'Gold Coin'

## PIPER

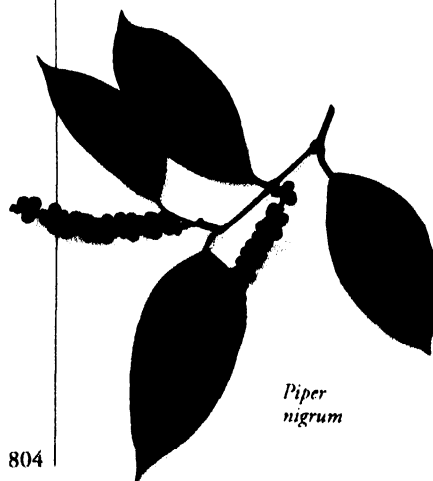
Pepper

PIPERACEAE

Genus of more than 1,000 species of shrubs, climbers, and small trees from very variable habitats throughout tropical regions of the world. Many have a pungent aroma, and some, including *P. nigrum*, are grown as spice crops in tropical regions. They bear alternate, asymmetric, very variable, but often narrowly to broadly ovate to rounded green leaves, heart-shaped at the bases, on stems that are swollen at the nodes. Cylindrical spikes of small (often unisexual) flowers without petals or sepals are followed by single-seeded fruit. In warm, humid, tropical areas with heavy, well-distributed rainfall, peppers are grown in fertile soils, with the shade and support of trees. Fruits are harvested at different stages of ripeness for different uses: dried, green mature fruit for black pepper; ripening green fruit for pickled pink peppercorns; ripened, red or yellow fruit (soaked to remove the outer layer of skin) for white pepper. In temperate zones, *P. nigrum* is grown in a conservatory or warm greenhouse; it may bear fruit under glass. Grow outdoors only in tropical areas.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added sharp sand, in bright filtered light and with high humidity. In the growing season, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in dappled shade. Support climbing stems. Pruning group 11, in late winter.
- **PROPAGATION** Sow seed at 20–24°F (66–75°C) in early spring, or take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Susceptible to fungal root rot, pepper weevil, and pepper flea beetle.

*P. nigrum* [■] (Black pepper, White pepper). Evergreen, woody-stemmed, perennial climber with ovate, heart-shaped, leathery, deeply veined, dark green leaves, to 13cm (5in) long. In summer, bears small white flowers in spikes to 11cm (4½in) long, on the side of the swollen stem joint opposite the leaf, followed by spherical fruit that are red when ripe. ♂↔ 4m (12ft) or more. India, Sri Lanka. ☼ (min. 16°C/61°F)



*Piper  
nigrum*

## PIPTANTHUS

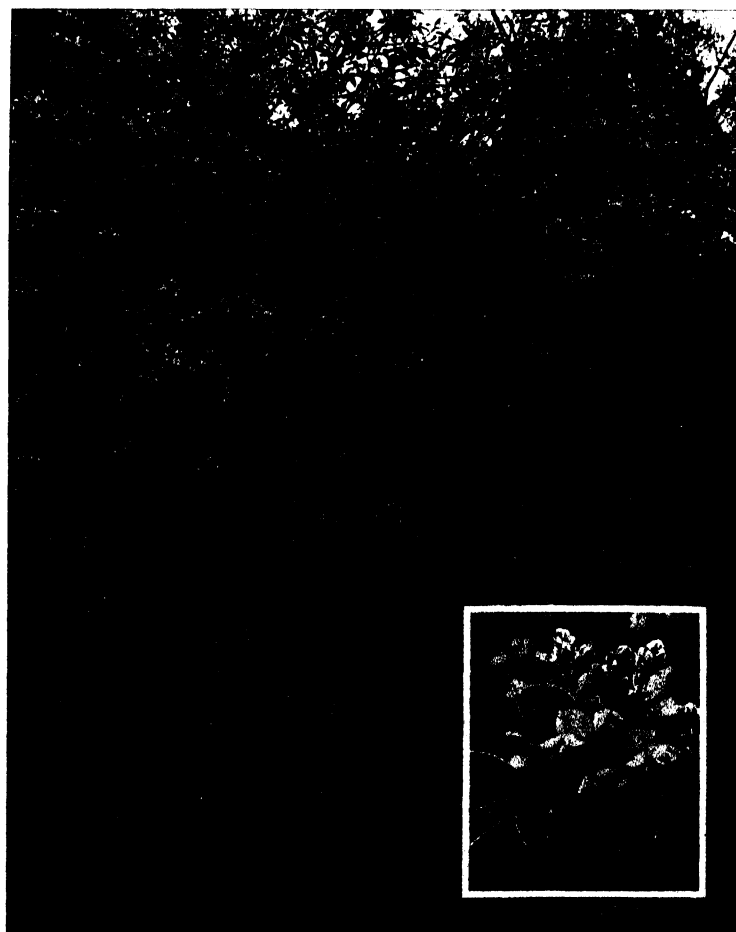
LEGUMINOSAE/PAPILIONACEAE

Genus of 2 species of deciduous or semi-evergreen shrubs occurring in scrub and woodland in the mountains of China and the Himalayas. They have alternate, 3-palmate, mid- to dark green, sometimes grey- or blue-green leaves, occasionally with white hairs and a grey-green surface. Grown for their foliage against, or training on, a wall.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in sun or partial shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 1, or group 13 if wall-trained.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Take heeled, semi-ripe basal cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*P. laburnifolius* see *P. nepalensis*.

*P. nepalensis* [■] syn. *P. laburnifolius* (Evergreen laburnum). Open, upright, deciduous or semi-evergreen shrub with 3-palmate leaves composed of lance-shaped, dark blue-green leaflets, to 15cm (6in) long, blue-white beneath. Pea-like, bright yellow flowers, 4cm (1½in) long, are produced in upright, terminal racemes in late spring and early summer, followed by pendent green seed pods, to 22cm (9in) long. ♂↔ 2.5m (8ft), ↔ 2m (6ft). Himalayas, S.W. China. ✱✱



*Piptanthus nepalensis* (inset: flower detail)

*P. tomentosus*. Open, upright, deciduous or semi-evergreen shrub bearing 3-palmate leaves composed of ovate, grey-green leaflets, to 15cm (6in) long, densely silky-hairy beneath. In late spring and early summer, bears pea-like, lemon-yellow flowers, 3cm (1¼in) long, in upright racemes, followed by pendent, woolly seed pods, to 8cm (3in) long. ♂↔ 2.5m (8ft), ↔ 2m (6ft). S.W. China. ✱✱

## PISONIA

syn. HEIMERLIODENDRON

NYCTAGINACEAE

Genus of 50 species of evergreen trees, shrubs, and climbers from chiefly maritime habitats in tropical regions worldwide, but mainly in North and South America. Cultivated for their attractive leaves, which are simple and entire, and borne alternately, in opposite pairs, or in whorls of 3, they also produce small, funnel-shaped, petalless flowers: the males with tufts of stamens, the females with solitary ovaries that develop into nutlets (achenes). In areas where temperatures fall below 10–13°C (50–55°F), grow in a temperate or warm greenhouse, or as houseplants. In warmer climates, grow as specimen trees, as windbreaks, or as a hedge.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light or bright indirect light. When in growth, water freely and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, humus-rich, well-drained



*Pisonia umbellifera* 'Variegata'

soil in full sun or partial shade. Pruning group 1; may need restrictive pruning under glass.

- **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Take greenwood cuttings in early summer, or semi-ripe cuttings in mid- to late summer. Air layer in spring.
- **PESTS AND DISEASES** Red spider mites and scale insects may infest greenhouse specimens.

*P. brunoniana* see *P. umbellifera*.

*P. umbellifera* ♀ syn.

*Heimerliodendron brunonianum*, *P. brunoniana* (Bird-catcher tree, Parapara). Small tree or large shrub, erect at first, then spreading, and usually freely branching. Densely borne, opposite or whorled, elliptic to lance-shaped leaves, 10–40cm (4–16in) long, are thinly leathery, glossy, and rich green. Bears insignificant, funnel-shaped, pink or yellow flowers, about 4–7mm (¼–¼in) long, in leafy panicles, intermittently throughout the year. Female sepals are sticky-glandular and elongate, enclosing the nutlets. ♂↔ 5–20m (15–70ft) sometimes more, ↔ 3–5m (10–15ft). Mauritius to Australia, New Zealand, and Japan (Ogasawara-Shoto). ☼ (min. 10°C/50°F). 'Variegata' [■] has leaves irregularly splashed and margined creamy white, and pink-tinged stalks.

▷ *Pistachio* see *Pistacia*

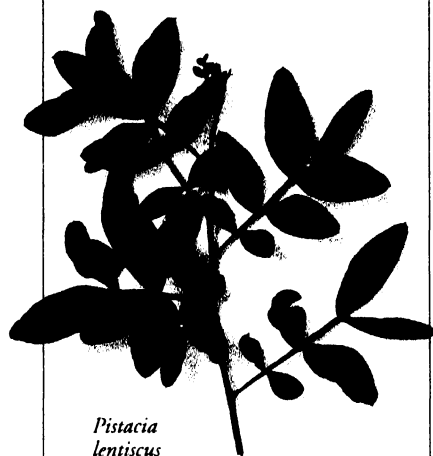
## PISTACIA

*Pistachio*

ANACARDIACEAE

Genus of 11 species of rounded to upright, dioecious, deciduous and evergreen trees and shrubs from dry habitats in the Mediterranean, C. Asia to Japan, Malaysia, Mexico, and S. USA. They are grown for their foliage, flowers, and fruit (although *P. vera*, which produces the edible pistachio nut, is not grown ornamentally). The alternate leaves are usually pinnate, occasionally ternate or simple; the small, petalless, mostly mid-green flowers appear in usually axillary racemes or panicles, followed by the peppercorn-like fruits. Grow as specimen trees; they thrive in coastal conditions. In frost-prone areas, grow half-hardy species in a cool or warm greenhouse.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3)



*Pistacia lentiscus*

with added sharp sand, in full light. During growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, sharply drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.

- **PROPAGATION** Sow seed at 25°C (77°F) in early spring. Take greenwood cuttings in late spring or early summer, or semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Prone to fungal root rot; coral spot affects *P. chinensis*.

***P. chinensis*** ♀ (Chinese mastic). Deciduous tree, erect at first, then spreading. Pinnate leaves, to 25cm (10in) long, each with 10–12 oblong-elliptic, toothed, leathery, glossy, dark green leaflets, with no terminal leaflet, colour well in autumn. Aromatic red flowers are produced with the young leaves in mid- and late spring; the males are in crowded panicles, to 10cm (4in) long, the females in looser panicles, 15–25cm (6–10in) long. The flowers are followed by spherical red fruit, about 3mm (1/8in) across, maturing blue. ‡ 15–25m (50–80ft), ↔ 7–10m (22–30ft). C. and W. China. \* \*

***P. lentiscus*** ♂ ♀ (Lentisc, Mastic tree). Evergreen, resinous, aromatic shrub or sometimes small, bushy tree. Pinnate leaves, 10cm (4in) long, with winged stalks and midribs, each have 2–7 pairs of narrowly oblong to ovate, ovate, oblong-lance-shaped, or elliptic, leathery, glossy, dark green leaflets, with no terminal leaflet. In spring or early summer, bears dense panicles, to 3cm (1 1/4in) long, of male flowers with red stamens, and looser panicles, 6cm (2 1/2in) long, of brownish green female flowers. The flowers are followed by spherical red fruit, 5mm (1/4in) across, ripening black. The sap yields mastic, the fragrant gum used in medicine, dentistry, and varnish. ‡↔ 1–3m (3–10ft). Morocco, Canary Islands, Portugal, S. Europe to Greece. \*

***P. terebinthus*** ♀ (Terebinth, Turpentine tree). Deciduous, freely branching tree, or sometimes large shrub, with pinnate leaves, 10–20cm (4–8in) long; these each consist of 3–6 pairs of oval, semi-glossy, mid- to rich green leaflets, with a terminal leaflet. In spring or early summer, produces greenish red flowers; the males are in compact panicles, 6–10cm (2 1/2–4in) long, the female in looser panicles, 5–15cm (2–6in) long. The flowers are

surrounded by brown bracts, and are followed by obovoid, edible red to purple-brown fruit, to 7mm (1/4in) long. The sap yields a fragrant gum, used in cancer treatments. ‡ 6m (20ft) or more, ↔ 2–6m (6–20ft). Portugal to Turkey, Canary Islands, Morocco to Egypt. \*

## PISTIA

Shell flower, Water lettuce

ARACEAE

Genus of one species of evergreen, floating aquatic perennial distributed worldwide in the tropics and subtropics. It is grown for its rosettes of attractive, wedge-shaped leaves, and for the exquisite colouring of its fine, feathery roots (which turn from white to purple, and finally black). Although regarded as a weed in some tropical areas, where its radiating stolons cover the surface of the water, it is an excellent ornamental plant for a sunny, temperate pool, for a greenhouse pool, or for a large aquarium.

- **HARDINESS** Frost tender.
- **CULTIVATION** Grow as a floating aquatic in full sun with some midday shade. In frost-prone areas, lift before the first frosts and overwinter at a minimum of 10°C (50°F); alternatively grow under glass on the surface of an indoor pool (or in baskets at the pool margins), in full light, with shade from hot sun, maintaining a water temperature of 15–22°C (59–72°F). Growth is more rapid the higher the water temperature. See also pp.52–53.
- **PROPAGATION** Separate plantlets in summer.
- **PESTS AND DISEASES** Trouble free.



*Pistia stratiotes*

***P. stratiotes*** ♂ (Shell flower, Water lettuce). Evergreen, floating aquatic perennial with spreading or semi-upright, wedge-shaped, glaucous leaves, to 20cm (8in) long, fluted above and ribbed beneath, borne in floating rosettes. Inconspicuous, tubular flowers are borne in leaf-like spathes in the leaf axils, irregularly throughout the year. ‡ 10cm (4in), ↔ indefinite. Tropics and subtropics worldwide. ♀ (min. 10°C/50°F)

## PITCAIRNIA

BROMELIACEAE

Genus of over 260 species of very variable, rosette-forming, usually evergreen perennials (bromeliads), mostly terrestrial, a few epiphytic. All but one species occur in rocky, generally dry areas of Mexico, Central America, South America, and many West Indian islands. They are cultivated for their linear, lance-shaped, or strap-shaped leaves, which have smooth or spiny margins, and for their bell-shaped, white, yellow, orange, green, or red flowers, which are produced in spikes, racemes, or panicles on branched or unbranched stems. In areas where temperatures drop below 10°C (50°F), grow in a warm greenhouse; in warmer climates, pitcairnia are suitable for a desert garden or moist shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard bromeliad compost in full or bright filtered light. From mid-spring to late autumn, water moderately and apply a nitrogen-based fertilizer every



*Pitcairnia heterophylla*

6–8 weeks. Evergreen species require moderate to high humidity, deciduous species require low humidity. When dormant, protect from cold draughts, keeping deciduous species dry, and evergreen species just moist. Outdoors, grow in moderately fertile, sharply drained soil in sun or partial shade. See also p.47.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Remove offsets in late spring or early summer.
- **PESTS AND DISEASES** Susceptible to scale insects and mealybugs, especially early in the growing season.

***P. atrovirens***. Rosette-forming, epiphytic or terrestrial, evergreen bromeliad with variable leaves: the outer ones are much reduced, smooth-margined, ovate, and very pointed; the lance-shaped inner ones, 60–90cm (24–36in) long, have smooth margins and spiny black stalks. In summer, up to 20 bell-shaped, pale yellow flowers, surrounded by red-purple floral bracts, are produced in spikes, to 30cm (12in) long, on stems with pointed, brownish-purple scape-bracts. ‡ to 90cm (36in), ↔ to 60cm (24in). Mexico, Central America, N.W. South America. ♀ (min. 10°C/50°F)

***P. bifrons***. Rosette-forming, terrestrial, evergreen bromeliad with strap-shaped, smooth-margined leaves, to 70cm (28in) or more long. During summer, 20–30 bell-shaped, red, red-orange, or yellow flowers, with red or yellow floral bracts, are produced in racemes, 18–27cm (7–11in) long, on white-scaly scapes. ‡↔ 70cm (28in). West Indies (Leeward and Westward Islands, St. Kitts, Guadeloupe). ♀ (min. 10°C/50°F)

***P. heterophylla*** ♂ Epiphytic or terrestrial bromeliad, evergreen for most of the year, but deciduous for a brief period, with a bulbous-based rosette of linear, viciously barbed, spiny outer leaves, to 20cm (8in) long, sometimes reduced to brown spines. Inner leaves, to 70cm (8in) long, are smooth-margined, linear, and white-woolly beneath. During summer, 3–12 bell-shaped, red-pink or white flowers are produced in spikes, to 15cm (6in) long, among red floral bracts, on very short scapes. ‡ 12cm (5in) or more, ↔ to 30cm (12in). Mexico to Venezuela and Peru. ♀ (min. 10°C/50°F)

▷ **Pitcher plant** see *Sarracenia*  
**Tropical** see *Nepenthes*

## PITTOSPORUM

## PITTOSPORACEAE

Genus of approximately 200 species of usually evergreen shrubs and trees, a few epiphytic, found in habitats ranging from sandy savannah to rain-forest, mainly in Australasia, but also in southern Africa, S. and E. Asia, and the Pacific islands. They are grown for their attractive, glossy, often leathery leaves, which are simple, usually entire, and borne alternately or in whorls. The often fragrant, 5-petalled flowers are borne mostly singly in the leaf axils, or in axillary or terminal corymbs, umbels, panicles, or clusters; they are followed by nearly spherical, woody fruits (capsules) that contain usually black seeds embedded in a sticky, brownish yellow mucilage. Where temperatures fall below 0°C (32°F), grow in a cool greenhouse, moving the plants outdoors for the summer. In warmer climates, the trees are fine specimens for a lawn; the shrubs are suitable for a border, and make a good hedge or windbreak, especially in coastal regions.

• **HARDINESS** Frost hardy to frost tender. Half-hardy species may survive short spells at several degrees below 0°C (32°F), provided wood has been well ripened in summer.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade, although those with variegated or purple leaves produce the best leaf effect in full sun. In frost-prone climates, shelter from cold, drying winds. Pruning group 1; may need restrictive pruning under glass. Trim hedges in spring and midsummer.

• **PROPAGATION** Sow seed ideally as soon as ripe, or in spring in containers in a cold frame. Take semi-ripe cuttings in summer, or layer or air layer in spring.

• **PESTS AND DISEASES** Red spider mites and scale insects may infest greenhouse specimens. Leaf spot and powdery mildew may cause problems.

*P. bicolor* ♀ Large shrub or small tree, erect and bushy, with downy young stems. Alternate, oblong, leathery leaves, 2.5–6cm (1–2½in) long, have rolled

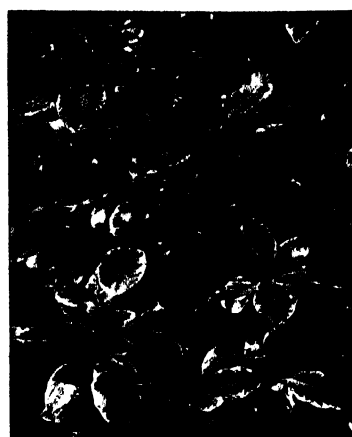
margins, and are deep green above, white- to brown-felted beneath. Bears noddling, bell-shaped, fragrant, maroon-crimson flowers, about 1cm (½in) long, singly or in small, axillary clusters, mainly in spring; these are followed by dark red capsules, 1cm (½in) or more across. †4–5m (12–15ft), occasionally more, ↔ 2–5m (6–15ft). Australia (New South Wales, Victoria, Tasmania). \* *P. colensoi* see *P. tenuifolium* subsp. *colensoi*.

*P. crassifolium* ♀ (Karo). Large, monoecious shrub or small tree, usually bushy and erect. It has erect to ascending stems, white- to buff-felted when young, and alternate, leathery leaves, 5–7cm (2–3in) or more long, which are obovate to elliptic, and dark green above, white- or buff-felted beneath. Tubular-bell-shaped, dark red to purple flowers, to 1cm (½in) across, are borne in terminal clusters in early summer; the males in clusters of up to 10, the females in clusters of 5. The flowers are followed by almost spherical brown capsules, to 1.5cm (½in) across. †5–10m (15–30ft), ↔ 2–5m (6–15ft). New Zealand (North Island). \*

*'Compactum'* is smaller, denser, and has grey-green leaves, 3–5cm (1¼–2in) long, in tight whorls; †1.5m (5ft), ↔ 1m (3ft). *'Variegatum'* ♂ has grey-green leaves with broad, irregular, creamy white margins; †2.5m (8ft).

*P. dallii* ♀ Small, broadly upright tree or sometimes large, rounded shrub, opening out with age, with reddish purple stems. Very deep green leaves, alternate, or whorled at the stem tips, are 6–11cm (2½–4½in) long, elliptic to elliptic-oblong, either coarsely and sharply toothed or virtually entire. In summer, produces small, shallowly cup-shaped, fragrant, yellow-green or white flowers, to 0.6–2cm (¼–¾in) across, in dense, terminal, compound umbels; they are followed by ovoid brown capsules, 1cm (½in) long. † to 6m (20ft), ↔ 2–4m (6–12ft). New Zealand (South Island). \* \*

*P. eugenoides* ♀ (Lemonwood, Tarata). Small tree, erect and conical when young, becoming rounded with age. Alternate, elliptic to narrowly ovate, wavy-margined leaves, to 13cm (5in) long, are thinly leathery, glossy, light green, and lemon-scented when crushed. Produces star-shaped, fragrant, light greenish yellow flowers, 3mm (¼in) across, in dense, terminal, compound umbels in summer, followed by ovoid



*Pittosporum 'Garnettii'*

brown capsules, 7mm (¼in) long. †5–12m (15–40ft), ↔ 2–5m (6–15ft). New Zealand. \* *'Variegatum'* ♂ ♀ produces leaves with bold, irregular, cream to creamy yellow margins. *'Zita Robinson'* ♀ is similar to the species, but is dense and columnar, with wavy leaf margins.

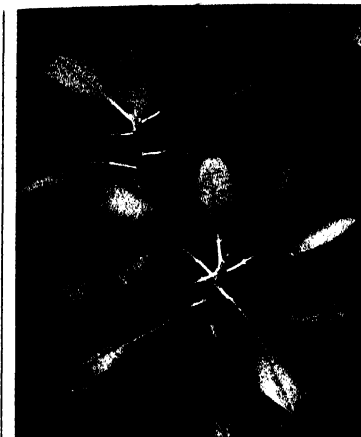
*P. 'Garnettii'* ♂ ♀ Large, bushy shrub, erect at first, then spreading, with alternate, oblong to elliptic leaves, 4–6cm (1½–2½in) long, sparingly hairy below, almost hairless above, greyish green and pink-spotted, with slightly wavy, creamy white margins. In late spring and early summer, bell-shaped, dark purple flowers, about 1cm (½in) long, are borne singly from the leaf axils, followed by almost spherical brown capsules, 1cm (½in) long. †3–5m (10–15ft), ↔ 2–4m (6–12ft). \*

*P. phillyreoides* ♀ (Desert willow, Weeping pittosporum). Large shrub or small tree of spreading, weeping habit, with softly hairy young stems and alternate, linear-oblong to narrowly lance-shaped, thick leaves, 5–10cm (2–4in) long, mid- to deep green above, paler beneath. In summer, bears bell-shaped, cream to yellow flowers, 1.5cm (½in) long, occasionally singly or more often in axillary, corymb-like clusters. They are followed by almost spherical yellow capsules, 1.5cm (½in) long, which split to disclose sticky, orange-red seeds. †6–10m (20–30ft), ↔ 3–5m (10–15ft). Dry areas of Australia. \*

*P. ralphii* ♂ ♀ Fast-growing, large shrub or small tree, erect then spreading, with white- to buff-downy young stems, and alternate, elliptic, sometimes wavy-margined leaves, 7–13cm (3–5in) long, semi-lustrous, deep green above, white to buff-felted beneath. In late spring and early summer, bears tubular-bell-shaped, very dark red flowers, to 1cm (½in) long, in loose, terminal, umbel-like clusters, followed by ovoid, hairy, brown capsules, 1.5cm (½in) long. †3–4m (10–12ft), ↔ 1.5–2.5m (5–8ft). New Zealand (North Island). \* \*

*'Variegatum'* has greyish green leaves with irregular, fairly wide, creamy white margins. *'Wheeler's Dwarf'* is smaller, very dense, and slow-growing; †1m (3ft), ↔ 60cm (24in).

*P. revolutum*. Large, bushy shrub with brown-downy young stems and alternate, ovate to lance-shaped, semi-lustrous, mid- to deep green leaves, 3–11cm (1¼–4½in) long, pale brown and densely woolly beneath, especially

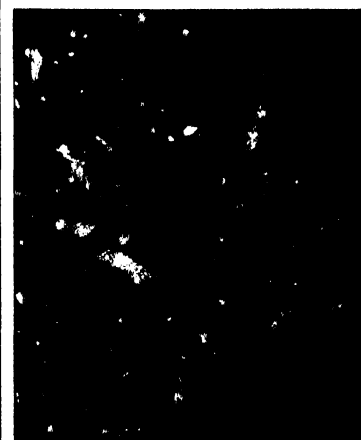


*Pittosporum ralphii*

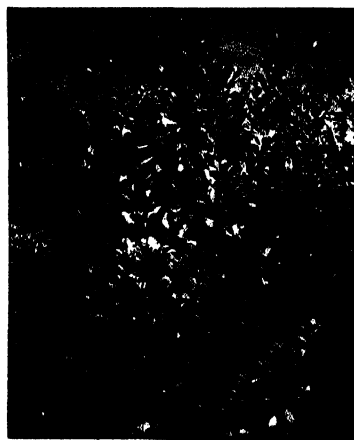
on the midribs. In late spring and early summer, produces bell-shaped yellow flowers, 8–10mm (⅜–½in) long, in small, compact, terminal, few-flowered umbels; they are sometimes followed by almost spherical orange capsules, 1cm (½in) or more long, which split to reveal sticky red seeds. †2–4m (6–12ft), much taller in a warm climate with high rainfall, ↔ 1.5–2.5m (5–8ft). Australia (Queensland, New South Wales). \*

*P. rhombifolium* ♀ (Diamond-leaved laurel). Conical tree, moderately bushy when young, with long-stalked, broadly lance-shaped to diamond-shaped or narrowly oval, lustrous, mid- to deep green leaves, arranged alternately. In summer, produces bell-shaped white flowers, 8–10mm (⅜–½in) long, in axillary or terminal, many-flowered clusters; they are sometimes followed by spherical, bright orange capsules, 1cm (½in) long, which split to reveal the red capsule interior and sticky, glossy black seeds. †10–20m (30–70ft), ↔ 3–6m (10–20ft). Australia (moist coastal forest in Queensland). \*

*P. tenuifolium* ♂ ♀ (Kohuhu). Large, bushy shrub to small tree, erect and fast-growing when young, broader and slower-growing with age. Produces dark grey to black young stems and alternate, oblong-ovate to elliptic-obovate, usually wavy-margined, thinly leathery, glossy, mid-green leaves, 2.5–6cm (1–2½in) long. In late spring and early summer, bears bell-shaped honey-scented, black-red flowers, 8–10mm (⅜–½in) across, singly or sometimes in small, few-flowered axillary clusters; they are followed by



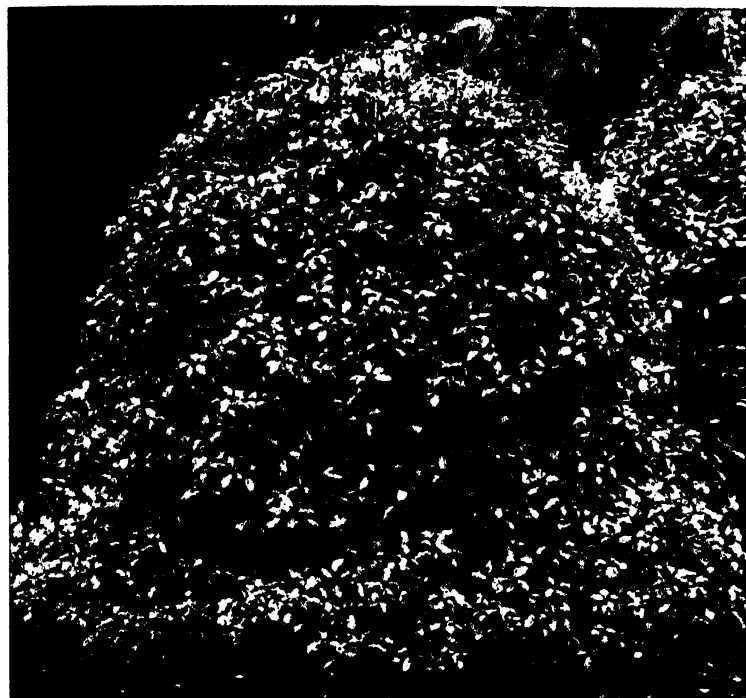
*Pittosporum tenuifolium*



*Pittosporum crassifolium 'Variegatum'*

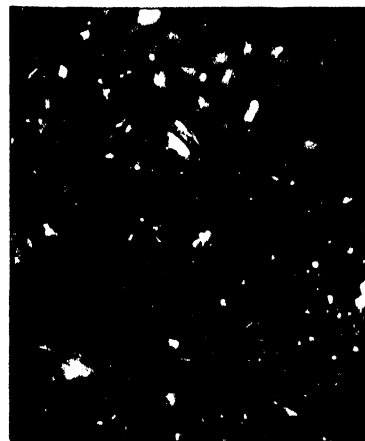
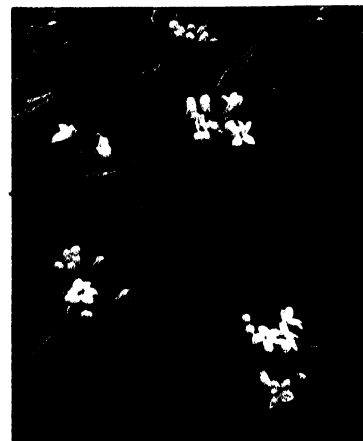


*Pittosporum eugenoides 'Variegatum'*

*Pittosporum tenuifolium* 'Irene Paterson'

grey-black capsules, 1.5cm (½in) long. †4–10m (12–30ft), ↔ 2–5m (6–15ft). New Zealand. \* \*. 'Abbotsbury Gold' has yellow leaves with irregular green margins; †3m (10ft), ↔ 1.5m (5ft). **subsp. colensoi**, syn. *P. colensoi*, produces softly hairy young stems and broader, thicker leaves, 5–10cm (2–4in) long; †8m (25ft), ↔ 1–4m (3–12ft). 'Deborah' bears small leaves, 2.5cm (1in) long, with cream and green variegation; †2m (6ft), ↔ 1m (3ft). 'Golden King' is erect, with light golden green leaves; †to 3m (10ft), ↔ 1m (3ft). 'Irene Paterson' ♀ forms a low bush, and bears foliage flushed bronze-purple; †to 1m (3ft), ↔ 60cm (24in). 'Warnham Gold' ♀ has golden green leaves that mature golden yellow. 'Wendle Channon' has light green leaves with cream-coloured margins. *P. tobira* ♀ (Japanese mock orange). Large shrub or small tree, usually rounded and dense, with erect, sturdy stems and alternate, obovate, leathery leaves, 3–10cm (1¼–4in) long, lustrous and deep green above, paler beneath, and with recurved margins. In late spring and early summer, bears large, handsome, terminal, umbel-like clusters of bell-shaped, very sweetly scented, creamy white flowers, to 2.5cm (1in) across, ageing yellow; they are followed by spherical, yellow-brown capsules with red seeds, 1.5cm (½in) long. †2–10m (6–30ft), ↔ 1.5–3m (5–10ft). China, Korea, Japan. \* \*. 'Variegatum' ♀ has congested stems and smaller leaves, 3cm (1¼in) long, with irregular white margins. *P. undulatum* ♀ (Australian mock orange, Cheesewood). Dense, rounded

leaves with irregular white margins; †1–4m (3–12ft), ↔ 2m (6ft). 'Tom Thumb' ♀ forms a low bush, and bears foliage flushed bronze-purple; †to 1m (3ft), ↔ 60cm (24in). 'Warnham Gold' ♀ has golden green leaves that mature golden yellow. 'Wendle Channon' has light green leaves with cream-coloured margins. *P. tobira* ♀ (Japanese mock orange). Large shrub or small tree, usually rounded and dense, with erect, sturdy stems and alternate, obovate, leathery leaves, 3–10cm (1¼–4in) long, lustrous and deep green above, paler beneath, and with recurved margins. In late spring and early summer, bears large, handsome, terminal, umbel-like clusters of bell-shaped, very sweetly scented, creamy white flowers, to 2.5cm (1in) across, ageing yellow; they are followed by spherical, yellow-brown capsules with red seeds, 1.5cm (½in) long. †2–10m (6–30ft), ↔ 1.5–3m (5–10ft). China, Korea, Japan. \* \*. 'Variegatum' ♀ has congested stems and smaller leaves, 3cm (1¼in) long, with irregular white margins. *P. undulatum* ♀ (Australian mock orange, Cheesewood). Dense, rounded

*Pittosporum tenuifolium* 'Tom Thumb'*Pittosporum tobira*

tree with alternate, oblong-lance-shaped to narrowly oblong-ovate, wavy-margined leaves, 7–15cm (3–6in) long, glossy, deep green above, paler beneath. From late spring to midsummer, bears bell-shaped, fragrant, creamy white flowers, 1.5cm (½in) across, in terminal, umbel-like clusters; they are sometimes followed by spherical, orange to brown capsules, to 1cm (½in) across, which split to reveal sticky, ruby-red seeds. †8–15m (25–50ft), sometimes to 24m (80ft), ↔ 3–7m (10–22ft). Australia (Queensland to Tasmania). \* \*. 'Variegatum' has leaves with irregular white margins.

*P. viridiflorum* Usually free-branching, large shrub or small tree, bearing hairy young stems and alternate, obovate, leathery leaves, 3–10cm (1¼–4in) long; the leaves are lustrous, deep green above, paler beneath, sometimes with margins rolled under. From late spring to midsummer, produces terminal, corymb-like panicles of small, jasmine-scented, yellow-green flowers, to 6mm (¼in) across; they are short-tubed and open trumpet-shaped, with 5 spreading lobes, and are followed by almost spherical brown capsules, 1.5cm (½in) long. †3m (10ft), sometimes to 6m (20ft), ↔ 2–3m (6–10ft). South Africa. ♀ (min. 5°C/41°F)

▷ **Pittosporum, Weeping** see *Pittosporum phyllireoides*

## PITYROGRAMMA

ADIANTACEAE/PTERIDACEAE

Genus of about 14 species of evergreen, terrestrial ferns, native to woodland and shady rocks in W. North America and tropical areas of Africa, Central America, and South America. They have creeping rhizomes that produce tufts of attractive, triangular, pinnate to 3-pinnate fronds, with a silvery white, yellow, or rarely pink, mealy powder on the undersides. Elongated sori are produced along the veins, without protective indusia. In frost-prone climates, grow in a warm greenhouse or as houseplants. In warmer regions, grow in a sheltered, shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould, in bright filtered light. In the growing season, water moderately, avoiding wetting the foliage, and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in humus-rich, moist but well-drained soil in partial shade.
- **PROPAGATION** Sow spores at 19–24°C (66–75°F) when ripe. Divide in spring. See also p. 51.
- **PESTS AND DISEASES** Trouble free.

*P. argentea* ♀ Tufted fern bearing long-stalked, arching, broadly triangular, 2- or 3-pinnate fronds, to 60cm (24in) long, with a silvery white or golden yellow bloom beneath. Pinnae are narrowly triangular-ovate, composed of wedge-shaped to broadly oblong-ovate and deeply pinnatifid secondary segments. †to 60cm (24in), ↔ 1m (3ft). Africa, Madagascar, Mascarene Islands. ♀ (min. 10°C/50°F)

*Pityrogramma argentea*

*P. calomelanos*. Neat, tufted fern bearing triangular-ovate, very regularly 2-pinnate, mid-green fronds, to 80cm (32in) long, usually silvery white, rarely pink mealy, on the undersides, with narrowly diamond-shaped segments. †to 30–90cm (12–36in), ↔ to 1m (3ft). Tropical Central America and South America. ♀ (min. 10°C/50°F). **var. austroamericana** has a yellow or orange bloom on the undersides of the fronds. *P. chrysophylla*. Tufted fern producing very long-stalked, ovate or triangular-ovate, 2- or 3-pinnate, mid-green fronds, 20–60cm (8–24in) tall. Similar to *P. calomelanos*, but the frond undersides are covered with a bright yellow, waxy powder, and the segments are ovate to narrowly diamond-shaped. †to 10–40cm (4–16in). West Indies, South America. ♀ (min. 10°C/50°F). *P. triangularis*, syn. *Gymnogramma triangularis* (Goldback fern). Tufted fern bearing triangular, 2-pinnate, mid- to yellow-green fronds, to 20cm (8in) long, rarely more, the undersides covered with a gold or silver, waxy powder. Pinnae are divided into narrow, triangular or oblong segments. †to 10–20cm (4–8in). S.W. USA, N.W. Mexico. ♀ (min. 10°C/50°F)

- ▷ *Plagianthus lyallii* see *Hoheria lyallii*
- ▷ *Plagiorhegma* see *Jeffersonia*
- P. dubia* see *J. dubia*
- ▷ *Plane* see *Platanus*
- London* see *P. x hispanica*
- Oriental* see *P. orientalis*

## PLANTAGO

Plantain

PLANTAGINACEAE

Genus of some 200 species of mostly rosette-forming annuals, biennials, evergreen perennials and shrubs, many of which are invasive, from very variable habitats worldwide. Grown mainly for their attractive basal rosettes of linear to almost rounded leaves, they also bear tiny, tubular flowers with 4 small petal lobes, in long-stemmed, spherical to oblong spikes, in summer. Grow larger species in a herbaceous border; smaller, alpine species in a rock garden or alpine house. In frost-prone areas, grow tender species in a cool greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in 4 parts peat or leaf mould to 1 part grit or sharp sand. Outdoors, grow in preferably neutral to acid, moderately

*Plantago nivalis*

fertile, sharply drained soil in full sun. Protect from winter wet.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or divide in spring.

• **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

**P. nivalis** ■ Compact perennial with neat rosettes of lance-shaped, very silky-hairy, silver-green leaves, to 1cm (½in) long. In summer, leafless stems, 10cm (4in) long, bear spikes, to 1cm (½in) across, of tiny, tubular, grey-brown flowers. ‡ 2.5cm (1in), ↔ 8cm (3in). Mountains in S. Spain. \*\*\*

▷ **Plantain** see *Musa*, *Plantago*

**French** see *Musa acuminata* 'Dwarf Cavendish'

**Parrot's** see *Heliconia psittacorum*

**Water** see *Alisma*

## PLATANUS

Plane

PLATANACEAE

Genus of about 6 species of deciduous trees found in valley bottoms and watercourses in North America and Mexico, with one species in S.E. Europe and one in S.E. Asia. Planes are grown for their imposing stature and open habit, their large, alternate, palmately lobed leaves, which turn golden brown in autumn, and their flaking bark. The flowers are inconspicuous, but spherical clusters of fruits hang from the shoots throughout winter. They are best as street trees or for large gardens or parks. Planes thrive in urban conditions, but if planted close to buildings their vigorous roots may damage drains. Contact with the basal tufts of hair on the fruits may irritate the skin and respiratory system.

• **HARDINESS** Fully hardy to half hardy, but all grow better in climates with hot summers where the current year's shoots are well-ripened.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun. Pruning group 1.

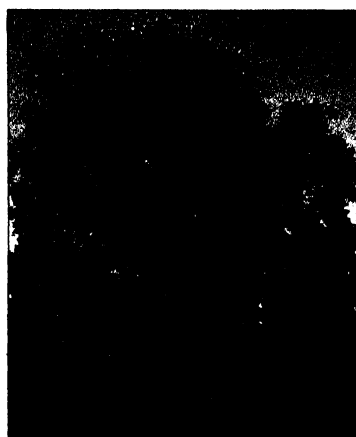
• **PROPAGATION** Sow seed (of species only) in autumn. Take hardwood cuttings in winter.

• **PESTS AND DISEASES** All except *P. orientalis* are prone to plane anthracnose. The foliage is prone to lacebugs.

**P. x acerifolia** see *P. x hispanica*.

**P. x hispanica** ■ ♀ □ (*P. occidentalis*

x *P. orientalis*) syn. *P. x acerifolia* (London plane). Vigorous, broadly

*Platanus x hispanica*

columnar, deciduous tree with flaking brown, grey, and cream bark and very variable but usually sharply 3- to 5-lobed, bright green leaves, to 35cm (14in) long. Green, later brown fruit clusters, 2.5cm (1in) across, are borne in groups of up to 4, and persist during autumn and winter. ‡ 30m (100ft), ↔ 20m (70ft). Garden origin. \*\*\*.

'**Bloodgood**' is fast-growing, drought-tolerant, and relatively resistant to anthracnose. '**Suttneri**' has leaves marked creamy white; ‡ 20m (70ft), ↔ 15m (50ft).

**P. occidentalis** □ (American sycamore, Buttonwood). Vigorous, broadly columnar, deciduous tree with flaking brown, grey, and cream bark and usually 3-lobed, bright green leaves, to 20cm (8in) long. Green, later brown fruit clusters, 2.5cm (1in) across, are produced usually singly, rarely in pairs, and persist during autumn and winter. ‡ 25m (80ft), ↔ 20m (70ft) or more. E. and S. North America. \*\*

**P. orientalis** ■ ♀ □ (Oriental plane). Vigorous, spreading, deciduous tree with flaking grey, brown, and cream bark and deeply 5-lobed, glossy green leaves, to 25cm (10in) long. Green, later

brown fruit clusters, to 2.5cm (1in) across, are borne in groups of up to 6, and persist during autumn and winter. ‡ 30m (100ft) or more. S.E. Europe (widely planted in W. Asia). \*\*\*

**P. racemosa** △ (California sycamore). Vigorous, broadly columnar tree with flaking grey bark and deeply 5-lobed, occasionally 3-lobed, dark green leaves, to 15–30cm (6–12in) long, velvety when young. Green, later brown fruit clusters, 2.5cm (1in) across, are produced in groups of 2–7, and persist during autumn and winter. ‡ 25m (80ft), ↔ 20m (70ft) or more. USA (S. California), Mexico. \*

## PLATYCARYA

JUGLANDACEAE

Genus of one species of deciduous, large shrub or small tree from forest in E. Asia. It is cultivated for its long, pinnate leaves that colour yellow in autumn, for its upright catkins, and for its long-lasting, cone-like racemes of fruit. The bark is often used for making a black dye. Best grown as a specimen tree in woodland.

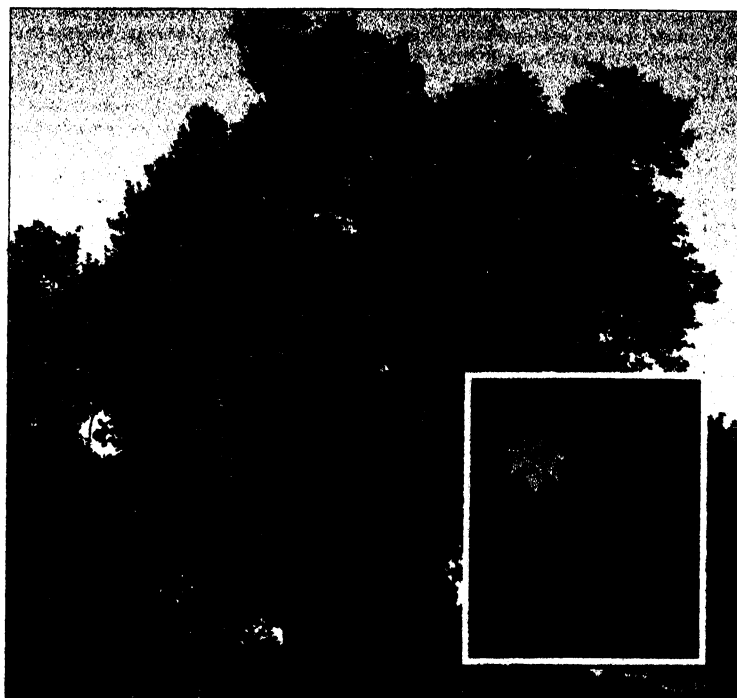
• **HARDINESS** Fully hardy, but young plants may be damaged by frost.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun. Pruning group 1.

• **PROPAGATION** Sow seed in containers in autumn.

• **PESTS AND DISEASES** Trouble free.

**P. strobilacea** □ Rounded tree with alternate, pinnate, mid-green leaves, to 30cm (12in) long, composed of 7 to 15 ovate to oblong-lance-shaped, toothed leaflets. In mid- and late summer, tiny flowers are borne in erect, yellow-green catkins: several males, to 10cm (4in) long, surround a single female. Small-winged, green, later brown, fruit are borne in cone-like racemes to 4cm (1½in) long, in autumn, and survive until the following year. ‡ 15m (50ft). China, Taiwan, Korea, Japan. \*\*\*

*Platanus orientalis* (inset: leaf detail)

## PLATYCERUM

Staghorn fern

POLYPODIACEAE

Genus of 15 or more species of evergreen, epiphytic ferns, with short-creeping rhizomes; most are found in temperate and tropical rainforest in Africa, Asia, and Australia, a few in South America. They are grown mainly for their attractive, often elegant foliage, each plant bearing both sterile and fertile fronds. The mid- to deep green sterile fronds are stalkless, rounded to oblong, and entire to irregularly lobed at the upper margins; they become brown and papery, and usually form a persistent "nest" or basket at the base of the plant. The fertile fronds are spreading or pendent to erect, wedge-shaped at the bases, usually grey-green and leathery, and often repeatedly forked; they are shed naturally when old. All fronds are covered on both sides with small, star-shaped hairs. Spores are formed in large patches on the undersides of fertile fronds; in some species, new plants develop from runners on the sides of established nests. In frost-prone climates, grow in a conservatory or cool or temperate greenhouse, or as houseplants, preferably in hanging baskets. In warmer regions, grow epiphytically in a tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow epiphytically in equal parts coarse leaf mould (or peat), roughly chopped sphagnum moss, loam, and charcoal, in bright filtered light. When in growth, water freely, mist daily, and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow epiphytically on a tree in partial shade.

• **PROPAGATION** Sow spores at 21°C (70°F) when ripe. Detach plantlets produced from root tips or runners as soon as nests have formed. See also p.51.

• **PESTS AND DISEASES** Scale insects can be a problem.

**P. alcicorne** (South American staghorn). Epiphytic fern with rounded to kidney-shaped, entire or partially lobed sterile fronds, 15–40cm (6–16in) long, which lie flat, and are mid- to deep green then brown. Leathery, grey-green fertile fronds, 60cm (24in) long, are erect, and divided 2 or 3 times. Spores are formed on frond forks. ‡ 30 to 85cm (34in). E. Africa, Madagascar, Seychelles, Mauritius. ♀ (min. 5°C/41°F)

**P. alcicorne of gardens** see

*P. bifurcatum*.

**P. bifurcatum** ■ ♀ syn. *P. alcicorne* of gardens (Common staghorn fern). Very variable, epiphytic fern with erect or horizontal, rounded to heart- or kidney-shaped sterile fronds, 12–45cm (5–18in) long, which are mid- to deep green then brown, and are entire, wavy, or lobed at the upper margins. Grey-green fertile fronds, to 90cm (36in), are erect, spreading, or pendent, forked 2 or 3 times into strap-shaped, densely hairy segments. Very similar to *P. alcicorne*. A very popular plant, from which many cultivars have been derived. ‡ to 90cm (36in), ↔ 80cm (32in). Java to E. Australia. ♀ (min. 5°C/41°F)





*Platycerium bifurcatum*

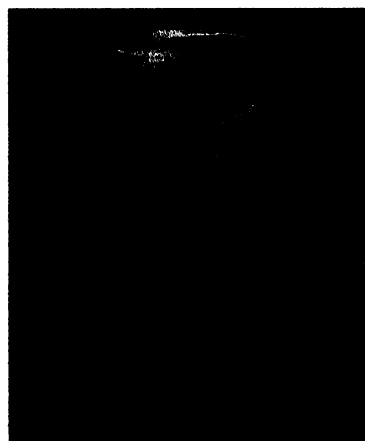
***P. elephantotis*** (Cabbage fern, Elephant's ear fern). Epiphytic fern with erect, rounded to oblong, papery, mid-to deep green then brown sterile fronds, to 90cm (36in) long. Fertile fronds are pendent, wedge-shaped, light grey-green, to 75cm (30in) long. Spores form along frond margins. ↑ to 90cm (36in), ↔ 80cm (32in). Tropical Africa. ☼ (min. 15°C/59°F)

***P. grande*** ♀ Magnificent epiphytic fern bearing bronze to brown sterile fronds, to 1m (3ft) tall, rounded to heart- or kidney-shaped, with deeply lobed upper margins; they are papery, may be spreading or lying flat to the branches, and form an impressive crown. Grey-green fertile fronds, to 1.8m (6ft) tall, are pendent, wedge-shaped, leathery, and forked into strap-shaped segments. Spores form in 2 large semicircular patches on the second forks of fertile fronds. ↑ to 1.8m (6ft), ↔ 1.2m (4ft). Philippines, Malaysia, Australia. ☼ (min. 15°C/59°F)

***P. grande* of gardens** see *P. superbum*.

***P. hillii*** □ Epiphytic fern with rounded, dark green sterile fronds, to 40cm (16in) long, shallowly lobed at the upper margins, and lying flat to the branches. Leathery, light grey-green fertile fronds are erect or arching, broadly wedge-shaped, irregularly forked or palmately lobed above, and 75cm (30in) or more tall. Sometimes considered a variety of *P. bifurcatum*. ↑ 70cm (28in) or more, ↔ 60cm (24in). N.W. Australia, New Guinea. ☼ (min. 10°C/50°F)

***P. superbum***, syn. *P. grande* of gardens. Very large, epiphytic fern producing a



*Platycerium hillii*

crown of grey to grey-green sterile fronds, to 1.6m (5½ft) tall, deeply lobed at the spreading upper margins, and lying flat on the branches. Greyish green fertile fronds, to 2m (6ft) long, are spreading to pendent, and forked up to 5 times with often twisted segments. Similar to *P. grande* but has only a single sori patch in the first fork of fertile fronds. ↑ to 2m (6ft), ↔ 1.5m (5ft). Australia (Western Australia). ☼ (min. 15°C/59°F)

▷ *Platycladus* see *Thuja*  
*P. orientalis* see *T. orientalis*

## PLATYCODON

Balloon flower

CAMPANULACEAE

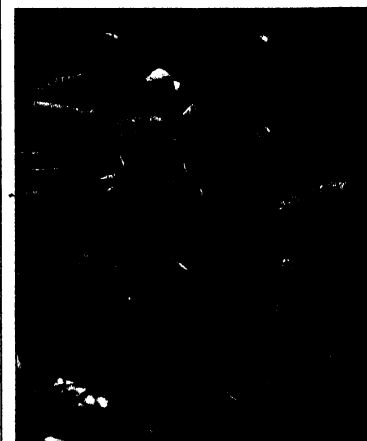
Genus of one species of perennial, variable in habit and form, from grassy slopes and mountain meadows in E. Asia. Late emerging, it forms a neat clump of hairless stems with simple, ovate to ovate-lance-shaped, toothed, bluish green leaves. It is cultivated mainly for its clusters of bell-shaped, 5-petalled, mid-blue, dark blue, or lilac-purple flowers, which open from large, balloon-like buds. Suitable for a rock garden or the front of a herbaceous border. It is also good for cutting. Established plants resent disturbance.

• **HARDINESS** Fully hardy.  
• **CULTIVATION** Grow in deep, light, fertile, loamy, reliably moist but well-drained soil in full sun or partial shade. Stems may require support.

• **PROPAGATION** Sow seed *in situ* or in containers, in spring. Divide in summer, or detach rooted basal shoots in early summer.

• **PESTS AND DISEASES** Slugs and snails attack young shoots.

***P. grandiflorus*** □♀ Compact, clump-forming perennial with ovate to ovate-lance-shaped, toothed, bluish green leaves, to 5cm (2in) long, borne in whorls on the lower stem, alternately higher up. In late summer, clusters of large, balloon-like buds open to shallow, bell-shaped, 5-petalled, purple-blue flowers, to 5cm (2in) across, with darker blue veins and pointed tips to the petals. ↑ to 60cm (24in), ↔ 30cm (12in). Russia (E. Siberia), N. China (including Manchuria), Korea, Japan. \*\*\*. f. *albus* has white flowers with blue veins. f. *apoyama* ♀ has deep violet flowers; ↑ 20cm (8in). 'Mother of Pearl' see



*Platycodon grandiflorus*

'Perlmuttertschale'. 'Park's Double Blue' produces double, violet-blue flowers. 'Perlmuttertschale', syn. 'Mother of Pearl', produces pale pink flowers.

## PLATYSTEMON

Californian poppy, Creamcups

PAPAVERACEAE

Genus of one very variable species of erect to spreading, basally branching, hairy annual from grassland, desert margins, and chaparral in W. USA. It has almost stalkless, stem-clasping, entire leaves, sometimes borne in small whorls. It is grown for its short-lived, poppy-like flowers, each with a central boss of flattened stamen filaments, borne in profusion where the climate is neither too hot nor too humid. Suitable for an annual border and rock gardens.

• **HARDINESS** Fully hardy.  
• **CULTIVATION** Grow in very light, well-drained soil in full sun.  
• **PROPAGATION** Sow seed *in situ* in spring.  
• **PESTS AND DISEASES** Trouble free.

***P. californicus*** (Californian poppy, Creamcups). Many-branched, spreading annual bearing linear-oblong to lance-shaped, densely hairy, strongly parallel-veined, grey-green leaves, to 8cm (3in) long. In spring, produces single, slender-stemmed, 6-petalled, creamy yellow flowers, to 2.5cm (1in) across. ↑ 10–30cm (4–12in), ↔ to 23cm (9in). USA (California to Arizona, Utah). \*\*\*

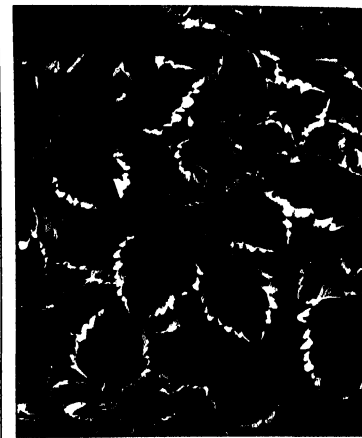
## PLECTRANTHUS

LABIATAE/LAMIACEAE

Genus of 350 species of annuals, evergreen perennials, semi-succulents, and shrubs from Africa, Madagascar, Asia, Australasia, and Pacific islands. Cultivated for their foliage and flowers, they are often upright at first but become trailing or spreading with growth. The heart-shaped to ovate or rounded leaves have usually scalloped, sometimes toothed or wavy margins; they are mostly soft, often slightly furry, and aromatic. The small, tubular, 2-lipped, whorled flowers are borne in terminal panicles, racemes, or spikes. In frost-prone climates, grow in a cool or temperate greenhouse or conservatory, or as houseplants; grow trailing species in hanging baskets, which may be placed outside in summer and autumn. In warmer areas, grow in a sunny border.

• **HARDINESS** Frost tender.  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, with shade from hot sun. During the growing season, water freely and apply a balanced liquid fertilizer every month; water moderately during winter. Outdoors, grow in moderately fertile, well-drained soil in dappled shade.  
• **PROPAGATION** Sow seed at 19–24°C (66–75°F) when ripe. Divide in mid- or late spring. Take stem-tip cuttings at any time of year.  
• **PESTS AND DISEASES** Trouble free.

***P. amboinicus***. Spreading, often decumbent, evergreen perennial with hairy, ovate, aromatic, mid-green leaves,



*Plectranthus forsteri* 'Marginatus'

to 4.5cm (1¾in) long, dotted with glands, and with finely scalloped margins. In summer, bears whorled, tubular, 2-lipped, lilac-pink, mauve, or white flowers, 7–9cm (3–3½in) across, in terminal racemes, to 15cm (6in) long. ↑ 30cm (12in), ↔ 1m (3ft). Tropical to Southern Africa. ☼ (min. 10°C/50°F)

***P. argentatus***. Erect to spreading, evergreen shrub with silver-hairy stems and densely pubescent, ovate, light grey-green leaves, 5–11cm (2–4½in) long, with scalloped margins. In summer, produces terminal racemes, to 30cm (12in) long, of whorled, tubular, pale bluish white flowers, 9–10mm (¾–½in) across. ↑ to 1m (3ft). Australia. ☼ (min. 10°C/50°F)

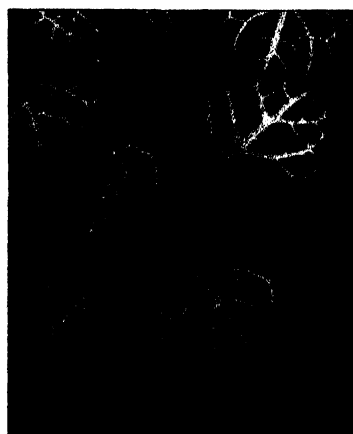
***P. australis*** (Swedish ivy). Upright then trailing, evergreen perennial producing rounded, glossy, dark green leaves, 2.5–4cm (1–1½in) long, with scalloped margins. Intermittently bears terminal racemes, 20cm (8in) long, of whorled, tubular, white or pale mauve flowers. ↑ 60–90cm (24–36in), ↔ to 1m (3ft). Australia. ☼ (min. 10°C/50°F)

***P. coleoides* of gardens** see *P. forsteri*.

***P. coleoides* 'Variegatus' of gardens** see *P. madagascariensis* 'Variegated Mintleaf'.

***P. forsteri***, syn. *P. coleoides* of gardens. Upright then trailing, evergreen perennial producing ovate to broadly ovate, hairy, light green leaves, 6–10cm (2½–4in) long, with scalloped margins. Intermittently bears terminal racemes, 15–20cm (6–8in) long, of whorled, tubular, pale mauve or white flowers, 3cm (1¼in) across. ↑ 25cm (10in), ↔ to 1m (3ft). E. Australia, Fiji, New Caledonia. ☼ (min. 10°C/50°F). 'Marginatus' □ has leaves with broad, creamy white margins.

***P. madagascariensis*** (Mintleaf). Creeping, shrubby, semi-succulent perennial with square brown stems and rounded, scalloped, firm, fleshy leaves, 3–4cm (1¼–1½in) long, sometimes wrinkled, and coated with white bristles; the leaves smell of mint when crushed. Terminal spikes, 10–15cm (4–6in) long, of whorled, tubular, 2-lipped, pale lavender-blue or white flowers, to 1½cm (½in) across, often dotted with red glands, are borne in early summer. ↑ to 30cm (12in), ↔ indefinite. S.E. Africa, Madagascar. ☼ (min. 15°C/59°F). 'Variegated Mintleaf', syn. *P. coleoides* 'Variegatus' of gardens, has variegated white leaves.

*Plectranthus oertendahliae*

***P. oertendahliae*** [♀] (Candle plant). Trailing perennial with freely branching, reddish purple stems bearing ovate to almost rounded, scalloped, bronze-green leaves, 3–4cm (1¼–1½in) long, with pale veins above, and undersides with soft purple felting. Loose, terminal racemes, 20cm (8in) long, of whorled, white or light blue flowers, 5mm (¼in) long, are produced at intervals all year round. ↑ 20cm (8in), ↔ trailing to 1m (3ft) or more. South Africa (KwaZulu/Natal). ☼ (min. 10°C/50°F)

***P. thyrsoideus***, syn. *Coleus thyrsoideus*. Bushy, branching perennial or subshrub, often grown as an annual or a winter-flowering container plant, with hairy stems and heart-shaped, toothed, hairy, mid-green leaves, to 15cm (6in) long. Bright blue flowers, to 1cm (½in) long, are produced in terminal spikes, to 9cm (3½in) long, at various times of the year. ↑ to 90cm (36in), ↔ to 60cm (24in). C. Africa. ☼ (min. 4°C/39°F)

***P. verticillatus***. Mat-forming, semi-succulent perennial with creeping stems rooting at the nodes. Ovate to rounded, coarsely toothed, soft, fleshy leaves, 1.5–4cm (½–1½in) long, have purplish green undersides. Terminal spikes, 16cm (6in) long, of whorled, tubular, 2-lipped, purple-speckled, white or pale mauve flowers, 1.5–2.5cm (½–1in) across, are produced in summer. ↑ 6–8cm (2½–3in), ↔ indefinite. South Africa (Northern Transvaal, Eastern Transvaal, Eastern Cape), Swaziland, Mozambique. ☼ (min. 10°C/50°F)

## PLEIOBLASTUS

GRAMINEAE/POACEAE

Genus of about 20 upright, evergreen, woody bamboos usually found in woodland and woodland margins in China and Japan. They are cultivated for their leaves, which are linear to lance-shaped, 5–35cm (2–14in) long, often tessellated, sometimes variegated, and usually white-bristled on the margins. They have generally vigorously spreading rhizomes, and produce thickets of erect woody canes, round in section, and either hollow or almost solid; on the lower part of each cane there are 1–7 branches per node. Spikes or racemes of spikelets, each containing 5–13 florets, are sometimes produced, but flowering occurs only rarely. They are suitable for growing in open glades in a woodland garden.

• **HARDINESS** Fully hardy.

*Pleioblastus auricomus*

• **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun, or in partial shade if not variegated. Provide shelter from cold, dry winds. Some are vigorous, requiring restraint.

• **PROPAGATION** Separate rhizomes in spring; keep divisions moist until established.

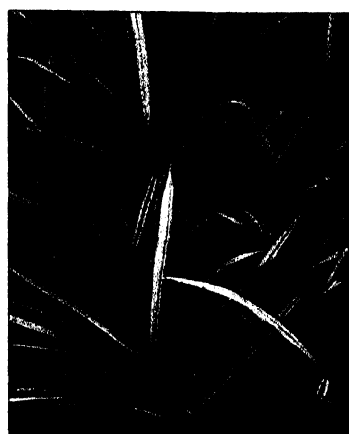
• **PESTS AND DISEASES** Trouble free.

***P. auricomus*** [♀] syn. *Arundinaria auricoma*, *A. viridistriata*, *P. viridistriatus*. Upright bamboo with

short-running rhizomes and hollow, purple-green canes with hairy nodes. The leaves, to 18cm (7in) long, are linear, brilliant yellow with green stripes, and margined with fine bristles. ↑ to 1.5m (5ft), ↔ 1.5m (5ft). Japan. \*\*\*

***P. humilis***, syn. *Arundinaria humilis*, *Sasa humilis*. Upright bamboo with hollow, dark green canes, 1–3 branches per node, and linear, mid-green leaves, to 20cm (8in) long, sometimes downy beneath. Can be very invasive. ↑ 1.5m (5ft), ↔ 2m (6ft) or more. Japan. \*\*\*

***P. pygmaeus***, syn. *Arundinaria pygmaea* (Pygmy bamboo). Upright, woody bamboo with usually solid, mid-green

*Pleioblastus variegatus*

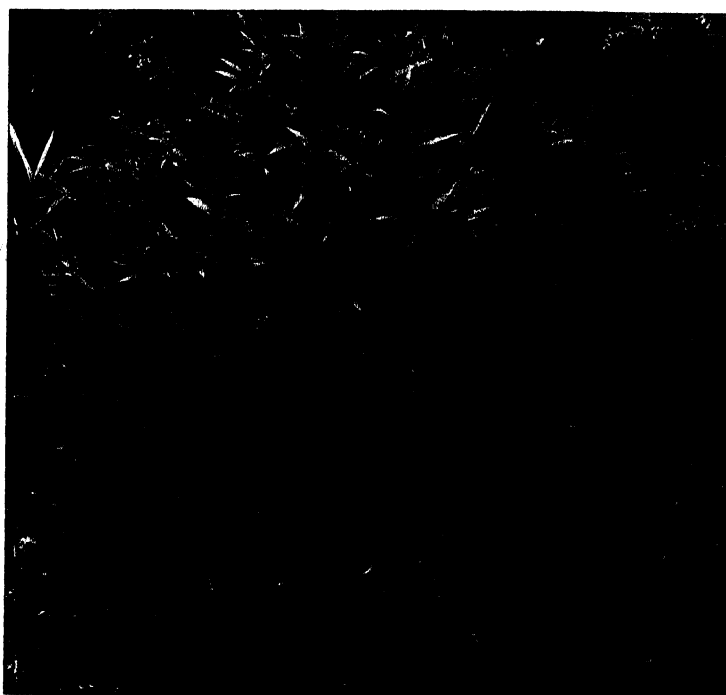
canes, flattened above; they are purplish-green at the tips, with 1 or 2 branches at each node. The leaves are linear, tessellated, downy, mid-green, and 8cm (3in) long. ↑ 40cm (16in), ↔ 1m (3ft). Japan. \*\*\*

**var. *distichus*** [♀] syn. *Arundinaria disticha*, *A. pygmaea* var. *disticha*, has hollow canes and hairless leaves; ↑ 1m (3ft), ↔ 1.5m (5ft).

***P. simonii* 'Variegatus'**, syn. *Arundinaria simonii* 'Variegata', *P. simonii* f. *variegatus*. Upright, woody bamboo with hollow canes, which have a waxy bloom and 3 branches at each white node. Mid-green, linear to lance-shaped leaves, to 20cm (8in) long, are sometimes striped white, and are finely downy beneath. ↑ 3m (10ft), ↔ 2m (6ft) or more. Japan. \*\*\*

**f. *variegatus*** see *P. simonii* 'Variegatus'. ***P. variegatus*** [♀] syn. *Arundinaria fortunei*, *A. variegata*. Upright, woody bamboo with hollow, pale green canes; the nodes have a white, waxy bloom beneath and each bears 1 or 2 branches. Linear leaves, 14cm (5½in) long, are dark green with cream stripes, and have fine white hairs on both sides. ↑ 75cm (30in), ↔ 1.2m (4ft). Japan. \*\*\*

***P. viridistriatus*** see *P. auricomus*.

*Pleioblastus pygmaeus* var. *distichus*

## PLEIONE

ORCHIDACEAE

Genus of about 16–20 species of small, deciduous, epiphytic, terrestrial, or lithophytic orchids mainly from wet forest or woodland, at altitudes of 1,000–4,000m (3,250–13,000ft) or higher, from N. India to S. China and Taiwan. They produce short-lived, variably shaped pseudobulbs with 1 or 2 folded, lance-shaped to elliptic, mid-green leaves, 15cm (6in) long, which usually fall before flowering. The often solitary flowers, 8cm (3in) across, are borne on short stems, 5–10cm (2–4in) long, from new growth, at various times of the year. Grow most species in a cool or temperate greenhouse or alpine house, or as houseplants. In areas where temperatures seldom fall below -5°C (23°F), *P. formosana* may be grown in a sheltered rock garden.

• **HARDINESS** Half hardy; some are frost hardy in areas where winter frost is not continuous.

• **CULTIVATION** Cool-growing orchids. Grow in shallow pans of terrestrial or epiphytic orchid compost. Report annually before flowering. Water freely in spring and summer until the leaves begin to die down, then keep just moist and admit full light. In summer, provide bright filtered light and moderate humidity, mist twice daily, and feed at every third watering. In winter, allow a period of rest, reducing the temperature to 0–2°C (32–35°F). Outdoors, grow *P. formosana* in sharply drained, moderately fertile, leafy, humus-rich soil in a sheltered site in partial shade. Plant in mid-spring. In cold areas, protect from severe weather and excessive wet with an open cloche, from early autumn to spring. See also p. 46.

• **PROPAGATION** Divide annually when reporting, discarding old pseudobulbs.

• **PESTS AND DISEASES** Prone to aphids, red spider mites, slugs, and mealybugs.

***P. bulbocodioides*** [♀] Terrestrial or lithophytic orchid with almost spherical pseudobulbs, each bearing one folded, lance-shaped to elliptic leaf, to 14cm (5½in) long. In spring, bears solitary, rose-lilac flowers, with white to pink lips spotted with pale brown or purplish pink. ↑ 15cm (6in), ↔ 30cm (12in). Burma, China, Taiwan. \* (borderline)

***P. Eiger*** [♀] (*P. formosana* x *P. humilis*). Terrestrial or lithophytic orchid with large, pear-shaped pseudobulbs, each bearing one elliptic leaf, to 18cm (7in) long. In mid- and late winter, produces white flowers, shaded pink, 1 or 2 per stem, with white lips marked red, or red and yellow. ↑ 12cm (5in), ↔ 5cm (2in). \* (borderline)

***P. formosana*** [♀] Terrestrial or lithophytic orchid with almost spherical pseudobulbs, each bearing one folded, lance-shaped to elliptic leaf, to 14cm (5½in) long. In spring, bears solitary, pale rose-lilac flowers with white lips that have brownish markings, pink margins, and brown or purplish pink spots. ↑ 15cm (6in), ↔ 30cm (12in). E. China, Taiwan. \* (borderline)

***P. forrestii***. Terrestrial or lithophytic orchid with conical pseudobulbs, each bearing one folded, lance-shaped leaf, 10–15cm (4–6in) long. In winter and



*Pleione bulbocodioides*

spring, produces solitary yellow flowers with red-dotted lips. ↓ 15cm (6in), ↔ 30cm (12in). China. \* (borderline)

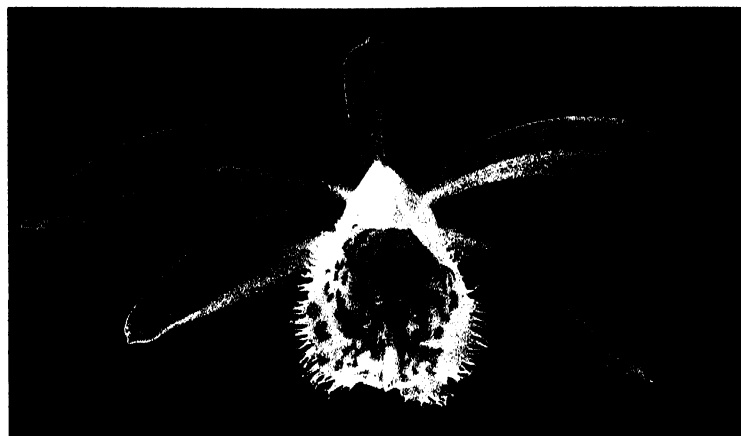
***P. hookeriana***. Epiphytic or lithophytic orchid with conical to ovoid pseudobulbs, each bearing one folded, lance-shaped to elliptic leaf, 5–21cm (2–8in) long. In summer, produces very pale pink to pale purple flowers, 5cm (2in) across, with solitary, white to pale pink lips. ↓ 10cm (4in), ↔ 15cm (6in). Tibet, Nepal, N.E. India, Bhutan, Burma, Laos, N. Thailand, China. \* (borderline)

***P. humilis***. Epiphytic or lithophytic orchid with conical pseudobulbs, each bearing one folded, lance-shaped leaf, 20–30cm (8–12in) long. From winter to spring, produces solitary white flowers with red-streaked lips. ↓ 15cm (6in), ↔ 30cm (12in). Nepal, N.E. India, Burma. \* (borderline)

***P. x lagenaria*** (*P. maculata* x *P. praecox*). Epiphytic or lithophytic orchid with inverted, cone-shaped pseudobulbs, each bearing 2 folded, lance-shaped leaves, to 30cm (12in) long. Fragrant, pink to rose-lilac to purple flowers, with a yellow central area and purple marks around the margins, are borne 1 or 2 per



*Pleione Eiger*



*Pleione formosana*

pseudobulb, in autumn. ↓ 15cm (6in), ↔ 30cm (12in). India (Assam), possibly S. China. \* (borderline)

***P. limprichtii***. Epiphytic or lithophytic orchid with conical, ovoid or pear-shaped pseudobulbs, each bearing one folded, conical to ovoid leaf, to 14cm (5½in) long. In spring, deep pink to pink-magenta flowers, with rose-red spotted lips, are borne 1 or rarely 2 per pseudobulb. ↓ 15cm (6in), ↔ 30cm (12in). S.W. China, possibly N. Burma. \* (borderline)

***P. maculata***. Epiphytic or lithophytic orchid with barrel-shaped pseudobulbs, each bearing 2 folded, lance-shaped to elliptic leaves, 15–30cm (6–12in) long. In autumn, produces solitary, white or pale cream flowers, sometimes streaked with pink, the lips white with purple markings and a central yellow patch. ↓ 15cm (6in), ↔ 30cm (12in). N. India, Bhutan, Burma, S.W. China, N. Thailand. \* (borderline)

***P. praecox***. Epiphytic or lithophytic orchid with bottle-shaped pseudobulbs, each bearing 2 folded, lance-shaped to narrowly elliptic leaves, to 20cm (8in) long. Solitary, bright rose-purple flowers are produced in autumn. ↓ 15cm (6in), ↔ 30cm (12in). Nepal, N. India (Sikkim), Bhutan, Burma, S.W. China, Thailand. \* (borderline)

***P. Stromboli 'Fireball'*** (*P. bulbocodioides* x *P. speciosa*). Epiphytic orchid with conical pseudobulbs, each bearing one folded, lance-shaped to narrowly elliptic leaf, to 25cm (10in) long. In spring, produces solitary, rose-lilac flowers with lips that have reddish pink markings. ↓ 15cm (6in), ↔ 30cm (12in). \* (borderline)

## PLEIOSPILOS

*Living granite*

AIZOACEAE

Genus of about 35 species of solitary or clump-forming, stemless, perennial succulents from arid areas of South Africa. They are grown for their unusual form and attractive flowers. Most have 1 or 2, occasionally 3 pairs of often unequal, erect, very fleshy, greyish or yellowish green or brown to red leaves, often with variably coloured dots; they are usually flattened on the upper surfaces, keeled, rounded, or rounded and partly keeled beneath, and united at the bases. The daisy-like, diurnal, yellow or orange flowers, which sometimes have a coconut-like fragrance, open in

late summer and early autumn. In areas where temperatures drop below 7°C (45°F), grow as houseplants or in a temperate greenhouse. In warm, dry climates, grow in a raised bed or succulent border.

• **HARDINESS** Frost tender.

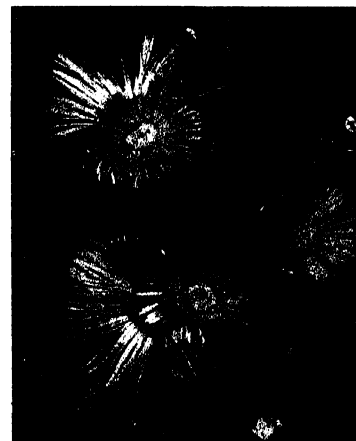
• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From early summer to late autumn, water sparingly but regularly and apply a low-nitrogen liquid fertilizer every 4–6 weeks. Keep dry at all other times. Outdoors, grow in low-fertility, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or detach offsets, from late spring to summer.

• **PESTS AND DISEASES** Vulnerable to aphids while flowering.

***P. bolusii*** □ ♀ Usually solitary, perennial succulent with one pair of ovoid, grey-green leaves, 4–7cm (1½–3in) long, sometimes tinged red and with dark green dots; they are generally broader than long, with the undersides more rounded and partly keeled. Daisy-like, golden yellow flowers, 6–8cm (2½–3in) across, are solitary or produced in cymes of 2–4 in late summer and early autumn. ↓ 8cm (3in), ↔ 15cm (6in). South Africa (Eastern Cape). ♀ (min. 7°C/45°F)

***P. nelii***. Solitary, perennial succulent with up to 3 pairs of unequal, almost hemispherical, densely dotted, greyish green leaves, 4–8cm (1½–3in) long, with the tips of the very rounded undersides drawn over the flat upper



*Pleiospilos bolusii*



*Pleiospilos simulans*

surfaces. In late summer and early autumn, produces solitary, daisy-like, orange-pink flowers, 7cm (3in) across. ↓ 7cm (3in), ↔ 12cm (5in). South Africa (Western Cape, Eastern Cape). ♀ (min. 7°C/45°F)

***P. simulans*** □ Clump-forming, perennial succulent bearing one pair of slightly unequal, ovate to 3-angled, spreading, densely dotted, reddish, yellowish, or brownish green leaves, 5–8cm (2–3in) long, the keeled undersides thickening towards the tips. Daisy-like, scented, yellow or orange flowers, 6cm (2½in) across, are solitary or produced in cymes of 1–3 in late summer and early autumn. ↓ 10cm (4in), ↔ 30cm (12in). South Africa (Eastern Cape). ♀ (min. 7°C/45°F)

▷ ***Pleroma macrantha*** see *Tibouchina urvilleana*

## PLEUROTHALLIS

ORCHIDACEAE

Genus of about 900 species of mainly small, evergreen, epiphytic or rarely lithophytic orchids found in tropical North, Central, and South America, from Mexico to Peru and Brazil; they occur in forest from low altitudes to over 2,500m (8,000ft). Although extremely variable in form and habit, they typically produce slender stems on creeping rhizomes, with a solitary, lance-shaped to almost rounded, leathery, mid-green leaf at the apex of each stem. One or many flowers, 1.5–3cm (½–1¼in) across, may be produced singly or in racemes from the base of each leaf.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow epiphytically on bark, or pot tightly into small containers of epiphytic orchid compost made with fine-grade bark. In summer, provide bright filtered light and high humidity; water freely, mist twice daily, and apply a balanced liquid fertilizer at every third watering. In winter, admit full light and water more sparingly. See also p.46.

• **PROPAGATION** Divide when the plant fills the pot and “flows” over the sides.

• **PESTS AND DISEASES** May be infested by red spider mites, aphids, and mealybugs.

***P. grobyi***. Small, epiphytic orchid bearing fleshy, lance-shaped to narrowly ovate leaves, 7cm (3in) long, with blunt

or rounded tips. Loose racemes of translucent, pale yellow to green flowers, 1cm (½in) long, with scattered purple veins, streaked with brown, are borne above the foliage in summer. ‡ 8cm (3in), ↔ 10cm (4in). Mexico, West Indies, Central and South America. ☼ (min. 10°C/50°F; max. 24°C/75°F)

▷ **Plum,**

**Cherry** see *Prunus cerasifera*

**Date** see *Diospyros lotus*

**Indian** see *Oemleria cerasiformis*

**Natal** see *Carissa macrocarpa*

**Oregon** see *Oemleria cerasiformis*

## PLUMBAGO

Leadwort

PLUMBAGINACEAE

Genus of 10–15 species of annuals, perennials, and evergreen shrubs and scandent climbers from tropical woodland and scrub in warm-temperate to tropical regions worldwide. They have alternate, simple, entire leaves, and are grown for their terminal, sometimes corymb-like racemes of attractive, white, red, or blue, salverform flowers, each with 5 spreading petal lobes. Where temperatures fall below 7°C (45°F), grow in a cool or temperate greenhouse or conservatory; plants grown in containers can be moved outdoors in summer. In warmer climates, use shrub and perennial species in a mixed or shrub border; train climbers over a pergola or arch.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. Top-dress or pot on in spring. During the growing season, water freely and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Tie stems to supports. Pruning group 12 for climbers, in early spring; group 8 for shrubs. May need restrictive pruning under glass.

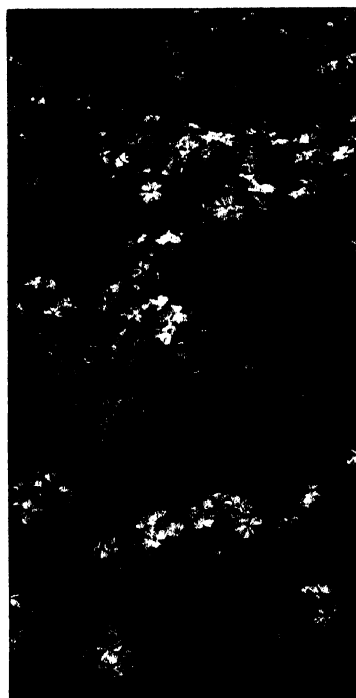
• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or root semi-ripe cuttings in midsummer with bottom heat. Take softwood cuttings from *P. indica* in late spring or early summer, or insert root cuttings in late winter.

• **PESTS AND DISEASES** Red spider mites, whiteflies, and mealybugs may be a problem under glass.

*P. auriculata* ☼♀ syn. *P. capensis* (Cape leadwort). Scandent, evergreen shrub, grown as a climber, with slender, whippy, moderately branching stems. Oblong to oblong-spoon-shaped leaves, 4–7cm (1½–3in) long, are mid- to bright matt green, sometimes with a blue-grey tone. Bears long-tubed, sky-blue flowers, 4cm (1½in) long, in dense, terminal, corymb-like racemes, 15cm (6in) across, from summer to late autumn. ‡ 3–6m (10–20ft), ↔ 1–3m (3–10ft). South Africa. \* var. *alba* bears pure white flowers.

*P. capensis* see *P. auriculata*.

*P. indica*, syn. *P. rosea* (Scarlet leadwort). Small, evergreen shrub becoming spreading or semi-scandent if not pruned annually. Ovate-elliptic leaves, 5–11cm (2–4½in) long, are mid- to deep green. Long-tubed, red to deep rose-pink flowers, 2.5cm (1in) long, are



*Plumbago auriculata*

borne in terminal racemes, 10–30cm (4–12in) long, in winter (earlier if unpruned). ‡ to 2m (6ft), ↔ to 1m (3ft). S.E. Asia. ☼ (min. 7°C/45°F)

*P. larpentiae* see *Ceratostigma plumbaginoides*.

*P. rosea* see *P. indica*.

▷ **Plume,**

**Brazilian** see *Justicia carnea*

**Scarlet** see *Euphorbia fulgens*

▷ **Plume plant** see *Calomeria amaranthoides*

## PLUMERIA

Frangipani, Pagoda tree, West Indian jasmine

APOCYNACEAE

Genus of 7 or 8 species of deciduous or semi-evergreen shrubs and small trees, with succulent stems and very thick, fleshy branches, from tropical and subtropical America. The simple, entire leaves, clustered towards the stem tips, are alternately or spirally arranged. The fragrant, salverform flowers, each with 5 broad petal lobes, are borne in showy, terminal clusters or panicles, often on bare stems or with the young leaves. Below 10°C (50°F), grow in a temperate or warm greenhouse, or as houseplants. In warmer climates, use as specimen plants. The milky sap may cause mild stomach upset if ingested.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep almost dry in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 1; need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 18°C (64°F) in spring. Take ripe cuttings of leafless stem tips in early spring; allow these to dry at the bases before inserting.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*P. acuminata* see *P. rubra* var.

*acutifolia*.

*P. acutifolia* see *P. rubra* var. *acutifolia*.

*P. alba* ☼♀ (West Indian jasmine).

Large, deciduous shrub or small, spreading tree with robust, sparsely branched, very thick stems. Spirally arranged, lance-shaped, slightly wrinkled, rich green leaves, to 30cm (12in) long, are usually finely hairy beneath. Salverform, yellow-eyed white flowers, 6cm (2½in) across, are produced in terminal panicles from summer to autumn. ‡ to 6m (20ft), ↔ to 4m (12ft). Puerto Rico, Lesser Antilles. ☼ (min. 10–13°C/50–55°F)

*P. rubra* ☼♀ (Common frangipani).

Large, deciduous shrub or small, sparsely branched tree, upright in habit, with very thick stems bearing alternately arranged, broadly elliptic to oblong or inversely lance-shaped, mid-green leaves, 20–40cm (8–16in) long, with paler midribs. Salverform, yellow-eyed flowers, 7–10cm (3–4in) across, usually rose-pink but sometimes yellow or red to bronze, are produced in terminal panicles from summer to autumn. ‡ to 7m (22ft), ↔ to 5m (15ft). Mexico to Panama. ☼ (min. 10–13°C/50–55°F). var. *acutifolia*, syn. *P. acuminata*, *P. acutifolia*, produces oblong-elliptic, pointed, dark green leaves, to 10cm (4in) long, on long stalks. Terminal panicles of salverform, very fragrant, yellow-centred white flowers, 8–9cm (3–3½in) across, with widely spreading petals, are produced from late summer to autumn. ‡ 4m (12ft), ↔ to 2m (6ft). Mexico to Panama, N. South America, West



*Plumeria rubra*

Indies. f. *tricolor* bears pink-margined white flowers with yellow eyes.

▷ **Plum yew** see *Cephalotaxus*,

*C. harringtoniana*, *Prumnopitys andina*

**Fortune** see *Cephalotaxus fortunei*

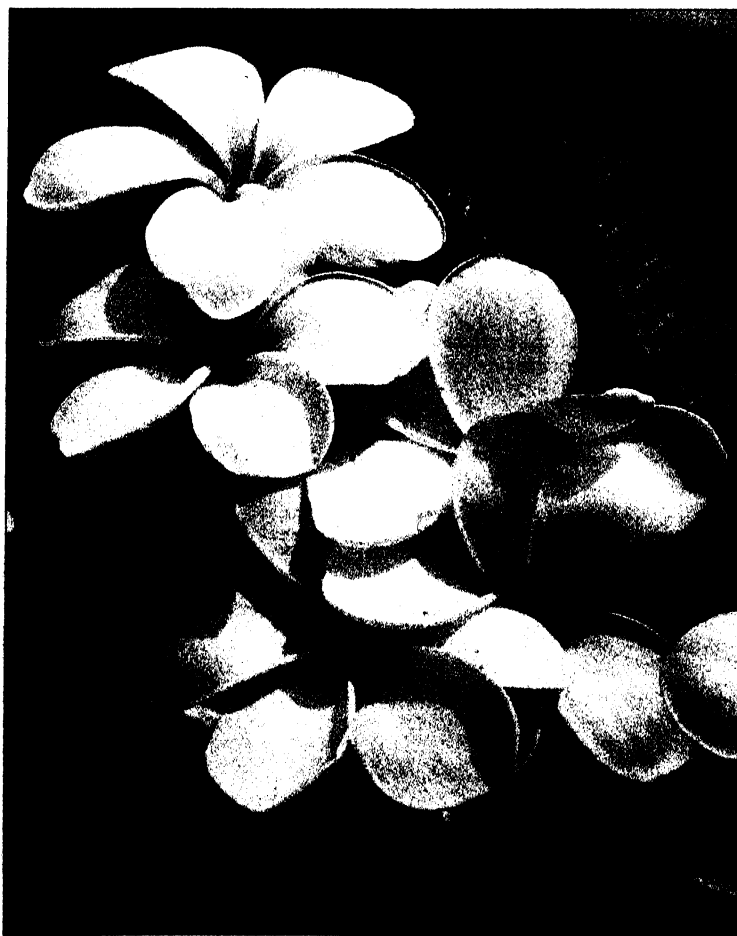
▷ **Plush plant** see *Echeveria pulvinata*

## POA

Meadow grass, Spear grass

GRAMINEAE/POACEAE

Genus of about 500 species of mainly perennial grasses (some are annuals) found in cool-temperate regions in a wide range of habitats from seashores to alpine zones. They include a number of important fodder, lawn, and pasture grasses. Of variable habit, they are



*Plumeria alba*

grown for their narrowly linear, flat to folded leaves and open or compact, summer-flowering panicles. Most cultivated species are grown as turf grasses or for agricultural purposes.

*P. alpina* var. *vivipara* is grown as a curiosity, either in a rock garden or at the front of a border. *P. chaixii* and other ornamental species are suitable for a border, and for naturalizing in woodland and other shady situations.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, medium to light, well-drained soil in full sun or partial shade. Remove flowering stems in autumn to prevent self-seeding; cut back dead foliage in early spring.

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn, or divide between mid-spring and early summer. Peg down mature flowerheads of *P. alpina* var. *vivipara* to allow plantlets to root.

• **PESTS AND DISEASES** Trouble free.

*P. alpina* (Alpine meadow grass). Densely tufted perennial with neat mounds of thick, flat, linear, short-pointed, mid-green leaves, 4–10cm (1½–4in) long. From early to late summer, produces dense, ovoid-pyramidal, short-branched, purplish green flowering panicles, to 7cm (3in) long. ↑ 30cm (12in), ↔ 20cm (8in). W. Europe to C. Asia. \*\*\* var. *vivipara* has panicles in which flower spikelets have been replaced by tiny plantlets.

*P. chaixii*. Densely tufted perennial bearing flat or folded, unusually broad, linear, glossy, bright green leaves, to 45cm (18in) long and 1cm (½in) wide, each abruptly contracted at the tip to form a "hood". In late spring and early summer, bears open, slightly nodding, straight-branched, ovate to ovate-oblong, pale green, often purple-tinted flowering panicles, to 25cm (10in) long, on strong, erect stems held well above the foliage. ↑ 1m (3ft), ↔ 45cm (18in). Europe, S.W. Asia, North America. \*\*\*

▷ **Poached egg plant** see *Limnanthes*, *L. douglasii*

## PODALYRIA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 25 species of evergreen shrubs from woodland, forest margins, and streamsides in southern Africa. They have simple, usually densely hairy leaves with rolled margins, and are grown for their fragrant, pea-like flowers, borne singly or in pairs from the leaf axils. Where temperatures fall below 7°C (45°F), grow in a cool greenhouse. In warmer areas, grow in a shrub border or at the base of a house wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 8; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*P. sericea*. Spreading, densely leafy shrub with obovate leaves, 2cm (¾in) long, thickly covered with silver-silky hairs that age to gold. From autumn to spring, produces solitary, upright, pea-like, fragrant, lavender-blue to lavender-pink flowers, 1cm (½in) across, with a purple mark at each petal base. ↑ 45–90cm (18–36in), ↔ 45–100cm (18–39in). South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 7°C/45°F)

▷ **Podocarp**,

**Tasmanian** see *Podocarpus alpinus*

**Willowleaf** see *Podocarpus salignus*

## PODOCARPUS

POIXCARPACEAE

Genus of about 100 species of dioecious, occasionally monoecious, evergreen, coniferous trees and shrubs from forest habitats, mainly in warm-temperate to tropical zones. They are grown for their spirally arranged leaves, which are variable in shape and are mainly borne in 2 ranks. Male and female flowers are usually borne on separate trees: the males are yellow or red, solitary or in axillary clusters of up to 5, or, in some species, borne in narrow, catkin-like cones; the females are green and produced in cone-like structures. Male and female plants are both needed to produce the plum-shaped, rounded to oblong, usually single-seeded fruits, which have fleshy, often red arils at the bases.

Grow as specimens or in a woodland garden; *P. alpinus* and *P. nivalis* are also suitable for a shrub border or large rock garden. *P. macrophyllus* needs long, hot, humid summers to achieve tree stature, remaining shrub-like in cooler areas; it is sometimes used for hedging. The frost-tender species are attractive specimens in warm climates, but need temperate or warm greenhouse protection in frost-prone areas.

• **HARDINESS** Fully hardy to frost tender.

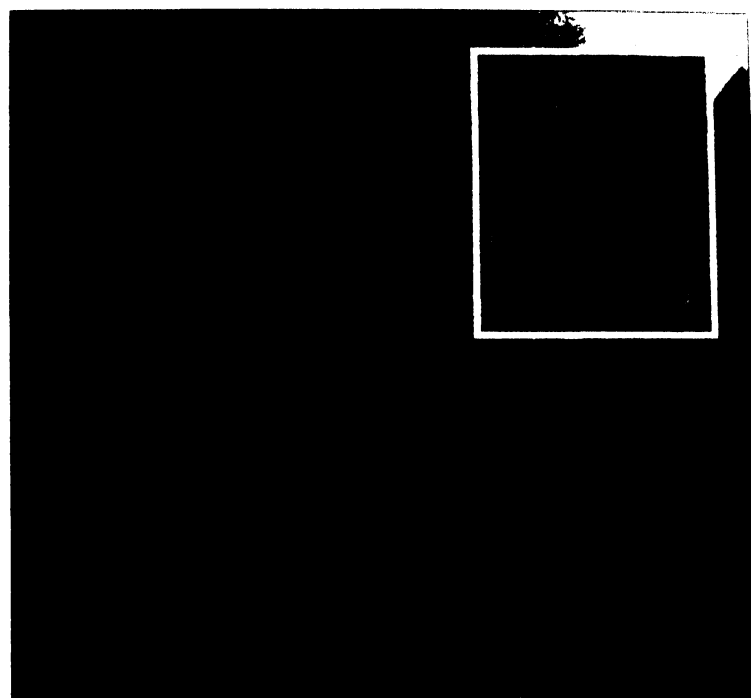
• **CULTIVATION** Tolerant of a range of soils but best in fertile, moist but well-drained, humus-rich soil in full sun, with shelter from cold, dry winds. Most species thrive best in humid or high-rainfall climates.

• **PROPAGATION** Sow seed as soon as ripe, or in containers in an open frame in spring; germination may take as long as 12–18 months. Take semi-ripe cuttings from upright leading shoots in late summer.

• **PESTS AND DISEASES** Trouble free.

*P. alpinus* (Tasmanian podocarp). Spreading, dense, rounded shrub bearing slender green shoots. Linear, dull green leaves, 6–12mm (¼–½in) long, each with 2 grey bands beneath, are parted on either side of the shoots. Male flowers are produced in yellow, catkin-like cones, female flowers in green cone-like structures. Ovoid, bright red fruit, 6mm (¼in) long, are produced in autumn on female plants. ↑↔ to 2m (6ft). Australia (New South Wales, Tasmania). \*\*\*

*P. andinus* see *Prumnopitys andina*.



*Podocarpus nivalis* (inset: fruit detail)

*P. macrophyllus* △ (Kusamaki). Conical tree, becoming domed, with reddish brown bark and erect or spreading, yellowish green shoots. Lance-shaped, firm, leathery leaves, 6–10cm (2½–4in) long, are light green becoming dark green above, each with 2 glaucous bands beneath, and are erect or spreading on the shoots. Male flowers are borne in yellow, catkin-like cones, female flowers in green cone-like structures. Ovoid, reddish purple fruit, about 1cm (½in) long, are borne in autumn on female plants. ↑ to 15m (50ft), ↔ 6–8m (20–25ft). E. China, Japan. \*\*

*P. nivalis* ▣ (Alpine totara). Spreading, dense, rounded shrub, very similar to *P. alpinus*, but with more rigid, linear, green-bronze leaves, 1–2cm (½–¾in) long, set radially around the slender, mid-green shoots, unparted on either side. Male flowers are borne in yellow, catkin-like cones, female flowers in green cone-like structures. Oblong, bright red fruit, 6mm (¼in) long, are produced in autumn on female plants. ↑↔ to 2m (6ft). New Zealand. \*\*\*

*P. salignus* ▣ ▣ ▣ (Willowleaf podocarp). Columnar or broadly conical



*Podocarpus salignus*

tree with spreading, later pendent branches, fibrous, peeling, red-brown bark, and green shoots that become grey-brown with age. Spreading, linear, often sickle-shaped leaves, 5–11cm (2–4½in) long, are dark bluish green (with a ridge above), and yellow-green beneath; they occur mainly near the shoot tips. The male flowers are borne in yellow, catkin-like cones, female flowers in green cone-like structures. Egg-shaped, green or dark violet fruit, 8mm (⅓in) long, are produced in autumn on female plants. Very graceful as a mature tree. ↑ to 20m (70ft), ↔ 6–9m (20–28ft). Chile. \*\*\*

## PODOPHYLLUM

BERBERIDACEAE

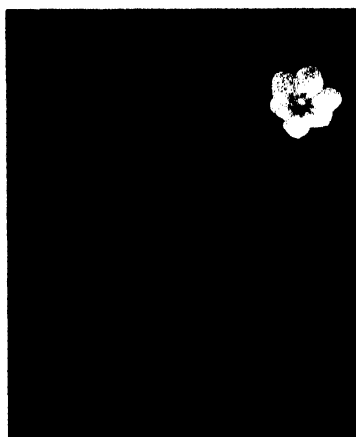
Genus of about 9 species of shade-loving, rhizomatous perennials, cultivated for their foliage and flowers, from scrub and forest in North America and from the Himalayas to China and Taiwan. Each plant has 1 or 2 peltate, palmately lobed, radical leaves, sometimes with purplish brown patches between the conspicuous veins; the leaves are pushed up by the lengthening leaf-stalks and emerge looking like tiny, folded umbrellas. Terminal, cup-shaped, pink, white, or red flowers are solitary or produced in small umbels, and are followed by red or yellow fruits, 2.5–5cm (1–2in) long. Podophyllums are suitable for a woodland garden or moist, shady border. All parts of the plants are highly toxic if ingested.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in humus-rich, leafy, moist soil in full or partial shade (*P. peltatum* tolerates drier soil). In cold areas, protect frost-hardy species with a dry winter mulch.

• **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide in spring or late summer.

• **PESTS AND DISEASES** Susceptible to slug damage in spring as the leaves emerge.



*Podophyllum hexandrum*

*P. emodi* see *P. hexandrum*.

*P. hexandrum* [G] syn. *P. emodi*.

Rhizomatous perennial bearing long-stalked, 3- to 5-lobed, deeply toothed, mid-green leaves, to 25cm (10in) long, with purplish brown markings; they unfurl after flowering. Solitary, open cup-shaped, usually 6-petaled, white or pale pink flowers, 2.5–5cm (1–2in) across, with prominent yellow anthers, are borne from late spring to midsummer; they are followed by plum-like, ovoid, fleshy red fruit, to 5cm (2in) long. ‡45cm (18in), ↔ 30cm (12in). N. India (Himalayas) to China. \*\*\*  
*P. japonicum* see *Ranunculus japonica*.  
*P. peltatum* (American mandrake, May apple). Creeping, rhizomatous perennial producing long-stalked, 5- to 9-lobed, toothed, sometimes 2-cleft, glossy leaves, to 30cm (12in) long, well-developed at flowering. Solitary, semi-pendent, shallowly cup-shaped, usually 9-petaled, fragrant, waxy white to pale pink flowers, 5cm (2in) across, are produced beneath the leaves from mid-spring to early summer; they are followed by edible, ovoid, yellowish green fruit, 2.5–5cm (1–2in) long. ‡45cm (18in), ↔ 1.2m (4ft) or more. North America (Ontario and Quebec to Texas and Florida). \*\*\*

*P. pleianthum* (Chinese may apple). Rhizomatous perennial with shallowly 6- to 10-lobed, finely toothed, glossy leaves, to 35cm (14in) long. Clusters of 5–8 cup-shaped, deep crimson to purple flowers are borne in the leaf axils in summer, followed by ovoid-spherical, dark red fruit, 2.5cm (1in) long. ‡75cm (30in), ↔ 45cm (18in). C. and S.E. China, Taiwan. \*\*

## PODRANEA

BIGNONIACEAE

Genus of 2 species of woody-stemmed, evergreen climbers from open woodland, one species from Zimbabwe, the other from S. Africa. They have pinnate leaves, borne in opposite pairs, and are cultivated for their 5-lobed, trumpet-shaped, foxglove-like flowers. Where temperatures regularly fall below 0°C (32°F), grow in a cool or temperate greenhouse. In milder climates, they are suitable for a pergola or arch, or cascading from a tree.

• **HARDINESS** Frost tender; may survive short spells near to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3)

in bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in light dappled or partial shade. Pruning group 12, immediately after flowering.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, take semi-ripe cuttings in summer, or layer in spring.

• **PESTS AND DISEASES** Prone to red spider mites and mealybugs under glass.

*P. ricasoliana*, syn. *Pandorea ricasoliana*, *Tecoma ricasoliana* (Pink trumpet vine). Scandent, twining climber, becoming bushy with age, with pinnate leaves, to 25cm (10in) long, composed of 5–11 lance-shaped to ovate, unevenly toothed, rich green leaflets with slender points. Produces loose, terminal panicles of about 12 trumpet-shaped pink flowers, to 6cm (2½in) long, with red veins, paler tubes, and wavy-margined, round lobes, from winter to summer, depending on temperature. ‡3–5m (10–15ft). South Africa (Eastern Cape, KwaZulu/Natal). ☼ (min. 10°C/50°F)

▷ **Pohutakawa** see *Metrosideros*

**Common** see *M. excelsus*

▷ **Poinciana gilliesii** see *Caesalpinia gilliesii*

▷ **Poinciana pulcherrima** see *Caesalpinia pulcherrima*

▷ **Poinciana regia** see *Delonix regia*

▷ **Poinsettia** see *Euphorbia pulcherrima*

**Annual** see *E. cyathophora*

▷ **Poison arrow plant** see *Acokanthera*

*oblongifolia*

▷ **Poison bulb** see *Crinum asiaticum*

▷ **Poke, Indian** see *Veratrum viride*

▷ **Pokeweed** see *Phytolacca*, *P. americana*

▷ **Polar plant** see *Silphium laciniatum*

## POLEMONIUM

Jacob's ladder

POLEMONIACEAE

Genus of about 25 species of deciduous, clump-forming or occasionally rhizomatous perennials and annuals, found in stony, arctic or alpine soils, often by streams, or in damp meadows, woodland, or scrub, in Europe, Asia, North America, and Central America. Most have basal clumps of unequally pinnate leaves, usually with numerous leaflets, and erect or decumbent stems bearing smaller leaves. They are grown for their spring and summer flowers,



*Polemonium caeruleum*



*Polemonium carneum*

which are bell-shaped, saucer-shaped, narrowly tubular, or funnel-shaped and spreading at the mouths; they are usually white or blue, sometimes purple, pink, or yellow, and either solitary or in terminal or axillary cymes. Grow taller species in a border or wild garden, the smaller, alpine species in a rock garden, scree bed, or alpine house. *P. caeruleum* grows well in grass. *P. brandegeei* and *P. pauciflorum* are usually short-lived.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow tall species in any fertile, well-drained but moist soil, preferably in full sun or partial shade.

Grow small species in gritty, sharply

drained soil in full sun with some

midday shade. Dead-head regularly.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring, or divide in spring.

• **PESTS AND DISEASES** Powdery mildew may be a problem.

*P. brandegeei*. Clump-forming, perennial bearing mainly basal, sticky, pinnate leaves, to 10cm (4in) long, with many lance-shaped leaflets, each to 1.5cm (½in) long. In early summer, upright stems bear short, terminal cymes

of long-tubed, funnel-shaped, pale to deep golden yellow, rarely white flowers, to 2.5cm (1in) long. \*\*\*. **subsp.**

*mellitum*, syn. *P. mellitum*, bears looser cymes of white or pale cream flowers in summer. ‡20cm (8in), ↔ 15cm (6in). USA (Rocky Mountains).

*P. caeruleum* [G] (Greek valerian, Jacob's ladder). Clump-forming perennial, mainly hairless but softly hairy near the inflorescences. Bears 2-pinnate leaves, to 40cm (16in) long, each composed of 19–27 oblong-lance-shaped leaflets, 1.5–4cm (½–1½in) long. Lax, terminal or axillary cymes of open bell-shaped, lavender-blue, rarely white flowers, 1–2.5cm (½–1in) across, are produced on erect, branched stems in early summer. ‡30–90cm (12–36in), ↔ 30cm (12in). N. and C. Europe, N. Asia, W. North America. \*\*\*. **var.**

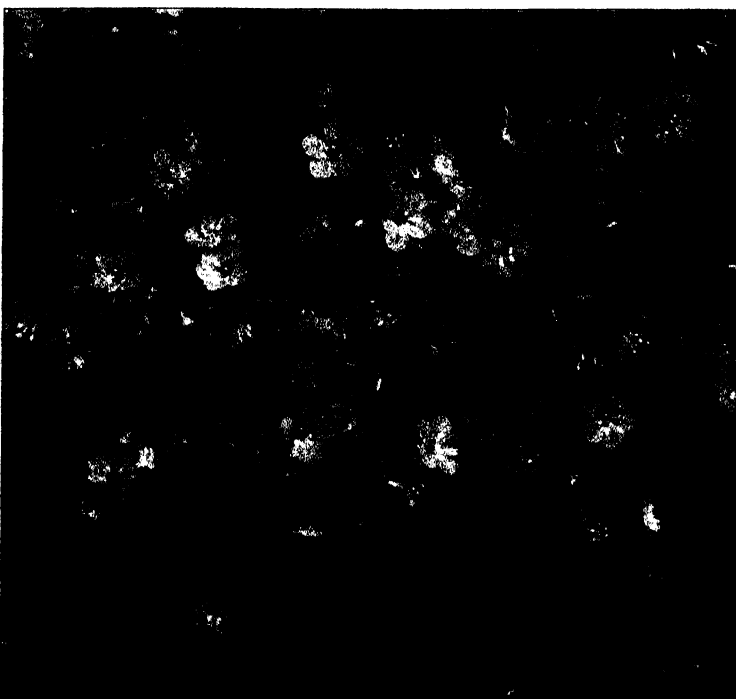
*lactum*, syn. *var. album*, has white flowers.

*P. carneum* [G] Hairless, clump-forming perennial bearing coarsely divided, pinnate leaves, to 20cm (8in) long, with 13–21 elliptic to ovate leaflets, each 0.7–2cm (¼–¾in) long. Lax, terminal cymes of shallowly bell-shaped, pale pink or yellow, sometimes dark purple or lavender flowers, 1–2.5cm (½–1in) across, with yellow centres, are borne on erect, branched stems in early summer. ‡10–40cm (4–16in), ↔ 20cm (8in). USA (Washington to California). \*\*\*

*P. confertum* see *P. viscosum*.

*P. eximium*, syn. *P. viscosum* var. *eximium*. Compact, clump-forming, perennial bearing crowded tufts of pinnate, glandular-sticky leaves, to 10cm (4in) long, with numerous leaflets, each 6–8mm (¼–¾in) long, deeply cut into 3 or 5 segments. Erect, branched stems bear dense, terminal cymes of narrowly funnel-shaped to cylindrical, clear blue flowers, 1.5cm (½in) long, in summer. ‡10–30cm (4–12in), ↔ 15cm (6in). High altitudes in W. USA (California, Sierra Nevada). \*\*\*

*P. foliosissimum*. Leafy, clump-forming perennial producing a few erect, softly



*Polemonium* 'Lambrook Mauve'



*Polemonium pauciflorum*

hairy stems. Pinnate leaves, to 15cm (6in) long, each have 11–25 elliptic-lance-shaped leaflets, 1–5cm (½–2in) long. Dense, axillary and terminal cymes of bell-shaped, blue-violet, cream, or white flowers, to 1.5cm (½in) across, are produced in midsummer. ↑75–80cm (30–32in), ↔60cm (24in). Central W. USA. \*\*\*. **var. flavum** bears yellow flowers that are shaded orange-red outside; ↑40–70cm (16–28in). USA (S. Arizona, New Mexico).

**P. 'Lambrook Mauve'** ☐♀ syn. *P. reptans* 'Lambrook Manor', *P. reptans* 'Lambrook Mauve'. Clump-forming perennial forming rounded mounds of neat, pinnate leaves, to 25cm (10in) long, each composed of 7–19 ovate or oblong leaflets, 3–5cm (1¼–2in) long. Erect, branched stems very freely bear lax, terminal cymes of bell-shaped, lilac-blue flowers, 1.5–2cm (½–¾in) across, in late spring and early summer. ↑↔ to 45cm (18in). \*\*\*

**P. mellitum** see *P. brandegeei* subsp. *mellitum*.

**P. pauciflorum** ☐ Short-lived, clump-forming perennial with spreading to erect, branched, softly hairy stems and mainly pinnate leaves, to 15cm (6in)

*Polemonium pulcherrimum*

long, each composed of 11–25 elliptic-lance-shaped leaflets, to 2.5cm (1in) long. From early to late summer, bears horizontal to semi-pendent, narrowly tubular, red-tinted, pale yellow flowers, 4cm (1½in) across, with spreading mouths, either singly or in loose, few-flowered, terminal or axillary cymes.

↑↔ to 50cm (20in). USA (S.E. Arizona, New Mexico). \*\*\*

**P. pulcherrimum** ☐ Clump-forming perennial with pinnate leaves, to 14cm (5½in) long, each composed of 11–25 ovate leaflets, to 3.5cm (1½in) long. Dense, terminal and axillary cymes of bell-shaped, light blue to purple-blue or white flowers, to 1cm (½in) across, with short tubes, yellow within, are borne on erect, branched stems in early summer.

↑↔ 30cm (12in). North America (Alaska to California). \*\*\*

**P. reptans 'Lambrook Manor'** see *P. 'Lambrook Mauve'*.

**P. reptans 'Lambrook Mauve'** see *P. 'Lambrook Mauve'*.

**P. viscosum**, syn. *P. confertum*. Clump-forming perennial bearing mainly basal, pinnate leaves, to 20cm (8in) long, with whorls of many palmately 3- or 5-lobed leaflets, each to 1.5cm (½in) long. In summer, produces large, terminal cymes of funnel-shaped, deep blue flowers, to 2–3cm (¾–1¼in) across, on upright, branched stems. ↑5–50cm (2–20in), ↔5–20cm (2–8in). North America (mountains from Canada to New Mexico). \*\*\*. **var. eximium** see *P. eximium*.

## POLIANTHES

AGAVACEAE

Genus of 13 species of tuberous perennials found in open woodland and at roadsides in sandy areas in Mexico and Texas. They are grown for their showy, loose racemes or spikes of tubular flowers, borne in summer. The mostly basal leaves are lance-shaped or linear. In frost-prone climates, grow in a warm greenhouse or summer border; elsewhere, grow in a sheltered border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. During the growing season, water moderately, and apply a balanced liquid fertilizer every 2 weeks. Reduce watering as the leaves die down, and keep dry when dormant. Outdoors, grow in moderately fertile, well-drained soil in full sun. Lift before first frosts and store tubers in sand in frost-free conditions.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Remove offsets when the plants are dormant.

• **PESTS AND DISEASES** Prone to viruses.

**P. geminiflora**, syn. *Bravoa geminiflora*. Tuberous perennial with semi-erect, narrow, linear, basal leaves, 30–40cm (12–16in). In summer, produces lax racemes of paired, pendent, tubular, bright orange-red flowers, 2.5cm (1in) long. ↑ to 70cm (28in), ↔8cm (3in). Mexico. ☼ (min. 15°C/59°F)

**P. tuberosa** ♀ (Tuberose). Tuberous perennial with semi-erect, thin, linear-lance-shaped leaves, to 45cm (18in) long, in a basal rosette. Spikes of tubular, intensely fragrant, waxy white flowers, 3–6cm (1¼–2½in) long, are

*Polianthes tuberosa* 'The Pearl'

produced in summer. ↑ to 1.2m (4ft), ↔15cm (6in). Mexico. ☼ (min. 15°C/59°F). **'The Pearl'** ☐ bears semi-double flowers.

▷ **Policeman's helmet** see *Impatiens glandulifera*

## POLIOTHYRSIS

FLACOURTIACEAE

Genus of one species of deciduous tree from mountain woodland in C. China. It is grown for its glossy, dark green leaves and fragrant, papery, greenish white then yellow summer flowers. Grow as a specimen or among trees.

• **HARDINESS** Fully hardy.

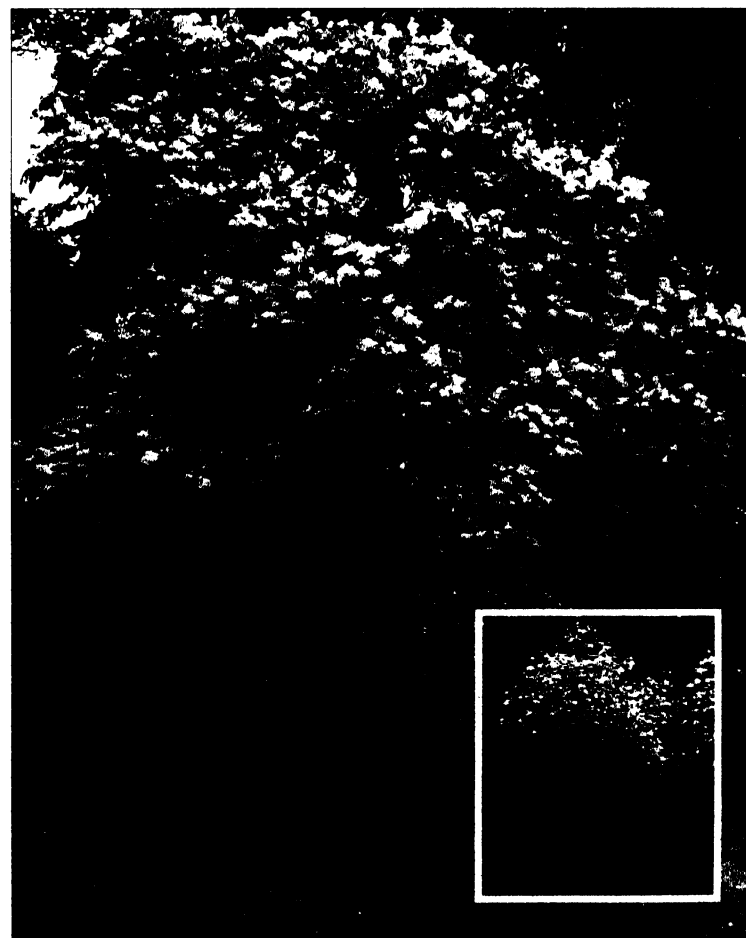
• **CULTIVATION** Grow in fertile, well-drained soil in full sun or partial shade,

with shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed in containers in an open frame in autumn, or take greenwood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**P. sinensis** ☐♂ Spreading, deciduous tree with grey bark, which is deeply furrowed in mature trees. Ovate, slender-pointed, glossy, dark green leaves, to 15cm (6in) long, red-tinged when young, are arranged alternately, and are borne on red stalks. In mid- and late summer, white buds open to tiny, cup-shaped, fragrant, papery, greenish white then yellow flowers, produced in conical panicles, to 25cm (10in) long. ↑10m (30ft) or more, ↔6m (20ft). C. China. \*\*\*

*Poliothyrsis sinensis* (inset: flower detail)

- ▷ **Polka dot plant** see *Hypoestes*, *H. phyllostachya*
- ▷ **Polvillo, Guayacan** see *Tabebuia serratifolia*
- ▷ **Polyanthus** see *Primula Polyanthus* Group

## POLYGALA

Milkwort, Seneca, Snakeroot

POLYGALACEAE

Genus of about 500 species of annuals and evergreen perennials and shrubs distributed in a wide range of habitats worldwide, except in New Zealand, Polynesia, and arctic regions. They are grown for their terminal or axillary racemes of colourful, pea-like flowers, produced in late spring and summer, or in some species in autumn; each flower has 5 sepals, the inner two forming broad, petal-like "wings", and 5 petals, the lowest forming a keel with a fringed apex. The leaves are alternate, opposite, or whorled, linear to rounded, and usually leathery. Grow hardy species in a woodland or rock garden, or in an alpine house. In frost-prone areas, grow tender species in a cool greenhouse or conservatory; in warmer climates, use in a shrub border.

- **HARDINESS** Fully hardy to frost tender.

- **CULTIVATION** Under glass, grow in loamless potting compost in full light, with shade from hot sun. In growth, keep well-ventilated, water freely, and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, sharply drained soil in full sun or partial shade. Pruning group 9 for *P. x dalmaisiana* and *P. myrtifolia*.

- **PROPAGATION** Sow seed of hardy species in containers in an open frame in autumn; sow seed of tender species at not less than 15°C (59°F) in spring. Take softwood cuttings in early summer, or semi-ripe cuttings in mid- to late summer.

- **PESTS AND DISEASES** Aphids and whiteflies may be a problem under glass.



816 *Polygala calcarea*



*Polygala calcarea* 'Bulley's Form'

*P. calcarea* ■ (Milkwort). Prostrate, creeping, mat-forming, evergreen perennial with basal rosettes of obovate, leathery, mid-green leaves, 1–3.5cm (½–1½in) long. In late spring and early summer, trailing stems bear deep blue flowers, to 7mm (¼in) long, with white-fringed lips, in terminal racemes, to 3cm (1¼in) long. ↓ 5cm (2in), ↔ to 20cm (8in). W. Europe. \*\*\*. The following cultivars are more robust and free-flowering. 'Bulley's Form' ■ has larger flowers in a deeper blue. 'Lillet' ♀ has a compact habit, and produces brighter blue flowers over a long period.

*P. chamaebuxus* ♀ Small, spreading, evergreen shrub with lance-shaped, leathery, dark green leaves, 1.5–3cm (½–1¼in) long. The flowers, 1.5cm (½in) long, have bright yellow lips, white or pale yellow wings, and a bright yellow keel that ages to purple or brownish crimson; the flowers may be solitary or in pairs, and are produced in the upper leaf axils, mainly in late spring and early summer. ↓ 5–15cm (2–6in), ↔ to 30cm (12in). W. central Europe. \*\*\*. **var. grandiflora** ■ ♀ syn. **var. purpurea**, **var. rhodoptera**, produces flowers with deep purplish

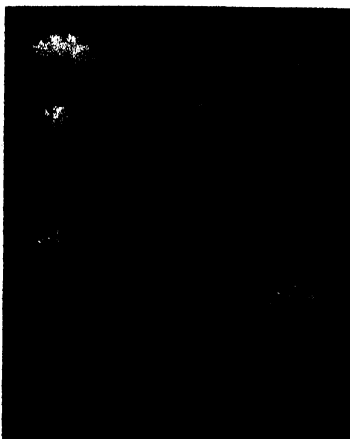
pink wings and yellow lips. Alps, Carpathians. **var. purpurea** see **var. grandiflora**. **var. rhodoptera** see **var. grandiflora**.

*P. x dalmaisiana* ■ ♀ (*P. myrtifolia* x *P. oppositifolia*) syn. *P. myrtifolia* **var. grandiflora** of gardens. Erect, rounded, evergreen shrub, tending to spread with age. Elliptic, ovate, or lance-shaped, glaucous, mid- to deep green leaves, to 2.5cm (1in) long, can be alternate or opposite on the same plant. Leafy, terminal racemes of purple or rose-magenta flowers, 2.5cm (1in) long, with the bases of the keels white, are borne from midsummer to late autumn. ↔ 1–2.5m (3–8ft). Garden origin. ☼ (min. 5–7°C/41–45°F)

*P. myrtifolia*. Erect, bushy, evergreen shrub, spreading with age, with elliptic-oblong or obovate, leathery, mid- to deep green leaves, 2.5–5cm (1–2in) long. Short, leafy, terminal racemes of purple-veined, greenish white flowers, to 2cm (¾in) long, with crested keel petals, are borne from spring to autumn. ↓ 1–2.5m (3–8ft), ↔ 1–2m (3–6ft). South Africa. ☼ (min. 5–7°C/41–45°F). **var. grandiflora** of gardens see *P. x dalmaisiana*.



*Polygala chamaebuxus* **var. grandiflora**



*Polygala x dalmaisiana*

## POLYGONATUM

Solomon's seal

CONVALLARIACEAE/LILIACEAE

Genus of about 50 species of rhizomatous perennials from woodland in temperate regions of Eurasia and N. America. Cultivated for their foliage and flowers, they have usually arching stems and alternate, opposite, or whorled, linear to broadly elliptic or ovate, parallel-veined leaves that turn yellow in autumn. Mostly pendent, sometimes erect, tubular to bell-shaped, mainly white or cream, occasionally purple-pink flowers, with green markings, are either solitary or produced in small clusters, often along the lower sides of the stems. The flowers are usually followed by berry-like, spherical, red or black fruits. Solomon's seals are suitable for a shady border, or for a woodland or rock garden. All parts may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost hardy.

- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full or partial shade.

- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide rhizomes when growth begins in spring, taking care to avoid damaging young, brittle shoots.

- **PESTS AND DISEASES** Susceptible to slugs and sawfly larvae.

*P. biflorum*, syn. *P. canaliculatum*, *P. commutatum*, *P. giganteum*.

Rhizomatous perennial with arching, hairless stems with alternate, narrowly lance-shaped to broadly elliptic leaves, to 18cm (7in) long, with hairless or minutely hairy undersides that are glaucous along the veins. From late spring to midsummer, usually solitary or 2–4 pendent, tubular, greenish white flowers, 1–2.5cm (½–1in) long, are produced in the leaf axils; they are followed by spherical black fruit, 9mm (¾in) across. ↓ to 0.4–2m (16–72in), ↔ 60cm (24in). S. central Canada, E. North America. \*\*\*

*P. canaliculatum* see *P. biflorum*.

*P. commutatum* see *P. biflorum*.

*P. cyrtonema* of gardens see *Disporopsis pernyi*.

*P. giganteum* see *P. biflorum*.

*P. hirtum* ■ syn. *P. latifolium*.

Rhizomatous perennial producing erect stems with alternate, lance-shaped to ovate leaves, 8–15cm (3–6in) long,



*Polygonatum hirtum*

*Polygonatum hookeri*

slightly hairy beneath. From late spring to midsummer, produces 1–5 pendent, tubular, green-tipped white flowers, 2cm (¾in) long, in the leaf axils; they are followed by spherical black fruit, 6mm (¼in) across. ‡ to 1.2m (4ft), ↔ 60cm (24in). C. and S.E. Europe, Turkey, W. Russia, Caucasus. \*\*\*  
***P. hookeri*** ■ Creeping, slowly spreading perennial with upright stems bearing alternate, linear to narrowly elliptic leaves, to 4cm (1½in) long, hairless beneath. In late spring and early summer, produces solitary, erect, pale to deep pink, short-tubed flowers, 2cm (¾in) across, with wide-spreading tepals, in the upper leaf axils; they are followed by spherical black fruit, 3mm (⅛in) across. Suitable for a peat bed. ‡ to 10cm (4in), ↔ to 30cm (12in) or more. E. Himalayas, China. \*\*\*  
***P. humile***. Rhizomatous perennial with upright stems bearing lance-shaped to ovate leaves, 4–7cm (1½–3in) long, arranged alternately, and finely hairy on the lower veins. In late spring, produces solitary or paired, pendent, tubular white flowers, to 2cm (¾in) long, in the upper leaf axils; they are followed by spherical, blue-black fruit, to 6mm

*Polygonatum multiflorum* 'Striatum'*Polygonatum stewartianum*

(¼in) across. ‡ 20cm (8in), ↔ 50cm (20in) or more. E. Europe, W. Asia. \*\*\*

***P. x hybridum*** ♀ (*P. multiflorum* x *P. odoratum*) syn. *P. multiflorum* of gardens (Common Solomon's seal). Rhizomatous perennial with scarcely arching, hairless stems bearing alternate, ovate-lance-shaped leaves, to 20cm (8in) long, held horizontally. Pendent, tubular, green-tipped, creamy white flowers, 2cm (¾in) long, slightly constricted around the middle, are produced in late spring, usually 4 per axil; they are followed by spherical, blue-black fruit, to 8mm (⅛in) across. ‡ to 1.5m (5ft), ↔ 30cm (12in). Garden origin. \*\*\*

***P. latifolium*** see *P. hirtum*.

***P. multiflorum***. Rhizomatous perennial with arching, hairless stems bearing ovate-lance-shaped leaves, to 5–15cm (2–6in) long, arranged alternately. In late spring, each lower leaf axil produces 2–6 pendent, tubular, green-tipped white flowers, 1cm (½in) long; they are followed by spherical black fruit, 4–6mm (⅛–¼in) across. ‡ to 90cm (36in), ↔ 25cm (10in). Europe, temperate Asia. \*\*\*. 'Striatum' ■ syn. 'Variegatum', has leaves striped creamy white.

***P. multiflorum* of gardens** see *P. x hybridum*.

***P. odoratum***, syn. *P. officinale*.

Creeping, rhizomatous perennial with arching, angular stems bearing alternate, lance-shaped to ovate, hairless leaves, 5–15cm (2–6in) long, usually in 2 rows. In late spring and early summer, bears 1 or 2 pendent, tubular, fragrant, green-tipped white flowers, to 3cm (1¼in) long, in the upper leaf axils, followed by spherical black fruit, 6mm (¼in) across. ‡ to 85cm (34in), ↔ 30cm (12in). Europe, Caucasus, Russia (Siberia) to Japan. \*\*\*. 'Flore Pleno' ♀ has double flowers with more extensive green markings. 'Gilt Edge' has leaves with narrow yellow margins.

***P. officinale*** see *P. odoratum*.

***P. stewartianum*** ■ Rhizomatous perennial with short, erect, slightly angular, hairless stems bearing whorled, linear-lance-shaped leaves, to 10cm (4in) long. From late spring to midsummer, produces small clusters of 1–3 pendent, tubular, purple-pink flowers, to 1.5cm (½in) long, in the leaf axils. The spherical red fruit, to 6mm (¼in) across, are spotted purplish white. ‡ 20–90cm (8–36in), ↔ 25cm (10in). Europe, temperate Asia. \*\*\*  
***P. verticillatum*** (Whorled Solomon's seal). Rhizomatous perennial with erect, slightly angular, hairless stems bearing stalkless, mainly whorled, sometimes opposite, lance-shaped leaves, 6–15cm (2½–6in) long. From late spring to midsummer, produces 1–4 pendent, tubular, greenish white flowers, to 1.5cm (½in) long, in the upper leaf axils; they are followed by spherical red fruit, 5mm (¼in) across. ‡ 20–90cm (8–36in), ↔ 25cm (10in). Europe, Caucasus, Afghanistan. \*\*\*

▷ *Polygonum affine* see *Persicaria affinis*

▷ *Polygonum amplexicaule* see

*Persicaria amplexicaulis*

▷ *Polygonum aubertii* see *Fallopia aubertii*

▷ *Polygonum baldschuanicum* see *Fallopia baldschuanica*

▷ *Polygonum bistorta* see *Persicaria bistorta*

▷ *Polygonum campanulatum* see *Persicaria campanulata*

▷ *Polygonum capitatum* see *Persicaria capitata*

▷ *Polygonum carneum* see *Persicaria bistorta* subsp. *carnea*

▷ *Polygonum macrophyllum* see *Persicaria macrophylla*

▷ *Polygonum milletii* see *Persicaria milletii*

▷ *Polygonum orientale* see *Persicaria orientale*

▷ *Polygonum sphaerostachyum* see *Persicaria macrophylla*

▷ *Polygonum tenuicaule* see *Persicaria tenuicaulis*

▷ *Polygonum vacciniifolium* see *Persicaria vacciniifolia*

▷ *Polygonum virginianum* see *Persicaria virginiana*

## POLYPODIUM

### POLYPODIACEAE

Genus of about 75 species of mostly evergreen, usually epiphytic, sometimes terrestrial ferns, mainly from tropical regions of the USA, Central America, and South America, but also from temperate and other tropical regions. They are often found growing on trees, rocks, walls, or well-drained banks and sand dunes. They are cultivated for their sculptural fronds, which are usually lance-shaped, simple to pinnatifid or pinnate, occasionally more divided, and borne at random in 2 rows along creeping, often surface rhizomes. Sori, without indusia, are arranged in rows on each side of the midrib of each frond or pinna. The hardy species are good for a rock garden, mixed border, or bank, especially where winter green and ground cover are required. In frost-prone climates, grow tender species in a warm greenhouse. Elsewhere, the tropical species, which are mostly epiphytic, are suitable for growing in trees.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in equal parts fine-grade bark, perlite, and charcoal. May be grown epiphytically in bright filtered light; wrap the rhizomes in moss and tie to a suitable rooting medium, such as osmunda fibre, and keep moist until established. Water moderately during the growing season; sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, gritty or stony, well-drained soil (*P. cambricum* requires neutral to alkaline soil) in full sun or dappled shade, with shelter from cold, dry winds.
- **PROPAGATION** Sow spores at 15–16°C (59–61°F) when ripe. Divide in spring or early summer. See also p.51.
- **PESTS AND DISEASES** Trouble free.

***P. aureum*** see *Phlebodium aureum*.

***P. australe*** see *P. cambricum*.

***P. cambricum***, syn. *P. australe*, *P. vulgare* subsp. *serratum* (Southern polypody). Terrestrial, deciduous fern producing broadly lance-shaped to broadly triangular-ovate, pinnate, mid-green fronds, to 60cm (24in) long, with linear or oblong pinnae, the longest usually being the second pair from the base; the pinnae often have toothed margins. New fronds appear in late summer and die back in spring. Sori are conspicuously yellow in winter. ‡ 15–60cm (6–24in), ↔ indefinite. S. and W. Europe. \*\*\*. Sterile variants, producing yellow-green fronds with deeply cut margins, are often listed or grown as *P. cambricum*. 'Cristatum' bears crested frond tips and pinnae. 'Grandiceps' has much larger crests than 'Cristatum', with the crests at the tips usually wider than the rest of the fronds. 'Omnilacerum Oxford' has tall, erect, oblong-lance-shaped fronds, to 60cm (24in) long, with lance-shaped pinnae cut irregularly almost to the midribs. 'Willharris' produces thick-textured, lance-shaped fronds, to 45cm (18in) long, with pinnae deeply divided into long segments.

***P. formosanum***. Epiphytic, evergreen fern with arching to pendent, ovate to oblong, pinnate, glaucous, pale green fronds, to 50cm (20in) long, composed of spreading, lance-shaped to linear pinnae. The rhizome is conspicuously glaucous, and is very sparsely covered with small scales. ‡ to 45cm (18in). China, Taiwan, Japan. \*

***P. glycyrrhiza*** ■ (Licorice fern).

Terrestrial, evergreen fern producing

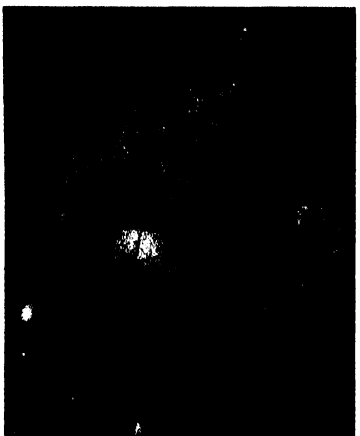
*Polypodium glycyrrhiza*

*Polypodium polypodioides*

lance-shaped, pinnate or very deeply pinnatifid, mid- to dark green fronds, to 35cm (14in) long, comprising sickle-shaped, linear pinnae. Similar to *P. vulgare*, except fronds are darker green, pinnae tips more pointed, and sori smaller. If chewed, the rhizome has a very sweet, licorice taste. † 30cm (12in), ↔ indefinite. North America (Alaska to California). \* \* \*. 'Longicaudatum', syn. *P. vulgare* 'Longicaudatum', has fronds with very long, pointed tips. **Malahatense Group** consists of fertile variants with deeply cut pinnae; they come true from spores.

*P. polypodioides* ■ (Resurrection fern). Small, semi-evergreen, terrestrial or epiphytic fern with narrowly triangular or oblong, pinnate, fairly leathery, mid-green fronds, to 30cm (12in) tall, covered with scales, and composed of well-spaced, linear or oblong pinnae. Frond margins temporarily roll inwards during dry weather. † to 30cm (12in), ↔ indefinite. Southern Africa, tropical regions of America. \*

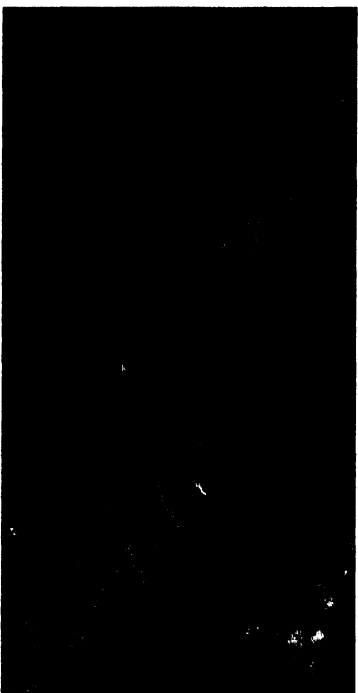
*P. scolieri* ■ (Leathery polypody). Terrestrial, evergreen fern bearing broadly ovate to triangular, pinnate or very deeply pinnatifid, leathery, thick,

*Polypodium scolieri**Polypodium vulgare*

rigid, glossy, deep green fronds, 30cm (12in) long. Pinnae are spreading, and narrowly oblong. Needs a sheltered site in frost-prone gardens. † 30cm (12in), ↔ indefinite. N.W. North America (coastal belt). \* \*

*P. virginianum* (Rockcap fern, Virginian polypody). Terrestrial or epiphytic, evergreen fern, very similar to *P. vulgare*, with arching or pendent, narrowly lance-shaped or triangular to oblong, pinnate or very deeply pinnatifid, leathery to thin, dark green fronds, 25cm (10in) long, composed of lance-shaped to linear or oblong pinnae. † 25cm (10in), ↔ indefinite. E. Asia, North America. \* \* \*

*P. vulgare* ■ (Common polypody). Terrestrial or epiphytic, evergreen fern with lance-shaped to oblong, pinnate or very deeply pinnatifid, thin to leathery, dark green fronds, 40cm (16in) long, composed of close, spreading, oblong to linear pinnae. Replaced in warmer sites in Europe by the very similar species, *P. interjectum*, which has ovate-triangular, thin-textured fronds. † 30cm (12in), ↔ indefinite. Mostly in northern regions or on higher ground in Europe, Africa, E. Asia. \* \* \*. 'Bifidograndiceps' has

*Polypodium vulgare* 'Cornubiense'

large, flat crests; † 30–50cm (12–20in). 'Cornubiense' ■ is very vigorous, bears both pinnatifid and 3- or 4-pinnatifid fronds, and is excellent as ground cover; † 30–40cm (12–16in). 'Cornubiense Grandiceps' has 3-pinnate fronds, to 40cm (16in) long, with large, branched, terminal crests. 'Jean Taylor' is crested, with pinnatifid and 4-pinnatifid fronds, moss-like in appearance; † 20cm (8in). 'Longicaudatum' see *P. glycyrrhiza* 'Longicaudatum'. subsp. *serratum* see *P. cambricum*. 'Trichomanoides Backhouse' bears pinnatifid and 4-pinnatifid fronds; † 20cm (8in).

#### ▷ Polypody,

**Common** see *Polypodium vulgare*

**Golden** see *Phlebodium aureum*

**Leathery** see *Polypodium scolieri*

**Limestone** see *Gymnocarpium robertianum*

**Southern** see *Polypodium cambricum*

**Virginian** see *Polypodium virginianum*

## POLYSCIAS

### ARALIACEAE

Genus of about 100 species of rounded or upright, evergreen shrubs and small trees from tropical regions of Africa, Asia, and the Pacific. They are cultivated for their alternate or spiralling leaves, which may be simple, 3-palmate, or pinnate to 3-pinnate, and tend to be grouped towards the stem tips. The small, usually whitish green flowers have 4–15 tepals, and are most often produced in panicles composed of small umbels, or in terminal clusters; they are followed by small, usually purple to black berries. Below 16°C (61°F), grow in a warm greenhouse or as houseplants. In warmer climates, grow in a shrub border; strong-growing species are also effective for hedging.

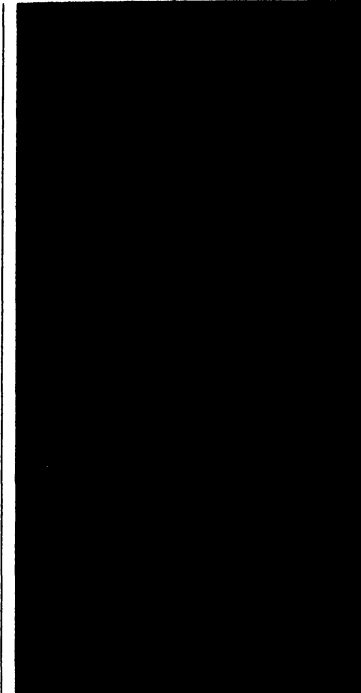
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light or bright filtered light. In growth, water freely, mist daily, and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun or partial shade. Pruning group 1; trim hedges in late summer and, if necessary, in late winter or early spring; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take greenwood cuttings in early summer, or root semi-ripe or ripe, leafless stem sections with bottom heat in summer.

• **PESTS AND DISEASES** Red spider mites, mealybugs, and root-knot eelworms may be troublesome under glass.

*P. filicifolia* ■ (Chotito, Fern-leaf aralia). Erect, evergreen shrub, sparingly branched (at least when young) unless regularly tip-pruned. Young plants bear arching to semi-pendent, pinnate to 3-pinnate leaves, to 10cm (4in) long, composed of 9–17 narrowly elliptic, bright green leaflets, with purple-tinted midribs. Mature plants produce leaves to 90cm (36in) long, composed of leaflets with entire or finely toothed margins. Star-shaped, whitish green flowers are borne in terminal, umbel-like panicles, in summer, followed by

*Polyscias filicifolia*

black fruit. Flowers and fruit are seldom produced. Probably a hybrid. † to 2–2.5m (6–8ft) or more, ↔ to 1m (3ft) or more. S. Malaysia, Pacific.

• (min. 16°C/61°F). 'Marginata' has leaves with white margins.

*P. guilfoylei* □ (Coffee tree, Geranium aralia). Large, erect, evergreen shrub or small tree, generally sparsely branched, with foliage confined to the stem tips. Pinnate leaves, 30–45cm (12–18in) long, are each composed of 5–9 broadly ovate to oblong-elliptic, shallowly lobed, irregularly spiny-toothed, white- to cream-margined, mid-green leaflets. In summer, mature plants produce brown-budded, 5-petaled, star-shaped, yellow-green flowers in large, loose, terminal, umbel-like panicles, to 50cm (20in) long, followed by spherical, black-purple fruit, 5mm (¼in). † 4–6m (12–20ft), ↔ 1–2.5m (3–8ft). E. Malaysia, W. Pacific. • (min. 16°C/61°F).

'Laciniata' has pendent, 2-pinnate leaves composed of lance-shaped leaflets with white margins. 'Victoriae' ■ (Lace aralia) is compact, with much-dissected, fern-like leaves; each leaflet irregularly toothed and white-margined; † 1.5m (5ft), ↔ 80cm (32in).

*Polyscias guilfoylei* 'Victoriae'

## POLYSTICHUM

Holly fern, Shield fern

DRYOPTERIDACEAE

Genus of nearly 200 species of usually evergreen, terrestrial ferns found in a range of habitats from alpine cliffs to tropical forests worldwide. They are cultivated for their often lance-shaped, pinnate to 3-pinnate fronds, which arise from erect or short-creeping rhizomes, usually in shapely, "shuttlecock" crowns. The pinnae are holly-like, and sometimes lobed, each lobe ending in a sharp point or bristle. Sori are borne on the undersides of the fronds, each usually protected by a rounded indusium. Grow shield ferns in a rock garden, fernery, or well-drained border. In frost-prone areas, grow tender species in a cool, temperate, or warm greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in fertile, humus-rich, well-drained soil in deep or partial shade. Remove dead fronds before new ones unfurl. Protect the crowns from excessive winter wet.
- **PROPAGATION** Sow spores at 15–16°C (59–61°F) when ripe. Divide rhizomes in spring. Detach fronds bearing bulbils in autumn. See also p. 51.
- **PESTS AND DISEASES** Susceptible to the fungal disease *Taphrina wetsteiniana*.

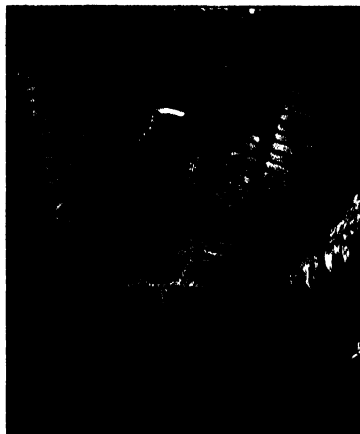
***P. acrostichoides***. Terrestrial, evergreen fern producing a shuttlecock of narrowly lance-shaped, pinnate, dark green fronds, 60cm (24in) long, with small, holly-like pinnae. Fertile fronds narrow abruptly towards tips where sori occur. †45cm (18in), ↔90cm (36in). N.E. North America. \*\*\*

***P. aculeatum*** ♀ (Hard shield fern, Prickly shield fern). Terrestrial, evergreen fern bearing narrowly lance-shaped, pinnate or 2-pinnate, often glossy, dark green fronds, 60cm (24in) long or more, forming shuttlecocks. Pinnae are oblong and pinnate or pinnatifid, with spiny-toothed lobes that are unstalked and acutely angled at the point of attachment to the midribs. Reliably evergreen. †60cm (24in), ↔90cm (36in). N.W. and C. Europe. \*\*\*. 'Pulcherrimum' see *P. setiferum* 'Plumosum Bevis'.

***P. munitum*** ♂ (Sword fern). Terrestrial, evergreen fern that bears narrowly lance-shaped, leathery, pinnate, dark green fronds, 90cm (36in) long or more, forming shuttlecocks. Pinnae are linear and spiny-toothed. Larger than *P. acrostichoides*, its fertile fronds do not narrow at the tips. †90cm (36in), rarely to 1.5m (5ft), ↔1.2m (4ft). N.W. North America. \*\*\*

***P. polyblepharum*** (Japanese tassel fern). Terrestrial, evergreen fern bearing shuttlecocks of spreading, lance-shaped, 2-pinnate, shiny, dark green fronds, 30–80cm (12–32in) long, covered with golden hairs when they unfurl. Pinnae lobes are oblong-ovate and have spiny-toothed margins. †60–80cm (24–32in), ↔90cm (36in). South Korea, Japan. \*\*\*

***P. rigens***. Terrestrial, evergreen fern producing shuttlecocks of narrowly ovate-oblong, 2-pinnate, leathery, harsh-textured, dull green fronds, 30–45cm (12–18in) long. Broad, lance-shaped pinnae are divided into ovate, spiny-



*Polystichum munitum*

toothed lobes. In spring, fronds are yellowish green. †40cm (16in), ↔60cm (24in). Japan. \*\*\*

***P. setiferum*** ♀ (Soft shield fern). Terrestrial, evergreen fern with soft, lance-shaped, 2-pinnate, dark green fronds, 30–120cm (12–48in) long, arranged in shuttlecocks. Pinnae lobes are ovate, bristle-toothed, stalked, and obtusely angled at the point of attachment to the midribs. †1.2m (4ft), ↔90cm (36in). Europe. \*\*\*. Ferns of **Divisilobum Group** ♂ produce usually spreading, 3-pinnate fronds, comprising narrowed and leathery segments; bulbils often form along the frond midribs. †→50–70cm (20–28in) or more. 'Dahlem' bears almost erect fronds; †75cm (30in), ↔45cm (18in).



*Polystichum setiferum*  
Plumosodivisilobum Group

'Herrenhausen' has broader, spreading fronds; †50cm (20in). 'Iveryanum' has fronds crested at the tips; †50cm (20in), ↔60cm (24in). **Multilobum Group** ferns produce 3-pinnate fronds similar to those of the Divisilobum Group, but the frond segments are not narrowed or leathery; †→60–80cm (24–32in). **Plumosodivisilobum Group** ♂ ferns bear fronds, 4-pinnate at the base, with segments narrowed towards the frond tips; lower pinnae often overlap. 'Plumosomultilobum' has overlapping, very leafy pinnae, which give it a moss-like appearance; similar to the Plumosodivisilobum Group, but the segments are not narrowed. 'Plumosum Bevis' ♂ syn. 'Pulcherrimum Bevis', *P. aculeatum* 'Pulcherrimum', has elongated pinnae



*Polystichum setiferum* Divisilobum Group



*Polystichum setiferum* 'Plumosum Bevis'

and segments that sweep gracefully towards the tips. Only very rarely fertile; †→60–80cm (24–32in).

'Pulcherrimum Bevis' see 'Plumosum Bevis'.

***P. tsussimense*** (Korean rock fern). Terrestrial, evergreen fern producing shuttlecocks of broadly lance-shaped, 2-pinnate, dark green fronds, 20–40cm (8–16in) long. The narrow, ovate to oblong-ovate, spiny-toothed pinnae are sharply and abruptly pointed. †→40cm (16in). East Asia. \*\*\*

▷ **Pomegranate** see *Punica*, *P. granatum*  
**Wild** see *Burchellia bubalina*

## PONCIRUS

syn. AEGLE

RUTACEAE

Genus of one species of spiny, deciduous shrub or small tree from woodland in China and Korea. It produces alternate, 3-palmate, dark green leaves, and is cultivated for its 5-petalled, fragrant white flowers and orange-like fruit. Grow in a shrub border or against a sunny wall, or as a very thick, thorny hedge. It is sometimes used as a rootstock for *Citrus* cultivars.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun, with shelter from cold, dry winds. Pruning group 1; trim hedges after flowering or fruiting.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

***P. trifoliata*** ♀ (Japanese bitter orange). Rounded, bushy, deciduous shrub or tree with rigid green shoots armed with very sharp spines. Alternate, 3-palmate leaves, 2.5–6cm (1–2½in) long, comprise 3 obovate, dark green leaflets, to 5cm (2in) long, turning yellow in autumn. Solitary, cup-shaped then saucer-shaped, fragrant white flowers, 5cm (2in) across, are borne in late spring and early summer, often again in autumn, followed by orange-like, inedible, green then orange fruit, 4cm (1½in) across. †→5m (15ft). N. China, Korea. \*\*\*

▷ **Pondweed** see *Elodea*  
**Canadian** see *Elodea canadensis*  
**Cape** see *Aponogeton distachyos*  
**Curled** see *Potamogeton crispus*

## PONGAMIA

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of wide-spreading, deciduous or semi-evergreen tree from seashores and riverbanks in Malaysia, Indonesia, N. Australia, and Pacific islands. It has pinnate leaves and axillary racemes of pea-like flowers. In frost-prone climates, grow in a warm greenhouse for its foliage. In tropical areas, it is a fine shade tree, suitable for coasts.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Root semi-ripe cuttings in summer with bottom heat.

• **PESTS AND DISEASES** Whiteflies may be a problem under glass.

*P. pinnata* ♂ (Karum oil tree, Poona oil tree). Many-branched, spreading, deciduous or semi-evergreen tree with a domed head and a usually short trunk. The pinnate, glossy, bright green leaves, 15–30cm (6–12in) long, comprise 5–9 ovate to elliptic leaflets, emerging pink-bronze. In summer and autumn, produces racemes, 13cm (5in) long, of pea-like, mauve-pink or cream flowers, strongly scented when crushed; they have rounded, standard petals, to 1.5cm (½in) across, often incurled. ‡20–25m (70–80ft), ↔ 15–25m (50–80ft). Malaysia, Indonesia, N. Australia, Pacific islands. ☀ (min. 16°C/61°F)

## PONTEDERIA

Pickerel weed

PONTEDERIACEAE

Genus of 5 species of marginal aquatic perennials from freshwater marshes and swamp ditches in North, Central, and South America. They are grown for their neat habit, distinctive foliage, and highly coloured flowers. The thick rootstock produces clumps of often linear or lance-shaped leaves. Terminal spikes of tubular, 2-lipped, usually blue flowers are borne in summer and early autumn. Grow at the margins of a pond or in a large, water-filled tub on a sunny,



Pontederia cordata

sheltered patio. Flower spikes may not open fully in cool, wet summers.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in aquatic planting baskets of fertile, loamy soil at the margins of a pool; grow in no more than 10–12cm (4–5in) of water, in full sun. See also pp.52–53.

• **PROPAGATION** Sow seed in containers outdoors as soon as ripe. Divide in late spring when growth starts.

• **PESTS AND DISEASES** Trouble free.

*P. cordata* ♂ ♀ (Pickerel weed).

Marginal aquatic perennial with erect, lance-shaped, triangular to ovate, glossy, emergent, floating, or submerged leaves, 20cm (8in) wide, with heart-shaped bases, borne on stalks to 25cm (10in) long. In late summer, produces tubular blue flowers in closely packed spikes, 2–16cm (¾–6in) long, on flower-stalks to 35cm (14in) tall. ‡0.9–1.3m (3–4½ft), ↔ 60–75cm (24–30in). E. North America to Caribbean. \* \* \*. **var. lancifolia**, syn. *P. lanceolata*, has narrower leaves, to 12–20cm (5–8in) long, on stalks 60–70cm (24–28in) long. ‡1.2–1.5m (4–5ft), ↔ 1m (3ft). E. and S. USA, South America. \* \* \* (borderline)

*P. lanceolata* see *P. cordata* var. *lancifolia*.

▷ **Ponytail** see *Beaucarnea recurvata*

▷ **Poplar** see *Populus*

**Balsam** see *P. balsamifera*

**Berlin** see *P. x berolinensis*

**Black** see *P. nigra*

**Canadian** see *P. x canadensis*

**Chinese necklace** see *P. lasiocarpa*

**Grey** see *P. x canescens*

**Lombardy** see *P. nigra* var. *italica*

**Necklace** see *P. deltoides*

**Western balsam** see *P. trichocarpa*

**White** see *P. alba*

▷ **Poppy** see *Papaver*

**Alpine** see *Papaver alpinum*

**Arctic** see *Papaver croceum*

**California** see *Eschscholzia*, *E. californica*

**Californian** see *Platystemon*, *P. californicus*

**Celandine** see *Silphium*

**diphyllum**

**Corn** see *Papaver rhoeas*

**Field** see *Papaver rhoeas*

**Flanders** see *Papaver rhoeas*

**Harebell** see *Meconopsis*

**quintuplinervia**

**Himalayan blue** see *Meconopsis*

**betonicifolia**, *M. grandis*

**Horned** see *Glaucium*

**Icelandic** see *Papaver croceum*

**Long-headed** see *Papaver dubium*

**Matilija** see *Romneya*

**Mexican tulip** see *Hunnemannia*

**fumariifolia**

**Opium** see *Papaver somniferum*

**Oriental** see *Papaver orientale*

**Plume** see *Macleaya*, *M. cordata*

**Prickly** see *Argemone*, *A. mexicana*

**Red horned** see *Glaucium*

**corniculatum**

**Snow** see *Eomecon*

**Tibetan blue** see *Meconopsis*

**betonicifolia**

**Tree** see *Dendromecon*, *Romneya*

**Water** see *Hydrocleys nymphoides*

**Welsh** see *Meconopsis cambrica*

**Yellow horned** see *Glaucium flavum*

▷ **Poppy mallow** see *Callirhoe*

**Prairie** see *C. involucreata*

## POPULUS

Aspen, Cottonwood, Poplar

SALICACEAE

Genus of about 35 species of usually dioecious, mainly deciduous trees found in woodland, valley bottoms, riverbanks, and swampland in N. temperate regions.

They are cultivated for their very rapid growth as specimen trees, and for their alternate, ovate, triangular-ovate or diamond-shaped leaves, often aromatic in bud and when unfolding. They have tiny flowers borne in catkins, generally 5–15cm (2–6in) long, mostly in late winter or spring, before the leaves. Male and female flowers are usually borne on separate trees, the females producing copious fluffy white seeds. Most poplars are useful as windbreaks; *P. alba* and *P. x canescens* will thrive in coastal sites. The vigorous root systems may damage drains and foundations, particularly on clay soil, so avoid growing poplars within 40m (130ft) of a building.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Tolerant of any, except constantly waterlogged soil, although best in deep, fertile, moist but well-drained soil in full sun. *P. alba* and *P. x canescens* tolerate dry conditions; Pruning group 1.

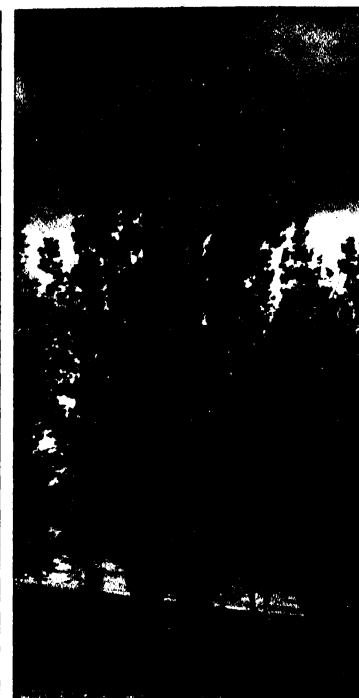
• **PROPAGATION** Take hardwood cuttings in winter. Remove suckers in autumn or late winter.

• **PESTS AND DISEASES** Susceptible to bacterial canker, various fungal diseases (such as honey fungus, rust, and silver leaf), and a variety of insects (such as beetles) and caterpillars, which may eat the foliage or bore into the bark.

*P. alba* ♂ ♀ (Abele, White poplar). Spreading, deciduous tree with white-hairy young shoots and broadly ovate to almost rounded, wavy-margined to maple-like, deeply 5-lobed leaves, to 10cm (4in) long, dark green above, thickly white-hairy beneath, and turning yellow in autumn. In early spring, bears pendent red male catkins, 7cm (3in) long, or green females, 5cm (2in) long. ‡20–40m (70–130ft), ↔ 15m (50ft). N. Africa, Turkey, C. and S. former USSR (including S.W. Siberia). \* \* \*. **f. pyramidalis** ♂ ♀ is pyramidal in shape; ↔ 5m (15ft). **'Raket'** ♂ ♀ syn. **'Rocket'**, is narrowly conical; ↔ 8m (25ft). **'Richardii'** has leaves that are golden yellow above; ‡15m (50ft), ↔ 12m (40ft). **'Rocket'** see **'Raket'**.



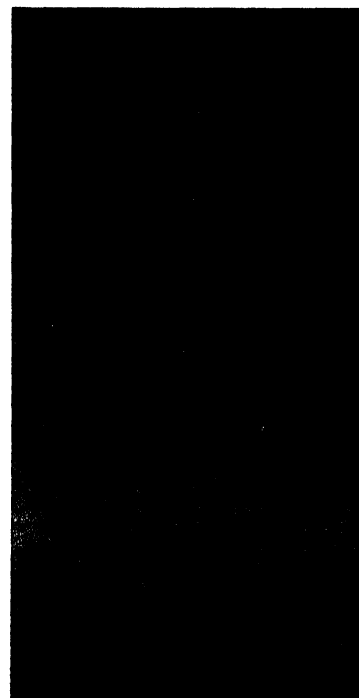
Populus alba



Populus alba f. pyramidalis

*P. balsamifera* ♂ (Balsam poplar, Tacamahac). Fast-growing, columnar, deciduous tree producing smooth, hairless shoots, balsam-scented buds, and ovate, glossy leaves, to 12cm (5in) long, dark green above, whitish green beneath. Pendent green catkins, the males to 5cm (2in) long, the females to 7cm (3in) long, are produced in early spring. ‡30m (100ft), ↔ 8m (25ft). North America. \* \* \*. **var. michauxii** produces downy shoots; N. USA.

*P. 'Balsam Spire'* ♂ ♀ syn. *P. 'TT 32'*. Very fast-growing, narrowly columnar, deciduous tree bearing ovate leaves, 5–12cm (2–5in) long, which are obtuse at the rounded bases and hairy beneath. Cylindrical green female catkins.



Populus alba 'Raket'





*Populus x canadensis* 'Robusta'

10–14cm (4–5½in) long, are produced from pleasantly aromatic buds in late winter or spring. ‡30m (100ft), ↔10m (30ft). \*\*\*

***P. x berolinensis*** ♀–♂ (*P. laurifolia* x *P. nigra* var. *italica*) (Berlin poplar). Columnar to broadly columnar, deciduous tree bearing upright branches and ovate, tapered leaves, to 12cm (5in) long, bright green above, whitish green beneath. Red male catkins, 7cm (3in) long, are borne in early spring. ‡30m (100ft), ↔8m (25ft). Garden origin. \*\*\*

***P. x canadensis*** ♂–♀ (*P. deltoides* x *P. nigra*) (Canadian poplar). Fast-growing, conical to columnar, deciduous tree bearing triangular to ovate, scalloped, tapered, glossy, bright green leaves, to

10cm (4in) long, turning yellow in autumn. Red male or green female catkins, each to 10cm (4in) long, are produced in early spring. ‡30m (100ft), ↔12m (40ft). Garden origin. \*\*\*

**'Aurea'** ♀–♂ syn. 'Serotina Aurea', is columnar and male, producing bronze young leaves in late spring, later turning golden yellow; ‡25m (80ft), ↔10m (30ft). **'Robusta'** ♂–♀ is narrowly conical and male, producing bronze-red young leaves in mid-spring. **'Serotina'** ♀ is similar to 'Aurea', but is broadly domed, with spreading branches, and produces grey-green foliage in summer. **'Serotina Aurea'** see 'Aurea'. **'Serotina de Selys'** ♂ syn. 'Serotina Erecta', has an upright habit, and produces pale green young leaves and red male catkins.

***P. x candicans*** ♀ (*P. balsamifera* x *P. deltoides*), syn. *P. gileadensis*, *P. x jackii* (Balm of Gilead). Broadly columnar, deciduous tree bearing broadly ovate leaves, to 15cm (6in) long, heart-shaped at the bases, dark green above, whitish green beneath. Green female catkins, to 16cm (6in) long, are produced in early spring. ‡25m (80ft), ↔15m (50ft). Garden origin. \*\*\*. **'Aurora'** ♂–♀ has leaves conspicuously marked white, cream, and pink; ‡15m (50ft), ↔6m (20ft).

***P. x canescens*** ♂–♀ (*P. alba* x *P. tremula*) (Grey poplar). Broadly columnar to spreading, deciduous tree bearing glossy, dark green leaves; these may be broadly ovate, grey-woolly beneath, and to 8cm (3in) long, or rounded, almost hairless, and to 6cm (2½in) long. Red male catkins, to 10cm (4in) long, are borne in early spring. Green catkins, 2–10cm (¾–4in) long, are borne on female trees, which are rarely seen. ‡to 30m (100ft), rarely to 50m (160ft), ↔15m (50ft). Europe. \*\*\*

***P. deltoides*** ♂–♀ (Eastern cottonwood, Necklace poplar). Fast-growing, spreading, deciduous tree bearing oval to triangular, glossy, bright green leaves, to 12cm (5in) long, strongly balsam-



*Populus deltoides* (inset: leaf detail)

scented when young. Red male or green female catkins, each to 10cm (4in) long, are produced in early spring. ‡30m (100ft), ↔20m (70ft). E. North America. \*\*\*. **'Siouxland'** is rust-resistant and male.

***P. fremontii*** ♀–♂ Fast-growing, round-headed, deciduous tree with spreading branches and glossy, yellow-green, broadly triangular leaves, to 8cm (3in) long, which turn yellow in autumn. Pendent red male or green female catkins, both to 10cm (4in) long, open in early spring. ‡25m (80ft), ↔15m (50ft). W. USA. \*\*\*

***P. gileadensis*** see *P. x candicans*.

***P. glauca*** see *P. jacquemontii* var. *glauca*.

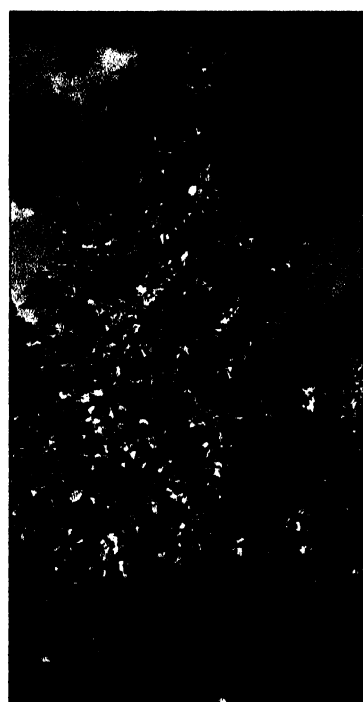
***P. grandidentata*** ♀ (Bigtooth aspen). Spreading, deciduous tree with grey-hairy young shoots and ovate leaves, to 12cm (5in) long, grey-woolly at first, dark green above and pale green beneath. Red male catkins, to 6cm (2½in) long, or green females, to 10cm (4in) long, are produced in early spring. ‡20m (70ft), ↔12m (40ft). E. North America. \*\*\*

***P. x jackii*** see *P. x candicans*.

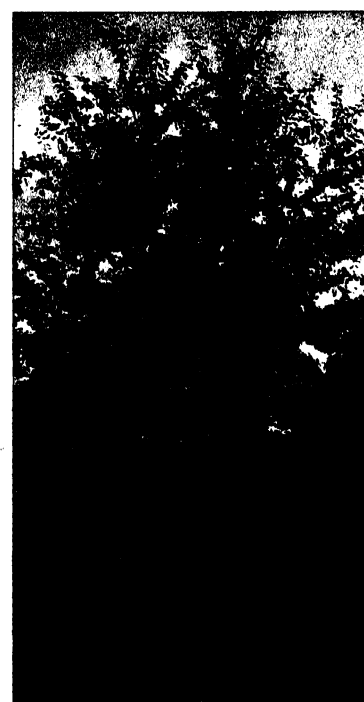
***P. jacquemontii* var. *glauca*** ♂ syn. *P. glauca*. Fast-growing, broadly conical, deciduous tree bearing broadly ovate, blue-green leaves, to 17cm (7in) long, on red leaf-stalks marked with darker red veins. The leaves emerge bronze in early spring, and turn yellow in autumn. Pendent catkins are produced in late spring, the red males to 12cm (5in), the green females to 15cm (6in) long. ‡20m (70ft), ↔10m (30ft). E. Himalayas. \*\*\*

***P. lasiocarpa*** ♀–♂ (Chinese necklace poplar). Broadly conical, later round-headed, deciduous tree bearing stout shoots, hairy when young, and large, heart-shaped, tapered, dark green leaves, to 30cm (12in) long, produced on red stalks. Yellow-green catkins, to 10cm (4in) long, usually containing both male and female flowers, are produced in mid-spring. ‡20m (70ft), ↔12m (40ft). C. China. \*\*\*

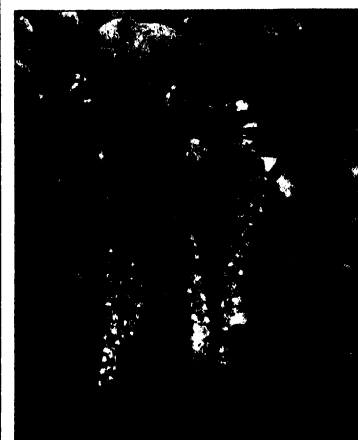
***P. maximowiczii*** ♂–♀ Fast-growing, conical, deciduous tree with hairy young shoots and ovate-elliptic leaves, to 12cm (5in) long, bright green above, whitish green beneath, with green veins. Red male catkins, to 10cm (4in) long, or green females, to 15cm (6in), are borne in early spring. ‡to 30m (100ft) or more, ↔10m (30ft). N.E. Asia. \*\*\*



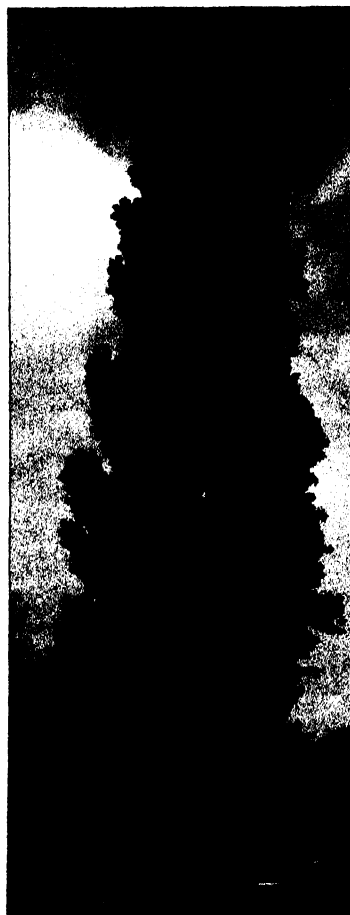
*Populus x candicans* 'Aurora'



*Populus x canescens*



*Populus maximowiczii*



*Populus nigra* var. *italica*

**P. nigra** ♀ (Black poplar). Fast-growing, spreading, deciduous tree with dark bark and triangular to ovate, tapered, glossy, dark green leaves, to 10cm (4in) long, bronze when young, turning yellow in autumn. Red male or green female catkins, both 5cm (2in) long, are produced in early and mid-spring. ‡ 35m (120ft), ↔ 20m (70ft). Europe, N. Africa, C. Asia (including Kazakhstan), Russia (Siberia). \*\*\*. 'Afghanica' see 'Thevestina'. \*\*\*. **italica** ♂♀ (Lombardy poplar) is male and narrowly columnar; ‡ 30m (100ft), ↔ 5m (15ft). 'Thevestina' ♂ syn. 'Afghanica', is narrowly columnar and female, with striking white bark; ‡ 30m (100ft), ↔ 5m (15ft). **P. simonii** ♂ Columnar, deciduous tree with diamond-shaped-ovate to elliptic,



*Populus tremula* 'Pendula'



*Populus trichocarpa*

tapered, dark green leaves, to 12cm (5in) long, emerging yellow-green and balsam-scented very early in spring. Red male or green female catkins, both to 3cm (1¼in) long, are produced in early spring. Susceptible to damage by late frosts. ‡ 12m (40ft), ↔ 6m (20ft). N. and W. China. \*\*\*. 'Fastigiata' ♂ is narrowly upright; ↔ 3m (10ft). **P. szechuanica** ♂ Broadly columnar, deciduous tree with ovate-oblong to broadly lance-shaped, smooth, dark green leaves, to 30cm (12in) long, whitish green beneath, bronze when young. Red male catkins, to 10cm (4in) long, or green females, to 15cm (6in), are borne in mid-spring. ‡ to 40m (130ft), ↔ 10m (30ft). W. China. \*\*\*. **var. tibetica** has leaves that are downy beneath, with dark red veins and leaf-stalks.

**P. tremula** ♀♂ (Common aspen). Vigorous, spreading, deciduous tree or shrub with flat-stalked, rounded to ovate, coarsely toothed, dark green leaves, to 8cm (3in) long, bronze when young, turning yellow in autumn; they tremble and rattle in the breeze. Grey-red male or green female catkins, both to 7cm (3in) long, are produced in early spring. ‡ 20m (70ft), ↔ 10m (30ft). Temperate Europe and Asia to China and Japan. \*\*\*. 'Pendula' ♂♀ (Weeping aspen) has long, pendent branches; ‡ 6m (20ft), ↔ 8m (25ft). **P. tremuloides** ♀ (American aspen, Quaking aspen). Vigorous, spreading, deciduous tree with flat-stalked, rounded to ovate, finely toothed, glossy, dark green leaves, to 6cm (2½in) long, bronze when young, turning yellow in autumn; light winds cause quivering and rattling of the leaves. Grey-red male or green female catkins, both to 6cm (2½in) long, are produced in early spring. ‡ 15m (50ft), ↔ 10m (30ft). W. North America. \*\*\*. **P. trichocarpa** ♂♂ (Black cottonwood, Western balsam poplar). Fast-growing, conical, deciduous tree with ovate, glossy leaves, to 20cm (8in) long, dark

green above, white beneath, turning yellow in autumn, and strongly balsam-scented when young. Red male catkins, 7cm (3in) long, or green females, to 15cm (6in) long, are borne in mid-spring. ‡ 30m (100ft) or more, ↔ 10m (30ft). W. North America. \*\*\*. **P. 'TT 32'** see *P. 'Balsam Spire'*.

## PORANA

### CONVOLVULACEAE

Genus of about 20 species of evergreen, twining climbers or shrubs, closely related to *Ipomoea*, from open or dense woodland in tropical Africa, Asia, and Australia. They have alternate, usually heart-shaped leaves, and are grown for their small, bell- to funnel-shaped, white, blue, or purple flowers, borne singly or in terminal panicles or cymes. Where temperatures drop below 7°C (45°F), grow in a cool or temperate greenhouse. In warmer regions, they are suitable for training over a pergola or arch, or through a shrub.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. During the growing season, water moderately and apply a balanced liquid fertilizer every 4 weeks; water sparingly in winter, after flowering. Outdoors, grow in fertile, moist but well-drained soil in full sun. Support the climbing stems. Pruning group 11, in early spring.
- **PROPAGATION** Soak seed and sow at 18°C (64°F) in spring. Root greenwood cuttings in early summer, or semi-ripe cuttings with bottom heat in late summer.
- **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

**P. paniculata** (Bridal bouquet, Snow in the jungle, White corallita). Strong-growing, twining climber bearing slender-pointed, heart-shaped, mid-green leaves, 8–15cm (3–6in) long, smooth above, white-powdery beneath when young. Produces large, terminal panicles, to 30cm (12in) long, of many funnel-shaped, elder-scented white flowers, 8mm (⅜in) across, from summer to early winter. ‡ to 9m (28ft). N. India, N. Burma. ☞ (min. 7°C/45°F)

## PORTEA

### BROMELIACEAE

Genus of about 7 species of rosette-forming, evergreen, terrestrial perennials (bromeliads) from Brazil, where they usually grow in coastal shrubland and shaded forest, to 600m (2,000ft) high. They are cultivated for their foliage and flowers: the strap-shaped, spiny-margined, fairly stiff leaves are mostly scaly, especially beneath; the tubular, blue or violet flowers are borne in cylindrical heads on long, slender flower-stalks. Where temperatures fall below 15°C (59°F), grow in an indoor garden; in warmer climates, they are suitable for growing outdoors in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light, with shade from hot sun. Water moderately at all times; overwatering often causes root rot. During the



*Portea petropolitana*

growing season, apply a low-nitrogen fertilizer every 6–8 weeks. Outdoors, grow in humus-rich, leafy, loamy soil in full sun, with some midday shade. See also p.47.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring or summer. Remove offsets in late spring.
- **PESTS AND DISEASES** Susceptible to beetles when grown outdoors. Scale insects sometimes attack new growth.

**P. petropolitana** ♂ Terrestrial perennial bearing a rosette of strap-shaped, minutely scaly, mid- to dark green leaves, to 80cm (32in) long, with black marginal spines. Large-toothed leaf sheaths have dark brown scales. In summer, the stout, reddish brown scapes produce branched, pendent, compound, cylindrical inflorescences, to 40cm (16in) long, with rose-red bracts. The tubular flowers, to 3cm (1¼in) long, have blue-violet petals and red ovaries. ‡ to 1m (3ft), ↔ 40cm (16in). E. Brazil. ☞ (min. 15°C/59°F). **var. extensa** has more open inflorescences with lilac-blue flowers and purple-tipped green ovaries, borne on arching, coral-red scapes.

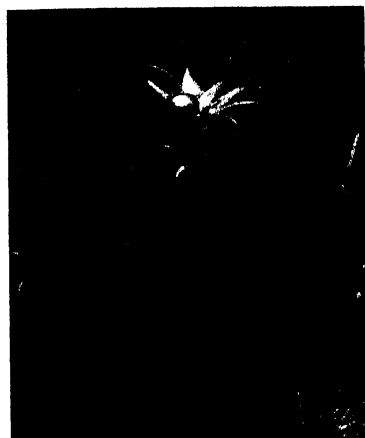
▷ **Portia tree** see *Thespesia populnea*

## PORTULACA

*Purslane, Rose moss*

### PORTULACACEAE

Genus of 100 semi-succulent, mainly erect to trailing annuals, with a few perennials, found in dry, sandy soils in warm-temperate and tropical regions. They have small, fleshy, alternate to sometimes opposite, flat to cylindrical, almost moss-like leaves, which are very variable in colour, often white, green, or red. They are grown for their showy, cup-shaped, rose-like, 4- to 7-petalled, scarlet, carmine, purple, yellow, pink, apricot, or white flowers, which usually have a leafy rosette of foliage below each flowerhead; flowering is best in dry summers. Grow as annuals in a sunny,



*Portulaca grandiflora* Sundance Hybrids

dry border or bank, or in a window-box or other container.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Outdoors, grow in poor, sandy, well-drained soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in mid-spring.
- **PESTS AND DISEASES** Prone to aphids. Seedlings are susceptible to damping-off.

***P. grandiflora*** (Rose moss, Sun plant). Spreading, red-stemmed annual with clusters of cylindrical, fleshy, bright green leaves, to 2.5cm (1in) long. In summer, produces single or double, mid- to dark green, satin-textured, rose-pink, red, yellow, or white flowers, to 2.5cm (1in) or more across, sometimes striped and flecked in a contrasting colour. † 10–20cm (4–8in), ↔ 15cm (6in). Brazil, Argentina, Uruguay. \*.

**Minilaca Hybrids** have a neat and compact habit, with large, double flowers, to 5cm (2in) across, in scarlet-red, rose-pink, apricot-pink, creamy yellow, and golden yellow; they are good container plants; † 10–15cm (4–6in).

**Sundance Hybrids** are semi-trailing, with large, semi-double or double flowers, to 5cm (2in) across, in a broad range of bright colours; † to 15cm (6in).

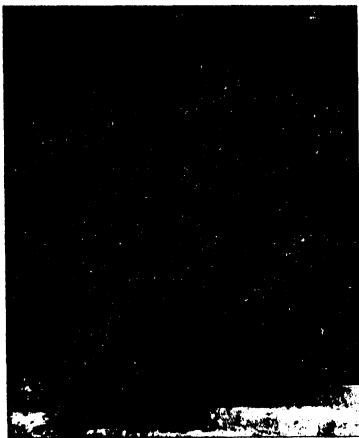
**Sundial Series** cultivars were bred for longer flowering in poor conditions and cooler climates; they have double flowers in a broad colour range, including an unusual bicolor: white, striped and flecked with lavender-blue.

## PORTULACARIA

PORTULACACEAE

Genus of 1–3 species (often considered one variable species) of bushy, perennial, succulent shrubs from semi-arid, hilly lowland in Namibia, South Africa, Swaziland, and Mozambique. Grown mainly for their foliage, they have fleshy stems, leaves, and branches, and inconspicuous, cup- or saucer-shaped flowers in cymes or short racemes. In areas where temperatures fall below 10°C (50°F), grow in a warm greenhouse; in warm, dry climates, use in a shrub border or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in full light or bright filtered light. From early spring to early autumn, water freely and apply a low-nitrogen liquid fertilizer every 6–8 weeks; keep almost completely dry at



*Portulacaria afra* 'Foliisvariegatus'

other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun or partial shade. Pruning group 1. See also pp.48–49.

- **PROPAGATION** Root cuttings of stem sections in spring with bottom heat.
- **PESTS AND DISEASES** Susceptible to scale insects.

***P. afra***. Bushy, succulent shrub with thick, grey-barked stems and jointed, short, twig-like, projecting branches. The obovate, sometimes pointed, opposite, glossy green leaves, to 2cm (¾in) long, are flat above, convex below. Inconspicuous, saucer-shaped, pale pink flowers, 2mm (⅛in) across, are produced in summer. † 2–3m (6–10ft), ↔ 1.5m (5ft). Namibia, South Africa (Northern Cape, Eastern Cape, Northern Transvaal, Eastern Transvaal), Swaziland, Mozambique. ♀ (min. 10°C/50°F). 'Foliisvariegatus' has yellow-mottled leaves.

## POSOQUERIA

RUBIACEAE

Genus of 12–16 species of upright to rounded, evergreen shrubs and trees occurring in habitats from forest to moist ravines in tropical regions of America. They are cultivated for their simple, leathery leaves, produced in opposite pairs, and corymbs of tubular, pendent, salverform, fragrant, white, pink, or red flowers. The flowers each have 5 spreading petal lobes, and are borne in terminal corymbs; they are followed by yellow berries. In areas where temperatures fall below 5–7°C (41–45°F), grow in a cool or temperate greenhouse; elsewhere they are suitable for a shrub border, or as specimens.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a loam-based potting compost (J1 No.2) with added grit, in full light or bright filtered light. From early spring to early autumn, water freely and apply a balanced liquid fertilizer every 6–8 weeks; keep just moist at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun or partial shade. Pruning group 8; plants under glass need restrictive pruning.
- **PROPAGATION** Take greenwood cuttings in early summer, or semi-ripe cuttings in mid- or late summer.
- **PESTS AND DISEASES** Susceptible to red spider mites, whiteflies, and mealybugs under glass.

***P. latifolia*** ♀ Moderately bushy shrub, or sometimes small, broadly upright tree if unpruned, bearing ovate or oblong to elliptic, prominently veined, rich green leaves, 15–25cm (6–10in) long. In spring, produces dense corymbs of few to many slender-tubed, fragrant white flowers, with long, slender tubes to 15cm (6in) long, 6cm (2½in) across; they are followed by yellow berries, 4–8cm (1½–3in) across. † 2–14m (6–45ft), ↔ 2–6m (6–20ft). Mexico to Brazil, West Indies. ♀ (min. 7°C/45°F)

▷ **Possum haw** see *Ilex decidua*, *Viburnum acerifolium*

## POTAMOGETON

POTAMOGETONACEAE

Genus of 80–100 species of marginal to deep-water aquatic perennials, distributed almost throughout the world, flourishing in freshwater ditches, ponds, canals, and waterways. They are cultivated as oxygenators in water gardens and for their decorative effect in aquariums. The branched, creeping rhizomes spread rapidly in muddy pool bottoms, where they support an interwoven, mat-like network of translucent, linear to lance-shaped submerged leaves, and leathery, opaque, lance-shaped to rounded floating leaves. Inconspicuous flowers are borne in fleshy spikes just above the water.

Grow the hardy species as oxygenators in outdoor pools; *P. crispus* tolerates polluted water better than any other oxygenator, and can also be used in cold-water aquariums. In frost-prone climates, grow tender species in cool-water aquariums; in warmer climates, they are suitable for outdoor pools.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** In an aquarium, grow in pots of an inert medium in full light. Feed with sachets of proprietary aquarium plant fertilizer. In an outdoor pool, grow in baskets of sandy loam, or root in a muddy pond bottom at a depth of 15–60cm (6–24in), ideally in full sun, or in partial shade. Cut back frequently and thin to keep in check. Submerged leaves may become encrusted with deposits of lime. See also pp.52–53.
- **PROPAGATION** Take cuttings of stem sections in late spring or early summer; the foliage becomes brittle from midsummer onwards.
- **PESTS AND DISEASES** Trouble free.

***P. crispus*** (Curled pondweed). Marginal to deep-water aquatic perennial with cylindrical, branching stems, to 4m (12ft) long, bearing narrowly oblong, almost translucent submerged leaves, about 4cm (1½in) long, wavy-margined when mature, and stalked, pointed, leathery floating leaves. Spikes of inconspicuous, crimson and creamy white flowers, 0.5–1.5cm (¼–½in) across, are produced just above the water surface in summer. ↔ indefinite. Europe, Asia to Australasia. \*\*\*

▷ **Potato bush, Blue** see *Solanum rantonnetii*

▷ **Potato tree, Chilean** see *Solanum crispum*

▷ **Potato vine** see *Solanum jasminoides*, *S. wendlandii*

## POTENTILLA syn. COMARUM

Cinquefoil

ROSACEAE

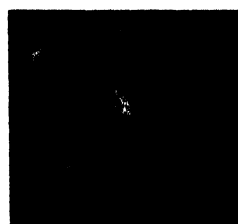
Genus of about 500 species of shrubs, herbaceous perennials, and a few annuals and biennials, found throughout the N. hemisphere, in habitats ranging from meadows to mountain screes. They are cultivated for their attractive, usually 5-petalled, saucer- to cup-shaped, occasionally star-shaped, white, yellow, orange, pink, or red flowers; they are produced over long periods from spring to autumn, either singly or, more often, in cymes or terminal panicles. The alternate leaves may be pinnate or 3- to 7-palmate, and are often strongly veined and wrinkled. The shrubby potentillas, mainly derived from *P. fruticosa*, are excellent, long-flowering plants for a mixed or shrub border and for low hedges. Many species are also suitable for rock gardens, raised beds, or mixed borders. Most clump-forming hybrids, derived mainly from *P. atrosanguinea* and *P. nepalensis*, are valued for their single, semi-double, or double, mainly red or yellow flowers providing summer and autumn colour in herbaceous borders: they have strawberry-like, 5-palmate, mid- to dark green leaves, 5–10cm (2–4in) long, conspicuously veined and toothed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun. Rock-garden species prefer poor, gritty, sharply drained soil. Pruning group 10 for shrubs, in early or mid-spring.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide perennials in autumn or spring. Take greenwood cuttings of shrubs in early summer.
- **PESTS AND DISEASES** Trouble free.

***P. alba*** ♀ Clump-forming perennial with spreading stems, bearing 5-palmate



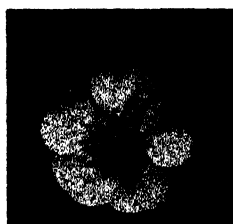
*Potentilla alba*



*Potentilla atrosanguinea*



*Potentilla aurea*



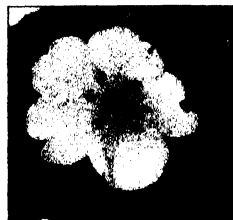
*Potentilla eriocarpa*



*Potentilla fruticosa*  
'Abbotswood'



*Potentilla fruticosa*  
'Daydawn'



*Potentilla fruticosa*  
'Elizabeth'



*Potentilla fruticosa*  
'Farrer's White'



*Potentilla fruticosa*  
'Friedrichsenii'



*Potentilla fruticosa*  
'Manchu'



*Potentilla fruticosa*  
'Primrose Beauty'



*Potentilla fruticosa*  
'Princess'



*Potentilla fruticosa*  
'Red Ace'



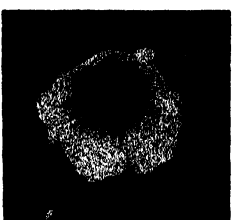
*Potentilla fruticosa*  
'Sunset'



*Potentilla fruticosa*  
'Vilmoriniana'



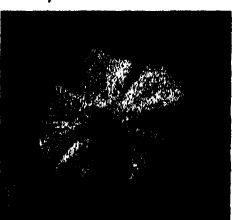
*Potentilla*  
'Gloire de Nancy'



*Potentilla megalantha*



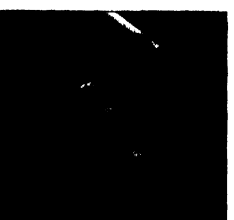
*Potentilla nepalensis*  
'Miss Willmott'



*Potentilla neumanniana*  
'Goldrausch'



*Potentilla recta*  
'Warrenii'



*Potentilla*  
'William Rollison'



*Potentilla*  
'Yellow Queen'

leaves, with oblong to obovate-lance-shaped leaflets, 2-4cm (¾-1½in) long, light green above, silver-silky-hairy beneath. In late spring and early summer, bears loose cymes of flat, saucer-shaped white flowers, 2.5cm (1in) across. †8cm (3in), ↔ 30cm (12in). C. and S. Europe. \*\*\*  
*P. arbuscula* see *P. fruticosa* var. *arbuscula*.

*P. atrosanguinea* [Himalayan cinquefoil]. Clump-forming, hairy perennial bearing 3-palmate, dark green leaves, 5-8cm (2-3in) long, with ovate to elliptic or obovate, toothed leaflets, grey-silky-hairy to densely white-hairy. From summer to autumn, panicle-like cymes of saucer-shaped, yellow, orange, or pale to deep red flowers, 3cm (1¼in) across, are borne on erect, branching, wiry stems. †45-90cm (18-36in), ↔ 60cm (24in). Himalayas. \*\*\*. var. *argrophylla* has leaves composed of 3-5 leaflets, and yellow or yellow-orange flowers.

*P. aurea* [Mat-forming perennial with 3- or 5-palmate, glossy, mid-green leaves, to 3cm (1¼in) long, composed of oblong leaflets with sharply toothed, silver-hairy margins. Produces cymes of flat, saucer-shaped, deep golden yellow flowers, 2cm (¾in) across, with overlapping petals, from late spring to summer. †10cm (4in), ↔ 20cm (8in). Pyrenees, Alps. \*\*\*

*P. davurica* var. *mandschurica* of gardens see *P. fruticosa* 'Manchu'.  
*P. davurica* 'Veitchii' see *P. fruticosa* var. *veitchii*.

*P. erecta*, syn. *P. tormentilla* (Tormentil). Low-growing perennial with trailing, non-rooting stems and usually 3-palmate, rarely 4- or 5-palmate leaves consisting of wedge- to lance-shaped, toothed leaflets, to 2cm (¾in) long, dark green above, silver-silky-hairy beneath. Loose, terminal cymes of slender-stemmed, 4-petaled, saucer-shaped yellow flowers, to 1cm (½in) across, are borne from late spring to summer. Suitable for a wildflower garden. †10-30cm (4-12in), ↔ 60cm (24in). Europe, Asia. \*\*\*

*P. eriocarpa* [Carpet-forming perennial with 3-palmate, bright green leaves, to 3cm (1¼in) long, composed of wedge-shaped, toothed leaflets. Solitary or clustered, short-stalked, cup-shaped, deep yellow flowers, to 4cm (1½in) across, are produced in early summer. †8cm (3in), ↔ 30cm (12in). Pakistan to China, Himalayas. \*\*\*

*P. 'Etna'*. Clump-forming perennial with silver-tinted, deep green leaves, and panicles of semi-double, deep velvety red flowers, 2.5-3cm (1-1¼in) across, with yellow margins, borne in midsummer. †to 45cm (18in), ↔ 60cm (24in). \*\*\*

*P. 'Flamenco'*. Clump-forming perennial with deep green leaves, and panicles of single, bright scarlet flowers, 2.5-3cm (1-1¼in) across, borne from late spring to midsummer. †to 45cm (18in), ↔ 60cm (24in). \*\*\*

*P. frugiformis* see *P. megalantha*.  
*P. fruticosa*. Compact, bushy, deciduous shrub with pinnate leaves, to 4cm (1½in) long, composed of usually 5 or 7 narrowly oblong, dark green leaflets. Saucer-shaped yellow flowers, to 4cm (1½in) across, are borne singly or in cymes of 3 over a long period from

late spring to mid-autumn. †1m (3ft), ↔ 1.5m (5ft). Europe, N. Asia, North America. \*\*\*. 'Abbotswood' [♀] has white flowers and dark blue-green leaves; †75cm (30in), ↔ 1.2m (4ft). var. *arbuscula*, syn. *P. arbuscula*, has grey-green to silvery grey foliage and golden yellow flowers, 4.5cm (1¾in) across; ↔ 1.2m (4ft); Himalayas, China.  
'Beesii' [♀] syn. 'Nana Argentea', is slow-growing and compact, with silver-silky-hairy leaves and golden yellow flowers, 2cm (¾in) across; †60cm (24in), ↔ 1.2m (4ft). 'Blink' see 'Princess'.  
'Coronation Triumph' bears profuse bright yellow flowers. 'Daydawn' [♀] has creamy yellow flowers that are flushed orange-pink; ↔ 1.2m (4ft).  
'Elizabeth' [♀] bears bright yellow flowers, to 4.5cm (1¾in) across.  
'Farrer's White' [♀] bears profuse white flowers, 2.5cm (1in) across.  
'Friedrichsenii' [♀] is vigorous and upright, with grey-green leaves and pale yellow flowers, 3cm (1¼in) across; †1.5m (5ft), ↔ 1.2m (4ft). 'Gold Drop', syn. 'Goldkugel', *P. parvifolia* 'Gold Drop', is upright, with profuse golden flowers, 2.5cm (1in) across; †to 1.2m (4ft). 'Goldfinger' [♀] has large, rich yellow flowers, to 5cm (2in) across. 'Goldkugel' see 'Gold Drop'.  
'Jackman's Variety' has bright yellow flowers, 3-4cm (1¼-1½in) across.  
'Katherine Dykes' [♀] has profusely borne, canary-yellow flowers.  
'Klondike' [♀] produces bright green leaves and bright yellow flowers.  
'Longacre' [♀] is low-growing and spreading, with bright yellow flowers, to 4cm (1½in) or more across; †60cm (24in). 'Maanelys' [♀] syn. 'Moonlight', *P. 'Maanelys'*, has soft yellow flowers, 3cm (1¼in) across, and grey-green foliage; †1.2m (4ft), ↔ 2m (6ft).  
'Manchu' [♀] syn. *P. davurica* var. *mandschurica* of gardens, is dwarf and mound-forming, with dark pink shoots, silvery grey, silky-hairy leaves, and white flowers, 2.5cm (1in) across; †30cm (12in), ↔ 75cm (30in). 'Moonlight' see 'Maanelys'. 'Nana Argentea' see 'Beesii'. 'Pretty Polly' has pale pink flowers, 2cm (¾in) across; †50cm (20in), ↔ 75cm (30in). 'Primrose Beauty' [♀] has grey-green leaves and pale primrose-yellow flowers, 3.5cm (1½in) across. 'Princess' [♀] syn. 'Blink', is low-growing, with pale pink flowers, 2.5cm (1in) across, fading to white in full sun; †60cm (24in), ↔ 1m (3ft). 'Red Ace' [♀] has bright vermilion flowers, yellow on the backs of the petals, fading in full sun. 'Royal Flush' has rich pink flowers with yellow centres, fading to white in full sun; †45cm (18in), ↔ 75cm (30in). 'Snowbird' has double white flowers. 'Sunset' [♀] has dark orange flowers, 3cm (1¼in) across, fading in full sun; ↔ 1m (3ft). 'Tangerine' [♀] has yellow flowers, 3cm (1¼in) across, flushed pale orange-red; ↔ 1m (3ft). 'Tilford Cream' [♀] is dense and spreading, with creamy white flowers, 3.5cm (1½in) across; †60cm (24in), ↔ 1m (3ft). var. *veitchii*, syn. *P. davurica* 'Veitchii', has white flowers, 2.5cm (1in) across. 'Vilmoriniana' [♀] is upright, with silvery grey leaves and creamy white flowers, 4cm (1½in) across; †1.2m (4ft), ↔ 1m (3ft). 'Yellow Gem' has a low and spreading habit, producing grey foliage



*Potentilla* 'Gibson's Scarlet'

and ruffled, bright yellow flowers; 1 to 60cm (24in), 1 to 1.2m (4ft).

**P. 'Gibson's Scarlet'** [M] Clump-forming perennial with soft green leaves and raceme-like cymes of single, very bright scarlet flowers, 3cm (1 1/4in) across, from early to late summer. 1 to 45cm (18in), 1 to 60cm (24in). \*\*\*

**P. 'Gloire de Nancy'** [M] syn. *P. 'Glory of Nancy'*. Clump-forming perennial with dark green leaves, and racemes of double, reddish orange flowers, 2.5-3cm (1-1 1/4in) across, from early to late summer. 1 to 45cm (18in), 1 to 60cm (24in). \*\*\*

**P. 'Glory of Nancy'** see *P. 'Gloire de Nancy'*.

**P. 'Manelys'** see *P. fruticosa* 'Maanelys'.

**P. megalantha** [M] syn. *P. fragiformis*. Compact, clump-forming perennial producing 3-palmate leaves, to 8cm (3in) long, with broadly elliptic to obovate, coarsely scalloped leaflets, mid-green and slightly hairy above, grey-green and more hairy beneath. Erect cymes of 3-7 saucer-shaped yellow flowers, 3-4cm (1 1/4-1 1/2in) across, are produced in mid- and late summer. 1 to 15-30cm (6-12in), 1 to 15cm (6in). E. Asia, Japan. \*\*\*

**P. 'Monsieur Rouillard'**. Clump-forming perennial with mid- to deep green leaves and raceme-like cymes of double, yellow-marked, deep blood-red flowers, 3cm (1 1/4in) across, borne from early to late summer. 1 to 45cm (18in), 1 to 60cm (24in). \*\*\*

**P. nepalensis**. Loose, clump-forming perennial with numerous branching, red-tinged, wiry stems bearing 5-palmate, mid-green leaves, 8-10cm

(3-4in) long, composed of large, obovate or elliptic, coarsely toothed, hairy leaflets. Throughout summer, bears loose cymes of saucer-shaped, dark crimson flowers, 2.5cm (1in) across, on long leaf-stalks. 1 to 30-90cm (12-36in), 1 to 60cm (24in). W. Himalayas. \*\*\*

**'Miss Willmott'** [M] has cherry-pink flowers suffused yellow, with darker pink centres; 1 to 30-45cm (12-18in).

**'Roxana'** has copper-pink flowers with cherry-red centres; 1 to 45cm (18in).

**P. neumanniana**, syn. *P. tabernaemontani*, *P. verna*. Procumbent, mat-forming perennial, similar to *P. eriocarpa*, with 5- or 7-palmate leaves, to 4cm (1 1/2in) long, comprising inversely lance-shaped to obovate, toothed, mid-green leaflets. Bears loose cymes of up to 12 saucer-shaped yellow flowers, to 2.5cm (1in) across, over long periods from spring onwards. 1 to 10cm (4in), 1 to 30cm (12in). Europe. \*\*\*

**'Goldrausch'** [M] produces loose cymes of up to 10 bright golden yellow flowers from spring to early summer; 1 to 10cm (4in), 1 to 20cm (8in). **'Nana'** is more compact; 1 to 8cm (3in), 1 to 15cm (6in).

**P. nitida**. Densely tufted perennial with palmate, silver-hairy leaves, to 1.5cm (1/2in) long, comprising 3, rarely 4 or 5, inversely lance-shaped to obovate leaflets. In summer, bears solitary or paired, short-stemmed, saucer-shaped, deep pink, rarely white flowers, 2.5cm (1in) or more across. Attractive alpine for a scree bed; not always free-flowering. 1 to 10cm (4in), 1 to 15cm (6in). S.W. and S.E. Alps, Apennines. \*\*\*

**P. palustris**, syn. *Comarum palustre* (Marsh cinquefoil). Rhizomatous,

woody-based perennial with upright, decumbent stems and pinnate leaves, 3-7cm (1 1/4-3in) long, composed of 5-7 toothed, oblong, grey-green leaflets, to 6cm (2 1/2in) long. Produces lax cymes of bowl-shaped, purple to maroon flowers, to 3cm (1 1/4in) across, in early summer. Suitable for the margins of a wildlife pond. 1 to 50cm (20in), 1 to 80cm (32in) or more. Europe, W. Asia, North America. \*\*\*

**P. parvifolia 'Gold Drop'** see *P. fruticosa* 'Gold Drop'.

**P. recta**. Erect, clump-forming, hairy perennial producing 5- or 7-palmate leaves, 10cm (4in) long, with oblong to obovate, toothed, grey-green to mid-green leaflets. Flat cymes of saucer-shaped, pale yellow flowers, to 2.5cm (1in) across, are produced from early to late summer. 1 to 60cm (24in), 1 to 45cm (18in). Europe, Caucasus, Russia (Siberia). \*\*\*

**'Citrina'** see var. *pallida*. **'Macrantha'** see 'Warrenii'. var. *pallida* [M] syn. 'Citrina', var. *sulphurea*, produces pale yellow to cream flowers; 1 to 45cm (18in). var. *sulphurea* see var. *pallida*. **'Warrenii'** [M] syn. 'Macrantha', produces loose cymes of bright canary-yellow flowers.

**P. tabernaemontani** see *P. neumanniana*.

**P. x tonguei** [M] (*P. anglica* x *P. nepalensis*). Clump-forming perennial with long, spreading stems bearing 3- or 5-palmate, dark green leaves, to 5cm (2in) long, composed of obovate leaflets. Over long periods in summer, produces solitary or loose, few-flowered cymes of rather flat, bowl-shaped, apricot-yellow flowers, 1.5cm (1/2in) across, with deep carmine-red eyes. 1 to 10cm (4in), 1 to 30cm (12in). Garden origin. \*\*\*

**P. tormentilla** see *P. erecta*.

**P. verna** see *P. neumanniana*.

**P. 'William Rollison'** [M] Clump-forming perennial with mid-green leaves and raceme-like cymes of semi-double, yellow- or red-orange flowers, 2.5-3cm (1-1 1/4in) across, with yellow centres and petal backs, from early to late summer. 1 to 45cm (18in), 1 to 60cm (24in). \*\*\*

**P. 'Yellow Queen'** [M] Clump-forming perennial with mid-green leaves and raceme-like cymes of double or semi-double, pure yellow flowers, 2.5-3cm (1-1 1/4in) across, from early to late summer. 1 to 30-45cm (12-18in), 1 to 60cm (24in). \*\*\*

▷ *Pothos celatocaulis* see *Rhaphidophora celatocaulis*

▷ *Pothos, Golden* see *Epipremnum aureum*

## X POTINARA

ORCHIDACEAE

Quadrigenic hybrid genus of evergreen orchids derived from crosses between *Brassavola*, *Cattleya*, *Laelia*, and *Sophranitis*. They are vegetatively similar to the 4 parent genera, which are loosely referred to as "cattleyas", and have stout to slender pseudobulbs and 1 or 2 mostly broadly oblong, semi-rigid, leathery leaves. The short racemes of flowers, with usually strong and clear colours, often yellow or red, are borne at the bases of the leaves, with or without sheaths.

• **HARDINESS** Frost tender.



x *Potinara* Cherub 'Spring Daffodil'

• **CULTIVATION** Cool-growing orchids. Grow in pots of epiphytic orchid compost made with coarse bark. When in growth, provide high humidity and bright filtered light, water freely, and feed at every third watering. In winter, admit full light and water sparingly. See also p.46.

• **PROPAGATION** Divide or remove backbulbs in spring.

• **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be troublesome.

x *P. Cherub* 'Spring Daffodil' [M] (*Cattleya aurantiaca* x *Lowiara* Trinket). Epiphytic orchid with elongated pseudobulbs and semi-rigid, broadly oval leaves, 10cm (4in) long. Clear yellow flowers, 5cm (2in) across, are produced in short racemes in spring. 1 to 15cm (6in), 1 to 20cm (8in). (min. 13°C/55°F; max. 30°C/86°F)

▷ **Pouch flower** see *Calceolaria*

▷ **Poui,**

Pink see *Tabebuia rosea*

Yellow see *Tabebuia serratifolia*

▷ **Powder-puff tree** see *Calliandra*

▷ **Prairie cone flower** see *Ratibida*

▷ **Prairie star** see *Lithophragma parviflora*

## PRATIA

CAMPANULACEAE

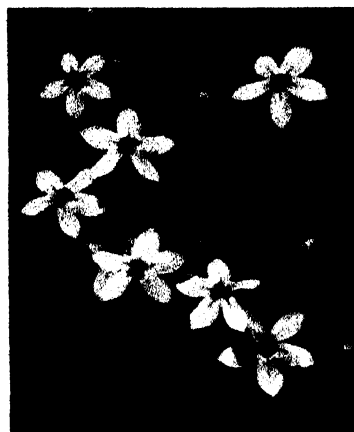
Genus of about 20 species of prostrate, spreading, freely rooting, evergreen perennials, mostly from damp, shady habitats in Africa, Asia, Australia, New Zealand, and South America. They produce alternate, usually stalkless, often toothed, ovate to rounded leaves, and are grown for their mass of solitary, 2-lipped, star-shaped, usually white or blue-purple flowers. Good ground cover in damp soil, they are also suitable for a rock garden or paving crevice, but can be invasive. In areas prone to prolonged or severe frosts, grow frost-hardy species in an alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, loamy, reliably moist soil in partial or deep shade; *P. pedunculata* tolerates drier soils. In an alpine house, use a mix of equal parts loam, leaf mould, and grit.

• **PROPAGATION** Divide at any time of year. Keep divisions moist until well-established.

• **PESTS AND DISEASES** Prone to slugs and snails, and to aphids under glass.

*Primula pedunculata*

***P. angulata***, syn. *Lobelia angulata*. Mat-forming, evergreen perennial with redd-tinted stems that spread and root down freely. The broadly ovate to rounded, coarsely toothed leaves are very variable in size, but usually 5–10mm (¼–½in) long. In late spring and early summer, bears short-stalked, axillary, star-shaped, sometimes purple-streaked white flowers, to 1cm (½in) across; they are followed by spherical, red-purple, fleshy fruit, 4mm (¼in) across. Moderately invasive in moist conditions. ↑ 5cm (2in), ↔ 30–60cm (12–24in). Malaysia, Indonesia, New Zealand. \*\*\*.

**'Treadwellii'**, syn. *P. treadwellii*, is larger in all its parts, and may be very invasive; ↑ 6cm (2½in), ↔ 1m (3ft).

***P. pedunculata*** ■ syn. *Lobelia pedunculata*. Ground-hugging perennial with ovate to rounded leaves, to 9mm (¾in) long. Short-stalked, star-shaped, pale blue flowers, to 7mm (¼in) across, are borne over long periods in summer. Invasive, even in dry conditions, but not too rampant. ↑ 1.5cm (½in), ↔ indefinite. Australia. \*\*\*.

***P. perpusilla***, syn. *Lobelia perpusilla*. Mat-forming perennial bearing tiny, obovate leaves, 3–5mm (¼–½in) long, with deeply toothed margins. During summer, bears short-stalked, star-shaped white flowers, 6–10mm (¼–½in) across, with recurving lobes. ↑ to 2cm (¾in), ↔ indefinite. \*\*\*. **'Fragrant Carpet'** produces fragrant flowers.

***P. treadwellii*** see *P. angulata* **'Treadwellii'**.

- ▷ **Prayer plant** see *Maranta leuconeura*
- ▷ **Prickle ear** see *Acanthostachys*
- ▷ **Prickly Moses** see *Acacia verticillata*
- ▷ **Western** see *A. pulchella*
- ▷ **Prickly pear** see *Opuntia ficus-indica*
- ▷ **Pride of Bolivia** see *Tipuana tipu*
- ▷ **Pride of Burma** see *Amherstia nobilis*
- ▷ **Pride of India** see *Koeleruteria paniculata*, *Lagerstroemia speciosa*, *Melia azedarach*
- ▷ **Pride of Madeira** see *Echium candicans*
- ▷ **Primavera** see *Cyrtanthus donnell-smithii*
- ▷ **Primrose** see *Primula*, *P. vulgaris*
- ▷ **Cape** see *Streptocarpus*
- ▷ **Desert evening** see *Oenothera deltoides*
- ▷ **Evening** see *Oenothera*, *O. biennis*
- ▷ **Fairy** see *Primula malacoides*
- ▷ **Japanese** see *Primula japonica*

## PRIMULA

Primrose

PRIMULACEAE

Genus of about 400 species of mainly herbaceous perennials, some woody-based and evergreen. Occurring in a wide range of habitats from bogs and marshland to alpine areas, they are widely distributed throughout the N. hemisphere, with almost half the species from the Himalayas; a few are also found in the S. hemisphere. They have linear to broadly ovate to obovate, pale to dark green leaves in basal rosettes, and attractive, often salverform, sometimes tubular, bell-shaped or funnel-shaped flowers, with usually spreading petals joined at the bases into tubes.

The solitary flowers may be clustered together among the leaves, or borne on slender to stout flower-stalks in umbels, whorls, or racemes. In some primulas, the leaves, flower stems, and calyces may be covered with a white or yellow, waxy meal, or "farina". Primulas can be used for most garden sites, from bog and waterside plantings to borders, rock gardens, and bedding; they can also be grown in an alpine house. A few tender species are grown as cool or temperate greenhouse container plants, or as houseplants.

*Primula* is a complex genus, divided into many different botanical sections. In gardens, however, only the following 3 major groupings are recognised; they apply to many, but not all primulas.

### Auricula primulas

Evergreen primulas, developed from hybrids between *P. auricula* and *P. hirsuta*. They bear umbels of several, usually large, flat-faced, salverform flowers above smooth, leathery, often white-mealy foliage. There are 3 main subgroups: alpine, show, and border.

**Alpine Auricula Group** – These have the colour of the flower centres in sharp contrast to that of the petals. They may be classed as either light-centred (white or pale in the centres) or gold-centred (yellow or gold in the centres). There is no meal on either leaves or flowers.

**Show Auricula Group** – These have a distinct circle of white meal, or "paste", in the centre of each flower. They may be described as self-coloured (one colour from the central paste to the petal margins), edged (the paste surrounded by black, feathering out to a green, grey, or white margin), or fancy (the paste surrounded by a colour other than black, with a green, grey, or white margin). Grow in an alpine house.

**Border Auricula Group** – These are generally robust, garden Auriculas, sometimes white-mealy, and often very fragrant. Grow in a mixed or herbaceous border; excellent for cottage gardens.

### Candelabra primulas

Robust herbaceous perennials with several whorls of flowers arranged in tiers up tall, sturdy stems. They are deciduous, dying back to basal buds, or semi-evergreen, dying back to reduced rosettes. Grow in moist shade or woodland; they are seen at their best in groups by streams or in bog gardens.

### Primrose-Polyanthus primulas

A very diverse grouping of evergreen, semi-evergreen, or deciduous, winter- to spring-flowering perennial hybrids derived from *P. amoena*, *P. elatior*, *P. juliae*, *P. veris*, and *P. vulgaris*. They have rosettes of broadly ovate to obovate leaves, and mainly large, salverform flowers borne in fascicles (bunched clusters) or umbels, sometimes with both types of inflorescence on the same plant. They occur in a wide range of colours, and are grown as biennials for bedding or containers, as greenhouse container plants, or as perennials for

rock gardens, and herbaceous and mixed borders. They are divided into 2 main groups, although interbreeding blurs the distinction between the two.

**Primrose Group** – Mainly grown as herbaceous perennials, and similar in habit to the 2 main parents, *P. vulgaris* and *P. juliae*. Most produce solitary flowers clustered among the basal rosettes, although a few may have both solitary and umbel-like inflorescences. They are either spring-flowering, if grown without protection, or winter- to spring-flowering, if grown as biennial, greenhouse container plants.

**Polyanthus Group** – Perennials, usually grown as biennials from summer-sown seed and planted out in autumn to flower through winter and the following spring, or grown under glass as winter- and spring-flowering container plants. A few cultivars are grown as spring-flowering herbaceous perennials; they are propagated by division in autumn, or in spring immediately after flowering. Distinguished from Primrose Group primulas by their long-stalked umbels.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** For ease of reference, cultivation requirements have been set out in groups, as follows:

1. Full sun or partial shade, in moderately fertile, moist but well-drained, humus-rich soil.
2. Partial shade, in deep, humus-rich, moist, neutral to acid loam soil, or peaty soil. Tolerates full sun if soil remains moist at all times.
3. Deep or partial shade in peaty, gritty, moist but sharply drained acid soil. Protect from excessive winter wet.
4. Under glass in an alpine house or frame. Use a mix of equal parts loam-based potting compost (J1 No. 2), leaf mould or peat, and grit. Avoid wetting the foliage of mealy species and hybrids.
5. Full sun with some midday shade, or partial shade, in moist but sharply drained, gritty, humus-rich, slightly alkaline soil.
6. In a cool or temperate greenhouse, or as a houseplant. Use a mix of 4 parts loam-based potting compost (J1 No. 2) and 1 part each grit and leaf mould (or peat), in bright filtered light. In growth, water freely and apply a half-strength balanced liquid fertilizer every week.

• **PROPAGATION** Surface-sow seed of half-hardy and frost-tender species in early spring. Sow seed of hardy species in containers in an open frame, as soon as ripe or in late winter or early spring. Divide between autumn and early spring. Root basal cuttings or offsets in autumn or early spring. Take root cuttings when dormant in winter.

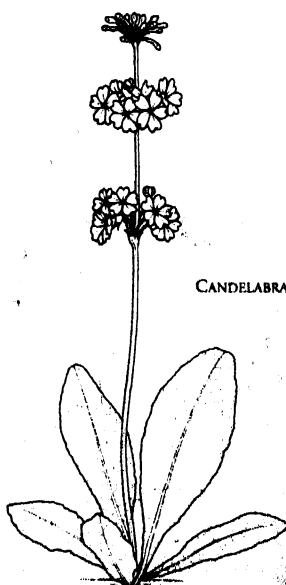
• **PESTS AND DISEASES** Prone to aphids, red spider mites, leafhoppers, vine weevil, slugs, viruses, primula brown core, and grey mould (*Botrytis*).

***P. 'Adrian'*** ■ Alpine Auricula primula with oval to rounded, mid-green leaves, to 10cm (4in) long. In spring, produces salverform, light-centred flowers, 3cm (1¼in) across, with purple-blue petals, paler at the margins. Cultivation group 1 or 4. ↑↔ 10cm (4in). \*\*\*.

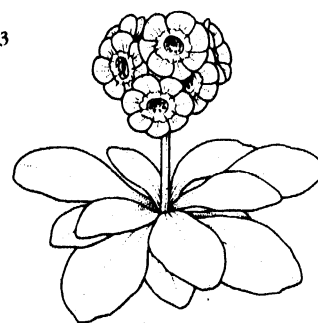
***P. 'Alice Haysom'***. Self-coloured show Auricula primula with oval to rounded, mid-green leaves, to 10cm (4in) long. In spring, bears salverform flowers, 3cm

## PRIMULA GROUPINGS

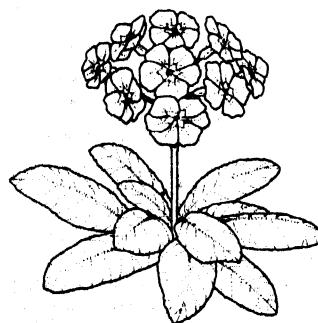
The genus *Primula* is classified into many botanical sections. In gardens, however, the 3 informal groupings shown here are the most commonly recognized.



CANDELABRA



AURICULA



POLYANTHUS GROUP



# PRIMULA

(1¼in) across, with cardinal-red petals and golden yellow tubes. Cultivation group 4.  $\pm$  10cm (4in). \*\*\*

**P. allionii** ■ Rosette-forming, evergreen perennial with entire, sometimes scalloped or finely toothed, glandular-hairy, inversely lance-shaped, grey-green leaves, to 5cm (2in) long. In late winter and spring, produces 1- to 5-flowered umbels of salverform flowers, each to 3cm (1¼in) across, varying from white to pink to reddish purple. Each corolla has a flat face and a white eye. Cultivation group 4 (lime-loving).

$\pm$  7-10cm (3-4in),  $\leftrightarrow$  to 20cm (8in). Cliffs in S. France and N. Italy. \*\*\*. There are many named cultivars.

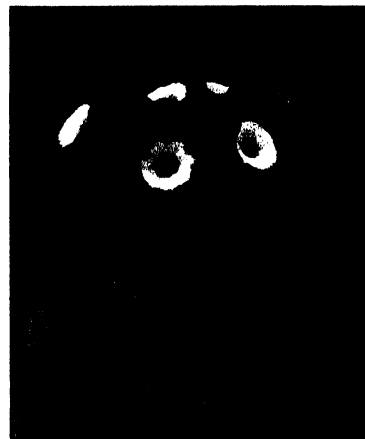
**'Snowflake'** is vigorous, with large white flowers, 2.5cm (1in) across, sometimes flushed pink at the margins.

**P. alpicola** ■ Rosette-forming, deciduous perennial with elliptic, toothed or scalloped, mid-green leaves, to 10cm (4in) long. In summer, white-mealy stems produce umbels of 6-12 pendent, tubular to funnel-shaped, fragrant, white, yellow, or violet flowers, 1-2.5cm (½-1in) across, with white-mealy eyes. Cultivation group 2.  $\pm$  50cm (20in),  $\leftrightarrow$  30cm (12in). Moist alpine areas in S.E. Tibet. \*\*\*

**P. amoena**, syn. *P. elatior* subsp. *meyeri*. Rosette-forming, deciduous perennial with elliptic to spoon-shaped, scalloped or finely toothed leaves, to 17cm (7in) long, bright green above, usually densely hairy beneath. In early spring, hairy stems bear usually one-sided umbels of 6-10 flat to shallowly tubular to funnel-shaped, red-purple, violet-blue, or occasionally white flowers, 2.5cm (1in) across, with yellow eyes. Cultivation group 2 or 4.  $\pm$  15cm (6in). Peaty banks and rocky hillsides in Caucasus and N.E. Turkey. \*\*\*

**P. anisodora**, syn. *P. wilsonii* var. *anisodora*. Rosette-forming, semi-evergreen Candelabra primula with obovate, finely toothed, aniseed-scented, mid-green leaves, to 25cm (10in) long. Stout stems produce 3-5 whorls of 8-10 pendent, tubular to bell-shaped, green-eyed, brown-purple flowers, 1.5cm (½in) across, in summer. Cultivation group 2.  $\pm$  60cm (24in). Wet meadows in S.W. China. \*\*\*

**P. 'Argus'** ■ syn. *P. 'Kingcup'*. Very vigorous alpine Auricula primula with oval to rounded, mid-green leaves, to 12cm (5in) long. In spring, produces salverform flowers, to 3cm (1¼in) across, with almost white centres, and



*Primula 'Argus'*

petals shading from plum-red to beetroot-red. Cultivation group 1 or 4.  $\pm$  10cm (4in). \*\*\*

**P. aurantiaca**. Small, rosette-forming, deciduous Candelabra primula with inversely lance-shaped to obovate, finely toothed, dark green leaves, to 20cm (8in) long, with red-purple midribs. In summer, red-tinged stems produce 2-6 whorls of 6-12 salverform, brilliant red-orange flowers, 1.5cm (½in) across. Cultivation group 2.  $\pm$  30cm (12in),  $\leftrightarrow$  40cm (16in). Moist, shaded sites in S.W. China. \*\*\*

**P. aureata** ■ Rosette-forming, evergreen perennial with spoon-shaped to oblong, toothed, white-mealy, mid-green leaves, to 8cm (3in) long. In spring, very short stems, hidden within the foliage, produce umbels of 2-10 salverform, cream to yellow flowers, 3-4cm (1¼-1½in) across, with large, darker yellow eyes. Cultivation group 3 or 4.  $\pm$  15cm (6in),  $\leftrightarrow$  20cm (8in). Moist cliffs and rocky hillsides in Nepal. \*\*

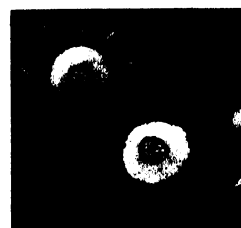
**P. auricula** ♀ Rosette-forming, evergreen, sometimes white-mealy perennial, with usually obovate-spoon-shaped to rounded, entire to toothed, pale green to grey-green leaves, to 12cm (5in) long. Umbels of 2-30 salverform, fragrant, deep yellow flowers, 1.5-2.5cm (½-1in) across, are produced in spring. Cultivation group 1, 4, or 5.  $\pm$  20cm (8in),  $\leftrightarrow$  25cm (10in). Alps, Apennines, Carpathians. \*\*\*. var. **albocincta** ■ bears grey-green leaves with white margins; Dolomites.

**P. 'Beatrice Wooster'**. Rosette-forming, evergreen perennial with obovate, scalloped or finely toothed, glandular-hairy, grey-green leaves, to 8cm (3in) long. Large, shallowly cup-shaped, clear pink flowers, to 3cm (1¼in) across, with white eyes, are borne in umbels of 2-10 on short stems in spring. Cultivation group 4 or 5.  $\pm$  10cm (4in),  $\leftrightarrow$  20cm (8in). \*\*\*

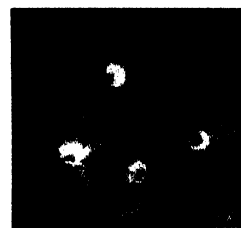
**P. beesiana** ■ syn. *P. bulleyana* subsp. *beesiana*. Rosette-forming, deciduous or semi-evergreen Candelabra primula that dies back to basal buds or reduced rosettes. The leaves are inversely lance-shaped to obovate, toothed, mid-green, and to 22cm (9in) long, with red midribs. In summer, stout, white-mealy stems each bear 2-8 whorls of 8-16 salverform, yellow-eyed, reddish pink flowers, 2cm (¾in) across. Cultivation group 2.  $\pm$  60cm (24in). Moist mountain meadows in China. \*\*\*

**P. x berninae** (*P. hirsuta* x *P. latifolia*). Small, neat, rosette-forming, deciduous perennial with ovate, toothed, mid-green leaves, to 12cm (5in) long. In spring, very short stems produce tubular to cup-shaped purple flowers, 1.5cm (½in) across, singly or in umbels of up to 15. Cultivation group 1 or 4.  $\pm$  7cm (3in),  $\leftrightarrow$  15cm (6in). Garden origin. \*\*\*. **'Windrush'** produces white-eyed, red-purple flowers, 2cm (¾in) across.

**P. 'Betty Green'**. Vigorous, rosette-forming, semi-evergreen Primrose Group primula bearing obovate, rich apple-green leaves, to 15cm (6in) long. Tubular to saucer-shaped, vivid crimson flowers, to 4cm (1½in) across, with clear yellow eyes, are produced freely in umbels of 3-25 in spring. Cultivation group 1 or 2.  $\pm$  10-15cm (4-6in),  $\leftrightarrow$  30-40cm (12-16in). \*\*\*



*Primula 'Adrian'*



*Primula allionii*



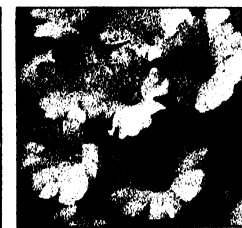
*Primula alpicola*



*Primula aureata*



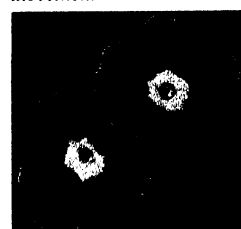
*Primula auricula* var. *albocincta*



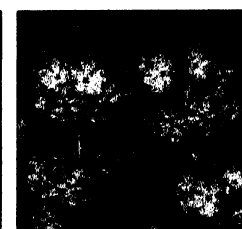
*Primula 'Blairside Yellow'*



*Primula 'Blossom'*



*Primula 'Buckland Wine'*



*Primula bulleyana*

**P. bhutanica**. Rosette-forming, deciduous perennial, dying back to a large, white-mealy bud in winter. The spoon-shaped, finely toothed, slightly white-mealy, crinkled leaves are mid-green, and to 10cm (4in) long. In late winter and spring, very short stems, hidden within the foliage, each bear umbels of 2-10 salverform, yellow-eyed blue flowers, 2.5cm (1in) across. Cultivation group 3.  $\pm$  15cm (6in),  $\leftrightarrow$  20cm (8in). Mixed forest in Tibet, Bhutan, and India (Assam). \*\*\*

**P. 'Blairside Yellow'** ■ Compact border Auricula primula, with rounded to oval, pale green leaves, to 12cm (5in) long. In early spring, produces open funnel-shaped yellow flowers, to 2.5cm (1in) across. Cultivation group 2 or 5.  $\pm$  10cm (4in),  $\leftrightarrow$  20cm (8in). \*\*\*

**P. 'Blossom'** ■ Vigorous alpine Auricula primula with oval, dark green leaves, 12cm (5in) long. Produces salverform, gold-centred flowers, 2.5cm (1in) across, with shaded crimson petals, in spring. Cultivation group 1 or 4.  $\pm$  10cm (4in). \*\*\*

**P. boothii**. Rosette-forming, deciduous perennial with spoon-shaped to elliptic, toothed, dark green leaves, to 15cm (6in) long. Very short stems produce umbels of 2-25 saucer-shaped, yellow-eyed, purple-pink flowers, to 3cm (1¼in) across, in spring. Cultivation group 3 or 4.  $\pm$  10cm (4in),  $\leftrightarrow$  20cm (8in). Moist, peaty areas in E. Himalayas. \*\*

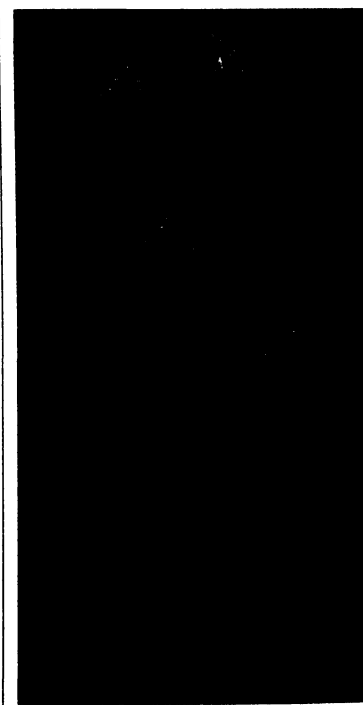
**P. 'Broadwell Gold'**. Vigorous border Auricula primula bearing obovate, mid-green leaves, to 15cm (6in) long. In spring, bears salverform, golden yellow flowers, to 4cm (1½in) across, with white-mealy eyes. Cultivation group 1, 2, or 4.  $\pm$  25cm (10in). \*\*\*

**P. 'Buckland Wine'** ■ Compact, rosette-forming, semi-evergreen, Primrose Group primula with oval,

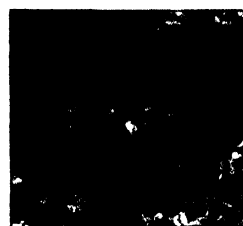
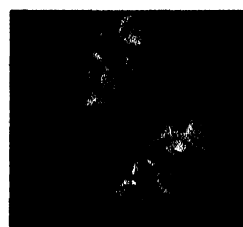
bronze-green leaves, to 15cm (6in) long. In spring, produces salverform, wine-red flowers, to 4cm (1½in) across, in umbels of 3-15. Cultivation group 1, 2, or 4.  $\pm$  10cm (4in),  $\leftrightarrow$  25cm (10in). \*\*\*

**P. bulleyana** ■ Rosette-forming, semi-evergreen Candelabra primula with ovate to ovate-lance-shaped, toothed, mid-green leaves, to 30cm (12in) long. In summer, stout stems produces 5-7 whorls of 5 to many salverform flowers, 2cm (¾in) across, in crimson fading to orange. Cultivation group 2.  $\pm$  60cm (24in). Hillsides in China. \*\*\*.

subsp. *beesiana* see *P. beesiana*.



*Primula beesiana*

*Primula capitata**Primula chungensis**Primula clarkei**Primula clusiana**Primula* 'Craddock White'*Primula denticulata* var. *alba**Primula elatior**Primula flaccida**Primula forrestii*

***P. burmanica***. Rosette-forming, deciduous Candelabra primula with inversely lance-shaped, toothed, dull, deep green leaves, to 30cm (12in) long. Stout stems produce up to 6 whorls of 10–18 salverform, yellow-eyed, red-purple flowers, 2cm (¾in) across, in late spring and early summer. Cultivation group 2.  $\uparrow$  60cm (24in). Meadows and forests in China and Burma. \*\*\*

***P. capitata***  $\square$  Rosette-forming, semi-evergreen, short-lived perennial, with inversely lance-shaped or oblong-lance-shaped, finely toothed, usually mealy, pale green leaves, to 15cm (6in) long, white-mealy beneath. Tubular, dark purple flowers, to 1cm (½in) long, with shallowly lobed petals, are borne in flattened, spherical racemes on white-mealy stems, from late spring to early autumn. Cultivation group 2.  $\uparrow$  40cm (16in). Moist alpine regions in Tibet, Bhutan, and India (Sikkim). \*\*\*

**subsp. *mooreana*** is vigorous, and larger in all parts;  $\uparrow$  60cm (24in).

***P. chionantha***  $\square$  Rosette-forming, deciduous perennial with inversely lance-shaped, toothed or almost entire, mid-green leaves, to 25cm (10in) long, covered in yellow or white meal. From late spring to early summer, stout stems produce 1–4 many-flowered whorls of tubular to funnel-shaped, fragrant, milk-white flowers, with or without whitish eyes, to 2.5cm (1in) across. Cultivation group 1 or 2.  $\uparrow$  60cm (24in). Open, alpine meadows in China. \*\*\*

**subsp. *melanops*** see *P. melanops*.

***P. 'Chloe'***. Green-edged show Auricula primula with oval, dark green leaves, to 12cm (5in) long. Salverform, 5- to 7-petalled black flowers, 2.5cm (1in) across, are borne in spring. Cultivation group 4.  $\uparrow$  10cm (4in). \*\*\*

***P. chungensis***  $\square$  Vigorous, rosette-forming, deciduous Candelabra primula with oblong-obovate, toothed and

shallowly lobed, mid-green leaves, to 30cm (12in) long. In early summer, stout stems bear 2–5 whorls of up to 12 salverform, fragrant, pale orange flowers, 1.5–2cm (½–¾in) across, with red tubes. Cultivation group 2.  $\uparrow$  80cm (32in),  $\leftrightarrow$  60cm (24in). Wet, open forest in China and Bhutan. \*\*\*

***P. clarkei***  $\square$  Small, rosette-forming, deciduous perennial with rounded to ovate, toothed, pale green leaves, to 5cm (2in) long. In spring, flat, yellow-eyed, rose-pink flowers, to 2cm (¾in) across, are borne in sometimes short-stemmed umbels of 2–6. Cultivation group 2 or 4.  $\uparrow$  7cm (3in),  $\leftrightarrow$  15cm (6in). Moist hillsides in India (Kashmir). \*\*\*

***P. clusiana***  $\square$  Small, rosette-forming, evergreen perennial with oblong to ovate, leathery, dark green leaves, to 8cm (3in) long. In spring, salverform, white-eyed, rose-pink to lilac flowers, to 4cm (1½in) across, are borne singly or in umbels of up to 4. Cultivation group 4 or 5.  $\uparrow$  8cm (3in),  $\leftrightarrow$  15cm (6in). Austria (N. calcareous Alps). \*\*\*

***P. cockburniana***. Rosette-forming, deciduous biennial or short-lived perennial Candelabra primula with oblong to oblong-obovate, mid-green leaves, to 15cm (6in) long, with small, toothed lobes. Slender stems bear 1–3 whorls of 3–8 salverform, red-tinged orange flowers, 1.5cm (½in) across, in summer. Cultivation group 1 or 2.  $\uparrow$  40cm (16in). Marshy, alpine meadows in China (S.W. Sichuan). \*\*\*

***P. cortusoides***. Small, rosette-forming, deciduous perennial with ovate-oblong, softly hairy, toothed, mid-green leaves, to 9cm (3½in) long. Umbels of 2–15 salverform, rose-red, pink to red-violet flowers, to 2cm (¾in) across, are borne in late spring and early summer. Cultivation group 2.  $\uparrow$  30cm (12in).

Woodland in Russia (W. Siberia). \*\*\*

***P. 'Craddock White'***  $\square$  Rosette-forming, deciduous or semi-evergreen Primrose Group primula with oval, dark green, bronze-veined leaves, 15cm (6in) long. In spring, salverform, scented white flowers, to 4cm (1½in) across, with yellow eyes, are produced in umbels of 3–8. Cultivation group 2.  $\uparrow$  12cm (5in),  $\leftrightarrow$  25cm (10in). \*\*\*

***P. cuneifolia***. Rosette-forming, deciduous, short-lived perennial with inversely lance-shaped, obovate, or wedge-shaped, coarsely toothed, pale green leaves, to 8cm (3in) long. In summer, salverform, rose-red, yellow-eyed flowers, to 2cm (¾in) across, are borne singly or in umbels of up to 9, on stems ranging from tiny to 30cm (12in) tall. Cultivation group 2 or 4.  $\uparrow$  30cm (12in). Russia (Siberia), Japan, North America (E. Alaska to British Columbia, Aleutian Islands). \*\*\*

***P. denticulata***  $\square$  (Drumstick primula). Robust, rosette-forming, deciduous perennial with oblong-obovate or spoon-shaped, mid-green leaves, to 25cm (10in) long, finely toothed, and white-mealy beneath. Stout stems bear crowded, spherical umbels of tubular to trumpet- or bell-shaped, yellow-eyed, purple flowers, to 2cm (¾in) across, from mid-spring to summer. Cultivation group 1 or 2.  $\uparrow$  45cm (18in). Moist alpine regions from Afghanistan to S.E. Tibet, Burma, and China. \*\*\*

**var. *alba***  $\square$  has white flowers. 'Rubra' has red-purple flowers.

***P. 'Dreamer'***  $\square$  Rosette-forming, semi-evergreen or evergreen Primrose Group primula with inversely lance-shaped to obovate, mid-green leaves, 10cm (4in) long. In spring, produces salverform flowers, 4–5cm (1½–2in) across, in cream, apricot, pink, or rose-pink; all bicolours have darker eyes and yellow centres. Cultivation group 6.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  15–20cm (6–8in). \*

***P. edgeworthii***, syn. *P. nana*. Rosette-forming, deciduous perennial with spoon-shaped to triangular-ovate, pale green leaves, to 12cm (5in) long, contracting to a tight rosette or crown in winter. From late winter to spring, very short stems bear umbels of flat, blue, lilac, pink, or white flowers, 3.5cm (1½in) across, with yellow and white eyes. Cultivation group 3 or 4.  $\uparrow$  10cm (4in),  $\leftrightarrow$  15cm (6in). W. Himalayas. \*\*\*

***P. elatior***  $\square$  (Oxlip). Variable, rosette-forming, evergreen or semi-evergreen perennial with ovate to oblong

*Primula* 'Dreamer'

or elliptic, scalloped, mid-green leaves, to 20cm (8in) long, softly hairy beneath. In spring and summer, stiff, upright stems bear one-sided umbels of 2–12 tubular yellow flowers, to 2.5cm (1in) long. Cultivation group 1 or 2.  $\uparrow$  30cm (12in),  $\leftrightarrow$  25cm (10in). Moist meadows and open woodland in Europe, Turkey to the Altai Mountains, and Russia (Siberia). \*\*\*

**subsp. *meyeri*** see *P. amoena*. ***P. ellisiae***. Rosette-forming, deciduous perennial with inversely lance-shaped to spoon-shaped, finely toothed, mid-green leaves, to 15cm (6in) long. In summer, sturdy stems produce umbels of 4–8 saucer-shaped, yellow-eyed, pinkish purple flowers, to 2.5cm (1in) across. Cultivation group 1 or 4.  $\uparrow$  30cm (12in). Moist crevices and ledges in USA (New Mexico). \*\*\*

***P. 'E.R. Jones'***. Vigorous, rosette-forming, semi-evergreen Primrose Group primula with broadly oval, toothed, mid-green leaves, to 15cm (6in) long. Masses of salverform, orange-flushed, salmon-pink flowers, 4cm (1½in) across, are borne in fascicles in spring, sometimes again in autumn. Has little foliage at spring flowering. Cultivation group 1 or 2.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  30–40cm (12–16in). \*\*\*

***P. farinosa***. Rosette-forming, deciduous perennial with inversely lance-shaped, sometimes toothed, mid-green leaves, to 10cm (4in) long, and white-mealy beneath. Bears compact umbels of 2–10 tubular, white-mealy, yellow-eyed, lilac-pink flowers, 1.5cm (½in) across, in late spring and early summer. Cultivation group 2 or 4.  $\uparrow$  25cm (10in). Moist meadows in Europe, N. Asia, and N. Pacific. \*\*\*

***P. 'Finesse'***. Rosette-forming, evergreen or semi-evergreen perennial bearing inversely lance-shaped to obovate, mid-green leaves, 10cm (4in) long. In late winter and early spring, produces salverform flowers, 4.5cm (1½in) across, in rose-pink, crimson-red, scarlet-red, mauve-blue, purple, light blue, or dark blue; each flower has a thin, "laced" margin in silver or gold. Cultivation group 6.  $\uparrow$  8–10cm (3–4in),  $\leftrightarrow$  15–20cm (6–8in). \*

***P. flaccida***  $\square$   $\square$  syn. *P. nutans* of gardens. Rosette-forming, deciduous, short-lived perennial with narrowly elliptic or obovate, downy, finely toothed, pale to mid-green leaves, to 20cm (8in) long. In summer, bears conical umbels of 5–15 pendent, broadly tubular to funnel-shaped, white-mealy, lavender-blue to violet flowers, 2.5cm (1in) across. Cultivation group 3 or 4.  $\uparrow$  50cm (20in),  $\leftrightarrow$  30cm (12in). Open forest and alpine meadows in China. \*\*\*

***P. florindae***  $\square$   $\square$  (Giant cowslip). Rosette-forming, deciduous perennial with ovate, toothed, mid-green leaves, to 45cm (18in) long. Umbels of up to 40 pendent, slender, tubular to funnel-shaped, white-mealy, fragrant, sulphur-yellow flowers, 1–2cm (½–¾in) across, are borne on stout stems in summer. Cultivation group 1 or 2.  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  90cm (36in). Marshes and streams in S.E. Tibet. \*\*\*

***P. forrestii***  $\square$  Rosette-forming, evergreen, perennial subshrub with ovate-elliptic, scalloped to toothed, dark green leaves, to 20cm (8in) long, wrinkled

above, white-mealy beneath. In late spring and summer, stout stems bear umbels of 10–25 salverform, orange-eyed, golden yellow flowers, 1.5–2.5cm (½–1in) across. Cultivation group 4 or 5. ↑ 60cm (24in), ↔ 45cm (18in). Dry, shady crevices in limestone cliffs in China. \*\*\*

***P. x forsteri f. bileckii*** (*P. hirsuta* x *P. minima*). Dwarf, rosette-forming, evergreen perennial with wedge-shaped, leathery, toothed, shiny, dark green leaves, 0.5–3cm (½–1¼in) long, with soft, glandular hairs. In late spring, bears umbels of 2 or 3 salverform, red-pink flowers, 1.5–3cm (½–1¼in) across, on very short stems. Cultivation group 2 or 4. ↑ 7cm (3in), ↔ 10cm (4in). Austria (Alps). \*\*\*

***P. frondosa*** [♀] Rosette-forming, deciduous perennial with spoon-shaped, finely toothed or lobed, mid-green leaves, to 10cm (4in) long, white-mealy beneath. In late spring and early summer, salverform, yellow-eyed, pale pinkish lilac to red-purple flowers, to 1.5cm (½in) across, are borne singly or in loose umbels of up to 30. Cultivation group 2 or 4. ↑ 15cm (6in), ↔ 25cm (10in). Bulgaria (Stara Planina plateau). \*\*\*

***P. 'Garryarde Guinevere'*** [♀] Vigorous, rosette-forming, evergreen Polyanthus Group primula with oval, toothed, deep bronze leaves, 15cm (6in) long, and salverform, yellow-eyed, purplish-pink flowers, 4cm (1½in) across, borne in umbels of 3–8 in spring. Cultivation group 2. ↑ 12cm (5in), ↔ 25cm (10in). \*\*\*

***P. geraniifolia***. Rosette-forming, hairy, deciduous perennial with rounded, 7- to 9-lobed leaves, to 15cm (6in) long, with scalloped margins. Slender stems bear umbels of 2–12 semi-pendent, tubular to bell-shaped, pinkish purple flowers, to 2cm (¾in) across, in late spring and early summer. Cultivation group 2. ↑ 30cm (12in). Shady hillsides in India (Sikkim), Nepal, Bhutan, Tibet, and China. \*\*\*

***P. glutinosa***. Rosette-forming, evergreen perennial with narrowly inversely lance-shaped to oblong, entire, leathery, sticky, glandular-hairy leaves, to 6cm (2½in) long. In late spring and early summer, cup-shaped, fragrant, blue-violet flowers, to 2cm (¾in) across, are borne singly or in umbels of up to 8. Cultivation group 1 or 4. ↑ 10cm (4in). Wet, acid alpine meadows in E. Alps and C. Balkans. \*\*\*

***P. Gold Laced Group*** [♂] Erect, semi-evergreen or evergreen Polyanthus Group primula with oval, sometimes red-tinged, mid-green leaves, 18cm (7in) long. In spring, bears umbels of 3–12 salverform, golden-eyed, very dark mahogany-red or black flowers, to 3cm (1¼in) across, each petal with a narrow gold margin. Cultivation group 2 or 4. ↑ 25cm (10in), ↔ 30cm (12in). \*\*\*

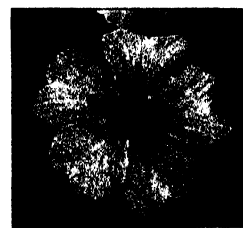
***P. gracilipes*** [♂] Rosette-forming, evergreen or semi-evergreen perennial with oblong to spoon-shaped to elliptic, toothed, mid-green leaves, to 15cm (6in) long. From winter to early summer, umbels of salverform, purple-pink flowers, 1.5–2.5cm (½–1in) across, with white-bordered, orange-yellow eyes, are borne on very short stems hidden within the foliage. Cultivation group 3 or 4. ↑ 10cm (4in), ↔ 20cm (8in). Moist alpine regions in S.E. Tibet and C. Nepal. \*\*\*

***P. griffithii***. Rosette-forming, deciduous perennial with ovate to arrow-shaped, toothed, dark bluish green leaves, to 25cm (10in) long, sparsely white-mealy beneath. Bears umbels of 5–12 salverform, yellow-eyed purple flowers, 2.5cm (1in) across, in spring. Cultivation group 3 or 4. ↑ 25cm (10in), ↔ 45cm (18in). Moist hillsides in Tibet and Bhutan. \*\*\*

***P. halleri***. Rosette-forming, deciduous perennial with inversely lance-shaped, elliptic to obovate, sometimes finely toothed, white-mealy, mid-green leaves, to 8cm (3in) long. Stout stems bear umbels of up to 20 salverform, yellow-eyed, lilac-pink flowers, to 2cm (¾in)



*Primula frondosa*



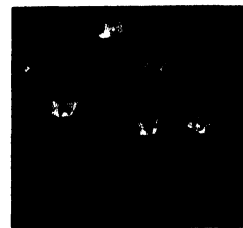
*Primula* 'Garryarde Guinevere'



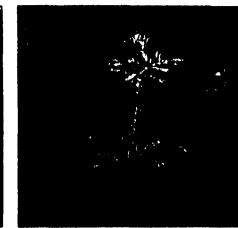
*Primula* Gold Laced Group



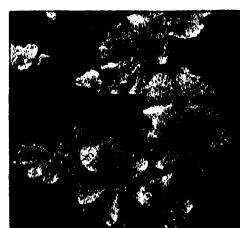
*Primula gracilipes*



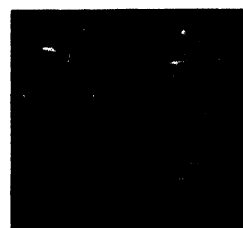
*Primula hirsuta*



*Primula* 'Inverewe'



*Primula* 'Iris Mainwaring'



*Primula japonica* 'Miller's Crimson'



*Primula japonica* 'Postford White'

across, in late spring and early summer. Cultivation group 2 or 4. ↑ 30cm (12in), ↔ 25cm (10in). Stony alpine meadows in Alps, Carpathians, Balkans. \*\*\*

***P. heucherifolia***. Rosette-forming, stoloniferous, hairy, deciduous perennial with long-stalked, rounded leaves, to 15cm (6in) long, with 7–11 triangular lobes. Slender stems bear 3–10 pendent, bell-shaped, mauve-pink to rich purple flowers, 1–2.5cm (½–1in) across, in early summer. Cultivation group 2. ↑ 30cm (12in). Shady, rocky hillsides in China (Sichuan). \*\*\*

***P. hirsuta*** [♂] syn. *P. rubra*. Rosette-forming, evergreen perennial with spoon-shaped to obovate, toothed, glandular-hairy, mid-green leaves, to 8cm (3in) long. In late spring and early summer, salverform, usually white-eyed, mauve-pink flowers, 1.5–2.5cm (½–1in) across, are borne singly or in umbels of up to 15, on short stems. Cultivation group 1, 2, or 4. ↑ 10cm (4in), ↔ 25cm (10in). Pyrenees, Alps. \*\*\*

***P. 'Hyacinthia'***, syn. *P. marginata* 'Hyacinthia'. Robust, rosette-forming, evergreen perennial with obovate, slightly white-mealy, light green leaves, to 12cm (5in) long. In spring, shallowly tubular to funnel-shaped, 6-lobed, hyacinth-blue flowers, to 3cm (1¼in) across, are borne in umbels of 2–20. Cultivation group 4 or 5. ↑ 15cm (6in), ↔ 20cm (8in). \*\*\*

***P. 'Inverewe'*** [♀] Vigorous, rosette-forming, semi-evergreen Candelabra primula with oval to lance-shaped, toothed, coarse, mid-green leaves, to 20cm (8in) long. In summer, numerous stems each bear several whorls of 5–15 salverform, brilliant red flowers, to 3cm (1¼in) across. Cultivation group 2. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

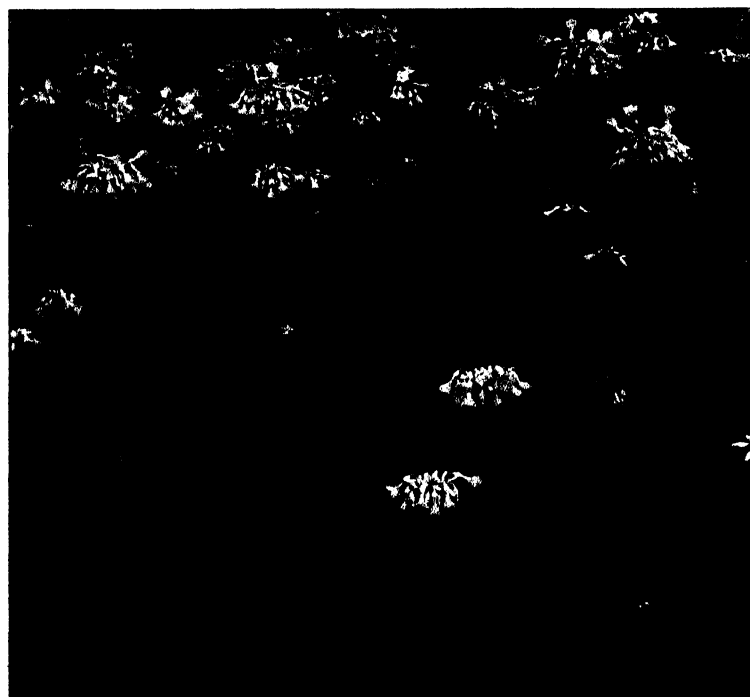
***P. involucreata***. Rosette-forming, deciduous perennial with ovate to

oblong, entire or finely toothed, mid-green leaves, to 15cm (6in) long. In late spring and early summer, long, slender stems produce umbels of 2–6 pendent, shallowly tubular to bell-shaped, yellow-eyed white flowers, 1.5–2cm (½–¾in) across. Cultivation group 2. ↑ 30cm (12in). Moist alpine meadows from Pakistan to S.W. China. \*\*\*

**subsp. *yargongensis***, syn. *P. yargongensis*, produces umbels of 3–8 semi-pendent, mauve-pink flowers; S.E. Tibet, China. ***P. ioessa***. Rosette-forming, deciduous perennial with narrowly oblong or inversely lance-shaped to spoon-shaped, deeply toothed, mid-green leaves, to 20cm (8in) long. Bears umbels of 2–8 pendent, tubular to funnel-shaped, white-mealy, fragrant, mauve-pink to violet or white flowers, 2.5cm (1in) across, in summer. Cultivation group 2, 3, or 4. ↑ 30cm (12in). Wet alpine meadows in S.E. Tibet. \*\*\*

***P. 'Iris Mainwaring'*** [♂] Compact, rosette-forming, evergreen or semi-evergreen Primrose Group primula with oval, deep green leaves, to 18cm (7in) long. In spring, delicate, salverform pink flowers, 4cm (1½in) across, with yellow centres, are borne in umbels of 3–8. Cultivation group 1, 2, or 4. ↑ 10–15cm (4–6in), ↔ 30–40cm (12–16in). \*\*\*

***P. japonica*** ♀ (Japanese primrose). Robust, rosette-forming, deciduous perennial with obovate, oblong, or broadly spoon-shaped, finely scalloped or toothed, pale green leaves, to 25cm (10in) long. Stout stems bearing 1–6 whorls of 5–25 salverform, red-purple to white flowers, 2cm (¾in) across, are borne in late spring and early summer. Cultivation group 2. ↑ 45cm (18in). Moist, shady places in Japan. \*\*\* **'Miller's Crimson'** [♂] has crimson flowers. **'Postford White'** [♂] is robust, and has red-eyed, clear white flowers.



*Primula florindae*



*Primula* Joker Series



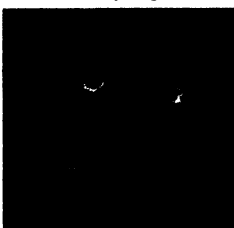
*Primula* x *kewensis*  
'Mountain Spring'



*Primula* 'Linda Pope'



*Primula* 'Linnet'



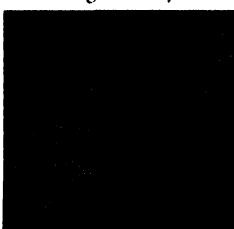
*Primula marginata*  
'Kesselring's Variety'



*Primula* 'Mark'



*Primula modesta* var.  
*fauriae*



*Primula obconica* Cantata  
Series 'Cantata Lavender'



*Primula obconica* 'Queen  
of the Market'

***P. jesoana***. Rosette-forming, hairy, deciduous or semi-evergreen perennial with rounded, deeply 7- to 9-lobed, mid-green leaves, to 30cm (12in) long. Slender stems each bear 1-4 umbels of 2-6 shallowly tubular to bell-shaped, yellow-eyed, pinkish purple or white flowers, 2cm (¾in) across, in late spring and early summer. Cultivation group 2 or 4. ‡ 30cm (12in). Mountain areas in C. Japan. \*\*\*

***P. 'Johanna'***. Rosette-forming, deciduous perennial bearing inversely lance-shaped, mid-green leaves, to 2cm (¾in) long. In spring, produces few-flowered umbels of salverform, yellow-eyed, clear pink flowers, 1cm (½in) across. Cultivation group 2 or 4. ‡ 10cm (4in), ↔ 15cm (6in). \*\*\*

***P. Joker Series*** ■ Compact, rosette-forming, evergreen or semi-evergreen perennials with small, short-stemmed, inversely lance-shaped to obovate, mid-green leaves, 10cm (4in) long. Salverform flowers, 4.5cm (1½in) across, in a range of colours, including numerous bicolours, with prominent yellow or creamy yellow eyes, are borne in spring. Cultivation group 6. ‡ 8-10cm (3-4in), ↔ 20cm (8in). \*

***P. juliae***. Rosette-forming, semi-evergreen or deciduous perennial with rounded, scalloped, dark green leaves, to 10cm (4in) long, deeply heart-shaped at the bases. In spring and summer, bears solitary, long-stalked, saucer-shaped magenta flowers, to 3cm (1¼in) across, with yellow eyes. Cultivation group 1, 2, or 4. ‡ 7cm (3in), ↔ 25cm (10in). Rocky mountain forest in E. Caucasus. \*\*\*

***P. x kewensis*** ♀ (*P. floribunda* x *P. sinensis*). Rosette-forming, evergreen perennial with obovate to spoon-shaped, toothed, sparsely white-mealy, mid-green leaves, 15-20cm (6-8in) long. Each stem bears 2-5 whorls of 6-10

long-tubed, salverform, fragrant yellow flowers, to 2cm (¾in) across, in early spring. Cultivation group 6. ‡ to 45cm (18in), ↔ 20cm (8in). Garden origin. \*  
**'Mountain Spring'** ■ is compact, and bears bright golden yellow flowers; ‡ to 25cm (10in). **'Thurgold'** has clear lemon-yellow flowers.

***P. 'Kingcup'*** see *P. 'Argus'*.

***P. 'Kinlough Beauty'***. Vigorous, evergreen or semi-evergreen Polyanthus Group primula with oval, dark green leaves, to 15cm (6in) long. In spring, salverform, salmon-pink flowers, 4cm (1½in) across, with cream stripes, are produced in umbels of 3-12. Cultivation group 1, 2, or 4. ‡ 10-15cm (4-6in), ↔ 30-40cm (12-16in). \*\*\*

***P. kisoana***. Rosette-forming, hairy, deciduous perennial with rounded, shallowly lobed, mid-green leaves, to 15cm (6in) long. In spring and early summer, produces umbels of 2-6 tubular to funnel-shaped, pinkish purple flowers, to 3cm (1¼in) across. Cultivation group 2, 3, or 4. ‡ 20cm (8in), ↔ 40cm (16in). Woodland in S.W. Japan. \*\*\*

***P. 'Lady Greer'*** ♀ Dainty, evergreen or semi-evergreen Polyanthus Group primula with spoon-shaped, bottle-green leaves, to 12cm (5in) long. In spring, bears salverform, pale yellow flowers, 2cm (¾in) across. Cultivation group 2 or 3. ‡ 10-15cm (4-6in), ↔ 30-40cm (12-16in). \*\*\*

***P. latifolia***. Rosette-forming, deciduous perennial with broadly lance-shaped, glandular-hairy, dull green leaves, to 15cm (6in) long, sometimes toothed at the tips. One-sided umbels of 2-25 salverform, sometimes white-mealy, fragrant, red-purple flowers, 1.5-2cm (½-¾in) across, are produced in late spring and early summer. Cultivation group 1, 2, or 4. ‡ 20cm (8in), ↔ 30cm

(12in). Moist, shady, acid cliffs in Pyrenees and Alps. \*\*\*

***P. 'Linda Pope'*** ■ ♀ syn. *P. marginata* 'Linda Pope'. Vigorous, rosette-forming, evergreen or semi-evergreen perennial with oval, toothed, white-mealy, mid-green leaves, 10cm (4in) long. Umbels of 4-16 salverform, mauve-blue flowers, to 3cm (1¼in) across, with white-mealy eyes, are borne in spring. Cultivation group 4 or 5. ‡ 15cm (6in), ↔ 30cm (12in). \*\*\*

***P. 'Lingwood Beauty'***. Rosette-forming, evergreen or semi-evergreen, Primrose Group primula with oval, bright green leaves, to 12cm (5in) long. Umbels of 3-12 salverform crimson flowers, 2.5cm (1in) across, with deep orange eyes, are borne in late spring. Cultivation group 2 or 4. ‡ 10-15cm (4-6in), ↔ 30-40cm (12-16in). \*\*\*

***P. 'Linnet'*** ■ Rosette-forming, evergreen perennial bearing obovate, mid-green leaves, to 8cm (3in) long. In spring, bears umbels of salverform, yellow-eyed, orange to rose-pink flowers, 3cm (1¼in) across. Cultivation group 3 or 4. ‡ 10cm (4in), ↔ 20cm (8in). \*\*\*

***P. 'Lismore Yellow'***. Rosette-forming, evergreen perennial with ovate, dark green leaves, to 3cm (1¼in) long. In spring, short stems bear umbels of 2-5 open funnel-shaped, pale yellow flowers, 2.5cm (1in) across. Cultivation group 4 or 5. ‡ 10cm (4in), ↔ 15cm (6in). \*\*\*

***P. luteola***. Rosette-forming, evergreen or semi-evergreen perennial with lance-shaped, sharply double-toothed, mid-green leaves, to 30cm (12in) long. In spring, robust, white-mealy stems bear symmetrical to spherical umbels of 10-25 salverform yellow flowers, 1.5cm (½in) across. Cultivation group 1 or 2. ‡ 35cm (14in), ↔ 45cm (18in). Moist meadows in E. Caucasus. \*\*\*

***P. macrophylla***. Short-lived, rosette-forming, deciduous perennial with lance-shaped to inversely lance-shaped, entire or finely scalloped, mid-green leaves, to 25cm (10in) long, usually white-mealy beneath. In spring, white-mealy stems bear umbels of 5-25 salverform purple flowers, 2cm (¾in) across; the eyes are usually darker or tinged yellow. Cultivation group 2 or 4. ‡ 25cm (10in), ↔ 30cm (12in). Rocky alpine meadows in Himalayas. \*\*\*

***P. malacoides*** (Fairy primrose). Erect, rosette-forming, evergreen perennial, usually grown as an annual, with dainty, oval, slightly frilly-margined, softly downy, pale green leaves, to 10cm (4in) long. In winter and spring, flat, single or double, pale lilac-purple, reddish pink, and white flowers, to 1cm (½in) across, are borne in whorls of decreasing size up slender, softly hairy stems. Cultivation group 6. ‡ 30-45cm (12-18in), ↔ 20cm (8in). China. \*  
**'Benary's Special'** are compact, with blue, yellow, golden orange, scarlet, red-pink, rose-pink, or white flowers; ‡ to 30cm (12in).

***P. marginata*** ♀ Rosette-forming, evergreen or semi-evergreen perennial with obovate to oblong, toothed, leathery, mid-green leaves, to 10cm (4in) long, white-mealy on the margins. In spring, white-mealy stems each bear a symmetrical umbel of 2-20 shallowly tubular to funnel-shaped, faintly fragrant, lavender-blue flowers, to 3cm (1¼in) across, with white-mealy eyes.



*Primula* Polyanthus Group Cowichan  
Series

Cultivation group 4 or 5. ‡ 15cm (6in), ↔ 30cm (12in). Europe (Alps). \*\*\*

**'Holden Variety'**, syn. 'Holden Clough', is compact, with small, tubular to funnel-shaped, dark blue flowers, 2cm (¾in) across. **'Hyacinthia'** see *P. 'Hyacinthia'*. **'Ivy Agee'** is vigorous, with heavily white-mealy leaves and lilac-blue flowers with cream eyes.

**'Kesselring's Variety'** ■ is moderately vigorous, bearing deep lavender-blue flowers. **'Linda Pope'** see *P. 'Linda Pope'*.

***P. 'Mark'*** ■ Vigorous alpine Auricula primula with oval, vibrant green leaves, to 12cm (5in) long. In spring, bears salverform, light-centred, wine-purple to pink flowers, 2.5cm (1in) across. Cultivation group 4. ‡ 10cm (4in). \*\*\*

***P. 'Marven'***. Rosette-forming, evergreen or semi-evergreen perennial with white-mealy, ovate or obovate-oblong, light green leaves, to 10cm (4in) long. In spring, bears umbels of up to 15 tubular to funnel-shaped, deep violet-blue flowers, 3cm (1¼in) across, each with a very dark eye, bordered by a white-mealy zone. Cultivation group 4 or 5. ‡ 10cm (4in), ↔ 25cm (10in). \*\*\*

***P. 'McWatt's Cream'***. Rosette-forming, evergreen or semi-evergreen Polyanthus Group primula with short scapes and spoon-shaped, deep green leaves, 12cm (5in) long. In spring, bears 3- to 12-flowered umbels of salverform cream flowers, 2cm (¾in) across. Cultivation group 1, 2, or 4. ‡ 10-15cm (4-6in), ↔ 30-40cm (12-16in). \*\*\*

***P. melanops***, syn. *P. chionantha* subsp. *melanops*. Rosette-forming, deciduous perennial with lance-shaped, toothed or scalloped, mid-green leaves, to 25cm (10in) long, white-mealy beneath. In late spring, white-mealy stems each bear 1 or 2 umbels of 5-12 narrowly tubular to bell-shaped, fragrant, black-eyed purple flowers, 2cm (¾in) across. Cultivation group 2 or 4. ‡ 35cm (14in), ↔ 50cm (20in). Alpine meadows in China. \*\*\*

***P. minima***. Dwarf, rosette-forming, evergreen perennial with wedge-shaped, leathery, sharply toothed, shiny, dark green leaves, to 3cm (1¼in) long. In late spring, very short stems each bear 1, sometimes 2 salverform, white-eyed, rose-pink, lilac, or white flowers, to 3cm (1¼in) across. Cultivation group 2 or 4. ‡ 7cm (3in), ↔ 20cm (8in). Alpine meadows in E. Alps and Balkans. \*\*\*

**P. modesta.** Rosette-forming, deciduous perennial with elliptic to spoon-shaped, wavy-margined or toothed, mid-green leaves, to 8cm (3in) long, white-mealy beneath. In spring and early summer, produces umbels of 2–15 salverform, purple-pink flowers, 1.5cm (½in) across. Cultivation group 1 or 4. ↑ 20cm (8in). Moist alpine meadows in Japan. \*\*\* **var. fauriae** [ ] is smaller, with yellow-eyed, pinkish purple flowers, and broadly ovate, white-mealy leaves with rolled back margins.

**P. nana** see *P. edgeworthii*.

**P. nutans of gardens** see *P. flaccida*.

**P. obconica.** Erect, rosette-forming, evergreen perennial, usually grown as an annual, with fairly coarse, oval to heart-shaped, toothed, mid-green leaves, to 15cm (6in) long. In winter and spring, produces salverform, pink, lilac-blue, red, or white flowers, 2.5–5cm (1–2in) across, sometimes with slightly frilled petal margins, in whorls of decreasing size up stout, hairy stems. Contact with the foliage may irritate skin, and the foliage may cause mild stomach upset if ingested. Cultivation group 6.

↑ 23–40cm (9–16in), ↔ to 25cm (10in). China. \*\*\* **'Appleblossom'**, syn.

**'Apricot Brandy'**, produces large flowers in pale pink, flushing to salmon-pink, then deeper red-pink; ↑ to 20cm (8in).

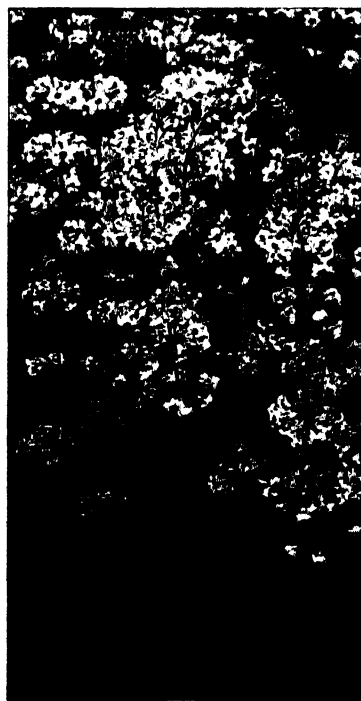
**'Apricot Brandy'** see **'Appleblossom'**.

**Cantata Series** cultivars are long-blooming, with flowers in carmine-red, pink, rose-pink, apricot-pink, lavender-blue, or white; ↑ 25–30cm (10–12in);

**'Cantata Lavender'** [ ] bears lavender-blue flowers. **'Pin Up'** has rose-pink flowers, and is free-flowering. **'Queen of the Market'** [ ] has red-pink flowers; ↑ to 20cm (8in).

**P. 'Old Yellow Dusty Miller'.**

Vigorous border Auricula primula with spoon-shaped, white-mealy, mid-green leaves, to 12cm (5in) long. In spring, produces salverform yellow flowers, 3cm (1¼in) across, with white-mealy eyes. Cultivation group 1. ↑ 15cm (6in), ↔ 25cm (10in). \*\*\*



*Primula pulverulenta* 'Bartley'

**P. 'Orb'.** Neat show Auricula primula with spoon-shaped or oval, dark green leaves, 12cm (5in) long. In spring, bears salverform, green-margined black flowers, 3cm (1¼in) across. Vigorous and easy to grow. Cultivation group 4. ↑ 10cm (4in). \*\*\*

**P. 'Our Pat'.** Rosette-forming, evergreen or semi-evergreen Polyanthus Group primula with oval, purple-tinted, bronze-green leaves, to 15cm (6in) long. Umbels of 3–8 rounded, double, dark claret-red flowers, 4cm (1½in) across, are produced very freely in spring.

Cultivation group 1, 2, or 4. ↑ 10–15cm (4–6in), ↔ 30–40cm (12–16in). \*\*\*

**P. palinuri** [ ] Rosette-forming, evergreen perennial with spoon-shaped to oblong-ovate, sometimes glandular-hairy, more or less toothed, fleshy, mid-green leaves, to 20cm (8in) long. In late winter and early spring, stout stems bear umbels of 3–40 nodding, narrowly funnel-shaped, scented yellow flowers, 1.5cm (½in) across, with white-mealy eyes. Cultivation group 1 or 4; requires full sun. ↑ 30cm (12in). Coastal cliffs in S. Italy. \*\*\*

**P. parryi.** Rosette-forming, deciduous perennial with obovate to inversely lance-shaped, leathery, entire or finely toothed, mid-green leaves, to 35cm (14in) long, covered in short glands. In spring and summer, stout, erect stems bear one-sided umbels of 3–20 pendent, funnel-shaped, strongly scented, red-purple to magenta flowers, to 3cm (1¼in) across; these are yellow-eyed with dark haloes. Cultivation group 2 or 4. ↑ 45cm (18in). Shady mountain areas in W. USA. \*\*\*

**P. 'Peter Klein'.** Rosette-forming, semi-evergreen or deciduous perennial with rounded to ovate, bright mid-green leaves, to 6cm (2½in) long. In spring, stout stems produce umbels of 2–5 salverform, bright, deep pink flowers, 2.5cm (1in) across. Cultivation group 2 or 4. ↑ 15cm (6in). \*\*\*

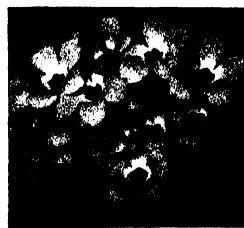
**P. petiolaris** [ ] Rosette-forming, evergreen perennial with spoon-shaped, finely toothed, mid-green leaves, to 10cm (4in) long. In spring, salverform, magenta-purple flowers, 2cm (¾in) across, yellow-eyed and with thin white borders, are borne singly on short stalks, 2–5cm (¾–2in) long. Cultivation group 3 or 4. ↑ 10cm (4in), ↔ 20cm (8in). Himalayas. \*\*\*

**P. Polyanthus Group** (Polyanthus). Rosette-forming, evergreen to semi-evergreen perennials of garden origin, with a complicated parentage believed to include *P. veris*, *P. elatior*, *P. vulgaris*, and the red-flowered European primula, *P. juliae*. They form sturdy rosettes of oval, heavily veined, dark green leaves, to 18cm (7in) long, almost corrugated in appearance. Large, salverform, mostly yellow-centred, red, blue, orange, yellow, white, or pink flowers, to 5cm (2in) across, are borne in umbels of 3–15 on thick, hairy stems, to 15cm (6in) long, from late winter to mid-spring. Some seed mixtures are available that produce hardy spring bedding plants. Cultivation group 1, 2, 4, or 6.

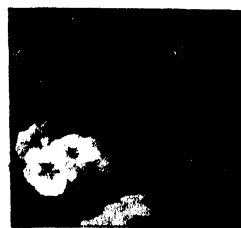
**Cowichan Series** [ ] cultivars bear bronze-flushed foliage, and flowers in strong, velvety, yellow, blue, red, maroon, or purple, without central yellow eyes. **Crescendo Series** [ ] cultivars are winter-hardy, with large,



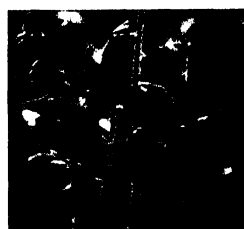
*Primula palinuri*



*Primula petiolaris*



*Primula Polyanthus Group*  
Crescendo Series



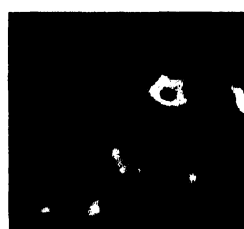
*Primula polyneura*



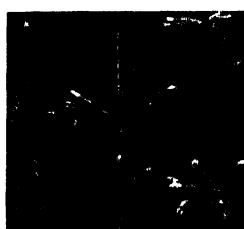
*Primula prolifera*



*Primula Prominent Series*



*Primula x pubescens* 'Mrs.  
J.H. Wilson'



*Primula pulverulenta*



*Primula reidii* var.  
*williamsii*

yellow-centred flowers, 5cm (2in) across, available in a number of separate ranges, classified by colour. **Rainbow Series** cultivars are short-stemmed, with yellow-centred flowers in blue, creamy yellow, pink, carmine-red, scarlet-red, white, or yellow, as well as some unusual rusty orange shades.

**P. polyneura** [ ] Rosette-forming, deciduous perennial with ovate to rounded, 7- to 11-lobed, mid-green leaves, to 30cm (12in) long. Each stem produces 1–3 umbels, each with 2–12 salverform, yellow-eyed, purplish pink flowers, 2.5cm (1in) across, in late spring and summer. Cultivation group 2. ↑ 45cm (18in). Woodland in W. China. \*\*\*

**P. prolifera** [ ] Rosette-forming, evergreen Candelabra primula with spoon- to diamond-shaped, finely toothed, deep green leaves, to 35cm (14in) long. In early summer, stout stems bear 1–7 whorls of 3–12 salverform, fragrant, white-mealy, pale to golden yellow or occasionally dull violet flowers, 2.5cm (1in) across. Cultivation group 2. ↑ 60cm (24in). Moist, shady alpine areas from India (Assam) to S.W. China, N. Burma, and Indonesia (Sumatra, Java). \*\*\*

**P. Prominent Series** [ ] Dwarf, compact, semi-evergreen or evergreen perennials with inversely lance-shaped to obovate, mid-green leaves, 10cm (4in) long. In mid- and late winter, salverform flowers, 4–5cm (1½–2in) across, are borne in a very wide range of colours, including bicolours. Cultivation group 6. ↑ 8–10cm (3–4in), ↔ 15–20cm (6–8in). \*

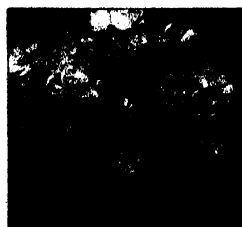
**P. x pubescens** ♀ (*P. auricula* x *P. hirsuta*). Vigorous, rosette-forming, evergreen perennial with obovate to broadly spoon-shaped, sometimes entire, white-mealy, usually mid-green leaves,

to 10cm (4in) long. Umbels of few to many salverform flowers, 1.5–2.5cm (½–1in) across, in white, yellow, pink, red, purple, or brown, are borne very freely in spring. Cultivation group 1 or 4. ↑ to 15cm (6in), ↔ 30cm (12in). Garden origin. \*\*\* **'Faldonside'** produces dusky red-pink flowers with white eyes; ↑ 7–10cm (3–4in). **'Harlow Car'** has shallowly toothed leaves and large, creamy white flowers, 3cm (1¼in) across; ↑ 7–10cm (3–4in). **'Mrs. J.H. Wilson'** [ ] bears compact rosettes of lance-shaped to obovate, rather thick, grey-green leaves, and fragrant, white-eyed purple flowers; ↑ 7cm (3in). **'Rufus'** has shallowly toothed, pale green leaves, and umbels of up to 16 large, almost brick-red flowers, to 3cm (1¼in) across, with golden yellow eyes; ↑ 8–10cm (3–4in).

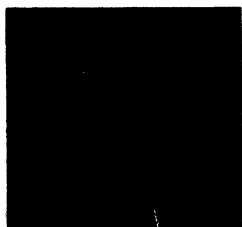
**P. pulverulenta** [ ] Rosette-forming, deciduous Candelabra primula with obovate or inversely lance-shaped, finely toothed, mid-green leaves, to 30cm (12in) long. In late spring and early summer, stout, white-mealy stems each bear several whorls of tubular, deep red or red-purple flowers, 2.5cm (1in) across, with darker red or purple eyes. Cultivation group 2. ↑ to 1m (3ft), ↔ 60cm (24in). Wet hillsides in China (Sichuan). \*\*\* **'Bartley'** [ ] has shell-pink flowers with red eyes.

**P. reidii.** Robust, rosette-forming, deciduous perennial with oblong to oblong-lance-shaped, scalloped or lobed leaves, to 20cm (8in) long. In summer, bears compact umbels of 3–10 pendent, bell-shaped, fragrant white flowers, 2.5cm (1in) across, often white-mealy on the outsides. Cultivation group 3 or 4. ↑ 5–15cm (2–6in), ↔ 10–15cm (5–6in). N.E. India to C. Nepal (Himalayas). \*\*\* **var. williamsii** [ ] is more robust, producing flowers that





*Primula rosea*



*Primula rusbyi*



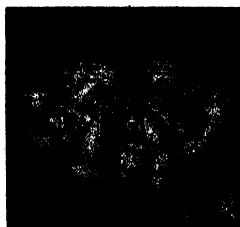
*Primula secundiflora*



*Primula sieboldii* 'Wine Lady'



*Primula sonchifolia*



*Primula veris*



*Primula vulgaris* 'Double Sulphur'



*Primula* 'Wanda'



*Primula warshenewskiana*

are pale blue to white;  $\pm$  15cm (6in); W. and C. Nepal.

***P. rosea***  $\square$   $\square$  Rosette-forming, deciduous perennial bearing obovate to inversely lance-shaped, scalloped or finely toothed, mid-green, often bronze-flushed leaves, to 20cm (8in) long, tinted red-bronze at first, emerging after the flowers. Umbels of 4–12 salverform, yellow-eyed, red-pink flowers, to 2.5cm (1in) across, are produced in spring. Cultivation group 2.  $\pm$  20cm (8in). Wet meadows from Afghanistan to Nepal. \*\*\*. 'Grandiflora' is vigorous,

producing larger flowers, to 3cm (1¼in) across;  $\pm$  to 20cm (8in).

***P. rubra*** see *P. hirsuta*.

***P. rusbyi***  $\square$  Rosette-forming, deciduous perennial with elliptic to spoon-shaped, entire or toothed, glandular-hairy, mid-green leaves, 3–10cm (1¼–4in) long. One-sided umbels of 4–12 salverform, rose-red to deep purple flowers, 3cm (1¼in) across, with incurved petals, are produced in spring and summer. Cultivation group 2 or 4.  $\pm$  20cm (8in),  $\pm$  35cm (14in). S.E. Arizona, S.W. New Mexico. \*\*\*

***P. x scapeosa*** (*P. bracteosa* x *P. scapigera*). Vigorous, rosette-forming perennial with oblong to spoon-shaped, toothed, mid-green leaves, to 15cm (6in) long. In spring, salverform, pink-purple flowers, 2.5cm (1in) across, are produced singly on short stalks. Cultivation group 3 or 4.  $\pm$  10cm (4in),  $\pm$  25cm (10in). Garden origin. \*\*\*

***P. 'Schneekissen'***, syn. *P. 'Snow Cushion'*. Very compact, rosette-forming, evergreen Primrose Group primula with rounded, pale green leaves, 10cm (4in) long. Short stems bear umbels of 3–8 salverform, pure white flowers, 2.5cm (1in) across, in spring. Cultivation group 1, 2, or 4.  $\pm$  8–10cm (3–4in),  $\pm$  20cm (8in). \*\*\*

***P. secundiflora***  $\square$  Rosette-forming, evergreen or semi-evergreen perennial with oblong to obovate or inversely lance-shaped, mid-green leaves, to 30cm (12in) long, with scalloped to toothed margins, and yellow-mealy beneath when young. In summer, stout stems produce one-sided umbels of 5–20 nodding, tubular to bell-shaped, red-purple or deep rose-red flowers, 2.5cm (1in) across. Cultivation group 2.  $\pm$  60–90cm (24–36in),  $\pm$  60cm (24in). Wet alpine meadows in S.E. Tibet and W. China. \*\*\*

***P. sieboldii***  $\square$  Rosette-forming, deciduous perennial with oblong-ovate, lobed, toothed, downy, pale green leaves, to 20cm (8in) long. In late spring and early summer, bears umbels of 2–15 salverform flowers, 2.5cm (1in) across; the flowers are rose-violet to lilac-purple or deep crimson, with white eyes, sometimes pure white. Cultivation group 2.  $\pm$  30cm (12in),  $\pm$  45cm (18in). Moist meadows and woodland in Japan.

\*\*\*. 'Musashino' is vigorous, and bears large, pale rose-pink flowers, 3.5cm (1½in) across, darker beneath. 'Shi-un' produces fringed flowers that are dark lavender-pink, fading to lavender-blue. 'Snowflake' is vigorous, producing large white flowers, 3.5cm (1½in) across, with deeply cut petals. 'Sumina' bears large, wisteria-blue flowers, 3cm (1¼in) across. 'Wine Lady'  $\square$  produces white flowers, flushed with purple-red.

***P. sikkimensis*** (Himalayan cowslip). Rosette-forming, deciduous perennial with oblong to lance-shaped, elliptic or oblong to inversely lance-shaped, toothed, shining, pale green leaves, to 30cm (12in) long. Produces umbels of numerous pendent, funnel-shaped, white-mealy, yellow or cream flowers, 2.5cm (1in) across, in late spring and early summer. Cultivation group 2.  $\pm$  60–90cm (24–36in),  $\pm$  60cm (24in). Wet meadows in Himalayas (W. Nepal to S.W. China). \*\*\*

***P. sinensis***. Erect, rosette-forming, evergreen perennial, usually grown as an annual, bearing broadly ovate to rounded, toothed, hairy, bright mid-green leaves, 8–10cm (3–4in) long, often red beneath. In winter and early spring, bears salverform, wavy-margined, purple to pink flowers, to 4cm (1½in) across, in 6- to 10-flowered whorls of decreasing size on thick, hairy stems.  $\pm$  15–20cm (6–8in). Cultivation group 6. Possibly N. China. \* **Single Superb Mixed** has flowers in white, pink, red, and lilac-blue;  $\pm$  to 25cm (10in),  $\pm$  to 15cm (6in).

***P. sinopurpurea***. Rosette-forming, deciduous perennial with oblong-lance-shaped, mid-green leaves, 5–35cm (2–14in) long, yellow-mealy beneath. In late spring and early summer, produces nodding, tubular to funnel-shaped, magenta, purple, and violet flowers, to 3cm (1¼in) across, with pale purple eyes, in umbels of 6–12. Cultivation group 2.  $\pm$  30–45cm (12–18in),  $\pm$  30–35cm (12–14in). China. \*\*\*

***P. 'Snow Cushion'*** see *P. 'Schneekissen'*.

***P. sonchifolia***  $\square$  Rosette-forming, deciduous perennial with oblong to obovate, mid-green leaves, to 20cm (8in) long, with small, toothed lobes. In spring, very short stems (elongating in fruit) bear umbels of 3–20 salverform, yellow-eyed, white-margined, lavender-blue flowers, 2.5cm (1in) across. Overwinters as large, white-mealy buds. Cultivation group 3 or 4.  $\pm$  5cm (2in),  $\pm$  30cm (12in). Open meadows near the snow line in China, S.E. Tibet, and Burma. \*\*\*

***P. suffrutescens***. Mat-forming, evergreen perennial with long rhizomes, and rosettes of wedge-shaped to spoon-shaped, scalloped to toothed, fleshy, dusky green leaves, to 5cm (2in) long.

In summer, produces umbels of 2–10 salverform, yellow-eyed, rose-pink to red or purple flowers, 2cm (¾in) across. Cultivation group 1 or 4.  $\pm$  15cm (6in),  $\pm$  30cm (12in). USA (California, Sierra Nevada mountains). \*\*\*

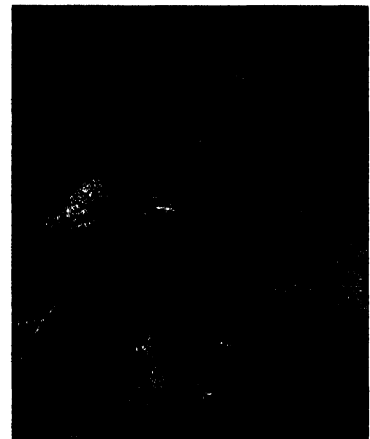
***P. 'Tawny Port'***. Very dwarf, rosette-forming, evergreen or semi-evergreen Polyanthus Group primula bearing rounded to oval, toothed, maroon-green leaves, 15cm (6in) long. Short stems produce salverform, dark port-wine-coloured flowers, 3.5cm (1½in) across, singly or in umbels of up to 5, over a long period from early to late spring. Cultivation group 1, 2, or 4.  $\pm$  10–15cm (4–6in),  $\pm$  15–20cm (6–8in). \*\*\*

***P. veris***  $\square$  (Cowslip). Very variable, rosette-forming, evergreen or semi-evergreen perennial with oblong-ovate to ovate, sometimes scalloped, mid-green leaves, to 20cm (8in) long. In mid- and late spring, produces umbels of 2–16 salverform, nodding, fragrant, deep yellow flowers, 1.5–2.5cm (½–1in) across. Cultivation group 1 or 2.  $\pm$  25cm (10in). Europe to W. Asia. \*\*\*

***P. vialis***  $\square$  Rosette-forming, deciduous, often short-lived perennial with broadly lance-shaped to oblong, toothed, softly hairy, mid-green leaves, to 30cm (12in) long. Stiff, stout, white-mealy stems produce dense spikes, to 15cm (6in) long, of many pendent, tubular, blue-violet flowers, 1cm (½in) across, in summer. In bud, the calyces are bright crimson. Cultivation group 2.  $\pm$  30–60cm (12–24in),  $\pm$  30cm (12in). Moist mountain areas in China (Sichuan, Yunnan). \*\*\*

***P. villosa***. Rosette-forming, evergreen perennial bearing obovate or spoon-shaped to oblong, toothed, fleshy, glandular-hairy leaves, 2–15cm (¾–6in) long. In early summer, red-hairy stems produce umbels of 4–12 salverform, white-eyed, pink to lilac flowers, to 2.5cm (1in) across. Cultivation group 2 or 4.  $\pm$  15cm (6in). Austria (Tyrol). \*\*\*

***P. vulgaris*** (Primrose). Rosette-forming, evergreen or semi-evergreen perennial with inversely lance-shaped to obovate, toothed to scalloped, deeply veined, bright green leaves, to 25cm (10in) long, softly hairy beneath. From early to late spring, produces clusters of 3–25 salverform, often fragrant, usually pale yellow flowers, 2.5–4cm (1–1½in) across. Cultivation group 2.  $\pm$  20cm (8in),  $\pm$  35cm (14in). Open woodland



*Primula vulgaris* 'Miss Indigo'

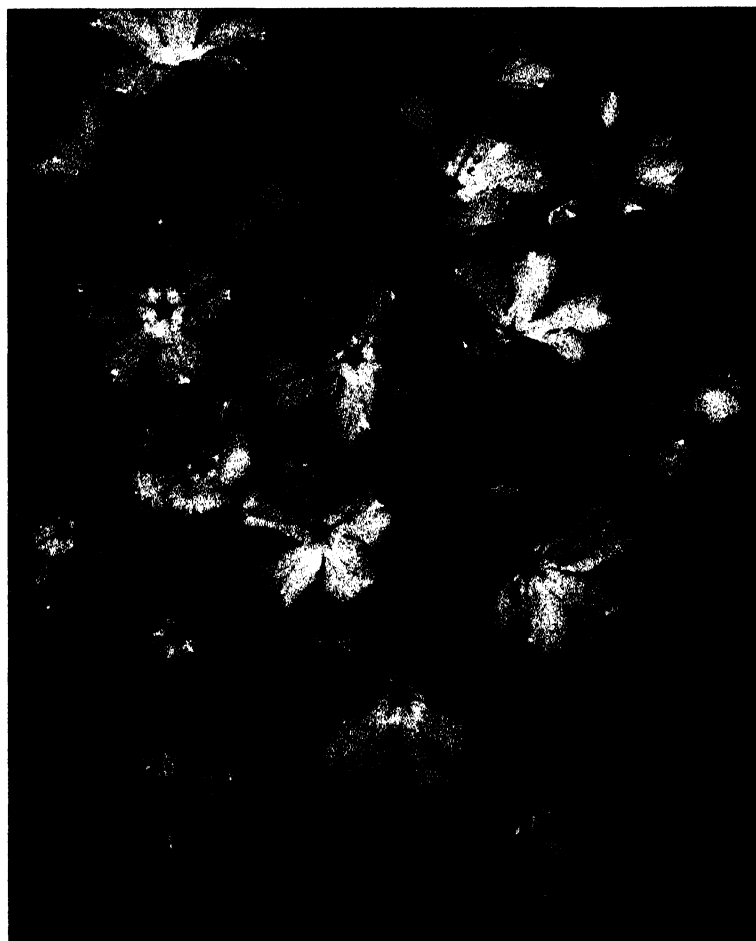


and shady banks in Europe and W. Turkey. \*\*\*. Many cultivars have been produced, of which some are hybrids, but with a similar habit to the species, and with double flowers. 'Alba Plena', syn. 'Double White', is vigorous and free-flowering, with fully double white flowers on long stalks. 'Double Sulphur' is vigorous, bearing sage-green leaves and double yellow flowers. 'Double White' see 'Alba Plena'. 'Jack in the Green' has single yellow blooms, each backed by a ring of bract-like leaves. 'Ken Dearman' produces double orange flowers, flushed with shades of yellow and copper. 'Marie Crousse' is vigorous, with large, scented, double violet flowers, 3cm (1¼in) across, splashed with white. 'Miss Indigo' is vigorous, and bears double, deep rich purple flowers with creamy white tips. **subsp. *sibthorpii*** is vigorous, bears wedge-shaped leaves, with usually rose-pink, red, lilac, purple, or white flowers; Balkans, Ukraine (Crimea), Caucasus, Turkey, Armenia. **P. 'Wanda'** is very vigorous, long-flowering, rosette-forming, evergreen or semi-evergreen perennial with oval, toothed, purplish green leaves, to 12cm (5in) long. Produces clusters of solitary, salverform, dark claret-red flowers, to 3.5cm (1½in) across, in spring. Thrives well in both sun and shade. Cultivation group 1 or 2. †10–15cm (4–6in), ↔30–40cm (12–16in). \*\*\*. **P. Wanda Supreme Series** is evergreen or semi-evergreen perennials bearing small, inversely lance-shaped to obovate, bronze to dark green leaves, 8–10cm (3–4in) long. From winter to mid-



*Primula Wanda Supreme Series*

spring, bears flowers, 4–5cm (1½–2in) across, in a mixture of different shades of blue, yellow, purple, burgundy, red, rose, and pink bicolors. Cultivation group 1 or 2. †8–10cm (3–4in), ↔15cm (6in). \*\* **P. *warshenevskiana*** is rosette-forming, deciduous perennial with oblong to inversely lance-shaped, finely toothed, dark green leaves, to 7cm (3in) long. Salverform, rose-pink flowers, 1.5cm (½in) across, with white-ringed yellow eyes, are borne singly or in umbels of up to 8, on short stems in late spring to summer. Cultivation group 2 or 4. †7cm (3in), ↔15cm (6in). Streamsides and wet ground from Tajikistan to Pakistan. \*\*\* **P. *wilsonii* var. *anisodora*** see *P. anisodora*.



*Primula vulgaris* subsp. *sibthorpii*

**P. *wulfeniana***. Rosette-forming, evergreen perennial with lance-shaped or elliptic to inversely lance-shaped or obovate, leathery, glandular-hairy, dark green leaves, 1.5–4cm (½–1½in) long. In spring, produces solitary or paired, salverform, rose-red to lilac flowers, to 2.5cm (1in) across, with deeply notched petal lobes. Cultivation group 4 or 5. †7cm (3in), ↔8cm (3in). Austrian Alps to S. Carpathians. \*\*\* **P. *yargongensis*** see *P. involucrata* subsp. *yargongensis*.

- ▷ **Primula, Drumstick** see *Primula denticulata*
- ▷ **Prince's feather** see *Amaranthus cruentus*, *Persicaria orientale*
- ▷ **Princess feather** see *Persicaria orientale*
- ▷ **Princess tree** see *Paulownia tomentosa*

## PRINSEPIA

ROSACEAE

Genus of 4 species of arching, spiny, deciduous shrubs found in woodland and thickets in the Himalayas and China. They are cultivated for their linear to elliptic or oblong-lance-shaped leaves, which are rich green on opening, later glossy or dull dark green. They are also valued for their fragrant, cup-shaped, white to yellow flowers, and for their cherry-like, spherical or ovoid, purple or red fruits. Grow in a shrub border, against a wall, or as a hedge; the leaves appear early, and are an excellent foil for other early flowering shrubs. • **HARDINESS** Fully hardy. • **CULTIVATION** Grow in fertile, well-drained but not dry soil in full sun, in an open position with room to spread. Pruning group 1; cut out dead wood in summer. • **PROPAGATION** Sow seed in containers in an open frame in autumn. Take greenwood cuttings in early summer. • **PESTS AND DISEASES** Trouble free.

**P. *uniflora*** is spreading, deciduous shrub with arching shoots bearing sharp spines and alternate, narrowly oblong to linear-oblong, glossy, rich dark green leaves, to 6cm (2½in) long. From early spring to summer, cup-shaped, fragrant white flowers, 1.5cm (½in) across, are produced singly or in clusters of up to 8, along the shoots; they are followed by cherry-like, red or purple fruit, 1cm (½in) across. †1.5m (5ft), ↔2.5m (8ft). China (N.W. China, Inner Mongolia). \*\*\*



*Prinsepia uniflora*

## PRITCHARDIA

ARECACEAE/PALMAE

Genus of about 37 species of single-stemmed palms from upland areas with high rainfall, on moist hillsides, and in rainforest valleys on volcanic soils in Fiji, Hawaii, and adjacent Pacific islands. They are cultivated for their fan-shaped, rich, mid-green or silvery or greyish green leaves, which are borne in terminal tufts. They produce small, bell-shaped, white, cream, yellow, or orange flowers in spikes or panicles between the leaves. In frost-prone climates, grow in a warm greenhouse. In tropical areas, they are suitable for growing as lawn specimens or in other strategic sites. • **HARDINESS** Frost tender. • **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added sharp sand, in bright filtered light. During the growing season, water freely and apply a liquid feed every month; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in partial shade. • **PROPAGATION** Sow seed at 24°C (75°F) in spring. • **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

**P. *gaudichaudii*** is a small palm with an erect, columnar trunk and long-stalked, fan-shaped leaves, 1–1.2m (3–4ft) long, deeply cut into many slender lobes, brown-hairy beneath, rich to silvery green above. Bell-shaped yellow flowers are borne in spikes up to 1m (3ft) long, usually in summer. †2–5m (6–15ft), ↔2.5–3.5m (8–11ft). Hawaii. ☞ (min. 16–18°C/61–64°F) **P. *pacifica*** (Fiji fan palm). Small to medium-sized palm with a smooth, slim, columnar trunk. Long-stalked, fan-shaped leaves, 1m (3ft) or more long, are white-downy when young, then smooth, rich green; they are divided for about one-third of their length into slender, pointed lobes. Bell-shaped, white to yellow flowers are borne in stiff panicles, 1m (3ft) long, in summer. †to 10m (30ft), ↔4–5m (12–15ft). Fiji. ☞ (min. 16–18°C/61–64°F)

- ▷ **Privet** see *Ligustrum*
- Amur** see *L. amurense*
- Chinese** see *L. lucidum*
- Common** see *L. vulgare*
- Golden** see *L. ovalifolium* 'Aureum'
- Japanese** see *L. japonicum*



*Pritchardia gaudichaudii*

# PROBOSCIDEA

syn. MARTYNIA

Elephant's tusk, Proboscis flower,  
Unicorn plant

PEDALIACEAE

Genus of about 9 species of erect to spreading, robust, frequently sticky-hairy annuals and perennials found in open plains in tropical North, Central, and South America. They are grown for the tropical effect of their foliage and fruits; the fruits can be dried and used for winter arrangements. The opposite, occasionally alternate, long-stemmed, fairly coarse leaves are rounded to ovate-lance-shaped, entire to palmately or pinnately lobed, and strongly veined. The flowers are borne in racemes, and are funnel- to bell-shaped, 5-lobed, reddish purple, lavender-pink, creamy white, or orange-yellow, with enclosing calyces split to the bases on one side; they are followed by unusually shaped fruits, which each have a pair of strongly upcurved, slender, horn-like beaks or projections at one end, and a fringed crest along the centre of the capsule body. The cultivated species are annuals, and are suitable for a mixed border; they may also be grown as decorative container plants in a cool or temperate greenhouse or conservatory.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. During the growing season, water freely and apply a balanced liquid fertilizer every 4 weeks. Discard after flowering. Outdoors, grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 21–24°C (70–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

**P. fragrans.** Spreading, thick-stemmed, softly hairy annual bearing rounded, broadly ovate to broadly triangular, 5-lobed leaves, to 25cm (10in) long. In summer, produces loose racemes of 8–20 funnel-shaped, fragrant, reddish purple to purple flowers, to 5cm (2in) across; the upper lobes are marked dark purple, each with a strong yellow band extending into the throat. The flowers are followed by narrow, canoe-shaped, crested fruit, to 6cm (2½in) long, with beak-like projections, to 18cm (7in) long, at one end. † to 45cm (18in), ↔ to 90cm (36in). USA (Texas) to Mexico. \*

**P. jussieu** see *P. louisianica*.

**P. louisianica**, syn. *P. jussieu*.

**P. proboscidea** (Common devil's claw, Common unicorn plant, Ram's horn). Erect to spreading, thick-stemmed, softly hairy annual with rounded to broadly ovate, unlobed, wavy-margined leaves, 6–20cm (2½–8in) long. In summer, bears open racemes of 8–20 funnel-shaped, creamy white to purple flowers, 3.5–5cm (1½–2in) across, flecked reddish purple and marked yellow within the throats; they are followed by crested, boat-shaped fruit, 10–20cm (4–8in) long, each with a pair of horn-like projections at one end that are longer than the fruit body. † to 45cm (18in), ↔ to 90cm (36in). C. and S.E. USA. \*

**P. proboscidea** see *P. louisianica*.

▷ **Proboscis flower** see *Proboscidea*



*Promenaea xanthina*

## PROMENAEA

ORCHIDACEAE

Genus of about 15 species of small, evergreen, epiphytic orchids from Brazil, occurring in forest areas at an altitude of around 1,500m (5,000ft). They produce oval pseudobulbs with 1–3 soft-textured, ovate-lance-shaped, light green, apical leaves. Usually yellow or white flowers are borne in ones or twos, rarely more, in short racemes from the bases of the pseudobulbs, mostly in summer and autumn.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool-growing orchids. Grow in small pots of epiphytic orchid compost made with fine bark, or epiphytically on slabs of bark. During summer, provide high humidity and bright filtered light, water freely (taking care not to overwater), and feed at every third watering. In winter, admit full light and water sparingly. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides, or remove backbulbs.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**P. xanthina** ■ Epiphytic orchid with clustered, oval pseudobulbs each with 2 broadly oval, soft-textured, light green leaves, 5cm (2in) long. Fragrant, lemon-yellow flowers, 4cm (1½in) across, with red-dotted lips, are borne in summer. † 8cm (3in), ↔ 15cm (6in). Brazil. ☼ (min. 13°C/55°F; max. 30°C/86°F)

▷ **Propeller plant** see *Crassula perfoliata* var. *minor*

▷ **Prophet flower** see *Arnebia pulchra*

▷ **Prosartes** see *Disporum*

## PROSTANTHERA

Mint bush

LABIATAE/LAMIACEAE

Genus of 50 species of bushy, evergreen shrubs and small trees from heathland and dry forest to rainforest and seashore (some species at subalpine and alpine level) in Australia. They are grown for their simple, entire or toothed, aromatic leaves, borne in opposite pairs, and leafy, terminal racemes or panicles of broadly tubular, cup- or bell-shaped, 2-lipped, 5-lobed, white, blue, or purple, occasionally red, yellow, or green flowers. In frost-prone climates, grow all but *P. cuneata* in a cool greenhouse. In



*Prostanthera cuneata* (inset: flower detail)

warmer areas, grow in a mixed or shrub border, or at the base of a house wall.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 8, after flowering; hard pruning may be detrimental.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring, or take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

**P. cuneata** ■ ♀ (Alpine mint bush). Bushy, erect to spreading shrub producing woody shoots. Tiny, obovate to rounded, entire leaves, 6mm (¼in) long, with wedge-shaped bases and rolled margins, are glossy, mid- to dark green, and strongly aromatic when crushed. In summer, bears racemes, 20cm (8in) long, of numerous broadly tubular white flowers, 1.5cm (½in) across, with purple and yellow markings within the wide tubes. † to 30–90cm

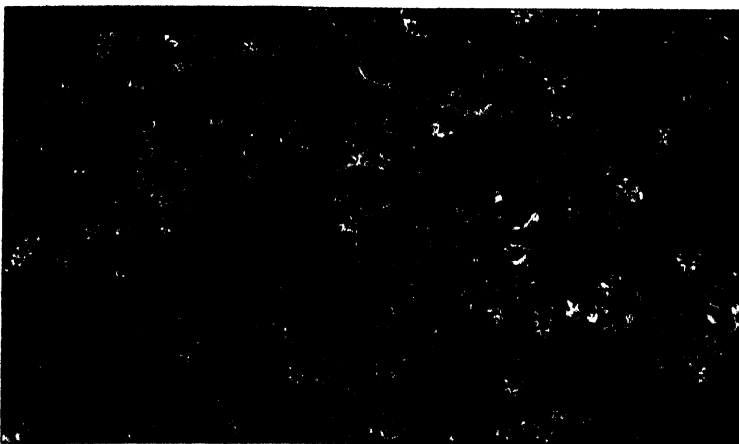
(12–36in). Australia (subalpine and alpine levels from New South Wales to Tasmania). \*\*

**P. nivea** (Snowy mint bush).

Moderately bushy shrub, erect at first, then spreading, with slender, square-sectioned stems and entire, narrowly lance-shaped to linear, inrolled, bright green leaves, 2.5–4cm (1–1½in) long. In spring and early summer, bears bell-shaped, pure white, sometimes lavender-blue-tinted flowers, to 2cm (¾in) across, in racemes to 15cm (6in) long. † 2–3m (6–10ft), ↔ 1.5–2m (5–6ft). S.E. Australia. \*

**P. ovalifolia** ■ (Oval-leaved mint bush). Bushy shrub with erect stems and lance-shaped to inversely lance-shaped, entire, matt, grey-green leaves, to 1.5cm (½in) long. In late spring and early summer, an abundance of cup-shaped purple flowers, 1cm (½in) across, sometimes mauve, or white tinged with lilac, are borne in leafy, terminal racemes, 6–7cm (2½–3in) long. † 2.5–4m (8–12ft), ↔ 1.5–2.5m (5–8ft). E. Australia. \*

**P. rotundifolia** ■ ♀ (Round-leaved mint bush). Bushy, spreading shrub



*Prostanthera ovalifolia*



*Prostanthera rotundifolia*

with slender, hoary stems and rounded to ovate, scarcely toothed leaves, to 1.5cm (½in) long, deep green above, paler beneath. In late spring and early summer, bears bell-shaped, purple to lilac-purple flowers, 1cm (½in) across, in numerous short racemes, to 7cm (3in) long. ‡ 2–4m (6–12ft), ↔ 1–3m (3–10ft). S.E. Australia (including Tasmania). \* **var. rosea**, syn. 'Chelsea Girl', produces grey-green leaves and light rose-pink flowers with mauve anthers.

## PROTEA

PROTEACEAE

Genus of 115 species of evergreen shrubs and, rarely, small, usually upright trees found on rocky hillsides and dry scrub from tropical Africa to South Africa. The leaves are alternate to spiralling, simple, entire, and leathery. Proteas are cultivated for their usually solitary and terminal, mainly cone-like clusters or flat heads of small flowers surrounded by petal-like, green, white, pink to purple, or yellow bracts, each cluster resembling a single, large flower. Each floret is tubular, splitting into 4 sepals to reveal the long, straight or curved, usually coloured style. In frost-prone areas, grow in a cool, well-ventilated greenhouse. In warmer areas, use in a mixed or shrub border. Larger species are also fine specimen plants.

• **HARDINESS** Half hardy to frost tender.  
• **CULTIVATION** Under glass, grow in a mixture of 1 part loam with added charcoal and 3 parts equal measures of grit (or perlite) and peat, in full light.



*Protea cynaroides*



*Protea eximia*

Water moderately during spring and summer; apply a liquid fertilizer of magnesium sulphate and urea, both at half recommended strength, once in spring and again in early autumn. Water sparingly in winter. Outdoors, grow in poor, neutral to acid, well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe or in spring, or take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Magnesium deficiency may result in chlorosis of the leaves. Die-back and general failure to thrive usually indicate that the rooting medium is too rich.

*P. barbata* see *P. speciosa*.

*P. barbigera* see *P. magnifica*.

*P. compacta*. Erect, moderately bushy shrub with oblong to elliptic, stalkless, horny-margined leaves, 5–13cm (2–5in) long. In spring and summer, oblong buds open to obovoid flowerheads, 7–10cm (3–4in) across, with bright pink, rarely white bracts, fringed with white hairs. ‡ 2.5–3.5m (8–11ft), ↔ 1.5–2.5m (5–8ft). South Africa (Western Cape). \*

*P. cynaroides* □ (King protea). Robust-stemmed, sparsely to moderately branched shrub, often spreading with age. Rounded to elliptic leaves are 8–14cm (3–5½in) long, and are borne on stalks 4–18cm (1½–7in) long. From late spring to summer, produces goblet- or bowl-shaped flowerheads, 12–30cm (5–12in) across, with deep crimson-red to pink or cream bracts. ‡ 1–2m (3–6ft). South Africa (Western Cape, Eastern Cape). \*

*P. eximia* □ Large shrub or small tree, rounded to broadly columnar, with fairly robust, sparsely branched stems. Ovate leaves are purple-flushed, silvery green, and glaucous, 6–10cm (2½–4in) long, sometimes with red margins, and heart-shaped at the bases. In spring and summer, bears oblong to inversely cone-shaped flowerheads, to 14cm (5½in) across, with red or red-tinted pink bracts, fringed with white hairs. ‡ 3–5m (10–15ft), ↔ 2–3m (6–10ft). South Africa (Western Cape). \*

*P. longifolia*, syn. *P. minor*. Erect to spreading shrub with linear, ascending, stalkless, mid- to deep green leaves, 9–20cm (3½–8in) long. During summer, produces oblong to inversely conical flowerheads, 10cm (4in) long, with greenish white to pink bracts, the

inner ones fringed with hairs. ‡ 2–3m (6–10ft), ↔ 1.5–2.5m (5–8ft). South Africa (Western Cape). \*

*P. magnifica*, syn. *P. barbigera* (Woolly-bearded protea). Erect shrub, often spreading when young, with robust stems and oblong or lance-shaped, wavy-margined, greyish green leaves, 10cm (4in) or more long. From spring to summer, produces densely packed flowerheads, 15cm (6in) across, initially narrowly bell-shaped, opening to cup-shaped, with black-tipped white inner bracts and clear pink outer bracts, fringed with white hairs. ‡ 1.5–2.5m (5–8ft). South Africa (Western Cape). \*

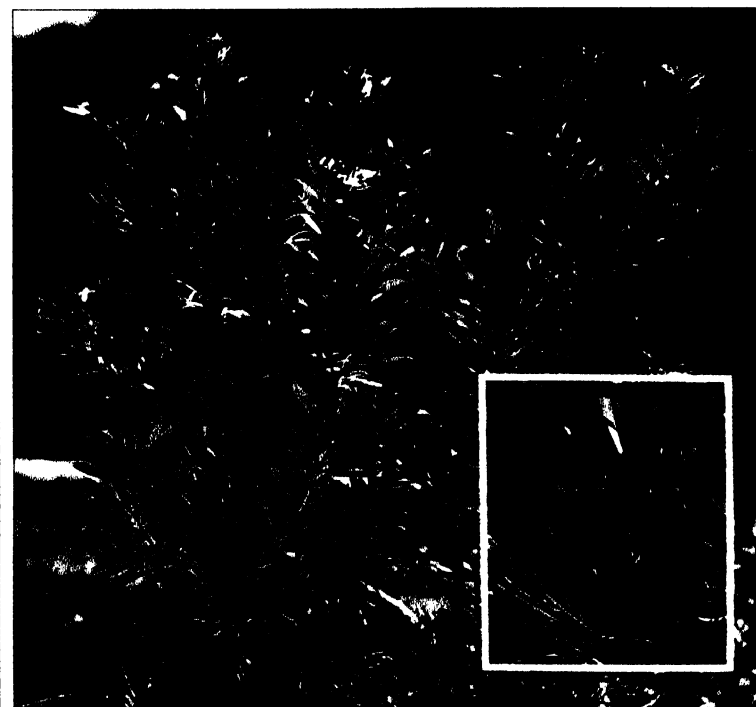
*P. mellifera* see *P. repens*.

*P. minor* see *P. longifolia*.

*P. repens* □ syn. *P. mellifera* (Sugarbush). Erect, moderately bushy shrub or sometimes small tree bearing erect, linear to lance-shaped leaves, to 15cm (6in) long. From spring to summer, produces flowerheads, obovoid in bud, goblet-shaped when open, to 9cm (3½in) across, with hairless bracts, uniformly cream-white or tipped with dark red to pink, and coated with a sticky resin. ‡ 2–4m (6–12ft), ↔ 1.5–3m (5–10ft). South Africa (Western Cape, Eastern Cape). \*

*P. scolymocephala*. Rounded shrub with linear to spoon-shaped, tapered, wavy-margined, olive-green leaves, 4–9cm (1½–3½in) long. From late spring to summer, bears bowl-shaped flowerheads, to 5cm (2in) across, with creamy green bracts flushed pink at the tips. ‡ 0.9–1.5m (3–5ft), ↔ 75–120cm (30–48in). South Africa (Western Cape). \*

*P. speciosa*, syn. *P. barbata*. Erect, moderately branched shrub with elliptic, leathery, orange-margined, mid-green leaves, 11cm (4½in) long. From summer to autumn, bears oblong-goblet-shaped flowerheads, 8cm (3in) across, with bearded, bright pink to creamy yellow bracts, fringed with tawny brown hairs. ‡ 1m (3ft), ↔ 80cm (32in). South Africa (Western Cape). \*



*Protea repens* (inset: flower detail)

▷ **Protea**,  
**King** see *Protea cynaroides*  
**Woolly-bearded** see *Protea magnifica*

## PRUMNOPITYS

PODOCARPACEAE

Genus of 10 species of dioecious, occasionally monoecious, evergreen, coniferous trees from forest in Puerto Rico through the Andes to southern Argentina, and from Malaysia to New Zealand. They are upright trees with whorled shoots, grown mainly for their linear or oblong, yew-like foliage. Male and female cones are borne at various times of the year: ovoid or cylindrical male cones are solitary or in groups of 2–20; spherical or ovoid female cones are solitary or borne in groups of up to 8. The fruits are like small, upright plums, but with only a thin, fleshy layer around the seed, and are borne in the leaf axils of short sideshoots. Grow as specimen trees or for hedging. In frost-prone areas, grow tender species in a cool or temperate greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun, with shelter from cold, drying winds. Clip hedges in early summer or midsummer.

• **PROPAGATION** Sow seed in containers outdoors in spring. Take semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*P. andina* △ syn. *Podocarpus andinus* (Plum yew). Dioecious, ovoid tree, conical when young, frequently with several stems, with smooth, grey-brown bark and shoots that are green for 3 years. Linear, soft, dull bluish green leaves, 2–3cm (¾–1¼in) long, parted below the shoot, are more upright above, especially in the sun; each has 2 white bands beneath. Ovoid, white-tinged yellow male cones, 1–2.5cm (½–1in) long, are produced in racemes

of 5–20 at various times of the year. Plum-shaped, yellowish white fruit, 2cm (¾in) long, have thin, fleshy, edible layers. †10–20m (30–70ft), ↔ 6–8m (20–25ft). Chile, Argentina. \*\*\*

## PRUNELLA

Self-heal

LABIATAE/LAMIACEAE

Genus of 7 species of spreading, semi-evergreen perennials, rooting freely at the nodes, occurring on dry grassland, on sunny banks, and in open woodland in Europe, Asia, North Africa, and North America. They are grown for their dense, upright spikes or heads of tubular, 2-lipped, white, pink, or violet flowers. The leaves are linear-lance-shaped to broadly ovate, simple or deeply lobed, often rounded at the bases, and either basal or in tufts on the stems. Self-heals are useful ground-covering plants for banks, for the front of a border, or in a wild garden, where they attract bees and other beneficial insects. They are extremely vigorous, and must be sited where they will not swamp other, smaller plants.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any soil in full sun or partial shade. Dead-head to prevent self-seeding.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring. Divide in spring or autumn.
- **PESTS AND DISEASES** Susceptible to slugs and snails.

*P. grandiflora* ■ (Large self-heal). Vigorous, spreading perennial bearing simple, ovate to ovate-lance-shaped, sparsely toothed, deep green leaves, 10cm (4in) long. In summer, leafy stems produce whorls of purple flowers, to 3cm (1¼in) long, with darker lips, in dense, upright spikes. †15cm (6in), ↔ 1m (3ft) or more. Europe. \*\*\*. 'Pink Loveliness' produces clear pink flowers. 'White Loveliness' produces pure white flowers.



*Prunella grandiflora*

## PRUNUS syn. AMYGDALUS

Ornamental cherry

ROSACEAE

Genus of more than 200 species of deciduous or evergreen, upright, rounded, or occasionally spreading trees or shrubs, widely distributed in N. temperate regions and to the Andes of South America and mountains of S.E. Asia. They occur mainly in woodland, woodland margins, and thickets, but also in a range of other habitats, including coastal sands, rocky places, and cliffs. They have alternate, broadly ovate to lance-shaped, elliptic, oblong, or obovate to almost rounded, usually toothed leaves. Ornamental cherries are cultivated mainly for their white, sometimes pink or red flowers, which are saucer-, bowl-, or cup-shaped, with 5 petals (more in semi-double or double forms); they are usually followed by fleshy, spherical or ovoid fruits. Some, such as *P. maackii* and *P. serrula*, are also grown for their shiny, coloured bark; many, including *P. sargentii*, have good autumn leaf colour. Certain *Prunus* species and cultivars, notably the plum (*P. x domestica*), cultivars of the almond (*P. dulcis*), and the peach (*P. persica*), are grown for their edible fruits. Leaves and fruits of most other species may cause severe discomfort if ingested.

They are excellent specimen trees, many being suitable for a small garden. Dense, bushy species, such as *P. laurocerasus* and *P. lusitanica*, are useful for screening and ground cover. *P. cerasifera*, *P. x cistena*, *P. incisa*, and *P. spinosa* are suitable for hedging. Grow shrubby species and their cultivars, such as *P. glandulosa* and *P. triloba*, against a wall or in a shrub border.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any moist but well-drained, moderately fertile soil: deciduous species and cultivars in full sun, evergreens in full sun or partial shade. *P. glandulosa* needs hot sun to ripen its wood. *P. laurocerasus* may become chlorotic on shallow chalk soil. Pruning group 1 for trees and most deciduous shrubs (prune in midsummer in areas where silver leaf is a problem); group 5 for *P. glandulosa* and *P. triloba* (group 13 if wall-trained); group 8 for evergreen shrubs. Trim deciduous hedges after flowering, evergreens in early to mid-spring.
- **PROPAGATION** Sow seed of species in containers outdoors in autumn. Root greenwood cuttings of deciduous species in early summer, and semi-ripe cuttings of evergreens in midsummer, both with bottom heat. Bud cultivars in summer, or graft in early spring.
- **PESTS AND DISEASES** Susceptible to damage from aphids, caterpillars, and bullfinches. Diseases include peach leaf curl (on *P. dulcis* and *P. persica*), silver leaf, honey fungus, blossom wilt, and *Taphrina wiesneri*, which causes witches' brooms (abnormal, crowded shoots).

*P. 'Accolade'* ■ ♀ ♂ Spreading, deciduous tree with oblong, tapered, dark green leaves, to 10cm (4in) long. Clusters of 3 semi-double, pale pink flowers, 4cm (1½in) across, open from dark pink buds in early spring. †↔ 8m (25ft). \*\*\*

*P. 'Amanogawa'* ♀! Upright, deciduous tree bearing obovate leaves, to 12cm (5in) long, yellowish bronze in spring while still folded, often red, yellow, and green on the same tree, at the same time, in autumn. In late spring, bears dense clusters of saucer-shaped or semi-double, fragrant, pale pink flowers, 4cm (1½in) across, held vertically on stout stalks. †8m (25ft), ↔ 4m (12ft). \*\*\*

*P. x amygdalopersica* ♂ (*P. dulcis* x *P. persica*) syn. *P. x persicoides*. Spreading, deciduous tree bearing lance-shaped, tapered, mid-green leaves, to 12cm (5in) long, with sharply toothed margins. Solitary, saucer-shaped, light pink flowers, 5cm (2in) across, are borne in early and mid-spring, followed by spherical, peach-like, dry-fleshed green fruit, 4cm (1½in) across. †↔ 7m (22ft). Garden origin. \*\*\*. 'Pollardii' bears large, rich pink flowers in early spring.

*P. avium* ■ ♀ ♂ (Gean, Wild cherry). Spreading, deciduous tree with red-banded bark and ovate-oblong, dark green leaves, to 15cm (6in) long, bronze when young, turning red and yellow in autumn. Bowl-shaped white flowers, 3cm (1¼in) across, are borne in umbels in mid-spring, followed by heart-shaped to ovoid red fruit, 1cm (½in) across. †20m (70ft), ↔ 10m (30ft). Europe, N. Africa, S.W. Asia, Russia (W. Siberia).

\*\*\*. 'Plena' ■ ♀ has double flowers and red autumn colour; †↔ 12m (40ft).

*P. x blireana* ♀ ♂ Spreading, deciduous shrub or small tree bearing ovate, red-purple leaves, to 6cm (2½in) long, turning dark green in summer. Solitary, double pink flowers, 3cm

(1¼in) across, are produced before the leaves in early and mid-spring. †↔ 4m (12ft). Garden origin. \*\*\*

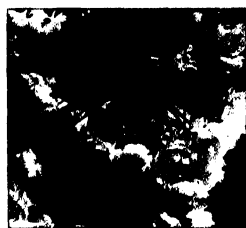
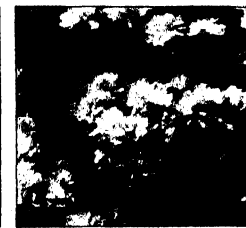
*P. campanulata* ♂ (Bell-flowered cherry, Taiwan cherry). Spreading, deciduous tree bearing ovate, tapered mid-green leaves, to 10cm (4in) long. Shallowly bowl-shaped, pink or red flowers, 2cm (¾in) across, in umbels of 2–5, are borne before or with the leaves in early and mid-spring, followed by ovoid, cherry-like red fruit, to 1.5cm (½in) across. †↔ 8m (25ft). S. China, Taiwan, S. Japan. \*\*

*P. cerasifera* ♂ (Cherry plum, Myrobalan). Rounded, deciduous tree with ovate to obovate, dark green leaves, to 6cm (2½in) long. Solitary, bowl-shaped white flowers, 2.5cm (1in) across, are borne along bare shoots in early spring, with the leaves, and are sometimes followed by spherical, plum-like, edible, red or yellow fruit, 3cm (1¼in) across. †↔ 10m (30ft). S.E. Europe, S.W. Asia. \*\*\*. 'Nigra' ■ ♀ syn. 'Pissardii Nigra', has dark purple leaves, red when young, and pink flowers. 'Pissardii', syn. *P. pissardii*, has dark red-purple leaves, and pale pink flowers that fade to white. 'Pissardii Nigra' see 'Nigra'. 'Thundercloud' ■ has pink flowers and dark purple foliage.

*P. 'Cheal's Weeping'* ■ ♀ ♂ syn. *P. 'Kiku-shidare-zakura'*. Weeping, deciduous tree bearing lance-shaped, tapered, mid-green leaves, to 10cm (4in) long, bronze when young. Fully double, bright pink flowers, 4cm (1½in) across, are borne in dense clusters, before or with the leaves, in mid- and late spring. †↔ 3m (10ft). \*\*\*



*Prunus cerasifera* 'Nigra'

*Prunus* 'Accolade'*Prunus avium**Prunus avium* 'Plena'*Prunus cerasifera*  
'Thundercloud'*Prunus* 'Cheal's Weeping'*Prunus x cistena**Prunus dulcis* 'Roseoplana'*Prunus glandulosa* 'Alba Plena'*Prunus* 'Hokusai'*Prunus incisa**Prunus jamasakura**Prunus* 'Kanzan'

*P.* 'Chôshû-hizakura' ♀♂ Broadly upright, deciduous tree with elliptic, tapered, dark green leaves, to 15cm (6in) long, bronze-red when young. Bowl-shaped or semi-double, mid-pink flowers, 3cm (1¼in) across, are borne in clusters of 2-4 in mid-spring. ↑ 7m (22ft), ↔ 6m (20ft). \*\*\*

*P. x cistena* ♀ (♀ *P. cerasifera* 'Atropurpurea' x *P. pumila*). Slow-growing, upright, deciduous shrub with oval, red-purple leaves, to 6cm (2½in) long, red when young. Solitary, bowl-shaped white flowers, 1cm (½in) across, are produced in late spring, sometimes followed by spherical, cherry-like, dark purple fruit, 2cm (¾in) across. ↑ 1.5m (5ft). Garden origin. \*\*\*

*P. davidiana* ♀ Spreading, deciduous tree with slender, lance-shaped, long-pointed, somewhat glossy, dark green leaves, to 12cm (5in) long. Solitary, saucer-shaped, white or pale pink flowers, 2.5cm (1in) across, stalkless or almost so, are borne before the leaves in early spring, followed by spherical, woolly yellow fruit, to 3cm (1¼in) across. Flowers may be damaged by late frosts. ↑ 8m (25ft). China. \*\*\*

*P. dulcis* ♀ (Common almond). Upright, spreading, deciduous tree with lance-shaped, finely toothed, tapered, dark green leaves, to 12cm (5in) long. Solitary or paired, bowl-shaped, pink or white flowers, 5cm (2in) across, are produced on bare shoots in early spring, followed by ovoid, velvety green fruit, to 6cm (2½in) long, each containing an edible nut. ↑ 8m (25ft). N. Africa, C. and S.W. Asia. \*\*\* 'Roseoplana' ♀ bears double pink flowers.

*P. 'Fudan-zakura'* ♀ syn. *P. serrulata* f. *sempervirens*. Small, spreading, deciduous tree with ovate, mid-green leaves, 6-12cm (2½-5in) long, rough on the upper surfaces. Intermittently from late autumn to mid-spring, soft pink buds open to shallowly cup-shaped, single white flowers, 4cm (1½in) across, in short-stalked clusters. ↑ 5m (15ft). \*\*\*

*P. glandulosa*. Rounded, deciduous shrub bearing narrowly ovate or elliptic, finely toothed, pale to mid-green leaves, to 10cm (4in) long. In late spring, bowl-shaped, white to pale pink flowers, to 1cm (½in) across, are borne singly or in pairs, densely clustered along

the branches; they are followed by spherical, dark red fruit, to 1cm (½in) across. ↑ 1.5m (5ft). N. and C. China, Japan. \*\*\* 'Alba Plena' ♀ has double, pure white flowers. 'Rosea Plena' see 'Sinensis'. 'Sinensis' ♀ syn. 'Rosea Plena', has double pink flowers. *P. 'Hally Jolivette'* ♀ Rounded, bushy, deciduous tree or shrub with ovate, dark green leaves, to 5cm (2in) long. Double white flowers, 3cm (1¼in) across, in clusters of up to 5, open from pink buds in mid- and late spring. ↑ 5m (15ft). \*\*\*

*P. 'Hillieri'* ♀ Spreading, deciduous tree with elliptic, dark green leaves, to 10cm (4in) long, bronze when young, orange-red in autumn. Many bowl-shaped, soft pink flowers, 4cm (1½in) across, are produced in clusters of up to 4, in mid-spring. ↑ 10m (30ft). \*\*\* *P. x hillieri* 'Spire' see *P. 'Spire'*.

*P. 'Hokusai'* ♀ syn. *P. 'Uzuzakura'*. Spreading, deciduous tree with oval, dark green leaves, to 12cm (5in) long, bronze when young, orange and red in

autumn. In mid- and late spring, bears double, pale pink flowers, 5cm (2in) across, singly or in dense clusters of up to 6. ↑ 6m (20ft), ↔ 8m (25ft). \*\*\* *P. 'Hosokawa'* see *P. 'Mount Fuji'*.

*P. 'Ichiyo'* ♀♂ Spreading, deciduous tree with elliptic, dark green leaves, to 10cm (4in) long, bronze when young. Wide-open, double, soft pink flowers, 5cm (2in) across, are borne in long, pendent clusters of 3 or 4 in mid- and late spring. ↑ 8m (25ft). \*\*\*

*P. ilicifolia* ♀ (Holly-leaved cherry). Compact, spreading, rounded, evergreen shrub or small tree with broadly lance-shaped to ovate, holly-like, sharply toothed, leathery, glossy, dark green leaves, to 5-7cm (2-3in) long. In summer, bowl-shaped white flowers, to 8mm (⅜in) across, are borne in racemes to 7cm (3in) long. Spherical, cherry-like red fruit, to 1.5cm (½in) across, ripen to blue-black. ↑ to 9m (28ft), ↔ 6m (20ft). USA (California). \*\*

*P. incisa* ♀♂ (Fuji cherry). Spreading, deciduous, rounded shrub, rarely tree-

like, with ovate to obovate, sharply toothed, dark green leaves, to 6cm (2½in) long, bronze-red when young, turning orange-red in autumn. Saucer-shaped, white or pale pink flowers, 2cm (¾in) across, solitary or in clusters of 2 or 3, are borne before the leaves in early and mid-spring; they are followed by ovoid, cherry-like, purple-black fruit, to 8mm (⅜in) long. ↑ 8m (25ft). S.W. Japan. \*\*\* 'February Pink' bears pale pink flowers over a long period in winter and early spring. 'Kojo-no-mai' has oblong to lance-shaped leaves, 0.6-3cm (¼-1¼in) long, yellow-green when young, turning mid-green in summer. Light red buds open to pale red flowers, 1.5cm (½in) across, borne singly or in pairs. ↑ 2.5m (8ft).

'Praecox' ♀ has pink buds that open to white flowers in late winter.

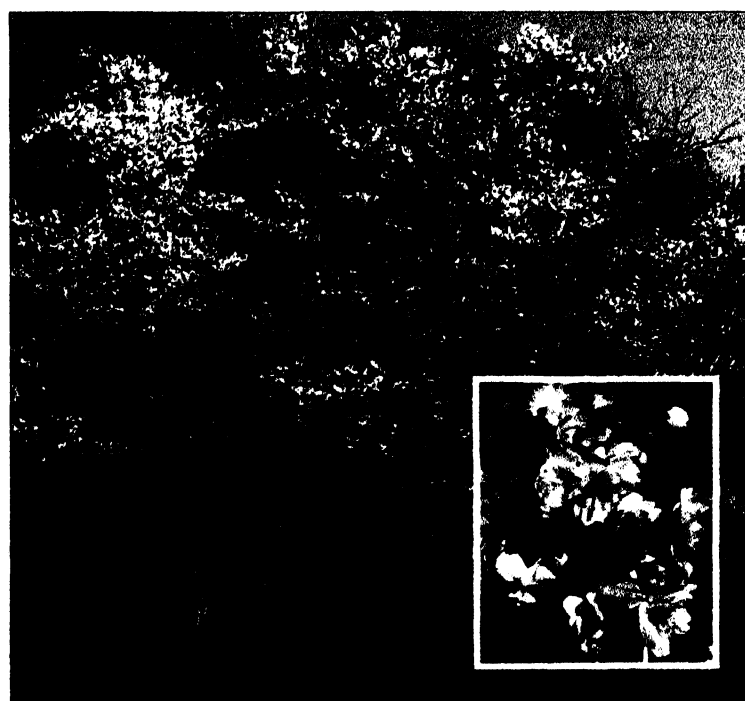
*P. jamasakura* ♀ syn. *P. serrulata* var. *spontanea* (Hill cherry). Spreading, deciduous tree with oblong, dark green leaves, to 12cm (5in) long, bronze-red when young, turning red and yellow in autumn. In mid- and late spring, bears a profusion of cup-shaped white flowers, 3cm (1¼in) across, in clusters of 3-5, followed by ovoid, cherry-like, magenta-red fruit, to 1cm (½in) long. ↑ 12m (40ft). China, Korea, Japan. \*\*\*

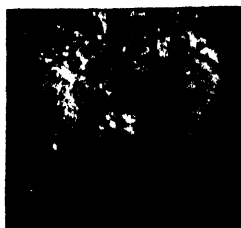
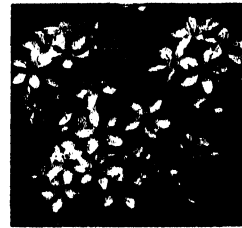
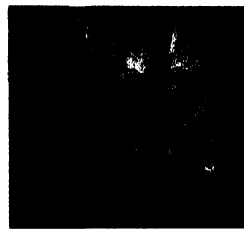
*P. 'Jo-nioi'* ♀ Spreading, deciduous tree with elliptic, mid-green leaves, to 10cm (4in) long, pale bronze when young. Bowl-shaped, fragrant white flowers, 4cm (1½in) across, in clusters of 3-5, open from pink buds in mid-spring. ↑ 10m (30ft). \*\*\*

*P. 'Kanzan'* ♀♂ Upright, deciduous tree, vase-shaped when young, spreading wider with age, with ovate, dark green leaves, to 12cm (5in) long, bronze when young. Double, deep pink flowers, 5cm (2in) across, are profusely borne in clusters of 2-5 in mid- and late spring, before and as the leaves emerge. ↑ 10m (30ft). \*\*\*

*P. 'Kiku-shidare-zakura'* see *P. 'Cheal's Weeping'*.

*P. 'Kursar'* ♀♂ Spreading, deciduous tree with elliptic, dark green leaves, to 12cm (5in) long, bronze when young. Saucer-shaped, dark pink flowers, 2cm (¾in) across, are profusely borne in clusters of 3 or 4 in early spring, before the leaves. ↑ 8m (25ft). \*\*\*

*Prunus* 'Hally Jolivette' (inset: flower detail)

*Prunus laurocerasus**Prunus laurocerasus* 'Otto Luyken'*Prunus laurocerasus* 'Zabeliana'*Prunus lusitanica* subsp. *azorica**Prunus lusitanica* 'Variegata'*Prunus mahaleb**Prunus* 'Mount Fuji'*Prunus mume* 'Beni-chidori'*Prunus mume* 'Omoi-no-mama'*Prunus* 'Okame'*Prunus padus**Prunus padus* 'Colorata'

***P. laurocerasus*** [♀] (Cherry laurel, Laurel). Dense, bushy, evergreen shrub, becoming spreading and tree-like with age, with oblong, glossy leaves, to 15cm (6in) long, dark green above, pale green beneath. In mid- and late spring, cup-shaped, fragrant white flowers, 8mm (½in) across, are produced in upright racemes, 5–12cm (2–5in) long, followed by conical, cherry-like red fruit, 1cm (½in) across, ripening to black. ‡8m (25ft), ↔10m (30ft). E. Europe, S.W. Asia. \*\*\*. 'Camelliifolia' is upright, with conspicuously twisted leaves; ↔4m (12ft). 'Castlewellan' see 'Marbled White'. 'Green Carpet' see 'Grünerteppich'. 'Grünerteppich', syn. 'Green Carpet', is low and spreading, with leaves to 12cm (5in) long; ‡1m (3ft), ↔3m (10ft). 'Herbergii' has a compact habit, with narrow leaves; ‡↔3m (10ft). 'Marbled White', syn. 'Castlewellan', has leaves conspicuously marked white; ‡↔5m (15ft). 'Otto Luyken' [♀] is very compact, with narrow, pointed, dark green leaves, to 11cm (4½in) long; frequently flowers again in autumn; ‡1m (3ft), ↔1.5m (5ft). 'Rotundifolia' is vigorous and upright, excellent for hedging; ‡5m (15ft), ↔4m (12ft). 'Schipkaensis' is spreading, and flowers profusely; ‡2m (6ft), ↔3m (10ft). 'Zabeliana' [♂] has a low and wide-spreading habit, very narrow leaves, and often flowers again in autumn; ‡1m (3ft), ↔2.5m (8ft). ***P. lusitanica*** ♀ (Laurel, Portugal laurel). Dense, bushy, evergreen shrub or tree with red-stalked, ovate to elliptic, glossy, dark green leaves, to 12cm (5in) long. Cup-shaped, fragrant white flowers, 1.5cm (½in) across, are borne in slender, ascending, spreading, or pendent racemes, to 25cm (10in) long, in early summer, followed by ovoid, cherry-like red fruit, 1cm (½in) across, ripening to black. ‡↔20m (70ft). S.W. Europe. \*\*\*. subsp. ***azorica*** [♀] has broader leaves, and racemes to 10cm (4in) long; Azores. 'Variegata' [♂] has leaves narrowly margined with white. ***P. maackii*** [♂] (Manchurian cherry). Conical, deciduous tree or shrub with peeling, yellow-brown bark and ovate, dark green leaves, to 8cm (3in) long, turning yellow in autumn. In mid-spring, produces dense racemes, 5–8cm (2–3in) long, each with 6–10 bowl-

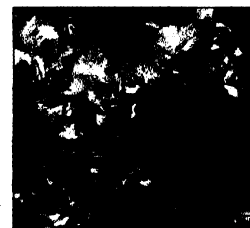
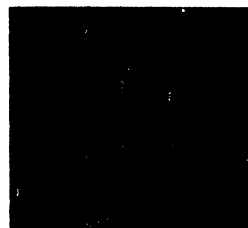
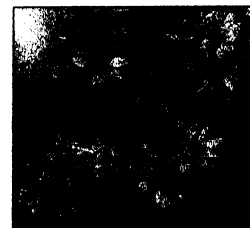
shaped, fragrant white flowers, 1cm (½in) across; they are followed by spherical, cherry-like, glossy black fruit, 5mm (¼in) across. ‡10m (30ft), ↔8m (25ft). N.E. Asia. \*\*\*. ***P. mahaleb*** [♂] (Saint Lucie cherry). Spreading, deciduous tree with rounded, glossy, dark green leaves, to 6cm (2½in) long, turning yellow in autumn. In mid- and late spring, bowl-shaped, very fragrant white flowers, 1.5cm (½in) across, are produced in racemes to 5cm (2in) long; they are followed by ovoid, glossy red cherries, 6mm (¼in) long, ripening to black. ‡10m (30ft), ↔8m (25ft). Europe. \*\*\*.

***P. 'Mount Fuji'*** [♀] syn. *P. 'Hosokawa'*, *P. 'Shirotae'*. Spreading, deciduous tree with slightly arching branches and elliptic, dark green leaves, to 12cm (5in) long, pale green when young, orange and red in autumn. In mid-spring, bears cup-shaped or semi-double, fragrant white flowers, 5cm (2in) across, in pendent clusters of 2 or 3. ‡6m (20ft), ↔8m (25ft). \*\*\*. ***P. mume*** [♂] (Japanese apricot). Spreading, deciduous tree producing green shoots and rounded, tapered, dark green leaves, to 10cm (4in) long. Bowl-shaped, fragrant, white to dark pink flowers, 2.5cm (1in) across, are

produced singly or in pairs, on bare shoots, in late winter and early spring; they are followed by spherical, softly hairy, apricot-like, sour to bitter, edible yellow fruit, to 3cm (1¼in) across. ‡↔9m (28ft). China, Korea. \*\*\*. 'Beni-chidori' [♂] syn. 'Benishidore', is upright and shrubby, with dark pink flowers; ‡↔2.5m (8ft). 'Dawn' bears double, ruffled pink flowers. 'Omoi-no-mama' [♂] syn. 'Omoi-no-wac', is upright and shrubby, with semi-double, pink-flushed white flowers; ‡↔2.5m (8ft). 'Pendula' [♂] has weeping branches and pink flowers; ‡↔6m (20ft). 'W.B. Clarke' [♂] is weeping, with double pink flowers; ‡↔6m (20ft). ***P. 'Okame'*** [♀] Bushy, deciduous tree or shrub with narrowly oval, sharply toothed, dark green leaves, to 8cm (3in) long, turning orange and red in autumn. In early spring, profuse, cup-shaped, carmine-pink flowers, 2–2.5cm (¾–1in) across, are borne in clusters of 2–5. ‡10m (30ft), ↔8m (25ft). \*\*\*. ***P. padus*** [♂] (Bird cherry). Spreading, deciduous tree or shrub, conical when young. Elliptic, dark green leaves, to 10cm (4in) long, turn red or yellow in autumn. Pendent racemes, to 15cm (6in) long, of cup-shaped, fragrant white flowers, to 1.5cm (½in) across, are produced in late spring, followed by spherical, pea-like, glossy black fruit, 8mm (⅜in) across. ‡15m (50ft), ↔10m (30ft). Europe, N. Asia to C. Japan. \*\*\*. 'Albertii' bears abundant flowers in dense racemes. 'Colorata' [♂] has reddish purple young foliage and pink flowers. 'Plena' has double flowers. 'Watereri' [♂] has flowers in slender racemes, to 20cm (8in) long. ***P. 'Pandora'*** [♀] Spreading, deciduous tree, upright when young, with oval, dark green leaves, to 7cm (3in) long, bronze when young, turning orange and red in autumn. In early spring, masses of solitary, cup-shaped, pale pink flowers, 3cm (1¼in) across, open before the leaves, from dark pink buds. ‡10m (30ft), ↔8m (25ft). \*\*\*. ***P. pendula*** 'Pendula Rosea' see *P. x subhirtella* 'Pendula Rosea'. ***P. pendula*** 'Pendula Rubra' see *P. x subhirtella* 'Pendula Rubra'. ***P. pensylvanica*** [♂] (Pin cherry). Spreading, deciduous tree or shrub with peeling, red-banded bark and ovate to

*Prunus maackii* (inset: bark detail)



*Prunus padus* 'Watereri'*Prunus* 'Pandora'*Prunus persica* 'Klara Meyer'*Prunus persica* 'Prince Charming'*Prunus* 'Pink Perfection'*Prunus sargentii**Prunus* 'Shirofugen'*Prunus* 'Shôgetsu'*Prunus spinosa* 'Purpurea'*Prunus* 'Spire'*Prunus x subhirtella*  
'Autumnalis Rosea'*Prunus x subhirtella*  
'Pendula Rosea'

oblong-lance-shaped, bright green leaves, to 11cm (4½in) long, turning yellow and red in autumn. In mid- and late spring, cup-shaped white flowers, 1.5cm (½in) across, are borne before or with the leaves, in stalkless umbels of 3–6, followed by spherical red fruit, 5mm (¼in) across. ♂→ 10m (30ft). North America. \*\*\*. 'Stockton' has double flowers and red autumn colour.

*P. persica* ♀ (Peach). Spreading, deciduous tree with narrowly elliptic, slender-pointed, glossy, mid- to dark green leaves, to 15cm (6in) long. Bears solitary, bowl-shaped, pink or red flowers, 4cm (1½in) across, in late spring, before the leaves, followed by spherical, downy, edible, red-blushed yellow fruit, 8cm (3in) across. ♂→ 8m (25ft). China. \*\*\*. 'Helen Borchers' has semi-double, rose-pink flowers, 6cm (2½in) across. 'Klara Meyer' ♀ has double, bright pink flowers. 'Peppermint Stick' bears double white flowers with red stripes. 'Prince Charming' ♀ is upright, with double, dark pink flowers; ♂ 4m (12ft), ♀ 1.5m (5ft).

*P. x persicoides* see *P. x amygdalopersica*. *P. 'Pink Perfection'* ♀ Spreading, deciduous tree with oblong, dark green leaves, to 12cm (5in) long, bronze when young. Double pink flowers, 5cm (2in) across, open in long, pendent clusters of 3–5 in late spring. ♂→ 8m (25ft). \*\*\*. *P. 'Pink Star'* see *P. x subhirtella* 'Stellata'.

*P. pissardii* see *P. cerasifera* 'Pissardii'.

*P. sargentii* ♀♂ (Sargent cherry). Spreading, deciduous tree with elliptic, tapered, dark green leaves, to 12cm (5in) long, red when young, turning brilliant orange-red in early autumn. Bowl-shaped, pale pink flowers, 4cm (1½in) across, are produced in umbels of 2–4 in mid-spring; they are followed by ovoid, cherry-like, glossy crimson fruit, to 1cm (½in) long. ♂ to 20m (70ft), ♀ 15m (50ft). Russia (Sakhalin). Korea, Japan. \*\*\*. 'Columnare' ♀ is narrow and upright; ♂ 3m (10ft).

*P. serotina* ♀ (Black cherry, Wild rum cherry). Broadly columnar, deciduous tree with elliptic, glossy, dark green leaves, to 12cm (5in) long, turning yellow or red in autumn. In late spring and early summer, bowl-shaped, fragrant white flowers, 1.5cm (½in) across, are borne in racemes to 15cm (6in) long; they are followed by spherical, edible red fruit, 1cm (½in) across, ripening to black. ♂ to 35m (120ft). North America. \*\*\*. *P. serrula* ♀♂ Rounded, deciduous tree with peeling, glossy, copper-brown bark and lance-shaped, tapered, dark green leaves, to 10cm (4in) long, turning yellow in autumn. Bowl-shaped white flowers, 2cm (¾in) across, solitary or in umbels of 2–4, are borne as the leaves emerge in late spring, followed by ovoid, cherry-like fruit, 1cm (½in) long. ♂→ 10m (30ft). W. China. \*\*\*.

*P. serrulata* f. *sempervirens* see *P. 'Fudan-zakura'*.

*P. serrulata* var. *spontanea* see *P. jamaresakura*.

*P. 'Shirofugen'* ♀♂ Spreading, deciduous tree bearing oblong, dark green leaves, to 12cm (5in) long, bronze-red when young, turning orange-red in autumn. Clusters of 3–5 double, fragrant white flowers, 5cm (2in) across, open from pink buds in late spring; they turn pink before they fall. ♂ 8m (25ft), ♀ 10m (30ft). \*\*\*.

*P. 'Shirotae'* see *P. 'Mount Fuji'*.

*P. 'Shôgetsu'* ♀♂ Rounded, deciduous tree bearing oblong, mid-green leaves, to 12cm (5in) long, bronze when young, turning orange and red in autumn. Frilly-margined, double, pink and white flowers, 5cm (2in) across, in pendent clusters of 3–6, open from pink buds in late spring. ♂ 5m (15ft), ♀ 8m (25ft). \*\*\*.

*P. spinosa* ♀ (Blackthorn, Sloe). Dense, bushy, spiny, deciduous shrub or tree with elliptic to obovate, mid- to deep green leaves, to 5cm (2in) long. Solitary, rarely paired, bowl-shaped white flowers, to 1.5cm (½in) across, are borne before the leaves in early and mid-spring; they are followed by spherical, edible, glaucous black fruit, 1.5cm (½in) across. ♂ 5m (15ft), ♀ 4m (12ft). Europe to Russia (W. Siberia). Mediterranean. \*\*\*. 'Purpurea' ♀ has red leaves, later turning dark red-purple, and pale pink flowers.

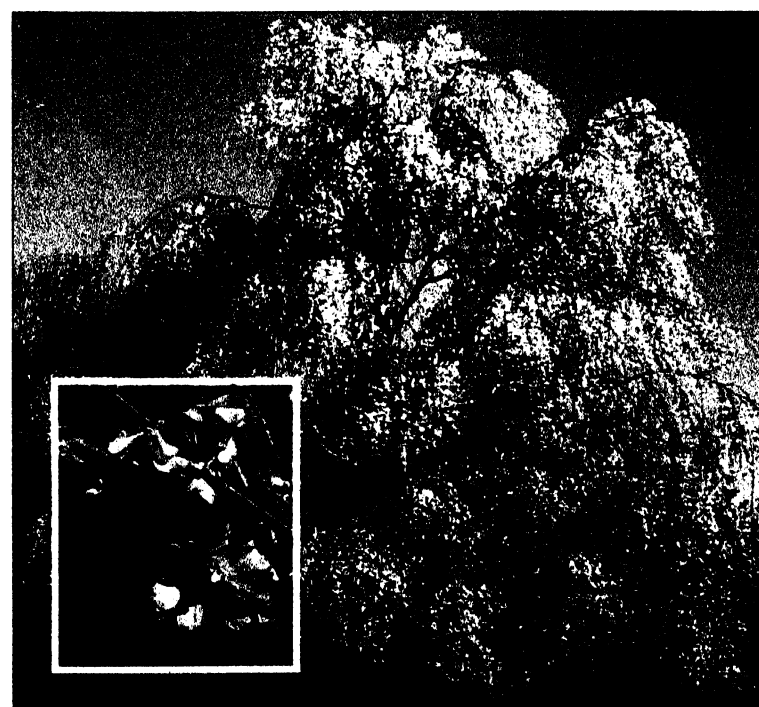
*P. 'Spire'* ♀♂ syn. *P. x hillieri* 'Spire'. Vase-shaped, deciduous tree, conical when young, with obovate, dark green leaves, to 10cm (4in) long, bronze when young, turning orange and red in autumn. Bowl-shaped, pale pink flowers, 4cm (1½in) across, in clusters of 3–5, are produced as the leaves emerge in mid-spring. ♂ 10m (30ft), ♀ 6m (20ft). \*\*\*.

*P. x subhirtella* ♀ (*P. incisa* x *P. pendula*) (Higan cherry, Rosebud

cherry). Spreading, deciduous tree with broadly elliptic or ovate, sometimes 3-lobed, sharply toothed, dark green leaves, to 8cm (3in) long, pale bronze when young, turning yellow in autumn. Bowl-shaped, white or pink flowers, 2cm (¾in) across, are borne in clusters of 2–5, intermittently from autumn to spring, before or with the leaves; they are sometimes followed by ovoid, cherry-like, red, later nearly black fruit, 8mm (⅜in) long. ♂→ 8m (25ft). Japan. \*\*\*. 'Autumnalis' ♀ bears semi-double, pink-tinged white flowers in mild periods between autumn and spring. 'Autumnalis Rosea' ♀ is similar to 'Autumnalis' but produces pink flowers. 'Fukubana' ♀ produces semi-double, dark rose-pink flowers.

'Pendula Rosea' ♀♂ syn. *P. pendula* 'Pendula Rosea', has weeping branches and rose-pink flowers. 'Pendula Rosea Plena' ♀♂ has weeping branches and semi-double, rose-pink flowers.

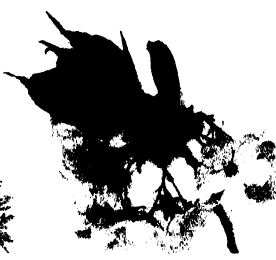
'Pendula Rubra' ♀ syn. *P. pendula* 'Pendula Rubra', has weeping branches

*Prunus serrula**Prunus x subhirtella* 'Pendula Rosea Plena' (inset: flower detail)

## PRUNUS



*Prunus x subhirtella*  
'Stellata'



*Prunus* 'Taihaku'



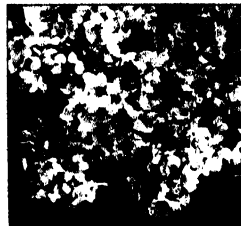
*Prunus tenella*



*Prunus* 'Ukon'



*Prunus* 'Yae-murasaki'



*Prunus x yedoensis*

and dark pink flowers. 'Stellata' ■ syn. *P.* 'Pink Star', has pale pink flowers, red in bud, with narrow, pointed petals.

*P.* 'Taihaku' ■ ♀ (Great white cherry). Vigorous, spreading, deciduous tree bearing elliptic, dark green leaves, to 20cm (8in) long, bronze when young. Bowl-shaped white flowers, to 6cm (2½in) across, are produced in clusters of up to 4 in mid-spring. ‡ 8m (25ft), ↔ 10m (30ft). \*\*\*

*P. tenella* ■ (Dwarf Russian almond). Bushy, deciduous shrub with upright shoots and obovate to inversely lance-shaped, glossy, dark green leaves, to 8cm (3in) long. Bowl-shaped, bright pink flowers, to 3cm (1¼in) across, solitary

or in profuse clusters of 2 or 3, are produced with the young leaves in mid- and late spring; they are followed by ovoid, almond-like, velvety, grey-yellow fruit, to 2.5cm (1in) long. ‡ to 1.5m (5ft), ↔ 1.5m (5ft). C. Europe to Russia (Siberia). \*\*\*. 'Fire Hill' ♀ has very dark pink flowers.

*P. 'Trailblazer'* ♀ Broadly upright, deciduous tree with oval, red-purple leaves, to 8cm (3in) long. Solitary, bowl-shaped, white or pale pink flowers, 2cm (¾in) across, are borne before the leaves in mid-spring, and are sometimes followed by plum-like, edible red fruit, 6cm (2½in) across. ‡ 10m (30ft), ↔ 6m (20ft). \*\*\*

*P. triloba* ♀ (Flowering almond).

Densely branched, deciduous shrub or small tree bearing broadly elliptic, often 3-lobed leaves, 4–8cm (1½–3in) long, dark green above, mid-green and softly hairy beneath. Solitary or paired, bowl-shaped pink flowers, 2–3.5cm (¾–1½in) across, are produced in early and mid-spring; they are followed by spherical red fruit, 1cm (½in) across. ‡↔ 3m (10ft). China. \*\*\*.

'Multiplex' ♀ is spreading, bearing oval leaves, to 6cm (2½in) long. Double pink flowers, 4cm (1½in) across, are produced in mid-spring. ‡↔ 4m (12ft).

*P. 'Ukon'* ■ ♀ Vigorous, spreading, deciduous tree with elliptic, tapered, dark green leaves, to 12cm (5in) long, bronze when young. Clusters of 3–6 double flowers, 4cm (1½in) across, yellowish white on the outsides and slightly pink at the tips, open from pink buds in mid-spring. ‡ 8m (25ft), ↔ 10m (30ft). \*\*\*

*P. 'Umineko'* ■ ♀ Upright, deciduous tree with ovate, sharply toothed, dark green leaves, to 7cm (3in) long, pale green when young. Cup-shaped white flowers, 4cm (1½in) across, are borne in clusters of 2 or 3 in mid-spring, with the young leaves. ‡ 8m (25ft), ↔ 3m (10ft). \*\*\*

*P. 'Uzuzakura'* see *P. 'Hokusai'*.

*P. virginiana* ♀ (Choke cherry, Virginian bird cherry). Conical, often suckering, deciduous tree or shrub with broadly obovate to broadly elliptic, glossy, mid- to dark green leaves, to 10cm (4in) long. In late spring, bears cup-shaped white flowers, 1cm (½in) across, in dense racemes, to 10cm (4in) long; they are followed by spherical, red to purple fruit, 8mm (⅓in) across. ‡ 10m (30ft), ↔ 8m (25ft). North America. \*\*\*. 'Shubert' produces leaves that turn dark red-purple in summer.

*P. 'Yae-murasaki'* ■ ♀ Spreading, very slow-growing, deciduous tree with elliptic, tapered, mid-green leaves, to 12cm (5in) long, bronze when young, turning orange-red in autumn. In mid-spring, bears semi-double, dark pink flowers, 4cm (1½in) across, in clusters of 2–4. ‡ 5m (15ft), ↔ 8m (25ft). \*\*\*

*P. x yedoensis* ■ ♀ (P. *speciosa* x *P. x subhirtella*) (Yoshino cherry). Spreading, deciduous tree bearing arching branches and elliptic, dark green leaves, to 11cm (4½in) long. In early spring, before the leaves, produces a profusion of racemes of 5 or 6 bowl-shaped, pale pink flowers, 4cm (1½in) across, fading to nearly white. ‡ to 15m (50ft), ↔ 10m (30ft). Japan. \*\*\*. 'Shidare-yoshino' ♀ syn. 'Pendula', 'Perpendens', has weeping branches arching to the ground.

## PSEUDERANTHEMUM

### ACANTHACEAE

Genus of about 60 species of evergreen perennials, subshrubs, and shrubs from woodland habitats in tropical regions worldwide. They are grown primarily for their variegated or coloured leaves, which are opposite, simple, and entire or toothed. The long, tubular, 2-lipped, white, blue, purple, or red flowers, sometimes marked with yellow, are produced in spikes, racemes, or cymes. In areas where temperatures fall below

## PSEUDOCYDONIA



*Pseuderanthemum atropurpureum*  
'Variegatum'

13°C (55°F), grow as foliage plants in a warm greenhouse. In tropical climates, they are suitable for growing in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, providing high humidity. During the growing season, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, moist, but well-drained soil in full sun with some midday shade, or in partial shade. Pruning group 9; needs restrictive pruning under glass.

• **PROPAGATION** Root semi-ripe cuttings in midsummer with bottom heat.

• **PESTS AND DISEASES** May be infested by red spider mites and whiteflies under glass.

*P. atropurpureum*, syn. *Eranthemum atropurpureum*. Erect, open shrub, the stems sparsely branched unless pinched out at intervals when young. Ovate to broadly elliptic leaves, 10–15cm (4–6in) long, are deep purple, sometimes metallic green, spotted yellow, pinkish purple, pink, green, and white. During summer, tubular white flowers, spotted rose-red or purple at the bases, 2.5cm (1in) long, are borne in dense, terminal spikes, to 18cm (7in) long. ‡ 0.9–1.5m (3–5ft), ↔ 30–75cm (12–30in). Polynesia. ☉ (min. 13°C/55°F). 'Variegatum' ■ syn. 'Tricolor', bears bronze-purple leaves, splashed and suffused creamy yellow and pink, and has pink flowers.

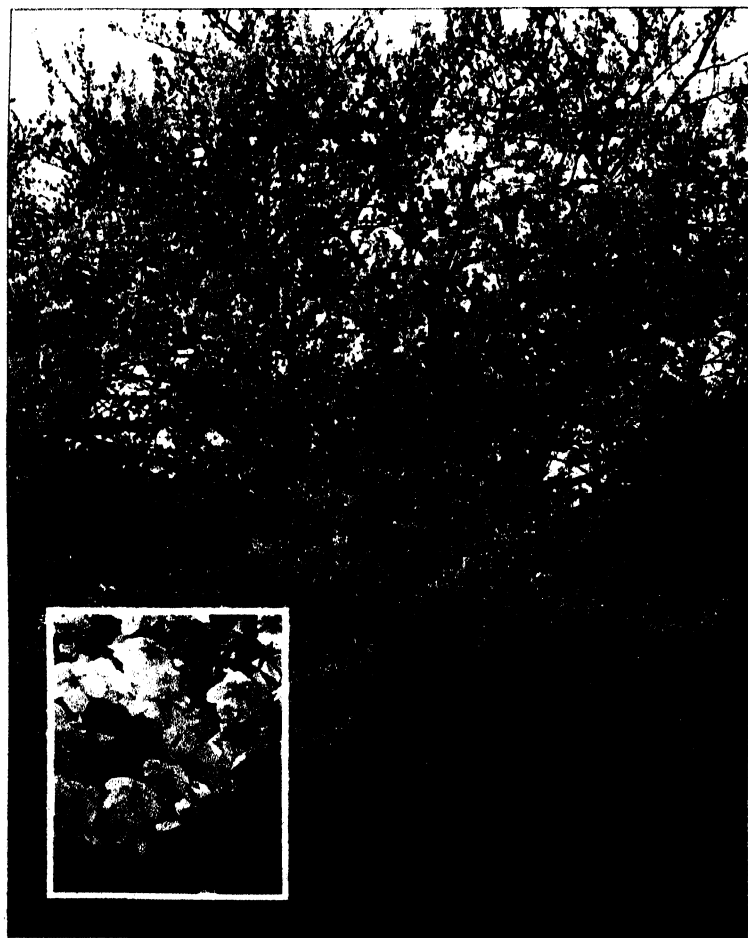
## PSEUDOCYDONIA

### ROSACEAE

Genus of one species of deciduous or semi-evergreen shrub or tree from temperate woodland in China. It has simple, dark green leaves, but is grown mainly for its peeling bark, cup-shaped pink flowers, and large, edible yellow fruit. It is best cultivated as a specimen tree, but will achieve tree stature only in regions with long, hot summers; in areas with cool summers, it remains shrubby and is best trained against a warm, sunny wall.

• **HARDINESS** Fully hardy in areas with hot summers, but otherwise frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun. Provide a warm site, sheltered from severe frost, and, in



*Prunus* 'Umineko' (inset: flower detail)

## PSEUDOCYDONIA

areas with cool summers, sheltered from cold, drying winds. Pruning group 1, or group 13 if wall-grown.

• **PROPAGATION** Sow seed in containers outdoors in autumn.

• **PESTS AND DISEASES** Trouble free.

*P. sinensis* ♀ syn. *Cydonia sinensis*. Spreading shrub or small tree bearing peeling grey and white bark, and oval, finely toothed, dark green leaves, to 10cm (4in) long. Solitary, cup-shaped pink flowers, 4cm (1½in) across, are produced in mid- and late spring, followed, after hot summers, by ovoid yellow fruit, 15cm (6in) long, 1½–6m (20ft). China. \*\*

▷ *Pseudodrynaria coronans* see

*Aglaomorpha coronans*

▷ *Pseudofumaria* see *Corydalis*

*P. lutea* see *C. lutea*

▷ *Pseudogynoxys chenopodioides* see *Senecio confusus*

## PSEUDOLARIX

PINACEAE

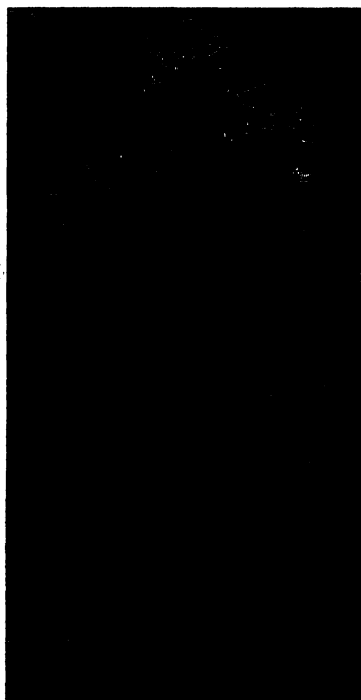
Genus of one species of monoecious, deciduous, coniferous tree occurring in forest in China, with linear leaves borne in rosettes on short shoots (as in *Larix*). It is grown mainly for the outstanding golden orange colour of its autumn foliage. The female cones have large, triangular green scales and release the seeds by disintegrating; the male cones are catkin-like and clustered on short shoots. It is an excellent specimen tree, but is initially slow-growing, and is best grown in regions with long, hot summers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in deep, fertile, acid to neutral, well-drained soil in a warm, sheltered site in full sun. Protect from cold, drying winds.

• **PROPAGATION** Sow seed in containers outdoors in spring. Take greenwood cuttings in early summer.

• **PESTS AND DISEASES** Trouble free.



*Pseudolarix amabilis*

*P. amabilis* ♂♀ syn. *P. kaempferi* (Golden larch). Broadly conical or flattened, open-crowned tree with spreading branches, grey bark furrowed with raised, plate-like pieces, and purple, later greyish purple shoots with ovoid buds. Linear, soft, fresh green leaves, 2–5cm (¾–2in) long, turning golden orange in autumn, are borne on both long and short shoots. Erect, ovoid, yellow-green female cones, 6–8cm (2½–3in) long, ripening to brown, are spiky due to the free tips of the scales. 1 to 15–20m (50–70ft), ½–6–12m (20–40ft). S. and E. China. \*\*\*

*P. kaempferi* see *P. amabilis*.

▷ *Pseudomuscari azureum* see *Muscari azureum*

## PSEUDOPANAX

ARALIACEAE

Genus of 12–20 species of evergreen trees and shrubs from forest and scrub in Tasmania (Australia), New Zealand, and Chile. Cultivated for their upright habit, foliage, and fruits, they are valuable architectural or specimen plants. The alternate, simple or palmate, entire or variously toothed leaves may vary greatly in shape, depending on the age of the plant. Inconspicuous, 4- or 5-petalled green flowers are borne mainly in winter, in terminal or, less commonly, lateral umbels, clusters, racemes, or mixtures of these. Male and female flowers usually grow on separate plants; both are required to produce the fruits, which are drupe-like, each with 2–5 stones. Grow in a warm, sheltered shrub border. In frost-prone areas, grow tender species in a cool greenhouse or conservatory.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added sharp sand, in full light with shade from hot sun, or in bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun or partial shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 1; may need restrictive pruning under glass.

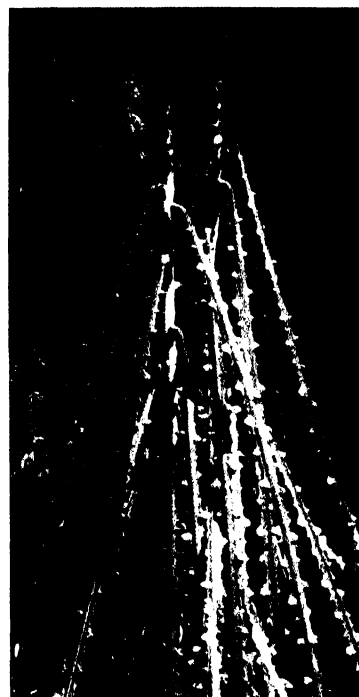
• **PROPAGATION** Sow seed in autumn or spring; seed of tender species at 19–24°C (66–75°F); seed of hardy species in containers in a cold frame. Take semi-ripe cuttings, or air layer, in summer.

• **PESTS AND DISEASES** Trouble free.

*P. arboreus* ♀ syn. *Neopanax arboreum* (Five finger, Whauwhaupaku). Bushy, round-headed, evergreen tree or sometimes large shrub, with long-stalked, 5- or 7-palmate, glossy, deep green leaves, composed of stalked, narrowly oblong to oblong-obovate, toothed leaflets, 10–20cm (4–8in) long. In winter, bears star-shaped, purple-budded cream flowers in compound umbels, to 20cm (8in) across, followed by black-purple fruit, 6mm (¼in) across. 1–4–8m (12–25ft), ½–2.5–5m (8–15ft). New Zealand. ☼ (min. 2°C/36°F)

*P. crassifolius* ♀ (Lancewood).

Evergreen tree, unbranched for many years, with long, slender seedling leaves, to 60cm (24in) long, and downward-

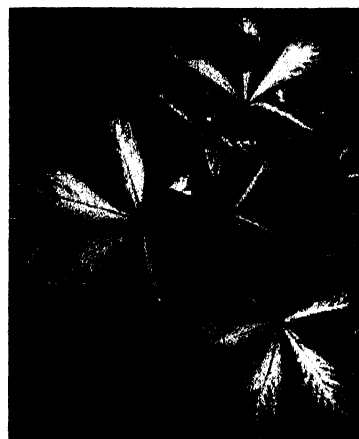


*Pseudopanax ferox*

pointing, dark green mature leaves, to 1m (3ft) long or more. Seedling leaves are simple, ovate to lance-shaped, membranous, coarsely toothed or lobed; mature leaves are linear, rigid, somewhat variegated, with red midribs and spine-tipped teeth. Mature plants develop a rounded head and narrow, spreading, linear to linear-obovate, 3- or 5-palmate, leathery leaves, with linear or sword-shaped leaflets, 20cm (8in) long. Star-shaped, greenish white flowers are produced in umbels, 7–10cm (3–4in) across, in summer and early autumn; they are followed on female or hermaphrodite flowers by spherical black fruit, 5mm (¼in) across. 1 to 15m (50ft), ½–2m (6ft). New Zealand. \*\*

*P. ferox* ♂♀ (Toothed lancewood).

Upright, dioecious, evergreen tree, later developing a small, rounded head. Young plants produce simple, pendent, narrow, linear, sharply pointed, coarsely and jaggedly toothed, dark bronze-green mature leaves, to 45cm (18in) long, marked white or grey. Mature plants bear spreading, linear, dark green leaves, to 15cm (6in) long. Green flowers are borne in umbel-like panicles, to 10cm (4in) across, in summer and early



*Pseudopanax lessonii* 'Gold Splash'

autumn; they are followed on female plants by ovoid black fruit, 8mm (⅜in) across. 1 to 5m (15ft), ½–2m (6ft). New Zealand. \*\*

*P. laetus* ♀ Rounded, dioecious, evergreen tree or shrub with stout shoots, and 5- or 7-palmate leaves composed of long-stalked, obovate, leathery, dark green leaflets, to 30cm (12in) long. In winter, bears greenish purple flowers in compound umbels, to 20cm (8in) across, followed on female plants by spherical, purple-black fruit, 5mm (¼in) across. 1 to 6m (20ft), ½–3m (10ft). New Zealand (North Island). \*\*

*P. lessonii* ♀ (Houpara). Erect to spreading, evergreen, large shrub or small tree, with stout branches. The deep green leaves are 3- or 5-palmate: on juvenile plants they have 5 lance-shaped, coarsely and irregularly toothed leaflets, to 12cm (5in) long; on mature plants, they comprise 3 smaller, stalkless, obovate, entire to sparsely toothed leaflets, to 10cm (4in) long. Yellowish green flowers are borne in compound umbels, 10cm (4in) across, in summer; they are followed by oblong, purple-black fruit, 5mm (¼in) long. 1 to 3–6m (10–20ft), ½–2–4m (6–12ft). New Zealand (North Island, Three Kings Island). ☼ (min. 2°C/36°F). 'Gold Splash' ♂♀ has yellow-marked leaves. 'Purpureus' ♀ has bronze-purple foliage.

▷ *Pseudorhipsalis alata* see *Disocactus alatus*

▷ *Pseudorhipsalis macrantha* see *Disocactus macranthus*

## PSEUDOSASA

GRAMINEAE/POACEAE

Genus of 3–6 species of woody, upright, spreading to clump-forming, evergreen, rhizomatous, perennial bamboos, often thicket-forming, found in woodland and along roads or tracks in China, Japan, and Taiwan. They are cultivated for their woody canes, which are erect, cylindrical, simple-branched or sometimes 3-branched at each upper node, and to 6m (20ft) high. The mid- or dark green leaves are lance-shaped or oblong, hairless, and somewhat tessellated. Rarely, spikelets of 2 to 8 flowers are borne in terminal, lax panicles. Grow in a woodland or wild garden, or as screening plants; they can be vigorous and invasive, and need room to spread.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. If plants do flower, cut back to the bases, and apply a general-purpose fertilizer and deep organic mulch; this usually restores vigour.

• **PROPAGATION** Divide clumps in spring; keep moist until established.

• **PESTS AND DISEASES** Trouble free.

*P. japonica*. Upright, eventually thicker-forming, spreading, rhizomatous bamboo. Canes are olive green when young, maturing to pale beige. Lance-shaped or oblong, tessellated, dark green leaves, to 35cm (14in) long, are silver-grey beneath and have yellow midribs. Spikelets of 2–8 green flowers are borne in lax panicles, although flowering is rare. 1 to 6m (20ft), ½–indeterminate. Japan. \*\*\*

*Pseudotsuga menziesii* 'Fretsii'

## PSEUDOTSUGA

PINACEAE

Genus of 6–8 species of tall, evergreen, coniferous trees from forest in China, Taiwan, Japan, W. North America, and Mexico. The linear leaves, arranged radially on the shoots, develop from pointed, many-scaled buds that are unique to the genus. The female cones have protruding, trident-shaped bract scales; the male cones are cylindrical. They are imposing specimen trees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained, non-chalky soil, in full sun.
- **PROPAGATION** Sow seed in containers outdoors in spring. Graft cultivars in late winter.

- **PESTS AND DISEASES** The foliage is attacked by Douglas fir adelgids.

*P. douglasii* see *P. menziesii*.  
*P. menziesii* ♀ ♂–♀ syn. *P. douglasii*, *P. taxifolia* (Douglas fir). Broadly conical tree when young, becoming columnar with spreading branches. The bark is smooth and grey at first, then thick, corky, deeply ridged, and red-brown. Ovoid, sharp-pointed, red-brown buds open to linear, soft, dark green leaves, 1.5–3cm (½–1¼in) long, loosely parted on the shoots, each with 2 white bands beneath. Ovoid-conical female cones, 7–10cm (3–4in) long, have long, erect bracts. ↑ 25–50m (80–160ft), ↔ 6–10m (20–30ft). W. North America (British Columbia to California). \* \* \*

'Fretsii' ■ is slow-growing, forming a small, spreading, conical tree, with dull green leaves, 0.8–1cm (⅜–½in) long; ↑ to 6m (20ft). **var. glauca** ■ (Blue Douglas fir) has smaller cones, 4.5–6cm (1¾–2½in) long, with reflexed bracts; the leaves are blue-glaucous, and the grey or black bark is thinner and more scaly. 'Oudemansii' is slow-growing, with short leaves, 1.5–2cm (½–¾in) long; ↑ 5–10m (15–30ft).

*P. taxifolia* see *P. menziesii*.

## PSEUDOWINTERA

WINTERACEAE

Genus of 3 species of aromatic, evergreen trees and shrubs from mountain forest in New Zealand. They are cultivated mainly for their alternate, broadly elliptic, leathery leaves, which have obvious glands. Cup-shaped,

*Pseudowintera colorata*

greenish yellow to white flowers are produced in axillary clusters, and are followed by spherical, dark red or black fruits. Pseudowinteras grow best in a sheltered border or woodland situation. In frost-prone areas, grow less hardy species in a cool greenhouse.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light or bright filtered light. During growth, water freely, applying a balanced liquid fertilizer monthly; water sparingly at all other times. Outdoors, grow in humus-rich, preferably neutral to acid, moist but well-drained soil in full sun or partial shade. Pruning group 8; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or spring. Root semi-ripe cuttings in midsummer with bottom heat.
- **PESTS AND DISEASES** Trouble free.

*P. colorata* ■ syn. *Drimys colorata*. Spreading, bushy shrub bearing broadly elliptic, leathery, yellow-green leaves, to 8cm (3in) long, marked pink and margined dark red-purple above, glaucous beneath. In mid-spring, bears clusters of 2–5 or more, cup-shaped, greenish yellow flowers, 1cm (½in) across, followed by spherical red, later black berries, 5mm (¼in) across. ↑ 1m (3ft), ↔ 1.5m (5ft). New Zealand. \* \*

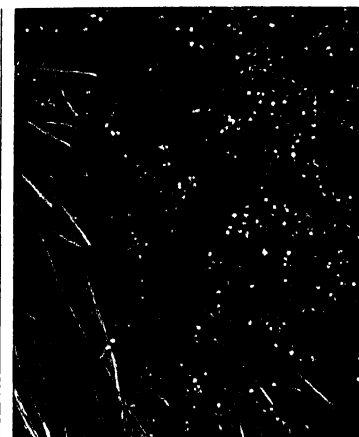
▷ *Pseudoxygocactus epiphylloides* see *Hatiora epiphylloides*

## PSILOTUM

Fork fern

PSILOTACEAE

Genus of 2 species of terrestrial or epiphytic, evergreen, rhizomatous, fern-like perennials from moist tropical and warm-temperate forest or woodland worldwide. They are grown for their upright, spreading, or pendent habit, and for their distinctive, repeatedly forked, triangular or flattened, yellow-green stems, 1–3mm (⅛–¼in) thick, which may die back in winter. The leaves are very small and inconspicuous, and the stems sometimes bear small, spherical, 3-lobed sporangia in the axils of minute bracts. In frost-prone areas, grow in a cool or temperate greenhouse, and leave undisturbed for long periods; in warmer areas, grow beneath shrubs or tree ferns.

*Psilotum nudum*

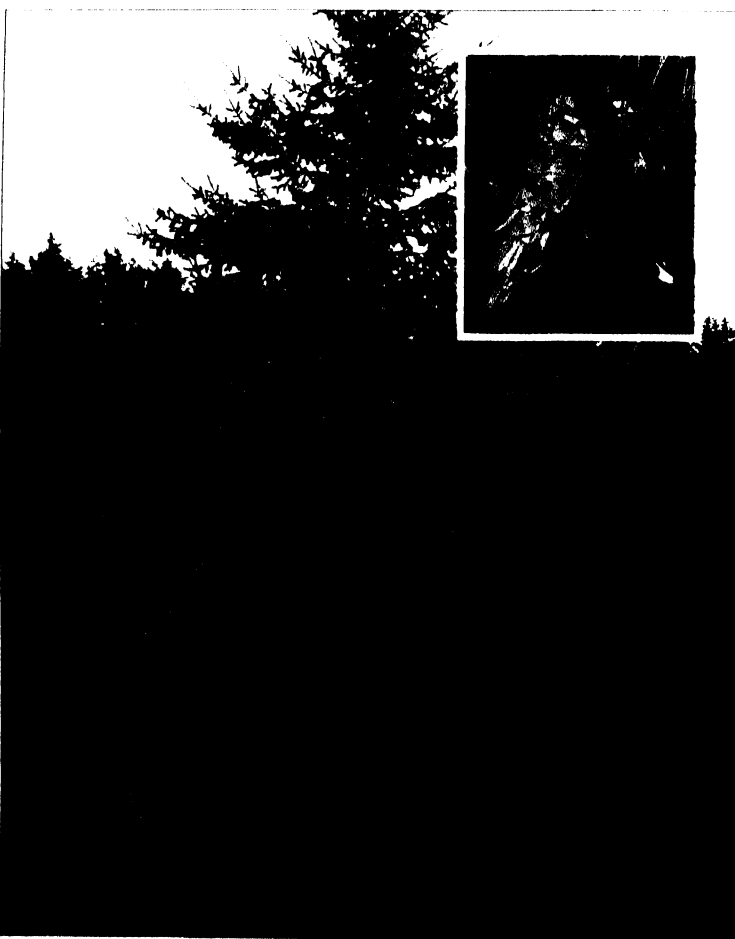
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould; or grow epiphytically on tree-fern bark. Provide bright filtered light and high humidity. In growth, water and mist freely, and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in light dappled shade.
- **PROPAGATION** Sow spores at 21°C (70°F) when ripe. Divide established plants in spring. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*P. nudum* ■ Bushy, evergreen, fern-like perennial with upright, spreading, or pendent, branching, yellow-green, triangular stems, to 60cm (24in) long. Dull yellow sporangia, 3mm (⅛in) wide, are produced on the upper parts of the stems. Leaves are sparse and scale-like, 2mm (⅛in) long. ↑ ↔ 60cm (24in). Tropical to warm-temperate areas worldwide. ☼ (min. 5°C/41°F)

## PSYCHOPSIS

ORCHIDACEAE

Genus of about 5 species of small, evergreen, epiphytic orchids from lowland to mountainous forest, at altitudes of up to 1,000m (3,250ft), in Central America, South America, and Trinidad. They have compressed, clustered, oval pseudobulbs, and solitary, semi-rigid, oblong-elliptic leaves, which are mottled dark green and dull purple. Butterfly-

*Psychopsis papilio*842 *Pseudotsuga menziesii* var. *glauca* (inset: cone detail)


like flowers are borne over a long period in long, slender, few-flowered, jointed racemes, occasionally singly, from the base of each pseudobulb.

• **HARDINESS** Frost tender.

• **CULTIVATION** Intermediate-growing orchids. Grow in epiphytic orchid compost or epiphytically on slabs of bark. Throughout the year, provide full light and high humidity, and water sparingly. During summer, mist rather than water, and feed every week. See also p.46.

• **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.

• **PESTS AND DISEASES** May be infested by red spider mites, aphids, and mealybugs.

**P. papilio**  syn. *Oncidium papilio*. Epiphytic orchid with spherical pseudobulbs, each producing a single, ovate to elliptic leaf, 12–25cm (5–10in) long. Orange-brown flowers, 15cm (6in) across, slightly mottled greenish yellow, with yellow and brown mottled lips, are borne in few-flowered racemes, to 1.2m (4ft) long, throughout the year.  $\uparrow$  60cm (24in),  $\leftrightarrow$  30cm (12in). Trinidad, Venezuela, Colombia, Ecuador, Peru. \* (min. 10°C/50°F; max. 30°C/86°F)

† **Psymorchis pusilla** see *Oncidium pusillum*

## PSYLLIOSTACHYS

Statice

PLUMBAGINACEAE

Genus of about 6–8 species of erect, usually rosette-forming annuals found in sandy soils on plains and in foothills from Syria to Iran and C. Asia. They have mostly basal, deeply lobed or occasionally simple and entire, oblong or lance-shaped to obovate, light to mid-green leaves. From spring to autumn, they produce branching or simple spikes of tiny, tubular, pink or white flowers, each with 5 spreading lobes. Statice are suitable for the front



*Psylliostachys suworowii*

of an annual border, and are tolerant of coastal conditions. They are also excellent for cutting and drying.

• **HARDINESS** Fully hardy to half hardy.


• **CULTIVATION** Grow in fertile, moist but well-drained soil in a warm, sheltered site in full sun.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring.

• **PESTS AND DISEASES** Prone to grey mould (*Botrytis*) and powdery mildew.

**P. spicata**, syn. *Limonium spicatum*, *Statice spicata*. Rosette-forming annual with deeply lobed, inversely lance-shaped leaves, 5–15cm (2–6in) long; the leaf-stalks and midribs are densely clothed in long hairs. Rose-pink flowers are borne in terminal spikes, to 9cm (3½in) long, and shorter, lateral spikes, from summer to early autumn.

$\uparrow$  30–45cm (12–18in),  $\leftrightarrow$  to 30cm (12in). Ukraine (Crimea), Caucasus, Iran. \*

**P. suworowii**  syn. *Limonium suworowii*, *Statice suworowii*. Rosette-forming annual bearing simple, basal, inversely lance-shaped to oblong, obovate, wavy-margined to slightly lobed, light green leaves, to 15cm (6in) long. Rose-pink flowers, are borne in narrow, cylindrical, branching spikes, to 20cm (8in) long, from summer to early autumn.  $\uparrow$  30–45cm (12–18in),  $\leftrightarrow$  to 30cm (12in). Iran, W. Turkmenistan, N. Afghanistan, C. Asia. \*

## PTELEA

RUTACEAE

Genus of 3 or more species of aromatic, deciduous trees and shrubs found in thickets and on rocky slopes in North America. Cultivated for their 3-palmate, strongly scented leaves, they also bear corymbs of inconspicuous, cup-shaped or star-shaped, sometimes unisexual, greenish white flowers, followed by winged, more or less rounded and flattened fruits. Suitable for growing in a shrub border or as lawn specimens.

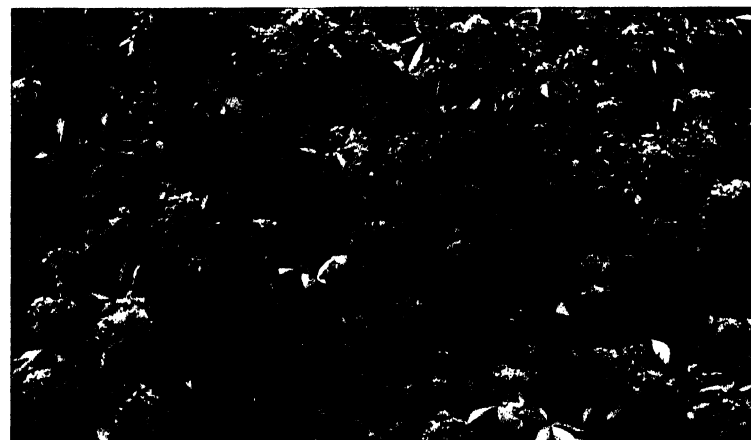
• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun or dappled shade. Pruning group 1.

• **PROPAGATION** Sow seed in containers outdoors in autumn or spring. Take greenwood cuttings in early summer.


• **PESTS AND DISEASES** Trouble free.

**P. trifoliata** ♀ (Hop tree). Upright, deciduous shrub with aromatic bark and



*Ptelea trifoliata* 'Aurea'

alternate, 3-palmate, scented, dark green leaves, to 12cm (5in) long, with ovate to elliptic leaflets. Corymbs of star-shaped, greenish white flowers are borne in summer, followed by winged, rounded and flattened, pale green fruit, to 2.5cm (1in) across.  $\uparrow$  8m (25ft),  $\leftrightarrow$  4m (12ft).

North America (Ontario to Connecticut, Michigan, Iowa, Florida, Texas, and N. Mexico). \*\*\*. 'Aurea'  ♀ bears bright yellow to yellow-green leaves, turning dark green, then yellow in autumn;  $\uparrow$  5m (15ft).

## PTERIS

Brake

ADIANTACEAE/PTERIDACEAE


Genus of approximately 280 species of deciduous, semi-evergreen, and evergreen, terrestrial ferns, found mainly in tropical and subtropical forests throughout the world. The rhizomes are stout and erect to slender and short-creeping. Brakes are cultivated for their closely spaced fronds, which are pinnatisect or pinnate to 4-pinnate, and range from less than 30cm (12in) long to 3m (10ft). Spores form at the frond margins, which curl under to protect them. In frost-prone climates, grow the tender species and cultivars in a cool or temperate greenhouse, or as houseplants. In warmer areas, use singly as feature plants, or in mixed foliage plantings.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in 1 part each of sharp sand, coarse leaf mould, and charcoal, and 2 parts loam-based potting compost (J1 No.2), in bright filtered light and high humidity; *P. cretica* and *P. vittata* prefer slightly alkaline soil, so add limestone chips. In growth, water freely, applying a high-nitrogen liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in any moist but well-drained soil (except chalky soil), with added leaf mould, in partial or deep shade.

• **PROPAGATION** Sow spores at 21°C (70°F) when ripe. Divide plants with creeping, branched rhizomes in spring. See also p.51.

• **PESTS AND DISEASES** Prone to scale insects and leaf eelworms under glass. In still, humid conditions, sooty mould may occur if water settles on the fronds.


**P. argyrea**  (Silver brake). Evergreen fern with erect rhizomes bearing erect, pinnate or 2-pinnate fronds, 60–100cm (24–39in) long, each with up to 6 pairs



*Pteris argyrea*

of oblong, dark green pinnae with broad, silvery white stripes down their centres. The pinnatisect pinnae are composed of numerous linear-oblong lobes; the lowest pair are usually forked. Requires shade.  $\uparrow$   $\leftrightarrow$  to 1m (3ft). Tropics. \* (min. 10°C/50°F)

**P. biaurita**. Evergreen fern with erect rhizomes producing erect, oblong or triangular-oblong, pinnate, light apple-green fronds, to 1.3m (4½ft) long, each with 5–15 pairs of pinnatisect pinnae, the lowest pair usually forked. Similar to *P. argyrea*, but pinnae lack the central white streaks. Thrives in damp shade.  $\uparrow$  0.6–1.5m (24–60in),  $\leftrightarrow$  40–150cm (16–60in). Tropics. \* (min. 10°C/50°F)

**P. cretica** ♀ Evergreen fern with a short-creeping, many-branched rhizome. Produces arching, crowded, ovate or rounded, pinnate, pale green fronds, 30–70cm (12–28in) long, each with 1–5 pairs of narrowly lance-shaped, simple or forked pinnae. Fertile fronds are taller and have narrower pinnae than sterile fronds. Some clones are half hardy.  $\uparrow$  to 75cm (30in),  $\leftrightarrow$  60cm (24in). Europe, Africa, Asia. \* (min. 2°C/36°F). 'Albolineata'  ♀ has a broad white band along the centre of



*Pteris cretica* 'Albolineata'

*Pteris multifida*

each pinna, and is easier to grow than the species; \* (borderline). 'Childsii' has broader pinnae than the species, with incised margins and small crested tips. Possibly of hybrid origin; ↑ to 50cm (20in), ↔ 30cm (12in). 'Distinction' is smaller than the species, and has deeply lobed pinnae with branched tips; ↑ to 40cm (16in). 'Mayi' is similar to 'Albolineata', but has crested pinnae tips. 'Parkeri' is a vigorous cultivar, with broader, mid- to dark green pinnae; ↑ to 90cm (36in), ↔ 60cm (24in). 'Rivertoniana' is strong-growing, with pinnae margins that are deeply but irregularly cut into narrow lobes. 'Wimsettii' has a compact habit; the margins of the pinnae are deeply and irregularly lobed, with the tips often crested; ↑ to 45cm (18in).

**P. dentata.** Evergreen fern that forms clumps of triangular to ovate, very variably divided, 2- or 3-pinnate, bright green fronds, to 1.5m (5ft) long, arising from short-creeping to erect rhizomes. Sterile fronds have pinnae segments with finely toothed margins, but on fertile fronds the margins are entire. ↑ 0.5–1.8m (20–72in), ↔ 0.6–1.5m (24–60in).

*Pteris tricolor*

Tropical Africa, South Africa, Arabian Peninsula. ☼ (min. 10°C/50°F)

**P. ensiformis** (Sword brake). Evergreen fern with short-creeping, branched rhizomes producing narrow-triangular, 2-pinnate, dark green fronds, often greyish white around the midribs. Fertile fronds, up to 40cm (16in) long, have 4 or 5 pairs of linear pinnae, each with a few toothed segments at the base. Sterile fronds are shorter, and have narrower pinnae with entire margins. ↑ to 30cm (12in). Himalayas to Japan, Philippines, Polynesia, tropical Australia. ☼ (min. 10°C/50°F). 'Arguta' has dark green fronds with strongly contrasting silver-white central midribs. 'Evergemienensis' has silver markings similar to 'Arguta'. 'Victoriae' has white bands running either side of the midribs.

**P. fauriei.** Small, neat, evergreen fern with erect rhizomes producing arching, broadly triangular to ovate, mid-green fronds, 20–60cm (8–24in) long, each with 3–5 pairs of oblong, deeply pinnatisect pinnae. ↑ to 45cm (18in), ↔ 60cm (24in). China, Japan. ☼ (min. 10°C/50°F)

**P. multifida** (Spider brake). Evergreen fern with short-creeping to erect, many-branched rhizomes producing numerous erect, ovate, light green fronds, 20–50cm (8–20in) long. Each frond is 2-pinnate at the base, pinnatisect above, with 3–5 pairs of pinnae. Pinnae are linear, with long, tapering tips, the upper ones decurrent to the stem. ↑ to 45cm (18in), ↔ 23cm (9in). China, Korea, Japan to Taiwan, Indonesia. ☼ (min. 10°C/50°F). 'Corymbifera' has crested pinnae tips. **P. tremula** (Shaking brake, Tender brake). Evergreen fern with an erect rhizome producing ovate, arching, light green fronds, to 2m (6ft) tall, 3- or 4-pinnate at the base, with overlapping pinnae giving a feathery appearance. Pinnae are narrowly oblong to linear, with finely toothed margins. Fast-growing, and may become invasive. ↑ to

*Pteris vittata*

1.5m (5ft), ↔ 1m (3ft). New Zealand, Australia, Fiji. ☼ (min. 10°C/50°F)

**P. tricolor** (Painted brake).

Evergreen fern with erect, ovate, pinnate fronds, 40–60cm (16–24in) long, arising from creeping, branched rhizomes. Fertile fronds have 2–5 pairs of pinnatisect, oblong pinnae; they are red-purple when young, ageing to mid-green, but stalks and midribs remain purple. ↑ to 60cm (24in), ↔ 60cm (24in). Malacca. ☼ (min. 10°C/50°F)

**P. umbrosa** (Jungle brake). Evergreen fern with short-creeping, many-branched rhizomes. Triangular-ovate, shining, dark green, erect fronds, to 1m (3ft) tall, are 2-pinnatisect with 3–7 pairs of narrowly lance-shaped lobes, the lower ones divided into 3 or 5 segments. The fronds are similar in appearance to those of *P. cretica*, but are much more robust and luxuriant. ↑ to 1.2m (4ft), ↔ 1m (3ft). Australia. ☼ (min. 10°C/50°F)

**P. vittata** (Evergreen fern with short-creeping rhizomes covered with golden scales. Fronds are erect, oblong, pinnate, to 1m (3ft) tall, with up to 40 pairs of simple, linear, dark green pinnae. Tolerates chalk and some exposure to sun. ↑ to 1m (3ft), ↔ 60cm (24in). Tropical and warm-temperate regions of Europe, Africa, Asia, Australasia. ☼ (min. 2°C/36°F)

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Take basal cuttings in spring or early summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

**P. fischeri.** Short-stemmed, shrub-like cactus producing spherical or ovoid, cylindrical, jointed, brown-green stems, 2cm (¾in) thick. White areoles bear about 16 spines (12 yellow radial spines and 4 longer, brownish yellow centrals). White flowers, 4cm (1½in) or more across, are produced in early summer. ↑ 15cm (6in), ↔ to 20cm (8in). S. Argentina. (Neuquen, Rio Negro). ☼ (min. 2–7°C/36–45°F)

**P. kuntzei** see *P. tuberosus*.

**P. tuberosus** (Syn. *P. kuntzei*). Shrub-like cactus producing cylindrical, brown or green-brown stems, to 0.8–1.5m (¾–½in) thick, with a vertical violet line below each areole. The grey areoles bear minute, off-white spines that lie flat on the stems. Pale yellow flowers, 3–5cm (1¼–2in) across, sometimes tinged orange-brown or coppery brown, are produced in early summer. ↑ to 40cm (16in). Argentina (Mendoza). ☼ (min. 2–7°C/36–45°F)

*Pterocactus tuberosus*

## PTEROCACTUS

CACTACEAE

Genus of 9 species of dwarf, shrub-like cacti occurring in hilly regions of Argentina. They arise from tuberous rootstocks, and branch from the bases to produce somewhat club-shaped stems. The areoles bear very fine, almost hair-like spines and minute glochids. Small, white or yellow to reddish brown and coppery, diurnal flowers, without tubes, are produced terminally in early summer. In frost-prone climates, grow in a cool greenhouse or in a bowl garden; in warmer regions, they are suitable for growing outdoors in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water moderately and apply a low-nitrogen liquid fertilizer every 4 or 5 weeks. Keep completely dry at other times. Outdoors, grow in poor, sharply drained soil in full sun. See also pp.48–49.



## PTEROCARYA

Wing nut

JUGLANDACEAE

Genus of about 10 species of fast-growing, deciduous trees found in woodland and on riverbanks, mainly in the mountains of Asia, from the Caucasus to Japan. They are cultivated for their attractive, spreading habit, for their large, alternate, more or less oblong, pinnate leaves, composed of 5–27 leaflets, which colour yellow in autumn, and for their long, pendent spikes of winged fruit, which are produced over a long period in summer. Inconspicuous green male and female flowers are produced in separate catkins in spring as the leaves emerge. Wing nuts grow to a considerable size, so site in a large garden or park.

- **HARDINESS** Fully hardy, but foliage may be damaged by late frosts.
- **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in full sun. Pruning group 1; remove unwanted suckers as they appear.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Remove rooted suckers in autumn.
- **PESTS AND DISEASES** Trouble free.

*P. fraxinifolia* ♀♂ (Caucasian wing nut). Vigorous, spreading tree bearing pinnate leaves, to 40cm (16in) long, with cylindrical midribs; the leaves are composed of 23 or more, oblong to ovate, glossy, dark green leaflets. Small, winged green fruit are produced in pendent spikes, to 50cm (20in) long,

in summer. ↑ 25m (80ft), ↔ 20m (70ft). Caucasus, N. Iran. \*\*\*

*P. x rehderiana* ♀ (P. fraxinifolia x P. stenoptera). Very vigorous, spreading, strongly suckering tree bearing pinnate leaves, to 20cm (8in) long, with slightly winged midribs; the leaves are composed of up to 21 oblong to ovate, glossy, dark green leaflets. Small, winged green fruit are produced in pendent spikes, to 45cm (18in) long, in summer. ↑ 25m (80ft), ↔ 20m (70ft). Garden origin. \*\*\*

*P. rhoifolia* ♀ (Japanese wing nut). Spreading tree with pinnate leaves, to 40cm (16in) long; the leaves are composed of up to 21 ovate-oblong, tapered, glossy, mid-green leaflets. Small, winged green fruit are produced in pendent spikes, to 30cm (12in) long, in summer. ↑ 30m (100ft), ↔ 25m (80ft). Japan. \*\*\*

*P. stenoptera* ♂♀ (Chinese wing nut). Spreading tree with pinnate leaves, to 40cm (16in) long, with winged midribs; the leaves comprise up to 21 oblong, bright green leaflets, the terminal leaflet often absent. Small, winged green fruit are produced in pendent spikes, to 30cm (12in) long, in summer. ↑ 25m (80ft), ↔ 15m (50ft). China. \*\*\*

## PTEROCELTIS

ULMACEAE

Genus of one species of deciduous tree found near streams, in rocky places, and in valleys in the mountains of China. It is cultivated for its habit, peeling bark, bright green foliage, and winged green fruit. Inconspicuous, very small green

flowers are produced in spring. Best grown as a specimen tree.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers outdoors in autumn.
- **PESTS AND DISEASES** Trouble free.

*P. tatarinowii* ♀ Spreading tree with arching branches, flaking grey bark, and ovate, tapered, 3-veined, bright green leaves, to 10cm (4in) long, with toothed margins. The tiny, green male flowers are produced in stalkless clusters; the very small, green female flowers are solitary. Both male and female flowers are produced in spring, from the leaf axils; they are followed by round, winged green fruit, 2cm (¾in) across, in autumn. ↑ 10m (30ft). N. and C. China. \*\*\*

## PTEROCEPHALUS

DIPSACACEAE

Genus of approximately 25 species of annuals, perennials, and evergreen shrubs, occurring on rocky slopes, roadsides, and waste ground from the Mediterranean and tropical Africa to C. Asia, the Himalayas, and W. China. They have opposite, simple, entire or pinnatifid leaves, sometimes with scalloped margins. They are cultivated for their scabious-like, pink or mauve flowerheads, produced on long stems in summer, and the attractive, papery seed heads that follow. *P. perennis*, the only species widely grown, is suitable for a rock garden or the front of a border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take stem-tip cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*P. perennis* ♂ syn. *P. parnassi*. Evergreen, mat-forming perennial bearing opposite, ovate to fiddle-shaped, hairy, grey-green leaves, to 4cm (1½in) long, scalloped at the margins. During summer, long stems, to 8cm (3in) long, bear solitary, dense, flattened heads of tubular, pale pinkish purple flowers, to 4cm (1½in) across; they are followed by papery seed heads. ↑ 8cm (3in), ↔ 20cm (8in). Greece. \*\*\*

*P. parnassi* see *P. perennis*.



*Pterocephalus perennis*

## PTERODISCUS

PEDALIACEAE

Genus of 18 species of succulent perennials and subshrubs found in semi-desert, rocky regions from tropical E. to S.W. Africa. They have a swollen caudex, tuberous roots, and solitary or branching stems. They are grown for their foliage and flowers: the leaves are very variable, light to dark green, and have entire, toothed, or deeply cut margins; the 5-lobed, funnel- to bell-shaped flowers are slightly 2-lipped, diurnal, usually yellow, orange, red, purple, or white, and are produced singly from the leaf axils in summer. In areas where temperatures fall below 15°C (59°F), grow as houseplants or in a warm greenhouse; in warm, dry climates, grow in a succulent border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, water sparingly and apply a low-nitrogen liquid fertilizer every 4–6 weeks. Keep dry at other times. Outdoors, grow in moderately fertile, sharply drained soil in full sun. Protect from excessive wet. See also pp.48–49.
- **PROPAGATION** Sow seed in spring at 19–24°C (66–75°F).
- **PESTS AND DISEASES** Trouble free.

*P. luridus*. Succulent with a conical, fleshy caudex, 8cm (3in) thick towards the base, covered with a smooth grey bark. Spreading, slightly white-frosted stems bear oblong, dark green leaves, 8cm (3in) long, with white or blue undersides and entire margins. Funnel-shaped yellow flowers, 2.5–5cm (1–2in) long, spotted red outside, are produced in summer. ↑ 50cm (20in), ↔ 15cm (6in). S.W. Africa. \* (min. 15°C/59°F)

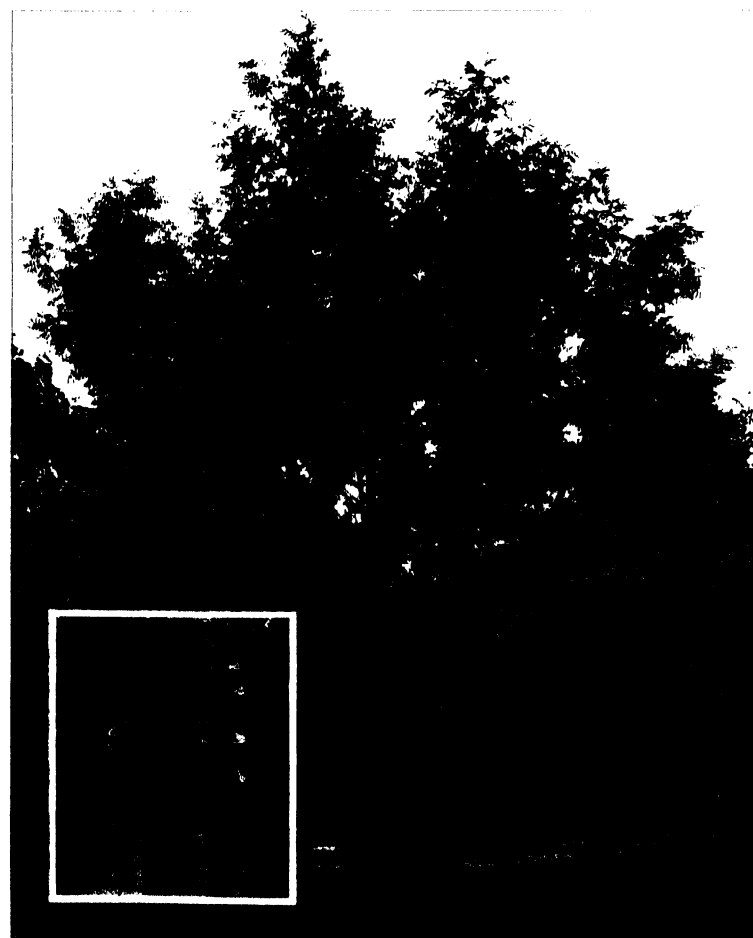
*P. speciosus*. Succulent with a conical to spherical, fleshy caudex, 6cm (2½in) thick towards the base, and stems bearing linear-oblong, dark green leaves, to 6cm (2½in) long, with irregularly toothed margins. Funnel-shaped, pale reddish purple flowers, 3cm (1¼in) long, are produced in summer. ↑ 15cm (6in), ↔ 10cm (4in). South Africa (Northern Transvaal, Eastern Cape). \* (min. 15°C/59°F)

## PTEROPOGON

ASTERACEAE/COMPOSITAE

Genus of 10 erect to slightly spreading, slender-stemmed, white-woolly annuals, previously part of the genus *Helipterum*, from semi-arid regions of South Africa and Australia. They bear alternate, narrowly lance-shaped, light to mid-green, white-woolly leaves, but are cultivated for their long-stemmed, leafy clusters of small, rounded, papery, daisy-like, usually yellow flowerheads, borne from summer to early autumn. Suitable for an annual or mixed border. The flowerheads are good for drying, the clustered blooms of *P. humboldtianus* turning an attractive metallic green.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in poor, sharply drained soil in full sun.
- **PROPAGATION** Sow seed *in situ* in late spring.
- **PESTS AND DISEASES** Prone to aphids.



*Pterocarya stenoptera* (inset: fruit detail)

*P. humboldtianus*, syn. *Helipterum humboldtianum*. Erect, single-stemmed or slightly branching annual with narrowly lance-shaped, white-woolly leaves, to 3cm (1¼in) long. Slightly fragrant, straw-textured yellow flowers are produced in flowerheads to 8cm (3in) across, from summer to early autumn. ‡ to 45cm (18in), ↔ to 15cm (6in). S. Australia. \*

## PTEROSTYRAX

STYRACACEAE

Genus of 4 species of spreading, deciduous trees or shrubs, with peeling, aromatic bark, occurring in mountain woodland in China and Japan. They are cultivated for their alternate, oblong to ovate, pale green leaves, pendent panicles of fragrant, 5-lobed white flowers, and unusual, ribbed or winged fruits. Grow as shrubs or as single- or multiple-stemmed specimen trees in a lawn or woodland setting.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, fertile, well-drained, neutral to acid soil in full sun or partial shade. Pruning group 1.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*P. hispida* ♀ (Epaulette tree). Spreading tree or shrub with peeling, aromatic grey bark and oblong to ovate, pale green leaves, to 20cm (8in) long. Bell-shaped, fragrant white flowers, 1cm (½in) across, each with 5 lobes divided almost to the base, are borne in pendent panicles, to 20cm (8in) long, in early and midsummer, followed by oblong, 5-ribbed fruit, to 1cm (½in) long, covered in yellow-brown bristles. ‡ 15m (50ft), ↔ 12m (40ft). China, Japan. \*\*

▷ *Ptilotrichum spinosum* see *Alyssum spinosum*

## PTILOTUS

AMARANTHACEAE

Genus of about 100 species of annuals, herbaceous perennials, and subshrubs from open scrub in Australia. They are grown for their dense, rounded, ovoid or conical to cylindrical spikes of tiny, 5-repalled, white, yellow, pink, mauve, purple, or green flowers, often enhanced by long white hairs. The leaves are alternate and usually narrow. In frost-prone areas, grow in a cool greenhouse or in an alpine house, or as annual summer bedding plants; in warmer areas, grow in a border or rock garden.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep almost dry in winter. Outdoors, grow in fertile, sharply drained soil in full sun; avoid wet conditions.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Take root cuttings in early spring.
- **PESTS AND DISEASES** Trouble free.

*P. exaltatus* (Pink mulla mulla). Robust, bushy perennial with rosettes of oblong-lance-shaped, thick, wavy-

marginated, bluish green leaves, to 8cm (3in) long, often tinged red. Very small, white to pink or red flowers, with hairy brown bracts, are borne in conical, later cylindrical spikes, to 15cm (6in) long, from winter to summer. ‡ to 30cm (12in) or more, ↔ 60cm (24in).

Australia. \*\*

*P. manglesii*, syn. *Trichinium manglesii*. Erect or spreading perennial bearing rosettes of narrow to broadly ovate, thick, smooth-margined, white-hairy, mid-green leaves, 2.5–8cm (1–3in) long. The lower leaves are borne on long stalks; the upper leaves are smaller and stalkless. In summer, very small, pink to violet flowers, with dark brown bracts, are produced in round to ovoid, white-hairy spikes, 8–10cm (3–4in) long. ‡ to 10–40cm (4–16in). Australia. \*\*

## PTYCHOSPERMA

ARECACEAE/PALMAE

Genus of about 30 species of single- or cluster-stemmed palms found in moist forest habitats from coastal lowlands to mountain valleys, from Micronesia to Australia, New Guinea, and the Solomon Islands. Pinnate, oblong-elliptic, glossy leaves are composed of linear leaflets. Greenish white or greenish yellow, 3-petalled flowers are produced in panicles below the leaves, followed by spherical to ovoid, red, orange, or purplish black fruits. In frost-prone climates, grow in a warm greenhouse, or as houseplants. In tropical regions, grow as specimens in a small lawn, or to add height and interest to a shrub border.

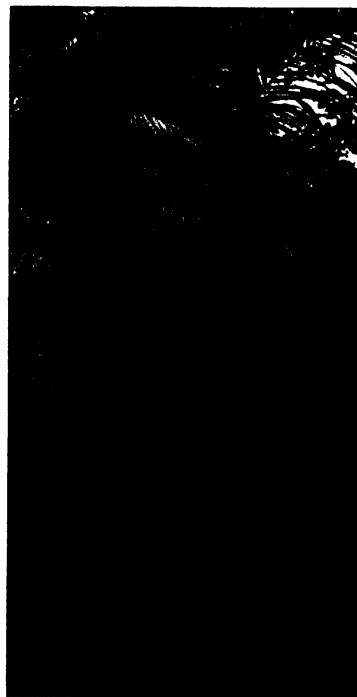
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added well-rotted organic matter and sharp sand, in bright indirect light. Pot on or top-dress in spring; during the growing season, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in partial shade.
- **PROPAGATION** Sow seed at 24°C (75°F) in spring.
- **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

*P. alexandrae* see *Archontophoenix alexandrae*.

*P. elegans* ♀ syn. *Seaforthia elegans* (Alexander palm, Solitaire palm). Small to medium-sized palm with a slender, columnar trunk, ringed with old leaf scars. The woolly crownshaft produces pinnate, short-stalked leaves, 1–2.5m (3–8ft) long, composed of many broadly linear, mid-green leaflets with notched or toothed tips. In summer, fragrant, greenish white flowers, each to 8mm (⅜in) across, are produced in nodding panicles, 30–60cm (12–24in) long; they are followed by ovoid, bright red fruit, 2cm (⅜in) across. ‡ 8–12m (25–40ft), ↔ 2–4m (6–12ft). N.E. Australia.

☀ (min. 16°C/61°F)

*P. macarthurii* ☀ Small, cluster-stemmed palm with slender, ring-scarred trunks. Pinnate, short-stalked leaves, 1.5m (5ft) long, are composed of many linear, bright green leaflets with ragged-toothed tips. Greenish yellow flowers, each to 8mm (⅜in) across, are produced in panicles 30–45cm (12–18in) long,



*Ptychosperma macarthurii*

usually in summer; they are followed by ovoid red fruit, 1.5cm (½in) long. ‡ 3–7m (10–22ft), ↔ 2–4m (6–12ft). New Guinea, N.E. Australia (Cape York Peninsula). ☀ (min. 16°C/61°F)

▷ **Puccoon, Red** see *Sanguinaria*

▷ **Pudding pipe-tree** see *Cassia fistula*

## PUERARIA

LEGUMINOSAE/PAPILIONACEAE

Genus of 17 species of mainly woody-stemmed, deciduous or evergreen, twining climbers from thickets and woodland in S.E. Asia and Japan. They are grown for their alternate, 3-palmate or pinnate leaves and for their axillary or terminal racemes of pea-like flowers. *P. lobata*, the only species commonly cultivated, is extremely vigorous and must be sited with care. It is suitable for growing as ground cover, for screening an unsightly building, or for covering a tall tree stump. In frost-prone areas, it may also be grown as an annual.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Support twining stems. Pruning group 11, in spring.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring.
- **PESTS AND DISEASES** Trouble free.

*P. hirsuta* see *P. lobata*.

*P. lobata*, syn. *P. hirsuta*, *P. thunbergiana* (Japanese arrowroot, Kudzu vine). Very vigorous, deciduous, twining climber, with a large tuber, sometimes grown as an annual. Bears 3-palmate leaves composed of ovate to diamond-shaped, lobed leaflets, the central one largest, to 18cm (7in) long. In autumn, fragrant, pea-like purple flowers, 2cm (⅜in) long, are produced in erect racemes, to 25cm (10in) long. ‡ to 20m (70ft) or more (sometimes reaches half this in one year). China, Japan, Pacific islands. \*\*

*P. thunbergiana* see *P. lobata*.

## PULMONARIA

Lungwort

BORAGINACEAE

Genus of about 14 species of deciduous or evergreen, low-growing perennials, with slowly spreading rhizomes. They are found in Europe and Asia, on acid to alkaline soils in a wide range of habitats, including mountainous areas, moist, subalpine woodland, and streamsides. They are grown for their early flowers, often among the first perennial blooms, in late winter or spring, and for their simple, ovate to elliptic or oblong, hairy basal leaves, which are often attractively spotted white or silver. The stem leaves are few, smaller, and more or less stalkless. Regular, funnel-shaped flowers, 5–10mm (¼–½in) across, with 5 spreading lobes, are borne in terminal cymes; the flowers may be pink, red, violet, purple, blue, or white, with either long (pin) or short (thrum) styles; blue, purple, or violet flowers may often be pink in bud. After flowering, new "summer" leaves develop, showing the markings at their best. Lungworts are good ground-cover plants for a shady position: grow in woodland, among shrubs, in a wild garden, or at the front of a border. They are attractive to bees.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, fertile, moist but not waterlogged soil, in full or partial shade; *P. officinalis* will tolerate full sun. Remove old leaves after flowering. Divide every 3–5 years.
- **PROPAGATION** Sow seed in containers outdoors as soon as ripe. Lungworts hybridize freely in cultivation, and plants raised from seed of species in gardens often do not come true. Divide after flowering, or in autumn. Take root cuttings in midwinter.
- **PESTS AND DISEASES** Prone to powdery mildew in dry conditions. Slugs and snails may damage new growth.

*P. angustifolia* ♀ (Blue cowslip). Open clump-forming, rhizomatous, usually deciduous perennial with lance-shaped, unspotted, mid- to dark green leaves, 40cm (16in) long. Funnel-shaped, rich blue flowers are borne profusely on erect then spreading stems, from early to late spring. ‡ 25–30cm (10–12in), ↔ 45cm (18in). C., N.E., and E. Europe. \*\*\*.

subsp. *azurea* ☀ syn. *P. azurea*, has brighter blue flowers, tinted red in bud; ‡ to 25cm (10in). 'Beth's Pink' see *P.*



*Pulmonaria angustifolia* subsp. *azurea*

*Pulmonaria* 'Lewis Palmer'

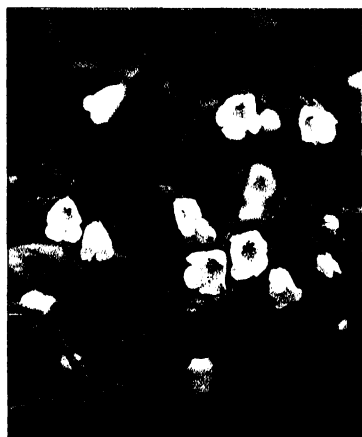
'Beth's Pink'. 'Blauers Meer' produces bright blue flowers very freely.

*P. azurea* see *P. angustifolia* subsp. *azurea*.

*P. 'Beth's Pink'*, syn. *P. angustifolia* 'Beth's Pink'. Clump-forming, rhizomatous, deciduous perennial with ovate, white-spotted, dark green leaves, to 25cm (10in) long, narrowing abruptly to the leaf-stalks. In mid- and late spring, bears funnel-shaped, deep coral-pink flowers. ↑ to 30cm (12in), ↔ 45cm (18in). \*\*\*

*P. 'Blue Ensign'*. Clump-forming, rhizomatous, deciduous perennial with ovate, unspotted, dark green leaves, to 25cm (10in) long, and large, blue-violet flowers, borne in spring. ↑ to 35cm (14in), ↔ to 45cm (18in). \*\*\*

*P. 'Lewis Palmer'* [ ] ♀ syn. *P. longifolia* 'Lewis Palmer'. Clump-forming, rhizomatous, deciduous perennial with lance-shaped, softly hairy, dark green basal leaves, to 30cm (12in) long, irregularly splashed and spotted greenish white, and ovate-lance-shaped stem leaves. In early spring, bears funnel-shaped flowers that open pink and become bright blue. ↑ 35cm (14in), ↔ 45cm (18in). \*\*\*

*Pulmonaria* 'Mawson's Blue'*Pulmonaria officinalis* 'Sissinghurst White'

*P. longifolia*. Densely clump-forming, rhizomatous, deciduous perennial with narrowly lance-shaped, dark green leaves, to 45cm (18in) long, spotted silvery white. Dense cymes of long-lasting, funnel-shaped, blue-purple to almost blue flowers are borne from late winter to late spring. ↑ to 30cm (12in), ↔ 45cm (18in). W. Europe, including Sweden and Britain. \*\*\*. 'Bertram Anderson' has longer, narrower, more strongly marked leaves, and brighter blue flowers. 'Lewis Palmer' see *P. 'Lewis Palmer'*.

*P. 'Mawson's Blue'* [ ] syn. *P. 'Mawson's Variety'*. Erect to spreading, rhizomatous, deciduous perennial bearing ovate to elliptic, softly hairy, unspotted, dark green leaves, to 30cm (12in) long. Produces dark blue flowers in spring. ↑ to 35cm (14in), ↔ to 45cm (18in). \*\*\*

*P. 'Mawson's Variety'* see *P. 'Mawson's Blue'*.

*P. mollis*, syn. *P. montana*. Vigorous, clump-forming, rhizomatous, deciduous perennial bearing elliptic to narrowly ovate, softly hairy, unspotted, mid-green leaves, to 45cm (18in) long. From late winter to mid-spring, produces funnel-shaped, rich blue flowers, sometimes pink-tinged fading to purplish blue. ↑ to 45cm (18in), ↔ 60cm (24in). Belgium, N.W. France, W. Germany, W. Switzerland. \*\*\*

*P. montana* see *P. mollis*.

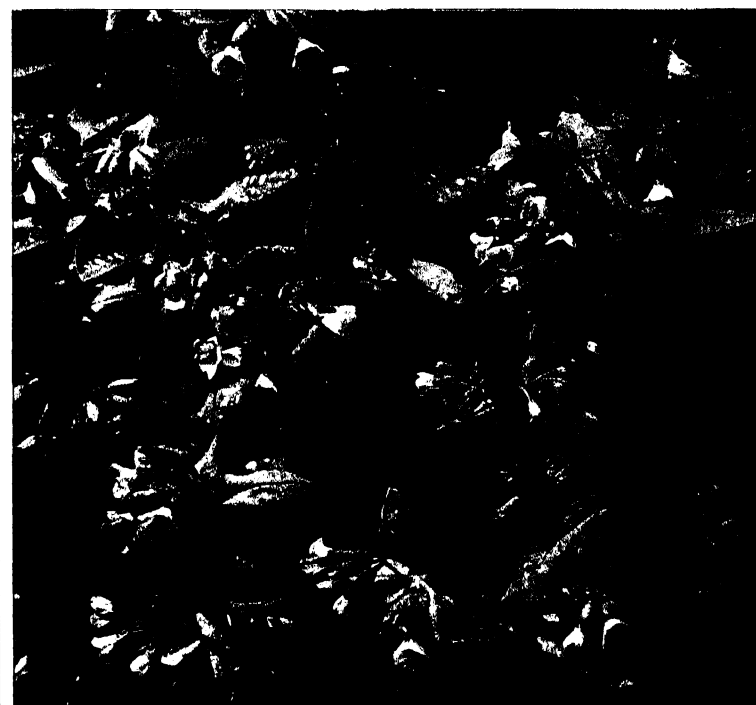
*P. officinalis* (Jerusalem cowslip, Soldiers and sailors. Spotted dog). Open clump-forming, rhizomatous, evergreen perennial with ovate, bristly, white-

*Pulmonaria rubra* 'Redstart'*Pulmonaria saccharata*

spotted, bright mid-green leaves, 10–15cm (4–5in) long, heart-shaped at the bases. From early to late spring, bears funnel-shaped flowers, opening pink and becoming reddish violet then blue. ↑ 25cm (10in), ↔ 45cm (18in). Europe. \*\*\*. 'Cambridge Blue', syn. 'Cambridge', bears heart-shaped leaves and abundant pale blue flowers, pink-tinged on opening. ↑ to 30cm (12in).

'Sissinghurst White' [ ] ♀ syn. *P. saccharata* 'Sissinghurst White', bears leaves 20–25cm (8–10in) long, with numerous white spots, and pure white flowers opening from pale pink buds; ↑ to 30cm (12in). 'White Wings' bears pink-eyed white flowers in late spring.

*P. rubra* ♀ Loosely clump-forming, rhizomatous, leafy, evergreen perennial with elliptic, almost diamond-shaped, velvety, unspotted, matt, bright green leaves, to 60cm (24in) long. Funnel-shaped, bright brick red to salmon-red flowers are borne over a long period from late winter to mid-spring. ↑ to 40cm (16in), ↔ 90cm (36in). S.E. Europe. \*\*\*. var. *alba* see var. *albocorollata*. var. *albocorollata*, syn. var. *alba*, has white flowers; ↑ to 30cm

*Pulmonaria saccharata* 'Frühlingshimmel'

(12in). 'Barfield Pink' has pink-and-white-striped flowers; ↑ to 30cm (12in). 'Bowles' Red' has leaves with pale green spots, and coral-red flowers. 'David Ward' has strongly white-variegated, sage-green leaves, with cream margins, and coral-red flowers; ↑ to 30cm (12in). 'Redstart' [ ] has coral-red flowers and is often the first pulmonaria to flower, in midwinter.

*P. saccharata* [ ] (Jerusalem sage).

Clump-forming, rhizomatous, evergreen perennial with elliptic, white-spotted, mid-green leaves, to 27cm (11in) long, the stem leaves nearly as large as the basal leaves. From late winter to late spring, bears funnel-shaped, red-violet, violet, or white flowers, with dark green calyces. ↑ 30cm (12in), ↔ 60cm (24in). S.E. France, N. and C. Italy. \*\*\*.

Cultivars in **Argentea Group** ♀ have almost completely silver leaves, and flowers opening red, ageing to dark violet. 'Frühlingshimmel' [ ] has many-spotted leaves, and light blue flowers with darker blue-purple eyes and calyces; ↑ 25cm (10in). 'Leopard' has many-spotted, dark green leaves, and red, pink-tinted flowers. 'Mrs. Moon' has pink buds opening to bluish lilac flowers. 'Pink Dawn' bears deep pink flowers ageing to violet. 'Sissinghurst White' see *P. officinalis* 'Sissinghurst White'.

*P. vallarsae*. Clump-forming, rhizomatous, deciduous perennial with elliptic-oblong, wavy-margined, densely softly hairy, dark green leaves, 20cm (8in) long, narrowing abruptly to the leaf-stalks; they have bright green or whitish green spots, in rare cases none. Funnel-shaped violet flowers, becoming more purple with age, are borne on glandular-hairy stems from early to late spring. ↑ 15–30cm (6–12in), ↔ 60cm (24in). Italy. \*\*\*. 'Margery Fish' ♀ has bright green leaves, 15cm (6in) long, densely silvered on the upper surfaces, with the midribs and margins spotted. The flowers are coral-pink to red-violet, becoming violet; ↑ 18–28cm (7–11in).

## PULSATILLA

## RANUNCULACEAE

Genus of about 30 species of clump-forming, deciduous perennials (sometimes with a few overwintering leaves) with a coarsely fibrous rootstock, found mainly in short turf and alpine meadows in Eurasia and N. America. They are cultivated for their finely dissected, fern-like leaves and their solitary, usually silky-hairy, bell- or cup-shaped flowers, produced in spring and early summer. The flowers are followed by spherical seed heads with silver-silky, plume-like styles, borne on stems that often elongate considerably after flowering; heights given below are for plants in flower. Grow in a rock garden, scree bed, or alpine house. All parts of the plant may cause mild stomach upset if ingested, and, in rare instances, contact with the sap may irritate skin.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, very well-drained soil in full sun; *P. vernalis* needs very gritty, moist but sharply drained soil in a scree bed, and requires protection from excessive winter wet. Pulsatillas resent root disturbance and may be difficult to establish, so plant when small and leave undisturbed. In an alpine house, use a mix of equal parts loam-based potting compost (J1 No.1) and grit.

• **PROPAGATION** Sow seed as soon as ripe in containers in an open frame. Take root cuttings in winter.

• **PESTS AND DISEASES** Young growth may be attacked by slugs and snails.



*Pulsatilla vernalis*

*P. alpina* ■ (Alpine pasque flower). Clump-forming perennial with finely divided, 2-pinnate, hairy, mid-green leaves, 6–12cm (2½–5in) long, composed of 30–80 toothed leaflets. In spring, bears cup-shaped white flowers, to 6cm (2½in) across, with silky-hairy petals, blue-tinted on the reverse, and yellow stamens, followed by ornamental seed heads (pictured). ↑ 15–30cm (6–12in), ↔ 20cm (8in). Mountains in C. Europe. \*\*\*. **subsp. apiifolia** ♀ syn. **subsp. sulphurea**, has pale yellow flowers, and usually occurs in acid soils. **subsp. sulphurea** see **subsp. apiifolia**.

*P. halleri* ■ ♀ Tufted perennial, densely clothed in long silver hairs, with pinnate, light green leaves, 5–18cm (2–7in) long, comprising 3–5 pinnatifid leaflets with oblong-lance-shaped lobes; the terminal leaflet is long-stalked. Erect, silky-hairy, bell-shaped, violet-purple to lavender-blue flowers, to 9cm (3½in) across, are produced with the leaves in late spring. ↑ 20cm (8in), ↔ 15cm (6in). C. and S.E. Europe, Crimea. \*\*\*. **subsp. grandis**, syn. *P. vulgaris* subsp. **grandis**, has silvery golden brown hairs. It bears very finely divided leaves after the shallowly bell-shaped, lavender-blue flowers, which have rounded segments; C. Europe, Ukraine.

*P. patens* (Eastern pasque flower). Clump-forming perennial with rounded-heart-shaped, roughly hairy, 3- to 7-palmate, mid-green leaves, to 12cm (5in) long; each of the leaflets is divided into 15–80 linear to linear-lance-shaped segments. In late spring, bears erect, broadly cup-shaped, blue-violet, lilac, or occasionally yellowish or



*Pulsatilla vulgaris* f. *alba*

yellowish white flowers, 5–8cm (2–3in) across. ↑ 15cm (6in), ↔ 10cm (4in). E. Europe, Russia (Siberia), North America. \*\*\*.

*P. vernalis* ■ ♀ Clump-forming perennial (with basal leaves overwintering) bearing clusters of finely cut, very sparsely hairy, pinnate, light green leaves, 6–12cm (2½–5in) long, comprising 3–5 deeply toothed leaflets. In spring, pendent buds open to erect, bell-shaped white flowers, to 6cm (2½in) across, deeply flushed with bluish violet and silky on the outside. ↑ to 10cm (4in). Mountains from Spain to Scandinavia, Bulgaria, and Russia (Siberia). \*\*\*.

*P. vulgaris* ■ ♀ (Pasque flower). Clump-forming perennial with finely divided, pinnate, light green leaves, 8–20cm (3–8in) long, comprising 7–9 leaflets, each 2- or 3-pinnatisect; the lobes are linear to linear-lance-shaped, very hairy when young. In spring, bears upright or semi-pendent, bell-shaped or narrowly bell-shaped, silky-hairy flowers, 4–9cm (1½–3½in) across, in shades of deep to pale purple, occasionally white. ↑ 10–20cm (4–8in), ↔ 20cm (8in). UK, W. France to Ukraine. \*\*\*. **f. alba** ■ ♀ produces pure white flowers of variable size. **subsp. grandis** see *P. halleri* subsp. **grandis**. 'Rode Klokke' syn. 'Rote Glocke', bears deep red flowers.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Grey mould may be a problem in damp conditions.

*P. procumbens* (Bush pea, Eggs and bacon). Low, spreading to mat-forming shrub with alternate, narrowly elliptic, mid- to deep greyish green leaves, 0.8–1cm (⅜–½in) long, with upfolded sides and reflexed points. In spring and early summer, pea-like, orange-red flowers, 1cm (½in) across, shaded orange-yellow, are produced in small, apparently terminal heads. ↑ 15–30cm (6–12in), ↔ 40cm (16in) or more. Australia (New South Wales, Victoria). \* (min. 5°C/41°F)



*Pulsatilla alpina*



*Pulsatilla halleri*



*Pulsatilla vulgaris*

## PUNICA

## Pomegranate

## LYTHRACEAE/PUNICACEAE

Genus of 2 species of rounded, deciduous shrubs or trees found in scrub, one species occurring from S.E. Europe and S.W. Asia to the Himalayas, the other from Socotra (Yemen). They have mostly opposite, narrowly oblong, entire leaves, and are grown for their showy, funnel-shaped, bright red flowers and large, spherical, edible fruits. In frost-prone areas, grow in a cool greenhouse or against a sunny wall, either as free-standing shrubs or fan-trained; in warmer areas, use as specimen trees, in a shrub border, or as hedging.

• **HARDINESS** Frost hardy; they require long, hot summers to produce fruit.



*Punica granatum* var. *nana*

## PULTENAEA

## LEGUMINOSAE/PAPILIONACEAE

Genus of about 120 species of evergreen shrubs from dry forest in Australia. They are cultivated for their usually alternate, occasionally opposite, linear to almost rounded leaves, and for their pea-like flowers. The axillary, usually yellow or pink flowers have notched standard petals, and are produced singly or in clusters, which are often crowded into apparently terminal heads. In frost-prone areas, grow in a cool greenhouse; in warmer areas, grow in a shrub border, or at the base of a wall.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 8; may need restrictive pruning under glass.

- **CULTIVATION** Under glass, plant directly in a greenhouse border or in large containers of loam-based potting compost (J1 No.2) in full light. When in growth, water freely and apply a balanced liquid fertilizer every month; water sparingly in winter. A temperature of 13–16°C (55–61°F) in autumn is required for fruit to ripen. Outdoors, grow in fertile, well-drained soil in full sun. Pruning group 1, from spring to summer; group 13 if wall-trained. Remove wayward shoots in spring.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

**P. granatum** ♀ (Pomegranate). Upright, sometimes spiny shrub or small, rounded tree with opposite, narrowly oblong, glossy, bright green leaves, coppery or red-veined when young, to 8cm (3in) long. Over a long period in summer, bears funnel-shaped, 5-petalled, bright orange-red flowers, to 4cm (1½in) across, singly or in clusters of up to 5, followed by spherical, yellow-brown, edible fruit, to 12cm (5in) across. ↑ 6m (20ft), ↔ 5m (15ft). S.E. Europe to Himalayas. \*\*\*. **var. nana** ■ is a compact, rounded shrub that fruits very freely; ↑↔ 30–100cm (12–39in). **f. plena** ♀ produces double flowers.

↳ **Purslane** see *Claytonia*, *Portulaca*  
**Rock** see *Calandrinia umbellata*  
**Tree** see *Attriplex halimus*  
**Water** see *Ludwigia palustris*

## PUSCHKINIA

HYACINTHACEAE/LILIACEAE

Genus of one species of bulbous perennial, related to *Chionodoxa* and *Scilla*, occurring in the Middle East, in damp flushes in grassland where snow has recently melted. It is grown for its small, densely packed racemes of bell-shaped, pale blue flowers with darker blue stripes, borne in spring. The bulbs



*Puschkinia scilloides* var. *libanotica*

each have 2 semi-erect, basal leaves. Grow in a rock garden or among shrubs.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun or light dappled shade.
- **PROPAGATION** Sow seed in containers in a cold frame in summer or autumn. Remove offsets in summer as the leaves die down.
- **PESTS AND DISEASES** Prone to viruses.

**P. libanotica** see *P. scilloides* var. *libanotica*.

**P. scilloides** ■ Small, bulbous perennial with 2 semi-erect, linear, basal leaves, 15cm (6in) long. In spring, produces compact racemes of 4–10 open bell-shaped, very pale, bluish white flowers, 1cm (½in) across, with a dark blue stripe on each petal. ↑ to 20cm (8in), ↔ 5cm (2in). Caucasus, Turkey, Lebanon, N. Iraq, N. Iran. \*\*\*. **var. libanotica** ■ syn. *P. libanotica*, has smaller white flowers, 7–8mm (¼–⅜in) across, rarely striped blue, with long, sharply pointed lobes; Turkey, Lebanon.

↳ **Pussy ears** see *Cyanotis somaliensis*

↳ **Pussy-toes** see *Antennaria*



*Puschkinia scilloides*

## PUTORIA

RUBIACEAE

Genus of 3 species of dwarf, evergreen shrubs occurring in sunny, rocky areas around the Mediterranean. They bear opposite, lance-shaped to obovate or oblong, malodorous, leathery, lustrous, rich, mid-green leaves, but they are cultivated for their long-tubed, funnel-shaped, pink to purple flowers, produced singly or in clusters from early to late summer. *P. calabrica*, the only cultivated species, is suitable for growing in a rock garden or at the base of a warm, sunny wall.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Take softwood cuttings in early summer.
- **PESTS AND DISEASES** Trouble free.

**P. calabrica** (Stinking madder). Slow-growing, spreading shrub with elliptic-lance-shaped, leathery, mid-green leaves, 2cm (¾in) long, foetid if crushed. Produces dense, terminal clusters of funnel-shaped pink flowers, to 1.5cm (½in) long, from early to late summer. ↑ 8cm (3in), ↔ to 30cm (12in). Mediterranean. \*\*\*



*Puya berteroniana*

early summer, produces loose, pyramidal panicles, over 1m (3ft) long, of funnel-shaped, rich bluish green or deep blue-green flowers, 5cm (2in) long, with bright orange-yellow stamens. Will tolerate brief periods below 0°C (32°F). ↑ to 2m (6ft), ↔ 3m (10ft). C. Chile. \*\* (borderline)

**P. caerulea** see *P. coerules*.

**P. chilensis** ■ Bromeliad with a very woody, caudex-like stem, sometimes branched, bearing spreading, dense, terminal rosettes of lance-shaped, stiff, leathery, mid-green leaves, 1m (3ft) long, with marginal spines. In summer, produces bell- to trumpet-shaped, yellow or green flowers, to 5cm (2in) long, with green sepals, in loosely branched panicles, 1.5m (5ft) long; the

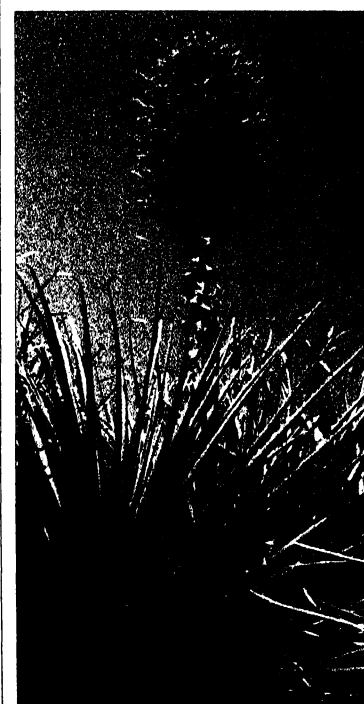
## PUYA

BROMELIACEAE

Genus of about 170 species of terrestrial, evergreen perennials (bromeliads) from rocky slopes, to 2,000m (6,500ft) high, in Andean South America, Costa Rica, Colombia, Guyana, N. Brazil, and N. central Argentina. They have erect or widely spreading rosettes of linear leaves with coarse marginal spines; young leaf-blades are upright, mature ones are outspread. The leaf sheaths are prominent, often forming bulbous bases. The flowers are trumpet- or bell-shaped, in colours from white, greenish yellow, and sea-green to ice-blue or violet; they are usually produced in erect panicles, the branches having sterile tips (which act as perches for humming-bird pollinators). Flowers are followed by green fruit capsules containing winged seeds. Puyas tolerate cold more than most bromeliads. In frost-prone areas, grow in a conservatory or cool greenhouse; in warmer climates, use in a raised bed.

- **HARDINESS** Frost hardy (borderline) to frost tender.
- **CULTIVATION** Under glass, grow in terrestrial bromeliad compost in full light. From mid-spring to late summer, water moderately and apply a low-nitrogen liquid fertilizer every 6–8 weeks; water sparingly at other times. Outdoors, grow in any well-drained soil in full sun. Protect from winter wet. See also p.47.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe.
- **PESTS AND DISEASES** New growth is susceptible to scale insects.

**P. berteroniana** ■ Bromeliad with a caudex-like stem bearing spreading, terminal rosettes of lance-shaped, arching, dark green leaves, 60–100cm (24–39in) long, white-scaly beneath. In



*Puya chilensis*

*Puya mirabilis*

upper parts of the panicle branches are covered with reduced bracts.  $\uparrow$  5m (15ft),  $\leftrightarrow$  2m (6ft) or more. C. Chile. \* *P. coerulea*, syn. *P. caerulea*. Extremely variable bromeliad producing well-developed, erect, stout stems, each with terminal, spreading rosettes of lance-shaped leaves, to 60cm (24in) long, the leaf-blades ash-white, the margins with hooked, reddish brown spines, to 5mm ( $\frac{1}{8}$ in) long. In summer, produces tubular, erect, stalked, dark blue flowers, 5cm (2in) or more long, in racemes or panicles, 40cm (16in) or more long.  $\uparrow$   $\leftrightarrow$  2m (6ft). C. Chile. \*

*P. mirabilis* ■ Stemless bromeliad bearing terminal, spreading rosettes of loose, linear-lance-shaped, finely toothed, white to brownish green leaves, to 60cm (24in) long. In summer, bears loose, simple racemes, to 50cm (20in) long, of funnel-shaped, yellowish green flowers, 10cm (4in) long.  $\uparrow$   $\leftrightarrow$  to 60cm (24in). Bolivia, N. Argentina. ☉ (min. 5°C/41°F)

*P. raimondii* ■ Bromeliad with a thick, caudex-like stem, to 50cm (20in) across. Produces broadly lance-shaped, often red-suffused, bright green leaves, to 2m (6ft) long, densely scaly beneath,

*Puya raimondii*

in a dense, globose, terminal rosette. In summer, tubular, greenish white, rarely purple flowers, 5cm (2in) long, are borne in a cylindrical, compound raceme, to 5m (15ft) long.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  1m (3ft). Peru, Bolivia. ☉ (min. 5°C/41°F)

## PYCNOSTACHYS

LABIATAE/LAMIACEAE

Genus of 40 species of erect, evergreen perennials or soft-stemmed shrubs occurring in forest margins in tropical and southern Africa and Madagascar. They are cultivated for their dense, terminal spikes of 2-lipped, tubular, deep blue flowers. The leaves are opposite or in whorls, linear, lance-shaped, or ovate, and are rather pungent when crushed. In frost-prone areas, grow in a warm greenhouse or conservatory. In warmer areas, they are suitable for growing in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full light. During the growing season, water freely and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Take softwood cuttings at any time.

• **PESTS AND DISEASES** Whiteflies may be troublesome.

*P. dawei* ■ Pyramidal, evergreen perennial bearing opposite, linear, mid-green leaves, to 30cm (12in) long, red beneath, with long, sharp points and toothed margins. In summer, produces tubular, cobalt-blue flowers, to 2.5cm (1in) long, in dense, terminal spikes, 15cm (6in) long.  $\uparrow$  1.8m (6ft),  $\leftrightarrow$  90cm (36in). Tropical Africa. ☉ (min. 12°C/54°F)

*P. urticifolia*. Erect, soft-stemmed, evergreen shrub, becoming somewhat woody at the base and branching freely, with opposite, narrowly ovate, hairless or softly hairy, mid-green leaves, to 12cm (5in) long, often with toothed margins. In winter, tubular, deep blue flowers, 1–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) long, sometimes white with a blue tinge, are produced in dense, terminal spikes, to 10cm (4in) long.  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1.2m (4ft). Tropical Africa and Mozambique. ☉ (min. 12°C/54°F)

*Pycnostachys dawei*

## PYRACANTHA

Firethorn

ROSACEAE

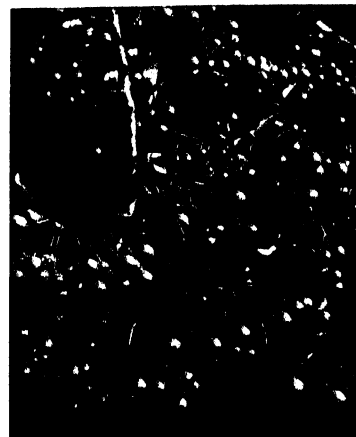
Genus of 7 species of spiny, evergreen, spreading to erect shrubs, occasionally trees, found in scrub and woodland margins from S. Europe to S.W. Asia, the Himalayas, China, and Taiwan.

They are cultivated for their foliage, flowers, and, in particular, fruit: the variably shaped leaves are alternate and often have toothed margins; the 5-petalled white flowers are hawthorn-like and borne in compound corymbs; the showy, spherical berries that follow them in autumn are yellow, orange, or red. Grow firethorns as free-standing shrubs in a shrub border, or against a wall, or for hedging. The seeds may cause mild stomach upset if ingested.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun or partial shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 1 for free-standing shrubs. Trim hedging in early to midsummer. On wall-trained plants, tie in any shoots needed to extend the framework, and cut back unwanted shoots to the main stem. After flowering in midsummer, shorten lateral shoots to 2 or 3 leaves from the base to expose the developing berries. In spring, remove old fruit trusses to make way for new growth.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings with bottom heat in summer.

*Pyracantha* 'Golden Chamer'

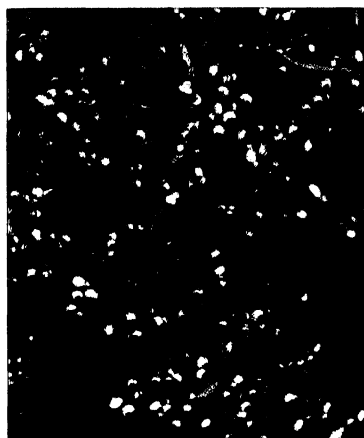
• **PESTS AND DISEASES** Susceptible to aphids, caterpillars, scale insects, leaf miners, coral spot, fireblight, and scab.

*P. angustifolia*. Dense, bushy shrub with narrowly oblong or obovate, dark green leaves, to 5cm (2in) long, grey-felted beneath. Small white flowers are produced in corymbs in midsummer; they are followed by orange-yellow berries, 8mm ( $\frac{3}{8}$ in) across.  $\uparrow$   $\leftrightarrow$  3m (10ft). W. China. \*\*

*P. atalantioides*. Vigorous shrub with upright, arching shoots and oblong-elliptic to lance-shaped, glossy, dark green leaves, to 8cm (3in) long. In spring, small white flowers are borne in corymbs; they are followed by persistent, bright orange-red berries, to 7mm ( $\frac{1}{4}$ in) across.  $\uparrow$  to 6m (20ft),

*Pyracantha atalantioides* 'Aurea'





Pyracantha 'Golden Dome'

↔ 4m (12ft). C. China. \*\* 'Aurea' ■ bears yellow berries.

**P. coccinea.** Dense, bushy shrub with ovate-lance-shaped, dark green leaves, to 2-4cm (¾-1½in) long. Small, creamy white flowers are borne in corymbs in early summer, followed by bright scarlet berries, 5mm (¼in) across. ↳↔ 4m (12ft). S.E. Europe to Caucasus. \*\*\*.

**'Lalandei'** has an upright habit and a profusion of bright orange-red berries, 7-8mm (¼-⅓in) across; ↳ to 6m (20ft).

**P. 'Golden Chamer'** ■ Vigorous, bushy shrub with arching branches and inversely lance-shaped, glossy, bright green leaves, to 5cm (2in) long. Small white flowers are produced in corymbs in early summer, followed by bright orange-red berries, 9mm (⅜in) across. ↳↔ 3m (10ft). \*\*\*

**P. 'Golden Dome'** ■ Spreading shrub, forming a dense mound of arching branches bearing oblong, glossy, dark green leaves, to 6cm (2½in) long. In early summer, small white flowers are produced in corymbs; they are followed by an abundance of golden yellow berries, 5mm (¼in) across. ↳ 2m (6ft), ↳↔ 3m (10ft). \*\*\*

**P. 'Harlequin'**, syn. *P. 'Variegated'*. Spreading shrub with oblong, dark green leaves, 5cm (2in) long, strikingly marked creamy white, flushed pink when young. Small white flowers are produced in corymbs in early summer, followed by red berries, 5mm (¼in) across. Best grown against a wall. ↳ 1.5m (5ft), ↳↔ 2m (6ft). \*\*

**P. koidzumii.** Erect shrub with inversely lance-shaped, glossy, dark green leaves, to 5cm (2in) long. Small



Pyracantha 'Mohave'



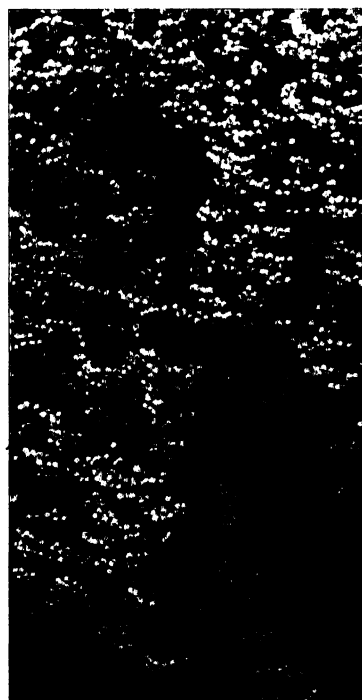
Pyracantha 'Orange Glow'

white flowers are produced in corymbs in early summer, followed by orange-red berries, 7mm (¼in) across. ↳ 3m (10ft), ↳↔ 4m (12ft). Taiwan. \*\* **'Rosedale'** has arching branches and bright red berries, 9mm (⅜in) across.

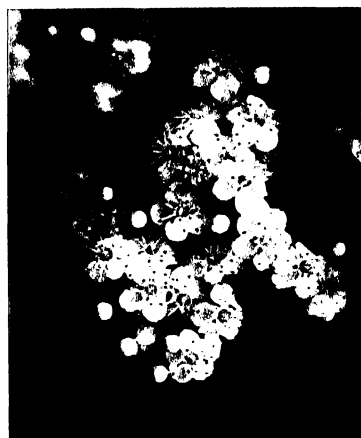
**P. 'Mohave'** ■ Vigorous, bushy shrub with oval, dark green leaves, to 6cm (2½in) long. In early summer, small white flowers are produced in corymbs, followed by long-lasting red berries, 9mm (⅜in) across. ↳ 4m (12ft), ↳↔ 5m (15ft). \*\*

**P. 'Orange Chamer'**. Vigorous, bushy shrub with arching branches and elliptic to obovate, glossy, bright green leaves, to 5cm (2in) long. Small white flowers are borne in corymbs in early summer, followed by dark orange berries, 9mm (⅜in) across. ↳↔ 3m (10ft). \*\*\*

**P. 'Orange Glow'** ■ Upright, later spreading, loosely branched shrub with broadly elliptic to obovate, glossy, dark green leaves, 2-4cm (¾-1½in) long. Small white flowers are produced in corymbs in late spring, followed by a profusion of persistent, orange-red to dark orange berries, 7-8mm (¼-⅓in) across. ↳↔ 3m (10ft). Probably a cultivar of *P. fortuneana*. \*\*\*



Pyracantha 'Soleil d'Or'



Pyracantha x watereri

**P. rogersiana** ♀ Spreading shrub with arching branches and inversely lance-shaped to narrowly obovate, glossy, bright green leaves, to 4cm (1½in) long. Small white flowers are produced in corymbs in spring, followed by orange-red berries, 8mm (⅜in) across. ↳↔ 4m (12ft). W. China. \*\* **f. flava** ♀ has yellow berries.

**P. 'Santa Cruz'**. Low, compact, spreading shrub with oblong, dark green leaves, to 8cm (3in) long. Small white flowers are produced in corymbs in early summer, followed by small red berries, 6-8mm (¼-⅓in) across. ↳ 1m (3ft), ↳↔ 2m (6ft). \*\*

**P. 'Shawnee'**. Spreading shrub with narrowly elliptic, glossy, dark green leaves, to 5cm (2in) long. Small white flowers are borne in corymbs in early summer, followed by slightly flattened, orange-yellow berries, 9mm (⅜in) across. ↳ 3m (10ft), ↳↔ 4m (12ft). \*\*

**P. 'Soleil d'Or'** ■ Upright shrub with red-tinged shoots and broadly elliptic, glossy, dark green leaves, 6cm (2½in) long. Small white flowers are produced in corymbs in early summer, followed by a profusion of golden yellow berries, 1cm (½in) across. ↳ 3m (10ft), ↳↔ 2.5m (8ft). \*\*\*

**P. 'Teton'**. Vigorous, upright shrub with oblong, wavy-margined, glossy, bright green leaves, to 5cm (2in) long. Small white flowers are produced in corymbs in early summer, followed by an abundance of yellow-orange berries, 6mm (¼in) across. ↳ 5m (15ft), ↳↔ 3m (10ft). \*\*\*

**P. 'Variegated'** see *P. 'Harlequin'*.

**P. x watereri** ■ (P. *atalantoides* x *P. rogersiana*). Dense, upright shrub with elliptic, dark green leaves, to 6cm (2½in) long. In early summer, small white flowers are produced in corymbs, followed by bright red berries, 8mm (⅜in) across. ↳↔ 2.5m (8ft). Garden origin. \*\*\*

▷ **Pyramid tree**, Queensland see

*Lagunaria patersonia*

▷ **Pyrethropsis** see *Rhodanthemum*

*P. atlantica* see *R. atlanticum*

*P. catananche* see *R. catananche*

*P. gayana* see *R. gayanum*

*P. hosmariensis* see *R. hosmariense*

*P. maresii* see *R. maresii*

▷ **Pyrethrum** see *Tanacetum*

*P. coccineum* see *Tanacetum coccineum*

*P. parthenium* see *Tanacetum parthenium*

▷ **Pyrethrum** cont.

*P. ptarmiciflorum* see *Tanacetum ptarmiciflorum*

*P. radicans* see *Leucanthemopsis pectinata*

*P. roseum* see *Tanacetum coccineum*

▷ **Pyrethrum** see *Tanacetum coccineum*

## PYROLA

Shinleaf, Wintergreen

ERICACEAE/PYROLACEAE

Genus of 35 species of creeping, rhizomatous, evergreen perennials from woodland and moorland in the N. hemisphere. They are grown for their basal clusters of alternate, simple, usually rounded to ovate, long-stalked, mid- to dark green leaves, and their upright racemes of cup- to bowl-shaped, usually white, occasionally pink or red flowers, borne in summer. They can be difficult to establish, possibly needing a mycorrhizal association with specific, soil-dwelling fungi. Grow in a woodland garden, peat bed, or rock garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, acid, leafy, moist but well-drained soil in partial or dappled shade.

• **PROPAGATION** Surface-sow seed in containers of damp sphagnum moss as soon as ripe. Divide with care in spring; roots resent disturbance.

• **PESTS AND DISEASES** Very susceptible to attack by slugs and snails.

**P. rotundifolia** (Round-leaved wintergreen, Wild lily-of-the-valley). Creeping perennial with basal clusters of rounded or broadly oval, mid- to dark green leaves, 2-6cm (¾-2½in) long. In summer, produces upright stems bearing loose racemes of up to 20 cup-shaped, pure white, rarely pink-tinged flowers, 0.8-1.5cm (⅛-½in) across, with incurving petals. ↳ 20cm (8in), ↳↔ 15cm (6in). Europe, North America. \*\*\*

## PYROSTEGIA

BIGNONIACEAE

Genus of 3 or 4 species of woody-stemmed, evergreen tendril climbers found in tropical woodland in South America. Leaves, produced in opposite pairs, each have 2 or 3 leaflets and sometimes a terminal, 3-branched tendril. The tubular or bell-shaped, usually orange or red flowers each have a tapered base and club-like tip, with 5 short petal lobes. Where temperatures fall below 10-13°C (50-55°F), grow in a temperate or warm greenhouse. In warmer areas, grow over a pergola or arch, or allow to cascade from a tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2) with added leaf mould and sharp sand, in full light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Support climbing stems. Pruning group 11 or 12, after flowering.

• **PROPAGATION** Sow seed at 16°C

(61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** May be infested with scale insects and red spider mites under glass.

*Pyrostegia venusta*

*P. ignea* see *P. venusta*.

*P. venusta* [ ] syn. *P. ignea* (Golden shower). Very vigorous climber with numerous slender stems, and opposite leaves composed of ovate to oblong-lance-shaped, rich green leaflets, to 8cm (3in) long. Bears a profusion of curved, tubular, waxy, golden to reddish orange flowers, 6cm (2½in) long, in terminal clusters, mainly in winter. †10m (30ft) or more. Bolivia to Brazil, Paraguay, N. Argentina. ☼ (min. 10–13°C/50–55°F)

† *Pyrrhocactus crispus* see *Neoporteria crispa*

## PYRRROSIA

Felt fern

POLYPODIACEAE

Genus of about 100 species of epiphytic and terrestrial, evergreen ferns with long-creeping rhizomes, mainly from tropical forest in North and South America, but also found in temperate areas in E. Asia. They are cultivated for their very small to large, mostly simple, linear to almost rounded, sometimes palmately lobed, thick, leathery fronds, the undersides of which are usually densely covered with matted and felt-like, star-shaped, branched hairs. In frost-prone climates, grow in a container or hanging basket in a temperate greenhouse; elsewhere, grow epiphytically on a tree or on other mossy supports, or in a sheltered, shady border.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in a mix of 1 part each loam, medium-grade bark, and charcoal, 2 parts sharp sand,

*Pyrrosia lingua*

and 3 parts coarse leaf mould. Provide bright filtered or indirect light, with high humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, leafy, well-drained soil in partial shade.

- **PROPAGATION** Sow spores at 21°C (70°F) when ripe. Divide in spring. See also p. 51.

- **PESTS AND DISEASES** Scale insects may be troublesome.

*P. lingua* [ ] (Japanese felt fern, Tongue fern). Evergreen fern bearing simple, lance-shaped to ovate, leathery, glossy, dark green fronds, to 30cm (12in) long, sparsely hairy above, densely covered with star-shaped hairs beneath. Spores form in patches over a large part of the undersides of the fronds. †10–20cm (4–8in), ↔ 30cm (12in). E. Asia, China, Taiwan, Japan (Ryukyu Islands). ☼ (min. 10°C/50°F). 'Cristata' has fronds repeatedly forked at the tips.

## PYRUS

Pear

ROSACEAE

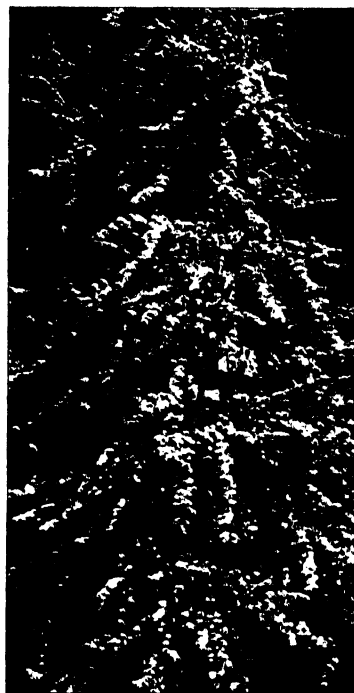
Genus of about 30 species of upright, mainly deciduous trees and shrubs, found in woodland, in rocky places, and on hillsides in Europe, W. to E. Asia, and N. Africa. They are grown for their habit, flowers, and fruits. The leaves are alternate, entire or very rarely lobed, ovate to oblong, elliptic, or oval, the margins often with forward-pointing teeth; some have good autumn colour. The 5-petalled, saucer- to bowl-shaped flowers, borne in umbel-like racemes, are white, occasionally pink, and usually have red anthers. The fruits are spherical to typically pear-shaped; numerous cultivars have been bred specifically for the production of culinary and dessert pears. Ornamental pears are best grown as specimen trees on a lawn; the smaller ones, such as *P. salicifolia* 'Pendula', and those of narrow habit, such as *P. calleryana* 'Chanticleer', are particularly suitable for growing in a small garden.

- **HARDINESS** Fully hardy.

- **CULTIVATION** Grow in any fertile, well-drained soil in full sun. Pruning group 1.

- **PROPAGATION** Sow seed in an open frame or in a seedbed in autumn. Bud in summer, or graft in winter.

- **PESTS AND DISEASES** Susceptible to aphids, caterpillars, leaf midges, and

*Pyrus calleryana* 'Chanticleer'*Pyrus communis*

mites. They are also prone to fireblight, honey fungus, powdery mildew, canker, brown rot, and scab.

*P. calleryana* △ Broadly conical, often very thorny, deciduous tree with ovate to broadly ovate, finely scalloped or toothed, glossy, dark green leaves, to 8cm (3in) long, turning red in late autumn. White flowers, 2cm (¾in) across, are borne in umbel-like racemes of up to 12, in early and mid-spring, followed in autumn by spherical brown fruit, 1cm (½in) across. †↔ 15m (50ft). China. \*\*\*. 'Autumn Blaze' has red-purple autumn colour. 'Bradford' △ is narrowly conical, becoming broader with age, and thornless; ↔ 12m (40ft). 'Capital' △ is narrowly conical, with

*Pyrus salicifolia* 'Pendula'

copper autumn colour; †12m (40ft), ↔ 5m (15ft). 'Chanticleer' [ ] △ is narrowly conical; ↔ 6m (20ft).

*P. communis* [ ] △ (Common pear). Columnar, occasionally thorny, deciduous tree with ovate to elliptic, glossy, dark green leaves, to 10cm (4in) long, with fine, forward-pointing teeth. White flowers, 4cm (1½in) across, often ringed pink in bud, are borne in umbel-like racemes of 5–9 in mid-spring; they are followed by edible, pear-shaped to spherical, green to yellow fruit, to 10cm (4in) long. Parent of numerous fruit-bearing cultivars. †15m (50ft), ↔ 10m (30ft). S. Europe, S.W. Asia. \*\*\*.

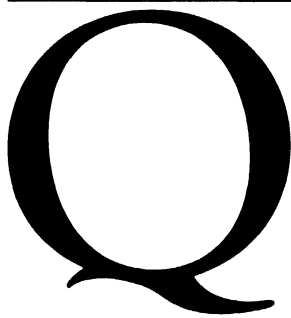
'Beech Hill' △ is narrowly conical, with leaves that turn orange and red in autumn; †10m (30ft), ↔ 7m (22ft).

*P. japonica* see *Chaenomeles speciosa*.

*P. nivalis* △ (Snow pear). Broadly conical, thornless, deciduous tree with elliptic to obovate, entire or shallowly scalloped, silvery grey leaves, to 8cm (3in) long, white-hairy beneath. In mid-spring, bears white flowers, 3cm (1¼in) across, in umbel-like racemes of 6–9, followed by spherical, yellow-green fruit, 4cm (1½in) across. †12m (40ft), ↔ 8m (25ft). C. and S.E. Europe. \*\*\*.

*P. salicifolia* △ Spreading, deciduous tree with pendent shoots and lance-shaped to narrowly elliptic, willow-like, grey-felted leaves, to 9cm (3½in) long, becoming hairless with age. Creamy white flowers, 2cm (¾in) across, are borne in dense, umbel-like racemes of 6–8 in spring, followed by pear-shaped green fruit, 3cm (1¼in) long. †8m (25ft), ↔ 6m (20ft). S.E. Europe, Caucasus, Turkey, N.W. Iran. \*\*\*. 'Pendula' [ ] △ has stiffly weeping branches; †5m (15ft), ↔ 4m (12ft).

*P. ussuriensis* △ Broadly conical, deciduous tree with broadly oval, glossy, dark green leaves, to 10cm (4in) long. White flowers, 3cm (1¼in) across, are borne in umbel-like racemes of 6–9 in mid-spring, followed by almost spherical green fruit, 4cm (1½in) across. †12m (40ft), ↔ 8m (25ft). N.E. Asia. \*\*\*.



- ▷ **Quaking grass** see *Briza*  
**Common** see *B. media*  
**Greater** see *B. maxima*  
**Lesser** see *B. minor*  
▷ **Quamash** see *Camassia*, *C. quamash*  
▷ **Quamoclit coccinea** see *Ipomoea coccinea*  
▷ **Quamoclit lobata** see *Ipomoea lobata*  
▷ **Quamoclit pennata** see *Ipomoea quamoclit*

## QUAQUA

ASCLEPIADACEAE

Genus of 14 species of perennial succulents, closely related to *Caralluma*, from hilly, often rocky terrain in S. Namibia and South Africa, grown for their prominently to shallowly lobed, bowl-shaped flowers, which are borne singly or in clusters during daytime in early summer. Where temperatures fall below 10°C (50°F), grow in a warm greenhouse; in warm, dry climates, use in a raised bed with other succulents.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.2) and sharp grit, in full light with shade from hot sun. During growth, water freely and apply a dilute balanced fertilizer 2 or 3 times. Keep barely moist in winter. Outdoors, grow in gritty, sharply drained, moderately fertile soil in full sun with some midday shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Take stem cuttings in late summer.
- **PESTS AND DISEASES** Prone to aphids.

**Q. pillansii**, syn. *Caralluma pillansii*. Erect, freely branching succulent with prominently 4-angled, sturdy, dark grey-green stems, to 2.5cm (1in) thick, spotted red, and bearing compressed brown teeth with spine-like tips. Dense clusters of 4–20 bowl-shaped, purple-brown flowers, to 2.5cm (1in) across, with purple- or red-spotted, greyish green lobes, develop from the stem grooves in early summer. ↑ to 30cm (12in). S. Namibia, South Africa (Western Cape). ☼ (min. 10°C/50°F)

- ▷ **Quassia** see *Picrasma quassioides*  
▷ **Queen Anne's lace** see *Anthriscus sylvestris*  
▷ **Queen Anne's thimbles** see *Gilia capitata*  
▷ **Queencup** see *Clintonia uniflora*  
▷ **Queen of the meadows** see *Filipendula ulmaria*  
▷ **Queen of the night** see *Selenicereus grandiflorus*  
▷ **Queen of the prairies** see *Filipendula rubra*  
▷ **Queen's tears** see *Billbergia nutans*

## QUERCUS

Oak

FAGACEAE

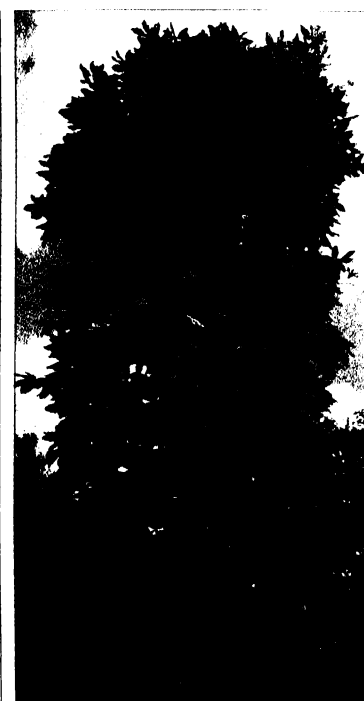
Genus of about 600 species of monoecious, deciduous, semi-evergreen or evergreen trees and shrubs, widely distributed in woodland and scrub in the N. hemisphere, and grown for their habit and foliage. They have usually fissured bark, downy to hairless shoots, and alternate, entire, lobed, or toothed leaves, which in some deciduous species give excellent autumn colour. The tiny male and female flowers are produced separately on the same plant in late spring and early summer; the males are borne in pendent catkins, the females singly, in pairs, or in racemes, followed by usually ovoid brown nuts (acorns) in scaly cups. The acorns are mostly 1–3cm (½–1¼in) long, sometimes more, and solitary or paired, but in some species are borne in racemes. Oak trees are best as specimens in a large garden or a park.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in deep, fertile, well-drained soil in sun or partial shade; evergreen species prefer full sun. Shelter oaks of borderline hardiness from frost and cold winds. They are lime-tolerant unless stated otherwise. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame or seedbed as soon as ripe. Graft in mid-autumn or late winter.
- **PESTS AND DISEASES** Susceptible to oak wilt, honey fungus, powdery mildew, aphids, gall wasps, and various bracket fungi. Knopper gall can disfigure acorns.

**Q. acutissima** ♀ syn. *Q. serrata*. Rounded, deciduous tree with fissured, corky, ashen-grey to black bark and long-lasting, sweet-chestnut-like, oblong-lance-shaped to obovate, glossy, mid-green leaves, to 20cm (8in) long, margined with bristle-tipped teeth. Solitary, ovoid acorns are borne in cups covered with slender, long, hairy scales. ↑ to 15–20m (50–70ft). Himalayas, China, Korea, Japan. \*\*\*  
**Q. aegilops** see *Q. macrolepis*.  
**Q. agrifolia** ♂ (Californian live oak). Spreading, evergreen tree or shrub with ridged, grey to reddish brown bark and convex, ovate-elliptic to broadly elliptic, spiny-toothed, glossy, dark green leaves, to 7cm (3in) long. Bears solitary, slender, ovoid, pointed acorns, to 3.5cm (1½in) long. ↑ to 10m (30ft). USA (California). \*\*\*  
**Q. alba** ♀ (American white oak). Spreading, deciduous tree with peeling, pale grey to brown bark. The obovate, oblong, or elliptic, deeply lobed, bright green leaves, to 22cm (9in) long, often pink-tinged when young, turn purple-red in autumn. Solitary acorns are ovoid-oblong. Needs lime-free soil. ↑ to 30m (100ft). E. North America. \*\*\*  
**Q. aliena** ♀ Spreading, deciduous tree with fissured, grey-brown bark, obovate, prominently toothed and veined, glossy, bright green leaves, to 20cm (8in) long, blue-green beneath, and stalked, ovoid acorns. ↑ 25m (80ft), ↔ 12m (40ft). China, Korea, Japan. \*\*\*  
**Q. bicolor** ♀ (Swamp white oak). Spreading, deciduous tree with peeling, fissured, grey-brown bark and oblong-obovate or obovate, shallowly lobed, glossy, dark green leaves, to 16cm (6in)

long, white-hairy beneath when young, orange to bright red in autumn. Long-stalked acorns are oblong-ovoid. ↑ 20m (70ft), ↔ 15m (50ft). S.E. USA. \*\*\*  
**Q. borealis** see *Q. rubra*.  
**Q. canariensis** ♂ ♀ (Mirbeck's oak). Deciduous or semi-evergreen tree, narrow when young, broadening with age, with rugged, thick black bark. Obovate-oblong to obovate, shallowly lobed, rich green leaves, to 18cm (7in) long, turn yellow-brown in autumn. Ovoid acorns are borne in clusters of up to 4. ↑ 30m (100ft), ↔ 15m (50ft). S.W. Europe, N. Africa. \*\*\*

**Q. castaneifolia** ♂ ♀ (Chestnut-leaved oak). Fast-growing, spreading, deciduous tree with rough, corky brown bark and sweet-chestnut-like, elliptic-oblong to oblong-lance-shaped, triangular-toothed, glossy, dark green leaves, to 16cm (6in) long, grey beneath. Ovoid acorns, in long-scaled cups, are solitary or in groups of up to 5. ↑ 25m (80ft), ↔ 20m (70ft). Caucasus, N. Iran. \*\*\*  
**'Green Spire'** ♂ has upright branches; ↑ 10m (30ft).  
**Q. cerris** ♀ (Turkey oak). Fast-growing, spreading, deciduous, very variable tree with grey-white bark, splitting into thick plates, and oblong-elliptic to oblong-lance-shaped, deeply lobed or toothed, dark green leaves, to 12cm (5in) long, pale green beneath and yellow-brown in autumn. Ellipsoid acorns, 2.5–4cm (1–1½in) long, in cups densely covered with long, slender scales, are solitary or in groups of 2–4. ↑ 30m (100ft), ↔ 25m (80ft). C. and S. Europe. \*\*\*  
**'Argenteovariegata'** ♂ syn. 'Variegata', has leaves margined with creamy yellow, later creamy white; ↑ 15m (50ft), ↔ 12m (40ft).  
**Q. chrysolepis** ♀ (Canyon oak). Spreading, evergreen tree or shrub with scaly, whitish grey or red-tinted bark and oblong-ovate to elliptic, spiny-toothed, leathery, shining, dark green leaves, to 6cm (2½in) long, grey- or yellow-hairy beneath. Ovoid to oblong-ovoid acorns, 2.5–5cm (1–2in) long, are borne in felted cups. ↑ 20m (70ft), ↔ 10m (30ft). USA (California). \*\*  
**Q. coccifera** ♀ (Kermes oak). Bushy, compact, evergreen shrub or tree with smooth grey bark, cracking with age, and holly-like, ovate to oblong-lance-shaped, spiny margined, glossy, dark green leaves, 3–5cm (1¼–2in) long.

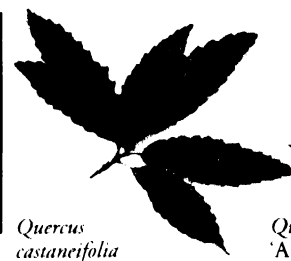


*Quercus canariensis*

Bears solitary, spherical or ovoid acorns in very spiny cups. ↑ to 10m (30ft), ↔ 4–6m (12–20ft). Mediterranean. \*\*  
**Q. coccinea** ♂ ♀ (Scarlet oak). Rounded, deciduous tree with pale grey-brown bark in scaly plates. Glossy, dark green leaves, to 15cm (6in) long, are elliptic, with deep lobes ending in bristle-tipped teeth, and tufts of hairs in the vein axils beneath; the leaves turn bright red in autumn. Acorns are ovoid to nearly spherical. Requires lime-free soil. ↑ 20m (70ft), ↔ 15m (50ft). E. North America. \*\*\*  
**'Splendens'** ♀ is very dark red in autumn.  
**Q. conferta** see *Q. frainetto*.  
**Q. dentata** ♂ ♀ (Daimio oak). Rugged, spreading, stoutly branched, deciduous tree with fissured brown bark, splitting into grey, scaly plates. Produces obovate, shallowly lobed to wavy-margined, dark green leaves, to 30cm (12in) or more long. Bears ovoid to nearly spherical, solitary acorns. Requires acid soil. ↑ 15m (50ft), ↔ 10m (30ft). E. Asia. \*\*\*  
**Q. ellipsoidalis** ♂ ♀ (Northern pin oak). Spreading, deciduous tree with



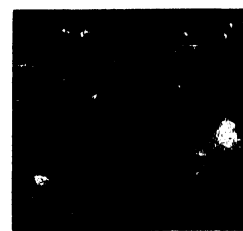
*Quercus agrifolia*



*Quercus castaneifolia*



*Quercus cerris*  
'Argenteovariegata'



*Quercus coccinea*



*Quercus dentata*



*Quercus ellipsoidalis*



*Quercus suber*

(7in) long, elliptic to elliptic-obovate, truncate, each with up to 9 lobes ending in bristle-tipped teeth, and turn red to red-brown in autumn. Acorns are ovoid. Requires lime-free soil. ‡ 20m (70ft), ↔ 12m (40ft). S.E. USA. \*\*\*

**Q. suber** [C] (Cork oak). Rounded, evergreen tree with thick, corky bark (the cork of commerce). Ovate-oblong, toothed, rigid, dark green leaves, to 7cm (3in) long, are grey-hairy beneath. Bears ovoid-oblong acorns. ‡ 20m (70ft). W. Mediterranean, N. Africa. \*\*

**Q. x turneri** [C] (*Q. ilex* x *Q. robur*). Dense, rounded, semi-evergreen tree with fissured, brownish grey to dark grey bark and obovate, shallowly lobed, dark green leaves, to 12cm (5in) long. Bears ovoid acorns in clusters of 3–7. ‡ 20m (70ft). Garden origin. \*\*\*

**Q. velutina** [C] (Black oak). Fast-growing, spreading, deciduous tree with ridged, dark brown, almost black bark. Elliptic, glossy, dark green leaves, to 25cm (10in) long, each with up to 7 pointed, deep lobes, turn red-brown in autumn. Acorns are more or less spherical. Requires lime-free soil. ‡ 30m (100ft), ↔ 25m (80ft). E. North America. \*\*\*

**Q. wislizeni** [C] [C] Spreading, evergreen tree or shrub with blackish or reddish brown bark and broadly lance-shaped to broadly elliptic, usually spiny-toothed, glossy, dark green leaves, 2.5–4cm (1–1½in) long. Bears solitary, oblong-ellipsoid acorns, to 4cm (1½in) long. ‡ to 20m (70ft), ↔ 12m (40ft). USA (California). \*\*

## QUESNELIA

BROMELIACEAE

Genus of approximately 15 species of almost stemless, evergreen, terrestrial or epiphytic perennials (bromeliads), some rhizomatous, found in scrub, woodland, or rainforest in E. Brazil, to 2,000m (6,500ft). They are cultivated for their rosetted, lance-shaped, spiny-margined, thick, stiff leaves and their upright or pendent, ellipsoid or cylindrical, dense or lax inflorescences of ovoid or tubular flowers, borne among showy bracts from late spring to summer. Below 13°C (55°F), grow as houseplants or in a warm greenhouse; elsewhere, grow in a humid, moist part of the garden.

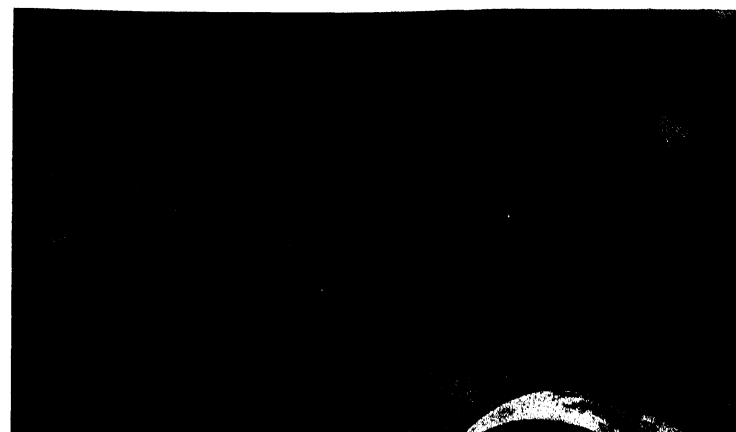
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in epiphytic or terrestrial bromeliad compost in bright filtered light. Water moderately at all times and regularly mist lightly. Apply a nitrogen-based fertilizer monthly during the growing season. Outdoors, grow in open, coarse, humus-rich, moist but well-drained soil in partial shade. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) as soon as ripe. Remove offsets in late spring or summer.

• **PESTS AND DISEASES** Young growth is vulnerable to scale insects.

**Q. liboniana** [C] Epiphytic perennial with funnel-shaped rosettes of lance-shaped, stiff, minutely brown-scaly, dark green leaves, 75–80cm (30–32in) long, margined with straight or curved spines. From late spring to summer, bears simple or few-branched inflorescences,



*Quesnelia liboniana*

10cm (4in) long, comprising orange-red bracts and tubular, deep purple-blue flowers, 5cm (2in) long, with yellow sepals, flushed orange-red. ‡ 75cm (30in). E. Brazil. ☉ (min. 13°C/55°F)

**Q. marmorata**, syn. *Aechmea marmorata*. Epiphytic, rhizomatous perennial with tubular rosettes of thick, 2-ranked, lance-shaped, greyish green leaves, 40–60cm (16–24in) long, marbled and banded lilac and green, with pinkish grey marginal spines. From late spring to summer, bears pyramid-shaped, terminal inflorescences, 20cm (8in) long, consisting of tiny pink floral bracts and ovoid, blue or purple flowers, 3cm (1¼in) long, with blue-purple sepals. ‡ 60cm (24in), ↔ 30cm (12in) or more. E. Brazil. ☉ (min. 13°C/55°F)

**Q. quesneliana**. Rhizomatous, terrestrial perennial with broad rosettes of 6–10 lance-shaped, brown-spiny, bright green leaves, 70–90cm (28–36in) long, cross-banded with greyish lilac scales beneath. From late spring to summer, bears cylindrical or narrowly ellipsoid inflorescences, 15cm (6in) long; these consist of overlapping pink, later white scales and spirally arranged, wavy-margined, red to rose-pink bracts, which almost hide the oval, blue-margined white flowers, 3.5cm (1½in) long, with red sepals. ‡ to 75cm (30in) or more. E. Brazil. ☉ (min. 13°C/55°F)

▷ **Quick** see *Crataegus monogyna*

▷ **Quickthorn** see *Crataegus monogyna*

▷ **Quince** see *Cydonia*

**Common** see *Cydonia oblonga*

**Flowering** see *Chaenomeles*

**Japanese** see *Chaenomeles, C.*

*japonica*

**Maule's** see *Chaenomeles japonica*

## QUISQUALIS

COMBRETACEAE

Genus of about 16 species of woody-stemmed, evergreen climbers or scandent shrubs from tropical forest in Africa, South Africa, Indonesia, and Malaysia. They are cultivated for their small, tubular, 5-lobed flowers, borne in terminal or axillary racemes or panicles. Leaves are simple and usually produced in opposite pairs. Where temperatures fall below 13°C (55°F), grow in a warm greenhouse. In tropical climates, use to clothe an arch or wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3)

in full light with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with some midday shade. Pruning group 11, in late winter or early spring.

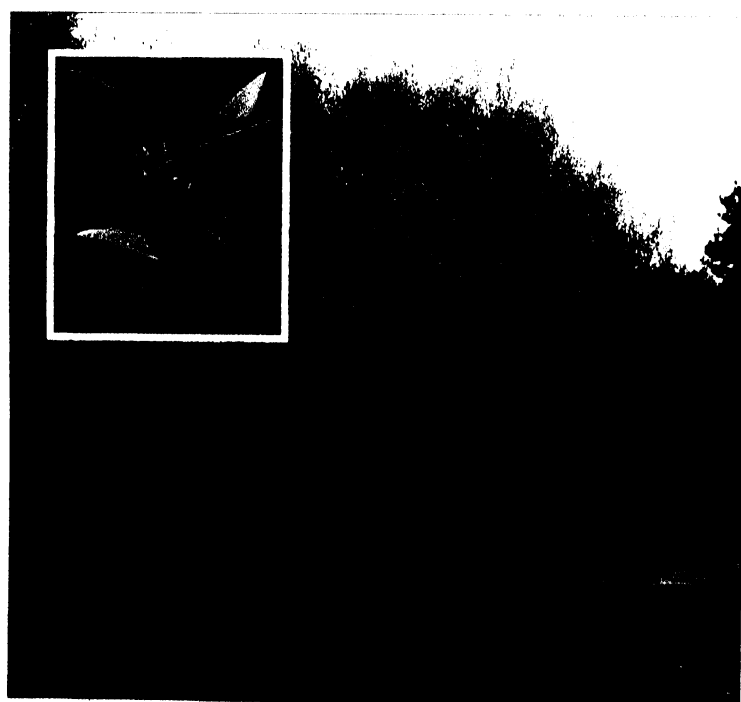
• **PROPAGATION** Sow seed at 18°C (64°F) in spring. Root softwood cuttings with bottom heat in late spring. Layer in spring.

• **PESTS AND DISEASES** Prone to red spider mites and mealybugs under glass.

**Q. indica** [C] (Rangoon creeper). Freely branching, perennial climber, erect and shrub-like when young. Mid- to deep green leaves, 8–18cm (3–7in) long, are elliptic to elliptic-oblong with rounded to heart-shaped bases, long, sharp tips, and prominent veins. In summer and autumn, bears slender-tubed, fragrant flowers, 4–7cm (1½–3in) long, with 5 spreading lobes, in pendent, terminal racemes, 10cm (4in) long; initially white, they change to pink and purplish red then bright red over a 3-day period. ‡ to 20m (70ft) or more. Tropical Africa and S.E. Asia. ☉ (min. 13°C/55°F)



*Quisqualis indica*



*Quercus wislizeni* (inset: acorn detail)

# R

- ▷ **Rabbit's foot** see *Maranta leuconeura* 'Kerchoveana'
- ▷ **Rabbit's tracks** see *Maranta leuconeura* 'Kerchoveana'
- ▷ **Radiator plant** see *Peperomia maculosa*
- ▷ **Raffia** see *Raphia*
- ▷ **Ragged robin** see *Lychnis flos-cuculi*
- ▷ **Ragwort, Leopard's bane** see *Senecio doronicum*
- ▷ **Rainbow plant, Marbled** see *Billbergia Fantasia* Group
- ▷ **Rainbow star** see *Cryptanthus bromelioides*
- ▷ **Rain flower** see *Zephyranthes*
- ▷ **Raisin-tree** see *Hovenia dulcis*

## RAMONDA

### GESNERIACEAE

Genus of 3 species of rosette-forming, evergreen perennials from shady rock crevices and cliff faces in N.E. Spain, the Pyrenees, and Balkan mountains. They are grown for their hairy, crinkled leaves, of variable shape and colour, and their flat or shallowly cup-shaped, colourful flowers. The flowers are often slightly 2-lipped, with 4 or 5, rarely 6 petals, and are borne singly or in cyme-like panicles on slender, leafless stems, in late spring and early summer. Grow in a rock garden, a peat bed, in crevices in a stone wall, or in an alpine house.

• **HARDINESS** Fully hardy, but intolerant of excessive winter wet.

• **CULTIVATION** In an alpine house, grow in equal parts loam, leaf mould, and grit, in bright filtered light with shade from hot sun. Outdoors, grow in moist but well-drained, humus-rich, moderately fertile soil in partial shade. Plants are best grown on their sides to avoid accumulations of moisture in the rosettes, which may cause rotting in winter. Leaves wither in dry conditions, but recover if watered thoroughly.

• **PROPAGATION** Sow seed very thinly in containers in a cold frame as soon as

ripe. Seedlings develop slowly, so do not prick out until they have several leaves. Root rosettes in early summer, or root leaf cuttings in early autumn.

• **PESTS AND DISEASES** Very susceptible to slug and snail damage.

***R. myconi*** [♀] syn. *R. pyrenaica*. Rosette-forming, evergreen perennial with elliptic to very broadly ovate, hairy, slightly crinkled, dark green leaves, to 8cm (3in) long. Cyme-like panicles of outward-facing, flat, 5-petalled flowers, 2.5cm (1in) across, usually deep violet-blue with yellow anthers, are produced in late spring and early summer; pink- and white-flowered variants also occur. ↑ 10cm (4in), ↔ to 20cm (8in).

Pyrenees, N.E. Spain. \*\*\*

***R. nathaliae*** ♀ Rosette-forming, evergreen perennial with elliptic to broadly ovate, hairy, slightly crinkled, glossy, pale green leaves, to 5cm (2in) long, entire or with slightly scalloped margins. In late spring and early summer, bears cyme-like panicles of outward-facing, flattish, 4-petalled, deep mauve-blue flowers, to 3.5cm (1½in) across, with orange-yellow eyes and yellow anthers. ↑ 10cm (4in). Bosnia & Herzegovina, Macedonia, N. Greece. \*\*\*

***R. pyrenaica*** see *R. myconi*.

***R. serbica***. Rosette-forming, evergreen perennial with narrowly obovate, hairy, crinkled, irregularly scalloped, pale green leaves, to 5cm (2in) long. In late spring and early summer, outward-facing, saucer- to cup-shaped, lilac-blue flowers, 3.5cm (1½in) across, each with 5, sometimes 6 petals and violet-blue anthers, open singly or in pairs in cyme-like panicles. ↑ 10cm (4in), ↔ 15cm (6in). Croatia, Yugoslavia, Albania, W. Greece, N.W. Bulgaria. \*\*\*

▷ **Rampion, Horned** see *Phyteuma*

▷ **Ram's horn** see *Probosidea louisianica*

▷ **Rangoon creeper** see *Quisqualis indica*

## RANUNCULUS

*Buttercup, Crowfoot*

### RANUNCULACEAE

Genus of about 400 species of annuals, biennials, and mainly deciduous, sometimes evergreen perennials, widely distributed in temperate regions of the world. They are found in a range of habitats, varying from damp woodland to grassland, and from mountain screes and summer-dry sites to bogs or shallow water. They may be rhizomatous, tuberous, fibrous-rooted, or spread by runners. The leaves form basal rosettes or are sometimes stem-clasping; they are very variable in shape, and may be simple and entire, toothed to palmately lobed, or pinnatisect. Buttercups are grown for their bowl-shaped, or cup- to saucer-shaped, usually 5-petalled, mainly yellow, but also white, pink, orange, or red flowers, which are borne singly or in cyme-like panicles in spring, summer, or occasionally in autumn. Buttercups are suitable for a wide range of sites (see cultivation groups below). Contact with the sap may irritate skin.

• **HARDINESS** Most are fully hardy. *R. asiaticus* is half hardy.

• **CULTIVATION** Buttercups have a range of cultivation requirements; for ease of reference, they have been divided into groups as follows:



*Ranunculus aconitifolius*

1. Woodland buttercups, best in partial or full shade in moist, humus-rich soil.  
2. Buttercups easily grown in sun or partial shade, in fertile, moist but well-drained soil; grow in a border or rock garden.

3. High alpine buttercups, best grown in gritty, humus-rich, sharply drained soil in a scree bed in full sun, or in an alpine house in a mix of equal parts loam, leaf mould, and grit in full light.

4. Aquatic or bog plants, best grown in mud at a pond margin or streamside. Grow *R. aquatilis* in 15–60cm (6–24in) of still or fast-moving water; grow *R. lingua* and *R. flammula* in 15–22cm (6–9in) of still or slow-moving water.

5. Tuberous buttercups (except *R. ficaria*) that require a dry, dormant period in summer; best in a bulb frame or alpine house in a mix of equal parts loam, leaf mould, and grit in full light.

• **PROPAGATION** Sow seed of most alpine species in pans in an open frame when seed is still slightly green; germination is erratic, and pans should be retained for several years if seeds fail to germinate in the first year. Sow seed of perennials, aquatic perennials, and mat-forming alpinists in containers in a cold frame as soon as ripe, or divide in spring or autumn. Divide tuberous species, or detach basal bulbils (where these form), in spring or autumn.

• **PESTS AND DISEASES** Vulnerable to slug and snail damage, aphids, and powdery mildew.

***R. aconitifolius*** [♂] (Bachelor's buttons). Clump-forming, hairy, fibrous-rooted perennial producing palmately 3- to 5-



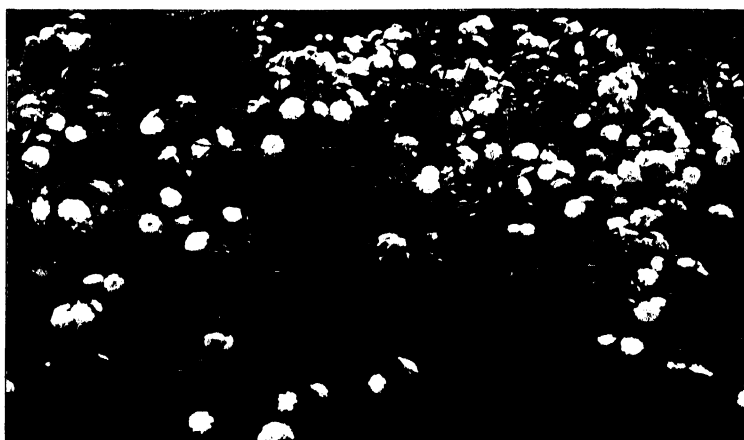
*Ranunculus acris* 'Flore Pleno'

lobed, toothed, glossy, dark green, basal leaves, to 20cm (8in) long. In late spring and early summer, freely branched stems bear numerous red-ringed buds that open to panicles of saucer-shaped white flowers, 1–2cm (½–¾in) across, with red- or purple-backed sepals. Cultivation group 1 or 2. ↑ 60cm (24in), ↔ 45cm (18in). C. Europe. \*\*\*. 'Flore Pleno' [♀] (Fair maids of France, Fair maids of Kent, White bachelor's buttons) has long-lasting, double white flowers with numerous small petals.

***R. acris*** (Meadow buttercup). Erect, hairy, fibrous-rooted perennial, sometimes with short rhizomes. The long-stalked, broadly ovate, palmately 3- to 7-lobed, mid-green, basal leaves, 8cm (3in) long, have toothed lobes, which are sometimes further subdivided. Many-branched stems bear panicles of numerous saucer-shaped, glossy, golden yellow flowers, to 2.5cm (1in) across, in early and midsummer. Cultivation group 1 or 2. ↑ 20–90cm (8–36in), ↔ 22cm (9in). Europe and W. Asia. \*\*\*. 'Farrer's Yellow' has pale yellow flowers. 'Flore Pleno' [♂] bears double, rosetted, many-petalled yellow flowers.



*Ramonda myconi*



*Ranunculus aconitifolius* 'Flore Pleno'


*Ranunculus alpestris*

**R. alpestris** [ ] Short-lived, tufted, occasionally evergreen perennial with fibrous roots. The kidney-shaped, palmately 3- to 5-lobed, basal leaves, are 3-5cm (1¼-2in) long, round-toothed, glossy and dark green. From late spring to midsummer, bears cup-shaped white flowers, to 2cm (¾in) across, singly or occasionally in clusters of 2 or 3.

Cultivation group 3. ↑ to 10cm (4in). Mountains of C. and S. Europe. \*\*\*

**R. amplexicaulis**. Clump-forming perennial with fibrous roots and ovate-lance-shaped, entire, sometimes sparsely hairy, grey-green basal leaves, to 7cm (3in) long, and smaller leaves clasping the upright, branching stems. In early summer, bears cyme-like panicles of up to 5 cup-shaped white flowers, each 2-2.5cm (¾-1in) across. Cultivation group 2. ↑ to 30cm (12in), ↔ 20cm (8in). Pyrenees, N. and C. Spain. \*\*\*

**R. aquatilis** [ ] (Water crowfoot). Aquatic annual or usually evergreen perennial with submerged, branched, slender stems and dark green leaves, 3-8cm (1¼-3in) long. The kidney-shaped to rounded, floating leaves are deeply divided into 3-7 lobes; the submerged leaves have many thread-like segments. Solitary, bowl- or saucer-shaped, white-based yellow flowers, 2cm (¾in) across, are borne on the water's surface in midsummer. Cultivation group 4. ↔ indefinite. Europe. \*\*\*

**R. asiaticus** [ ] (Persian buttercup). Tuberous, fibrous-rooted perennial with long-stalked, broadly ovate to rounded, deeply 3-lobed, hairy, pale to dark green, basal leaves, to 14cm (5½in) long, the lobes further subdivided and


*Ranunculus asiaticus*

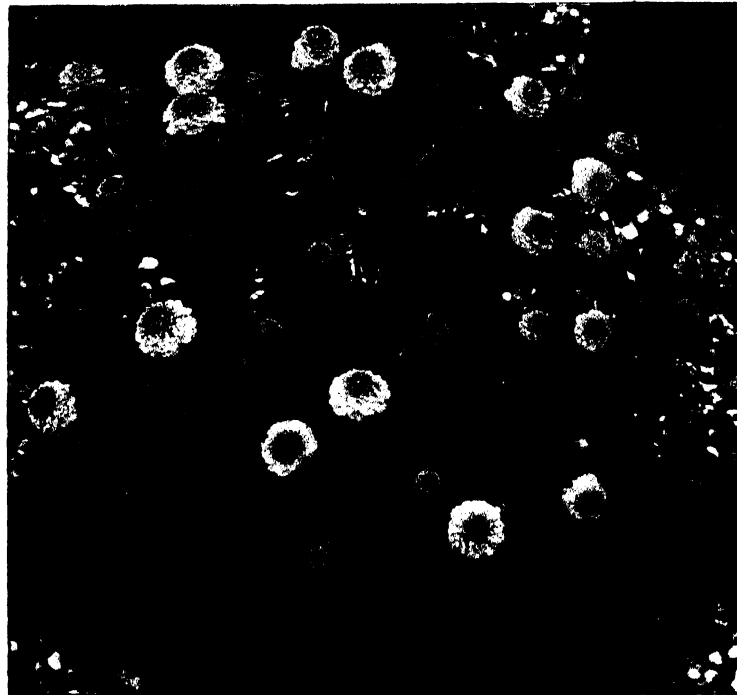
toothed. Branching flowering stems bear 1-4 cup-shaped, red, pink, yellow, or white flowers, 3-5cm (1¼-2in) across, with purple-black centres, in late spring and early summer. Cultivation group 5. ↑ 20-45cm (8-18in), ↔ 20cm (8in). E. Mediterranean, N.E. Africa, S.W. Asia. \* **Turban Group** cultivars have double flowers.

**R. bulbosus** (Bulbous buttercup).

Erect, hairy, sometimes semi-evergreen perennial with fibrous roots and a swollen, corm-like stem base. Ovate, 3-lobed, dark green basal and lower stem leaves, to 12cm (5in) long, each have a long-stalked middle segment. In late spring and early summer, bears branched, cyme-like panicles of several saucer-shaped, rich golden yellow flowers, 2-3cm (¾-1¼in) across, with reflexed, paler yellow sepals. Cultivation group 2. ↑ 15-40cm (6-16in), sometimes to 80cm (32in), ↔ 30cm (12in). Europe, N. Africa, Caucasus. \*\*\*

**var. farreri** see 'F.M. Burton'. 'F.M. Burton', syn. **var. farreri**, bears glossy, pale creamy yellow flowers. '**Speciosus Plenus**' of gardens see *R. constantinopolitanus* 'Plenus'.

**R. bullatus**. Tuberous perennial with broadly obovate, puckered, glossy, dark green, basal leaves, to 10cm (4in) long, hairy beneath, and often with 3 shallow lobes or teeth at the tips. In autumn, short, unbranched stems each bear 1 or 2 bowl-shaped, violet-scented, shining yellow flowers, 2.5cm (1in) across. Unusual in being autumn-flowering and scented. Cultivation group 5. ↑ to 10cm (4in). W. to E. Mediterranean, (including Spain and Portugal). \*\*


*Ranunculus constantinopolitanus* 'Plenus'

**R. calandrinoides** [ ] Clump-forming perennial with thick, fleshy roots and broadly lance-shaped to ovate-lance-shaped, hairless, blue-green leaves, to 7cm (3in) long, dying down in summer. In late winter and early spring, unbranched stems bear short, cyme-like panicles of up to 3 cup-shaped, usually pink-flushed white flowers, to 5cm (2in) across. Cultivation group 3 or 5. ↑ 20cm (8in), ↔ 15cm (6in). Atlas Mountains. \*\*\*

**R. constantinopolitanus**. Clump-forming perennial with short rhizomes and deeply 3-lobed, mid-green basal and lower stem leaves, 3-10cm (1¼-4in) long. From mid-spring to midsummer, branched stems bear cyme-like panicles of 3-8 bowl-shaped, glossy, bright yellow flowers, to 3cm (1¼in) across, with reflexed, pale yellow sepals. Cultivation group 1 or 2. ↑ 30-70cm (12-28in), ↔ 30cm (12in). E. Europe, Balkans, Cyprus, Syria, Iraq, Iran, Caucasus, Ukraine (Crimea). \*\*\* **'Plenus'** [ ] syn. *R. bulbosus* 'Speciosus Plenus' of gardens. *R. gouanii* 'Plenus', *R. speciosus* 'Flore Pleno', produces double yellow flowers; ↑ 30cm (12in), ↔ 15cm (6in).

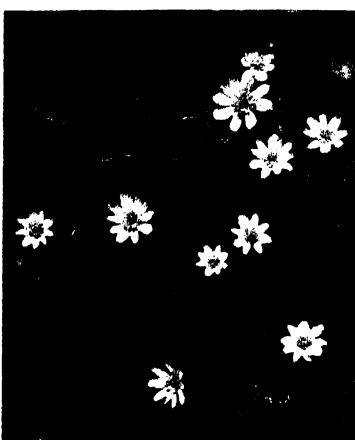
**R. crenatus**. Rosette-forming, semi-evergreen perennial with fibrous roots and rounded, glossy, mid-green leaves, 5-15mm (¼-½in) long, toothed or shallowly 3-lobed at the tips. In summer, flowering stems bear solitary, or occasionally pairs of shallowly cup-shaped white flowers, 2.5cm (1in) across. Cultivation group 3. ↑ to 8cm (3in). E. Alps, C. Apennines, mountains of Balkan peninsula, S. and E. Carpathians. \*\*\*

**R. ficaria** (Lesser celandine, Pilewort). Very variable, tuberous perennial with long-stalked, broadly heart-shaped, glossy, usually dark green, basal leaves, 2-5cm (¾-2in) long, often with silver or bronze markings and scalloped or toothed margins. In early spring, bears usually solitary, shallowly cup-shaped, brilliant, shining, golden yellow flowers, 2-3cm (¾-1¼in) across, fading to white with age. The leaves die down after flowering. Some variants produce axillary bulbils and are extremely invasive. Cultivation group 1. ↑ 5cm (2in), ↔ to 30cm (12in) or more. Europe, N.W. Africa, S.W. Asia. \*\*\*

**f. albus** [ ] has very pale yellow flowers, fading to white, and leaves marked dark bronze. **f. aurantiacus** [ ] syn. 'Cupreus', has silvery leaves, each with a bronze central mark, and deep coppery orange flowers, darker on the reverse. '**Brazen Hussy**' produces glossy, deep chocolate-brown leaves, and shining, golden yellow flowers with a bronze reverse. Seedlings often have bronze leaves. '**Collarette**' produces leaves with bronze central bands, and double yellow flowers with anemone-form centres. '**Cupreus**' see *f. aurantiacus*. '**Double Bronze**' bears double yellow flowers with a bronze reverse to the petals. '**Double Cream**' see 'Double Mud'. '**Double Mud**', syn. 'Double Cream', has double cream flowers, with a grey-tinted reverse to the petals. '**Salmon's White**' bears pale green leaves with bronze marks, and cream flowers, tinted blue-purple on the reverse of the petals.

R


*Ranunculus aquatilis*

*Ranunculus calandrinoides*

*Ranunculus ficaria* f. *albus*




*Ranunculus ficaria* f. *aurantiacus*

***R. flammula*** (Lesser spearwort). Marginal aquatic perennial with semi-erect, red-tinted green stems bearing broadly ovate to linear-lance-shaped, dark green leaves, 1–2.5cm (½–1in) long. Shallowly cup-shaped, bright yellow flowers, 2cm (¾in) across, are borne in few-flowered, cyme-like panicles, or sometimes singly, in early summer. Cultivation group 4. ↑70cm (28in), ↔75cm (30in). Europe, Asia. \*\*\*

***R. glacialis***. Hummock-forming perennial with fibrous roots and very broadly ovate, deeply 3-lobed, slightly fleshy, hairless, dark green leaves, 3–8cm (1¼–3in) long. In late spring and early summer, flowering stems bear solitary, occasionally 2 or 3, shallowly cup-shaped, white or pink flowers, 2–3cm (¾–1¼in) across, flushed deep pink after fertilization. Protect from excessive winter wet. Cultivation group 3. ↑5–25cm (2–10in), ↔5cm (2in). Spain (Sierra Nevada), Pyrenees, Alps, Greenland. \*\*\*

***R. gouanii* 'Plenus'** see *R. constantinopolitanus* 'Plenus'.

***R. gramineus*** [♀]. Clump-forming perennial, very variable in size and habit, with basal clusters of grass-like, linear to lance-shaped, very finely hairy, glaucous leaves, to 20cm (8in) long. In late spring and early summer, branched flowering stems bear 1–3 cup-shaped, lemon-yellow flowers, to 2cm (¾in) across. Cultivation group 2. ↑to 30cm (12in), ↔to 15cm (6in). S.W. Europe. \*\*\*

***R. insignis***. Semi-evergreen, clump-forming perennial, similar to *R. lyallii*,


*Ranunculus gramineus*

*Ranunculus lingua*

with ovate-lance-shaped, leathery, dark green, basal leaves, to 15cm (6in) long, brown hairy beneath. In summer, bears panicles of 5–20 shallowly cup-shaped, deep yellow flowers, 2–5cm (¾–2in) across. Cultivation group 1 or 2. ↑to 60cm (24in), ↔to 30cm (12in). New Zealand. \*\*\*

***R. lingua*** [♂] (Greater spearwort). Marginal aquatic perennial with erect, hollow stems. Non-flowering stems bear long-stalked, ovate to ovate-oblong, blue-green leaves, to 20cm (8in) long, with heart-shaped bases. In early summer, branched flowering stems, with short-stalked, linear to lance-shaped leaves, bear cup-shaped, golden yellow flowers, 5cm (2in) across, singly or in few-flowered, cyme-like panicles. Cultivation group 4. ↑1.5m (5ft), ↔2m (6ft). Europe to Siberia. \*\*\*

***R. lyallii*** (Giant buttercup, Mount Cook lily). Semi-evergreen, clump-forming, rhizomatous perennial with peltate, rounded, scalloped, leathery, dark green, basal leaves, to 30cm (12in) long, becoming progressively smaller up the branching stems. Cyme-like panicles of 5–15 cup-shaped white flowers, 5cm (2in) across, are borne in summer.


*Ranunculus parnassifolius*

Requires cool conditions. Cultivation group 1 or 2. ↑to 1m (3ft), ↔to 35cm (14in). Rocky areas in New Zealand. \*\*\* (borderline)

***R. montanus* 'Molten Gold'** ♀

Vigorous, mat-forming, rhizomatous perennial producing rounded-obovate, 3- to 5-lobed, glossy, deep green basal leaves, to 4cm (1½in) long, and narrower stem leaves. In early summer, short flowering stems each bear 1–3 shallowly cup-shaped, shining, bright gold-yellow flowers, 2–3cm (¾–1¼in) across. Cultivation group 2. ↑10cm (4in), ↔30cm (12in). \*\*\*

***R. parnassifolius*** [♂] Rosette-forming perennial with fibrous roots and broadly lance-shaped to ovate-heart-shaped, hairy, dark green, basal leaves, to 5cm (2in) long. In early summer, stems bear solitary, occasionally 2 or 3, cup-shaped flowers, 2.5cm (1in) across, opening white but often turning pink with age, usually finely pink- or red veined. Cultivation group 3. ↑15cm (6in), ↔10cm (4in). High screes in the Alps, Pyrenees, N. Spain. \*\*\*

***R. repens* 'Pleniflorus'**, syn. *R. repens* var. *pleniflorus* (Double creeping buttercup). Erect, fast-spreading, hairy, stoloniferous perennial. Long-stalked, triangular-ovate, mid-green basal and lower stem leaves, 9cm (3½in) long, each have 3 lobes, further cut into 3 toothed segments, the middle lobe long-stalked. Branched stems bear cyme-like panicles of double, glossy, bright yellow flowers, 1.5–2cm (½–¾in) across, with tightly packed petals and pale yellow sepals, from late spring to midsummer. Cultivation group 1 or 2. ↑30–60cm (12–24in), ↔2m (6ft). \*\*\*

***R. repens* var. *pleniflorus*** see *R. repens* 'Pleniflorus'.

***R. speciosus* 'Flore Pleno'** see *R. constantinopolitanus* 'Plenus'.

## RANZANIA

### BERBERIDACEAE

Genus of one species of herbaceous perennial found in deciduous mountain woodland in S. Japan. It has short rhizomes, and is grown for its attractive foliage and flowers. Smooth stems, with opposite, 3-palmate leaves at their tips, bear pendent, bell-shaped flowers, either singly or in few-flowered cymes, before the leaves have fully developed; the long flower-stalks become upright as berries form. Grow in a woodland garden or shady border.

- **HARDINESS** Hardy to -10°C (14°F), but late frosts may damage new growth.
- **CULTIVATION** Grow in moist, leafy, humus-rich soil in partial or deep shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn; seedlings will flower in about 4 years. Divide in early spring.
- **PESTS AND DISEASES** Susceptible to slug damage in spring.

***R. japonica***, syn. *Podophyllum japonicum*. Rhizomatous perennial with smooth stems, each bearing 2 or 3 opposite, broadly triangular leaves, to 8cm (3in) long, composed of 3 broadly ovate to heart-shaped leaflets, mid-green above, bluish green beneath. In mid- and late spring, long flower-stalks bear pendent, bowl-shaped, pale mauve-blue flowers, 2.5–3cm (1–1¼in) across, each

with 6 large, pointed tepals and 6 small petals that recurve with age. The flowers are followed by elliptic white berries, to 1.5cm (½in) long. ↑to 30cm (12in), ↔20cm (8in). S. Japan (N. Hondo). \*\*\*

## RAOULIA

### ASTERACEAE/COMPOSITAE

Genus of about 20 species of evergreen perennials or subshrubs from screes and open rocky places at high and low altitudes in New Zealand. They form mats or cushions of dense, overlapping, linear to diamond- or spoon-shaped, silvery leaves. The usually small, disc-shaped flowerheads are borne singly or in few-flowered, terminal clusters. They thrive in regions with cool summers and mild winters, and are excellent foliage plants for a rock garden, raised bed or scree bed, or for an alpine house.

• **HARDINESS** Hardy to about -10°C (14°F) in well-drained soil.

• **CULTIVATION** Under glass, grow in a mix of equal parts loam, leaf mould, and sharp sand, with a top dressing of grit, in bright filtered light. When in growth, water freely (avoiding the foliage); keep just moist in winter. Outdoors, grow in gritty, humus-rich, moist but sharply drained soil in full sun, or in partial shade in warm, dry areas. Protect from excessive winter wet.

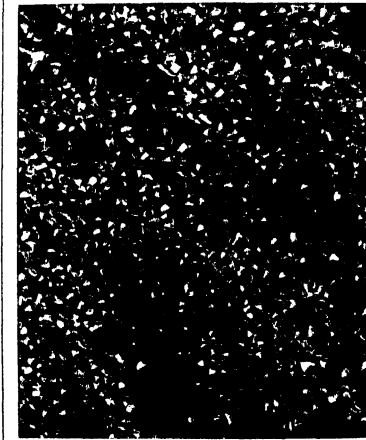
• **PROPAGATION** Divide or separate rooted stems of mat-forming species in spring. Root new rosettes of cushion-forming species as cuttings in early summer in partial shade; water carefully and moderately until rooted.

• **PESTS AND DISEASES** Prone to red spider mites and aphids under glass.

***R. australis*** [♂] syn. *R. lutescens*.

Prostrate, mat-forming, grey-silver perennial with branching, rooting stems, densely clothed in overlapping, spoon-shaped, silver-hairy leaves, 2mm (⅛in) long. In summer, bears sulphur-yellow flowerheads, 5mm (¼in) across. Plants sold under this name are often variants of *R. hookeri*. ↑1cm (½in), ↔30cm (12in) or more. New Zealand. \*\*\*

***R. eximia*** (Vegetable sheep). Extremely dense, cushion-forming perennial with tightly packed rosettes of overlapping, oblong to ovate, grey-hairy leaves, to 2mm (⅛in) long. Yellowish white flowerheads, to 3mm (⅓in) across, are borne in late spring or summer. Resents winter wet; best grown in an alpine


*Raoulia australis*



*Raoulia haastii*



*Raoulia hookeri* var. *albosericea*

house. ↓ 5cm (2in), ↔ to 10cm (4in). New Zealand. \* \*

**R. haastii** [■] Dense, cushion-forming perennial with loosely overlapping, ovate to linear-oblong, silky-hairy leaves, to 5mm (¼in) long; pale green at first, they darken in summer, becoming brown-tinted in winter. In spring, bears yellow flowerheads, to 5mm (¼in) across. ↓ 1cm (½in), ↔ 30cm (12in) or more. New Zealand. \* \*

**R. hookeri** var. *albosericea* [■] Mat-forming perennial producing branching, rooting stems clothed in closely overlapping, narrowly obovate-spoon-shaped leaves, 2mm (⅛in) long, covered with white-silky hairs. Silky-hairy, pale green or straw-coloured flowerheads, to 7mm (¼in) across, are borne briefly in summer. Similar to, but less tolerant of winter wet than *R. australis*. ↓ 1cm (½in), ↔ to 20cm (8in). New Zealand (North Island). \* \*

**R. leontopodium** see *Leucogenes leontopodium*.

**R. x loganii** see *Leucoraoulia loganii*.

**R. lutescens** see *R. australis*.

## RAPHIA

Raffia

ARECACEAE/PALMAE

Genus of about 30 species of massive, single- or cluster-stemmed, spreading, monocarpic palms, mainly found in moist, wet, or swampy sites and by streams in Central and South America, Africa, and Madagascar. Some species have short, underground stems (caudices) and appear to be stemless.

The pinnate, light to mid-green leaves,

with folded linear leaflets, are produced in terminal heads or tufts. Panicles of bowl-shaped, 3-petalled flowers are borne either between the leaves or just beneath the lowest leaf. In frost-prone areas, grow young specimens as houseplants, or in a warm greenhouse or conservatory. In tropical areas, use the stemless species in a border, and those with stems as specimens on a lawn.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pot on or top-dress in spring. Outdoors, grow in moist, moderately fertile, humus-rich soil in partial shade.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**R. farinifera** ♀ Large, spreading palm with a sturdy trunk covered in old leaf bases. Erect to arching leaves, to 20m (70ft) long, each have numerous linear leaflets to 2m (6ft) long; they are waxy, light to mid-green above, and waxy, powdery white beneath. Green flowers, 8–15mm (⅜–½in) across, are borne in panicles to 3m (10ft) long, in summer, followed by ovoid to ellipsoid, scaly orange fruit, 7–10cm (3–4in) long. ↓ to 25m (80ft), ↔ to 20m (70ft) or more. Tropical Africa, Madagascar. ☼ (min. 16°C/61°F)

▷ **Raphidophora** see *Rhaphidophora*

▷ **Raripila, Red** see *Mentha x smithiana*

▷ **Raspberry, Flowering** see *Rubus odoratus*

▷ **Rasp fern, Common** see *Doodia media*

▷ **Rata** see *Metrosideros*, *M. robustus*  
**Northern** see *M. robustus*

## RATIBIDA

Mexican hat, Prairie coneflower

ASTERACEAE/COMPOSITAE

Genus of 5 or 6 species of biennials and perennials, mainly found on prairies in North America and Mexico. Woody-based crowns produce erect stems, branching above the middle, that bear alternate, pinnate to pinnatifid leaves and solitary, terminal flowerheads. They are cultivated for their daisy-like flowerheads, which have a few long, yellow or yellow-brown ray-florets and prominent, spherical or cone-shaped centres of brown disc-florets. Grow in a sunny border, gravel garden, or wild-flower meadow. The flowerheads are good for cutting.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in dry, well-drained, neutral to slightly alkaline, moderately fertile soil in full sun. Ratibidas are drought-resistant.

• **PROPAGATION** Sow seed in containers in a cold frame in early spring. Divide perennials in spring when young (the roots become woody with age).

• **PESTS AND DISEASES** Trouble free.

**R. columnifera** [■] syn. *Lepachys columnifera*, *Rudbeckia columnifera*. Erect perennial, sometimes grown as a biennial or annual, with pinnate, hairy, greyish green leaves, 3–15cm (1¼–6in)



*Ratibida columnifera*

long; the leaflets are usually linear, entire, and often pinnatifid. From early summer to early autumn, long, thin, branching stems bear daisy-like flowerheads, to 8cm (3in) across, with reflexed yellow ray-florets and large, columnar centres of green, then brown disc-florets. ↓ to 80cm (32in), ↔ 30cm (12in). S.W. Canada, W. and C. USA to New Mexico. \* \* \*. **f. pulcherrima** bears flowerheads with purple-brown or reddish brown ray-florets; ↓ 30cm (12in), ↔ 20cm (8in).

**R. pinnata**, syn. *Lepachys pinnata* (Drooping coneflower, Grey-head coneflower). Upright, stout-stemmed, branching perennial, sometimes grown as a biennial or annual. Pinnate, toothed, bluish green leaves, 2–12cm (¾–5in) long, with lance-shaped, sparsely hairy leaflets, are borne mainly on the lower, unbranched portion of the stems. From summer to autumn, bears long-stemmed, daisy-like flowerheads, to 12cm (5in) across, with bright yellow ray-florets and red-brown disc-florets forming prominent, oval, cone-shaped centres. ↓ to 1.2m (4ft), ↔ to 45cm (18in). C. North America. \* \* \*

▷ **Rattan cane** see *Calamus rotang*

▷ **Rattan vine** see *Berchemia scandens*

▷ **Rattlebox** see *Crotalaria*

▷ **Rattlesnake plant** see *Calathea lancifolia*

▷ **Rauli** see *Nothofagus procera*

## RAVENALA

Traveller's tree

STRELITZIACEAE

Genus of one species of small, evergreen tree, occurring in open rainforest or deforested areas in Madagascar, grown for its foliage, spathes, and palm-like habit. The large, alternate, long-stalked, banana-like leaves have expanded leaf bases that accumulate water. Boat-shaped spathes, enclosing cymes of tiny, 3-petalled flowers, are produced from the leaf axils. Where temperatures fall below 16–18°C (61–64°F), grow in a warm greenhouse. In tropical regions, use as a distinctive specimen tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light, with high humidity. Water freely in spring and summer, applying a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in fertile, moist, but well-drained

soil in full sun. Provide shelter from strong winds.

• **PROPAGATION** Sow seed at 20–21°C (68–70°F), or remove rooted suckers, in spring.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**R. madagascariensis** ♀ Large, erect tree with an unbranched, palm-like trunk topped by a fan-shaped crown of 2-ranked, paddle-shaped, leathery, lustrous, rich green leaves. The oblong leaf-blades, 2–4m (6–12ft) long, are borne on thick, grooved stalks, of about the same length, closely overlapping at the bases. On mature plants, tiny, narrow white flowers, each with 6 tepals, emerge from pointed, boat-shaped, greenish white spathes, a few at a time, in summer; they are followed by fruit capsules that contain seeds with bright blue arils. ↓ 10–16m (30–52ft), ↔ 3–6m (10–20ft). Madagascar. ☼ (min. 16–18°C/61–64°F)

## REBUTIA

syn. SULCOREBUTIA, WEINGARTIA

CACTACEAE

Genus of about 40 species of mostly dwarf, clump-forming, simple or clustering, perennial cacti found in mountainous terrain, to 4,000m (13,000ft) high, in Bolivia and N. and N.W. Argentina. They are cultivated for their habit and colourful flowers. The spherical to short-cylindrical, ribbed stems are divided into low tubercles in some species. The areoles have mainly short, bristly spines and, in summer, those near the stem bases bear many trumpet-shaped, diurnal flowers. In frost-prone regions, grow in a temperate greenhouse or as houseplants. In warm, dry areas, use in a desert garden or a raised bed.

• **HARDINESS** Frost tender.

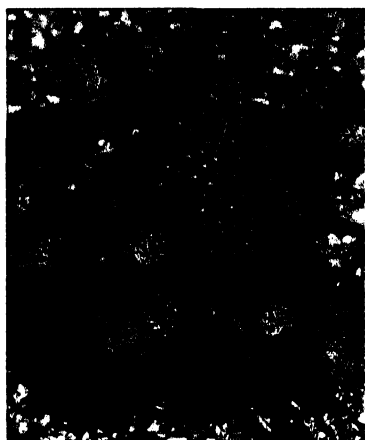
• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with low humidity. From spring to summer, water moderately and apply a balanced liquid fertilizer 3 or 4 times; keep completely dry at other times. Outdoors, grow in moderately fertile, gritty, sharply drained soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring, or remove offsets in spring or summer.

• **PESTS AND DISEASES** Prone to mealybugs early in the growing season.



*Rebutia aureiflora*

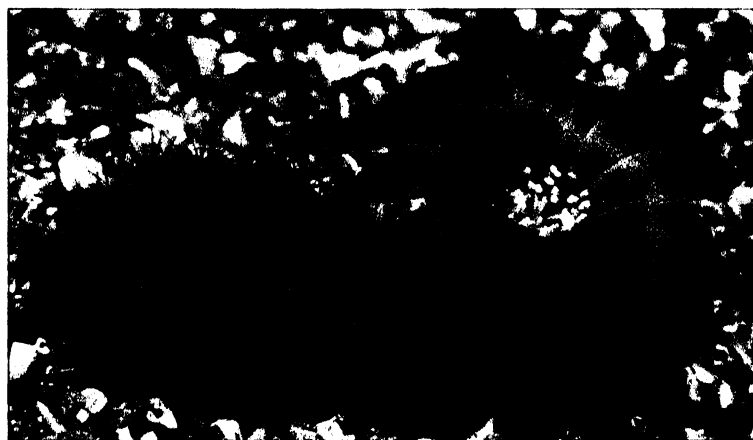
*Rebutia fiebrigii*

***R. aureiflora*** [X] Freely clustering cactus with depressed-spherical to spherical, mid-green to greenish violet, often red-tinged stems, to 3.5cm (1½in) thick. The stems are covered with prominent, spirally arranged tubercles set with white areoles and greyish white spines (10–16 radials and 1–4 longer centrals). White-throated, yellow or yellowish orange, sometimes orange, red, or purple flowers, 4cm (1½in) across, are borne in summer. ↓ 10cm (4in), ↔ to 20cm (8in). N.W. Argentina. \* (min. 5°C/41°F)

***R. fiebrigii*** [X] syn. *R. muscula*. Variable, clustering cactus with spherical to ovoid or depressed-spherical, dark green stems, 6cm (2½in) thick, with up to 18 ribs. White areoles bear 30–40 white radial spines and 2–5 longer, brownish white centrals. Bright yellowish brown or bright orange to red flowers, 2–3.5cm (¾–1½in) across, are borne in summer. ↓ 10cm (4in), ↔ to 15cm (6in). Bolivia, N.W. Argentina. \* (min. 5°C/41°F)

***R. heliosa***. Initially simple, later clustering cactus producing depressed-spherical to cone-shaped, greyish green stems, to 2.5cm (1in) thick, with 15–40 low-tubercled, spirally arranged ribs. Brown-felted areoles have 24–26 tiny, comb-like, undifferentiated white spines. In summer, bears orange or deep rose-red flowers, 4cm (1½in) across; the inner petals often have a central lilac stripe. ↓ 10cm (4in), ↔ 15cm (6in). Bolivia. \* (min. 5°C/41°F)

***R. krainziana*** [X] Clustering cactus with depressed-spherical, warty, bright to dull green stems, 4cm (1½in) thick. The stems have 20 or more, spirally

*Rebutia violaciflora*

arranged ribs, and close-set white areoles with 8–12 tiny, undifferentiated white spines. Bright red flowers, to 5cm (2in) across, sometimes with a violet sheen and violet throats, are borne in summer. ↓ 5cm (2in), ↔ 20cm (8in). Probably of garden origin. \* (min. 5°C/41°F)

***R. minuscula* subsp. *violaciflora*** see *R. violaciflora*.

***R. muscula*** see *R. fiebrigii*.

***R. neocumingii*** [X] syn. *Weingartia neocumingii*. Simple cactus, of variable form and shape, with hemispherical to spherical, bright dark green stems, 10cm (4in) thick. The stems have 16–18 warty ribs, white areoles, and brown-tipped yellow spines (16–20 radials and 3–10 thicker centrals). Orange or yellow flowers, 2cm (¾in) or more across, are borne in summer. ↓ 20cm (8in), ↔ 10cm (4in). Bolivia. \* (min. 5°C/41°F)

***R. pulchra*** see *R. rauschii*.

***R. pygmaea***. Simple or clustering cactus producing ovoid to short-cylindrical, mid- to dark green stems, 1–2cm (½–¾in) thick, with tubercles arranged in 8–12 spiral rows and white spines, 2–3mm (⅛–¼in) long (9–11 radials, no centrals). Solitary, pink-purple flowers, 2–2.5cm (¾–1in) across, are borne on the lower parts of the stems in summer. ↓ 4cm (1½in), ↔ 8cm (3in). N.W. Argentina. \* (min. 10°C/50°F)

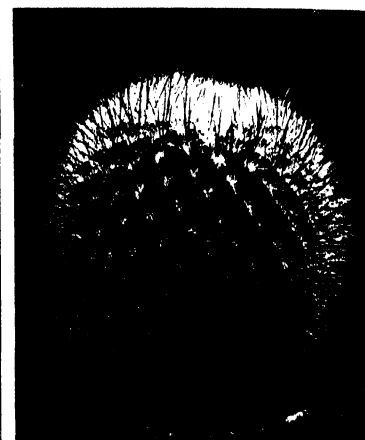
***R. rauschii***, syn. *R. pulchra*, *Sulcorebutia rauschii*. Offsetting cactus with a tuberous rootstock and ovoid, blackish green to violet stems, 3cm (1¼in) thick, with up to 16, spirally arranged, low-tubercled ribs. White-felted areoles bear yellow or black spines

(up to 11 radials, no centrals). Carmine-red flowers, 3cm (1¼in) across, often with paler red or white throats, are borne in summer. ↓ 5cm (2in), ↔ 10cm (4in). Bolivia. \* (min. 5°C/41°F)

***R. senilis***. Freely offsetting cactus producing depressed-spherical, dark green stems, to 7cm (3in) thick, with about 18 warty, spirally arranged ribs, and white areoles bearing 25–30 long, fine, yellowish white or chalky white, undifferentiated spines. Lemon-yellow, or white-throated, carmine-red flowers, 3.5cm (1½in) across, are borne in summer. ↓ 8cm (3in), ↔ 15cm (6in). N. Argentina. \* (min. 5–7°C/41–45°F)

***R. spegazziniana*** [X] Clustering cactus producing spherical, pale to deep green stems, 5cm (2in) thick, with about 18 prominently warty ribs, white-felted areoles, and white spines (14 radials and 3–6 shorter centrals). Pale vermilion to dark red flowers, 2.5–3cm (1–1¼in) across, are borne in summer. ↓ to 10cm (4in), ↔ to 20cm (8in). N.W. Argentina. \* (min. 5–7°C/41–45°F)

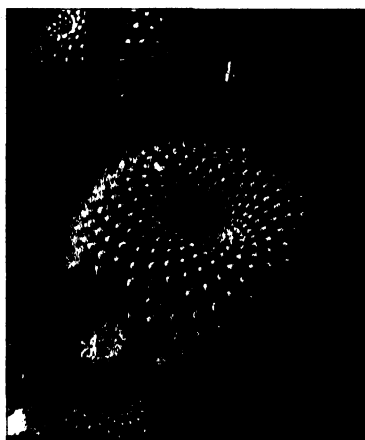
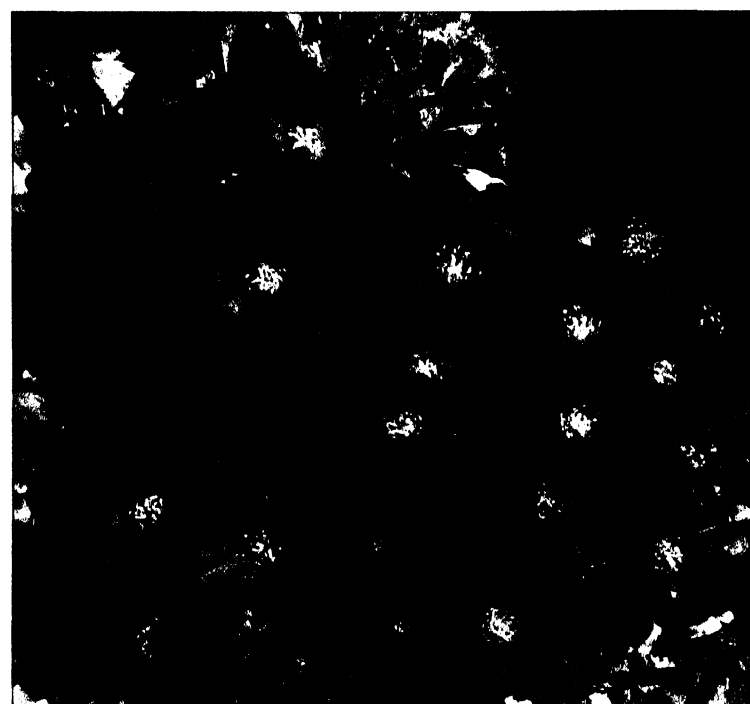
***R. spinosissima***. Freely offsetting cactus producing spherical, bright green stems, 5–6cm (2–2½in) thick, with 15 or more warty, spirally arranged ribs,

*Rebutia tiraquensis*

white-hairy areoles, and white spines (numerous radials and 5 or 6 thicker, brown-tipped centrals). Pale orange to mid-red flowers, 3–4cm (1¼–1½in) across, are borne in summer. ↓ to 10cm (4in), ↔ 15cm (6in). N. Argentina. \* (min. 5–7°C/41–45°F)

***R. tiraquensis*** [X] Upright cactus with mid-green stems, simple at first, but eventually clump-forming, covered in spirally arranged tubercles. Elongated areoles, to 7mm (¼in) long, bear 2–4 reddish brown central spines, 6–7cm (2½–3in) long, and 14–18 glassy white radials. Solitary, funnel-shaped, purple or magenta flowers, 3.5cm (1½in) across, are borne in summer. ↓ 9–10cm (3½–4in), ↔ 10cm (4in). Bolivia. \* (min. 7–10°C/45–50°F)

***R. violaciflora*** [X] syn. *R. minuscula* subsp. *violaciflora*. Freely clustering cactus with slightly flattened, spherical, dull mid- to dark green stems, 5cm (2in) thick, with 16–20 warty, spirally arranged ribs, and brown areoles bearing 25–30 undifferentiated white spines. Red or bright pinkish purple flowers, 3–4cm (1¼–1½in) across, are produced in summer. ↓ 5cm (2in), ↔ 12cm (5in). N. Argentina. \* (min. 5°C/41°F)

*Rebutia krainziana**Rebutia neocumingii**Rebutia spegazziniana*

- ▷ *Reichsteineria leucotricha* see *Sinningia canescens*
- ▷ **Redbud**,  
  - California** see *Cercis occidentalis*
  - Chinese** see *Cercis chinensis*
  - Eastern** see *Cercis canadensis*
  - Western** see *Cercis occidentalis*
- ▷ **Red cloak**, **Brazilian** see *Megasepasma erythrochlamys*
- ▷ **Red cole** see *Armoracia rusticana*
- ▷ **Red hot poker** see *Kniphofia*
- ▷ **Red ink plant** see *Phytolacca americana*
- ▷ **Red pine** see *Pinus resinosa*  
  - Chinese** see *P. tabulaeformis*
  - Japanese** see *P. densiflora*
- ▷ **Red tree** see *Peperomia metallica*
- ▷ **Redwood**,  
  - Coastal** see *Sequoia sempervirens*
  - Dawn** see *Metasequoia glyptostroboides*
  - Giant** see *Sequoiadendron giganteum*
  - Sierra** see *Sequoiadendron giganteum*
- ▷ **Reed** see *Phragmites*  
  - Burr** see *Sparganium*
  - Common** see *Phragmites australis*
  - Giant** see *Arundo donax*
  - Norfolk** see *Phragmites australis*
- ▷ **Reedmace** see *Typha*  
  - Narrow-leaved** see *T. angustifolia*

## REHDERODENDRON

STYRACACEAE

Genus of 9 species of deciduous shrubs and trees from mountain woodland in China and Vietnam. They are valued for their cup-shaped, 5-petalled white flowers, borne in leafless, axillary, cyme-like panicles or racemes, and their oblong or elliptic, ribbed, woody fruits. The leaves are alternate and finely toothed. *R. macrocarpum*, the only species usually cultivated, is ideal for a woodland garden.

- **HARDINESS** Hardy to -10°C (14°F).
- **CULTIVATION** Grow in fertile, moist but well-drained, neutral to acid soil in sun or partial shade, sheltered from cold, dry winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*R. macrocarpum* ♀ Small, broadly upright, deciduous tree with red young shoots and elliptic to oblong, glossy, dark green leaves, to 15cm (6in) long. As the leaves emerge in late spring, bears cyme-like racemes of 6–10 cup-shaped, fragrant, creamy white flowers, 6cm (2½in) across. Flowers are followed by pendent, ellipsoid, green, then red fruit, to 7cm (3in) long. ↓ 10m (30ft), ↔ 7m (22ft). W. China. ★★

## REHMANNIA

SCROPHULARIACEAE

Genus of 8 or 9 species of perennials, sometimes grown as biennials, from woodland and stony sites in China. They are cultivated for their large, foxglove-like flowers, which are 2-lipped and borne in terminal racemes. The leaves, arranged in basal rosettes, are large, obovate to oblong, shallowly lobed or toothed, conspicuously veined, and hairy. Grow at the front of a sunny border; in regions with mild, damp winters grow permanently, or overwinter, in a cool greenhouse.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, moderately fertile, humus-rich soil in a sheltered site in full sun. In regions where winters are mild and damp, lift in autumn, pot up, and overwinter in a cool, dry place, at 7°C (45°F).
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in late winter; seedlings will flower in 12–14 months. Take root cuttings in late autumn, or softwood cuttings from basal shoots before flowering. Separate and pot up runners in spring.
- **PESTS AND DISEASES** Susceptible to slug and snail damage.

*R. angulata* of gardens see *R. elata*.  
*R. elata* ♂ syn. *R. angulata* of gardens (Chinese foxglove). Rosette-forming perennial with obovate, lobed or toothed, conspicuously veined, hairy, mid-green, basal leaves, 20–25cm (8–10in) long. Branched stems bear leafy racemes of semi-pendent, tubular flowers, 7–10cm (3–4in) long, from summer to autumn. The flowers have bright, pinkish purple lips and paler tubes; they are red-spotted, especially in the throats. ↓ to 1.5m (5ft), ↔ 50cm (20in). China. ★★  
*R. glutinosa* ♀ Sticky, purple-hairy perennial with slender runners and rosettes of obovate, scalloped, conspicuously veined, basal leaves, to 10cm (4in) long, mid-green above and often red-tinted beneath. From mid-spring to summer, branched, leafy stems bear pendent, tubular flowers, to 5cm (2in) long, in few-flowered, cyme-like racemes, or singly on long flower-stalks, from the leaf axils. The flowers have reddish brown tubes, marked with darker reddish purple veins, and pale yellow-brown lips. ↓ 15–30cm (6–12in), ↔ to 30cm (12in). N. China. ★★



Rehmannia elata

## REINECKEA

CONVALLARIACEAE/LILIACEAE

Genus of one species of rhizomatous, evergreen perennial from deciduous woodland or sandy open areas among shrubs in China and Japan. It is grown for its arching, pale green leaves and spikes of tiny, fragrant pink flowers. *R. carnea* provides attractive, leafy ground cover, but rarely flowers freely or bears its spherical red berries in areas with cool summers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich, neutral or acid soil in partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Separate rhizomes from the margins of established clumps in spring.
- **PESTS AND DISEASES** Susceptible to damage from slugs and snails.

*R. carnea*. Evergreen, rhizomatous perennial with tufts of arching, linear-lance-shaped, glossy, mid- to dark green leaves, 15–35cm (6–14in) long, borne in 2 ranks at the ends of the rhizomes. In late spring, bears dense, terminal spikes of shallowly cup-shaped, pale to deep pink flowers, to 1cm (½in) across, each with 6 segments, the tips reflexing with age. In areas with warm summers, spherical red berries, 8–10mm (⅜–½in) across, are produced in autumn. ↓ 20cm (8in), ↔ 40cm (16in) or more. China, Japan. ★★

## REINWARDTIA

LINACEAE

Genus of 1 or 2 species of evergreen shrubs or subshrubs, related to flaxes (*Linum*), found in mountain woodland from Pakistan to S.W. China and S.E. Asia. The alternate, elliptic- to oblong-obovate leaves may be entire or toothed. They are grown for their funnel-shaped flowers, each with 5 spreading petal



Reinwardtia indica

lobes, borne in terminal or axillary, cyme-like clusters, occasionally singly. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse. In milder regions, grow at the base of a sunny wall, or in a courtyard garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light, with shade from hot sun and moderate humidity. In growth, mist regularly, water freely, and apply a balanced liquid fertilizer monthly; water moderately at other times. Winter flowers are borne most freely with a minimum temperature of 13°C (55°F). Outdoors, grow in fertile, moist but well-drained, humus-rich soil in full sun. Pruning group 8: tip-prune young plants to encourage branching.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root softwood cuttings in early summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*R. indica* ♂ syn. *R. tetragyna*, *R. trigyna* (Yellow flax). Open, erect to spreading shrub with elliptic- to oblong-obovate, finely toothed, deep green to greyish green leaves, 3–8cm (1¼–3in) long. From autumn to late spring, produces funnel-shaped, bright golden yellow flowers, 3–5cm (1¼–2in) across, singly or in short, cyme-like clusters from the leaf axils. ↓ 60–90cm (24–36in). Pakistan, N. India, Burma, S.W. China, S.E. Asia. ☼ (min. 7°C/45°F)

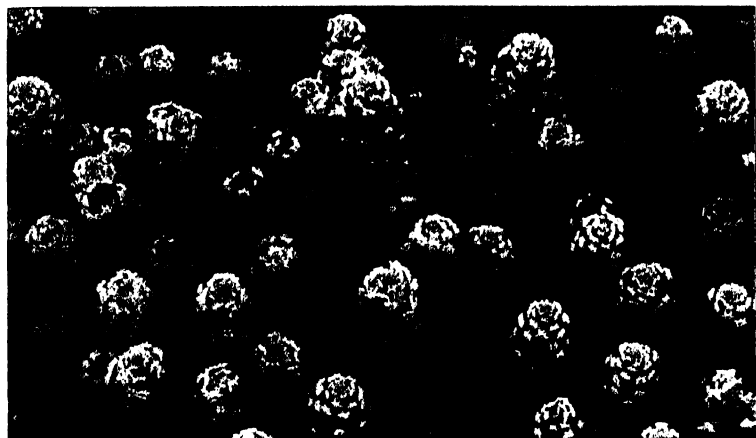
*R. tetragyna* see *R. indica*.  
*R. trigyna* see *R. indica*.

## RESEDA

Mignonette

RESEDACEAE

Genus of 55–60 species of erect to spreading, branching, and occasionally rosette-forming annuals and perennials from stony hillsides, scrub, or field margins, mainly in the Mediterranean and S.W. Asia, but also in E. Africa and N.W. India. They have alternate, small, variably shaped, entire, toothed, or pinnatifid, prominently veined, mostly mid-green leaves. Star-shaped, greenish white or greenish yellow, sometimes red-tinged flowers, each with 4–10 narrow petals, are borne in long, unbranched or branching, spike-like racemes from spring to autumn. *R. odorata* has been grown for centuries, mainly for its fragrant flowers, which hold their scent



*Reseda odorata*

for months even when cut and dried; modern cultivars have larger, more strongly coloured flowers, which tend to be less fragrant. All are attractive to bees, and are ideal for a mixed or herbaceous border, or for a wildflower garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, moderately fertile, preferably alkaline soil in full sun or partial shade. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed at 13°C (55°F) in late winter, or *in situ* in early spring or autumn. Where temperatures fall below -5°C (23°F), provide cloche protection for autumn-sown seedlings.
- **PESTS AND DISEASES** Trouble free.

***R. odorata*** ■ (Common mignonette). Erect to slightly spreading, hairless annual with branching, strongly ribbed stems and entire, elliptic to spoon-shaped, sometimes 3-lobed leaves, to 10cm (4in) long. From summer to early autumn, bears loose, conical, raceme-like heads of tiny, star-shaped, highly fragrant, yellowish green or white to reddish green flowers, to 7mm (¼in) across; each flower has 4–7 petals and a central tuft of orange stamens. ↑30–60cm (12–24in), ↔ 23cm (9in). N. Africa. Widely naturalized. \*\*\*

- ▷ **Restharrow** see *Ononis*
- Common** see *O. repens*
- Shrubby** see *O. fruticosa*
- ▷ **Resurrection plant** see *Selaginella lepidophylla*

## RETAMA syn. LYGOS

LEGUMINOSAE/PAPILIONACEAE

Genus, related to *Genista*, of 4 species of deciduous shrubs found on sandy and rocky soils in the Canary Islands, the Mediterranean, and W. Asia. They have willowy, dark green stems with alternate, mid-green leaves that soon fall, and pea-like, yellow or white flowers borne in dense, axillary racemes. *R. monosperma*, the only species usually cultivated, has an elegant, arching habit and fragrant flowers. In frost-prone areas, grow in a cool greenhouse. In warmer areas, grow in a sheltered border or at the base of a warm, sunny wall.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in growth, water moderately; keep just moist in winter. Outdoors, grow in moderately fertile,

sharply drained soil in full sun, in a sheltered position. Pruning group 3, although pruning is seldom needed; do not cut back into old wood.

- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***R. monosperma***, syn. *Genista monosperma*. Graceful, deciduous shrub with slender, arching, silky grey stems and a few linear leaves, to 2cm (¾in) long, which soon fall. Small, very fragrant, pea-like white flowers are produced in dense, axillary racemes, to 4cm (1½in) long, in early spring. ↑to 4m (12ft), ↔ 1.5m (5ft). Portugal, Spain, N. Africa, Canary Islands. \*

▷ **Rewarewa** see *Knightia excelsa*

▷ **Reynoutria** see *Fallopia*

## RHAMNUS

RHAMNACEAE

Genus of 125 or more species of usually thorny, deciduous or evergreen shrubs and trees, widely distributed in N. temperate regions, with a few in the S. hemisphere. They occur in woodland, heathland, scrub, fens, bogs, or rocky places, often on alkaline soils. They are cultivated primarily for their foliage, which has good autumn colour in some deciduous species, and for their decorative fruits. The leaves are opposite or alternate. Tiny, hermaphrodite or unisexual, cup-shaped flowers, 2–4mm (⅛–¼in) across, with 4 or 5 petals, are borne in axillary racemes or umbel-like clusters; they are often fragrant and usually yellowish white, greenish white, or white. Some flowers, particularly those of *R. frangula*, are very attractive to bees. Grow in a shrub border; *R. cathartica* and *R. frangula* may be used as hedging, or in a wild or woodland garden. All parts may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile soil in full sun or partial shade. *R. cathartica*, *R. frangula*, and *R. imeretina* prefer moist soils. *R. alaternus* needs well-drained soil in full sun. Pruning group 1; trim hedges in early spring. Cut out reverting shoots on *R. alaternus* 'Argenteovariegata' when seen.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings of evergreen species

in summer. Root greenwood cuttings of deciduous species in early summer, or layer in autumn or spring.

- **PESTS AND DISEASES** Trouble free.

***R. alaternus*** (Italian buckthorn). Erect to spreading, evergreen shrub with ovate to oblong, leathery, glossy, dark green leaves, to 7cm (3in) long. Unisexual and hermaphrodite, yellow-green flowers are borne in axillary clusters in late spring and early summer; they are followed by spherical red fruit, 6mm (¼in) across, ripening to black in late summer. ↑5m (15ft), ↔ 4m (12ft). Portugal, Morocco, Mediterranean, Ukraine (Crimea). \*\*.

'Argenteovariegata' ■ ♀ syn.

'Variegata', has grey-green leaves with conspicuous white margins.

***R. californica*** (Coffeeberry). Upright, evergreen or semi-evergreen shrub with red shoots and oblong to oval, glossy, mid-green leaves, to 8cm (3in) long. In late spring and early summer, bears axillary clusters of hermaphrodite, yellowish white flowers. Spherical red fruit, 6mm (¼in) across, ripen to purple-black in late summer and autumn. ↑4m (12ft), ↔ 3m (10ft). W. USA. \*\*.

***R. cathartica*** (Common buckthorn). Dense, thicket-forming, spiny, deciduous shrub, sometimes a small tree, with oval to ovate or elliptic, glossy, dark green leaves, to 6cm (2½in) long, turning yellow in autumn. Axillary clusters of unisexual, yellowish green flowers are borne in late spring and early summer. In autumn, bears spherical red fruit, to 6mm (¼in) across, ripening to black. ↑6m (20ft), ↔ 5m (15ft). Europe, N.W. Africa, Asia. \*\*\*

***R. frangula*** (Alder buckthorn). Bushy, spreading, deciduous shrub with oval to obovate, glossy, dark green leaves, to 7cm (3in) long, turning red in autumn. In late spring and early summer, bears axillary clusters of hermaphrodite green flowers, followed by fleshy, spherical red fruit, to 1cm (½in) across, ripening to black in autumn. ↑→ 5m (15ft). Europe, N. Africa, Russia to Altai Mountains. \*\*\*

***R. imeretina***. Open, spreading, deciduous shrub with stout shoots and oblong to oval, conspicuously veined, dark green leaves, to 30cm (12in) long, turning bronze-purple in autumn. In early summer, bears unisexual green flowers in axillary clusters, followed in late summer and autumn by spherical red fruit, 5mm (¼in) across, ripening to black. ↑3m (10ft), ↔ 5m (15ft). Georgia, E. Turkey, Armenia. \*\*\*

## RHAPHIDOPHORA

syn. RAPHIDOPHORA

ARACEAE

Genus of 60 species of evergreen root climbers and trailers from woodland in tropical S. and S.E. Asia and the Pacific islands. They are cultivated for their attractive leaves, which are short-stalked and entire on young plants, and long-stalked, larger, and pinnatifid or pinnate on mature specimens. In summer, mature plants grown outdoors produce yellow spadices of tiny, petalless flowers, surrounded by boat-shaped, yellow to green spathes. In frost-prone regions, grow as houseplants, or in a warm greenhouse or conservatory. In tropical



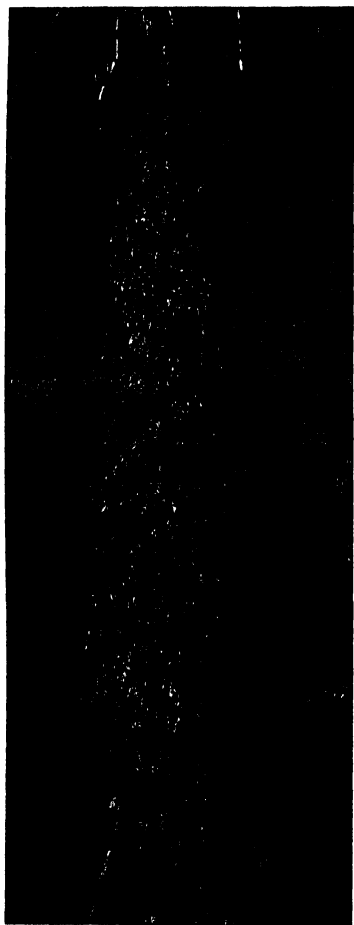
*Rhamnus alaternus* 'Argenteovariegata'

climates, grow through a tree or on a damp shady wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in equal parts loam, leaf mould, bark, and sharp sand in bright filtered light. Provide moderate humidity, draught-free conditions, and the support of a moss pole or similar structure. When in full growth, water moderately, mist regularly, and apply a balanced liquid fertilizer every 2–3 weeks; water sparingly in winter. Outdoors, grow in moist, humus-rich soil in partial shade. Pruning group 11, after flowering; pruning is seldom needed.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Root stem-tip or leaf-bud cuttings, or air layer, in spring or early summer.
- **PESTS AND DISEASES** Prone to scale insects and red spider mites under glass.

**R. celatocaulis**, syn. *Monstera latravaginata* of gardens, *Pothos celatocaulis*, *R. pinnata* (Shingle plant). Erect, sparsely branched climber mostly grown in its juvenile phase, when it has short-stalked, elliptic-ovate, entire, blue-green leaves, to 10cm (4in) long, closely overlapping and lying flat along the stems. Mature leaves are entire, pinnatifid, or pinnatisect, and 20–40cm (8–16in) long, with stalks of the same length. In summer, produces yellow spathes, 10–15cm (4–6in) long, singly from the leaf axils on long stems. † 10m (30ft). Borneo. ☼ (min. 15°C/59°F)

**R. decursiva** ■ Erect, robust climber usually cultivated in its adult phase, when it has thick, stiff, sparsely



*Rhaphidophora decursiva*

branched, slow-growing stems and oblong, pinnatisect, leathery, lustrous, rich green leaves, 50–90cm (20–36in) long. Juvenile leaves are arranged in 2 ranks and are broadly ovate, entire, and mid-green, to 30cm (12in) long. Fleshy yellow spathes, 14–18cm (5½–7in) long, are produced singly from the leaf axils in summer. † to 10m (30ft). N. Burma, India, Sri Lanka. ☼ (min. 15°C/59°F)

**R. pinnata** see *R. celatocaulis*.

## RHAPHIOLEPIS

ROSACEAE

Genus of about 3–5, possibly up to 15 species of evergreen shrubs and trees from scrub in S.E. and E. Asia. They are grown for their alternate, often toothed leaves, which are glossy, dark green, and leathery, and for their fragrant, apple-blossom-like, star-shaped flowers borne in erect, terminal racemes or panicles in spring or summer. Grow in a sheltered border, or at the base of a warm, sunny wall. In frost-prone areas, grow half-hardy species in a cool greenhouse.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, moderately fertile soil in full sun, with shelter from cold, drying winds. Pruning group 8.
- **PROPAGATION** Root semi-ripe cuttings in late summer. Layer in autumn.
- **PESTS AND DISEASES** Trouble free.

**R. x delacourii** (*R. indica* x *R. umbellata*). Dome-shaped, evergreen shrub with broadly obovate to inversely lance-shaped, shallowly toothed, leathery, dark green leaves, to 7cm (3in) long. Star-shaped pink flowers, to 2cm (¾in) across, are produced in erect, broadly conical panicles, to 10cm (4in) long, in spring or summer. † 2m (6ft),



*Rhaphiolepis umbellata*

↔ 2.5m (8ft). Garden origin. ✱✱.

'**Coates' Crimson**' bears dark pink flowers. '**Enchantress**' is compact, with rose-pink flowers. '**Indian Princess**' produces bright pink flowers fading to white. '**Spring Song**' bears pale pink flowers over an extended period. '**White Enchantress**' is dwarf and compact, bearing pure white flowers.

**R. indica** (Indian hawthorn). Bushy, spreading, evergreen shrub producing narrowly elliptic to lance-shaped, deeply toothed, leathery, glossy, dark green leaves, to 7–11cm (3–4½in) long. In spring or early summer, bears white flowers, to 1.5cm (½in) across, with pink-flushed centres, in loose racemes or panicles, to 8cm (3in) long. † 1.5m (5ft), ↔ 2m (6ft). China. ✱

**R. japonica** see *R. umbellata*.

**R. ovata** see *R. umbellata*.

**R. umbellata** ■ ♀ syn. *R. japonica*. *R. ovata*. Bushy, evergreen shrub with oval to obovate or inversely lance-shaped, leathery, dark green, shallowly toothed leaves, to 9cm (3½in) long. White flowers, to 2cm (¾in) across, sometimes tinted rose-pink, are borne in conical racemes, to 10cm (4in) long, in early summer. † 1.5m (5ft). Korea, Japan. ✱✱

## RHAPIDOPHYLLUM

Needle palm

ARECACEAE/PALMAE

Genus of one species of almost stemless palm from wooded, swampy areas in coastal S.E. USA. It is grown for its fan-shaped, palmately lobed leaves, cut almost to the midribs. The tiny, bowl-shaped, 3-petalled flowers are borne in small panicles among the leaf sheaths. In frost-prone areas, grow in a cool or temperate greenhouse. In warmer areas, use as a lawn or courtyard specimen.

- **HARDINESS** Frost tender, but will survive short spells around 0°C (32°F), if ripened by warm summers.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2)



*Rhapidophyllum hystrix*

in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in any moderately fertile, moist but well-drained soil in partial shade.

- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Remove smaller suckers in spring.
- **PESTS AND DISEASES** Red spider mites, mealybugs, and scale insects may be a problem under glass.

**R. hystrix** ■ ✱ (Blue palmetto, Porcupine palm). Small, slow-growing, clump-forming palm with a short-branching stem system below or at the soil surface. Sheaths at the bases of the leaf-stalks bear long, erect spines; each smooth, erect leaf-stalk bears a deeply lobed leaf-blade, to 1m (3ft) long, with 5–12 lobes, bright green above, tinted blue-grey beneath. Tiny, bowl-shaped, purplish red flowers, borne in summer, are hidden by the foliage. † 1.5–2m (5–6ft), ↔ 2–4m (6–12ft). USA (S. Carolina to Florida and Mississippi). ☼ (min. 7–10°C/45–50°F)

## RHAPIS

Lady palm

ARECACEAE/PALMAE

Genus of 12 species of small, cluster-stemmed palms found in shady tropical and subtropical forest from S. China to S.E. Asia. The light or mid-green leaves, arranged in spirals or loose tufts at the stem tips, are divided almost to the bases into 2–10 or more lobes. Bowl-shaped, 3-petalled flowers are borne in short panicles between the leaves. In frost-prone areas, grow in a temperate or warm greenhouse, or as houseplants. In frost-free regions, use in a shady border or to add foliage interest to other plantings.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pot on or top-dress in spring. Outdoors, grow in any moderately fertile, moist but well-drained soil in dappled shade.
- **PROPAGATION** Sow seed at 27°C (81°F), or divide, in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.



*Rhaps excelsa*

***R. excelsa*** [M] ♀ ✱ syn. *R. flabelliformis* (Miniature fan palm). Small, clump-forming palm with slender, erect, bamboo- or reed-like stems. The long-stalked, deeply lobed, lustrous, dark green leaves, 20–30cm (8–12in) long, each have 3–10 broadly to narrowly lance-shaped, puckered lobes. Tiny, bowl-shaped cream flowers are borne in panicles, to 12cm (5in) long, among the leaves, in summer. ↑↔ 1.5–5m (5–15ft). S. China. ☼ (min. 10–13°C/50–55°F). 'Variegata' has leaves with white-striped lobes. 'Zuikonishiki' has leaves with yellow-variegated lobes; ↑ to 60cm (24in), rarely more.

***R. flabelliformis*** see *R. excelsa*.

▷ **Rhazya** see *Amsonia*

***R. orientalis*** see *A. orientalis*

## RHEUM

Rhubarb

POLYGONACEAE

Genus of about 50 species of rhizomatous, often tough or woody perennials found in a range of habitats, from marshy meadows and streamsides to scrub and rocky slopes, in E. Europe and C. Asia to the Himalayas and China. Unlike *R. x hybridum*, which is grown for its edible leaf-stalks, the rhubarbs described below are cultivated for their imposing, large, basal leaves and tall flower panicles. A few species from mountainous regions in Asia are dwarf with small flower spikes. The rounded, entire to palmately lobed leaves often emerge from bright red buds; the leaves are sometimes crimson-purple when young, usually with coarse teeth and conspicuous veins and midribs. Large panicles of tiny, petalless, star-shaped flowers are borne on hollow, leafless, flowering stems in summer; they have large, colourful, showy bracts in some species. The flowers are followed by small, triangular, winged, usually brown fruits. Grow rhubarbs near water, or in a moist border or

woodland garden. The leaves may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, moist, humus-rich soil in full sun or partial shade. *R. alexandrae* prefers wet, marshy soil. Mulch annually in early spring with well-rotted organic matter. *R. nobile* may prove difficult to establish.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in early spring.
- **PESTS AND DISEASES** Susceptible to damage by slugs, and prone to crown rot and viruses.

***R. 'Ace of Hearts'*** [M] syn. *R. 'Ace of Spades'*. Rhizomatous perennial with elongated, heart-shaped, entire, dark

*Rheum 'Ace of Hearts'*

green leaves, to 35cm (14in) long, red-veined above and purple-red beneath. In mid- and late summer, numerous tiny, star-shaped, very pale pink to white flowers open in panicles to 1.2m (4ft) long. ↑ to 1.2m (4ft), ↔ 90cm (36in). \*\*\*

***R. 'Ace of Spades'*** see *R. 'Ace of Hearts'*.

***R. alexandrae***. Rhizomatous perennial with rosetted, oblong-ovate, entire, glossy, dark green leaves, to 20cm (8in) long, with heart-shaped bases and prominent veins. In early summer, bears narrow, arching, then pendent panicles, 60cm (24in) long, of tiny, star-shaped, yellow-green flowers, which are almost hidden by creamy white or greenish cream bracts, to 10cm (4in) or more long. ↑ to 1.5m (5ft), ↔ 60cm (24in). W. China, Tibet. \*\*\*

***R. nobile***. Rhizomatous perennial, similar to *R. alexandrae*, with broadly ovate, entire, glossy, dark green leaves, to 30cm (12in) or more long, veined and margined red. In midsummer, bears panicles, 60cm (24in) long, of showy, arching to pendent, overlapping cream bracts, to 15cm (6in) long, which conceal short, erect clusters of tiny, star-shaped green flowers. ↑ to 2m (6ft), ↔ 60cm (24in). Himalayas, Nepal to S.E. Tibet. \*\*\*

***R. palmatum*** ♀ (Chinese rhubarb). Rhizomatous perennial with a massive rootstock and thick leaf-stalks that bear broadly ovate to rounded, palmately 3–9 lobed, coarsely toothed, dark green leaves, to 90cm (36in) long, purple-red or red and softly hairy beneath. In early summer, numerous tiny, star-shaped, creamy green to deep red flowers are borne in panicles to 2m (6ft) long. ↑ to 2.5m (8ft), ↔ to 1.8m (6ft). N.W. China, N.E. Tibet. \*\*\*

**'Atropurpureum'** see 'Atrosanguineum'.

**'Atrosanguineum'** [M] syn. 'Atropurpureum', has leaves that emerge from almost scarlet buds; the leaves are vivid crimson-purple when young, fading gradually to dark green above.

*Rheum palmatum 'Atrosanguineum'*

Bears clustered panicles of rich cerise-pink flowers. 'Bowles' Crimson' has darker red flowers, and leaves that are crimson beneath. **var. tanguticum** has leaves with jagged leaflets, emerging reddish green and becoming dark green, often purple-tinted, with age. Massive flowering stems bear erect panicles of numerous white, pink, or crimson flowers; ↑ 2m (6ft).

▷ **Rheumatism root** see *Jeffersonia diphylla*

## RHEXIA

Meadow beauty

MELASTOMATACEAE

Genus of about 10 species of bristly perennials, some tuberous, others woody-based, from swamps or moist meadows in E. North America. They have square stems and opposite, oblong to ovate-lance-shaped, almost stalkless leaves with entire, usually hairy to bristly margins. They are cultivated for their shallowly saucer-shaped flowers, each with a short tube, 4 widely parted petals, and 8 prominent stamens, borne singly or in terminal cymes in summer. Grow in a sheltered border, bog garden, or wild garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in constantly moist, acid soil in full sun. In frost-prone areas that do not experience snow cover, protect the crown with a deep winter mulch. They dislike disturbance.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring; before planting out, grow seedlings on, in containers in a cold frame, for up to 2 years to obtain strong plants. Divide in spring.
- **PESTS AND DISEASES** Susceptible to slug damage.

***R. virginica*** (Meadow beauty). Bristly, tuberous perennial with square, slightly winged stems. Almost stalkless, oval to oblong-lance-shaped, mid-green leaves, to 5cm (2in) long, are hairy above, with

3–5 prominent veins and hair-fringed margins. In mid- and late summer, few-flowered cymes of shallowly saucer-shaped, short-tubed purple flowers, 4cm (1½in) across, open from red-bristly buds. ↑ 22–45cm (9–18in), ↔ 15cm (6in). E. North America (Nova Scotia to Texas). \*\*\*

▷ *Rhipsalidopsis* see *Hatiora*  
*R. gaertneri* see *H. gaertneri*  
*R. rosea* see *H. rosea*

## RHIPSA LIS

CACTACEAE

Genus of about 50 species of mostly epiphytic or rock-dwelling perennial cacti from wooded and forested areas of Central and South America and the West Indies, with one species found in tropical Africa, Madagascar, and Sri Lanka. They often have aerial roots and freely branching stems, which vary in shape from cylindrical to winged, or flat and leaf-like, and may be ribbed or angled, some having spines or bristles. Small, funnel-shaped, diurnal flowers are borne singly or in small clusters from the areoles, mainly from spring to summer. These are followed by fleshy, berry-like, usually spherical fruits. In frost-prone areas, grow as houseplants in containers or hanging baskets, or in a temperate or warm greenhouse. In frost-free regions, grow epiphytically on a tree, or in a sheltered, humid border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in epiphytic cactus compost in bright filtered or indirect light with moderate to high humidity. Mist daily in warm weather. In growth, water freely and apply a balanced liquid fertilizer 3 or 4 times; water sparingly at other times. Outdoors, grow in an open site in fertile, humus-rich, moist but sharply drained soil in partial shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or root cuttings of stem sections, in spring or summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

*R. baccifera*, syn. *R. cassutha* (Mistletoe cactus). Pendent, epiphytic cactus with aerial roots and cylindrical, sparsely branched, mid-green stems, 4–6mm (¼–¼in) thick. Minute areoles bear clusters of funnel-shaped white flowers, 5–10mm (¼–½in) long, from winter to



*Rhipsalis cereuscula*

spring, followed by spherical, pale pink or translucent white fruit, 5–8mm (¼–½in) across. ↑ to 4m (12ft), ↔ 60cm (24in). Africa, Madagascar, Sri Lanka. Tropical America. ☼ (min. 7–12°C/45–54°F)

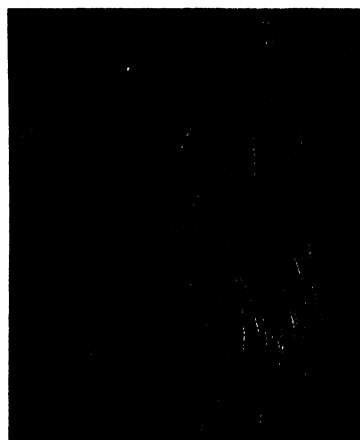
*R. capilliformis* [■] Pendent, epiphytic cactus producing cylindrical, jointed, pale green stems with bunches of side branches, 2–3mm (¼–½in) thick. The stems have slightly woolly, bristly areoles and, near the tips of the joints, minute, bristleless areoles bearing clusters of funnel-shaped, glossy, greenish white flowers, to 8mm (½in) long, in late spring. These are followed by spherical white fruit, 4–5mm (¼–½in) across.

↑ 40cm (16in) or more, ↔ 30cm (12in). E. Brazil. ☼ (min. 7–12°C/45–54°F)

*R. cassutha* see *R. baccifera*.

*R. cereuscula* [■] Erect then pendent, epiphytic cactus producing cylindrical, many-branched, mid-green stems, 4mm (¼in) thick, with whorls of short, jointed branches. In spring, woolly, few-bristled areoles at the tips of the short branches bear usually solitary, narrowly funnel-shaped white flowers, 1.5cm (½in) long, with pinkish green sepals. These are followed by obovoid white fruit, 5mm (¼in) across. ↑ to 60cm (24in), ↔ 40cm (16in). Brazil, Paraguay, Argentina. ☼ (min. 7–12°C/45–54°F)

*R. crispata*. Semi-pendent, epiphytic cactus producing branching, flat, leaf-like, light green stems, 2–4cm (¾–1½in) thick, with elliptic, inversely lance-shaped or obovate segments, with sometimes 3-winged, scalloped margins. In early summer, minute, spineless areoles bear solitary, funnel-shaped,



*Rhipsalis capilliformis*



*Rhipsalis floccosa*

creamy white flowers, 1.5cm (½in) across, followed by spherical white, sometimes red-flushed fruit, 8–10mm (⅜–½in) across. ↑ 60cm (24in), ↔ indefinite. S.E. Brazil. ☼ (min. 7–12°C/45–54°F)

*R. fasciculata*. Erect or semi-pendent, epiphytic cactus producing cylindrical, branching, pale bluish green stems, 6mm (¼in) thick, with woolly, few-bristled areoles along the margins. In early summer, the areoles bear funnel-shaped, white or pale greenish white flowers, to 8mm (½in) long, singly or in small clusters. They are followed by spherical white fruit, 4–5mm (⅜–¼in) across. ↑ to 60cm (24in), ↔ to 30cm (12in). Brazil. ☼ (min. 7–12°C/45–54°F)

*R. floccosa* [■] syn. *R. tucumanensis*.

Pendent, epiphytic cactus with aerial roots and cylindrical, branching, mid-green stems, to 1cm (½in) thick. Stem segments are arranged in whorls of 2–6, and have slightly woolly, sunken areoles bearing solitary, funnel-shaped, pink-tipped, white or creamy white flowers, 1.5cm (½in) long, from winter to spring. These are followed by spherical white, sometimes pink-tinged fruit, 5–10mm (¼–½in) across. ↑ 45cm (18in), ↔ 24cm (10in). Brazil, Bolivia, N. Paraguay, Argentina. ☼ (min. 7–12°C/45–54°F)

*R. paradoxa*. Pendent, epiphytic cactus with aerial roots and branching, mid-green stems, 3–5cm (1¼–2in) thick. Stems have long, 3-angled segments, twisted into shorter segments every 2–6cm (¾–2½in), with white wool at the top of each angle. Funnel-shaped white flowers, 2cm (¾in) across, are borne singly from sunken areoles in late spring. They are followed by spherical red fruit, 8mm (½in) across. ↑ 1m (3ft) or more, ↔ indefinite. S.E. Brazil. ☼ (min. 7–12°C/45–54°F)

*R. tucumanensis* see *R. floccosa*.

## RHODANTHE

syn. ACROCLINIUM

Strawflower

ASTERACEAE/COMPOSITAE

Genus of over 40 species of erect, drought-tolerant annuals, perennials, and subshrubs, frequently included in the genera *Acroclinium* and *Helipetrum*, occurring in arid areas of Australia. They are cultivated for their solitary or corymb-like clusters of daisy-like, straw-textured, “everlasting”, single to double,



*Rhodanthe chlorocephala* subsp. *rosea*



*Rhodanthe manglesii*

yellow, white, or pink flowerheads, borne mainly in summer. The alternate leaves are entire, linear to oblong or obovate, and mid- to grey-green. Grow in an annual or mixed border; the perennials and subshrubs are usually grown as annuals, even in frost-free areas. The flowerheads are excellent for dried flower arrangements.

• **HARDINESS** Half hardy.

• **CULTIVATION** Grow in light, well-drained, preferably poor soil in full sun. Cut for drying before flowerheads are fully open, and hang upside down in a cool, dry, dark place.

• **PROPAGATION** Sow seed at 16°C (61°F) in early spring and plant out when all danger of frost has passed, or sow *in situ* in mid-spring.

• **PESTS AND DISEASES** Seedlings and young plants are prone to aphids and slug damage.

*R. chlorocephala* subsp. *rosea* [■] syn. *Acroclinium roseum*, *Helipetrum roseum*. Fast-growing, erect annual producing linear, pointed, stem-clasping, grey-green leaves, to 3.5cm (1½in) long. In summer, bears solitary, daisy-like flowerheads, 2.5–8cm (1–3in) across, with yellow disc-florets surrounded by spreading, papery, white or rose-pink bracts, often with white bases; they close in dull weather. ↑ 30–60cm (12–24in), ↔ 15cm (6in). S.W. Australia. \*

*R. manglesii* [■] syn. *Helipetrum manglesii*. Erect, bushy annual with oblong to ovate, pointed, grey-green leaves, to 10cm (4in) long. From summer to early autumn, bears stiff-stemmed clusters of small, daisy-like flowerheads, to 3cm (1¼in) across, with light yellow disc-florets surrounded by decorative, spreading, papery, red, pink, or white bracts. ↑ 60cm (24in), ↔ 15cm (6in). W. Australia. \*

## RHODANTHEMUM

syn. CHIRYSANTHEMOPSIS, PYRETHROPSIS

ASTERACEAE/COMPOSITAE

Genus of about 10 species of mat-forming, often rhizomatous perennials and subshrubs, previously included in the genera *Chrysanthemum* or *Leucanthemum*, from exposed rocky areas in N. Africa, with one species from Spain. They are cultivated for their solitary, large, daisy-like flowerheads, surrounded by prominent, usually green bracts, borne on erect, branched or unbranched stems, mainly in spring and

*Rhodanthemum hosmariense*

summer. The deeply or shallowly 3-lobed leaves are hairy and sometimes silvery. Grow in a sunny rock garden, a raised bed, at the base of a warm, sunny wall, or in an alpine house.

• **HARDINESS** Most are hardy to -10°C (14°F) in very well-drained soil, but resent excessive winter wet.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in moderately fertile, very well-drained soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root softwood cuttings in early summer.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

**R. atlanticum**, syn. *Chrysanthemum atlanticum*, *Pyrethropsis atlantica*.

Prostrate, rhizomatous perennial with unbranched stems and 3-lobed, hairy, mid-green leaves, to 4cm (1½in) long, the middle lobe divided into 3, the outer lobes finely divided. In summer, bears solitary, daisy-like flowerheads, 3cm (1¼in) across, with white ray-florets, flushed pink beneath, and yellow disc-florets. ↑ 8cm (3in), ↔ 30cm (12in). Morocco. \* \*

**R. catananche**, syn. *Chrysanthemum catananche*, *Pyrethropsis catananche*. Rhizomatous perennial producing unbranched stems and hairy, silver-grey leaves, to 6cm (2½in) long, irregularly cut into 3 toothed lobes. In summer, bears solitary, daisy-like flowerheads, to 5cm (2in) across, with cream ray-florets, each with a maroon stripe, surrounding a small centre of deep yellow disc-florets. ↑ 15cm (6in), ↔ 30cm (12in). Morocco. \* \*

**R. gayanum**, syn. *Chrysanthemum gayanum*, *Pyrethropsis gayana*. Semi-erect subshrub with branching stems and deeply 3-lobed, softly hairy, grey-green leaves, 2.5cm (1in) long. In summer, freely bears solitary, daisy-like flowerheads, 2.5–4cm (1–1½in) across, with rose-pink or white, pink-backed ray-florets and brown disc-florets. ↑ to 30cm (12in). Morocco, Algeria. \* \*

**R. hosmariense** □ ♀ syn. *Chrysanthemum hosmariense*, *Leucanthemum hosmariense*, *Pyrethropsis hosmariensis*. Spreading, bushy subshrub with stalkless, softly hairy, intensely silver, deeply 3-lobed leaves, to 4cm (1½in) long. From early spring to

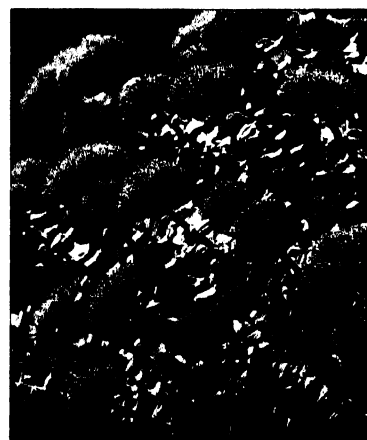
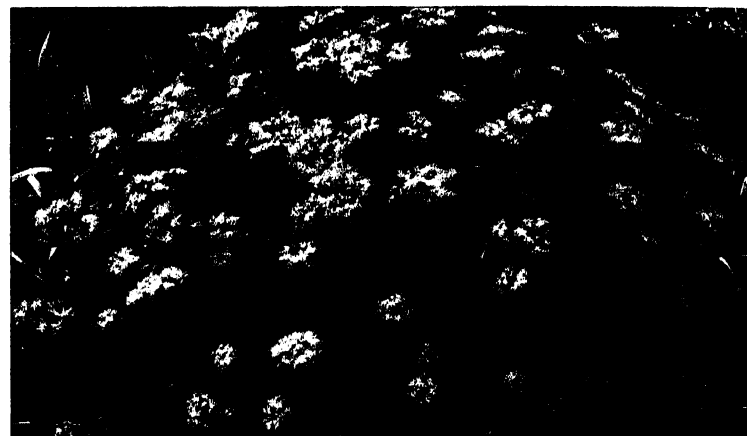
autumn, bears solitary, short-stemmed, daisy-like flowerheads, to 5cm (2in) across, with white ray-florets and wide centres of yellow disc-florets. The flowerheads are surrounded by silvery bracts, the outer ones with distinctive black margins. It is the easiest species to grow in the open garden; in an alpine house it flowers for most of the year, if dead-headed. ↑ 10–30cm (4–12in), ↔ 30cm (12in). Morocco (Atlas Mountains). \* \*

**R. maresii**, syn. *Chrysanthemum maresii*, *Pyrethropsis maresii*. Spreading subshrub, similar to *R. hosmariense*, with deeply 3-lobed, softly hairy, silver-green leaves, to 6cm (2½in) long. In summer, bears solitary, daisy-like flowerheads, 2–4cm (¾–1½in) across, with yellow ray-florets and yellow disc-florets that become increasingly purple-tinged with age. ↑ 10–30cm (4–12in), ↔ 30cm (12in). Algeria. \* \*

## RHODIOLA

CRASSULACEAE

Genus of about 50 species of perennials, some dioecious, widely distributed in the N. hemisphere in sunny, rocky habitats. They have thick, fleshy rhizomes producing scaly brown basal leaves, and stiffly erect, unbranched or occasionally branched stems that bear alternate, triangular-ovate to lance-shaped, often toothed, fleshy, grey-green stem leaves. The small, star-shaped, green, yellow, orange, or red flowers, with 8–10 prominent stamens, are borne in dense, rounded, terminal, corymb- or raceme-like heads, and may

*Rhodiola heterodonta**Rhodiola rosea*

be unisexual or bisexual. Rhodiolas are cultivated for their foliage and flowers, and are suitable for a rock garden, or the front of a mixed or herbaceous border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide rhizomes in spring or early summer. Root leaf cuttings in summer.

• **PESTS AND DISEASES** Prone to aphids.

**R. heterodonta** □ syn. *Sedum heterodontum*, *S. rosea* var. *heterodontum*. Erect, hairless, dioecious, rhizomatous perennial with branching stems of ovate, fleshy, greyish green leaves, 2.5–3cm (1–1¼in) long, either entire or with a few coarse teeth. In late spring and early summer, bears dense, terminal cymes of numerous star-shaped yellow flowers, 3mm (¼in) across, opening from rounded red buds in late spring and early summer. Male flowers have red or purple-red anthers that colour the whole of the flowerheads; females have purple-tipped carpels. ↑ to 40cm (16in). Afghanistan, Pamir Mountains, W. Himalayas, Tibet. \* \* \*

**R. rosea** □ syn. *Sedum rosea*, *S. rhodiola* (Roseroot). Variable, clump-forming, dioecious, rhizomatous perennial with purple stems bearing broadly ovate to narrowly inversely lance-shaped, entire or irregularly toothed, glaucous, fleshy, grey-green leaves, to 4cm (1½in) long, with red-tinted tips. In summer, bears dense, terminal, corymb- or umbel-like heads of numerous male or female, yellow-green flowers, 6mm (¼in) across, opening from slightly pink buds. ↑ 5–30cm (2–12in), ↔ 20cm (8in). Throughout N. hemisphere. \* \* \*

**subsp. integrifolia** has smaller leaves, and red-purple, sometimes green flowers often borne on reddish green stems.

**R. wallichiana**, syn. *Sedum crassipes*, *S. wallichianum*. Erect, rhizomatous, hairless perennial with linear-lance-shaped, slightly toothed, mid-green leaves, 1–3cm (½–1¼in) long. In early summer, bears dense but few-flowered, terminal, corymb-like flowerheads with bisexual, star-shaped, pale yellow to greenish white flowers, 5–10mm (¼–½in) across, sometimes tinged pink. ↑ to 35cm (14in), ↔ 30cm (12in). W. Himalayas, W. China, Tibet. \* \* \*

▷ **Rhodocactus grandifolius** see *Pereskia grandifolia*

## RHODOCHITON

SCROPHULARIACEAE

Genus of 3 species of deciduous, perennial climbers found in woodland in Mexico. They are cultivated for their flowers, which have pendent, long-tubed corollas, with 5 rounded segments, and inflated calyces. Twining leaf-stalks bear alternate, simple, sparsely toothed leaves. In frost-prone areas, grow as annuals outdoors, or in a cool greenhouse. In frost-free areas, use to cover a pergola or arch.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in full sun.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) as soon as ripe or in spring.

• **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

**R. atrosanguineus** □ ♀ syn. *R. volubile*. Slender-stemmed climber producing heart-shaped, rich green leaves, 4–8cm (1½–3in) long. Long, pendent stalks bear solitary, tubular, black to reddish purple flowers, 4.5cm (1¾in) long, with cup-shaped, rose-pink or mauve calyces, from summer to autumn. ↑ to 3m (10ft), sometimes more. Mexico. ☼ (min. 3–5°C/37–41°F)

**R. volubile** see *R. atrosanguineus*.

*Rhodochiton atrosanguineus*

## RHODODENDRON

syn. AZALEA  
ERICACEAE

Genus of 500–900 species of evergreen and deciduous trees and shrubs, sometimes epiphytic, from Europe, Asia, Australasia, and North America, particularly S.W. China, Tibet, Burma, N. India, and New Guinea. They occur in diverse habitats, from dense forest to alpine tundra, and from sea level to high altitudes. They vary greatly in habit (see panel below), and may reach a height of 25m (80ft) or creep at ground level to form prostrate shrubs.

The leaves are mostly lance-shaped and mid- to dark green, ranging in size from 4mm (1/8in) to 75cm (30in) long. All hybrids described below conform to one of the following leaf length ranges: very large, 45–75cm (18–30in) long; large, 15–45cm (6–18in) long; medium-sized, 5–15cm (2–6in) long; small, 1–5cm (1/2–2in) long; very small, 4–10mm (1/8–1/2in) long. Some have leaves and young stems covered with an indumentum (a dense woolly covering of hairs or scales); a few have leaves that are aromatic when crushed.

Rhododendrons are grown mainly for their spectacular, sometimes strongly scented flowers, which are borne singly or in lateral or terminal racemes (known as trusses), from late autumn to late summer. The individual flowers vary greatly in size and shape (see panel below), but are usually 5-lobed, and often marked with flares or spots inside, on the upper or lower lobes or in the throats; some also have conspicuous or brightly coloured, basal nectar pouches inside. There are thousands of hybrids, encompassing nearly every flower colour. Some rhododendrons also have attractive young growth, which ranges in colour from red to bronze-brown or metallic blue-green; a few have decorative, exfoliating bark, which may be any colour from brown-pink or deep maroon to silvery grey. A number of the deciduous rhododendrons are valued for their autumn colour.

Rhododendrons have a wide range of garden uses: dwarf alpine varieties are effective in a rock garden; larger woodland rhododendrons are excellent for brightening shady areas; the "iron clad" (or "hardy hybrid") rhododendrons are tolerant of more exposed sites and also suitable for hedges or informal screens;

and many of the modern compact hybrids are ideal for growing on shaded patios, or in containers or tubs. In frost-prone areas, tender rhododendrons, including Vireyas, are best grown in a conservatory or cool greenhouse. The nectar of some rhododendron flowers may cause severe discomfort if ingested.

In horticulture, rhododendrons are often divided into 4 main groups: evergreen rhododendrons, Vireya rhododendrons, azaleas, and azaleodendrons.

### Evergreen rhododendrons

Unless otherwise stated, all evergreen shrubs and trees described on the following pages fall into this group, which includes the "iron clad" rhododendrons (often known as "hardy hybrids"), derived from *R. catawbiense*, *R. ponticum*, and *R. caucasicum* crosses. Evergreen rhododendrons vary in habit from small, cushion-forming shrubs to tree rhododendrons. They have small to large leaves and flowers in a variety of shapes, sizes, and colours.

### Vireya rhododendrons

Sometimes known as Malesian rhododendrons, these are evergreen, usually epiphytic shrubs from tropical areas of S.E. Asia, and are frost tender. They have scaly leaves and stems. The flowers are extremely varied in shape, colour, and season; a range of plants will give flowers throughout the year. Grow in a cool greenhouse or conservatory. Containers will restrict the spread of larger plants.

### Evergreen and deciduous azaleas

These are small to medium-leaved shrubs belonging to the botanical Section *Azalea* within the genus *Rhododendron*, and commonly known to gardeners as azaleas. They bear a profusion of small to large trusses of usually small flowers in a variety of shapes. Azalea hybrids may be further divided into the following subgroups:

**Deciduous hybrid azaleas – Ghent (Gandavense) hybrids** are Belgian-raised, fully hardy azaleas, resulting from crosses between American azalea species and *R. luteum*. The funnel-shaped, white, yellow, orange, pink, or red flowers, borne in early summer, are long-tubed, sometimes double, and usually scented. **Knap Hill-Exbury hybrids** are English hybrid azaleas with complex origins (American azalea species x *R. molle*), characterized by large trusses of trumpet-shaped, scented or scentless flowers, in a wide range of bright colours, borne in mid- to late spring. **Mollis hybrids** have Dutch and Belgian origins, and are a result of crossing selections of *R. molle* subsp. *japonicum* and *R. molle*. Funnel-shaped, unscented flowers, in a wide range of colours, including cream, yellow, pink, orange, or red, are borne before the leaves in late spring. **New Zealand Ilam hybrids** are a further selection developed from Knap Hill-Exbury hybrids.

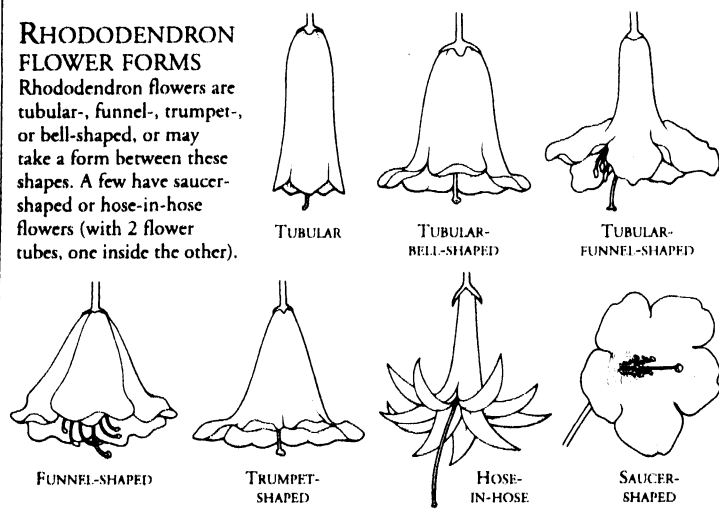
**Occidentale hybrids** are English azaleas, raised by crossing Mollis hybrids with *R. occidentale*. Funnel-shaped, usually scented, pink or white flowers are borne in summer, later than those of Ghent hybrids. **Rustica (Rustica Flore Pleno) hybrids** are sweet-scented, double-flowered azaleas, resulting from crosses between double-flowered Ghent hybrids and *R. molle* subsp. *japonicum*. Funnel-

shaped, hose-in-hose, yellow, cream, white, pink, or red flowers are borne in late spring and early summer on compact bushes.

**Evergreen hybrid azaleas – Gable hybrids** are azaleas raised by Joseph B. Gable in Pennsylvania, USA, using mainly *R. kaempferi* and *R. yedoense* var. *poukhanense* with other species and hybrids. The unscented flowers are funnel-shaped, mostly pink, red, or white, and borne in late spring and early summer. **Glenn Dale hybrids** are varied, complex azaleas raised in Glenn Dale, Maryland, USA. The relatively large, scented, funnel-shaped flowers, usually white or pink to red, are borne from spring to early summer. Some are frilled, semi-double, or multicoloured. **Indian (Indica) hybrids** are complex azaleas, mostly of Belgian origin, bred from *R. simsii*, *R. mucronatum*, *R. indicum*, and other species. In winter, they produce large, funnel-shaped, unscented flowers in a wide range of colours, and are popular for growing indoors in containers for winter decoration. **Kaempferi hybrids** are Dutch azaleas raised from *R. kaempferi*, *R. 'Malvaticum'*, and *R. 'Maxwellii'*. They are taller, more hardy, and later-flowering than Kurume hybrids (below), which are also derived from *R. kaempferi*. They bear funnel-shaped, unscented, white, pink, or red flowers in spring, on bushes about 1.2m (4ft) tall. **Kurume hybrids** are Japanese-raised dwarf azaleas, originating from crosses between *R. kaempferi*, *R. kiusianum*, and *R. 'Obtusum'*. Numerous, very small, funnel-shaped, unscented flowers are borne in a wide range of colours in spring. They are particularly effective in massed plantings. **Kyushu hybrids** are very hardy Japanese azaleas. They are the result of a complex breeding programme, using *R. kiusianum* with other dwarf species to produce low-growing, compact plants with small, shiny leaves. They are exceptionally hardy, to -30°C (-22°F), and ideal for cold climates. Small, funnel-shaped, unscented flowers, in a wide range of colours, are borne in spring. **Oldhamii hybrids** are dwarf azaleas raised at Exbury, England. The large, funnel-shaped flowers are unscented and borne in a wide range of colours in spring. **Satsuki hybrids** are Japanese-raised azaleas, originally used for bonsai work. They have been bred using mainly *R. indicum* and *R. simsii*. Half hardy with a low, twiggy habit, they bear large, funnel-shaped, unscented flowers in white, pink, red, or purple, in summer. They have a tendency to sport. **Shammarello hybrids** were raised by Shammarello in N. Ohio, USA. They are ideal for growing in very cold climates, and are hardy from -20 to -26°C (-10 to -20°F). Many have been raised by crossing *R. 'Hino-crimson'* with *R. yedoense* var. *poukhanense*. They have small, trumpet-shaped, unscented flowers in a range of colours, borne in late spring. **Vuyk (Vuykiana) hybrids** were bred by Vuyk van Nes Nurseries in Holland, using a complex cross of *R. kaempferi* and *R. mucronatum*, and probably other species. They bear very showy, medium-sized, funnel-shaped, unscented flowers in a range of colours, in late spring.

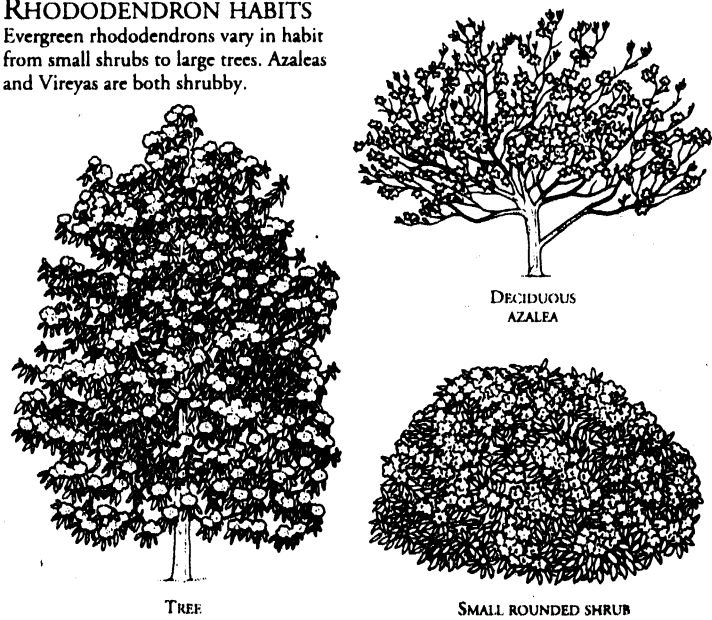
### RHODODENDRON FLOWER FORMS

Rhododendron flowers are tubular-, funnel-, trumpet-, or bell-shaped, or may take a form between these shapes. A few have saucer-shaped or hose-in-hose flowers (with 2 flower tubes, one inside the other).



### RHODODENDRON HABITS

Evergreen rhododendrons vary in habit from small shrubs to large trees. Azaleas and Vireyas are both shrubby.





*Rhododendron austrinum* (inset: flower detail)

### Azaleodendrons

This is a group of hybrids between deciduous azaleas and evergreen hybrid rhododendrons. They are generally fully hardy, semi-evergreen shrubs, 1–2.5m (3–8ft) tall, flowering in late spring and early summer. They produce cream, yellow, pink, or mauve flowers, some of which are fragrant.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow tender rhododendrons in lime-free (ericaceous) potting compost in bright filtered light with moderate to high humidity. When in growth, water freely with soft water and apply a balanced liquid fertilizer monthly; keep just moist in winter.

For Vireyas, use well-croaked containers and incorporate granulated bark, rotted bracken litter, or conifer needles to keep the compost open. Vireyas will tolerate a maximum day temperature of 32°C (90°F).

Indian hybrids grown as winter-flowering houseplants should be misted daily until the flower buds show colour; provide a maximum temperature of 13–16°C (55–61°F) when in bloom. Remove spent flowers and repot after flowering, then transfer to a cool greenhouse or window-sill in bright, indirect light. For the summer months, plunge pots in a shaded, well-ventilated cold frame and keep cool, moist, and humid; protect from any autumn frosts; bring plants indoors in early winter.

Outdoors, grow rhododendrons in moist but well-drained, leafy, humus-rich, acid soil (ideally pH4.5–5.5). Shallow planting is essential: all rhododendrons are surface-rooting and will not tolerate deep planting. Most large-leaved species and hybrids require dappled shade in sheltered woodland conditions; avoid the deep shade immediately beneath a tree canopy. Most of the other groups, including the “iron clads” and “hardy hybrids”, thrive in light dappled shade or part-day shade, but not early morning sun; they will tolerate a more open site if given shelter

from cold, dry winds. Most dwarf alpine species will tolerate full sun in cooler climates, provided the soil remains moist. Avoid frost pockets to reduce the risks of waterlogging and bark split. Mulch annually with leaf mould. After flowering, dead-head where practical, to promote vegetative growth rather than seed production. Pruning group 8.

- **PROPAGATION** Surface-sow seed at 13–18°C (55–64°F) in ericaceous (lime-free) propagating compost or fine moss peat, as soon as ripe or in early spring. Sow seed of hardy dwarf species and hybrids in containers in a cold frame as soon as ripe. Rhododendrons hybridize freely and garden-collected seed may not come true; however, seed collected from species in the wild or from hand-pollinated garden plants will generally produce plants that are true to type. Root semi-ripe cuttings in late summer. Layer in autumn. Graft in late winter or late summer.

- **PESTS AND DISEASES** Susceptible to vine weevil, rhododendron and azalea whiteflies, leafhoppers, lacebugs, scale insects, caterpillars, aphids, powdery mildew, bud blast, honey fungus, rust, leafy gall, petal blight, silver leaf, *Phytophthora* root rot, and lime-induced chlorosis (if soil is not sufficiently acid).

**R. ‘A. Bedford’** see *R. ‘Arthur Bedford’*.  
**R. ‘Addy Wery’** ♀ Evergreen Kurume azalea with small leaves. In mid- and late spring, bears an abundance of funnel-shaped, vermilion-red flowers, 4.5cm (1¾in) long, in small trusses. 1–1.2m (4ft). \*\*\*

**R. adenogynum** ♀ syn. *R. adenophorum*. Evergreen shrub or small tree with elliptic or narrowly elliptic, dark green leaves, 6–11cm (2½–4½in) long; the undersides have a thick, tawny indumentum, yellowish brown at first, becoming olive-brown when mature. Trusses of 4–12 funnel-shaped, pink-tinged white flowers, 3–4.5cm (1¼–1¾in) long, spotted crimson inside, or each with a reddish pink

mark, are borne in mid-spring. 1–2.5m (8ft). S.W. China. \*\*\*

**R. adenophorum** see *R. adenogynum*.

**R. albrechtii** ♂/♀ Twiggy, deciduous azalea with obovate, finely toothed, dark green leaves, 4–12cm (1½–5in) long, grey-downy beneath. Trusses of 3–5 widely bell-shaped, deep to purplish rose-pink flowers, 4–5cm (1½–2in) across, spotted olive-green inside, are borne in mid-spring. Tolerates full sun. 1–2.5m (8ft). Japan. \*\*\*

**R. ‘Alison Johnstone’** ♂ Evergreen shrub producing small, elliptic leaves with a metallic lustre. In spring, bears loose trusses of pendent, tubular-bell-shaped, pale yellow flowers, 4cm (1½in) long, flushed peach-pink inside. Prefers a sunny, sheltered site. 1–2m (6ft). \*\*\*

**R. ‘Angelo’**. Tall, evergreen shrub with an open habit and medium-sized to large leaves. Trusses of 9–10 funnel-shaped, fragrant, very pale pink or white flowers, 13cm (5in) long, open in late spring and early summer. 1–4m (12ft). \*\*\*

**R. ‘Anna Baldisiefen’** ♀ Dwarf, compact, evergreen shrub of upright habit, with small, oblong-ovate leaves, turning bronze-red in winter. In early spring, bears dense trusses of numerous funnel-shaped, bright pink flowers, 3cm (1¼in) long, with deeper pink margins. 1–1m (3ft). \*\*\*

**R. ‘Anna Rose Whitney’** ♀ Evergreen shrub with large leaves. In late spring, bears loose, rounded trusses of widely funnel-shaped, deep rose-pink flowers, 6–10cm (2½–4in) across, spotted brown inside. 1–4m (12ft). \*\*\*

**R. arboreum** ♂/♀ Evergreen tree producing inversely lance-shaped, dark green leaves, 7–19cm (3–7in) long, with a silvery, fawn, or cinnamon-brown indumentum beneath. Dense trusses of tubular-bell-shaped, red, pink, or white flowers, 3–5cm (1¼–2in) long, with black nectar pouches and black spots inside, are borne in early spring. 1–12m (40ft), 4m (12ft). China to Thailand, N. India, Bhutan, Sri Lanka. \*\*

**R. ‘Arctic Tern’** see *x Ledodendron ‘Arctic Tern’*.

**R. argyrophyllum** ♂ Evergreen shrub with oblong to lance-shaped, dark green leaves, 3–6cm (1¼–2½in) long, with grey-white hairs beneath. In mid- and late spring, bears lax trusses of funnel- to

bell-shaped, mid- to pale pink flowers, 3–6cm (1¼–2½in) long, spotted deep pink inside. 1–6m (20ft), 2–5m (8ft). S.W. China. \*\*\*

**R. arizelum** see *R. rex* subsp. *arizelum*.

**R. ‘Arthur Bedford’**, syn. *R. ‘A. Bedford’*. Vigorous, evergreen shrub with large leaves. In early summer, bears pyramid-shaped trusses of funnel-shaped, light mauve flowers, 5–9cm (2–3½in) long, each with a deep brown-red flare in the throat. Tolerant of sun. 1–3m (10ft). \*\*\*

**R. augustinii** ♂/♀ Bushy, evergreen shrub or small tree producing oblong to lance-shaped, mid- to dark green leaves, 4–11cm (1½–4½in) long. Trusses of 2–5 broadly funnel-shaped, pale to deep blue or lavender-blue flowers, to 7cm (3in) across, spotted greenish brown inside, open in mid-spring. Will grow in full sun. 1–2.2m (7ft). China. \*\*\*

**R. auriculatum** ♀ Multi-stemmed, spreading, evergreen shrub or small tree producing oblong to lance-shaped, dark green leaves, 15–30cm (6–12in) long, with ear-like lobes at their bases. In late summer, bears loose trusses of funnel-shaped, 7-lobed, very fragrant white flowers, 8–11cm (3–4½in) long, tinted green inside. 1 to 10m (30ft), 5m (15ft). W. China. \*\*\*

**R. austrinum** ♂/♀ syn. *R. prinophyllum*. Deciduous azalea with elliptic-obovate, dark green leaves, 3–9cm (1¼–3½in) long, sparsely hairy above, glaucous, grey-green and more hairy beneath. Trusses of 5–9 tubular-funnel-shaped, pale to deep pink flowers, 3.5cm (1½in) long, are borne in late spring. Will tolerate full sun. 1–3m (10ft). USA (Florida to Mississippi). \*\*\*

**R. ‘Azor’**. Vigorous, evergreen shrub of open habit, with medium-sized leaves. In midsummer, bears loose trusses of funnel-shaped, fragrant, salmon-pink flowers, 6–9cm (2½–3½in) long, spotted red-brown inside. 1–4m (12ft). \*\*\*

**R. ‘Azuma-kagami’** ♂/♀ Compact, evergreen Kurume azalea with small leaves. In mid-spring, bears numerous small trusses of hose-in-hose, bright pink flowers, 3cm (1¼in) long. 1–1.2m (4ft). \*\*\*

**R. bakeri** see *R. calendulaceum*.

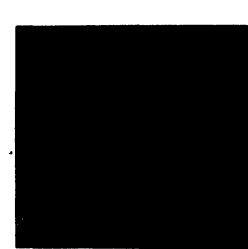
**R. barbatum** ♀ Multi-stemmed, tall, evergreen shrub or small tree with bristly



*Rhododendron albrechtii*



*Rhododendron ‘Alison Johnstone’*



*Rhododendron arboreum*



*Rhododendron argyrophyllum*



*Rhododendron augustinii*



*Rhododendron ‘Azuma-kagami’*

leaf-stalks and young stems, and peeling, reddish purple bark. Produces elliptic to obovate, dark green leaves, 9–19cm (3½–7in) long. Tight trusses of tubular to bell-shaped, bright scarlet flowers, 3.5–5cm (1½–2in) long, with crimson-black nectar pouches inside, are borne in early spring.  $\pm$  6m (20ft). Himalayas. \*\*\*

**R. 'Beauty of Littleworth'**  $\square$   $\varnothing$

Vigorous, showy, evergreen shrub with large leaves. In late spring, bears cone-shaped trusses of funnel-shaped, fragrant white flowers, 10–15cm (4–6in) long, spotted crimson inside. Only suitable for dappled shade.  $\pm$  4m (12ft). \*\*\*

**R. 'Beethoven'**  $\square$   $\varnothing$  Dwarf, evergreen Vuyk azalea with small leaves. In late spring, bears lax trusses of funnel-shaped, fringe-petalled, magenta-pink flowers, 5cm (2in) long, each with a deeper mauve mark inside.  $\pm$  1.3m (4½ft). \*\*\*

**R. 'Berryrose'**  $\varnothing$  Mound-forming, evergreen shrub with sparse, medium-sized leaves. Compact trusses of tubular-funnel-shaped, bright apricot-orange flowers, 10cm (4in) long, are borne in late spring.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Blue Diamond'**  $\square$  Dwarf, small-leaved, evergreen shrub with a compact, upright habit. In mid- and late spring, bears trusses of up to 5 funnel-shaped, violet-blue flowers, 5cm (2in) long. Prefers full sun.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Blue Peter'**  $\square$   $\varnothing$  Large-leaved, evergreen shrub of open habit. In early summer, bears tight, rounded trusses of funnel-shaped, lavender-blue flowers, 7cm (3in) long, with frilled petals and purple marks inside. Tolerates full sun.  $\pm$  3m (10ft). \*\*\*

**R. 'Blue Tit'** Dwarf, compact, evergreen shrub with small leaves that are a distinctive yellowish green when young, mid-green when mature. Trusses of 2 or 3 funnel-shaped, grey-blue flowers, 0.7–2.5cm (¼–1in) long, are borne at the tips of the shoots in early and mid-spring. Suitable for a rock garden in full sun.  $\pm$  1m (3ft). \*\*\*

**R. 'Bow Bells'**  $\varnothing$  Free-flowering, compact, evergreen shrub with small to medium-sized, broadly ovate to rounded leaves, reddish bronze when young, mid-green when mature. In late spring, bears lax trusses of long-stalked, bell-shaped, light pink flowers, 5–6cm (2–2½in) long.  $\pm$  2m (6ft). \*\*\*

**R. brachysiphon** see *R. maddenii*.

**R. 'Britannia'**  $\varnothing$  Low but relatively broad, evergreen shrub with medium-sized, pale green leaves. Dense trusses of bell-shaped, bright scarlet flowers, 5–7cm (2–3in) long, are borne in early summer.  $\pm$  1.5m (5ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

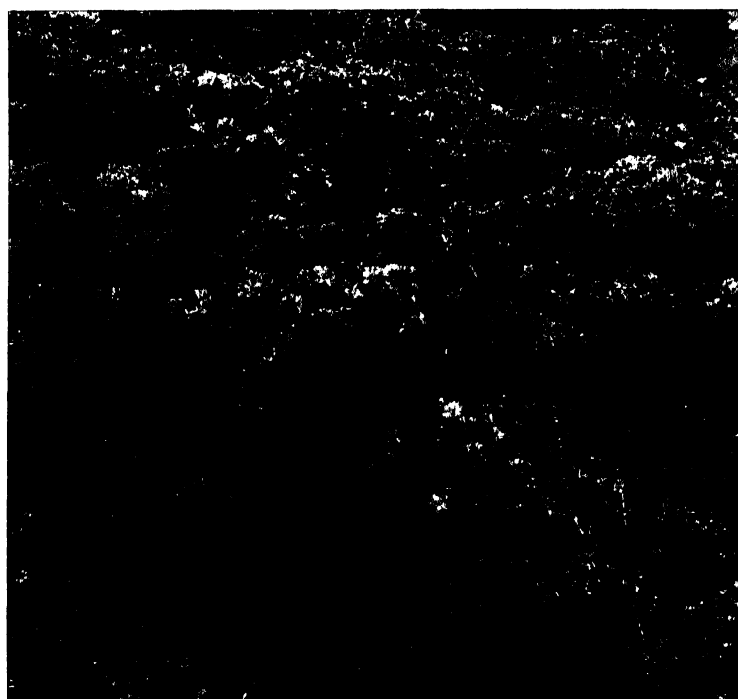
**R. bullatum** see *R. edgeworthii*.

**R. bureausi** see *R. bureavii*.

**R. bureavii**  $\square$   $\varnothing$  syn. *R. bureau*. Multi-stemmed, evergreen shrub producing ovate to lance-shaped, dark green leaves, 4.5–12cm (1½–5in) long, initially covered with a light brown indumentum above and a woolly, bright orange-brown indumentum beneath. In mid-spring, bears neat trusses of tubular-bell-shaped, white or soft pink, crimson-spotted flowers, 2.5–4cm (1–1½in) long.  $\pm$  3m (10ft). S.W. China. \*\*\*

**R. calendulaceum**, syn. *R. bakeri*.

Robust, deciduous azalea with elliptic-oblong, mid-green leaves, 3.5–9cm



*Rhododendron* 'Blue Diamond'

(1½–3½in) long, softly hairy on both sides. In late spring and early summer, bears lax trusses of funnel-shaped, bright orange to scarlet flowers, to 5cm (2in) long, usually opening with the leaves, or just after they emerge. Prefers full sun.  $\pm$  2.5m (8ft). E. USA. \*\*\*

**R. calophytum**  $\square$   $\varnothing$  Many-stemmed, evergreen shrub or small tree with oblong to inversely lance-shaped, dark green leaves, 14–30cm (5½–12in) long. In early spring, bears large trusses of broadly bell-shaped, 5- to 7-lobed, fragrant, pale pink flowers, to 7cm (3in) across, with basal, carmine-red marks in the throats.  $\pm$  10m (30ft),  $\leftrightarrow$  6m (20ft). S.W. China, Tibet. \*\*\*

**R. calostrotum**  $\square$  Compact, dwarf, evergreen shrub with oblong-ovate to rounded leaves, 1–3cm (½–1¼in) long, scaly and glaucous above, with dense brown scales beneath. In late spring and early summer, freely bears solitary or pairs of saucer-shaped, bright rose-purple flowers, 2–4cm (¾–1½in) across, often with purple spots on the upper lobes. Tolerates full sun if kept moist.  $\pm$  75cm (30in),  $\leftrightarrow$  90cm (36in). N.E. India, Tibet, W. China. \*\*\*

**R. 'Carita'**  $\square$  Neat, evergreen shrub, becoming more open with age, with medium-sized leaves. In mid-spring, bears flat-topped trusses of funnel-shaped flowers, 5cm (2in) long, pale pink to pale lemon yellow, each with a small, cerise-red, basal flash in the throat.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Carmen'**  $\varnothing$  Dwarf, evergreen shrub with small, dark green leaves. Loose trusses of 2–5 tubular-bell-shaped, waxy, dark red flowers, 3–6cm (1¼–2½in) long, are produced in mid-spring.  $\pm$  1m (3ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. carolinianum** see *R. minus*.

**R. catawbiense** Evergreen shrub with oblong-ovate, glossy, dark green leaves, 7–15cm (3–6in) long, paler beneath. Large trusses of funnel-bell-shaped, reddish purple flowers, 3–4.5cm (1¼–1¾in) long, are produced in late spring and early summer. Thrives in full

Trusses of 3–15 delicate, bell-shaped, pale to mid-yellow flowers, 2.5–4cm (1–1½in) long, are borne in mid-spring. Some variants have deep red basal marks inside.  $\pm$  to 5m (15ft),  $\leftrightarrow$  4m (12ft). S.E. Tibet, S.W. China, N.E. Burma. \*\*\*

**R. campylognum** Dwarf, compact, evergreen shrub with inversely lance-shaped leaves, 1–3.5cm (½–1½in) long, glossy, dark green above, often off-white or silver beneath. In late spring, bears small trusses of long-stemmed, nodding, broadly bell-shaped flowers, 1–2.5cm (½–1in) long, varying in colour from white or pink to purple or purplish black. Suitable for growing in a rock garden in full sun.  $\pm$  75cm (30in). E. India (Arunachal Pradesh), Tibet, W. China, N.E. Burma. \*\*\*

**R. camtschaticum** Deciduous shrub with an unusual, dwarf, procumbent habit and obovate, hairy-margined, mid-green leaves, 2–5cm (¾–2in) long, on hairy shoots. Saucer-shaped, reddish purple or pink flowers, 2.5cm (1in) across, each with a leafy calyx, are borne singly or in pairs in late spring and early summer.  $\pm$  to 30cm (12in),  $\leftrightarrow$  90cm (36in). E. Asia, Alaska. \*\*\*

**R. 'Carita'**  $\square$  Neat, evergreen shrub, becoming more open with age, with medium-sized leaves. In mid-spring, bears flat-topped trusses of funnel-shaped flowers, 5cm (2in) long, pale pink to pale lemon yellow, each with a small, cerise-red, basal flash in the throat.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Carmen'**  $\varnothing$  Dwarf, evergreen shrub with small, dark green leaves. Loose trusses of 2–5 tubular-bell-shaped, waxy, dark red flowers, 3–6cm (1¼–2½in) long, are produced in mid-spring.  $\pm$  1m (3ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. carolinianum** see *R. minus*.

**R. catawbiense** Evergreen shrub with oblong-ovate, glossy, dark green leaves, 7–15cm (3–6in) long, paler beneath. Large trusses of funnel-bell-shaped, reddish purple flowers, 3–4.5cm (1¼–1¾in) long, are produced in late spring and early summer. Thrives in full

sun; very hardy.  $\pm$  3m (10ft). E. North America. \*\*\*

**R. 'Catawbiense Album'** Vigorous, shrubby, evergreen "iron clad" rhododendron with medium-sized leaves. In early summer, pale lilac buds open to conical trusses of bell-shaped white flowers, 6–8cm (2½–3in) long, with green flashes in the throats. Tolerates sun and wind.  $\pm$  3m (10ft). \*\*\*

**R. 'Cécile'**  $\square$   $\varnothing$  Vigorous, deciduous Knap Hill-Exbury azalea with medium-sized leaves. In late spring, dark salmon-pink buds open to dense, rounded trusses of tubular-funnel-shaped, clear salmon-pink flowers, 5cm (2in) long, with yellow flares in the throats.  $\pm$  2.2m (7ft). \*\*\*

**R. 'Chikor'** Dwarf, evergreen shrub with a neat habit and small, dark green leaves, bronze-tinted in winter. Trusses of 3–6 saucer-shaped, clear yellow flowers, 3cm (1¼in) across, are borne in mid-spring.  $\pm$  60cm (24in). \*\*\*

**R. 'Chionoides'** Dense, evergreen shrub with medium-sized leaves. In mid- and late spring, bears dense trusses of funnel-shaped, pure white flowers, 5cm (2in) long, each with a conspicuous yellow flare on the inside of the upper lobe. Tolerant of wind, sun, and heat.  $\pm$  2m (6ft). \*\*\*

**R. 'Christmas Cheer'**  $\varnothing$  Dense, compact, evergreen shrub with medium-sized leaves. Numerous trusses of funnel-shaped, whitish pink flowers, 4.5cm (1¾in) long, open in late winter and early spring.  $\pm$  2m (6ft). \*\*\*

**R. ciliatum**  $\varnothing$  Semi-dwarf, compact, evergreen shrub with oblong-elliptic leaves, 4.5–9cm (1¾–3½in) long, dark green above, paler green beneath, and with hairy margins. Small trusses of 2–4 tubular-bell-shaped, pinkish white flowers, 2–3cm (¾–1¼in) long, open in early and mid-spring. Tolerates full sun.  $\pm$  2m (6ft). E. Himalayas. \*\*\*

**R. 'Gippenense'**  $\square$   $\varnothing$  Showy, compact, small-leaved, evergreen shrub. In early spring, bears profuse trusses of up to 3 funnel-shaped, pale to mid-pink flowers, 4.5–5cm (1¾–2in) long. Flowers are vulnerable to early frosts.  $\pm$  1.1m (3½ft). \*\*\*

**R. cinnabarinum**  $\square$  Vigorous, erect, evergreen shrub producing neat, aromatic, elliptic-obovate, hairless, dark green leaves, 3–9cm (1¼–3½in) long, with a metallic grey-green sheen above, scaly beneath. Loose trusses of pendent, narrowly tubular-bell-shaped, waxy, red, sometimes yellow, orange, apricot-pink, or reddish purple flowers, 2.5–3.5cm (1–1½in) long, are borne from mid-spring to early summer.  $\pm$  6m (20ft),  $\leftrightarrow$  2m (6ft). Himalayas to N. Burma. \*\*\*

**R. 'Cinnkeys'** Erect, evergreen shrub with medium-sized, narrowly oblong, glossy leaves. In mid- and late spring, bears multiple trusses of narrowly tubular flowers, 4cm (1½in) long, with clear red tubes and yellow lobes with a light, waxy bloom.  $\pm$  2.2m (7ft). \*\*\*

**R. 'Coccineum Speciosum'**  $\varnothing$  Bushy, deciduous Ghent azalea with small, dark green leaves, turning yellow or orange in autumn. In early summer, bears lax trusses of funnel-shaped, fragrant, rich



orange-red flowers, to 5cm (2in) long.  $\updownarrow$  2m (6ft). \*\*\*

**R. 'Corneille'**  $\square \nabla$  Deciduous, tall-growing Ghent azalea of open habit, with small leaves. Domed trusses of open trumpet-shaped, honeysuckle-like, fragrant cream flowers, 4cm (1½in) long, strongly suffused pink on the outside, are borne in early summer.  $\updownarrow$  1.5–2.5m (5–8ft). \*\*\*

**R. 'Cottage Garden's Pride'** see *R. Mrs. G. W. Leak*.

**R. 'Crest'**  $\square \nabla$  syn. *R. 'Hawk Crest'*. Evergreen shrub of open habit, with medium-sized leaves. In mid-spring, orange-yellow buds open to trusses of up to 12 long-lasting, broadly funnel-shaped, primrose-yellow flowers, 10cm (4in) long.  $\updownarrow$  3.5m (11ft). \*\*\*

**R. cubittii**  $\square$  Evergreen shrub with purple-brown young shoots and oblong-elliptic, leathery, sparsely scaly, mid- to dark green leaves, to 10cm (4in) long. In mid- and late spring, bears funnel-shaped, white to pale pink flowers, to 10cm (4in) long, with brownish or orange-yellow markings.  $\updownarrow$  1.5m (5ft),  $\leftrightarrow$  to 1m (3ft). N. Burma. \*

**R. 'Cunningham's White'**. Compact, evergreen shrub with medium-sized leaves. In late spring, mauve buds open to lax trusses of funnel-shaped white flowers, 5–6cm (2–2½in) long, with yellow to green-brown markings inside.  $\updownarrow$  2.2m (7ft). \*\*\*

**R. 'Curlew'**  $\nabla$  Dwarf, spreading, small-leaved, evergreen shrub. In mid-spring, bears numerous trusses of 2 or 3 broadly funnel-shaped, bright yellow flowers, 5cm (2in) across, spotted greenish brown inside.  $\updownarrow$  60cm (24in). \*\*\*

**R. 'Cynthia'**  $\square \nabla$  syn. *R. 'Lord Palmerston'*. Large, evergreen shrub with large leaves. In late spring, bears pyramidal trusses of funnel-shaped, deep rose-pink to magenta flowers, 8cm (3in) long, with deep crimson markings on the insides of the upper lobes. Grows well in sun.  $\updownarrow$  6m (20ft). \*\*\*

**R. dauricum**. Deciduous or semi-evergreen shrub with small, elliptic, leathery, glossy, dark green leaves, 1–3.5cm (½–1½in) long, scaly beneath, turning purple-brown in winter. In mid- and late winter, bears small trusses of funnel-shaped, vivid rose-purple flowers, 1.5–2cm (½–¾in) long. Very hardy; suitable for an open site.  $\updownarrow$  1.5m (5ft). E. Asia. \*\*\*

**R. davidsonianum**  $\square \nabla$  Vigorous, evergreen shrub producing lance-shaped to oblong-lance-shaped, glossy, dark green leaves, 3–7cm (1¼–3in) long, densely brown-scaly beneath. In mid-spring, bears trusses of 2–6 broadly funnel-shaped, pale pink to purplish pink flowers, to 4.5cm (1¾in) across, sometimes spotted red inside. Grow in full sun or partial shade.  $\updownarrow$  to 4m (12ft),  $\leftrightarrow$  3m (10ft). W. China. \*\*\*

**R. 'Daviesii'**  $\nabla$  Compact, deciduous Ghent azalea with small leaves. In late spring and early summer, bears lax trusses of tubular to funnel-shaped, fragrant white flowers, to 7cm (3in) long, with yellow flares inside.  $\updownarrow$  1.5m (5ft). \*\*\*

**R. decorum**  $\square \nabla$  Large shrub or small tree with rough, fissured bark and oblong-ovate, dark green leaves, 6–20cm (2½–8in) long, glaucous beneath. In late spring and early summer, bears trusses of 7–10 funnel- to bell-shaped, 6- or 7-

lobed, strongly scented white flowers, 4.5–11cm (1¾–4½in) long, sometimes faintly tinged pink, often with greenish yellow bases.  $\updownarrow$  6m (20ft),  $\leftrightarrow$  2.5m (8ft). China. \*\*\*

**R. degonianum subsp. heptamerum** see *R. metternichii*.

**R. degonianum subsp.**

**yakushmanum** see *R. yakushmanum*.

**R. dichroanthum**. Compact, evergreen shrub producing obovate to inversely lance-shaped, dark green leaves, 4–4.5cm (1½–1¾in) long, with a thin, pale fawn indumentum beneath. In late spring and early summer, bears trusses of 4–8 fleshy, tubular to bell-shaped, yellow to orange or orange-red flowers, 3.5–5cm (1½–2in) long. Grows well in full sun.  $\updownarrow$  to 2m (6ft),  $\leftrightarrow$  2.2m (7ft). N.E. Burma, W. China. \*\*\*

**R. discolor** see *R. fortunei* subsp. *discolor*.

**R. 'Doc'**  $\square \nabla$  Small, compact, evergreen shrub with medium-sized leaves. In late spring, bears rounded trusses of funnel-shaped, wavy-margined, rose-pink flowers, 4cm (1½in) long, with deeper pink margins and spots, fading to white.  $\updownarrow$  1.2m (4ft). \*\*\*

**R. 'Doncaster'**. Evergreen shrub with distinctive, concave, wavy-margined, medium-sized leaves. Full, dense trusses of funnel-shaped, dark red flowers, to 8cm (3in) long, each with a black-spotted flare inside, are borne in mid- and late spring.  $\updownarrow$  2.2m (7ft). \*\*\*

**R. 'Dopey'**  $\nabla$  Upright, compact, evergreen shrub with medium-sized leaves. In late spring, bears neat, full trusses of long-lasting, bell-shaped, glossy red flowers, 5–7cm (2–3in) long, with dark brown spots inside, paler towards the margins.  $\updownarrow$  2m (6ft). \*\*\*

**R. 'Dora Amateis'**  $\square \nabla$  Reliable, semi-dwarf, compact, evergreen shrub with small leaves. In spring, bears lax trusses of 6–8 broadly funnel-shaped white flowers, 2–3cm (¾–1¼in) long, the insides flushed pink with small green flecks.  $\updownarrow$  60cm (24in). \*\*\*

**R. 'Dr. Herman Sleumer'**. Evergreen Vireya rhododendron with medium-sized leaves. Intermittently bears trusses of 5 or 6 bell-shaped pink flowers, 4–6cm (1½–2½in) long, with cream throats, from winter to summer.  $\updownarrow$  1.2m (4ft),  $\leftrightarrow$  1m (3ft).  $\odot$  (min. 5°C/41°F)

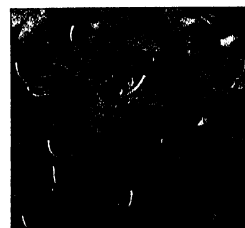
**R. edgeworthii**  $\nabla$  syn. *R. bullatum*. Evergreen, epiphytic shrub with elliptic to ovate, wrinkled, dark green leaves, 5–10cm (2–4in) long; the shoots and undersides of the leaves have a thick, tawny indumentum. In mid-spring, bears trusses of 2 or 3 broadly funnel-shaped, strongly scented flowers, 6–15cm (2½–6in) across, white to pale pink or pink, flushed deep red outside.  $\updownarrow$  2.5m (8ft). E. Himalayas. \*\*

**R. 'Edmund de Rothschild'**. Vigorous, upright, leggy, evergreen shrub with medium-sized leaves. In early summer, bears dense trusses of 20 or more funnel-shaped, deep red flowers, 9cm (3½in) long, heavily spotted darker red inside.  $\updownarrow$  3m (10ft). \*\*\*

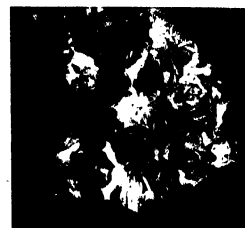
**R. 'Elisabeth Hobbie'**  $\nabla$  Dense, compact, semi-dwarf, evergreen shrub with medium-sized, rounded leaves. In early and mid-spring, produces lax trusses of 6–10 narrowly funnel-shaped, scarlet-red flowers, 6cm (2½in) long, faintly spotted darker red inside.  $\updownarrow$  75cm (30in). \*\*\*



*Rhododendron* 'Beauty of Littleworth'



*Rhododendron* 'Beethoven'



*Rhododendron* 'Blue Peter'



*Rhododendron* bureavii



*Rhododendron* calophytum



*Rhododendron* calostrotum



*Rhododendron* campanulatum



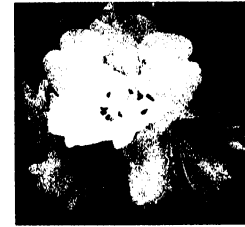
*Rhododendron* campylocarpum



*Rhododendron* 'Carita'



*Rhododendron* 'Cécile'



*Rhododendron* 'Cilpinense'



*Rhododendron* cinnabarinum



*Rhododendron* cinnabarinum subsp. xanthocodon



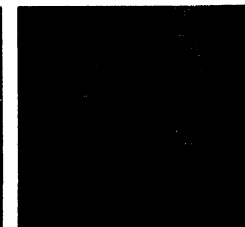
*Rhododendron* 'Corneille'



*Rhododendron* 'Crest'



*Rhododendron* cubittii



*Rhododendron* 'Cynthia'



*Rhododendron* davidsonianum



*Rhododendron* decorum



*Rhododendron* 'Doc'



*Rhododendron* 'Dora Amateis'

**R. 'Elizabeth'** ■ Compact, dwarf, evergreen shrub with small leaves. In spring, bears trusses of up to 5 funnel-shaped, bright red flowers, 6–8cm (2½–3in) long, in such abundance that they may almost hide the foliage. Suitable for sun. ↗ 1m (3ft). \*\*\*

**R. 'Elizabeth Lockhart'**. Compact, semi-dwarf, evergreen shrub with small, rounded, shiny, deep maroon-purple leaves. In mid-spring, bears loose trusses of bell-shaped, cherry-red flowers, 5cm (2in) long. Remove any growth that reverts to green. ↗ 1m (3ft). \*\*\*

**R. 'Elsie Lee'**. Dwarf, evergreen Shammarello azalea with small leaves. In late spring, bears numerous small trusses of broadly funnel-shaped, semi-double, light reddish-purple flowers, 5–7cm (2–3in) across. Suitable for full sun and exposed sites. Very hardy. ↗ 1m (3ft). \*\*\*

**R. eriogynum** see *R. facatum*.

**R. 'Fabia'** ■ Evergreen shrub with medium-sized leaves. Loose trusses of long-lasting, funnel-shaped, orange-red flowers, to 7cm (3in) long, marked pale brown inside, are borne in late spring. ↗ 2m (6ft). \*\*

**R. facatum** ♀ syn. *R. eriogynum*.

Evergreen shrub or small tree with a woolly white indumentum on young shoots. Oblong-elliptic to inversely lance-shaped leaves, 10–19cm (4–7½in) long, are matt, mid-green above, glossy beneath. In early summer, produces trusses of 8–16 tubular-bell-shaped, bright scarlet flowers, 4–5cm (1½–2in) long, with deep purple nectar pouches. ↗ 10m (30ft), ↔ 2.5m (8ft). Burma, China. \*\*

**R. falconeri** ■ Multi-stemmed, evergreen tree with flaking, red-brown bark. Broadly elliptic to obovate, dark green leaves, 18–35cm (7–14in) long, have a dense, woolly brown indumentum beneath and on the leaf-stalks. In mid-spring, bears large trusses of 20–25 widely bell-shaped, fleshy, creamy white or yellow flowers, 4–5cm (1½–2in) long, sometimes pink-tinged, often with purple marks inside. ↗ to 12m (40ft), ↔ 5m (15ft). E. Himalayas. \*\*\*

**R. fastigiatum**. Compact, dwarf, alpine rhododendron with broadly elliptic to ovate-oblong, glaucous, mid-green leaves, 0.5–1.5cm (¼–½in) long, with tan scales beneath. Abundant trusses of up to 5 funnel-shaped, purplish blue flowers, 1–2cm (½–¾in) long, are borne in mid-spring. Suitable for full sun. ↗ 1m (3ft). W. China. \*\*\*

**R. 'Fastuosum Flore Pleno'** ■ Dome-shaped, shrubby, "iron clad" rhododendron with medium-sized leaves. Long-lasting trusses of funnel-shaped, wavy-margined, double mauve flowers, 5–7cm (2–3in) long, with brown-crimson flashes inside, are borne in late spring and early summer. ↗ 4m (12ft). \*\*\*

**R. ferrugineum** (Alpenrose). Compact, evergreen shrub producing narrowly to broadly elliptic, glossy, dark green leaves, 2–4cm (1–1½in) long, the leaf-stalks and undersides covered in red-brown scales. In early summer, bears trusses of 6–8 tubular, rose-pink to crimson, occasionally white flowers, 1.5cm (½in) long, with spreading lobes. Prefers full sun. ↗ to 1.5m (5ft), ↔ 1.2m (4ft). C. Europe. \*\*\*

**R. fictolactum** see *R. rex* subsp. *fictolactum*.

**R. 'Firefly'** see *R. 'Hexe'*.

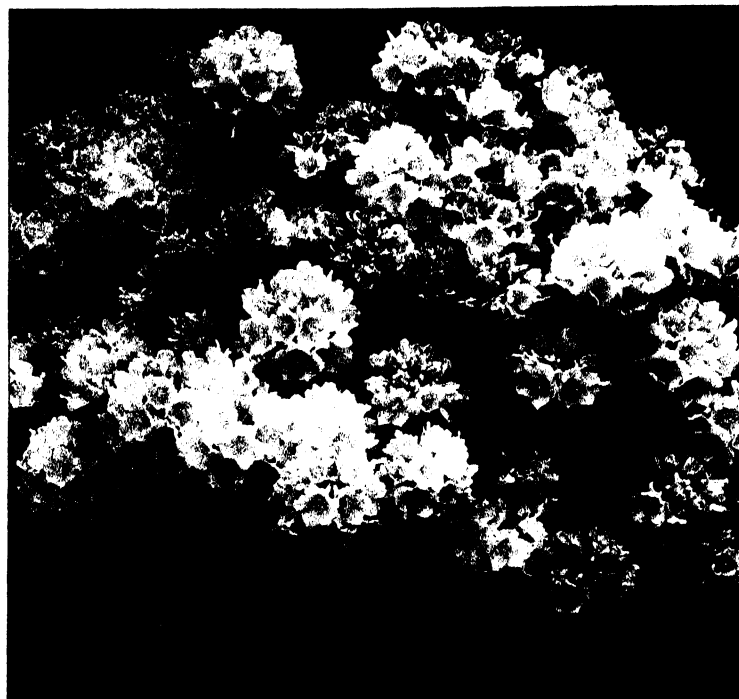
**R. forrestii**. Prostrate, creeping, evergreen shrub with neat, broadly obovate to rounded, glossy, dark green leaves, 1–3cm (½–1¼in) long, purple beneath. Tubular to bell-shaped, fleshy scarlet flowers, 3–3.5cm (1¼–1½in) long, with dark carmine-red nectar pouches, are borne singly or in pairs in mid-spring. ↗ 20cm (8in), ↔ 1.5m (5ft). Tibet, China (Yunnan), N.E. Burma. \*\*\*

**R. fortunei** ♀ Evergreen shrub or small tree with oblong-elliptic to oblong leaves, 8–18cm (3–7in) long, matt, dark green above, paler green beneath. Trusses of 6–12 broadly funnel-shaped, 7-lobed, fragrant, pink or lilac-pink flowers, 6–8cm (2½–3in) across, are borne in mid- and late spring. ↗ 10m (30ft), ↔ 2.5m (8ft). China. \*\*\*

**subsp. discolor** ■ syn. *R. discolor*, has a more open habit, and bears trusses of 8–10 funnel- to bell-shaped, white, pink, or rose-pink flowers, in early and midsummer. ↗ 6m (20ft), ↔ 3m (10ft).

**R. 'Fragrantissimum'** ■ Lax, evergreen shrub with hairy, medium-sized leaves. In mid-spring, bears trusses of up to 4 broadly funnel-shaped, nutmeg-scented, white, sometimes pink-flushed flowers, 6cm (2½in) long, with yellow throats. ↗ 2m (6ft). \*

**R. 'Freya'** ■ Deciduous, compact, bushy Rustica azalea with small leaves. Flat-domed trusses of funnel-shaped, hose-in-hose, fragrant, pink-flushed, salmon-orange flowers, 4cm (1½in) long, are borne in late spring and early summer. Suitable for sun. ↗ 1.5m (5ft). \*\*\*



*Rhododendron* 'Golden Torch'

**R. 'Frome'** ■ Deciduous Knap Hill-Exbury azalea of open habit, with medium-sized leaves. In late spring, bears frilled, wavy-margined, broadly funnel-shaped, saffron-yellow flowers, 7cm (3in) long, overlaid with red in their throats. Suitable for an open site. ↗ 1.5m (5ft). \*\*\*

**R. fulgens**. Rounded, evergreen shrub with smooth, peeling, pink-grey to red-brown bark. The broadly ovate to obovate, glossy, dark green leaves, 7–11cm (3–4½in) long, have a dense, reddish brown indumentum beneath. Compact trusses of 10–15 tubular to bell-shaped, crimson-scarlet flowers, 2–3.5cm (¾–1½in) long, with black-red nectar pouches, are borne in early spring. ↗ 4m (12ft), ↔ 3m (10ft). E. Himalayas, Tibet. \*\*\*

**R. fulvum** ■ Large, evergreen shrub or small tree with inversely lance-shaped to elliptic leaves, 8–22cm (3–9in) long, glossy, dark green above, with a red-brown to fawn indumentum beneath. Compact trusses of up to 20 tubular-bell-shaped white flowers, 2.5–4.5cm (1–1½in) long, flushed rose-pink to deep rose-pink, sometimes each with a basal crimson mark, open in early and mid-spring. ↗ 5m (15ft), ↔ 3m (10ft). E. Himalayas, China. \*\*\*

**R. 'Furnivall's Daughter'** ■ Upright, rounded, showy, evergreen shrub with medium-sized leaves. In late spring and early summer, bears compact trusses of funnel-shaped, bright pink flowers, 9cm (3½in) long, each with a bold, strawberry-red flare in the throat. ↗ 3m (10ft). \*\*\*

**R. 'George Budgen'**. Vigorous, evergreen, compact Vireya rhododendron with medium-sized leaves. Trusses of up to 5 tubular-funnel-shaped flowers, 8cm (3in) long, bright orange at the petal tips, shading to rich yellow at the centres, are borne intermittently from winter to summer. ↗ 1.3m (4½ft), ↔ 1–1.2m (3–4ft). ♂ (min. 5°C/41°F)

**R. 'George Reynolds'** ■ Deciduous, bushy Knap Hill-Exbury azalea with

medium-sized leaves. Large trusses of broadly funnel-shaped yellow flowers, 6–8cm (2½–3in) long, flushed pink in bud, are borne with or before the leaves, in mid-spring. Suitable for full sun. ↗ 2m (6ft). \*\*\*

**R. 'Gibraltar'** ♀ Vigorous, deciduous Knap Hill-Exbury azalea with medium-sized leaves. In spring, crimson-orange buds open to dense trusses of funnel-shaped, brilliant orange flowers, 6–8cm (2½–3in) long, each with a distinct yellow flash and crinkled petals. Suitable for full sun. ↗ 1.5m (5ft). \*\*\*

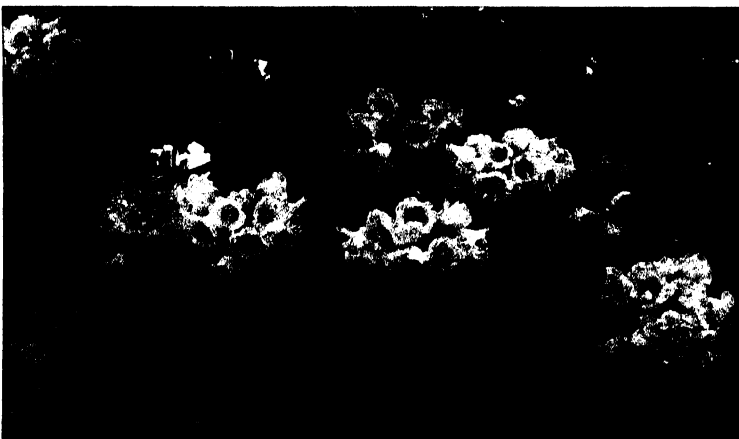
**R. 'Ginny Gee'** ♀ Dwarf, evergreen shrub forming dense, cushion-like mats of small, dark green leaves. Multiple trusses of tubular-funnel-shaped, pale purplish pink flowers, 2.5cm (1in) long, fading to white-pink, cover the leaves in mid-spring. Suitable for sun. ↗ 60–90cm (24–36in). \*\*\*

**R. glaucophyllum**. Compact, semi-dwarf, evergreen shrub with oblong to elliptic-lance-shaped, aromatic leaves, 3.5–6cm (1½–2½in) long, matt, dark green above, white-glaucous and scaly beneath. In mid-spring, bears lax trusses of 4–10 bell-shaped, white, rose-pink, or pinkish purple flowers, 1–3cm (½–1¼in) long. Suitable for full sun. ↗ 1.5m (5ft). E. Himalayas. \*\*\*

**R. 'Gloria Mundi'** ■ Deciduous, twiggy Ghent azalea with small leaves. In early summer, bears lax trusses of honeysuckle-like, tubular-funnel-shaped, fragrant orange flowers, 4–7cm (1½–3in) long, with yellow flares inside and frilled margins. Suitable for full sun. ↗ 2m (6ft). \*\*\*

**R. 'Glory of Littleworth'** ■ Semi-evergreen azaleodendron of untidy habit, with medium-sized leaves. Compact trusses of broadly funnel-shaped, creamy white flowers, 5–6cm (2–2½in) long, with bright orange-red flashes on the upper petals, open from mid-spring to early summer. ↗ 1.5m (5ft). \*\*\*

**R. 'Glowing Embers'** ■ Striking, deciduous Knap Hill-Exbury azalea with medium-sized leaves. Conical trusses of



*Rhododendron falconeri*

## RHODODENDRON

broadly funnel-shaped, vivid reddish orange flowers, 7cm (3in) long, each marked orange in the throat, are produced in mid-spring. Suitable for sun.  $\pm$  2m (6ft). \*\*\*

**R. 'Goldbukett'**, syn. *R. 'Golden Bouquet'*. Evergreen shrub producing medium-sized leaves. In late spring and early summer, bears loose trusses of 10–14 funnel-shaped, creamy yellow flowers, 5–6cm (2–2½in) long, spotted red-purple inside. Very hardy.  $\pm$  2m (6ft). \*\*\*

**R. 'Gold Crown'** see *R. 'Goldkrone'*.

**R. 'Golden Bouquet'** see *R. 'Goldbukett'*.

**R. 'Golden Fleece'** see *R. 'Princess Anne'*.

**R. 'Golden Torch'**  $\square$   $\varnothing$  Compact, upright, evergreen shrub with medium-sized leaves. In late spring and early summer, salmon-pink buds open to rounded trusses of funnel-shaped, soft yellow flowers, 4–5cm (1½–2in) long, fading to pale yellow or cream.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Goldkrone'**  $\square$  syn. *R. 'Gold Crown'*. Low-growing, compact, evergreen shrub with medium-sized leaves. Trusses of 16–18 funnel- to bell-shaped, bright golden yellow flowers, 5–7cm (2–3in) long, delicately spotted ruby-red inside, are borne in succession in mid-spring. Very hardy.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Goldsworth Orange'**. Upright, evergreen shrub, of dense, compact habit, with medium-sized leaves. In early summer, bears full trusses of tubular-funnel-shaped, salmon-pink flowers, 6cm (2½in) long, with subtle orange shading.  $\pm$  2m (6ft). \*\*\*

**R. 'Gomer Waterer'**  $\varnothing$  Compact, evergreen shrub with medium-sized leaves. In late spring and early summer, lilac-pink buds open to hemispherical trusses of funnel-shaped white flowers, to 8cm (3in) long, flushed mauve-pink at the margins, each with a bold yellow-brown flare in the throat. Very tolerant of sun, heat, and wind.  $\pm$  2m (6ft). \*\*\*

**R. 'Grace Seabrook'**. Vigorous, evergreen shrub with medium-sized leaves. In early and mid-spring, bears tight trusses of funnel-shaped, deep blood-red flowers, 8cm (3in) long, paling towards the margins. Very hardy.  $\pm$  2m (6ft). \*\*\*

**R. 'Greeting'**. Dwarf, evergreen Glenn Dale azalea with small leaves. In early and mid-spring, bears lax trusses of funnel-shaped, wavy-margined, bright orange-red flowers, 5cm (2in) long. Grow in full sun or partial shade.  $\pm$  1m (3ft). \*\*\*

**R. griersonianum**  $\square$  Striking, evergreen shrub with bristly, woolly shoots. Elliptic to oblong-lance-shaped, matt, olive-green leaves, 10–20cm (4–8in) long, have a loose brown indumentum beneath. In late spring and early summer, trusses of 5–12 tubular-bell-shaped scarlet flowers, 6–8cm (2½–3in) long, open from buds with long, tapering scales.  $\pm$  3m (10ft). W. China, N.E. Burma. \*\*\*

**R. griffithianum**  $\square$  Evergreen, large shrub or tree with peeling, smooth, red-brown bark. Oblong-elliptic, pale green leaves, 10–30cm (4–12in) long, are slightly glaucous beneath. Trusses of 3–6 open bell-shaped, fragrant, white or pale pink flowers, 4.5–8cm (1¾–3in) long, spotted green inside, open in mid-

spring.  $\pm$  6m (20ft),  $\leftrightarrow$  2.5m (8ft).

C. and E. Himalayas, Bhutan. \*\*

**R. 'Gumpo'**, syn. *R. indicum* var. *eriocarpum* 'Gumpo'. Late-flowering, dwarf, evergreen Satsuki azalea with small leaves. In early summer, bears few-flowered trusses of funnel-shaped, wavy-petalled, white, sometimes pink or pink-flushed white flowers, 6–8cm (2½–3in) long. Heat-tolerant.  $\pm$  1m (3ft). \*\*\*

**R. haematodes**. Slow-growing, compact, evergreen shrub producing oblong-ovate, dark green leaves, 4.5–10cm (1¾–4in) long, with a dense, reddish-brown indumentum beneath. In late spring, bears lax trusses of 6–10 tubular-bell-shaped, fleshy crimson flowers, 3.5–4.5cm (1½–1¾in) long.  $\pm$  2m (6ft). China (Yunnan). \*\*\*

**R. 'Halfdan Lem'**  $\square$  Very vigorous, lax, evergreen shrub with large leaves. In mid- and late spring, bears tight trusses of broadly funnel-shaped red flowers, 9cm (3½in) long, spotted dark red, fading to pink with age.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Hatsugiri'**  $\square$   $\varnothing$  Compact, dwarf, evergreen Kurume azalea with small leaves. In spring, bears trusses of up to 3 broadly funnel-shaped, bright crimson-purple flowers, 0.7–2.5cm (¼–1in) long. Will tolerate sun.  $\pm$  60cm (24in). \*\*\*

**R. 'Hawk Crest'** see *R. 'Crest'*.

**R. 'Hexe'**, syn. *R. 'Firefly'*. Dwarf, evergreen Indian azalea of neat habit, with small leaves. In spring, bears lax trusses of numerous hose-in-hose, glowing crimson flowers, 3–4cm (1¼–1½in) long.  $\pm$  60cm (24in). \*\*

**R. 'Hino-crimson'**  $\varnothing$  Dwarf, evergreen Kurume azalea of dense habit, with small leaves. In spring, bears abundant funnel-shaped, brilliant red flowers, 0.7–2.5cm (¼–1in) long, in rounded trusses.  $\pm$  60cm (24in). \*\*\*

**R. 'Hinode-giri'**  $\square$   $\varnothing$  Compact, dwarf, evergreen Kurume azalea with small leaves. In spring, bears domed trusses of numerous broadly funnel-shaped, bright crimson flowers, 1–2.5cm (½–1in) long. Prefers full sun.  $\pm$  60cm (24in). \*\*\*

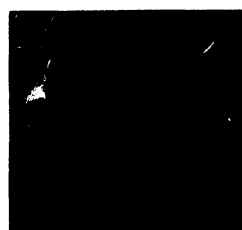
**R. 'Hino-mayo'**  $\square$   $\varnothing$  Dwarf, small-leaved, evergreen Kurume azalea of dense, compact habit. From mid-spring to early summer, produces lax trusses of broadly funnel-shaped, clear pink flowers, 1–2.5cm (½–1in) long. Will tolerate full sun.  $\pm$  60cm (24in). \*\*\*

**R. hippophaeoides**  $\square$  Upright, semi-dwarf, evergreen shrub with narrowly lance-shaped, aromatic, scaly, grey-green leaves, 2–3cm (¾–1¼in) long. In early and mid-spring, bears trusses of 6–8 funnel-shaped, lavender-blue or pale lilac flowers, 0.5–2.5cm (¼–1in) long. Prefers full sun.  $\pm$  1.5m (5ft),  $\leftrightarrow$  75cm (30in). S.W. China. \*\*\*

**R. hodgsonii**  $\square$  Evergreen tree or large shrub with attractive, peeling, red-brown to grey bark and oblong-elliptic leaves, 17–24cm (7–10in) long, glossy, dark green above, with a pale brown indumentum beneath. Compact trusses of 15–20 tubular-bell-shaped, fleshy, crimson, purple, or rose-purple flowers, 3–5cm (1¼–2in) long, each usually with 7 or 8, occasionally up to 10 lobes, open in mid- and late spring.  $\pm$  to 11m (35ft),  $\leftrightarrow$  6m (20ft). E. Himalayas. \*\*\*

**R. 'Homebush'**  $\square$   $\varnothing$  Compact, bushy, deciduous Knap Hill-Exbury azalea with

## RHODODENDRON



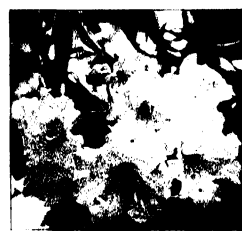
*Rhododendron* 'Elizabeth'



*Rhododendron* 'Fabia'



*Rhododendron* 'Fastuosum Flore Pleno'



*Rhododendron fortunei* subsp. *discolor*



*Rhododendron* 'Fragrantissimum'



*Rhododendron* 'Freya'



*Rhododendron* 'Frome'



*Rhododendron fulvum*



*Rhododendron* 'Furnivall's Daughter'



*Rhododendron* 'George Reynolds'



*Rhododendron* 'Gloria Mundi'



*Rhododendron* 'Glory of Littleworth'



*Rhododendron* 'Glowing Embers'



*Rhododendron* 'Goldkrone'



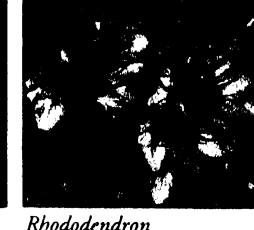
*Rhododendron griersonianum*



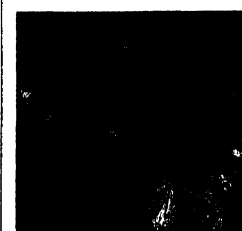
*Rhododendron* 'Halfdan Lem'



*Rhododendron* 'Hatsugiri'



*Rhododendron* 'Hinode-giri'



*Rhododendron* 'Hino-mayo'



*Rhododendron hippophaeoides*



*Rhododendron* 'Homebush'

R

medium-sized leaves. In late spring, bears tight, rounded trusses of trumpet-shaped, semi-double, bright pink flowers, 3cm (1½in) long, with paler pink shading.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Hotei'** ♀ Dense, evergreen shrub with medium-sized leaves. In mid- and late spring, bears slightly open trusses of funnel-shaped, deep yellow flowers, 5cm (2in) long, each with a prominent calyx.  $\pm$  1.5–2.5m (5–8ft). \*\*\*

**R. 'Humming Bird'**. Neat, compact, dome-shaped, evergreen shrub with small, rounded, glossy leaves. In early and mid-spring, bears loose trusses of 4 or more, nodding, widely bell-shaped, cherry-red flowers, 5–6cm (2–2½in) across.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Hydon Dawn'** ♂♀ Very compact, low-growing, evergreen shrub with medium-sized leaves. From mid-spring to early summer, bears tight trusses of funnel-shaped, frilled, pale pink flowers, 5cm (2in) long, fading to white. Tolerates full sun.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Hydon Hunter'** ♀ Vigorous, open shrub with medium-sized leaves. In early summer, bears compact trusses of narrowly bell-shaped flowers, 5cm (2in) long, with red rims fading to pink in the centres and spotted orange inside. Grow in sun.  $\pm$  1.5m (5ft). \*\*\*

**R. 'Ilam Cream'** ♂ Evergreen shrub producing large leaves. Lax trusses of lilac-pink buds open to funnel-shaped, fragrant, creamy yellow flowers, 6–9cm (2½–3½in) long, in late spring and early summer.  $\pm$  4m (12ft). \*\*\*

**R. impenitum** ♀ Compact, dwarf, evergreen shrub with tiny, elliptic-ovate, aromatic, scaly, grey-green leaves, 4–15mm (¼–½in) long. In mid- and late spring, bears abundant broadly funnel-shaped, purplish blue flowers, 2–2.5cm (¾–½in) long, singly or in pairs.  $\pm$  60cm (24in). W. China. \*\*\*

**R. 'I.M.S.'** see *R. Irene Stead*.

**R. indicum var. eriocarpum 'Gumpo'** see *R. 'Gumpo'*.

**R. insigne** ♀ Compact, dome-shaped, evergreen shrub with elliptic to lance-shaped, stiff leaves, 7–13cm (3–5in) long, glossy, dark green above, copper beneath. In late spring and early summer, bears trusses of 8–15 bell-shaped, pinkish white flowers, to 4cm (1½in) long, the insides striped rose-pink with crimson spots. Tolerates full sun.  $\pm$  4m (12ft). W. China. \*\*\*

**R. 'Irene Koster'** ♂♀ Deciduous Occidentale azalea with medium-sized leaves. Bold trusses of delicate, funnel-shaped, fragrant, pink-suffused yellow flowers, 6cm (2½in) long, with orange-yellow flashes inside, open in late spring and early summer.  $\pm$  2m (6ft). \*\*\*

**R. 'Irene Stead'** ♂ syn. *R. 'I.M.S.'* Vigorous, evergreen shrub with large leaves and deep purple leaf-stalks. In late spring, flower buds open to very large trusses of funnel-shaped, fragrant, soft pink flowers, 6–9cm (2½–3½in) long.  $\pm$  4m (12ft). \*\*\*

**R. 'Irohayama'** ♂♀ Compact, dwarf, small-leaved, evergreen Kurume azalea. Small trusses of abundant funnel-shaped white flowers, 4–5cm (1½–2in) long, margined pale lavender, open in spring. Grow in sun.  $\pm$  60cm (24in). \*\*\*

**R. irroratum** ♂ Evergreen, large shrub or small tree with inversely lance-shaped to elliptic leaves, 7–14cm (3–5½in) long, mid-green above, paler beneath.

Trusses of up to 15 tubular-bell-shaped white flowers, 3.5–5cm (1½–2in) long, sometimes suffused pale pink, and variably crimson-spotted within, open in early spring. Grow in sun.  $\pm$  8m (25ft).  $\pm$  4m (12ft). China (Yunnan, Sichuan), Vietnam, Indonesia, Laos. \*\*\*

**R. 'Jalisco'**. Evergreen shrub of open habit, with medium-sized leaves. In late spring and early summer, bears semi-pendent trusses of funnel-shaped, yellow or apricot-yellow flowers, 6cm (2½in) long, marked and streaked red-brown in the throats.  $\pm$  2.2m (7ft). \*

**R. japonicum** see *R. molle* subsp. *japonicum*.

**R. jasminiflorum**. Evergreen Vireya rhododendron with a lax, untidy habit. Elliptic to lance-shaped or oblong, dark green leaves, 2.5–5cm (1–2in) long, arranged in whorls of 3–5, have small but distinct brown scales beneath. Trusses of 5–12 trumpet-shaped, sweet-scented flowers, 3.5–5cm (1½–2in) long, often opening pale pink and fading to white, with red flower-stalks, are borne intermittently from summer to winter.  $\pm$  1m (3ft),  $\pm$  1–2m (3–6ft). W. Malaysia, Philippines, Sumatra. \* (min. 5°C/41°F)

**R. 'Jean Mary Montague'** see *R. 'The Hon. Jean Marie de Montague'*.

**R. 'John Cairns'** ♂♀ Striking, robust, small-leaved, evergreen Kaempferi azalea, of compact, upright habit. Flat-headed trusses of abundant funnel-shaped, orange-red flowers, 4–4.5cm (1½–1¾in) long, are borne in spring. Grow in sun.  $\pm$  1.5m (5ft). \*\*\*

**R. kaempferi** ♂♀ Loosely branched, erect, semi-evergreen azalea with glossy, mid-green leaves, 1–5cm (1½–2in) long, ovate to lance-shaped in spring, smaller and elliptic-obovate in summer. In late spring and early summer, bears trusses of 2–4 broadly funnel-shaped flowers, 2–3cm (¾–1¼in) long, in shades of red. Prefers full sun.  $\pm$  3m (10ft),  $\pm$  1.5m (5ft). Korea, Japan. \*\*\*

**R. keiskei** ♂ Compact, dwarf or semi-dwarf, evergreen shrub with small,

oblong-lance-shaped, dark green leaves, 2.5–8cm (1–3in) long, slightly scaly above, densely scaly beneath. Trusses of 2–5 broadly funnel-shaped, pale to lemon-yellow flowers, to 5cm (2in) across, are borne freely in mid- and late spring.  $\pm$  25–90cm (10–36in),  $\pm$  1.2m (4ft). S. Japan. \*\*\*

**'Yaku Fairy'** ♀ is prostrate;  $\pm$  15cm (6in).

**R. keleticum** see *R. calostrotum* subsp. *keleticum*.

**R. 'Ken Janeck'** see *R. yakushimanum* 'Ken Janeck'.

**R. kesangiae** ♂ Vigorous, evergreen shrub or small tree with very large, broadly elliptic to obovate, glossy, dark green leaves, 20–30cm (8–12in) long, with a silver-fawn indumentum beneath. In mid- and late spring, bears compact trusses of 15–25 bell-shaped, rose-pink flowers, 3–5cm (1¼–2in) long, with red nectar pouches.  $\pm$  12m (40ft),  $\pm$  8m (25ft). Bhutan. \*\*\*

**R. 'Kilimanjaro'** ♂♀ Vigorous, evergreen shrub with medium-sized leaves. From mid-spring to early summer, bears very large trusses of funnel-shaped, bright deep red flowers, 15cm (6in) long, spotted crimson on the lobes.  $\pm$  2.2m (7ft). \*\*\*

**R. 'Kirin'** ♂♀ Free-flowering, evergreen, compact, dwarf Kurume azalea with small leaves. In mid-spring, bears small trusses of hose-in-hose, deep pink flowers, 3cm (1¼in) long, shaded a delicate silvery rose-pink. Suitable for sun.  $\pm$  1.5m (5ft). \*\*\*

**R. kiusianum** ♂♀ Dwarf, semi-evergreen shrub with variable, broadly elliptic to obovate, short-bristled, mid-green leaves, 0.5–2cm (¼–¾in) long, larger in spring than in summer. Trusses of 2 or 3 funnel-shaped, pink or purple, sometimes white flowers, 1.5–2cm (½–¾in) long, are borne in late spring and early summer. Prefers full sun.  $\pm$  1.2m (4ft). Japan. \*\*\*

**R. 'Klondyke'** ♀ Striking, deciduous Knap Hill-Exbury azalea with medium-sized leaves. In late spring, red-flushed buds open to large trusses of funnel-

shaped, glowing orange-gold flowers, 6cm (2½in) long, tinted red on the reverse of the petals. Grow in full sun.  $\pm$  2m (6ft). \*\*\*

**R. 'Kluis Sensation'** ♀ Relatively slow-growing, evergreen shrub with medium-sized leaves. In late spring and early summer, bears tight trusses of funnel-shaped, slightly frilled, dark red-scarlet flowers, 4.5–5cm (1¾–2in) long, spotted crimson inside. Very tolerant of heat and sun.  $\pm$  2.2m (7ft). \*\*\*

**R. konorii**. Erect, evergreen Vireya rhododendron producing obovate to broadly elliptic, dull, mid-green leaves, 11–14cm (4½–5½in) long, with small brown scales beneath. From summer to winter, intermittently bears trusses of 4–7 elongated, funnel-shaped, usually 7-lobed, fragrant flowers, 7–9cm (3–3½in) long, pale to deep pink, or pink fading to white, with prominent cream stamens.  $\pm$  2m (6ft),  $\pm$  1.5m (5ft). New Guinea. \* (min. 5°C/41°F)

**R. 'Kure-no-yuki'** ♂♀ syn. *R. 'Snowflake'*.

Compact, dwarf, evergreen Kurume azalea with small leaves. Freely bears trusses of 2 or 3 hose-in-hose white flowers, 0.5–2.5cm (¼–1in) long, in mid-spring.  $\pm$  1m (3ft). \*\*\*

**R. lacteum**. Large, densely branched, evergreen shrub producing oblong-elliptic, dark green leaves, 8–17cm (3–7in) long, with a brown indumentum beneath. Trusses of 20–30 broadly bell-shaped, pale yellow flowers, 5cm (2in) across, sometimes with crimson marks inside, are borne in mid- and late spring.  $\pm$  5m (15ft). China (Sichuan, Yunnan), Burma. \*\*\*

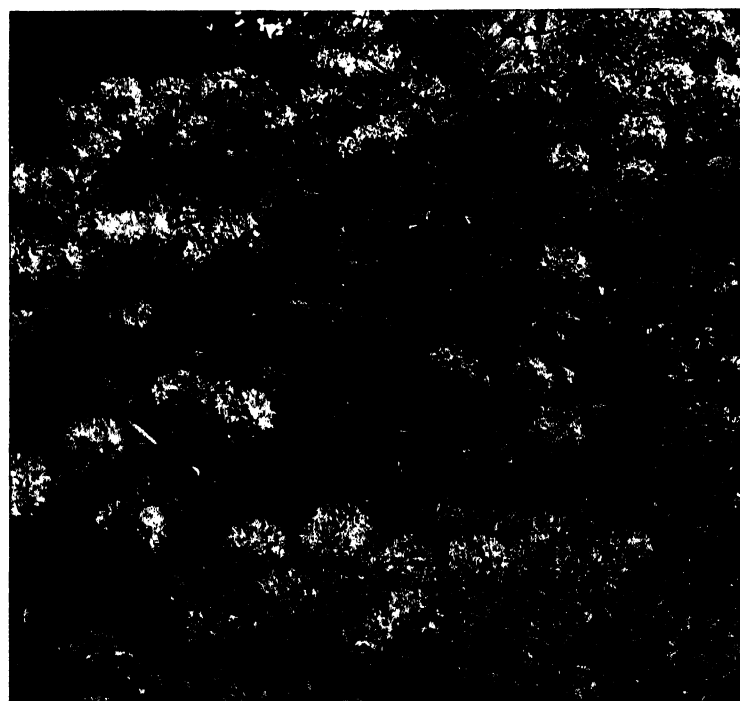
**R. 'Lady Alice Fitzwilliam'** ♀ Open, evergreen shrub with medium-sized leaves. In mid-spring, bears trusses of 2 or 3 funnel-shaped, nutmeg-scented pink flowers, 10cm (4in) long, maturing to white with yellow-marked throats.  $\pm$  2m (6ft). \*\*

**R. 'Lady Clementine Mitford'** ♀ Shrubby, spreading, evergreen "iron clad" rhododendron, with medium-sized leaves. In late spring and early summer, bears compact trusses of funnel-shaped flowers, to 8cm (3in) long, peach-pink at the margins of the petals, shading to white at the centres, with V-shaped markings of red-brown to green spots in the throats.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Lady Eleanor Cathcart'** ♀ ♂ Shrubby, evergreen "iron clad" rhododendron with arching, medium-sized leaves. In late spring, bears rounded trusses of funnel-shaped, pale pink flowers, 5–6cm (2–2½in) long, with dark maroon flares inside. Suitable for sun.  $\pm$  4m (12ft). \*\*\*

**R. laetum** ♂ Erect, evergreen Vireya rhododendron with elliptic to broadly elliptic, glossy, dark green leaves, 5–9cm (2–3½in) long, with tiny scales beneath. In spring, bears trusses of 5–12 funnel-shaped, golden yellow flowers, 4.5cm (1¾in) long, later suffused orange-red, on red flower-stalks.  $\pm$  1.5m (5ft). N.W. New Guinea. \* (min. 5°C/41°F)

**R. 'Lavender Girl'** ♂♀ Evergreen, large-leaved shrub with domed trusses of funnel-shaped, fragrant, pink-mauve flowers, to 10cm (4in) long, fading to near white in the centres. Blooms open in late spring and early summer, earlier than most other hybrids with lavender-blue or mauve-pink flowers. Grow in an open site.  $\pm$  2.5m (8ft). \*\*\*



*Rhododendron luteum*

## RHODODENDRON

**R. 'Ledifolium'** see *R. mucronatum*.

**R. 'Lem's Cameo'** ☐ ♀ Evergreen shrub producing medium-sized leaves, brown-bronze when young. In mid-spring, bears large, domed trusses of funnel-shaped, frilled, pale peach flowers, 9cm (3½in) long, fading to apricot-cream or pink, and marked and spotted red in the throats. ⚬→ 2.2m (7ft). \*\*\*

**R. lepidostylum** ♀ Distinctive, dome-shaped, dwarf, evergreen shrub with densely bristly shoots. Small, oblong-oval, obovate, or ovate leaves, 3–3.5cm (1¼–1½in) long, intensely glaucous above, golden scaly beneath, have margins fringed with hairs. Broadly funnel-shaped yellow flowers, 4cm (1½in) across, sparsely bristly outside, are borne singly or in pairs, in late spring and early summer. ⚬→ 1m (3ft). W. China. \*\*\*

**R. leucaspis** ☐ Densely branched, dwarf, evergreen shrub with bristly calyces and shoots, and broadly elliptic, dark green leaves, 3–4.5cm (1¼–1½in) long, bristly above, scaly and yellowish green beneath. In early spring, bears trusses of up to 3 saucer-shaped white flowers, 5cm (2in) across, with chocolate-brown anthers. ⚬ 1m (3ft), ⚬→ 1.5m (5ft). S.E. Tibet. \*\*\*

**R. lindleyi** ♀ Evergreen, epiphytic shrub, of untidy habit, with peeling, reddish brown bark. Lance-shaped to oblong-lance-shaped, olive-green leaves, 9–13cm (3½–5in) long, are glaucous and scaly beneath. In late spring and early summer, bears trusses of up to 6 tubular to funnel-shaped, heavily scented white flowers, 7–10cm (3–4in) long, each with a yellow or orange flare within. ⚬ 3m (10ft), ⚬→ 2m (6ft). E. Himalayas. \*\*\*

**R. 'Lionel's Triumph'** Tall, large-leaved evergreen shrub with an open habit. Large trusses of funnel-shaped, creamy yellow flowers, 10cm (4in) long, with crimson-spotted throats and pink-flushed margins, open from pink buds in mid-spring. Grow in partial shade. ⚬→ 4m (12ft). \*\*\*

**R. 'Loderi King George'** ☐ ♀ Large, evergreen shrub of open habit, with large leaves. In late spring and early summer, pale pink buds open to huge trusses of funnel-shaped, fragrant, pure white flowers, 9–11cm (3½–4½in) long, with subtle green markings in the throats. ⚬→ 4m (12ft). \*\*\*

**R. 'Loderi Venus'** ♀ Evergreen, large-leaved shrub of open habit. In late spring and early summer, bears large trusses of funnel-shaped, fragrant, mid-pink flowers, 9–11cm (3½–4½in) long, fading to pale pink, the throats slightly green-marked. ⚬→ 4m (12ft). \*\*\*

**R. 'Loder's White'** ♀ Vigorous, evergreen shrub with large leaves. In midsummer, bears large, conical trusses of long-lasting, funnel-shaped, slightly fragrant white flowers, 9–10cm (3½–4in) long, with red flecks inside. Thrives in sun. ⚬→ 3m (10ft). \*\*\*

**R. 'Lord Palmerston'** see *R. 'Cynthia'*.

**R. 'Louise Dowdle'** ☐ Compact, evergreen Glenn Dale azalea with medium-sized leaves. In spring, bears compact trusses of funnel-shaped, vivid red-purple flowers, 4cm (1½in) long, the throats with bright rose-red marks. Suitable for full sun. ⚬→ 1m (3ft). \*\*\*

**R. lutescens** ☐ Graceful, bushy, erect, semi-evergreen shrub with ovate-oblong

to lance-shaped, sparsely scaly leaves, 5–9cm (2–3½in) long, bronze when young, maturing to dull green, and paler green with yellow scales beneath. In early spring, bears trusses of 3–6 broadly funnel-shaped, primrose-yellow flowers, 2.5cm (1in) across, spotted green inside. ⚬→ 5m (15ft). S.W. China. \*\*\*

**R. luteum** ☐ ♀ Deciduous azalea of open habit, with oblong to lance-shaped, mid-green leaves, 5–10cm (2–4in) long, sparsely hairy above and beneath.

Trusses of 7–12 funnel-shaped, strongly scented, sticky yellow flowers, 3.5cm (1½in) long, open in late spring and early summer. Prefers full sun. ⚬→ 4m (12ft). E. Europe to Caucasus. \*\*\*

**R. macabeaunum** ♀ Evergreen shrub or tree with large, oblong-ovate, dark green leaves, 20–30cm (8–12in) long, with a woolly, pale fawn indumentum beneath. In mid-spring, bears huge trusses of up to 20 broadly bell-shaped, creamy to deep yellow flowers, 5–6cm (2–2½in) across, with purple marks inside, and purple nectar pouches. ⚬ 15m (50ft), ⚬→ 6m (20ft). India (Manipur). \*\*\*

**R. macgregoriae** ☐ Bushy, evergreen Vireya rhododendron with ovate-lance-shaped to ovate-elliptic, glossy, dark green leaves, 4–9cm (1½–3½in) long, minutely scaly beneath. Trusses of up to 25 short, widely funnel- to bell-shaped, usually yellow or orange, occasionally pink flowers, to 1–3cm (½–1¼in) long, with protruding brown stamens, open in winter. ⚬ to 5m (15ft), ⚬→ 1–2m (3–6ft). New Guinea. ☼ (min. 5°C/41°F)

**R. macrophyllum** Large, free-flowering, evergreen shrub with oblong-ovate to elliptic leaves, 7–17cm (3–7in) long, dark green above, paler green beneath. In late spring and early summer, bears compact trusses of 15–20 funnel-shaped, rose-purple to pink, sometimes white flowers, 3–4cm (1¼–1½in) long, with red-brown spots inside. Suitable for sun. ⚬→ to 5m (15ft). W. North America. \*\*\*

**R. maddenii** ♀ syn. *R. brachysiphon*. Multi-stemmed, evergreen shrub with peeling, grey-brown bark. Leaves, varying from lance-shaped or obovate to elliptic, are 6–18cm (2½–7in) long, dark green above, and densely brown-scaly beneath. In late spring and early summer, bears trusses of 2–4 funnel-shaped, strongly scented white flowers, 6–10cm (2½–4in) long, sometimes flushed rose-pink. ⚬→ 2.5m (8ft). Himalayas, S.W. China, Burma. \*\*\*

**R. mallotum** ♀ Evergreen, upright shrub or small tree producing obovate, stiff leaves, 10–13cm (4–5in) long, dark green and hairless above, with a woolly, reddish brown indumentum beneath. Trusses of up to 15 tubular-bell-shaped, fleshy scarlet flowers, 4–4.5cm (1½–1¾in) long, are borne in early spring. ⚬ 6–7m (20–22ft), ⚬→ 3m (10ft). W. China, N.E. Burma. \*\*\*

**R. 'Martha Isaacson'** Sturdy, semi-evergreen azaleodendron with medium-sized, maroon-tinted leaves. In late spring and early summer, bears rounded trusses of funnel-shaped, slightly scented white flowers, 4cm (1½in) long, with vivid pink stripes. Prefers full sun. ⚬→ 2.5m (8ft). \*\*\*

**R. 'May Day'** ☐ ♀ Low-growing, spreading, large-leaved evergreen shrub. In mid-spring, freely bears loose trusses

## RHODODENDRON



*Rhododendron* 'Hydon Dawn'



*Rhododendron* 'Ilam Cream'



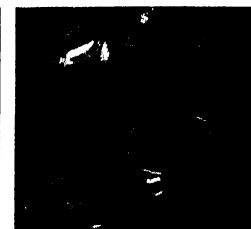
*Rhododendron* 'Irene Koster'



*Rhododendron* 'Irene Stead'



*Rhododendron* 'Irohayama'



*Rhododendron* 'John Cairns'



*Rhododendron kaempferi*



*Rhododendron keiskei*



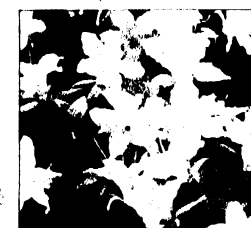
*Rhododendron* 'Kilimanjaro'



*Rhododendron* 'Kirin'



*Rhododendron kiusianum*



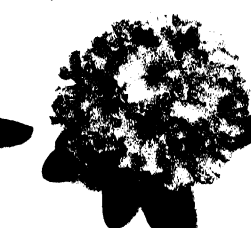
*Rhododendron* 'Kureno-yuki'



*Rhododendron laetum*



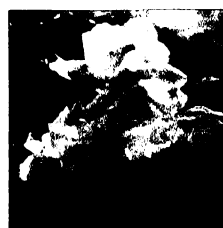
*Rhododendron* 'Lavender Girl'



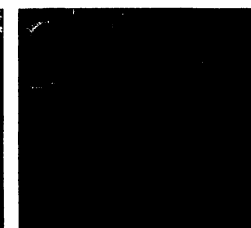
*Rhododendron* 'Lem's Cameo'



*Rhododendron leucaspis*



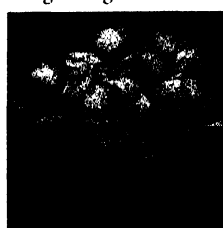
*Rhododendron* 'Loderi King George'



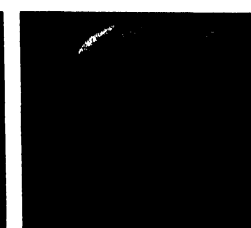
*Rhododendron* 'Louise Dowdle'



*Rhododendron lutescens*



*Rhododendron macgregoriae*



*Rhododendron* 'May Day'

R



of funnel-shaped scarlet flowers, 7cm (3in) long, with petal-like calyces.

Tolerates full sun.  $\updownarrow$  1.5m (5ft). \*\*\*

**R. 'Medway'**  $\square$  Deciduous, bushy Knap Hill-Exbury azalea of open habit, with medium-sized leaves. In late spring, bears trusses of trumpet-shaped, pale pink flowers, 6cm (2½in) long, with darker margins, orange-flashed throats, and frilled petals.  $\updownarrow$  1.5–2.5m (5–8ft). \*\*\*

**R. mekongense Viridescens Group**, syn. *R. viridescens*. Distinctive, semi-dwarf, evergreen shrubs with oblong-oval, pale blue-green leaves, 5cm (2in) long, glaucous above, paler and scaly beneath. Trusses of 4 or 5 broadly funnel-shaped, pale yellow flowers, 2cm (¾in) long, with green spots inside, are borne in late spring and early summer. Suitable for full sun.  $\updownarrow$  1.2m (4ft). S.E. Tibet, S.W. China. \*\*\*

**R. metternichii**  $\square$  syn. *R. degonianum* subsp. *heptamerum*. Evergreen shrub with oblong to inversely lance-shaped leaves, 8–14cm (3–5½in) long, often red when young, maturing to glossy, deep green above, with a thick brown indumentum beneath. In mid-spring, bears trusses of up to 12 funnel- to bell-shaped, 5- to 7-lobed, pale to deep pink flowers, 3–4.5cm (1¼–1½in) long, sometimes lined deeper pink inside. Will tolerate full sun.  $\updownarrow$  2m (6ft). N. Japan. \*\*\*

**R. minus**, syn. *R. carolinianum*. Evergreen shrub with ovate-elliptic to elliptic, dark green leaves, 5–11cm (2–4½in) long, brown-scaly beneath. In late spring and early summer, bears trusses of 6–12 funnel- to bell-shaped, pink-purple, pink, or white flowers, 2–3.5cm (¾–1½in) long, with green-brown spots. Very hardy, suitable for an open site.  $\updownarrow$  4m (12ft). E. North America. \*\*\*

**R. 'Moerheim'**  $\square$  Free-flowering, dwarf, evergreen shrub with small, dark green leaves that turn maroon in winter. Bears small trusses of funnel-shaped, violet-blue flowers, 3cm (1¼in) long, in abundance in mid-spring. Very hardy; prefers full sun.  $\updownarrow$  60cm (24in). \*\*\*

**R. molle subsp. japonicum**, syn. *R. japonicum*. Vigorous, deciduous azalea of upright habit, with obovate, obovate-oblong, or inversely lance-shaped leaves, 5–10cm (2–4in) long, mid-green above, paler bluish green beneath. Trusses of 2–12 widely funnel-shaped, often scented, orange-red, occasionally yellow flowers, 6–9cm (2½–3½in) long, softly hairy outside, are borne before the leaves, in late spring. Tolerates full sun.  $\updownarrow$  2.2m (7ft). C. and E. Japan. \*\*\*

**R. 'Moonshine Crescent'**. Evergreen shrub of open, upright habit, with medium-sized leaves. In mid-spring, dome-shaped trusses of bell-shaped, primrose-yellow flowers, 5–7cm (2–3in) long, open from red winter buds.  $\updownarrow$  2–2.5m (6–8ft). \*\*\*

**R. moupinense**  $\square$  Compact, dwarf, evergreen shrub with narrowly ovate, elliptic, or obovate, glossy, dark green leaves, 3–5cm (1¼–2in) long, paler green and minutely scaly beneath. Trusses of up to 3 funnel-shaped, white, pink, or deep rose-pink flowers, 3–4cm (1¼–1½in) long, sometimes spotted purple inside, are borne in late winter and early spring.  $\updownarrow$  1.2m (4ft). W. China. \*\*\*



*Rhododendron* 'Polar Bear' (inset: flower detail)

**R. 'Mrs. A.T. de la Mare'**  $\square$  Upright, compact, evergreen shrub with medium-sized leaves. Domed trusses of funnel-shaped, frilled, slightly fragrant, pale pink flowers, 9cm (3½in) long, fading to white, with green-spotted throats, are borne in late spring.  $\updownarrow$  3m (10ft). \*\*\*

**R. 'Mrs. Furnival'**  $\square$  Compact, evergreen shrub with medium-sized leaves. From an early age, bears neat trusses of funnel-shaped, light rose-pink flowers, to 8cm (3in) long, each with a bold, brownish red flare inside, in late spring. Suitable for partial shade or full sun.  $\updownarrow$  2.2m (7ft). \*\*\*

**R. 'Mrs. G.W. Leak'**  $\square$  syn. *R. 'Cottage Garden's Pride'*. Compact, evergreen shrub with medium-sized leaves. In mid-spring, bears upright trusses of funnel-shaped, light rose-pink flowers, 10–15cm (4–6in) long, each with a deep brown and crimson central flare.  $\updownarrow$  4m (12ft). \*\*\*

**R. 'Mrs. T.H. Lowinsky'**  $\square$  Free-flowering, vigorous, evergreen shrub with medium-sized leaves. Dense trusses of funnel-shaped, pink-flushed white flowers, to 8cm (3in) long, each with a bright orange-brown flare inside and reflexed lobes, open from lavender-pink buds in early summer. Grow in sun.  $\updownarrow$  2.2–3m (7–10ft). \*\*\*

**R. mucronatum**  $\square$  syn. *R. 'Ledifolium'*. Spreading, semi-evergreen shrub with lance-shaped to ovate- or oblong-lance-shaped, hairy, mid-green leaves, 3–6cm (1¼–2½in) long. In mid-spring, freely bears trusses of 2 or 3 widely funnel-shaped, fragrant white, occasionally pink flowers, 6–7cm (2½–3in) across. Grows

well in full sun.  $\updownarrow$  1.2–1.5m (4–5ft).

Origin uncertain. \*\*\*

**R. mucronulatum**. Dwarf to medium-sized, deciduous shrub of erect habit, with lance-shaped, dark green leaves, 4–6cm (1½–2½in) long, scaly beneath. Solitary, funnel-shaped, pinkish purple, pink, or occasionally white flowers, 2–2.5cm (¾–1in) long, are borne from midwinter to early spring. Grow in full sun.  $\updownarrow$  0.3–2.5m (1–8ft).  $\leftrightarrow$  1m (3ft). E. Russia, N. and C. China, Mongolia. \*\*\*

**R. nakaharae**. Prostrate, compact, evergreen shrub with small, bristly leaves, 2.5cm (1in) long, shiny, dark green above, paler green beneath. Trusses of up to 3 funnel- to bell-shaped, dark orange-red to rose-red flowers, 1–2cm (½–¾in) long, are borne in early and midsummer.  $\updownarrow$  30cm (12in).  $\leftrightarrow$  2m (6ft). Taiwan. \*\*\*

**R. 'Naomi'**  $\square$  Tall, evergreen shrub or small tree with medium-sized leaves. In mid-spring, produces large trusses of widely funnel-shaped, fragrant, pale lavender-pink flowers, 9cm (3½in) across, shading to greenish yellow in the throats and each with a subtle brown stripe.  $\updownarrow$  5m (15ft). \*\*\*

**R. 'Narcissiflorum'**  $\square$  Compact, vigorous, deciduous Ghent azalea with medium-sized leaves. In late spring and early summer, bears compact trusses of hose-in-hose, sweetly scented, pale yellow flowers, 3cm (1¼in) long, darker yellow towards the centres and on the outsides of the petals.  $\updownarrow$  1.5–2.5m (5–8ft). \*\*\*

**R. 'Ne Plus Ultra'**. Vigorous, upright, evergreen Vireya rhododendron with

medium-sized leaves. Trusses of up to 14 tubular-funnel-shaped, bright red flowers, 5–6cm (2–2½in) long, with purplish pink throats, are produced intermittently from summer to winter.  $\updownarrow$  1.5m (5ft).  $\leftrightarrow$  1m (3ft).  $\odot$  (min. 5°C/41°F)

**R. neriiflorum**  $\square$  Evergreen shrub producing elliptic to oblong or inversely lance-shaped, dark green leaves, 4–11cm (1½–4½in) long, glaucous beneath. In mid- and late spring, bears trusses of 5–12 tubular-bell-shaped, fleshy, bright scarlet to crimson flowers, 3.5–4.5cm (1½–1¾in) long. Suitable for full sun.  $\updownarrow$  to 6m (20ft).  $\leftrightarrow$  4m (12ft). Tibet, China, Burma. \*\*\*

**R. niveum**  $\square$  Distinctive, evergreen shrub or tree with white-felted shoots and inversely lance-shaped to elliptic leaves, 11–17cm (4½–7in) long, dark green above, with a white-fawn indumentum beneath. In mid-spring, bears compact trusses of 15–30 tubular-bell-shaped, smoky blue to purple-lilac flowers, 3–3.5cm (1¼–1½in) long, with dark purple nectar pouches inside.  $\updownarrow$  to 6m (20ft).  $\leftrightarrow$  4m (12ft). India (Sikkim), Bhutan. \*\*\*

**R. Nobleanum Group**  $\square$  syn. *R. x pulcherrimum*. Robust, evergreen shrubs or small trees producing medium-sized to large leaves. Compact trusses of broadly funnel-shaped flowers, 5cm (2in) across, which may be rose-red, pink, or white (depending on the clone), are borne intermittently in mild weather, from late autumn to early spring.  $\updownarrow$  5m (15ft). \*\*\*

**R. 'Nova Zembla'**  $\square$  Evergreen shrub with medium-sized leaves. Full, rounded trusses of broadly funnel-shaped, deep red flowers, 4–5cm (1½–2in) long, spotted darker red inside, are produced in mid- and late spring.  $\updownarrow$  1.5–3m (5–10ft). \*\*\*

**R. nuttallii**  $\square$  Evergreen shrub or small tree of open habit, with oblong to oblong-ovate leaves, 17–26cm (7–10in) long, strongly puckered, dark green above, densely scaly beneath. Trusses of 3–6 very large, tubular to bell-shaped, strongly scented, yellow or creamy white flowers, 8–13cm (3–5in) long, suffused yellow in the throats, are borne in mid-spring.  $\updownarrow$  to 10m (30ft). N.E. India to W. China. \*

**R. occidentale**  $\square$  Deciduous shrub with elliptic to oblong-lance-shaped leaves, 3–9cm (1¼–3½in) long, glossy, mid-green above, glaucous beneath. In early summer, bears trusses of 6–12 broadly funnel-shaped, sweetly scented, usually creamy white or pale pink flowers, 6–8cm (2½–3in) across, each with a yellow or yellow-orange mark inside. Grow in sun.  $\updownarrow$  3m (10ft). W. North America. \*\*\*

**R. 'Odee Wright'**  $\square$  Compact, sometimes low-growing, dense, evergreen shrub with medium-sized leaves. In mid-spring, peach-coloured buds open to trusses of up to 15 broadly funnel-shaped, greenish yellow flowers, to 15cm (6in) long, tinted pink, and spotted carmine-red in the throats. Grow in full sun.  $\updownarrow$  1.5m (5ft). \*\*\*

**R. 'Olive'**  $\square$  Free-flowering, upright, small to medium-sized, evergreen shrub producing small, ovate-elliptic leaves, mid-green above, paler green beneath. Trusses of 2 or 3 funnel-shaped flowers, 4cm (1½in) long, mauve-pink with



## RHODODENDRON

deeper spots inside, are borne in early spring.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. orbiculare** ☉ Evergreen shrub or tree producing distinctive, rounded, matt, mid-green leaves, 7–13cm (3–5in) long, glaucous beneath, with heart- or ear-shaped bases. Loose trusses of 7–12 broadly bell-shaped, rose- to deep pink flowers, 5–7cm (2–3in) long, are borne in mid- and late spring. Grow in sun.  $\uparrow$  3m (10ft). W. China. \*\*\*

**R. oreodoxa** ☉ Evergreen shrub or small tree with obovate-elliptic, dark green leaves, 6–9cm (2½–3½in) long, pale bluish green and glaucous beneath. In mid-spring, bears abundant trusses of 10–12 tubular- to broadly bell-shaped, usually 7-lobed pink flowers, 5cm (2in) long, sometimes purple-spotted inside. Tolerates full sun.  $\uparrow$  3–5m (10–15ft),  $\leftrightarrow$  3m (10ft). W. China. \*\*\*

**R. oreotrephes** ☉ Evergreen shrub producing oblong-elliptic, mid- or grey-green leaves, 2–8cm (¾–3in) long, usually with purple, red-brown, or grey scales, and glaucous beneath. In mid- and late spring, bears trusses of 3–11 funnel- to bell-shaped, mauve, purple, or rose-pink flowers, 2.5–3.5cm (1–1½in) long, sometimes purple-spotted inside. Thrives in sun.  $\uparrow$  5m (15ft). Tibet, China, Burma. \*\*\*

**R. pachysanthum** ☉ Evergreen, mound-forming shrub. Lance-shaped to oval leaves, 4–10cm (1½–4in) long, have a conspicuous silver-brown indumentum above, and a dense silver indumentum beneath, later becoming rich brown. In mid-spring, bears trusses of 11 or more funnel- to bell-shaped, pale rose-pink flowers, to 4cm (1½in) long, with variable markings inside. Grow in sun.  $\uparrow$  1.5–2.5m (5–8ft),  $\leftrightarrow$  2.5m (8ft). Taiwan. \*\*\*

**R. 'Palestrina'** ☉ Compact, evergreen Vuyk azalea with small leaves. Trusses of 2 or 3 open funnel-shaped, pure white flowers, 6–10cm (2½–4in) long, with faint green markings in the throats, are borne freely in late spring.  $\uparrow$  1.2m (4ft). \*\*\*

**R. 'Patty Bee'** ♀ Free-flowering, dwarf, evergreen shrub, of compact, rounded habit, with small leaves turning purple-bronze in winter. Compact trusses of broadly funnel-shaped, clear pale yellow flowers, 5cm (2in) across, smother the foliage in early and mid-spring. Prefers full sun; very hardy.  $\uparrow$  75cm (30in). \*\*\*

**R. pemakoense**. Dwarf, dense, compact, evergreen shrub with small, elliptic to obovate leaves, 2–3cm (¾–1¼in) long, glossy, dark green above, glaucous beneath. Abundant trusses of up to 3 bell-shaped, pink to rose-purple flowers, 3.5–4.5cm (1½–1¾in) long, open in early and mid-spring.  $\uparrow$  60cm (24in). N.E. India, S.E. Tibet. \*\*\*

**R. 'Penheale Blue'** ♀ Free-flowering, low-growing, compact, evergreen shrub with small leaves. Clustered trusses of funnel-shaped, red-flushed, bright violet-blue flowers, 2.5cm (1in) long, are borne in early and mid-spring. Suitable for full sun.  $\uparrow$  1–1.2m (3–4ft). \*\*\*

**R. 'Percy Wiseman'** ♀ Low-growing, compact, evergreen shrub with medium-sized leaves. In mid- and late spring, bears rounded trusses of funnel-shaped, peach-pink and cream flowers, 5cm (2in) long, fading to creamy white, with

green markings in the throats. Suitable for full sun.  $\uparrow$  2m (6ft). \*\*\*

**R. 'Persil'** ☉ Deciduous, bushy Knap Hill-Exbury azalea producing medium-sized leaves. Funnel-shaped, pure white flowers, to 6cm (2½in) long, each with a bold orange-yellow flare inside, open in mid-spring.  $\uparrow$  2m (6ft). \*\*\*

**R. 'Peter John Mezitt'** ♀ syn. *R. 'P.J. Mezitt'*. Dwarf, compact, evergreen shrub with small, ovate, dark green leaves, which turn brownish purple in winter if grown in full sun. Trusses of 4–9 small, frost-resistant, broadly funnel-shaped, bright lavender-pink flowers, 4.5cm (1¾in) long, are borne in very early spring. Very hardy.  $\uparrow$  1.2m (4ft). \*\*\*

**R. 'Pink Pearl'** ☉ Vigorous, evergreen shrub of open, erect habit, with large leaves. In mid- and late spring, bears abundant tall trusses of funnel-shaped, soft pink flowers, 10–12cm (4–5in) long, fading to white. Thrives in sun.  $\uparrow$  4m (12ft). \*\*\*

**R. 'P.J. Mezitt'** see *R. 'Peter John Mezitt'*.

**R. 'Polar Bear'** ☉ Late-flowering, vigorous, multi-stemmed, evergreen shrub or small tree with large leaves. In late summer, bears large trusses of tubular-funnel-shaped, strongly scented white flowers, 4.5–10cm (1¾–4in) long, with light brown-flecked, pale green throats.  $\uparrow$  5m (15ft),  $\leftrightarrow$  4m (12ft). \*\*\*

**R. ponticum**. Vigorous, evergreen shrub with inversely lance-shaped to broadly elliptic leaves, 6–18cm (2½–7in) long, glossy, dark green above, paler beneath. In early summer, bears trusses of 10–15 broadly funnel-shaped, reddish purple, occasionally white flowers, to 5cm (2in) long, often spotted yellowish green inside.  $\uparrow$  6–8m (20–25ft),  $\leftrightarrow$  6m (20ft). Portugal, Spain, Lebanon, Turkey, Armenia, Caucasus. \*\*\*

**R. x praecox** see *R. 'Praecox'*.

**R. 'Praecox'** ♀ syn. *R. x praecox*. Early-flowering, sometimes low-growing, evergreen shrub producing small leaves. In late winter and early spring, trusses of 2 or 3 widely funnel-shaped, rose-purple flowers, 4–4.5cm (1½–1¾in) across, are borne at the shoot tips. Thrives in full sun; suitable as a hedge.  $\uparrow$  1.3m (4½ft). \*\*\*

**R. 'President Roosevelt'** ☉ Slow-growing, weakly branched, evergreen shrub with splashes of bright yellow on its medium-sized, glossy, dark green leaves. In early and mid-spring, bears conical trusses of funnel-shaped, bright red flowers, 4–5cm (1½–2in) long, fading to white in the centres.  $\uparrow$  2m (6ft). \*\*\*

**R. 'Princess Anne'** ♀ syn. *R. 'Golden Fleece'*. Compact, rounded, semi-dwarf, evergreen shrub with small, ovate, mid-green leaves, bronze when young and during cold winters. Domed trusses of funnel-shaped, pale yellow, green-tinged flowers, 5cm (2in) long, are borne in abundance in mid-spring. Prefers full sun.  $\uparrow$  75–120cm (30–48in). \*\*\*

**R. prinophyllum** see *R. austrinum*.

**R. pseudochrysanthum** ♀ Dome-shaped, evergreen shrub producing ovate to elliptic, rigid, thick, dark green leaves, 3–8cm (1¼–3in) long, with a thin grey indumentum above; the undersides are glossy, with midrib indumentum only. In mid-spring, bears trusses of 5–10 bell-shaped, pale pink or white flowers,

## RHODODENDRON



*Rhododendron* 'Medway'



*Rhododendron metternichii*



*Rhododendron* 'Mrs. Furnival'



*Rhododendron* 'Mrs. G.W. Leak'



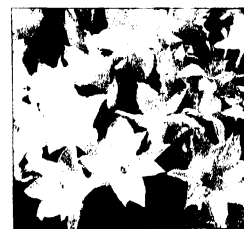
*Rhododendron* 'Mrs. T.H. Lowinsky'



*Rhododendron mucronatum*



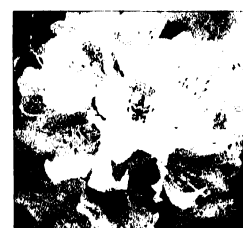
*Rhododendron* 'Naomi'



*Rhododendron* 'Narcissiflorum'



*Rhododendron neriiflorum*



*Rhododendron* Nobleanum Group



*Rhododendron* 'Nova Zembla'



*Rhododendron occidentale*



*Rhododendron* 'Odee Wright'



*Rhododendron* 'Olive'



*Rhododendron oreodoxa*



*Rhododendron oreotrephes*



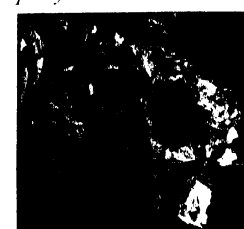
*Rhododendron pachysanthum*



*Rhododendron* 'Palestrina'



*Rhododendron* 'Persil'



*Rhododendron* 'Pink Pearl'



*Rhododendron* 'President Roosevelt'

3–4cm (1¼–1½in) long, deeply lined with dark pink outside and spotted with dark pink inside. Suitable for full sun.  $\uparrow$  to 3m (10ft). Taiwan. \*\*\*

**R. 'Ptarmigan'**  $\square \nabla$  Free-flowering, drought-resistant, dwarf, evergreen shrub with a spreading habit and small, dark green leaves. Clustered trusses of funnel-shaped, pure white flowers, 2.5cm (1in) long, virtually smother the foliage in early and mid-spring.  $\uparrow$  to 45–90cm (18–36in). \*\*\*

**R. x pulcherrimum** see *R. Nobleanum* Group.

**R. 'Purple Splendour'**  $\square \nabla$  Evergreen shrub with medium-sized leaves. In late spring and early summer, bears trusses of about 15 striking, filled, funnel-shaped, deep purple-blue flowers, to 8cm (3in) long, each with a purple-black basal mark inside. Suitable for full sun.  $\uparrow$  to 3m (10ft). \*\*\*

**R. 'Queen Elizabeth II'**  $\square \nabla$  Strong-growing, evergreen shrub of open habit, with medium-sized leaves. Full trusses of 10–12 funnel-shaped, very pale, clear greenish yellow flowers, 11–12cm (4½–5in) long, are borne in mid- and late spring.  $\uparrow$  to 1.5–3m (5–10ft). \*\*\*

**R. racemosum**  $\square$  Stiffly branched, evergreen shrub producing broadly obovate to oblong-elliptic, mid- to dark green leaves, 1.5–5cm (½–2in) long, glaucous beneath. Bears abundant trusses of up to 4 widely funnel-shaped, deep rose-red, pink, or white flowers, to 3cm (1¼in) across, along the stems in early and mid-spring.  $\uparrow$  to 2m (6ft). W. China. \*\*\*

**R. 'Razorbill'**  $\nabla$  Free-flowering, compact, semi-dwarf, evergreen shrub with small, crinkled, dark green leaves. In early and mid-spring, bears conical trusses of distinctive, upward-facing, tubular, light rose-pink flowers, 2cm (¾in) long, flushed deep pink inside.  $\uparrow$  to 1.1–1.3m (3½–4½ft). \*\*\*

**R. rex**  $\nabla$  Evergreen, large shrub or small tree producing inversely lance-shaped leaves, 25–45cm (10–18in) long, with a cinnamon-brown indumentum above when young, becoming wrinkled, dark green, with a thick, cinnamon-brown or darker brown indumentum beneath. In mid- and late spring, bears trusses of 12–25 bell-shaped, 7- or 8-lobed, white-tinged pink flowers, 4–5cm (1½–2in) long, each with a crimson basal mark and sometimes heavily spotted crimson. Requires a sheltered site in light woodland.  $\uparrow$  to 12m (40ft). China (Sichuan, Yunnan). \*\*\*

**subsp. arizelum**  $\square$  syn. *R. arizelum*, has obovate leaves, 13–22cm (5–9in) long, and usually yellow, sometimes pink, rarely white flowers, with crimson marks in the throats;  $\uparrow$  to 8m (25ft), China (W. Yunnan), N.E. Burma. **subsp.**

**fictolactum**  $\square$  syn. *R. fictolactum*, has oblong-ovate to lance-shaped leaves, 11–30cm (4½–12in) long, and bears trusses of 12–25 white, sometimes pink-tinged flowers with crimson throats and sometimes crimson spotting; S.E. Tibet, China (W. Yunnan), N.E. Burma.

**R. 'Rose Bud'**  $\square \nabla$  Compact, low-growing, evergreen Kurume azalea with small leaves. In mid-spring, bears an abundance of small trusses of rosebud-like, funnel-shaped, rose-pink flowers, 3cm (1¼in) long. Thrives in sun.  $\uparrow$  to 60–90cm (24–36in). \*\*\*

**R. 'Roza Harrison'** see *R. 'Roza Stevenson'*.

**R. 'Roza Stevenson'**  $\square \nabla$  syn. *R. 'Roza Harrison'*. Vigorous, open, erect, evergreen shrub with medium-sized leaves.

In mid- and late spring, bears abundant loose trusses of 10–12 saucer-shaped, clear lemon-yellow flowers, 15cm (6in) across.  $\uparrow$  to 1.5–4m (5–12ft). \*\*\*

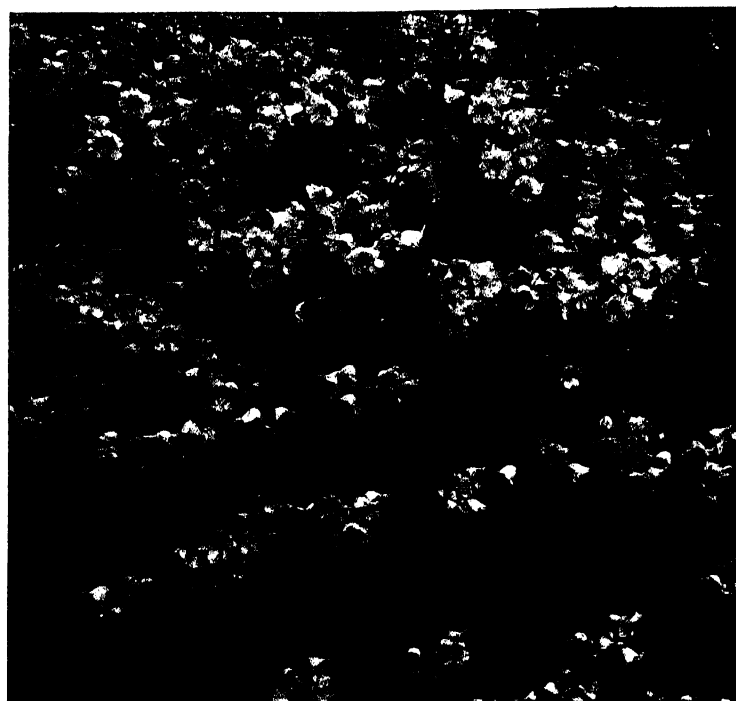
**R. rubiginosum**  $\nabla$  Evergreen shrub or small tree with lance-shaped or oblong to elliptic-lance-shaped, dark green leaves, 5–12cm (2–5in) long, red-brown and scaly beneath. In mid- and late spring, bears trusses of 4–8 funnel- to bell-shaped, rose-pink to lilac-purple flowers, 1.5–3.5cm (½–1½in) long, brown-spotted inside. Thrives in sun.  $\uparrow$  10m (30ft) or more,  $\leftrightarrow$  6m (20ft). S.E. Tibet, S.W. China, N. Burma. \*\*\*

**R. russatum**  $\square \nabla$  Dwarf, compact, evergreen shrub with narrowly to broadly elliptic or oblong, dark green leaves, to 4cm (1½in) long, brown to red-brown and scaly beneath. In mid- and late spring, bears trusses of 4–6 broadly funnel-shaped, reddish purple to indigo-blue, occasionally white flowers, 1–2cm (½–¾in) across. Prefers full sun.  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  1.2m (4ft). S.W. China. \*\*\*

**R. 'St. Valentine'**  $\square$  syn. *R. 'Valentine'*. Evergreen *Vireya* rhododendron of spreading habit, with small, elliptic leaves. Trusses of 3–5 pendent, tubular-bell-shaped, bright red flowers, 4cm (1½in) long, are borne in spring.  $\uparrow$  1.5m (5ft),  $\leftrightarrow$  2m (6ft). \* (min. 5°C/41°F)

**R. 'Sappho'**  $\square \nabla$  Free-flowering, tall, evergreen shrub with medium-sized leaves. Funnel-shaped white flowers, 7–9cm (3–3½in) long, attractively flared purple-black in the throats, are borne in high-domed trusses in early summer. Grow in full sun.  $\uparrow$  to 3m (10ft). \*\*\*

**R. sargentianum**  $\nabla$  Compact, dwarf, evergreen shrub with bristly, scaly shoots and broadly elliptic, aromatic leaves, to 1.5cm (½in) long, glossy mid-green above, densely golden scaly beneath. From mid-spring to early summer, bears flattened trusses of 5–7 tubular, lemon-yellow or cream flowers, to 1cm (½in)



*Rhododendron* 'Temple Belle'

long, with spreading lobes.  $\uparrow$  to 60cm (24in). W. China. \*\*\*

**R. 'Satan'**  $\nabla$  Bushy, free-flowering, deciduous Knap Hill-Exbury azalea with medium-sized leaves. In mid-spring, produces bold trusses of funnel-shaped, bright red flowers, 5cm (2in) long. Grow in full sun.  $\uparrow$  to 2m (6ft). \*\*\*

**R. 'Scarlet Wonder'**  $\nabla$  Free-flowering, compact, semi-dwarf, evergreen shrub with small leaves. In mid-spring, bears loose trusses of 4–7 funnel-shaped, slightly frilled, bright cardinal red flowers, 5cm (2in) long.  $\uparrow$  to 1.2–2m (4–6ft). \*\*\*

**R. schlippenbachii**  $\nabla$  Deciduous, densely branched azalea with obovate or broadly ovate leaves, 2.5–11cm (1–4½in) long, dark green above, paler

green beneath, borne in whorls of 5 at the branch tips. In mid- and late spring, produces trusses of 3–6 flat or saucer-shaped, pale pink or rose-pink, sometimes white flowers, 3–5cm (1¼–2in) across, spotted reddish pink on the upper lobes.  $\uparrow$  to 5m (15ft). China (N. Manchuria), Korea. \*\*\*

**R. 'Scintillation'** Evergreen shrub with medium-sized leaves. In early summer, bears dense, rounded trusses of funnel-shaped, pale pink flowers, 6–7cm (2½–3in) long, each with a bronze to pinkish brown flare in the throat.  $\uparrow$  to 2.2m (7ft). \*\*\*

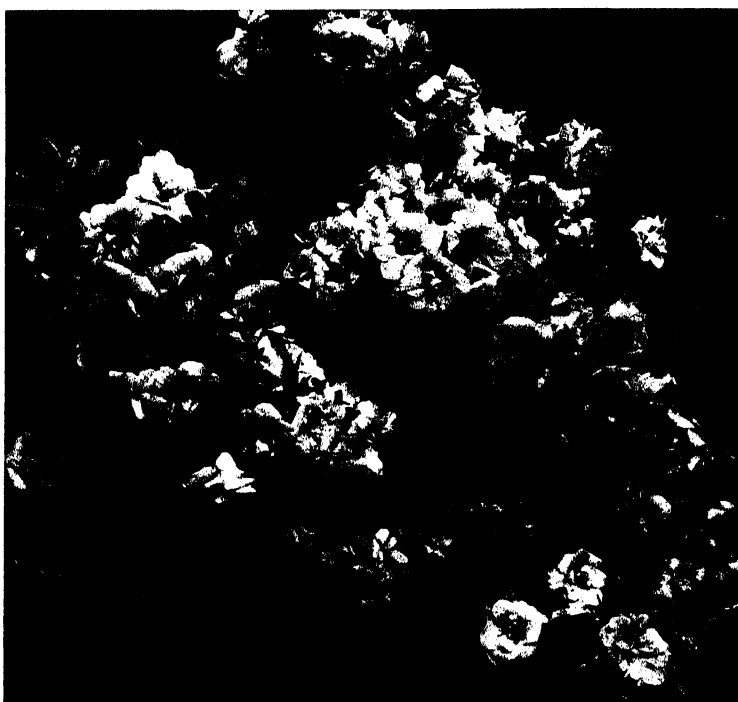
**R. 'Seta'**  $\square \nabla$  Free-flowering, evergreen shrub of open habit, with small leaves. In early spring, bears upright, clustered trusses of tubular-bell-shaped, light pink flowers, 3.5cm (1½in) long, striped deep pink on the outside.  $\uparrow$  to 1–1.5m (3–5ft). \*\*\*

**R. 'Seven Stars'**  $\square \nabla$  Vigorous, upright, evergreen shrub with medium-sized leaves. In mid-spring, bears rounded trusses of funnel-shaped, pale pinkish white flowers, 5cm (2in) across, flushed deep red-purple on the outside.  $\uparrow$  to 4m (12ft). \*\*

**R. 'Shamrock'** Free-flowering, compact, dwarf, spreading, evergreen shrub with small leaves. In early and mid-spring, bears rounded trusses of 5–9 funnel-shaped, pale yellow flowers, 0.7–2.5cm (¼–1in) across, tinged green and spotted yellow inside. Very hardy; tolerates sun and drought.  $\uparrow$  to 75cm (30in). \*\*\*

**R. 'Silver Moon'** Dwarf, broadly spreading, evergreen Glenn Dale azalea with small leaves. Abundant, funnel-shaped white flowers, 6–8cm (2½–3in) long, marked pale green inside, are borne in rounded trusses in mid-spring. Grow in sun.  $\uparrow$  to 1–1.5m (3–5ft). \*\*\*

**R. 'Silver Slipper'**  $\nabla$  Bushy, deciduous Knap Hill-Exbury azalea producing medium-sized leaves. Domed trusses of funnel-shaped white flowers, 6cm (2½in) across, flushed pink with central orange flares inside, are borne freely in



*Rhododendron* 'Rose Bud'

## RHODODENDRON

mid-spring. Suitable for sun.  $\pm$  2m (6ft). \*\*\*

**R. sinogrande**  $\square \varnothing$  Evergreen shrub or small tree with very large, oblong to lance-shaped, glossy, dark green leaves, to 75cm (30in) long, with a smooth, silver to buff indumentum beneath. In mid- and late spring, bears trusses of 20–30 widely bell-shaped, pale yellow to creamy white flowers, 5cm (2in) long, marked crimson inside.  $\pm$  10m (30ft). Tibet, China, Burma. \*\*\*

**R. 'Sir Charles Lemon'**  $\varnothing$  Tall, erect, evergreen shrub producing medium-sized, dark green leaves with a cinnamon-brown indumentum beneath. In mid- and late spring, bears abundant dense trusses of funnel-shaped, pure white flowers, 4cm (1½in) across, speckled red inside. Grow in full sun.  $\pm$  6m (20ft),  $\leftrightarrow$  4m (12ft). \*\*\*

**R. smirnowii**. Evergreen shrub producing oblong to lance-shaped, dark green leaves, 7–14cm (3–5½in) long, with a thick, woolly, fawn indumentum beneath. Trusses of 10–12 funnel- to bell-shaped, pale to deep rose-purple flowers, to 4cm (1½in) long, are borne in late spring and early summer. Very hardy.  $\pm$  to 4m (12ft),  $\leftrightarrow$  5m (15ft). N.E. Turkey, Georgia, Caucasus. \*\*\*

**R. 'Snowdrift'**. Deciduous, bushy Mollis azalea with medium-sized leaves. Dense trusses of narrowly funnel-shaped white flowers, with yellow-orange marks in the throats, are borne in spring before the leaves. Suitable for full sun.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Snowflake'** see *R. 'Kure-no-yuki'*.

**R. 'Snow Lady'**  $\varnothing$  Compact, evergreen, semi-dwarf shrub with medium-sized leaves. In early spring, freely bears lax trusses of 2–5 funnel-shaped, pure white flowers, 2.5–4cm (1–1½in) long. Flowers best in a sunny, but sheltered site.  $\pm$  1m (3ft). \*\*\*

**R. 'Songbird'**. Evergreen, compact, semi-dwarf shrub with small leaves. Neat trusses of small, funnel-shaped, vivid violet-blue flowers are borne in profusion in early spring. Very hardy; suitable for full sun.  $\pm$  1.2m (4ft). \*\*\*

**R. souliei**  $\square$  Evergreen shrub with ovate-rounded leaves, 6–8cm (2½–3in) long, metallic blue-green above when young, becoming mid-green with age, light green and glaucous beneath. In late spring and early summer, bears trusses of 5–8 saucer-shaped, pink or rose-red, occasionally white flowers, 5–8cm (2–3in) long.  $\pm$  to 5m (15ft),  $\leftrightarrow$  4m (12ft). W. China. \*\*\*

**R. 'Spek's Brilliant'**  $\square \varnothing$  Deciduous Mollis azalea with medium-sized leaves. In late spring and early summer, produces full trusses of funnel-shaped, bright orange-scarlet flowers, 2.5–6cm (1–2½in) across, with deeper orange-scarlet flares inside. Suitable for full sun.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Spek's Orange'**  $\square \varnothing$  Deciduous, bushy Mollis azalea with medium-sized leaves. In late spring and early summer, bears dense trusses of broadly funnel-shaped, bright reddish orange flowers, 6cm (2½in) long. Suitable for full sun.  $\pm$  2.5m (8ft). \*\*\*

**R. 'Strawberry Ice'**  $\square \varnothing$  Bushy, deciduous Knap Hill-Exbury azalea with medium-sized leaves. Rounded trusses of broadly funnel-shaped, pale flesh pink flowers, 6–7cm (2½–3in) long, heavily

veined and mottled deeper pink at the petal margins, with deep yellow-marked throats, are borne in late spring. Thrives in full sun.  $\pm$  2m (6ft). \*\*\*

**R. strigillosum**. Large, dome-shaped, evergreen shrub with densely bristly shoots and recurved, oblong to lance-shaped leaves, 7–14cm (3–5½in) long, bright green above, scaly and brown-hairy beneath. From late winter to mid-spring, bears trusses of 8–12 tubular-bell-shaped, glossy crimson-scarlet flowers, 4–6cm (1½–2½in) long.  $\pm$  6m (20ft). W. China. \*\*\*

**R. 'Susan'**  $\square \varnothing$  Vigorous but compact, evergreen shrub with medium-sized leaves. In mid-spring, bears trusses of 12–16 funnel-shaped, cool mauve-blue flowers, 6cm (2½in) long, with darker margins, fading to near white.  $\pm$  3m (10ft). \*\*\*

**R. suchuenense**  $\square \varnothing$  Spreading, evergreen shrub or small tree with oblong to lance-shaped leaves, 11–25cm (4½–10in) long, matt, mid-green above, paler green beneath. From late winter to mid-spring, bears trusses of 8–12 broadly bell-shaped, rose-pink or pale lilac flowers, to 8cm (3in) across, often with purple spots inside.  $\pm$  8m (25ft). W. China. \*\*\*

**R. 'Taylorii'**. Erect, evergreen Vireya rhododendron with medium-sized, narrowly elliptic leaves. From winter to spring, intermittently bears rounded trusses of up to 15 funnel-shaped pink flowers, 5–8cm (2–3in) long.  $\pm$  1.5m (5ft),  $\leftrightarrow$  1m (3ft).  $\bullet$  (min. 5°C/41°F)

**R. 'Temple Belle'**  $\square \varnothing$  Low-growing, compact, evergreen shrub producing medium-sized, rounded, pale green leaves. Loose trusses of 3–5 bell-shaped, clear pink flowers, 5–6cm (2–2½in) long, are borne freely in early and mid-spring.  $\pm$  2m (6ft). \*\*\*

**R. 'Tessa Roza'**  $\varnothing$  Early-flowering, low-growing, upright, evergreen shrub with small leaves. In late winter and early spring, produces trusses of 3 funnel-shaped, deep rose-pink flowers, 3–4cm (1¼–1½in) long, spotted deep carmine red inside.  $\pm$  1.5m (5ft). \*\*\*

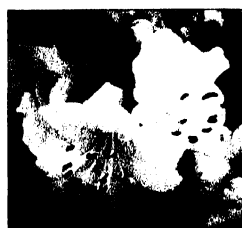
**R. 'The Hon. Jean Marie de Montague'**, syn. *R. 'Jean Mary Montague'*. Free-flowering, compact, evergreen shrub with medium-sized leaves. Dense trusses of funnel-shaped, scarlet-crimson flowers, 5–7cm (2–3in) long, are borne in mid-spring. Tolerates heat, sun, and an exposed site.  $\pm$  2.5m (8ft). \*\*\*

**R. thomsonii**  $\square \varnothing$  Evergreen shrub or small tree with smooth, peeling, purple-brown bark and broadly ovate leaves, 3–11cm (1¼–4½in) long, dark green above, glaucous beneath. Pendent trusses of 6–12 bell-shaped, waxy, fleshy, deep blood-red flowers, 3.5–5cm (1½–2in) long, with large calyces, open in mid- and late spring.  $\pm$  6m (20ft). Himalayas, W. China. \*\*\*

**R. 'Titian Beauty'**  $\square \varnothing$  Low-growing, compact, evergreen shrub producing medium-sized, deep green leaves, with a thin brown indumentum beneath. Lax trusses of tubular-bell-shaped, waxy, rich red flowers, 3.5–5cm (1½–2in) long, are borne on long flower-stalks above the foliage, in late spring and early summer. Suitable for full sun.  $\pm$  2m (6ft). \*\*\*

**R. tsariense**. Evergreen shrub producing elliptic-obovate, dark green leaves, 3.5–6cm (1½–2½in) long, with a rich

## RHODODENDRON



*Rhododendron* 'Ptarmigan'



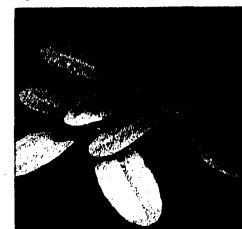
*Rhododendron* 'Purple Splendour'



*Rhododendron* 'Queen Elizabeth II'



*Rhododendron racemosum*



*Rhododendron rex* subsp. *arizelum*



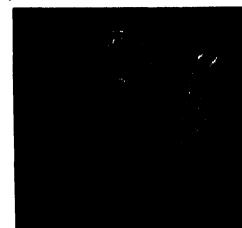
*Rhododendron rex* subsp. *fictolacteum*



*Rhododendron* 'Roza Stevenson'



*Rhododendron russatum*



*Rhododendron* 'St. Valentine'



*Rhododendron* 'Sappho'



*Rhododendron* 'Seta'



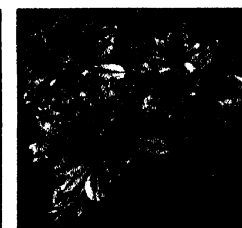
*Rhododendron* 'Seven Stars'



*Rhododendron sinogrande*



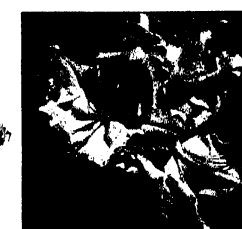
*Rhododendron souliei*



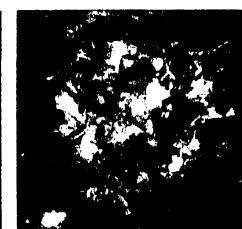
*Rhododendron* 'Spek's Brilliant'



*Rhododendron* 'Spek's Orange'



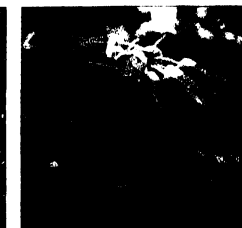
*Rhododendron* 'Strawberry Ice'



*Rhododendron* 'Susan'



*Rhododendron suchuenense*



*Rhododendron thomsonii*



*Rhododendron* 'Titian Beauty'

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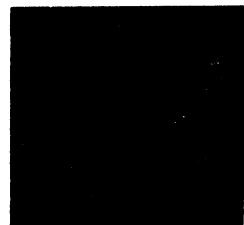
*Rhododendron* 'Vanessa Pastel'



*Rhododendron vernicosum*



*Rhododendron* 'Vuyk's Rosyred'



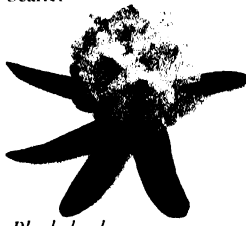
*Rhododendron* 'Vuyk's Scarlet'



*Rhododendron wardii*



*Rhododendron yakushmanum*



*Rhododendron yakushmanum* 'Ken Janeck'



*Rhododendron* 'Yellow Hammer'



*Rhododendron yunnanense*

cinnamon-brown indumentum beneath. Trusses of 3 or 4 bell-shaped white flowers, 2.5–3.5cm (1–1½in) long, tinged pink and frequently spotted red inside, are borne from early to late spring.  $\uparrow$  4m (12ft). E. Himalayas, Tibet, Bhutan. \*\*\*

**R. 'Valentine'** see *R. 'St. Valentine'*.

**R. 'Vanessa Pastel'**  $\square$   $\varnothing$  Free-flowering, compact, evergreen shrub producing medium-sized leaves. In early summer, bears lax trusses of funnel-shaped, creamy pink flowers, 6cm (2½in) long, stained red on the outsides and with red-marked throats.  $\uparrow$  2m (6ft). \*\*\*

**R. vaseyi**  $\varnothing$  Deciduous azalea with elliptic to elliptic-oblong, hairless, shiny, dark green leaves, 5–12cm (2–5in) long, paler green beneath. In mid- and late spring, trusses of 4–8 broadly funnel-shaped, rose-pink, pale pink, or white flowers, 4cm (1½in) long, spotted red, are borne before the leaves. Suitable for full sun.  $\uparrow$  5m (15ft). E. North America. \*\*\*

**R. vernicosum**  $\square$   $\varnothing$  Evergreen shrub or small tree of variable habit, with elliptic to ovate-elliptic or obovate-elliptic, dull, mid-green leaves, 5–10cm (2–4in) long, slightly glaucous beneath. In late spring, produces trusses of 6–12 funnel- to bell-shaped, 6- or 7-lobed flowers, 3.5–5cm (1½–2in) long, bright rose-pink, lavender-pink, or white, sometimes marked crimson inside.  $\uparrow$  6m (20ft). W. China. \*\*\*

**R. 'Vida Brown'**. Slow-growing, evergreen Kurume azalea of low, compact habit, with small leaves. Hose-in-hose, rose-pink flowers, 4cm (1½in) long, are borne in small trusses in mid-spring.  $\uparrow$  75cm (30in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. viridescens** see *R. mckongense* Viridescens Group.

**R. viscosum**  $\varnothing$  Deciduous azalea with hairy shoots and elliptic-obovate to

oblong-obovate, dark green leaves, 1.5–3cm (½–1¼in) long, often glaucous beneath. In early and midsummer, bears trusses of 4–12 narrowly tubular to funnel-shaped, fragrant, pink-suffused white flowers, 2–3cm (¾–1¼in) long. Thrives in damp soil in sun.  $\uparrow$  2.5m (8ft). E. North America. \*\*\*

**R. 'Vuyk's Rosyred'**  $\square$   $\varnothing$  Low-growing, dwarf, evergreen Vuyk azalea with small leaves. Bears a profusion of funnel-shaped, satiny, deep rose-pink flowers, 5cm (2in) long, each with a darker pink flare inside, in pairs in mid-spring.

Suitable for full sun.  $\uparrow$  75cm (30in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Vuyk's Scarlet'**  $\square$   $\varnothing$  Dwarf, evergreen Vuyk azalea with small leaves. In mid-spring, bears abundant solitary or paired, funnel-shaped, crimson-scarlet flowers, 6–7cm (2½–3in) long, with wavy-margined lobes. Tolerates full sun, especially in frost-prone areas.

$\uparrow$  75cm (30in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. wardii**  $\square$   $\varnothing$  Evergreen shrub or small tree with oblong-elliptic to broadly obovate, hairless, dark green leaves, 6–11cm (2½–4½in) long, paler green beneath. Trusses of 7–14 broadly funnel-shaped flowers, 4–5cm (1½–2in) long, in various shades of yellow, sometimes with basal crimson marks inside, are borne in late spring and early summer.  $\uparrow$  6m (20ft),  $\leftrightarrow$  5m (15ft). S.E. Tibet, S.W. China. \*\*\*

**R. 'Wigeon'**. Free-flowering, semi-dwarf, evergreen shrub with small leaves. In mid-spring, bears neat trusses of numerous saucer-shaped, rich lavender-pink flowers, 2.5cm (1in) long, with deeper spotting on the upper lobes inside. Very hardy; suitable for full sun.  $\uparrow$  1.2m (4ft). \*\*\*

**R. williamsianum**  $\varnothing$  Dome-shaped, evergreen shrub with ovate-rounded leaves, 2–4.5cm (¾–1¾in) long, brown when young, bright green above and glaucous beneath when mature. Loose trusses of 2 or 3 bell-shaped flowers, 3–4cm (1¼–1½in) long, in various shades of pink, occasionally white, are borne in abundance in mid- and late spring. Thrives in full sun.  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  1.2m (4ft). W. China. \*\*\*

**R. 'Winsome'**  $\square$   $\varnothing$  Compact, dense, sometimes low-growing, evergreen shrub with medium-sized, mid-green leaves, bronze when young. Loose trusses of funnel-shaped, cherry-pink flowers, 5–6cm (2–2½in) long, open in early and mid-spring. Suitable for sun or partial shade.  $\uparrow$  1.5m (5ft). \*\*\*

**R. 'Wombat'**  $\square$  Prostrate, vigorous, evergreen azalea with small leaves. Lax trusses of funnel-shaped pink flowers,



*Rhododendron* 'Wombat'

1–2cm (½–¾in) long, are produced in abundance in early summer. Provides excellent ground cover in full sun.

$\uparrow$  25cm (10in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. xanthocodon** see *R. cinnabarinum* subsp. *xanthocodon*.

**R. 'Yaku Princess'**. Dense, compact, low-growing, evergreen shrub producing medium-sized, olive-green leaves, with a buff indumentum beneath. Spherical trusses of funnel-shaped, pinkish white flowers, 5–6cm (2–2½in) long, each with a deeper pink mark and greenish spots inside, are borne in mid- and late spring. Suitable for full sun.  $\uparrow$  1.5m (5ft). \*\*\*

**R. yakushmanum**  $\square$  syn. *R.*

*degronianum* subsp. *yakushmanum*.

Tightly dome-shaped, evergreen shrub with recurved, linear to lance-shaped, glossy, dark green leaves, 8–14cm (3–5½in) long, with a thick, reddish brown indumentum beneath. Young foliage has a pale cinnamon-brown indumentum on the upper surfaces, which is lost as the leaves mature. In mid-spring, trusses of 5–10 deep rose-pink buds open to tubular-funnel-shaped flowers, 3–4.5cm (1¼–1¾in) long, fading to pale pink or white. Very hardy; suitable for full sun.  $\uparrow$  to 2m (6ft). Japan (Yakushima Island). \*\*\*

**'Ken Janeck'**  $\square$  syn. *R. 'Ken Janeck'*, is low-growing, bearing full trusses of funnel-shaped white flowers, 4–5cm (1½–2in) long, lined with pinkish purple and spotted with green;  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  1.3m (4½ft).

**R. 'Yellow Hammer'**  $\square$   $\varnothing$  Erect, free-flowering, evergreen shrub with small leaves. Produces small, tightly packed trusses of 2 or 3 tubular, canary-yellow flowers, 2.5–3cm (1–1¼in) long, in early and mid-spring, and frequently again in autumn. Grow in sun.  $\uparrow$  2m (6ft). \*\*\*

**R. yunnanense**  $\square$  Vigorous, evergreen or semi-evergreen shrub with lance-shaped, narrowly elliptic, or elliptic, scaly leaves, 3–10cm (1¼–4in) long, bright green above, paler green beneath. In late spring, bears trusses of 3–5 broadly funnel-shaped, pink, pale rose-pink, lavender-pink, or white flowers, 2–3cm (¾–1¼in) long, sometimes with crimson marks, or crimson-spotted inside. Thrives in sun.  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  4m (12ft). S.E. Tibet, W. China, Burma. \*\*\*

▷ *Rhododendron*, Indian see *Melastoma malabathricum*



*Rhododendron* 'Winsome'

## RHODOHYPOXIS

### HYPOXIDACEAE

Genus of 6 species of small, clump-forming herbaceous perennials, with corm-like rootstocks, from open meadows in areas with heavy summer rainfall in the eastern provinces of South Africa, and Swaziland. The basal leaves are lance-shaped and hairy. Short-stalked, almost flat, white, pink, red, or deep purple flowers are produced over long periods in summer. Each flower has 6 overlapping tepals, arranged in 2 ranks of 3, which are fused at the bases to form a tube; the outer tepals are broader than the inner ones. Grow in a trough, rock garden, or alpine house.

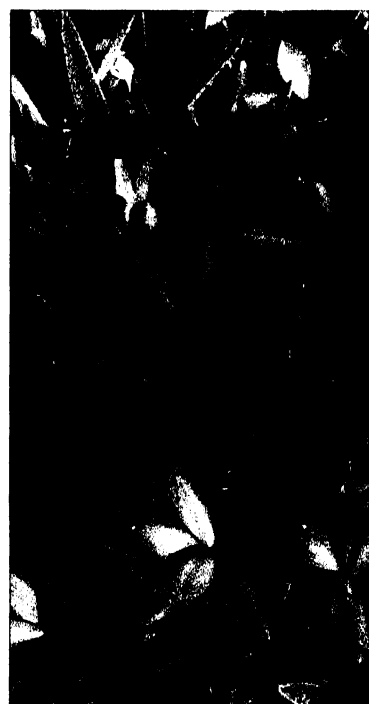
• **HARDINESS** Fully hardy to frost hardy; to survive lower temperatures, plants must be kept almost dry in winter.

• **CULTIVATION** Under glass, grow in a mix of equal parts lime-free (ericaceous) potting compost, leaf mould, and sharp sand, in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in well-drained, moderately fertile, humus-rich soil in full sun, with protection from excessive winter wet. *R. milloides* thrives in damp conditions, and will tolerate more winter wet.

• **PROPAGATION** Sow seed at 6–12°C (45–54°F) as soon as ripe or in spring. Divide established clumps, or separate offsets, in late autumn.

• **PESTS AND DISEASES** Susceptible to red spider mites and thrips under glass.

*R. baurii* ♀ Clump-forming perennial with basal clusters of narrowly lance-shaped, keeled, folded leaves, to 10cm (4in) long. The leaves are dull greyish green, and very hairy on both surfaces and at the margins. Solitary, pale to deep reddish pink flowers, to 2cm (¾in) across, are produced on stalks 5–10cm (2–4in) tall, throughout summer. ↗ 10cm (4in). South Africa. \* \* \*. The



*Rhodohypoxis baurii* 'Albrighton'



*Rhodohypoxis baurii* 'Margaret Rose'

following cultivars, derived mainly from *R. baurii* and *R. baurii* var. *platypetala*, are generally large-flowered and vigorous. 'Albrighton' □ has deep red-pink flowers. 'Harlequin' has pink-flushed white flowers, to 1.5cm (½in) across, with distinct pink margins. 'Helen', syn. *R. 'Tetra White'*, has very large white flowers, 3cm (1¼in) or more across. 'Margaret Rose' □ has clear pink flowers. var. *platypetala* is more robust than *R. baurii*, with wider, grey-green leaves and white, rarely pink flowers, to 3cm (1¼in) across; ↗ 12cm (5in), ↔ 15cm (6in). 'Tetra Pink' and 'Tetra Red' have large flowers, 3cm (1¼in) or more across, in pink and reddish purple, respectively; flowers become smaller after 2–3 years.

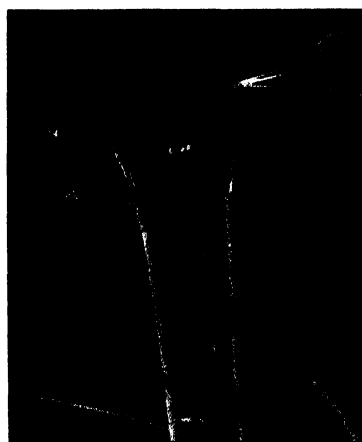
*R. milloides*. Vigorous, clump-forming perennial with runners, and with erect, hairless or sparsely hairy, linear-lance-shaped, keeled, folded, light green, basal leaves, to 17cm (7in) long. Cerise or dark crimson, occasionally deep pink or white flowers, to 3.5cm (1½in) across, are produced on hairy flower-stalks, to 12cm (5in) or more tall, over long periods in summer. ↗ 15cm (6in), ↔ 20cm (8in). South Africa. \* \* \* *R. 'Tetra White'* see *R. baurii* 'Helen'.

## RHODOPHIALA

### AMARYLLIDACEAE

Genus, closely related to *Hippeastrum*, of about 35 species of bulbous perennials from coastal sands to rocky, dry sites in the mountains of Uruguay, Argentina, and Chile. They are grown for their funnel-shaped flowers, borne in umbels on leafless stems in summer or autumn. The basal leaves are linear and mid-green. Grow in an alpine house; in frost-free areas, however, *R. advena* and *R. pratensis* may be grown outdoors against a warm, sunny wall.

• **HARDINESS** Half hardy to frost tender; *R. advena*, *R. bifida*, and *R. pratensis* may withstand occasional falls to around -5°C (23°F).



*Rhodophiala advena*

• **CULTIVATION** Under glass, plant bulbs with the necks and shoulders above soil level, in autumn. Grow in loam-based potting compost (J1 No.2) in full light or bright filtered light. Water sparingly until plants are in active growth, then water moderately and apply a half-strength balanced liquid fertilizer every 2–3 weeks. Keep dry when dormant. Avoid root disturbance; pot on only every 3 years. Outdoors, plant bulbs 15–20cm (6–8in) deep in moderately fertile, well-drained soil in full sun. Provide a deep, dry winter mulch in cold areas.

• **PROPAGATION** Sow seed at 16°C (61°F) as soon as ripe. Remove offsets in autumn or winter.

• **PESTS AND DISEASES** Trouble free.

*R. advena* □ syn. *Hippeastrum advenum*. Bulbous perennial producing umbels of 2–6 horizontal, open funnel-shaped, red, yellow, or pink flowers, 5cm (2in) across, in late summer and early autumn, just before the semi-erect, linear, basal leaves, 15–30cm (6–12in) long, emerge. ↗ 30–50cm (12–20in), ↔ 10cm (4in). Chile. \*

*R. bifida*, syn. *Hippeastrum bifidum*. Bulbous perennial producing umbels of up to 5 erect, narrowly funnel-shaped, bright deep red flowers, 5cm (2in) long, in summer; flowers are borne as, or just before, the semi-erect, linear, basal leaves, to 45cm (18in) long, emerge. ↗ to 30cm (12in), ↔ 10cm (4in). Argentina, Uruguay. \*

*R. pratensis*, syn. *Hippeastrum pratense*. Bulbous perennial bearing umbels of 2–8 horizontal, broadly funnel-shaped red flowers, 5–7cm (2–3in) across, in early summer, at the same time as the semi-erect, linear, basal leaves, 30–50cm (12–20in) long. ↗ to 60cm (24in), ↔ 10cm (4in). Chile. \*

## RHODOTHAMNUS

### ERICACEAE

Genus of 2 species of dwarf, evergreen shrubs found in pockets of humus-rich soil, often among limestone rocks, in the eastern Alps and Turkey. They have glossy, dark green foliage, and are grown for their solitary, occasionally clustered, cup-shaped pink flowers, produced in profusion from the leaf axils in early summer. Grow in a rock garden, peat bed, or alpine house. They are not easy to establish.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with additional leaf mould, in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water more sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, acid or alkaline, moist soil with a cool root run. They prefer full sun, but partial shade is tolerated, especially in drier areas. Avoid root disturbance.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*R. chamaecistus*. Semi-prostrate, evergreen shrub with elliptic to inversely lance-shaped, glossy, bright dark green leaves, 6–10mm (¼–½in) long, paler beneath, fringed with bristly white hairs. In late spring and early summer, abundant cup-shaped, 5-petalled, pale clear pink flowers, to 3cm (1¼in) across, with red eyes, are produced singly from the leaf axils or in few-flowered terminal clusters. ↗ 20cm (8in), ↔ 25cm (10in). E. Alps. \* \* \*

## RHODOTYPUS

### ROSACEAE

Genus of one species of deciduous shrub occurring in scrub and woodland in China and Japan. It has opposite, ovate, toothed leaves, but is cultivated mainly for its large, papery, 4-petalled white flowers, borne over a long period from spring to summer, and its shiny black berries. Grow in a shrub border or woodland garden.

• **HARDINESS** Fully hardy.

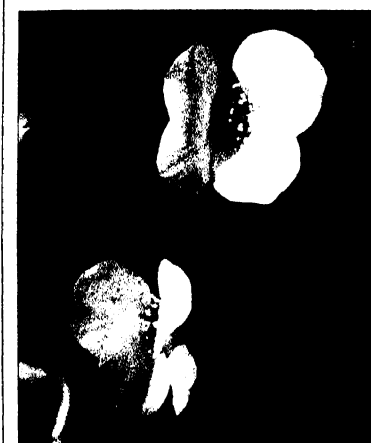
• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil, preferably in sun, although partial shade is tolerated. Pruning group 1 or 2.

• **PROPAGATION** Sow seed in a seedbed, or in containers in a cold frame, in autumn. Root greenwood cuttings in early summer, or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*R. kerrioides* see *R. scandens*.

*R. scandens* □ syn. *R. kerrioides*. Deciduous shrub with arching shoots and ovate, tapered, sharply toothed, deeply veined, mid-green leaves, to 6cm (2½in) long. In late spring and early summer, 4-petalled white flowers, 4cm



*Rhodotypus scandens*

(1½in) across, are produced singly from the shoot tips; they are followed by spherical, glossy black berries, to 8mm (⅜in) across. ↗ 1.5m (5ft). China, Japan. \*\*\*

▷ *Rhoeo discolor* see *Tradescantia spathacea*

▷ *Rhoeo spathacea* see *Tradescantia spathacea*

## RHOICISSUS

VITACEAE

Genus of 10–12 species of evergreen trees and woody-stemmed tendril climbers or scramblers from woodland in tropical Africa and South Africa. The leaves are alternate, and simple or 3-, occasionally 5-palmate, with entire or toothed leaflets. Tendrils are produced opposite the leaves. Tiny, yellowish green flowers are borne in small cymes that are almost hidden by the leaves; they are followed by red to purple berries. Where temperatures fall below 7°C (45°F), grow in a cool or temperate greenhouse, or as houseplants; elsewhere, use to clothe a wall, pergola, or arch.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed at 13°C (55°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites and powdery mildew may be a problem.

*R. capensis* ■ ♀ syn. *Cissus capensis*, *Vitis capensis* (Cape grape). Robust climber with tuberous roots and very long, forked tendrils. Leathery, lustrous, dark green leaves, 10–20cm (4–8in) long, are rounded to kidney-shaped,



*Rhoicissus capensis*

and bluntly 5-angled, with broad, wavy teeth. Insignificant, yellowish green flowers are borne in spring, and are followed by grape-like, spherical, blackish red berries. ↗ 5m (15ft) or more. South Africa. ☼ (min. 7°C/45°F)

*R. rhombifolia* see *Cissus rhombifolia*.

## RHOMBOPHYLLUM

AIZOACEAE

Genus of 3 species of very fleshy, usually compact, mat-forming, perennial succulents occurring on hillsides and often in the lowlands of South Africa. The crowded, fleshy leaves are linear or semi-cylindrical, expanded towards the middle, and opposite or united at the bases; they are mid- to dark greyish green, with white or translucent spots, and margins that are entire or have 1 or 2 short teeth. Attractive, daisy-like, bright golden yellow flowers, which open during the day, are produced singly or in cymes of 3–7 in summer. In frost-prone regions, grow in a temperate greenhouse. In warm, dry climates, grow outdoors in a raised bed or desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. In spring and summer, water moderately and apply a dilute, low-nitrogen fertilizer monthly; keep completely dry at other times. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or divide offsets, in spring or summer.
- **PESTS AND DISEASES** Prone to aphids while flowering.

*R. rhomboideum* ■ Clump-forming succulent with 4 or 5 uneven pairs of semi-cylindrical, white-spotted, dark greyish green leaves, 2.5–5cm (1–2in) long; the upper surfaces of the leaves are more or less flat, the undersurfaces are rounded, thickened, and keeled towards the tips, with paler green, occasionally toothed margins. Golden yellow flowers, 3cm (1¼in) across, tinged red on the reverse of the petals, are produced in summer. ↗ 5cm (2in), ↔ 15cm (6in). South Africa (Eastern Cape). ☼ (min. 7°C/45°F)

▷ *Rhubarb* see *Rheum*  
Chinese see *R. palmatum*



*Rhombophyllum rhomboideum*

## RHUS syn. TOXICODENDRON

Sumach

ANACARDIACEAE

Genus of about 200 species of deciduous or evergreen shrubs, trees, and woody climbers, widely distributed in temperate and subtropical North America, South Africa, E. Asia, and N.E. Australia. They are found in woodland, thickets, dry sites, bogs, and on rocky slopes. Sumachs are grown mainly for their alternate, simple, pinnate, or palmate leaves, which in many species and cultivars turn brilliant shades of yellow, red, or orange in autumn; some also produce showy fruit clusters. The inconspicuous flowers, usually 2mm (⅛in) across, are borne in spring or summer in terminal, normally erect, ovoid, or conical to pyramidal panicles. In autumn, they are followed by spherical, usually red fruits, 4–6mm (⅛–¼in) across. *R. glabra*, *R.*

× *pulvinata*, and *R. typhina* usually produce male and female flowers on separate plants; plants of both sexes must be grown together to obtain fruit. Grow in a shrub border or woodland garden, or as specimen plants. In frost-prone areas, grow tender species in a cool greenhouse. All parts of *R. radicans* and *R. verniciflua* are highly toxic if ingested; contact with their foliage, and that of a number of related species, including *R. succedanea*, may aggravate skin allergies.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in moist but well-drained, moderately fertile soil, in full sun to obtain best autumn colour. Suckering species, such as *R. typhina*, may be invasive. Pruning group 1, or group 7 for *R. typhina*, *R. x pulvinata*, and *R. glabra*.
- **PROPAGATION** Sow seed in a seedbed in autumn. Root semi-ripe cuttings in summer, or insert root cuttings in winter. Separate suckers when dormant.
- **PESTS AND DISEASES** Prone to coral spot and *Verticillium* wilt.

*R. aromatica* (Fragrant sumach). Mound-forming, suckering, deciduous shrub with spreading shoots. The 3-palmate, aromatic leaves, to 10cm (4in) long, are softly hairy or almost hairless, with ovate or obovate, sharply toothed, dark green leaflets, turning orange to red-purple in autumn. Tiny yellow flowers are borne in small, erect, ovoid panicles, 2cm (¾in) long, in mid-spring, followed by spherical red fruit. ↗ 1–1.5m (3–5ft), ↔ 1.5m (5ft). E. North America. \*\*\*

*R. chinensis* □ Upright, deciduous tree with stout, downy shoots bearing pinnate leaves, to 40cm (16in) long, with winged stalks and 7–13 ovate-oblong, mid-green leaflets, turning red in autumn. In late summer, bears yellowish white flowers in erect, conical panicles, to 25cm (10in) long, followed by spherical, orange-red fruit. ↗ 6m (20ft). E. Asia. \*\*\* (borderline)

*R. copallina* □ (Dwarf sumach, Shining sumach). Upright, deciduous shrub or tree with long, branching, softly hairy, reddish green shoots. Pinnate leaves, to 35cm (14in) long, have winged stalks, and 9–15 oblong-lance-shaped, glossy, dark green leaflets, turning bright red in



*Rhus glabra*

autumn. In summer, bears yellow-green flowers in erect, conical panicles, to 15cm (6in) long, followed by spherical red fruit. ↗ 1.5m (5ft) or more. E. North America. \*\*\*

*R. cotinoides* see *Cotinus obovatus*.

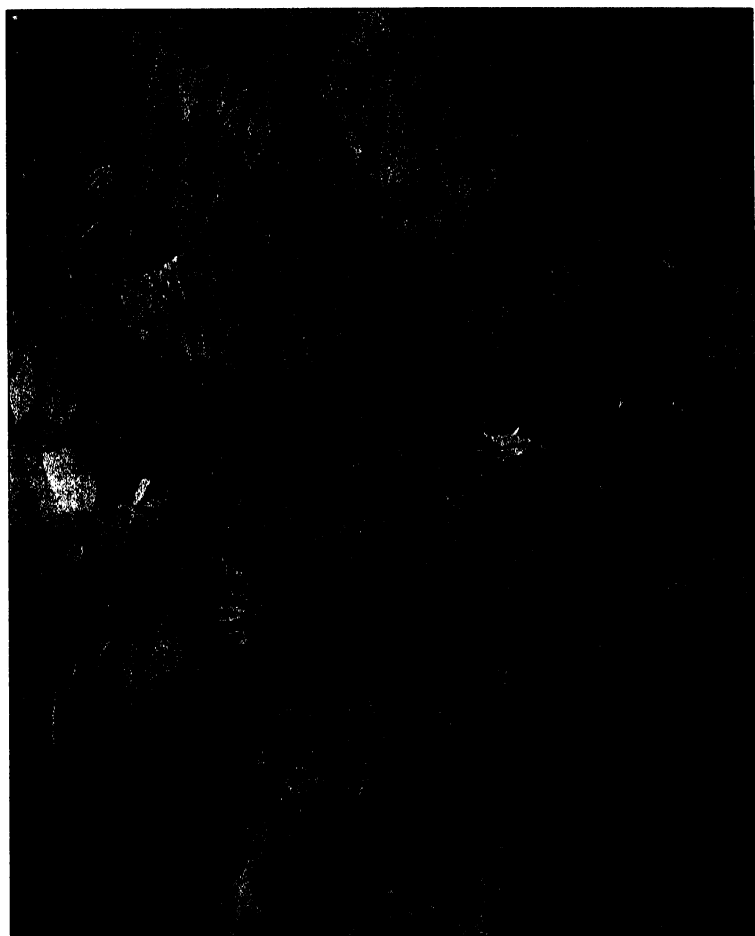
*R. cotinus* see *Cotinus coccinea*.

*R. glabra* ■ (Scarlet sumach, Smooth sumach). Bushy, suckering, deciduous shrub producing smooth, hairless shoots and pinnate leaves, to 45cm (18in) long, with 15–31 oblong-lance-shaped, toothed, glossy, bluish green leaflets, turning rich red in autumn. In summer, bears yellow-green flowers in upright, conical panicles, to 25cm (10in) long; they are followed on female plants by spherical red fruit. ↗ 2.5m (8ft) or more. North America, Mexico. \*\*\*.



*Rhus trichocarpa*



*Rhus typhina*

'**Laciniata**' of gardens see *R.*

x *pulvinata* 'Red Autumn Lace'.

*R. potaninii* ☉ Rounded, deciduous tree with hairless or finely hairy shoots and pinnate leaves, to 35cm (14in) long, composed of 7–11 oblong to oblong lance-shaped, dark green leaflets, turning red in autumn. Creamy white flowers are borne in pendent, pyramidal panicles, 20cm (8in) long, in summer, followed by spherical, hairy red fruit. ↑ 12m (40ft), ↔ 8m (25ft). China. \*\*\*

*R. x pulvinata* 'Red Autumn Lace' ♀ syn. *R. glabra* 'Laciniata' of gardens. Spreading, suckering, deciduous shrub with smooth shoots and pinnate leaves, to 50cm (20in) or more long, composed of 11–13 oblong-lance-shaped, rich green leaflets, turning orange to red-

*Rhus verniciflua*

purple in autumn. Yellow-green flowers are borne in erect, conical panicles, to 20cm (8in) long, in summer, followed by spherical, bristly red fruit. ↑ 3m (10ft), ↔ 5m (15ft). \*\*\*

*R. succedanea* ☉ syn. *Toxicodendron succedaneum* (Wax tree). Spreading, deciduous tree with softly hairy young shoots. Pinnate leaves, to 30cm (12in) long, have 9–15 ovate-oblong, glossy, dark green leaflets, turning red in autumn. Yellow-green flowers are borne in dense, erect, conical panicles, to 12cm (5in) long, in summer, followed by spherical, waxy, yellow-brown fruit. ↑ 10m (30ft). E. Asia. \*\*

*R. trichocarpa* ☐☉ Spreading, deciduous tree or shrub with softly hairy young shoots, later becoming hairless. Pinnate leaves, to 50cm (20in) long, have 13–17 broadly ovate, usually entire, dark green leaflets, pink-tinged when young, turning red-purple to orange in autumn. In summer, bears yellow flowers in erect, conical panicles, to 10cm (4in) long, followed by spherical, bristly, brownish yellow fruit. ↑ 6m (20ft). C. China, Korea, Japan. \*\*\*

*R. typhina* ☐♀☉ (Stag's horn sumach, Velvet sumach). Upright, suckering, deciduous shrub or tree with densely velvety red shoots, resembling a stag's horns. Pinnate leaves, to 60cm (24in) long, have 11–31 oblong-lance-shaped, dark green leaflets, turning brilliant orange-red in autumn. Yellow-green flowers are produced in erect, conical panicles, to 20cm (8in) long, in summer; they are followed on female plants by dense clusters of spherical,

hairy, deep crimson-red fruit. ↑ 5m (15ft) or more, ↔ 6m (20ft). E. North America. \*\*\*. 'Dissecta' ♀ syn. 'Laciniata' of gardens, is female and shrubby, with finely cut leaflets; ↑ 2m (6ft), ↔ 3m (10ft).

*R. verniciflua* ☐☉ syn. *Toxicodendron vernicifluum* (Varnish tree). Spreading, deciduous tree with softly hairy young shoots, later becoming hairless. Pinnate leaves, to 60cm (24in) long, have 7–13 broadly ovate, glossy, bright green leaflets, turning red in autumn. Yellow-green flowers are produced in lax, semi-pendent panicles, to 20cm (8in) long, in summer, followed by spherical, pale yellow fruit. ↑ 15m (50ft), ↔ 10m (30ft). E. Asia. \*\*\*

▷ *Rhynchelytrum* see *Melinis*

*R. repens* see *M. repens*

*R. roseum* see *M. repens*

## RHYNCHOSTYLIS

ORCHIDACEAE

Genus of about 6 species of evergreen, monopodial, epiphytic orchids from warm, moist forest in India, Malaysia, Indonesia, the Philippines, Thailand, Laos, Burma, and Sri Lanka. They have thick, rigid, aerial roots, and produce 8–10 pairs of semi-rigid, linear to strap-shaped leaves at the apexes of short, stout stems. Many small flowers are borne in dense, upright or pendent racemes that arise laterally from the bases of the leaves from spring to winter.

• **HARDINESS** Frost tender.

• **CULTIVATION** Intermediate-growing orchids. Grow in epiphytic orchid compost in half-pots or (preferably) in slatted baskets. Provide high humidity, full light, and shade from hot sun. In summer, water freely, mist daily, and apply a balanced liquid fertilizer at every third watering; water moderately in winter. Disturb as little as possible. See also p.46.

• **PROPAGATION** Divide when the plant fills the container and "flows" over the sides. Cuttings or offshoots may be rooted successfully.

• **PESTS AND DISEASES** Red spider mites, aphids, and mealybugs may be a problem.

*R. gigantea*. Epiphytic orchid with linear, mid-green leaves, 25cm (10in) long. Fragrant, waxy, pale purple-spotted, white or deep violet flowers, to 4cm (1½in) across, are borne in pendent racemes, 20–25cm (8–10in) long, from autumn to winter. ↑ 30cm (12in). Burma, Thailand, Laos. ☼ (min. 13–15°C/55–59°F; max. 30°C/86°F)

*R. retusa*. Epiphytic orchid with linear to oblong, bluish green leaves, 25cm (10in) long. Fragrant, waxy white flowers, to 3cm (1¼in) across, spotted purple or pink, with purple lips, are produced in pendent racemes, to 30cm (12in) long, in summer. ↑ 15cm (6in), ↔ 25cm (10in). India, Burma, Sri Lanka to Malaysia, Philippines. ☼ (min. 13–15°C/55–59°F; max. 30°C/86°F)

▷ **Ribbon bush** see *Homalocladium, Hypoestes aristata*

▷ **Ribbon grass** see *Phalaris arundinacea*

▷ **Ribbon plant** see *Chlorophytum comosum, Dracaena sanderiana*

▷ **Ribbonwood** see *Hoheria sexstylosa*

## RIBES

Flowering currant

GROSSULARIACEAE/SAXIFRAGACEAE

Genus of about 150 species of mainly deciduous, occasionally evergreen, sometimes spiny shrubs, widely distributed in woodland, scrub, and rocky places. Most are found in N. temperate regions; some occur in South America. Some species, such as blackcurrant (*R. nigrum*), redcurrant (*R. rubrum*), and gooseberry (*R. uva-crispa*), are grown for their edible fruits; those described below are cultivated primarily for their flowers. The leaves are alternate and often 3- to 5-lobed. Small, tubular, cup- or bell-shaped flowers, each with small petals and 4, rarely 5, larger, spreading sepals, are borne singly or in pendent racemes, mostly in spring or summer. The berry-like fruits are spherical or ovoid, and vary in colour from red or black to green or white. Grow in a shrub border; *R. speciosum* and *R. viburnifolium* are best grown against a wall. *R. sanguineum* may be used as informal hedging.

• **HARDINESS** Fully hardy to frost hardy.

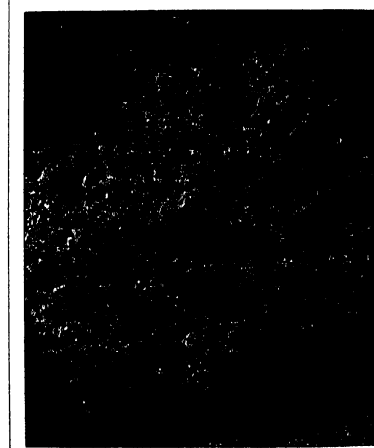
• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. *R. laurifolium* will grow well in partial shade; *R. sanguineum* 'Brocklebankii' should be shaded from the hottest sun. Pruning group 2; group 13 if wall-grown, in late summer. Trim hedges after flowering.

• **PROPAGATION** Root hardwood cuttings of deciduous flowering currants in winter. Root semi-ripe cuttings of evergreens in summer.

• **PESTS AND DISEASES** Aphids, leaf spot, powdery mildew, honey fungus, and coral spot may be a problem.

*R. alpinum*. Compact, mound-forming, much-branched, deciduous shrub with spineless shoots and broadly ovate, 3- to 5-lobed, mid-green leaves, to 5cm (2in) long, often smaller. In spring, bears bell-shaped, greenish yellow flowers (males and females on separate plants) in erect racemes, to 4cm (1½in) long; they are followed on female plants by spherical, dark red fruit, 7mm (¼in) long. ↑ 60cm (24in), ↔ 90cm (36in). N. Europe to Russia (Siberia). \*\*\*. 'Aureum' ☐ is female, and has bright yellow leaves, becoming paler in summer.

*R. aureum* of gardens see *R. odoratum*. *R. x gordonianum* (*R. petraeum* x *R. sanguineum*). Spreading, spineless,

*Ribes alpinum* 'Aureum'

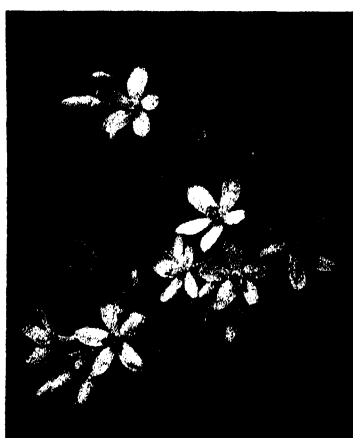
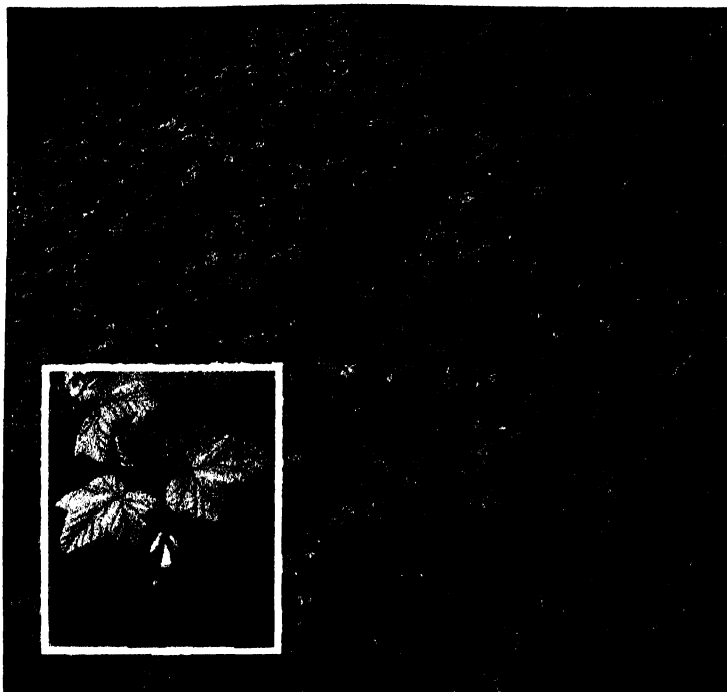
*Ribes laurifolium*

deciduous shrub with rounded, 3- to 5-lobed, toothed, aromatic, dark green leaves, to 5cm (2in) long. Tubular, 5-lobed flowers, red outside and yellow within, open in dense, pendent racemes, to 7cm (3in) long, in early summer. It is not known to produce fruit and is probably sterile.  $\uparrow$  2m (6ft),  $\leftrightarrow$  2.5m (8ft). Garden origin. \*\*\*

***R. laurifolium*** [■] Spreading, spineless, dioecious, evergreen shrub with ovate-oblong, scalloped, leathery, dark green leaves, 5–10cm (2–4in) long. In late winter and early spring, bears cup-shaped, greenish yellow flowers in pendent racemes, the males to 5cm (2in) long, the females to 2.5cm (1in) long. Female flowers are followed by ovoid fruit, to 1cm (½in) long, red at first, ripening to black.  $\uparrow$  1m (3ft),  $\leftrightarrow$  1.5m (5ft). W. China. \*\*\*

***R. odoratum*** [■] syn. *R. aureum* of gardens (Buffalo currant). Spineless, erect, deciduous shrub with hairy young shoots (hairless in the true *R. aureum*). Broadly ovate, 3- to 5-lobed, toothed, bright green leaves, to 8cm (3in) long, turn red and purple in autumn. In mid- and late spring, bears tubular, fragrant yellow flowers in pendent racemes, to 5cm (2in) long, followed by spherical black fruit, to 1cm (½in) across.  $\uparrow$  2m (6ft). C. USA. \*\*\*

***R. sanguineum*** (Flowering currant). Upright, spineless, deciduous shrub with rounded, 3- to 5-lobed, toothed, aromatic, dark green leaves, 5–10cm (2–4in) long, heart-shaped at the bases, and slightly hairy above, white-hairy beneath. Tubular, deep pinkish red flowers are borne in pendent racemes,

*Ribes odoratum**Ribes sanguineum* 'Brocklebankii' (inset: leaf and flower detail)

5–10cm (2–4in) long, in spring, followed by spherical, glaucous, blue-black fruit, 5mm (¼in) across.  $\uparrow$  2m (6ft). W. North America. \*\*\*

**'Brocklebankii'** [■] ♀ is slow-growing, with bright yellow leaves, paler in summer, and pale pink flowers;  $\uparrow$  1.2m (4ft). **'King Edward VII'** is compact and upright, with dark red flowers. **'Pulborough Scarlet'** [■] ♀ is vigorous, and bears dark red, white-centred flowers;  $\uparrow$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). **'Tydeman's White'** ♀ has pure white flowers;  $\uparrow$  2.5m (8ft).

***R. speciosum*** ♀ (Fuchsia-flowered currant). Upright, spiny, deciduous shrub with bristly shoots, red when young, and broadly ovate, 3- to 5-lobed, glossy, mid-green leaves, 1–4cm

*Ribes sanguineum* 'Pulborough Scarlet'

(½–1½in) long. In mid- and late spring, bears slender, bell-shaped, dark red flowers, with protruding red stamens, in small, pendent racemes, 2.5cm (1in) long. Flowers are followed by spherical, bristly red fruit, to 1cm (½in) across.  $\uparrow$  2m (6ft), sometimes more,  $\leftrightarrow$  2m (6ft). USA (California). \*\*\* (borderline)

***R. viburnifolium***. Arching, spineless, evergreen shrub with long, pendent or semi-climbing, spineless shoots and broadly ovate to elliptic, aromatic, glossy, dark green leaves, to 4cm (1½in) long. In mid-spring, bears tiny, bell-shaped pink flowers in small, erect racemes, to 2.5cm (1in) long, followed by ovoid red fruit, to 8mm (⅜in) long.  $\uparrow$  2.5m (8ft). USA (S. California). \*\*

▷ **Rice** see *Oryza*

**Annual wild** see *Zizania aquatica*

**Canadian wild** see *Zizania aquatica*

**Water** see *Zizania aquatica*

**Wild** see *Zizania*

▷ **Rice-paper plant** see *Tetrapanax papyrifer*

## RICHEA

EUPHORBACEAE

Genus of 11 species of evergreen shrubs and small trees found in moist forest in Australia, often at high altitudes. They have crowded branches with spiralling, alternate, narrow leaves, overlapping at the bases. The small, ovoid to conical or bottle-shaped flowers are borne in terminal spikes or panicles; they are open at the bases and almost closed at the tips, quickly losing their petals and leaving the stamens and stigmas exposed. In frost-prone areas, grow half-hardy and tender species in a cool greenhouse or conservatory. In frost-free areas, grow the shrubby species at the base of a warm, sunny wall or in a shrub border; use the trees as specimen plants.

• **HARDINESS** Frost hardy to half hardy.  
• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light. When in growth, water

*Ricinus dracophylla*

freely and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, poor to moderately fertile, humus-rich, neutral to acid soil in full sun; shelter from cold, dry winds. Pruning group 9.

• **PROPAGATION** Surface-sow seed in containers outdoors, ideally as soon as ripe or in spring (germination is unreliable). Root semi-ripe cuttings with bottom heat in late summer.

• **PESTS AND DISEASES** Trouble free.

***R. dracophylla*** [■] Medium to large shrub or small tree with sparse, erect branches. Spreading, spiralling, flexuous, lance-shaped, dark green leaves, 15–30cm (6–12in) long, with tapering, red-tinged tips, are crowded at the ends of the stems. Small, obovoid white flowers are produced in dense, upright panicles, 15–25cm (6–10in) long, in summer.  $\uparrow$  2–5m (6–15ft),  $\leftrightarrow$  0.6–1.5m (2–5ft). Australia (Tasmania). \*

## RICINUS

EUPHORBACEAE

Genus of one species of erect, very fast-growing, mound-forming, suckering, monoecious, evergreen shrub, widely naturalized in wasteland, at roadsides, and on stony slopes, from N.E. Africa to W. Asia. It is grown mainly for its large, glossy, palmately lobed leaves. Spikes of small, cup-shaped flowers are followed by prickly, ovoid capsules. In frost-prone areas, grow as an annual in a cool greenhouse or conservatory, or as a specimen plant for summer bedding. In warmer

*Ricinus communis*



*Ricinus communis* 'Impala'

climates, grow in a border. All parts of *R. communis*, particularly the seeds, are highly toxic if ingested; contact with the foliage may aggravate skin allergies.

• **HARDINESS** Half hardy.

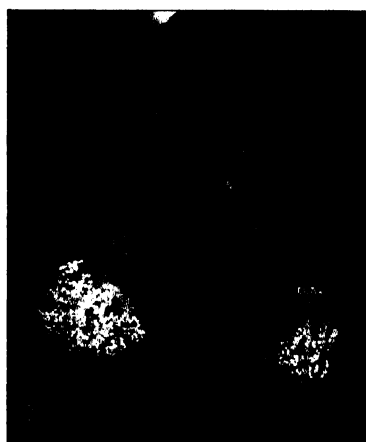
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter.

Outdoors, grow in fertile, humus-rich, well-drained soil in full sun. Stake in exposed sites. Plants grown on poor soils tend to produce flowers at the expense of vegetative growth and bear smaller leaves. Pruning group 9; plants grown under glass may need restrictive pruning.

• **PROPAGATION** Soak seed for 24 hours before sowing in late spring; sow singly into 9cm (3½in) pots, at 21°C (70°F). Grow young plants on at 13°C (55°F); pot on into 13cm (5in) pots before they become pot-bound, to prevent premature flower production. Plant out when all danger of frost has passed.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

***R. communis*** ■ (Castor oil plant). Erect, branching shrub, usually grown as an annual, with alternate, very broadly ovate, deeply 5- to 12-lobed, toothed, glossy, mid-green, reddish purple, or bronze-red leaves, 15–45cm (6–18in) long. Greenish yellow flowers, to 2.5cm (1in) long, are borne in ovoid spikes, to 15cm (6in) long, in summer; the female flowers are borne above the males at the tips of the spikes, and each female has a prominent red stigma. The flowers are followed by spherical,



*Ricinus communis* 'Zanzibarensis'

reddish brown capsules, covered with soft brown spines. ↓ to 1.8m (6ft) or more, ↔ to 1m (3ft) as an annual; ↓ to 10m (30ft), ↔ to 4m (12ft) as a shrub. N.E. Africa to W. Asia. ✱. Heights given for cultivars are for annual growth.

'**Carmencita**' ♀ is tall and well-branched, with dark bronze-red foliage and bright red female flowers; ↓ 2–3m (6–10ft). '**Impala**' ■ is compact, with reddish purple foliage and yellowish green male flowers; young shoots and leaves are carmine-red; ↓ 1.2m (4ft). '**Red Spire**' is tall, with red stems and bronze-flushed leaves; ↓ 2–3m (6–10ft). '**Zanzibarensis**' ■ is tall, producing large, white-veined, mid-green leaves, 50cm (20in) long; ↓ 2–3m (6–10ft).

## RIGIDELLA

### IRIDACEAE

Genus, closely related to *Tigridia*, of 4 species of bulbous perennials from dry pine to cloud forest in Central America. They are cultivated for their iris-like, brightly coloured flowers, borne in succession in spring or summer. The long, broadly lance-shaped, many-folded leaves are reduced to short, sharp-pointed, leaf-like bracts on the flowering stems. In frost-prone areas, grow in a cool greenhouse. In warmer areas, grow at the base of a sunny wall or in a warm site where the soil dries out in summer.

• **HARDINESS** Half hardy, but may withstand short spells at -5°C (23°F).

• **CULTIVATION** Plant bulbs 10cm (4in) deep in spring. Under glass, grow in deep containers of loam-based potting compost (J1 No.2) with added sharp sand, in full light. Water moderately in growth; keep completely dry in winter. Pot on in spring. Outdoors, grow in humus-rich, well-drained soil in full sun; in frost-prone regions, lift for frost-free winter storage.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring.

• **PESTS AND DISEASES** Trouble free.

***R. flammea***. Bulbous perennial with lance-shaped basal leaves, to 30cm (12in) long, and shorter, sheathing stem leaves. Short-lived, iris-like, semi-pendent, brilliant scarlet flowers, 10cm (4in) across, with striking purple markings at the bases of the petals, are borne in succession before the leaves in spring or early summer. ↓ 1–1.5m (3–5ft), ↔ 30cm (12in). Mexico. ✱

▷ **Rimu** see *Dacrydium cupressinum*

## ROBINIA

### LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species (or only 4, according to some authorities) of deciduous, sometimes bristly or thorny trees and shrubs found in woodland and thickets in the USA. They are cultivated for their alternate, pinnate leaves, and pendent racemes of pea-like flowers, borne in late spring and early summer. Grow the trees as specimen plants; shrubby robinias are suitable for a large shrub border. *R. hispida* is effective grown against a sunny wall. All parts may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in full sun in moderately fertile, moist but well-



*Robinia hispida*

drained soil; they will tolerate poor, dry soils. Shelter from strong winds, as the branches are brittle. Suckers from *R. pseudoacacia* may be a problem. Pruning group 1; *R. pseudoacacia* 'Frisia' also group 7. Prune in late summer or early autumn to prevent bleeding.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert root cuttings or graft in winter. Remove suckers in autumn.

• **PESTS AND DISEASES** Trouble free.

***R. x ambigua*** 'Decaisneana' ♀

Spreading, nearly thornless tree with pinnate, dark green leaves, to 25cm (10in) long, composed of up to 23 ovate leaflets. Pale pink flowers, 2.5cm (1in) long, are borne in pendent racemes, to 15cm (6in) long, in early summer, followed by smooth, dark brown seed pods, 10cm (4in) long. ↓ 15m (50ft), ↔ 10m (30ft). ✱ ✱ ✱

***R. fertilis*** see *R. hispida* var. *fertilis*.

***R. hispida*** ♀ (Bristly locust, Rose acacia). Upright, suckering shrub with bristly shoots and pinnate, dark green leaves, to 30cm (12in) long, composed of 9–13 ovate to broadly elliptic leaflets. In late spring and early summer, bears light rose-pink flowers, 3cm (1½in) long, in pendent racemes, to 12cm (5in) long, followed by bristly brown seed pods, 4–6cm (1½–2½in) long. ↓ 2.5m (8ft), ↔ 3m (10ft). S.E. USA. ✱ ✱ ✱.

var. *fertilis*, syn. *R. fertilis*, has dense, spreading bristles on shoots and leaves, and narrow, oblong-ovate to elliptic leaflets; ↓ 2m (6ft). var. *kelseyi*, syn. *R. kelseyi*, is similar to *R. hispida* but has bristles only on the flower-stalks and raceme axes; leaves have oblong to ovate leaflets. It bears bright rose-pink flowers very freely. '**Monument**' is compact and conical, with sparsely bristly shoots and lilac-pink flowers; ↓ 4m (12ft).

***R. 'Idaho'*** ♀ Open, spreading tree with arching branches and pinnate, mid-to dark green leaves, to 25cm (10in) long, with 15 oval leaflets. In late spring and early summer, produces fragrant, dark pink flowers, 2.5cm (1in) long, in pendent racemes, to 20cm (8in) long. It is sterile and does not bear seed pods. ↓ 12m (40ft), ↔ 10m (30ft). ✱ ✱ ✱

***R. kelseyi*** see *R. hispida* var. *kelseyi*.

***R. luxurians*** see *R. neomexicana*.

***R. x margaretta*** see *R. x slavini*.

***R. x margaretta*** 'Casque Rouge' see *R. x slavini* 'Casque Rouge'.

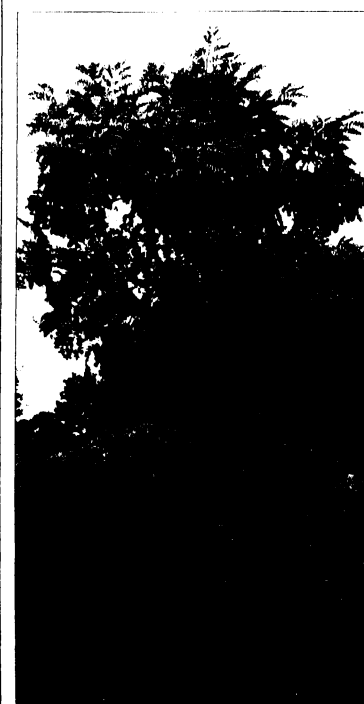
***R. x margaretta*** 'Pink Cascade' see *R. x slavini* 'Casque Rouge'.



*Robinia* 'Idaho'

***R. neomexicana*** ♀ syn. *R. luxurians* (New Mexico locust). Upright, thicker-forming, spiny shrub or small tree with pinnate, hairy, blue-green leaves, to 20cm (8in) long, composed of 13 to 25 lance-shaped, narrowly ovate or oblong leaflets. In early summer, bears pink flowers, 2.5cm (1in) long, in pendent racemes, to 10cm (4in) long, followed by sparsely glandular brown seed pods, to 10cm (4in) long. ↓ 6m (20ft), ↔ 5m (15ft). USA (New Mexico, Arizona). ✱ ✱ ✱

***R. pseudoacacia*** ♀ (Black locust, False acacia, Locust). Fast-growing, suckering, broadly columnar tree with usually spiny shoots. Pinnate, dark green leaves, to 30cm (12in) long, have up to 23 lance-shaped or elliptic to ovate, blunt leaflets. In early and midsummer, bears fragrant white flowers, 2cm (¾in) long, in pendent racemes, to 20cm (8in) long, followed by smooth, dark brown seed pods, 10cm (4in) long. ↓ 25m (80ft), ↔ 15m (50ft). E. USA. ✱ ✱ ✱. The following selections do not flower freely. '**Bessoniana**' ♀ is erect when young, later rounded; ↓ 15m (50ft), ↔ 10m (30ft). '**Fastigiata**' see 'Pyramidalis'. '**Frisia**' ♀ has golden



*Robinia pseudoacacia* 'Frisia'

## ROBINIA

yellow foliage, turning yellow-green in summer, then orange-yellow in autumn;  $\uparrow$  15m (50ft),  $\leftrightarrow$  8m (25ft). 'Inermis' see 'Umbraculifera'. 'Pyramidalis'  $\downarrow$  syn. 'Fastigiata', is narrowly columnar with upright, spineless shoots;  $\uparrow$  15m (50ft),  $\leftrightarrow$  3m (10ft). 'Tortuosa'  $\odot$  is slow-growing with twisted shoots;  $\uparrow$  15m (50ft),  $\leftrightarrow$  10m (30ft). 'Umbraculifera'  $\odot$  syn. 'Inermis' (Mop-head acacia), has a rounded crown;  $\uparrow$   $\leftrightarrow$  6m (20ft).

**R. x slavonii**  $\odot$  (*R. hispida* var. *kelseyi* x *R. pseudoacacia*), syn. *R. x margaretta*. Open, rounded, spiny tree or shrub with bristly young branches and pinnate, dark green leaves, to 20cm (8in) long, composed of up to 19 ovate leaflets. Fragrant, lilac-pink to dark pink flowers, 2cm ( $\frac{3}{4}$ in) long, are borne in pendent racemes, to 15cm (6in) long, in late spring; they are followed by brown, warty seed pods, to 10cm (4in) long,  $\uparrow$   $\leftrightarrow$  10m (30ft). Garden origin. \*\*\*  
'Casque Rouge' syn. *R. x margaretta* 'Casque Rouge', *R. x margaretta* 'Pink Cascade', has dark purple-pink flowers.

- ▷ **Roblé** see *Nothofagus obliqua*
- ▷ **Rochea coccinea** see *Crassula coccinea*
- ▷ **Rochea falcata** see *Crassula perfoliata* var. *minor*
- ▷ **Rock cress** see *Arabis*
- ▷ **Rocket, Sweet** see *Hesperis matronalis*
- ▷ **Rock rose** see *Cistus*, *Helianthemum*
- ▷ **Montpellier** see *Cistus monspeliensis*
- ▷ **Sydney** see *Boronia serrulata*

## RODGERSIA

SAXIFRAGACEAE

Genus of 6 species of vigorous, clump-forming, rhizomatous perennials occurring in moist woodland and scrub, and at streamsides, in the mountains of Burma, China, Korea, and Japan. They have large, long-stalked, palmate or pinnate, sometimes bronze-tinted, basal leaves, in some species turning shades of red and brown in autumn. In summer, tall stems bear star-shaped, petalless, white or pink flowers, each 7–8mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) across, in large, fluffy, pyramidal panicles. These are followed by dark red or brown, capsular fruits. Grow near water, in a bog garden or moist border, or use for naturalizing at woodland margins.

- **HARDINESS** Fully hardy, but young leaves may be damaged by late frosts.
- **CULTIVATION** Grow in humus-rich, moist soil in full sun or partial shade, sheltered from cold, drying winds. They



*Rodgersia pinnata* 'Superba'

resent drought, but will tolerate drier conditions with more shade.  
• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in early spring.  
• **PESTS AND DISEASES** Slugs may damage young leaves.

**R. aesculifolia**  $\boxtimes$   $\odot$  Clump-forming, rhizomatous perennial producing horse-chestnut-like, palmate, crinkled, mid-green leaves, to 25cm (10in) long. The leaves have densely woolly, red-brown stalks and veins, and usually 7, sometimes 5–9, obovate, toothed leaflets. In midsummer, bears numerous star-shaped, white or pink flowers in large panicles, to 60cm (24in) long,  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  1m (3ft). N. China. \*\*\*  
**R. japonica** see *R. podophylla*.

**R. pinnata**. Rhizomatous, clump-forming perennial producing pinnate, or partially pinnate or palmate, crinkled, heavily veined, glossy, dark green leaves, to 90cm (36in) long; leaves have reddish green stalks and 5–9 obovate-inversely-lance-shaped leaflets. In mid- and late summer, reddish green stems bear star-shaped, yellowish white, pink, or red flowers in panicles 30–70cm (12–28in) long,  $\uparrow$  to 1.2m (4ft),  $\leftrightarrow$  75cm (30in). China (Sichuan, Yunnan). \*\*\*  
'Superba'  $\boxtimes$   $\odot$  has purplish bronze young leaves, sometimes with fewer leaflets than in the species, and bright pink flowers.

**R. podophylla**  $\boxtimes$   $\odot$  syn. *R. japonica*. Clump-forming, rhizomatous perennial with palmate leaves, to 40cm (16in) long, composed of usually 5 large,



*Rodgersia podophylla*



*Rodgersia sambucifolia*

## ROHDEA

jagged, obovate, 3- to 5-lobed leaflets, crinkled and bronze when young, becoming smoother, glossy, and mid-green, with brown hairs. The leaves turn bronze-red in autumn. In mid- and late summer, bears star-shaped, creamy green flowers in panicles 30cm (12in) long,  $\uparrow$  to 1.5m (5ft),  $\leftrightarrow$  to 1.8m (6ft). Korea, Japan. \*\*\*

**R. sambucifolia**  $\boxtimes$  Clump-forming, rhizomatous perennial with elder-like, pinnate, hairy, dark green leaves, to 75cm (30in) long, with usually 7, sometimes 3–11, oblong-lance-shaped, toothed leaflets. In early and mid-summer, bears star-shaped, white or pink flowers in dense panicles, to 45cm (18in) long, arching at the tips.  $\uparrow$   $\leftrightarrow$  90cm (36in). W. China. \*\*\*

**R. tabularis** see *Astilboides tabularis*.

## RODRIGUEZIA

ORCHIDACEAE

Genus of about 30 species of evergreen, rhizomatous, epiphytic orchids from warm, moist, forest areas of Central and South America. They have fine, aerial, sometimes mat-forming roots, ovoid pseudobulbs partially enveloped by overlapping leaf-sheaths, and narrowly strap-shaped to oblong, leathery, mid-green leaves. They are grown mainly for their fragrant flowers, borne in pendent racemes arising from the bases of the pseudobulbs.

- **HARDINESS** Frost tender.
- **CULTIVATION** Intermediate-growing orchids. Grow in small containers of epiphytic orchid compost made with fine-grade bark, or grow epiphytically on bark. Provide full light with shade from hot sun, and high humidity. In summer, water freely, mist daily, and apply a balanced liquid fertilizer at every third watering; water more sparingly in winter. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

**R. venusta**. Epiphytic orchid with compressed, ovoid pseudobulbs, each producing several narrowly oblong, leathery leaves, 15cm (6in) long. Arching racemes of many very fragrant, pure white flowers, 3cm (1 $\frac{1}{4}$ in) across, with yellow-marked lips, are borne in autumn.  $\uparrow$   $\leftrightarrow$  15cm (6in). E. Brazil.  $\odot$  (13°C/55°F; max. 30°C/86°F)

## ROHDEA

CONVALLARIACEAE/LILIACEAE

Genus of one species of rhizomatous perennial from woodland in S.W. China and Japan, grown for its basal rosettes of fleshy, dark green leaves, and erect spikes of narrowly bell-shaped flowers, borne in early spring. Grow in a woodland garden or damp, shady border.

- **HARDINESS** Frost hardy; will tolerate occasional falls in temperature to around -10°C (14°F).
- **CULTIVATION** Grow in humus-rich, moist, moderately fertile soil in deep or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring.
- **PESTS AND DISEASES** Prone to damage by slugs, snails, and vine weevil larvae.

**R. japonica.** Rosetted, rhizomatous perennial with thick, semi-erect, usually inversely lance-shaped, leathery, dark green leaves, 28–45cm (11–18in) long. In early spring, erect stems bear dense spikes, 2.5–5cm (1–2in) long, of narrowly bell-shaped, greenish white flowers, to 5mm (¼in) across, followed by fleshy red berries. ‡ 25cm (10in), ↔ 20cm (8in). S.W. China, Japan. \* \*

## ROMANZOFFIA

HYDROPHYLLACEAE

Genus of 4 species of low-growing, clump-forming perennials, with tuber-like roots, from shaded, rocky, alpine, or woodland habitats in W. North America and the Aleutian Islands. They produce tufts of rounded or kidney-shaped, lobed or deeply scalloped leaves, which die back after flowering and re-emerge in autumn. The bell- or funnel-shaped flowers, each with 5 rounded petal lobes and conspicuous anthers, are borne in raceme-like cymes in early summer. Suitable for a woodland garden, rock garden, peat bed, or for growing in an alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, humus-rich, neutral to acid soil in deep or partial shade.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Divide in early spring.
- **PESTS AND DISEASES** Susceptible to damage by slugs and snails.

**R. sitchensis**, syn. *R. suksdorfii*. Tufted perennial with swollen roots and kidney-shaped, deeply lobed, glossy, dark green leaves, 2.5cm (1in) long. In early summer, bears small, funnel-shaped white flowers, 8mm (⅜in) long, with yellow petal bases and deep yellow anthers, in branching, terminal, raceme-like cymes, to 15cm (6in) long. ‡ 30cm (12in), ↔ to 15cm (6in). W. North America (Alaska to Montana). \* \* \* **R. suksdorfii** see *R. sitchensis*.

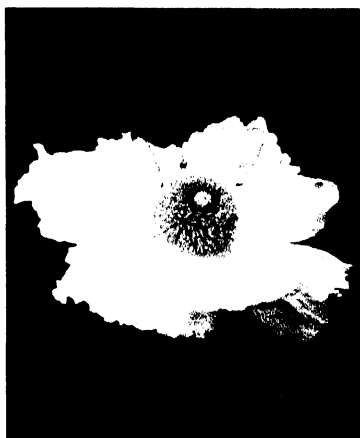
## ROMNEYA

*Matilija poppy*, *Tree poppy*

PAPAVERACEAE

Genus of 2 species of suckering, woody-based, subshrubby perennials found in chaparral and sage scrub in S. California, USA, and N. Mexico. They are grown for their glaucous foliage and fragrant, showy white flowers. The leaves are alternate, and pinnatifid to pinnatisect; the poppy-like, solitary, terminal, 6-petalled flowers, with bright yellow stamens, are borne in summer. Grow in a border or, in frost-prone areas, against a warm, sunny wall.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun, sheltered from strong, cold winds. Provide a deep, dry winter mulch. Tree poppies are sometimes difficult to establish and resent transplanting, but may eventually spread vigorously by suckers. Usually cut back to the base by frost; in warmer areas, pruning group 6.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Root basal cuttings in spring; insert root cuttings in winter.
- **PESTS AND DISEASES** *Verticillium* wilt and caterpillars may be a problem.



*Romneya coulteri* 'White Cloud'

**R. coulteri** ♀ Upright, deciduous subshrub producing ovate to rounded, pinnatifid, intensely glaucous, grey-green leaves, to 12cm (5in) long, with 3–5 lance-shaped to ovate lobes. Solitary, shallowly cup-shaped white flowers, to 12cm (5in) across, with prominent yellow stamens, are borne over a long period in summer. ‡ 1–2.5m (3–8ft), ↔ indefinite. \* \* \*. 'White Cloud' ■ is vigorous and fast-spreading, with very glaucous foliage.

## ROMULEA

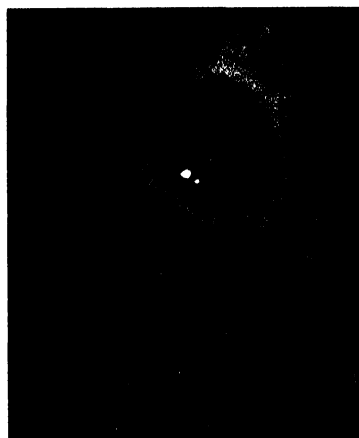
IRIDACEAE

Genus of about 80 species of small, cormous perennials from a range of habitats including mountainous areas and coastal cliff tops in Europe, the Mediterranean, N. Africa, and South Africa. They are grown for their colourful, crocus-like flowers, produced in spring on very short, slender stems. The flowers often open only at midday, closing in the evening. Each plant produces up to 6 erect, or recurved and arching, thread-like, basal leaves, 5–40cm (2–16in) long. Grow in a sunny rock garden, or in containers in an alpine house. Half-hardy species are best grown in a cool greenhouse.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Plant corms 8cm (3in) deep in autumn. Under glass, grow in loam-based potting compost (J1 No.2) with additional grit, in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly. After flowering, reduce water gradually; keep completely dry when



*Romulea bulbocodium*



*Romulea sabulosa*

dormant in summer. Outdoors, grow in moderately fertile, well-drained soil in full sun.

- **PROPAGATION** Sow seed at 6–12°C (45–54°F) in autumn, or remove offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

**R. bulbocodioides of gardens** see *R. flava*.

**R. bulbocodium** ■ syn. *R. grandiflora*. Small, cormous perennial with recurved, linear, channelled, mid-green, basal leaves. In spring, stems bear up to 5 upright, funnel-shaped, pale to deep lilac-purple flowers, 2.5cm (1in) long, with white or yellow centres. ‡ 5–10cm (2–4in), ↔ 5cm (2in). Mediterranean, Portugal, N.W. Spain, Bulgaria. \* \* \*. **var. crocea** has yellow flowers.

**R. flava**, syn. *R. bulbocodioides* of gardens. Cormous perennial with upright, sheathing, linear, mid-green, basal leaves. In spring, produces up to 4 solitary, funnel-shaped, yellowish green, sometimes white or blue flowers, 3–4cm (1¼–1½in) long, with yellow centres. ‡ 10cm (4in), ↔ 5cm (2in). South Africa (Western Cape, Northern Cape, Eastern Cape). \*

**R. grandiflora** see *R. bulbocodium*.

**R. longituba** see *R. macowanii* var. *alticola*.

**R. macowanii** var. *alticola*, syn. *R. longituba*. Cormous perennial with erect or recurved, linear, mid-green, basal leaves. In summer, stems bear up to 3 tubular, bright yellow flowers, 3–6cm (1¼–2½in) long, with orange-yellow centres. ‡ 8cm (3in), ↔ 5cm (2in). Lesotho (Drakensberg mountains), South Africa. \* \*

**R. requienii**. Cormous perennial with arching to almost prostrate, linear, mid-green, basal leaves. Stems with up to 3 funnel-shaped violet flowers, 5cm (2in) long, sometimes veined darker violet, and with paler violet or white centres, are produced in spring. ‡ 12cm (5in), ↔ 5cm (2in). Mediterranean, France (Corsica), Italy (Sardinia). \* \*

**R. sabulosa** ■ Showy, cormous perennial with upright or recurved, linear, mid-green, basal leaves. In early spring and summer, stems bear up to 4 funnel-shaped flowers, 5cm (2in) long; the flowers are bright shining scarlet to ruby red, with black centres, sometimes with paler margins, and open wide in the sun. ‡ 10–20cm (4–8in), ↔ 5cm (2in). South Africa (Western Cape, Eastern Cape). \*

## RONDELETIA

RUBIACEAE

Genus of 125–150 species of evergreen shrubs and trees from tropical woodland in Central and South America. The simple, leathery to paper-thin leaves are borne in opposite pairs or whorls of 3. They are grown for their small, tubular to salverform, sometimes fragrant flowers, each with 4–6 spreading petal lobes, which are borne in large, axillary or terminal panicles, cymes, or corymbs. Where temperatures fall below 12°C (54°F), grow in a temperate or warm greenhouse. In warmer areas, grow in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added leaf mould, in full light with shade from hot sun. Water freely in growth, and apply a balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in fertile, moist but well-drained soil in sun or partial shade. Pruning group 9; plants under glass may need restrictive pruning.
- **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Prone to red spider mites, mealybugs, and whiteflies.

**R. amoena** ■□ Bushy, rounded shrub or small tree with smooth to downy stems and elliptic or ovate-oblong leaves, 8–15cm (3–6in) long, glossy, mid-green above, brown-hairy or hairless beneath. In summer, bears axillary or terminal cymes or panicles, 5–15cm (2–6in) long, of small, salverform, fragrant, pink or white flowers with bearded yellow throats. ‡ 1.5–5m (5–15ft) or more, ↔ 1.5–4m (5–12ft). Mexico, Guatemala, Panama. ☼ (min. 12°C/54°F)

**R. odorata**, syn. *R. speciosa*. Bushy shrub, often with downy to felted stems, producing ovate to oblong, puckered, wavy-margined leaves, to 10cm (4in) long, deep green above, paler green beneath. Tubular, fragrant, orange to red, yellow-throated flowers are borne in dense, terminal cymes, corymbs, or panicles, 10cm (4in) long, in autumn. ‡ to 3m (10ft), ↔ to 2.5m (8ft). Cuba, Panama. ☼ (min. 12°C/54°F)

**R. speciosa** see *R. odorata*.

▷ **Rooksbya euphorbioides** see

*Neobuxbaumia euphorbioides*

▷ **Rooistompie** see *Mimetes cucullatus*



*Rondeletia amoena*

## ROSA

Rose

ROSACEAE

Genus of about 150 species of semi-evergreen or deciduous, perennial shrubs and climbers, some of which have been in cultivation for many centuries. They are found in a wide variety of habitats in Asia, Europe, N. Africa, and North America. Roses have erect, arching, scrambling, or sometimes trailing, often thorny or prickly stems. The alternate leaves range from 2.5cm (1in) long in miniature roses to 18cm (7in) or more long in bush, shrub, and climbing roses; each leaf usually has 5 or 7 sometimes toothed, variably shaped leaflets.

Roses are grown for their attractive and often very fragrant flowers, borne mainly in summer and autumn, and sometimes also for their fruits, known as hips. The flowers are solitary or borne in corymbs (referred to in this account as clusters), are sometimes remontant, and vary greatly in colour, size, and form (see panel below). Roses are suitable for a range of garden situations: as specimen plants or standards, for a shrub or mixed border, as hedges, or as climbers to clothe walls, trees, pillars, pergolas, and arbours. Groups of roses are often grown together in a single bed; a well-chosen mix of cultivars will ensure a long summer display. Miniature roses are suitable for a rock garden, raised bed, or containers. The flowers of all roses are popular for cutting.

Many modern rose cultivars are known by their trademark names rather than by their registered cultivar names; where this is the case, the plant is listed below under its trademark name, with the cultivar name given as a synonym. For reasons of space, these cultivar names have not been cross-referenced.

Rose species and cultivars are often regarded as 2 separate groups. Cultivars are further divided into Old Garden and Modern roses, the many subgroups of which are described below.

Species, or wild, roses (including interspecific hybrids, which share most of the characteristics of their parent species) are either shrubs or climbers, mostly bearing single, 5-petalled, often fragrant flowers in early summer, usually in one flush on short shoots from second-year wood; the flowers are followed by red or black hips.

Cultivars, derived initially from crossing species roses, number many thousands, and are very varied in habit. In the subgroup descriptions below, leaflet lengths are defined as: small, up to 4cm (1½in); medium-sized, 4–7cm (1½–3in); large, over 7cm (3in). The flowers, in a range of shapes, are borne mainly in summer, over a longer period than in species roses; they are often remontant. Flowers are either single (having 8 petals or fewer), semi-double (8–20 petals), double (20 petals or more), or fully double (over 30 petals). "Single to fully double", as used below, means that the flowers may be single, semi-double, double, or fully double.

## Old Garden roses

**Alba** – Large, free-branching shrub roses, varying greatly in size, with only a few prickles on the stems. They have greyish green leaves with medium to large, oval leaflets, and bear clusters of 5–7 semi- to fully double, scented flowers in midsummer, on shoots from second-year wood. Very hardy. Most are suitable for a border, as hedges, or as specimen plants.

**Bourbon** – Large, open, remontant shrub roses, often with long, smooth or prickly stems, which may be trained to climb. They have often glossy leaves with medium-sized, oval leaflets, and most bear numerous scented, double or fully double flowers, usually in clusters of 3, in flushes in summer and usually autumn. Flowers are borne on short shoots from second-year wood and on new wood. Ideal for a border, or for training on a fence, wall, or pillar.

**Boursault** – Climbing roses with long, arching, usually smooth stems, and dark green leaves with medium to large, oval leaflets. They bear semi-double or double, slightly scented flowers, singly or in clusters of 3, in early summer, on short shoots from second-year wood. Grow against a sheltered wall or fence.

**Centifolia (Provence)** – Lax, thorny shrub roses producing matt, dark green leaves with small to medium-sized, oval leaflets. Double or fully double, often scented flowers, are borne singly or in clusters of 3 in summer, on shoots from second-year wood. Grow in a border.

**China** – Spindly, remontant shrub roses with mostly smooth stems, bearing only a few reddish brown prickles, and glossy leaves comprised of small to medium-sized, lance-shaped leaflets. They bear single to fully double, sometimes scented flowers, singly or in clusters of 3–13, in flushes from summer to autumn. Flowers are borne on short shoots from second-year wood and on new wood. Use in a border, or grow against a low wall in a sheltered site.

**Damask** – Open shrub roses with prickly stems and downy leaves with medium to large, oval leaflets. They bear semi- to fully double, often very fragrant flowers, singly or in loose clusters of 5–7, mainly in summer, on shoots from second-year wood; a few also flower on new wood in autumn. Ideal for a border or for training on a support.

**Gallica** – Shrub roses of dense, free-branching habit, with usually thorny stems, and mostly dull, dark green leaves with medium-sized, oval leaflets. In summer, they bear single to fully double, mostly scented flowers, often in clusters of 3, on shoots from second-year wood. Use in a bed or as hedges.

**Hybrid Perpetual** – Free-branching, remontant shrub roses with upright, prickly growth and dark green leaves with medium to large, oval leaflets. They bear often scented, fully double flowers, singly or in clusters of 3, in flushes from summer to autumn, on shoots from second-year wood and on new wood. Ideal for a bed or border.

**Moss** – Often lax shrub roses with moss-like, furry growth on the stems and calyces, and mostly dark green leaves with medium to large, oval leaflets. Semi- to fully double, usually fragrant flowers, often in clusters of 3 or more, are borne on very thorny shoots from

second-year wood in summer. Suitable for a bed or border.

**Noisette** – Remontant climbing roses with smooth stems and usually glossy leaves comprising medium to large, oval or lance-shaped leaflets. They bear large clusters of 3–15 slightly spice-scented, normally double to fully double flowers, in flushes from summer to autumn. Flowers are borne on shoots from second-year wood, occasionally on new wood. Grow against a sheltered wall.

**Portland** – Upright, compact, remontant shrub roses with thorny stems and usually dark green leaves composed of medium to large, oval leaflets. Semi- to fully double, usually scented flowers are borne, singly or in clusters of 3, in flushes from summer to autumn, mainly on shoots from second-year wood. Grow in a bed or border.

**Scots (or Scotch)** – Suckering shrub roses, selections or hybrids of *R. pimpinellifolia*, of low, spreading, rarely upright habit, with prickly stems and dark green leaves comprising small to medium-sized, oval leaflets. The single to double, occasionally scented flowers are solitary or borne in clusters of 3 or more, on short stems from second-year wood, usually in early summer. Suitable for a bed or border.

**Sempervirens** – Vigorous, semi-evergreen climbing or rambler roses with shiny, light green leaves composed of small to medium-sized, lance-shaped leaflets. Arching, thorny stems bear clusters of 3–15 unscented, semi- to fully double flowers in summer, on short stems from second-year wood. Use to clothe a fence or pergola, or in informal, unconfined plantings.

**Sweet Briar** – Vigorous, free-branching shrub roses with usually thorny stems and sweetly scented, dark green leaves composed of small to medium-sized, oval leaflets. In summer, they bear single to double, usually scented flowers, singly or in clusters of up to 7, on short shoots from second-year wood. Use as hedges, as specimen plants, or in a large border.

**Tea** – Remontant shrub and climbing roses with smooth to thorny stems, sometimes bearing a few large red prickles, and medium-sized, glossy, light or sometimes dark green leaves with lance-shaped leaflets. Semi- to fully double, spice-scented flowers are borne singly or in clusters of 3, in flushes from summer to autumn, on shoots from second-year wood and on new wood. Grow in a sheltered site in a bed or border, or against a wall.

## Modern roses

**Climber** – Often vigorous climbing roses with thorny, arching, stiff stems and often dense, glossy, mid- to dark green foliage. They bear often scented flowers in a variety of forms, singly or in clusters of 3–7 or more. Some bloom in summer only, on short shoots from second-year wood; many are remontant and also flower on new wood. Train against a wall or fence, or use to cover garden structures.

**Cluster-flowered bush (Floribunda)** – Remontant, free-branching shrub roses of upright or bushy habit, usually with prickly stems and glossy, dark green leaves composed of medium-sized, oval or lance-shaped leaflets. The single to fully double, sometimes scented flowers

## ROSE FLOWER FORMS

**Flat** – Open, usually single or semi-double flowers with petals that are almost flat.

**Cupped** – Open, single to fully double flowers with petals that curve outwards and upwards from the centre.

**Rounded** – Usually double or fully double flowers with even-sized, overlapping petals forming a bowl shape or more rounded form.

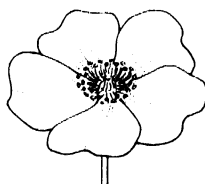
**High-centred** – Semi-double to fully double flowers with high, tight centres.

**Urn-shaped** – Semi-double to fully double flowers with inner petals that curve inwards to form an urn-shape, and outer petals that are flatter and more spreading.

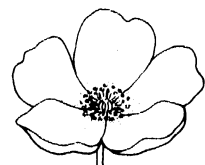
**Rosette-shaped** – Almost flat, double or fully double flowers with slightly overlapping, often uneven petals.

**Quartered-rosette** – Almost flat, double or fully double flowers with the petals, often of uneven size, arranged so that the flower appears divided into 4 sections.

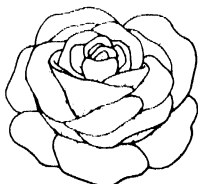
**Pompon** – Small, rounded, double or fully double flowers, usually in clusters, with masses of small petals.



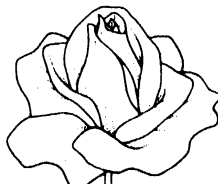
FLAT



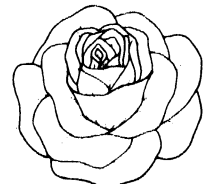
CUPPED



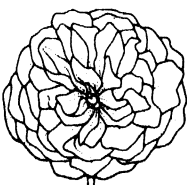
ROUNDED



HIGH-CENTRED



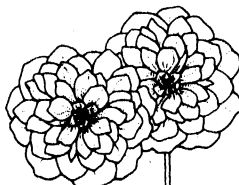
URN-SHAPED



ROSETTE-SHAPED



QUARTERED-ROSETTE



POMPON



are usually in clusters of 3–25, rarely solitary, and borne continuously from summer to autumn on shoots from second-year wood and on new wood. Use in a border or as hedges.

**Dwarf cluster-flowered bush (Patio)** – Remontant shrub roses with compact growth, sometimes prickly stems, and usually glossy leaves composed of small to medium, oval or lance-shaped leaflets. They bear clusters of 3–11 single to double, usually unscented flowers in flushes from summer to autumn, on shoots from second-year wood and on new wood. Suitable for a bed or border, as low hedges, and for containers.

**Ground-cover bush or shrub** – Spreading and trailing roses, mostly with prickly stems, producing often glossy leaves with small to medium-sized, lance-shaped leaflets. They bear clusters of numerous single to fully double, sometimes scented flowers; some flower in summer only, on short shoots from second-year wood; some are remontant, and also flower on new wood. Many bear flowers all along the stems. Ideal for a bed, bank, container, or for trailing over walls.

**Large-flowered bush (Hybrid Tea)** – Remontant, free-branching shrub roses of upright or bushy habit, with usually thorny stems and glossy or matt, mid- to dark green leaves with medium-sized to large, oval or lance-shaped leaflets. Large, usually double, often scented flowers are solitary or borne in clusters

of 3 in flushes from summer to autumn, on shoots from second-year wood and on new wood. Use as hedges or in a formal bed, and for cut flowers.

**Miniature bush** – Remontant shrub roses with very compact, sparsely thorny, short growth, and leaves with very small, usually lance-shaped leaflets. Sprays of 3–11 tiny, single to fully double, rarely scented flowers are borne in flushes from summer to autumn, on very short shoots from second-year wood and on new wood. Ideal for edging paths, or for a raised bed, rock garden, or container.

**Miniature climber** – Remontant climbing roses with restrained, sparsely thorny growth, and leaves comprised of very small, lance-shaped leaflets. Clusters of 3–9 tiny, single to fully double, rarely scented flowers are borne in flushes from summer to autumn, on shoots from second-year wood and on new wood. Grow against a low wall, fence, or pillar.

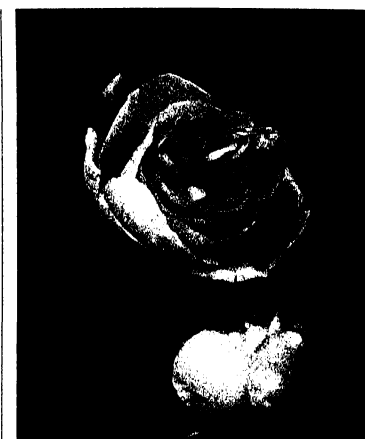
**Miniature ground-cover bush or shrub** – Remontant miniature roses with very compact, spreading, sparsely thorny growth, and leaves with usually very small, lance-shaped leaflets. They bear clusters of 3–11 tiny, single to fully double, rarely scented flowers in flushes from summer to autumn, on short shoots from second-year wood and on new wood. Use for edging a path or driveway, or in a raised bed, rock garden, or container.

**Polyantha** – Remontant, compact-growing shrub roses with sparsely thorny stems, and glossy leaves with small, lance-shaped leaflets. Sprays of many small, single to double, rarely scented flowers are borne in flushes from summer to autumn, on short shoots from second-year wood and on new wood. Suitable for a bed or border, as hedges, and for containers.

**Rambler** – A diverse group of vigorous climbing roses with long, arching, thorny, sometimes lax stems and dense foliage. They have usually glossy leaves with small, lance-shaped leaflets, and bear clusters of 3–21 single to fully double, sometimes scented flowers, mainly in summer, on short shoots from second-year wood. Train over a fence or pergola, on walls, or into a tree.

**Rugosa** – Hardy shrub roses with tough, wrinkled, usually bright green leaves with medium to large, oval or lance-shaped leaflets and prickly stems. Most bear single or semi-double, scented flowers, in clusters of 3–11, throughout summer and autumn, on shoots from second-year wood and on new wood. They are often followed by tomato-like, usually red hips. Use as hedges, for a bed or border, or as specimen plants.

**Shrub** – A very diverse group, including the hybrid musk roses. They are usually larger than bush roses, with often thorny stems, and produce leaves with medium-sized to large, oval or lance-shaped leaflets. The usually scented, single to



Rosa 'Abraham Darby'

fully double flowers are borne in few- to many-flowered clusters, sometimes singly, from summer to autumn; some bloom in summer only from second-year wood; most are remontant and also flower on new wood. Ideal for a border or bed, or as hedges; some are also excellent specimen plants.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Roses tolerate a wide range of conditions, but usually prefer an open site in full sun. They thrive on moderately fertile, humus-rich, moist but well-drained soil. Soil in which roses have recently been grown is unsuitable for new plantings because of the build-up of harmful soil organisms. In such cases, either exchange the soil, which may be used elsewhere, sterilize the soil with a proprietary remedy, or choose a fresh planting site. The best time for planting is winter or early spring, during a frost-free spell. For best flowering, apply a balanced fertilizer and mulch in late winter or early spring. In spring and summer, apply a balanced liquid fertilizer every 3 weeks. The height and spread measurements in the descriptions below are for pruned plants; unpruned, roses grow much larger.

Most roses sold have been budded on the rootstock of a wild rose to ensure vigorous growth. The rootstock may produce shoots, known as "suckers", which should be removed at their point of origin as soon as seen. To identify a sucker, check that it originates from the rootstock itself, and not from above the point where the plant was budded.

Rain may damage the flowers of some roses, causing the petals to form "balls".

- **PROPAGATION** Root hardwood cuttings in autumn. Bud in summer.
- **PESTS AND DISEASES** Susceptible to aphids, leafhoppers, red spider mites, scale insects, caterpillars, sawfly larvae, and leaf-cutting bees; rabbits and deer may cause damage. Prone to black spot, rust, powdery mildew, die-back, canker, crown gall, honey fungus, soil sickness, viruses, and downy mildew.

**R. 'Abbeyfield Rose'** ♀ syn. *R. 'Cobroc'*. Large-flowered bush rose of compact habit, with masses of glossy, dark green leaves. High-centred, double, deep rose-pink flowers, 10cm (4in) across, are borne freely from summer to autumn. 1→ 60cm (24in). \*\*\*  
**R. 'Abraham Darby'** ♂ syn. *R. 'Auscot'*. Shrub rose with a strong,

## PRUNING REQUIREMENTS

On planting, shorten thick roots to 25cm (10in) and remove damaged ones. Reduce top-growth to 3–5 strong shoots, and cut these back to outward-facing buds: to 8–15cm (3–6in) above ground for large- and cluster-flowered bushes and dwarf variants; to 40cm (16in) for rambles; to 20–30cm (8–12in) for other groups. For climbers and standards, remove only dead, diseased, damaged, weak, or crossing shoots.

When in growth, remove dead, damaged, and diseased wood, suckers, and blind shoots, and prune as below. Dead-head all

roses unless hips are wanted. In autumn, trim long shoots back by 15–30cm (6–12in) to reduce wind rock. Avoid pruning in frosty weather when roses are dormant; delay until early spring in areas with severe winters. Prune in the cooler months in warm climates, to simulate dormancy.

The pruning chart below gives specific advice for individual rose groups. For standard roses, prune according to the type of rose that forms the head; leave weeping standards unpruned on planting and for 2 subsequent years, to develop their form.

GROUP	SEASON	FOR MAINTENANCE	FOR RENEWAL
LARGE-FLOWERED BUSH, TEA, HYBRID PERPETUAL	Late winter to early spring	Cut back main stems to 20–25cm (8–10in) above ground in temperate climates; to 45–60cm (18–24in) in warm climates. Reduce sideshoots to 2 or 3 buds or 10–15cm (4–6in). Remove weak, spindly shoots.	Cut back ¼ of oldest stems almost to the base; repeat for rest of old stems over next 2 or 3 years.
CLUSTER-FLOWERED BUSH (INC. DWARF CULTIVARS), MINIATURE BUSH, POLYANTHA	Late winter to early spring	Cut back main stems to 25–45cm (10–18in) above ground; reduce sideshoots to 2 or 3 buds. Cut back stems and sideshoots of dwarf cultivars and miniature bushes by ½–⅓.	As above.
CLIMBERS (INC. MINIATURE CULTIVARS), BOURSALT, NOISETTE, AND CLIMBING BOURBON	Late autumn to early spring	In the first 2 years, cut out only dead, diseased, or damaged wood; train stems on to wires or other, preferably horizontal supports. From year 3, prune main shoots to within designated area for growth; reduce sideshoots by ⅔, or to 3 or 4 buds.	Cut back 1 or 2 of oldest stems to 30–45cm (12–18in) above ground. Repeat every 1–3 years.
RAMBLER, SEMPERVIRENS	Summer, after flowering	In the first 2 years, train stems on to support; reduce sideshoots only, by ¾ or to 2–4 buds. In year 3, reduce sideshoots as before, and begin renewal pruning.	Cut out ¼–⅓ of flowered stems at the base. New shoots arise from base.
GROUND-COVER BUSH (INC. MINIATURE CULTIVARS)	Late winter to early spring	Cut back to outward-facing buds to confine to designated area for growth. Shorten sideshoots if overcrowded.	Cut out ⅓–¼ of oldest flowered stems.
SPECIES, SHRUB, MINIATURE BUSH, RUGOSA	Late summer, after flowering	For non-remontant roses, prune main stems lightly, or cut back by up to ⅓, as necessary; reduce sideshoots by ½–⅓. For remontant roses, see below.	As above.
BOURBON, CHINA, PORTLAND; & remontant roses of group above	Late winter to early spring	As for category above, but during the dormant season.	As above.
ALBA, CENTIFOLIA, DAMASK, MOSS, SCOTS, SWEET BRIAR	Late summer	Immediately after flowering, prune main stems lightly or cut back by ¼–⅓, as necessary; reduce sideshoots by ⅓.	Cut out up to ¼ of oldest stems; cut back rest by ⅓.
GALLICA	Late summer	Cut back overlong shoots by up to ⅓; reduce sideshoots by ¾.	Cut out 1 or 2 of oldest stems every 1–3 years.



Rosa 'Agnes'



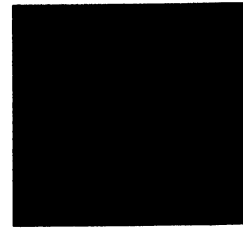
Rosa 'Alba Maxima'



Rosa 'Albéric Barbier'



Rosa 'Albertine'



Rosa 'Alec's Red'



Rosa 'Alister Stella Gray'



Rosa 'Aloha'



Rosa 'Alpine Sunset'



Rosa 'Amber Queen'



Rosa 'American Pillar'



Rosa 'Angela Rippon'



Rosa 'Anisley Dickson'

bushy habit and large, glossy, dark green leaves. Cupped, fully double, fruit-scented, apricot-pink flowers, 11cm (4½in) across, are borne from summer to autumn. ↑→ 1.5m (5ft). \*\*\*

**R. 'Adélaïde d'Orléans'** ♀ Sempervirens rambler rose producing long, slender stems and matt, light green leaves. Clusters of pendent, cupped, semi-double, lightly scented, light pink flowers, 4cm (1½in) across, are borne in midsummer. ↑ 5m (15ft), ↔ 3m (10ft). \*\*

**R. 'Agnes'** □ Rugosa rose with upright stems, dark green leaves and cupped, double, scented, light yellow flowers, 10cm (4in) across, produced in summer (a few borne later). ↑ 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Aimée Vibert'**, syn. *R. 'Bouquet de la Mariée'*. Noisette climbing rose with long stems and glossy, dark green leaves. Cupped, fully double, lightly scented white flowers, 8cm (3in) across, are borne in large clusters from summer to autumn. May be grown as a shrub. ↑ 3–5m (10–15ft), ↔ 3m (10ft). \*\*

**R. x alba 'Maxima'** see *R. 'Alba Maxima'*.

**R. 'Alba Maxima'** □♀ syn. *R. x alba 'Maxima'* (Great white rose, Jacobite rose, White rose of York). Alba rose of vigorous, upright habit, with greyish green leaves. Flat, double, sweet-scented, creamy white flowers, 8cm (3in) across, are borne in midsummer. ↑ 2.2m (7ft), ↔ 1.5m (5ft). \*\*\*

**R. x alba 'Semiplena'** see *R. 'Alba Semiplena'*.

**R. 'Alba Semiplena'** ♀ syn. *R. x alba 'Semiplena'*. Alba rose of vigorous, bushy habit, with greyish green leaves. In midsummer, produces flat, semi-double, scented white flowers, 8cm (3in) across. ↑ 2.2m (7ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Albéric Barbier'** □♀ Vigorous, semi-evergreen rambler with pendent growth and glossy, dark green leaves. Clusters of rosette-shaped, fully double, slightly fragrant, creamy white flowers, 8cm (3in) across, aging to pure white, are produced in summer. ↑ to 5m (15ft), ↔ 3m (10ft). \*\*\*

**R. 'Albertine'** □♀ Vigorous, rampant rambler with arching, prickly, reddish green stems and mid-green leaves. Rounded to cupped, fully double,

sweetly scented, light salmon-pink flowers, 8cm (3in) across, are borne freely in midsummer. ↑ to 5m (15ft), ↔ 4m (12ft). \*\*\*

**R. 'Alec's Red'** □ Large-flowered bush rose with mid-green leaves and high-centred, fully double, strongly fragrant red flowers, 15cm (6in) across, borne from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Alexander'** □♀ Vigorous large-flowered bush rose with shiny, dark green foliage. Urn-shaped, double, bright red flowers, 12cm (5in) across, often with scalloped petals, are borne on long stems from summer to autumn. ↑ to 2m (6ft), ↔ 80cm (32in). \*\*

**R. 'Alister Stella Gray'** □♀ syn. *R. 'Golden Rambler'*. Noisette climbing rose with long, vigorous, arching stems and mid-green foliage. Quartered-rosette, fully double, musk-scented flowers, 6cm (2½in) across, yolk-yellow fading to white, are borne freely from summer to autumn. ↑ to 5m (15ft), ↔ 3m (10ft). \*\*

**R. 'Aloha'** □ Strong-stemmed climber with leathery, dark green leaves. Bears rounded, fully double, sweetly scented, rose-pink and salmon-pink flowers, 9cm (3½in) across, from summer to autumn. May be maintained as a shrub by pruning. ↑ to 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Alpine Sunset'** □ Large-flowered bush rose of neat habit, with glossy, light green leaves. From summer to

autumn, bears rounded, fully double, fragrant, light peach-yellow flowers, 18cm (7in) across, edged pink. ↑→ 60cm (24in). \*\*\*

**R. 'Altissimo'** ♀ Climber with dark green leaves and cupped, single, bright red flowers, 12cm (5in) across, showing yellow stamens, borne from summer to autumn. ↑ 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Amanda'** see *R. 'Red Ace'*.

**R. 'Amberlight'** see *R. 'Fyvie Castle'*.

**R. 'Amber Queen'** □♀ syn. *R. 'Harroony'*. *R. 'Prinz Eugen van Savoyen'*. Cluster-flowered bush rose of neat, spreading habit, with leathery, dark green foliage, reddish green when young. Cupped, fully double, fragrant, amber-yellow flowers, 8cm (3in) across, are borne from summer to autumn. ↑ 50cm (20in), ↔ 60cm (24in). \*\*\*

**R. 'America'**. Free-branching climber producing mid-green leaves. From summer to autumn, bears cupped, fully double, fragrant, coral- to salmon-pink flowers, 10cm (4in) across. ↑ to 4m (12ft), ↔ 2.5m (8ft). \*\*\*

**R. 'American Pillar'** □ Rampant rambler with long stems and leathery, glossy, mid-green foliage. Large clusters of cupped, single, carmine-red flowers, 5cm (2in) across, with white eyes, are borne freely in midsummer. ↑ to 5m (15ft), ↔ 4m (12ft). \*\*\*

**R. 'Andeli'** see *R. 'Double Delight'*.

**R. x anemonoides 'Ramona'** see *R. 'Ramona'*.

**R. 'Angela Rippon'** □ syn. *R. 'Ocarina'*. *R. 'Ocaru'*. Miniature bush rose of upright habit, with many dark green leaves. Bears urn-shaped, fully double, rose- to salmon-pink flowers, 4cm (1½in) across, from summer to autumn. ↑ 45cm (18in), ↔ 30cm (12in). \*\*\*

**R. 'Angel Face'**. Spreading cluster-flowered bush rose with leathery, dark green leaves. From summer to autumn,

bears cupped, fully double, scented, deep mauve flowers, 10cm (4in) across. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Angelita'** see *R. 'Snowball'*.

**R. 'Anisley Dickson'** □♀ syn. *R. 'Dickimono'*, *R. 'Dicky'*. Vigorous cluster-flowered bush rose with shiny, dark green leaves and large clusters of high-centred, double, deep reddish salmon-pink flowers, 8cm (3in) across, borne from summer to autumn. ↑ 1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Anna Ford'** □♀ syn. *R. 'Harpiccolo'*. Dwarf cluster-flowered bush rose of compact habit, with dark green leaves. Bears many urn-shaped, semi-double, orange-red flowers, 4cm (1½in) across, opening flat, from summer to autumn. ↑ 45cm (18in), ↔ 40cm (16in). \*\*\*

**R. 'Anna Livia'** ♀ syn. *R. 'Kormetter'*, *R. 'Trier 2000'*. Vigorous cluster-flowered bush rose with leathery, mid-green foliage. Large sprays of rounded, double pink flowers, 8cm (3in) across, are borne freely from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Anne Harkness'** □ syn. *R. 'Harkaramel'*. Cluster-flowered bush rose of vigorous, tall habit, with mid-green foliage. Urn-shaped, double, apricot-yellow flowers, 8cm (3in) across, are borne in spectacular, many-flowered sprays from late summer to autumn. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*\*

**R. 'Apricot Nectar'**. Cluster-flowered bush rose with mid-green leaves and rounded, fully double, scented, apricot to apricot-pink flowers, 10cm (4in) across, borne in tight clusters from summer to autumn. ↑ to 80cm (32in), ↔ 65cm (26in). \*\*\*

**R. 'Arizona'**, syn. *R. 'Tocade'*, *R. 'Werina'*. Large-flowered bush rose with shiny, dark green leaves. Urn-shaped, double, sweet-scented, orange-yellow flowers, 10cm (4in) across, are borne



Rosa 'Alexander'

*Rosa* 'Anna Ford'*Rosa* 'Anne Harkness'*Rosa* 'Armada'*Rosa* 'Arthur Bell'*Rosa* 'Awakening'*Rosa* 'Baby Masquerade'*Rosa banksiae* 'Lutea'*Rosa* 'Bantry Bay'*Rosa* 'Baron Girod de l'Ain'*Rosa* 'Baronne Edmond de Rothschild'*Rosa* 'Belle de Crécy'*Rosa* 'Blairii Number Two'

from summer to autumn. ↑ to 1.5m (5ft), ↔ 75cm (30in). \*\*\*

**R. 'Arizona Sunset'**. Miniature bush rose of spreading habit, with mid-green foliage. From summer to autumn, bears cupped, double flowers, 4.5cm (1½in) across, light yellow, flushed orange-red. ↑↔ 40cm (16in). \*\*\*

**R. 'Armada'** [■] syn. *R. 'Haruseful'*. Vigorous, free-branching shrub rose with glossy, dark green leaves. Cupped, semi-double, scented, deep rose-pink flowers, 8cm (3in) across, are borne from summer to autumn. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Arthur Bell'** [■] ♀ Cluster-flowered bush rose with shiny, bright green leaves. Cupped, double, fragrant, yellow to cream flowers, 8cm (3in) across, are produced from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Avon'**, syn. *R. 'Fairy Lights'*, *R. 'Poulmulti'*, *R. 'Sunnyside'*. Ground-cover rose of compact habit, with dark green leaves. Clusters of flat, semi-double, pale pink to pearl-white flowers, 4.5cm (1½in) across, are borne along the stems from summer to autumn. ↑ 35cm (14in), ↔ 1m (3ft). \*\*\*

**R. 'Awakening'** [■] syn. *R. 'Probusini'*. Climber with shiny, mid-green leaves. Clusters of cupped, fully double, fragrant, pale pearl-pink flowers, 8cm (3in) across, are borne from summer to autumn. Tolerates a partially shaded site. ↑ 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Ayrshire Splendens'** see *R. 'Splendens'*.

**R. 'Baby Carnival'** see *R. 'Baby Masquerade'*.

**R. 'Baby Love'**. Dwarf cluster-flowered rose of shrubby growth and dense, upright habit. Shallowly cupped, single, bright yellow flowers, 5cm (2in) across, are borne freely close to the mid-green foliage, from summer to autumn. ↑ 1.1m (3½ft), ↔ 75cm (30in). \*\*\*

**R. 'Baby Masquerade'** [■] syn. *R. 'Baby Carnival'*. Miniature bush rose of dense, twiggy habit, with dark green leaves and clusters of many rosette-shaped, double, yellow-pink flowers, 2.5cm (1in) across, borne from summer to autumn. ↑↔ 40cm (16in). \*\*\*

**R. 'Bad Nauheim'** see *R. 'National Trust'*.

**R. 'Ballerina'** [■] ♀ Polyantha shrub rose of dense, spreading habit, with mid-

green leaves. Spectacular in flower, it bears many shallowly cupped, single, white-centred, light pink flowers, 3cm (1¼in) across, in mop-headed clusters, from summer to autumn. ↑ to 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. banksiae**, syn. *R. banksiae* var. *alba*, *R. banksiae* 'Alba Plena' (Double white banksian rose). Climbing species rose with long, slender, smooth stems and small, pale green leaves composed of 3–7 oblong-lance-shaped to elliptic-ovate leaflets, 3–6cm (1¼–2½in) long. Clusters of many rosette-shaped, double, violet-scented white flowers, 2.5cm (1in) across, with notched petals, are produced in late spring. Protect from frost for best results. Prune spent wood only. ↑ to 12m (40ft), ↔ to 6m (20ft). W. and C. China. \*\*\*. var. *alba* see *R. banksiae*. 'Alba Plena' see *R. banksiae*. 'Lutea' [■] ♀ syn. var. *lutea* (Yellow banksian rose) bears fully double yellow flowers, 2cm (¾in) across. Requires a sheltered wall. ↑↔ to 6m (20ft).

'Lutescens', syn. f. *lutescens*, produces

single, strongly scented yellow flowers. var. *normalis* (Single white banksian rose) bears single, fragrant white flowers on prickly stems; ↑↔ to 12m (40ft).

**R. 'Bantry Bay'** [■] Climber of upright, free-branching habit, with dark green leaves. Clusters of cupped, semi-double, lightly scented, deep pink flowers, 9cm (3½in) across, are borne from summer to autumn. ↑ 4m (12ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Baron Girod de l'Ain'** [■] Hybrid Perpetual rose of vigorous habit, with moderately prickly stems and leathery, dark green leaves. From summer to autumn, bears cupped, fully double, scented crimson, white-edged flowers, 10cm (4in) across, with wavy-margined petals. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Baronne Edmond de Rothschild'** [■] syn. *R. 'Meigriso'*. Vigorous large-flowered bush rose producing leathery, glossy, mid-green foliage. Rounded, fully double, fragrant, ruby-red flowers, 12cm (5in) across, with a pale pink reverse to the petals, are borne from

summer to autumn. ↑ 90cm (36in), ↔ 75cm (30in). \*\*\*

**R. 'Baronne Prévost'** ♀ Erect Hybrid Perpetual rose with prickly stems and dark green leaves. Quartered-rosette, fully double, scented pink flowers, 10cm (4in) across, are borne from summer to autumn. ↑ to 1.5m (5ft), ↔ 1m (3ft). \*\*\*

**R. 'Beauty of Glazenwood'** see *R. x odorata* 'Pseudindica'.

**R. 'Belle Amour'**. Alba rose of upright habit, with grey-green foliage. Camellia-like, rounded, semi-double, myrrh-scented, light salmon-pink flowers, 9cm (3½in) across, cupped on opening, are borne in midsummer, followed by spherical red hips. ↑ 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Belle Courtisane'** see *R. 'Königin von Dänemark'*.

**R. 'Belle de Crécy'** [■] ♀ Gallica rose of lax habit, with bristly stems and greyish green leaves. In summer, bears quartered-rosette, full-petalled, fully double, fragrant, deep pink to purple flowers, 8cm (3in) across, showing green centres as they open. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Belle de Londres'** see *R. 'Compassion'*.

**R. 'Belle of Portugal'** see *R. 'Belle Portugaise'*.

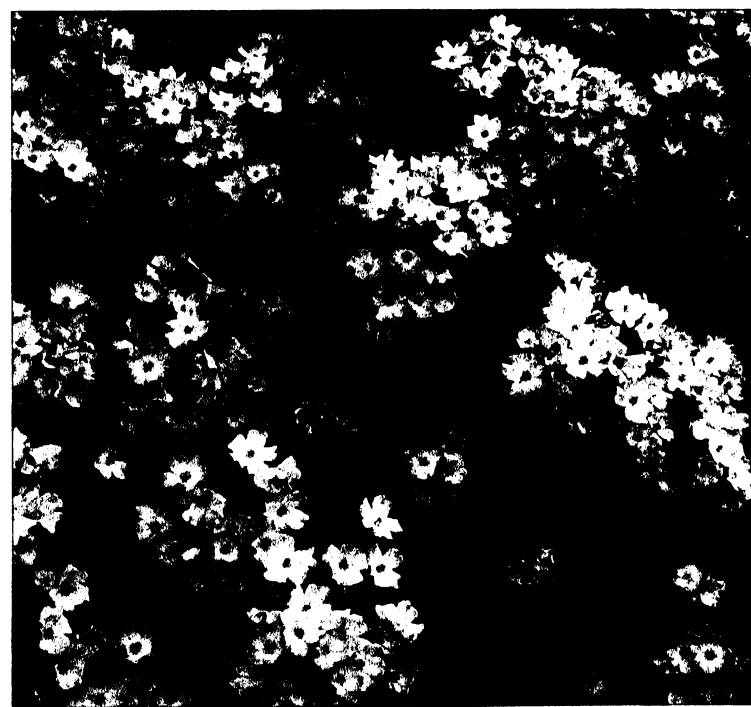
**R. 'Belle Portugaise'**, syn. *R. 'Belle of Portugal'*. Very vigorous, climbing Tea rose with glossy, olive green leaves and high-centred, semi-double, fragrant, light salmon-pink flowers, 12cm (5in) across, borne in summer. ↑ to 5m (15ft), ↔ 3m (10ft). \*\*\*

**R. 'Berkeley'** see *R. 'Tournament of Roses'*.

**R. 'Big Purple'**, syn. *R. 'Nuit d'Orient'*, *R. 'Stebigpu'*. Vigorous large-flowered bush rose with dark green leaves. Bears high-centred, fully double, strongly scented, deep beetroot-purple flowers, 12cm (5in) across, from summer to autumn. ↑ 1.1m (3½ft), ↔ 70cm (28in). \*\*\*

**R. 'Bizarre Triomphant'** see *R. 'Charles de Mills'*.

**R. 'Blairii Number Two'** [■] ♀ Vigorous, climbing Bourbon rose with mid-green leaves, reddish green when young. In summer, bears clusters of usually 3–5 double, fragrant, light pink flowers, 8cm (3in) across, rounded at

*Rosa* 'Ballerina'



Rosa 'Blessings'



Rosa 'Bobbie James'



Rosa 'Bonica'



Rosa 'Boule de Neige'



Rosa 'Bourbon Queen'



Rosa 'Breath of Life'



Rosa 'Bright Smile'



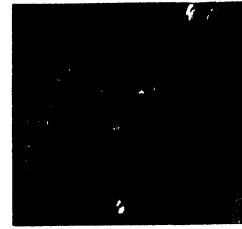
Rosa 'Brown Velvet'



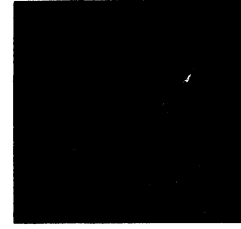
Rosa 'Buff Beauty'



Rosa 'Camaïeux'



Rosa 'Cardinal de Richelieu'



Rosa 'Cardinal Hume'

first, opening flat. Prone to mildew. ↑ to 4m (12ft), ↔ 2m (6ft). \*\*\*

**R. 'Blanc Double de Coubert'** ♀ Rugosa rose of dense, spreading habit, with leathery, mid-green foliage. From summer to autumn, bears loose-petalled, cupped to flat, semi-double, fragrant white flowers, 8cm (3in) across, with yellow stamens, followed in some years by spherical red hips. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Blanche Moreau'**. Moss rose of lax growth, with dark green leaves. In summer, bears cupped, fully double, fragrant white flowers, 10cm (4in) across, with brownish green mottling on the stems and calyces. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Blaze'**. Branching climber with mid-green leaves and clusters of cupped, semi-double red flowers, 6cm (2½in) across, borne freely from summer to autumn. ↑↔ 2.5m (8ft). \*\*\*

**R. 'Blessings'** ♂ Vigorous large-flowered bush rose with dark green leaves. Bears urn-shaped, fully double, scented, salmon-pink flowers, 10cm (4in) across, from summer to autumn. ↑ 1.1m (3½ft), ↔ 75cm (30in). \*\*\*

**R. 'Blue Moon'**, syn. *R. 'Mainzer Fastnacht'*, *R. 'Sissi'*. Branching large-flowered bush rose with dark green leaves. Bears high-centred, fully double, fragrant, lilac-mauve flowers, 10cm (4in) across, from summer to autumn. ↑ 1m (3ft), ↔ 70cm (28in). \*\*\*

**R. 'Blue Rambler'** see *R. 'Veilchenblau'*.

**R. 'Blush Noisette'** see *R. 'Noisette Carnée'*.

**R. 'Blush Rambler'**. Vigorous rambler with long, arching stems and masses of shiny, mid-green leaves. Large, dense clusters of cupped, semi-double, light pink flowers, 4cm (1½in) across, are borne in late summer. ↑ 4m (12ft), ↔ 5m (15ft). \*\*\*

**R. 'Bobbie James'** ♂ Rampant rambler producing glossy leaves, reddish green when young, maturing mid-green. Large clusters of cupped, semi-double, scented, creamy white flowers, 5cm (2in) across, are produced in summer. ↑ to 10m (30ft), ↔ 6m (20ft). \*\*\*

**R. 'Bonica'** ♂ syn. *R. 'Bonica '82'*, *R. 'Meidonomac'*. Vigorous shrub rose of low, spreading habit, with dense, glossy, rich green foliage. Large sprays of cupped, fully double, rose-pink flowers,

7cm (3in) across, are borne from summer to autumn. ↑ 85cm (34in), ↔ 1.1m (3½ft). \*\*\*

**R. 'Bonica '82'** see *R. 'Bonica'*.

**R. 'Boule de Neige'** ♂ Bourbon rose of vigorous, uneven growth, with glossy, dark green leaves. From summer to autumn, bears cupped to rosette-shaped, fully double, fragrant, pink-touched white flowers, 8cm (3in) across. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Bouquet de la Mariée'** see *R. 'Aimée Vibert'*.

**R. 'Bourbon Queen'** ♂ syn. *R. 'Souvenir de la Princesse de Lamballe'*. Vigorous Bourbon rose with long, leafy stems and mid-green foliage. Clusters of numerous cupped, double, scented, magenta to rose-pink flowers, 8cm (3in) across, are borne mainly in summer. ↑ to 2.5m (8ft), ↔ 1.5m (5ft). \*\*\*

**R. bracteata** (Chickasaw rose, Macartney rose). Fast-growing, semi-evergreen species rose producing prickly, brownish green stems and glossy, dark green leaves, each with 5–11 obovate to elliptic leaflets, 2–5cm (¾–2in) long. From summer to autumn, bears cupped to flat, single, lightly scented white flowers, 9cm (3½in) across, with gold stamens and curling petals, followed by spherical orange hips. ↑ to 6m (20ft). S.E. China, Taiwan. \*\*\*

**R. 'Brandy'**. Large-flowered bush rose producing dark green leaves. Bears high-centred, double, lightly scented apricot flowers, 10cm (4in) across, from summer to autumn. ↑ 1.1m (3½ft), ↔ 75cm (30in). \*\*\*

**R. 'Brass Ring'** see *R. 'Peek A Boo'*.

**R. 'Breath of Life'** ♂ syn. *R. 'Harquanne'*. Upright climber with mid-green leaves and rounded, fully double, scented, apricot to apricot-pink flowers, 10cm (4in) across, borne from summer to autumn. ↑ 2.5m (8ft), ↔ 2.2m (7ft). \*\*\*

**R. 'Brigadoon'** syn. *R. 'Jacpal'*. Large-flowered bush rose with dark green leaves. From summer to autumn, bears high-centred, double, lightly scented, strawberry-red flowers, 12cm (5in) across, margined pale pink. ↑ 1m (3ft), ↔ 70cm (28in). \*\*\*

**R. 'Bright Smile'** ♂ syn. *R. 'Dicdance'*. Low-growing cluster-flowered bush rose with glossy, bright green leaves. Well-spaced clusters of flat, semi-double, scented yellow flowers, 8cm (3in) across,

are borne freely from summer to autumn. ↑↔ 45cm (18in). \*\*\*

**R. 'Brite Lites'** see *R. 'Princess Alice'*.

**R. 'Broadway'**, syn. *R. 'Burway'*. Large-flowered bush rose with glossy, dark green foliage. From summer to autumn, bears high-centred, fully double, spice-scented, orange-yellow flowers, 10cm (4in) across, the outer petals flushed with pink. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Brown Velvet'** ♂ syn. *R. 'Colorbreak'*, *R. 'Maccultra'*. Cluster-flowered bush rose with glossy, dark green leaves. Bears fully double, brownish orange flowers, 8cm (3in) across, quartered-rosette on opening, from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Buffalo Bill'** see *R. 'Regensburg'*.

**R. 'Buff Beauty'** ♂ Shrub rose of rounded habit, with dense, dark green leaves. Freely bears large clusters of cupped, fully double, lightly fragrant flowers, 9cm (3½in) across, apricot fading to buff, in summer, a few later. ↑↔ 1.2m (4ft). \*\*\*

**R. 'Burgund '81'** see *R. 'Loving Memory'*.

**R. 'Burning Sky'** see *R. 'Paradise'*.

**R. californica**. Shrubby species rose with bristly shoots and dull, mid-green leaves, each composed of 5–7 ovate to broadly elliptic leaflets, 1–3cm (½–1¼in) long. Clusters of flat, single, scented, lilac-pink flowers, 4cm (1½in) across, are borne freely in summer, a few later in autumn, before the spherical, orange-red hips. ↑ 1.5–2.5m (5–8ft), ↔ 1.2–2m (4–6ft). USA (S. Oregon to S. California), N.W. Mexico. \*\*\*

**'Plena'** see *R. nutkana* 'Plena'.

**R. 'Camaïeux'** ♂ Gallica rose of dense habit, with mid-green foliage. Cupped, fully double, scented, light pink flowers, 9cm (3½in) across, striped with crimson-purple to lilac-grey, are borne in summer. ↑↔ 80cm (32in). \*\*\*

**R. 'Camelot'**. Vigorous, tall cluster-flowered bush rose with leathery, dark green leaves. From summer to autumn, bears cupped, fully double, spice-scented, coral pink flowers, 9cm (3½in) across. ↑ 1.5m (5ft), ↔ 1m (3ft). \*\*\*

**R. 'Canary Bird'** see *R. xanthina* 'Canary Bird'.

**R. 'Capitaine John Ingram'** ♀ Vigorous, bushy Moss rose with dark green leaves and clusters of peony-like,

pompon-shaped, fully double, fragrant, dark crimson to purple flowers, 8cm (3in) across, with a lilac-pink reverse to the petals, borne in summer. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Cardinal de Richelieu'** ♂ Gallica rose of vigorous, compact, lax habit, with smooth stems and dense, dark green foliage. Rounded, fully double, fragrant, deep burgundy-purple flowers, 8cm (3in) across, are borne in summer. ↑ 1m (3ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Cardinal Hume'** ♂ syn. *R. 'Harregale'*. Vigorous shrub rose of spreading habit, with dense, dark green leaves. Bears dense clusters of cupped, double, lightly scented, reddish purple flowers, 8cm (3in) across, from summer to autumn. ↑ 80cm (32in), ↔ 1.1m (3½ft). \*\*\*

**R. 'Carefree Wonder'**, syn. *R. 'Meipitac'*. Free-branching, leafy shrub rose of rounded, bushy habit, with mid-green leaves. From summer to autumn, freely bears clusters of cupped, double pink flowers, 9cm (3½in) across, with a pale pink reverse to the petals. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Caribia'** see *R. 'Harry Wheatcroft'*.

**R. 'Carl Philip'** see *R. 'The Times'*.

**R. 'Casino'** ♂ syn. *R. 'Gerbe d'Or'*, *R. 'Macca'*. Climber with sparse, dark green leaves and rounded, fully double, fragrant yellow flowers, 9cm (3½in) across, sometimes opening quartered-rosette, borne from summer to autumn. ↑ 3m (10ft), ↔ 2.2m (7ft). \*\*\*

**R. 'Catherine Mermet'**. Vigorous, shrubby Tea rose with shiny, mid-green leaves and high-centred, fully double, scented, beige-pink flowers, 10cm (4in) across, with a mauve tinge, borne from summer to autumn. ↑ 1.2m (4ft), ↔ 1.1m (3½ft). \*\*\*

**R. 'Cécile Brunner'** ♂ syn. *R. 'Mignon'*, *R. 'Sweetheart Rose'*. China rose of upright growth, with sparse, dark green leaves. Perfectly formed, urn-shaped, fully double, light pink flowers, 4cm (1½in) across, are borne from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

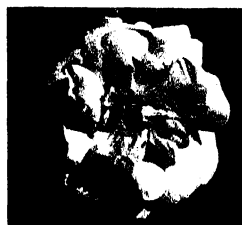
**R. 'Celeste'** ♂ syn. *R. 'Celestial'*. Vigorous, spreading Alba rose with greyish green foliage. Clusters of cupped, double, fragrant, light pink flowers, 8cm (3in) across, are produced in midsummer. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*



Rosa 'Casino'



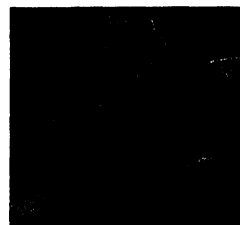
Rosa 'Cécile Brunner'



Rosa 'Céleste'



Rosa x centifolia 'Muscosa'



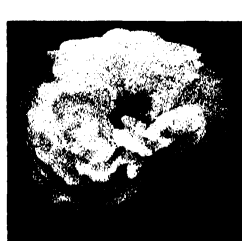
Rosa 'Cerise Bouquet'



Rosa 'Champagne Cocktail'



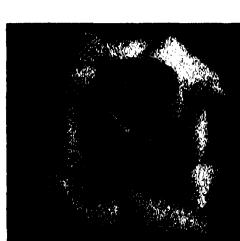
Rosa 'Cherry Brandy'



Rosa 'Chinatown'



Rosa 'Cider Cup'



Rosa 'City Girl'



Rosa 'City of London'



Rosa 'City of York'

**R. 'Celestial'** see *R. 'Céleste'*.

**R. x centifolia.** Vigorous Centifolia rose of branching habit, with arching, dull, mid-green leaves comprising 5–7 broadly ovate leaflets, to 5cm (2in) long. In summer, bears cupped, fully double, very fragrant, deep rose-pink, sometimes red or white flowers, 9cm (3½in) across. ↑ 1.5m (5ft), ↔ 1.2m (4ft). Garden origin. \*\*\*. **'Cristata'** ♀ syn. *R. 'Chapeau de Napoléon'*, *R. 'Cristata'* (Crested moss rose) has a lax, branching habit, and double, rose-pink flowers on bowing stems. It has no true moss, but mossy tufts on the calyces. Best grown on a support. **'Muscosa'** ♂♀ (Common moss rose) is a vigorous, branching Moss

rose, with dull, dark green leaves and dense moss on the stems and calyces. Rounded to cupped pink flowers are 8cm (3in) across. **var. pomponia** see *R. 'De Meaux'*.

**R. 'Cerise Bouquet'** ♂♀ Very vigorous shrub rose of arching habit, producing small, greyish green leaves. In summer, bears a spectacular display of flat, semi-double, cherry-red flowers, 6cm (2½in) across. ↑ to 3.5m (11ft). \*\*\*

**R. 'C.F. Meyer'** see *R. 'Conrad Ferdinand Meyer'*.

**R. 'Champagne Cocktail'** ♂ syn. *R. 'Horflash'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears open clusters of cupped,

double, scented, light yellow flowers, 9cm (3½in) across, with pink markings. ↑ 1m (3ft), ↔ 70cm (28in). \*\*\*

**R. 'Champneys' Pink Cluster'**.

Vigorous Noisette climbing rose with arching, smooth stems and shiny, light green leaves. From summer to autumn, bears large clusters of cupped, double, fragrant pink flowers, 5cm (2in) across. ↑ 2.5–4m (8–12ft), ↔ 2.5m (8ft). \*\*

**R. 'Chapeau de Napoléon'** see *R. x centifolia 'Cristata'*.

**R. 'Charles de Mills'** ♂♀ syn. *R. 'Bizarre Triomphant'*. Upright, arching Gallica rose with smooth stems and mid-green foliage. In summer, pink buds open to quartered-rosette, fully double, fragrant, mulberry-coloured flowers, 10cm (4in) across. ↑ ↔ 1.2m (4ft) or more. \*\*\*

**R. 'Cheerio'** see *R. 'Playboy'*.

**R. 'Cherish'**, syn. *R. 'Jacsal'*. Cluster-flowered bush rose of compact habit, with dark green leaves. High-centred, double, light pink flowers, 8cm (3in) across, the petals with white bases inside, open from summer to autumn. ↑ 70cm (28in), ↔ 60cm (24in). \*\*\*

**R. 'Cherry Brandy'** ♂ syn. *R. 'Aroca'*, *R. 'Tantryrandy'*. Fast-growing, large-flowered bush rose of uneven habit, with dense, glossy, bright green leaves. High-centred to cupped, double orange flowers, 9cm (3½in) across, suffused salmon-pink, are borne singly and in open clusters from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Child's Play'**, syn. *R. 'Savachild'*. Miniature bush rose of upright habit, with dark green leaves. Produces high-centred, double, bicoloured, pink and white flowers, 4cm (1½in) across, from summer to autumn. ↑ 35cm (14in), ↔ 25cm (10in). \*\*\*

**R. 'China Doll'**. Miniature bush rose with leathery, mid-green leaves and cupped, double, china-pink flowers, 4cm (1½in) across, borne from summer to autumn. ↑ 45cm (18in). \*\*\*

**R. 'Chinatown'** ♂♀ syn. *R. 'Ville de Chine'*. Vigorous cluster-flowered bush rose with strong, uneven growth and abundant, glossy, dark green leaves. From summer to autumn, produces rounded, double, scented yellow flowers, 10cm (4in) across, flushed pink. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. chinensis var. minima** see *R. 'Rouletii'*.

**R. chinensis 'Mutabilis'** see *R. x odorata 'Mutabilis'*.

**R. chinensis 'Semperflorens'** see *R. x odorata 'Semperflorens'*.

**R. chinensis 'Viridiflora'** see *R. x odorata 'Viridiflora'*.

**R. 'Christian IV'** see *R. 'The Times'*.

**R. 'Chrysler Imperial'**. Neat large-flowered bush rose producing dark green leaves. From summer to autumn, bears high-centred, fully double, very fragrant, deep red flowers, 12cm (5in) across. Prefers a sheltered site. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Cider Cup'** ♂ syn. *R. 'Dieladida'*. Dwarf cluster-flowered bush rose of neat habit, with dense, glossy, mid-green foliage. From summer to autumn, bears well-spaced clusters of high-centred, double, deep apricot-pink flowers, 4cm (1½in) across. ↑ 45cm (18in), ↔ 30cm (12in). \*\*\*

**R. 'City Girl'** ♂ syn. *R. 'Harzorba'*. Free-branching climber producing glossy, dark green leaves. From summer to autumn, bears clusters of cupped, semi-double, scented, salmon-pink flowers, 11cm (4½in) across. ↑ 2.2m (7ft). \*\*\*

**R. 'City of Belfast'**, syn. *R. 'Macci'*. Cluster-flowered bush rose of compact habit, with glossy, dark green foliage and cupped, double scarlet flowers, 6cm (2½in) across, borne from summer to autumn. ↑ 60cm (24in). \*\*\*

**R. 'City of Leeds'**. Vigorous cluster-flowered bush rose producing dark green foliage. Freely bears cupped to flat, semi-double, salmon-pink flowers, 9cm (3½in) across, from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'City of London'** ♂♀ syn. *R. 'Harukfore'*. Cluster-flowered bush rose or climbing rose of spreading, uneven habit, with glossy mid-green leaves. Loosely formed, rounded to flat, semi-double to double, fragrant, light pink flowers, 8cm (3in) across, are produced from summer to autumn. ↑ 80cm (32in), ↔ 75cm (30in). \*\*\*

**R. 'City of York'** ♂ syn. *R. 'Direktor Benschop'*. Climber with glossy, bright green foliage. Clusters of cupped, semi-double, scented, creamy white flowers, 6cm (2½in) across, are borne in early summer. ↑ to 4m (12ft), ↔ 3m (10ft). \*\*\*

**R. 'Clarissa'**, syn. *R. 'Harprocrustes'*. Cluster-flowered bush rose producing



Rosa 'Charles de Mills'



*Rosa* 'Climbing Mrs. Sam McGredy'



*Rosa* 'Compassion'



*Rosa* 'Complicata'



*Rosa* 'Congratulations'



*Rosa* 'Conrad Ferdinand Meyer'



*Rosa* 'Constance Spry'



*Rosa* 'Cordon Bleu'



*Rosa* 'Cornelia'



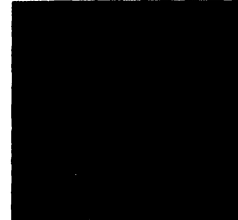
*Rosa* 'Crimson Glory'



*Rosa* 'Crimson Shower'



*Rosa* x *damascena* var. *sempervlorens*



*Rosa* 'Danse du Feu'

many small, glossy, dark green leaves. Abundant urn-shaped, fully double apricot flowers, 5cm (2in) across, are borne on long stems from summer to autumn. †80cm (32in), ↔45cm (18in). \*\*\*

**R. 'Class Act'**, syn. *R.* 'First Class', *R.* 'Jacare', *R.* 'White Magic'. Cluster-flowered bush rose producing dark green leaves and loosely formed, flat, semi-double white flowers, 8cm (3in) across, from summer to autumn. †1m (3ft), ↔75cm (30in). \*\*\*

**R. 'Climbing Cécile Brunner'** ♀ Vigorous climber with strong growth and sparse, dark green leaves composed of lance-shaped leaflets. From summer to autumn, bears exquisitely formed, urn-shaped, double, light pink flowers, 4cm (1½in) across. †→4m (12ft). \*\*\*

**R. 'Climbing Crimson Glory'**. Climber of branching habit, with fairly sparse, mildew-prone, dark green leaves and prickly stems. Cupped, fully double, intensely fragrant, dark crimson flowers, 11cm (4½in) across, are borne on bowing stems from summer to autumn. †to 5m (15ft), ↔2.5m (8ft). \*\*\*

**R. 'Climbing Ena Harkness'**. Climber of branching habit, with mid-green foliage and high-centred, fully double, fragrant, bright crimson flowers, 12cm (5in) across, borne from summer to autumn. †5m (15ft), ↔2.5m (8ft). \*\*\*

**R. 'Climbing Etoile de Hollande'** ♀ Climber with rampant, open growth, dark green foliage, and cupped, double, very fragrant, dark crimson flowers, 11cm (4½in) across, borne mainly in summer. †to 6m (20ft), ↔5m (15ft). \*\*\*

**R. 'Climbing Iceberg'** ♀ Climber with strong, well-branched growth and dense, light green foliage. Showy clusters of numerous cupped, double white flowers, 8cm (3in) across, are borne freely from summer to autumn. †→3m (10ft). \*\*\*

**R. 'Climbing Lady Hillingdon'** ♀ Climbing 'Tea rose' with stiff, vigorous growth, purplish green wood, and glossy, dark green foliage. From summer to autumn, high-centred to cupped, semi-double to double, fragrant, light apricot-yellow flowers, 9cm (3½in) across, are borne on nodding stems. †to 5m (15ft), ↔2.5m (8ft). \*\*\*

**R. 'Climbing Little White Pet'** see *R.* 'Félicité Perpétue'.

**R. 'Climbing Mrs. Sam McGredy'** ♀ Vigorous climber with a stiff, branching habit and sparse dark green foliage. Urn-shaped, fully double, copper-red to salmon-pink flowers, 11cm (4½in) across, are borne mainly in summer. †→3m (10ft). \*\*\*

**R. 'Climbing Orange Meilandina'** see *R.* 'Climbing Orange Sunblaze'.

**R. 'Climbing Orange Sunblaze'**, syn. *R.* 'Climbing Orange Meilandina', *R.* 'Meijikatarsar'. Miniature climber with upright, branching growth and many dark green leaves. Cupped, fully double,



*Rosa* 'Climbing Iceberg'

bright orange-red flowers, 4cm (1½in) across, are borne from summer to autumn. †1.5m (5ft), ↔1.2m (4ft). \*\*\*

**R. 'Climbing Pompon de Paris'**. Vigorous, miniature China climbing rose with spreading, arching growth and abundant matt, mid-green foliage. Many-flowered clusters of cupped, fully double, rose-red flowers, 2.5cm (1in) across, are borne in early summer. †to 4m (12ft), ↔2.5m (8ft). \*\*\*

**R. 'Climbing Shot Silk'** ♀ Branching climber with shiny, deep green foliage. Urn-shaped to cupped, double, sweet-scented flowers, 10cm (4in) across, salmon-pink suffused yellow, are borne mainly in summer. †3m (10ft), ↔2.5m (8ft). \*\*\*

**R. 'Colorbreak'** see *R.* 'Brown Velvet'. **R. 'Color Magic'**. Large-flowered bush rose of branching habit, producing dark green leaves. Cupped, wide-opening, double flowers, 12cm (5in) across, ivory becoming deep pink, are borne freely from summer to autumn. †1.1m (3½ft), ↔75cm (30in). \*\*\*

**R. 'Commandant Beaurepaire'**, syn. *R.* 'Panachée d'Angers'. Vigorous, bushy, spreading Bourbon rose with wavy, pale green leaves. From summer to autumn, bears cupped, double, fragrant pink flowers, 10cm (4in) across, with purple and white stripes. †→1.2m (4ft). \*\*\*

**R. 'Compassion'** ♀ syn. *R.* 'Belle de Londres'. Climber with upright, free-branching growth and dark green leaves. Rounded, fully double, fragrant flowers, 10cm (4in) across, salmon-pink suffused apricot, are borne from summer to autumn. †3m (10ft), ↔2.5m (8ft). \*\*\*

**R. 'Complicata'** ♀ Very vigorous Gallica rose with strong, arching, open growth and greyish green leaves. In summer, bears clusters of cupped to flat, single pink flowers, 11cm (4½in) across, with paler centres and folded petals. †2.2m (7ft), ↔2.5m (8ft). \*\*\*

**R. 'Comte de Chambord'** see *R.* 'Mme Knorr'.

**R. 'Comtesse de Labarthe'** see *R.* 'Duchesse de Brabant'.

**R. 'Comtesse Ouwaroff'** see *R.* 'Duchesse de Brabant'.

**R. 'Congratulations'** ♀ syn. *R.* 'Korlift', *R.* 'Sylvia'. Tall, vigorous large-flowered bush rose with dark green

leaves. Neatly formed, urn-shaped, fully double, rose-pink flowers, 11cm (4½in) across, are borne on long stems from summer to autumn. †1.5m (5ft), ↔1m (3ft). \*\*\*

**R. 'Conrad Ferdinand Meyer'** ♀ syn. *R.* 'C.F. Meyer'. Strong, vigorous shrub rose with prickly, arching stems and coarse, greyish green leaves. Bears cupped, fully double, fragrant, silvery pink flowers, 10cm (4in) across, mainly in summer, a few in autumn. Prone to rust. †2.5m (8ft), ↔2m (6ft). \*\*\*

**R. 'Conservation'** ♀ syn. *R.* 'Cocdimple'. Vigorous, dwarf cluster-flowered bush rose with glossy, mid-green leaves. From summer to autumn, freely bears dense clusters of cupped, semi-double, apricot-pink flowers, 6cm (2½in) across. †→45cm (18in). \*\*\*

**R. 'Constance Spry'** ♀ Shrub rose of arching habit, which will climb if supported, with dense, greyish green leaves. Rounded, fully double, myrrh-scented pink flowers, 12cm (5in) across, are borne on nodding stems in summer. †2m (6ft), ↔1.5m (5ft) as a shrub; †→3m (10ft) as a climber. \*\*\*

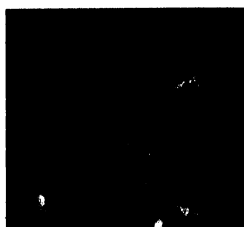
**R. 'Cordon Bleu'** ♀ *R.* 'Harubasil'. Large-flowered bush rose with dark green foliage and cupped, double, scented, reddish apricot flowers, 10cm (4in) across, borne from summer to autumn. †1m (3ft), ↔60cm (24in). \*\*\*

**R. 'Cornelia'** ♀ Vigorous shrub rose of arching, spreading habit, producing dense, dark green leaves with lance-shaped leaflets. From summer to autumn, bears large clusters of many rosette-shaped, double, pink-tinged flowers, 5cm (2in) across, copper at the centres. †→1.5m (5ft). \*\*\*

**R. 'Crimson Glory'** ♀ Large-flowered bush rose of branching habit, with sparse, mildew-prone, dark green leaves and prickly stems. Cupped, fully double, intensely fragrant, dark crimson flowers, 11cm (4½in) across, are borne on bowing stems from summer to autumn. †→60cm (24in). \*\*\*

**R. 'Crimson Shower'** ♀ Rambler with lax stems and many glossy, bright green leaves. Dense clusters of rosette-shaped, double crimson flowers, 3cm (1¼in) across, are produced from late summer to autumn. †to 2.5m (8ft), ↔2.2m (7ft). \*\*\*

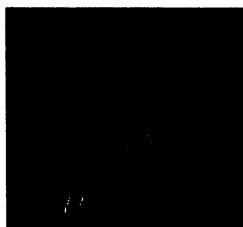




Rosa 'De la Maître d'Ecole'



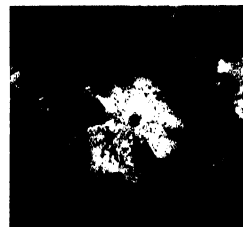
Rosa 'Desprez à Fleur Jaune'



Rosa 'Disco Dancer'



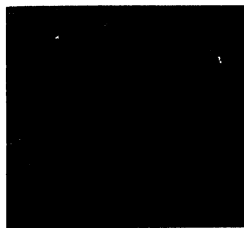
Rosa 'Doris Tysterman'



Rosa 'Dortmund'



Rosa 'Double Delight'



Rosa 'Dublin Bay'



Rosa 'Duc de Guiche'



Rosa 'Duchesse de Brabant'



Rosa 'Dunwich Rose'



Rosa 'Dupontii'



Rosa 'Dutch Gold'

**R. 'Cristata'** see *R. x centifolia* 'Cristata'.  
**R. 'Cuisse de Nymphe'** see *R. 'Great Maiden's Blush'*.

**R. 'Cupcake'**, syn. *R. 'Spicup'*. Vigorous miniature bush rose of compact, bushy habit, with glossy, mid-green leaves. High-centred, fully double, mid-pink flowers, 4cm (1½in) across, are borne from summer to autumn. ↑ 35cm (14in), ↔ 30cm (12in). \*\*\*

**R. 'Dainty Bess'**. Branching large-flowered bush rose with leathery, dark green leaves. Flat, single, scented, pale pink flowers, 9cm (3½in) across, with maroon stamens, are borne from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. x damascena** (Damask rose). Vigorous Damask rose with arching, prickly stems and dull, greyish green leaves, each composed of 5, rarely 7, ovate to elliptic leaflets, to 6cm (2½in) long. In summer, bears clusters of 3–11 cupped to flat, semi-double, fragrant, pale pink to white flowers, 8cm (3in) across. Middle East. ↑ 2m (6ft), ↔ 1.5m (5ft). \*\*\*. **var. bifera** see var. *semperflorens*. **var. semperflorens** □ syn. var. *bifera*, *R. 'Quatre Saisons'* (Autumn damask rose, Four seasons rose, Rose of Castille) has an open, arching habit and light green leaves. Loosely formed, rose-pink flowers, 9cm (3½in) across, are produced in lax clusters, mainly in summer and sporadically in autumn. Best in a sunny position; ↑ 1.5m (5ft), ↔ 1.2m (4ft). **'Versicolor'** (York and

Lancaster rose) has a twiggy, untidy habit, and bears loosely cupped, double, pink-tinged white flowers, 6cm (2½in) across; ↑ 1.5m (5ft), ↔ 1.2cm (4ft).

**R. 'Danse du Feu'** □ syn. *R. 'Spectacular'*. Stiffly branched climber bearing abundant glossy, mid-green leaves. Rounded, double scarlet flowers, 8cm (3in) across, are produced from summer to autumn. ↑ 2.5m (8ft). \*\*\*

**R. 'Darling Flame'**, syn. *R. 'Meilucca'*, *R. 'Minuetto'*. Bushy, well-branched miniature bush rose producing glossy, dark green leaves. Urn-shaped, double, orange-red flowers, 4cm (1½in) across, are borne freely from summer to autumn. ↑ 40cm (16in), ↔ 30cm (12in). \*\*\*

**R. 'Dearest'**. Cluster-flowered bush rose of neat, spreading habit, with dark green leaves. Large clusters of camellia-like, rounded, double, fragrant, light rose-pink flowers, 8cm (3in) across, are borne from summer to autumn. ↑ 60cm (24in). \*\*\*

**R. 'Deep Secret'**, syn. *R. 'Mildred Scheel'*. Vigorous large-flowered bush rose with glossy, dark green foliage. Rounded, fully double, scented, deep crimson flowers, 10cm (4in) across, are borne from summer to autumn. ↑ 1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'De la Maître d'Ecole'** □ ♀ Gallica rose of bushy, spreading habit, with mid-green foliage. Quartered-rosette, fully double, fragrant, carmine-red to light pink flowers, 10cm (4in) across, are borne on bowed stems in summer. ↑ 1m (3ft), ↔ 1.1m (3½ft). \*\*\*

**R. 'De Meaux'**, syn. *R. x centifolia* var. *pomponia*, *R. 'Rose de Meaux'* (Pompon rose). Dwarf Centifolia rose of upright habit, with bright green leaves. Clusters of pompon, fully double, scented, rose-pink flowers, 4cm (1½in) across, are borne in summer. ↑ 1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Desprez à Fleur Jaune'** □ ♀ syn. *R. 'Jaune Desprez'*. Vigorous Noisette climbing rose with arching growth and light green leaves. Flat, fully double, scented, pale creamy apricot flowers, 8cm (3in) across, are borne mainly in summer. ↑ 5m (15ft). \*\*

**R. 'Dicky'** see *R. 'Anisley Dickson'*.

**R. 'Direktor Benshop'** see *R. 'City of York'*.

**R. 'Disco Dancer'** □ syn. *R. 'Dicinfra'*. Free-branching, vigorous cluster-flowered bush rose with dense, glossy, mid-green foliage. Showy, cupped, double, bright orange-scarlet flowers, 6cm (2½in) across, are produced from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Dolly Parton'**. Large-flowered bush rose with dark green foliage and high-centred, fully double, fragrant, vivid orange-red flowers, 11cm (4½in) across, borne from summer to autumn. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*

**R. 'Donatella'** see *R. 'Granada'*.

**R. 'Doris Tysterman'** □ Tall large-flowered bush rose producing glossy, dark green foliage. High-centred, double, orange-red flowers, 10cm (4in) across, are borne from summer to autumn. ↑ 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**R. 'Dorothy Perkins'**. Lax Rambler with many glossy, dark green leaves. Bears dense clusters of rosette-shaped, double, rose-pink flowers, 2cm (¾in) across, in late summer. ↑ 3m (10ft). \*\*\*

**R. 'Dortmund'** □ Upright climber with dense, glossy, dark green leaves. Showy clusters of flat, single red flowers, 10cm (4in) across, each with a white eye, are borne freely from summer to autumn. ↑ 3m (10ft), ↔ 2m (6ft). \*\*\*

**R. 'Double Delight'** □ syn. *R. 'Andeli'*. Large-flowered bush rose of uneven, branching habit, with dull, mid-green foliage. From summer to autumn, bears rounded, fully double, sweet-scented flowers, 12cm (5in) across, pale pink, margined and flushed carmine-red. The flowers spoil in rain. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Drummer Boy'**, syn. *R. 'Harvacity'*. Spreading, dwarf cluster-flowered bush rose producing mid-green foliage. Dense sprays of cupped, double, bright crimson flowers, 5cm (2in) across, are borne freely from summer to autumn. ↑ 50cm (20in). \*\*\*

**R. 'Dublin Bay'** □ ♀ Free-branching climber, which may be pruned to form a shrub. Bears glossy, dark green leaves and clusters of cupped, double, bright crimson flowers, 10cm (4in) across, from summer to autumn. ↑ 2.2m (7ft). \*\*\*

**R. 'Duc de Guiche'** □ ♀ Gallica rose of spreading habit, with dark green leaves.

Fully double, crimson-purple flowers, 10cm (4in) across, opening flat and quartered-rosetted, are produced in summer. ↑ 1.2m (4ft). \*\*\*

**R. 'Duchesse de Brabant'** □ syn. *R. 'Comtesse de Labarthe'*, *R. 'Comtesse Ouwaroff'*. Tea rose of spreading, shrubby habit, with mid- to dark green leaves. Cupped, silky-petalled, double, scented, rose-pink flowers, 11cm (4½in) across, are borne from summer to autumn. ↑ 1.2m (4ft) or more, ↔ 1m (3ft). \*\*

**R. 'Duchesse d'Istrie'** see *R. 'William Lobb'*.

**R. 'Duchess of Portland'** see *R. 'Portlandica'*.

**R. 'Duet'**. Vigorous large-flowered bush rose producing leathery, mid-green leaves. High-centred, double flowers, 10cm (4in) across, in two shades of pink, are borne freely from summer to autumn. Good for cut flowers. ↑ 1.2m (4ft), ↔ 60cm (24in). \*\*\*

**R. 'Duftzauber '84'** see *R. 'Royal William'*.

**R. 'Dunwich Rose'** □ syn. *R. 'pimpinellifolia'* 'Dunwichensis'. Vigorous, twiggy Scots rose with a low, hummock-forming habit and dark green leaves. In early summer, bears a profusion of short-stemmed, cupped to flat, single, scented, creamy white flowers, 6cm (2½in) across, with prominent gold stamens. ↑ 65cm (26in), ↔ 1.2m (4ft). \*\*\*

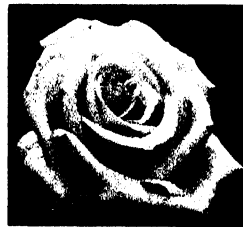
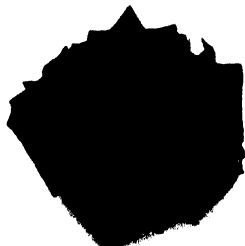
**R. 'Dupontii'** □ syn. *R. moschata* var. *nivea* (Snowbush rose). Shrub rose of upright, shrubby habit, with grey-green foliage. Cupped to flat, single, fragrant, creamy white flowers, 6cm (2½in) across, showing yellow anthers, are borne freely in midsummer. ↑ 2.2m (7ft). \*\*\*

**R. 'Dutch Gold'** □ Vigorous large-flowered bush rose producing large, dark green leaves. Rounded, fully double, scented yellow flowers, 15cm (6in) across, are borne from summer to autumn. ↑ 1.1m (3½ft), ↔ 75cm (30in). \*\*\*

**R. 'Easlea's Golden Rambler'**. Rambler with leathery, dark green leaves and loosely formed, rounded, fully double, scented flowers, 10cm (4in) across, bright yellow flecked with red, borne in summer. ↑ to 6m (20ft), ↔ 5m (15ft). \*\*\*



Rosa 'Conservation'

*Rosa ecae**Rosa eglanteria**Rosa 'Elina'**Rosa 'Elizabeth Harkness'**Rosa 'Emily Gray'**Rosa 'Empereur du Maroc'**Rosa 'Ena Harkness'**Rosa 'English Garden'**Rosa 'English Miss'**Rosa 'Ernest H. Morse'**Rosa 'Escapade'**Rosa 'Eye Paint'*

***R. ecae*** ■ Erect, wiry, suckering species rose with red stems and small, fern-like, mid-green leaves, each composed of 5–9 broadly elliptic to obovate leaflets, 4–8mm (1/8–1/4in) long. Cupped, single, musk-scented, bright yellow flowers, 2cm (3/4in) across, are produced along the stems in late spring. Liable to die-back. ↑1.5m (5ft), ↔1.2m (4ft).

Turkmenistan, Uzbekistan, Tajikistan, N.E. Afghanistan, N.W. Pakistan. \*\*\*

***R. eglanteria*** ■ ♀ syn. *R. rubiginosa* (Eglantine rose, Sweet briar). Vigorous, arching, prickly species rose with apple-scented, dark green leaves composed of 5–9 ovate leaflets, 2.5–4cm (1–1 1/2in) long. Cupped, single, rose-pink flowers, 2.5cm (1in) across, are produced in midsummer, followed by ovoid to spherical red hips in autumn. ↑ to 2.5m (8ft). Europe, N. Africa to W. Asia. \*\*\*

***R. 'E.H. Morse'*** see *R. 'Ernest H. Morse'*.

***R. 'Electron'*** see *R. 'Mullard Jubilee'*.

***R. elegantula* 'Persetosa'**, syn. *R. elegantula* f. *persetosa*, *R. farreri* f. *persetosa*. Upright species rose with wiry stems, red-bristled when young, and pale grey-green leaves, each composed of 7–11 narrowly ovate to elliptic, fern-like leaflets, 1.5cm (1/2in) long, reddening in autumn. Shallowly cupped, single, light pink flowers, 2cm (3/4in) across, are produced in summer; they are followed by ovoid, orange-red hips. ↑ to 2m (6ft). N.W. China. \*\*\*

***R. elegantula* f. *persetosa*** see *R. elegantula* 'Persetosa'.

***R. 'Elina'*** ■ ♀ syn. *R. 'Dicjana'*, *R. 'Peaudouce'*. Vigorous large-flowered bush rose with abundant dark green foliage. Rounded, fully double, scented, ivory-white flowers, 15cm (6in) across, with lemon-yellow centres, are borne freely from summer to autumn. ↑1.1m (3 1/2ft), ↔75cm (30in). \*\*\*

***R. 'Elizabeth Harkness'*** ■ Large-flowered bush rose of neat habit, with dark green leaves. High-centred to rounded, fully double, fragrant, creamy pink flowers, 12cm (5in) across, are produced from summer to autumn. ↑80cm (32in), ↔60cm (24in). \*\*\*

***R. 'Elizabeth of Glamis'***, syn. *R. 'Irish Beauty'*. Cluster-flowered bush rose producing mid-green foliage. From summer to autumn, bears well-spaced sprays of cupped, double, scented, light

orange-pink flowers, 9cm (3 1/2in) across. ↑75cm (30in), ↔60cm (24in). \*\*\*

***R. 'Emily Gray'*** ■ Semi-evergreen rambling with lax stems covered in lustrous, dark green leaves. In summer, bears small clusters of loosely formed, rounded, double, scented, butter-yellow flowers, 5cm (2in) across. ↑ to 5m (15ft), ↔3m (10ft). \*\*\*

***R. 'Empereur du Maroc'*** ■ Hybrid Perpetual rose of compact, shrubby habit, with mid-green leaves. Quartered-rosette, fully double, fragrant, maroon-crimson flowers, 8cm (3in) across, are borne freely on bowed stems in summer, sparsely in autumn. ↑1.2m (4ft), ↔1m (3ft). \*\*\*

***R. 'Empress Josephine'*** see *R. x francofurtana*.

***R. 'Ena Harkness'*** ■ Large-flowered bush rose of branching habit, with mid-green leaves. High-centred, double, fragrant, bright crimson flowers, 10cm (4in) across, are borne from summer to autumn. ↑75cm (30in), ↔60cm (24in). \*\*\*

***R. 'English Garden'*** ■ syn. *R. 'Ausbuff'*. Upright shrub rose with light green leaves and rosette-shaped, double, lightly scented flowers, 10cm (4in) across, buff yellow, paling towards the edges, borne from summer to autumn. ↑1m (3ft), ↔75cm (30in). \*\*\*

***R. 'English Miss'*** ■ Cluster-flowered bush rose of neat, spreading habit, with leathery, dark green leaves. Wide clusters of camellia-like, cupped, fully double, fragrant, pale pink flowers, 8cm (3in) across, are borne from summer to autumn. ↑75cm (30in), ↔60cm (24in). \*\*\*

***R. 'Ernest H. Morse'*** ■ syn. *R. 'E.H. Morse'*. Large-flowered bush rose with semi-glossy, dark green foliage. High-centred, double, very fragrant crimson flowers, 12cm (5in) across, are freely produced from summer to autumn. ↑75cm (30in), ↔60cm (24in). \*\*\*

***R. 'Escapade'*** ■ ♀ syn. *R. 'Harpade'*. Vigorous cluster-flowered bush rose of dense habit, with abundant light green foliage. Showy, cupped, semi-double, scented, pink-violet flowers, 8cm (3in) across, each with a white eye, are borne freely from summer to autumn. ↑75cm (30in), ↔60cm (24in). \*\*\*

***R. 'Esmeralda'*** see *R. 'Keepsake'*.

***R. 'Essex'***, syn. *R. 'Pink Cover'*, *R. 'Poulnoz'*. Ground-cover rose of dense

habit, with dark green leaves. From summer to autumn, clusters of many small, cupped, single, light reddish pink flowers, 2.5cm (1in) across, with whitish pink centres, are borne freely along the stems. ↑60cm (24in), ↔1.2m (4ft). \*\*\*

***R. 'Euphrates'***, syn. *R. 'Harunique'*. Prickly, hummock-forming shrub rose with light green leaves composed of narrow leaflets. In summer, produces clusters of numerous cupped, single, salmon- to rose-pink flowers, 2cm (3/4in) across, with scarlet at the petal bases. ↑60cm (24in), ↔75cm (30in). \*\*\*

***R. 'Evelyn Fison'***, syn. *R. 'Irish Wonder'*. Cluster-flowered bush rose with sparse, glossy, dark green foliage. Many neatly formed, rounded, double, bright deep red flowers, 6cm (2 1/2in) across, are borne from summer to autumn. ↑70cm (28in), ↔60cm (24in). \*\*\*

***R. 'Excelsa'***, syn. *R. 'Red Dorothy Perkins'*. Lax rambling with abundant shiny, mid-green leaves. In summer, bears dense clusters of rosette-shaped, fully double crimson flowers, 2cm (3/4in) across. Prone to mildew. ↑4m (12ft), ↔3m (10ft). \*\*\*

***R. 'Eye Paint'*** ■ syn. *R. 'Maceye'*, *R. 'Tapis Persan'*. Vigorous cluster-flowered bush or shrub rose with dense, dark green foliage. Large clusters of cupped to flat, single scarlet flowers, 5cm (2in) across, with white eyes, are borne from summer to autumn. ↑1.1m (3 1/2ft), ↔75cm (30in). \*\*\*

***R. 'Fairyland'***, syn. *R. 'Harlayalong'*.

Polyantha shrub rose of vigorous, arching, spreading habit, with small, dark green leaves. Large sprays of many rosette-shaped, double, scented, pale pink flowers, 4cm (1 1/2in) across, are borne from summer to autumn. ↑75cm (30in), ↔1.2m (4ft). \*\*\*

***R. 'Fairy Lights'*** see *R. 'Avon'*.

***R. 'Fanny Bias'*** see *R. 'Gloire de France'*.

***R. 'Fantin-Latour'*** ■ ♀ Vigorous Centifolia rose of open habit, producing broad, dark green leaves. Cupped to flat, fully double, fragrant, light pink flowers, 10cm (4in) across, each with a green button eye, are borne in summer. ↑1.5m (5ft), ↔1.2m (4ft). \*\*\*

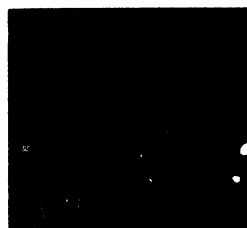
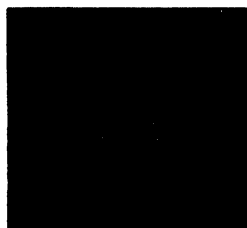
***R. farreri* f. *persetosa*** see *R. elegantula* 'Persetosa'.

***R. fedtschenkoana***. Very vigorous, suckering species rose with arching, bristly stems and pale grey-green leaves with 5–9 elliptic to obovate leaflets, 2.5cm (1in) long. Single, flat white flowers, 4.5cm (1 1/4in) across, with yellow stamens, are borne in clusters of up to 4 blooms, mainly in summer; they are followed by pear-shaped, orange-red hips. ↑ to 2.2m (7ft). C. Asia. \*\*\*

***R. 'Fée des Neiges'*** see *R. 'Iceberg'*.

***R. 'Felicia'*** ■ ♀ Vigorous shrub rose with abundant dark green leaves. Large clusters of cupped, double, scented, light pink flowers, 8cm (3in) across, flushed yellow-apricot, are borne from summer to autumn. ↑1.5m (5ft), ↔2.2m (7ft). \*\*\*

*Rosa 'Ferdie'*

*Rosa* 'Fantin-Latour'*Rosa* 'Felicia'*Rosa* 'Félicité Parmentier'*Rosa* 'Félicité Perpétue'*Rosa* 'Fellowship'*Rosa* 'Ferdinand Pichard'*Rosa* 'Fire Princess'*Rosa* 'Flower Carpet'*Rosa foetida**Rosa foetida* 'Persiana'*Rosa* 'Fragrant Cloud'*Rosa* 'François Juranville'

**R. 'Félicité et Perpétue'** see *R. 'Félicité Perpétue'*.

**R. 'Félicité Parmentier'** ■♀ Vigorous Alba rose of upright, compact habit, producing abundant grey-green leaves. In midsummer, bears quartered-rossette, fully double, fragrant, cream to pale pink flowers, 6cm (2½in) across. ↑ 1.3m (4½ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Félicité Perpétue'** ■♀ syn. *R. 'Climbing Little White Pet'*, *R. 'Félicité et Perpétue'*. Sempervirens rambler rose with long, slender stems clothed in dense, dark green leaves. Rosette-shaped, fully double, pale pink to white flowers, 4cm (1½in) across, are borne freely in summer. ↑ to 5m (15ft), ↔ to 4m (12ft). \*\*\*

**R. 'Fellowship'** ■ syn. *R. 'Harwelcome'*. Vigorous cluster-flowered bush rose with even growth and abundant glossy, mid-green foliage. Well-spaced clusters of cupped, double, scented, deep orange flowers, 9cm (3½in) across, are borne freely from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Ferdi'** see *R. 'Ferdy'*.

**R. 'Ferdinand Pichard'** ■♀ Upright, compact Hybrid Perpetual rose with smooth stems and long, light green leaves. Cupped, double, fragrant, pale pink flowers, 8cm (3in) across, with pink and red stripes, are produced from summer to autumn. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Ferdy'** ■ syn. *R. 'Ferdi'*, *R. 'Keitoly'*. Cluster-flowered shrub rose of uneven, spiky growth, with fine-cut, mid-green leaves. Dense clusters of cupped to flat, double, bright pink flowers, 2.5cm (1in) across, wreath the stems from summer to autumn. ↑ 80cm (32in), ↔ 1.2m (4ft). \*\*\*

**R. 'Festival'**, syn. *R. 'Kordialo'*. Compact, dwarf cluster-flowered bush rose with abundant dark green leaves. From summer to autumn, bears dense clusters of rounded, semi-double, crimson-scarlet flowers, 4.5cm (1¾in) across, with a silvery white reverse to the petals. ↑ 60cm (24in), ↔ 50cm (20in). \*\*\*

**R. filipes 'Kiftsgate'** ■♀ syn. *R. 'Kiftsgate'*. Rampant climber producing abundant glossy, light green leaves, each composed of 5–7 narrowly elliptic to narrowly ovate leaflets, 5–8cm (2–3in) long. Large clusters of cupped, single, fragrant, creamy white flowers, 2.5cm

(1in) across, are borne in late summer. ↑ to 10m (30ft), ↔ 6m (20ft). \*\*\*

**R. 'Fiona'**, syn. *R. 'Meibeluxen'*. Cluster-flowered shrub rose with a wide, spreading habit and shiny dark green leaves. Large clusters of cupped to flat, double red flowers, 6cm (2½in) across, are borne from summer to autumn. ↑ 80cm (32in), ↔ 1.2m (4ft). \*\*\*

**R. 'Fire Princess'** ■ Upright miniature bush rose with glossy, mid-green leaves. Rosette-shaped, fully double scarlet flowers, 4cm (1½in) across, are borne from summer to autumn. ↑ 45cm (18in), ↔ 30cm (12in). \*\*\*

**R. 'First Class'** see *R. 'Class Act'*.

**R. 'First Prize'**. Large-flowered bush rose of vigorous, spreading habit, with leathery, dark green foliage. High-centred, double, scented, two-toned pink flowers, 13cm (5in) across, are borne from summer to autumn. ↑ 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**R. 'Flower Carpet'** ■♀ syn. *R. 'Heidetraum'*, *R. 'Noatraum'*. Vigorous ground-cover rose with abundant, shiny, bright green leaves. Showy clusters of

cupped, double, deep rose-pink flowers, 5cm (2in) across, are borne freely along the stems from summer to autumn. ↑ 75cm (30in), ↔ 1.2m (4ft). \*\*\*

**R. foetida** ■ (Austrian briar, Austrian yellow rose). Species rose of upright, open habit, with arching, brownish green stems and pale green leaves, each comprised of 5–7 elliptic to obovate leaflets, 2–4cm (¾–1½in) long. Cupped, single, pungent, bright yellow flowers, 5cm (2in) across, are borne in early summer; the flowers are followed by spherical red hips. Susceptible to die-back in hard winters. ↑ ↔ 1.5m (5ft). W. to C. Asia. \*\*\*

**'Bicolor'**, syn. *R. 'Rose Capucine'* (Austrian copper rose), a sport of *R. foetida*, has vivid nasturtium-orange flowers with a yellow reverse to the petals. **'Persiana'** ■ syn. var. *persiana* (Persian yellow rose) has gaunt, arching growth, small, fern-like leaves, and fully double yellow flowers, 6cm (2½in) across; ↔ 1.2m (4ft).

**R. 'Fontaine'** see *R. 'Fountain'*.

**R. 'Fountain'**, syn. *R. 'Fontaine'*, *R. 'Red Prince'*. Vigorous cluster-flowered

shrub rose with strong, upright growth and glossy, dark green leaves. From summer to autumn, bears large clusters of cupped, double, scented, bright crimson flowers, 12cm (5in) across. ↑ 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Fragrant Cloud'** ■ syn. *R. 'Tanellis'*. Large-flowered bush rose with branching growth and abundant, dark green leaves. Rounded, double, intensely fragrant, dusky scarlet flowers, 11cm (4½in) across, are borne freely from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Fragrant Delight'**. Cluster-flowered bush rose of willowy, uneven habit, with abundant reddish green foliage. Freely bears large sprays of urn-shaped, double, scented, salmon-pink flowers, 8cm (3in) across, from summer to autumn. ↑ 1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Fragrant Dream'**, syn. *R. 'Dicodour'*. Upright, branching large-flowered bush rose producing dark green foliage. High-centred to rounded, double, fragrant, light apricot flowers, 12cm (5in) across, are borne from summer to autumn. ↑ 80cm (32in), ↔ 75cm (30in). \*\*\*

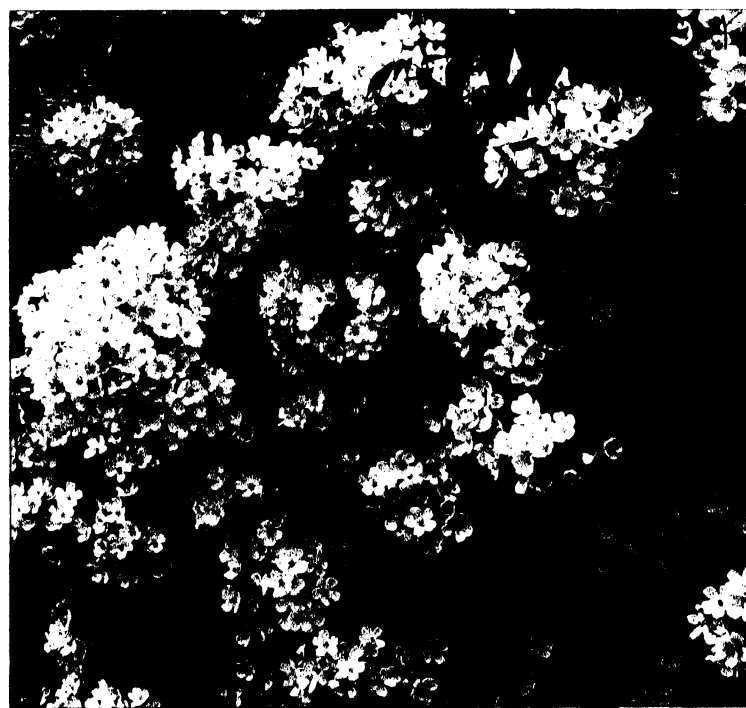
**R. 'Fragrant Surprise'** see *R. 'Samaritan'*.

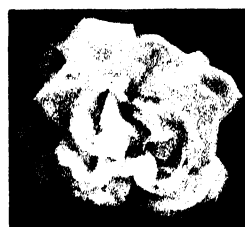
**R. 'Francine Austin'**, syn. *R. 'Ausram'*. Cluster-flowered shrub rose of arching, open habit, with long, light green leaves. Small sprays of many pompon, double, scented white flowers, 4cm (1½in) across, are borne on bowed stems from summer to autumn. ↑ 1m (3ft), ↔ 1.2m (4ft). \*\*\*

**R. × francofurtana** ♀ syn. *R. 'Empress Josephine'*. Bushy, wide-spreading Gallica rose with smooth stems and greyish green leaves composed of 5–7 broadly ovate leaflets, to 5cm (2in) long. Loosely formed, rounded, semi-double flowers, 9cm (3½in) across, with wavy-margined, bright pink petals and deeper pink veining, open in summer, followed by inversely cone-shaped red hips. ↑ ↔ 1.2m (4ft). Garden origin. \*\*\*

**R. 'François Juranville'** ■♀ Rambler with abundant, shiny, dark green leaves and clusters of rosette-shaped, fully double, apple-scented, light salmon-pink flowers, 8cm (3in) across, borne in summer. ↑ 6m (20ft), ↔ 5m (15ft). \*\*\*

**R. 'Frau Dagmar Hartopp'** see *R. 'Fru Dagmar Hastrup'*.

*Rosa filipes* 'Kiftsgate'



Rosa 'Frau Karl Druschki'



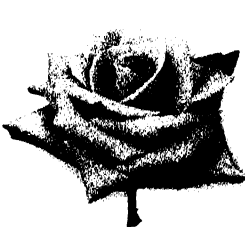
Rosa 'Freedom'



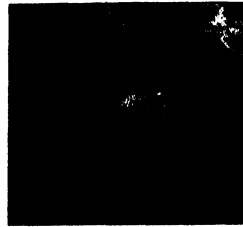
Rosa 'Fru Dagmar Hastrup'



Rosa 'Frühlingsmorgen'



Rosa 'Fulton Mackay'



Rosa gallica var. officinalis

Rosa gallica var. officinalis  
'Versicolor'

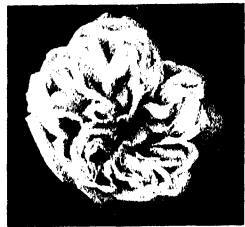
Rosa 'Gentle Touch'



Rosa glauca



Rosa 'Glenfiddich'



Rosa 'Gloire de Dijon'



Rosa 'Golden Chersonese'

**R. 'Frau Karl Druschki'** ■ syn. *R. 'Reine des Neiges'*, *R. 'Snow Queen'*, *R. 'White American Beauty'*. Vigorous Hybrid Perpetual rose with strong, arching stems, mid-green leaves, and high-centred, fully double, milk-white flowers, 11cm (4½in) across, borne from summer to autumn. † 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Fred Loads'** ♀ Vigorous cluster-flowered bush rose of gaunt habit, producing dark green leaves. Many showy, cupped to flat, semi-double, vermilion-orange flowers, 9cm (3½in) across, are borne from summer to autumn. † 2m (6ft), ↔ 1m (3ft). \*\*\*

**R. 'Freedom'** ■ ♀ syn. *R. 'Dicjem'*. Large-flowered bush rose of uneven growth, with many shoots and abundant glossy, mid-green foliage. Rounded, double, stiff-petalled, bright yellow flowers, 9cm (3½in) across, are borne freely from summer to autumn. † 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'French Lace'**, syn. *R. 'Jaclace'*. Upright cluster-flowered bush rose with well-branched growth and mid-green foliage. From summer to autumn, bears high-centred, fully double, scented white flowers, 9cm (3½in) across. † 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Friesia'** see *R. 'Korresia'*.

**R. 'Fru Dagmar Hastrup'** ■ ♀ syn. *R. 'Frau Dagmar Hartopp'*. Sturdy Rugosa rose of spreading habit, producing leathery mid-green leaves. Shallowly cupped, single, clove-scented, light pink flowers, 9cm (3½in) across, are borne mainly in summer, followed by tomato-shaped, dark red hips in autumn. † 1m (3ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Frühlingsgold'** ♀ syn. *R. 'Spring Gold'*. Vigorous shrub rose with strong, arching branches, covered in downy red bristles when young, and with toothed, matt, light green leaves. Cupped, semi-double, scented, pale yellow flowers, 10cm (4in) across, with golden stamens, are borne mainly in early summer. † 2.5m (8ft), ↔ 2.2m (7ft). \*\*\*

**R. 'Frühlingsmorgen'** ■ syn. *R. 'Spring Morning'*. Open, free-branching shrub rose with greyish green leaves. Shallowly cupped, single, hay-scented pink flowers, 12cm (5in) across, with primrose-yellow centres and maroon stamens, are produced in early summer. † 2m (6ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Fulton Mackay'** ■ syn. *R. 'Cocdana'*. Large-flowered bush rose with handsome, glossy, mid-green foliage. High-centred, double, scented, golden apricot, pink-flushed flowers, 12cm (5in) across, are borne from summer to autumn. † 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Fyvie Castle'**, syn. *R. 'Amberlight'*, *R. 'Cochamber'*. Large-flowered bush rose of neat, branching habit, with mid-green foliage. Rounded, fully double, scented flowers, 13cm (5in) across, apricot-pink flushed amber, are borne from summer to autumn. † 60cm (24in). \*\*\*

**R. gallica var. officinalis** ■ ♀ syn. *R. officinalis* (Apothecary's rose, Crimson damask rose, Provins rose, Red rose of Lancaster). Species rose of neat, rounded habit, producing rough, dark green leaves with 3-5, rarely 7, broadly elliptic to almost rounded leaflets, 2.5-8cm (1-3in) long. Cupped to flat, semi-double, scented, pinkish red flowers, 8cm (3in) across, are borne singly or in clusters of 2-4 in summer, followed by spherical to ellipsoid, orange-red hips. † 80cm (32in), ↔ 1m (3ft). \*\*\*

**'Versicolor'** ■ ♀ (*Rosa mundi* rose) is compact, with pale pink flowers, striped reddish pink.

**R. 'Garden Party'**. Vigorous large-flowered bush rose with mid-green leaves. From summer to autumn, bears high-centred, double, fragrant white flowers, 12cm (5in) across, margined pale pink. † 1.2m (4ft), ↔ 80cm (32in). \*\*\*

**R. 'Garnette'**, syn. *R. 'Garnette Red'*. Cluster-flowered bush rose with dark green leaves and tight clusters of cupped to flat, fully double, firm-petalled, garnet-red flowers, 6cm (2½in) across, borne from summer to autumn. † 1m (3ft), ↔ 45cm (18in). \*\*\*

**R. 'Garnette Red'** see *R. 'Garnette'*.

**R. 'Gentle Touch'** ■ ♀ syn. *R. 'Dielulu'*. Dwarf cluster-flowered bush rose of neat habit, producing dark green leaves. Sprays of urn-shaped, semi-double, pale salmon-pink flowers, 5cm (2in) across, are borne close to the foliage from summer to autumn. † 50cm (20in), ↔ 40cm (16in). \*\*\*

**R. 'Gerbe d'Or'** see *R. 'Casino'*.

**R. 'Gertrude Jekyll'** ♀ syn. *R. 'Ausbord'*. Lanky large-flowered shrub

rose with greyish green leaves. Cupped, double, fragrant, deep pink flowers, 10cm (4in) across, with infolded petals, are borne from summer to autumn. † 1.5m (5ft), ↔ 1m (3ft). \*\*\*

**R. 'Gingernut'**, syn. *R. 'Cocrazy'*. Dwarf cluster-flowered bush rose of vigorous, short, spreading habit, with glossy, mid-green leaves. From summer to autumn, freely bears cupped, double flowers, 6cm (2½in) across, bronze-orange, with reddish tints on the reverse of the petals. † 40cm (16in), ↔ 45cm (18in). \*\*\*

**R. 'Gioia'** see *R. 'Peace'*.

**R. 'Gipsy Boy'** see *R. 'Zigeunerknabe'*.

**R. glauca** ■ ♀ syn. *R. rubrifolia*. Vigorous, arching species rose with reddish green stems and greyish purple leaves, each composed of 5-9 ovate to narrowly elliptic leaflets, 2.5-4cm (1-1½in) long. Flat, single, cerise-pink flowers, 4cm (1½in) across, with paler pink centres and gold stamens, are borne in small clusters in summer; they are followed by many spherical red hips

in autumn. † 2m (6ft), ↔ 1.5m (5ft). Mountains of C. and S. Europe. \*\*\*

**R. 'Glenfiddich'** ■ Cluster-flowered bush rose with glossy, dark green leaves. Produces clusters of urn-shaped, double, scented, amber to yellow flowers, 10cm (4in) across, from summer to autumn. † 80cm (32in), ↔ 60cm (24in). \*\*\*

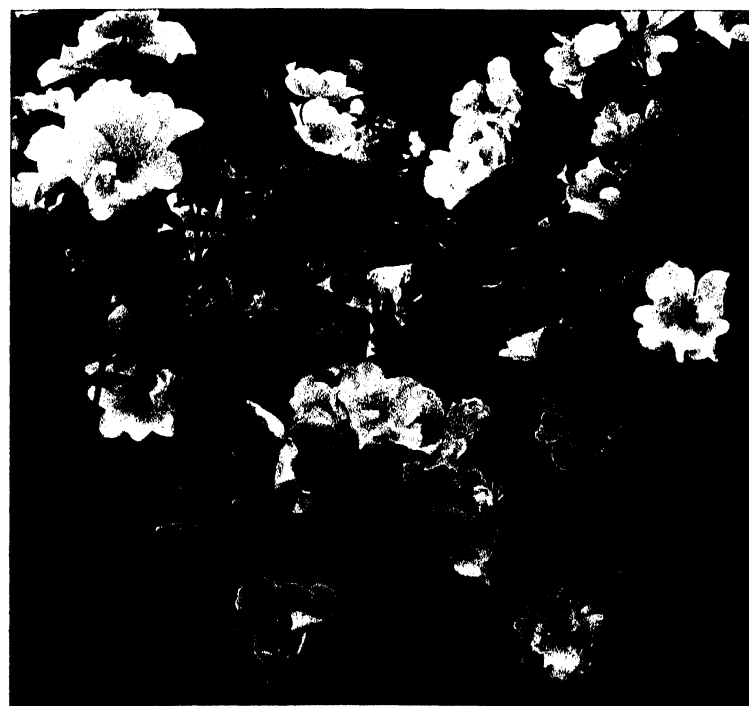
**R. 'Gloire de Dijon'** ■ ♀ (Old glory rose). Vigorous, stiffly branching Noisette or climbing Tea rose with glossy, dark green leaves. Quartered-rosette, fully double, scented, creamy buff flowers, 10cm (4in) across, are borne from summer to autumn. † to 5m (15ft), ↔ 4m (12ft). \*\*\*

**R. 'Gloire de France'**, syn. *R. 'Fanny Bias'*. Lax Gallica rose with crisp, dark green foliage. Quartered-rosette, fully double, fragrant, lilac-pink flowers, 8cm (3in) across, are borne freely in summer. † 1m (3ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Gloria Dei'** see *R. 'Peace'*.

**R. 'Golden Cherry'** see *R. laevigata*.

**R. 'Golden Chersonese'** ■ syn. *R. 'Hilgold'*. Vigorous, upright shrub rose



Rosa 'Golden Wings'



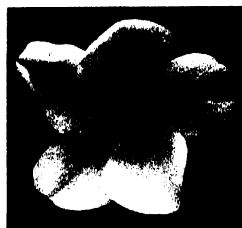
Rosa 'Golden Showers'



Rosa 'Goldfinch'



Rosa 'Graham Thomas'



Rosa 'Grandiflora'



Rosa 'Grandpa Dickson'



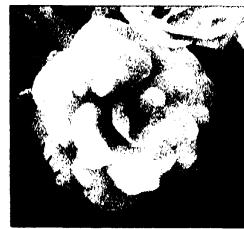
Rosa 'Great Maiden's Blush'



Rosa 'Grouse'



Rosa 'Gruss an Aachen'



Rosa 'Hakuun'



Rosa 'Handel'



Rosa 'Hannah Gordon'



Rosa 'Harry Wheatcroft'

with arching, reddish green stems and fern-like, mid-green leaves. Cupped to flat, single, bright yellow flowers, 4cm (1½in) across, are borne along the branches in early summer. † 2.2m (7ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Golden Rambler'** see *R. 'Alister Stella Gray'*.

**R. 'Golden Showers'** ■♀ Stiff, upright climber with glossy, dark green leaves. Numerous cupped, double, fragrant, clear yellow flowers, 10cm (4in) across, are borne from summer to autumn. † to 3m (10ft), ↔ 2m (6ft). \*\*\*

**R. 'Golden Sunblaze'** see *R. 'Rise 'n' Shine'*.

**R. 'Golden Wings'** ■♀ Dense, spreading shrub rose with many prickly stems and light green leaves. Shallowly cupped, single, scented, pale yellow flowers, 12cm (5in) across, are borne from summer to autumn. † 1.1m (3½ft), ↔ 1.3m (4½ft). \*\*\*

**R. 'Goldfinch'** ■ Vigorous, arching rambler producing abundant light green leaves. Masses of rosette-shaped, double, scented flowers, 4cm (1½in) across, deep yellow fading to creamy white, are borne in summer. † 2.5m (8ft), ↔ 2m (6ft). \*\*\*

**R. 'Gold Medal'**, syn. *R. 'Aroyueli'*. Upright, vigorous large-flowered bush rose with dark green leaves. High-centred, fully double, deep yellow flowers, 9cm (3½in) across, with a light, fruity fragrance, are borne from summer to autumn. † 1.1m (3½ft), ↔ 70cm (28in). \*\*\*

**R. 'Gold of Ophir'** see *R. x odorata 'Pseudindica'*.

**R. 'Goldsmith'** see *R. 'Simba'*.

**R. 'Gourmet Popcorn'**, syn. *R. 'Weopop'*. Vigorous, rounded miniature bush rose with dark green leaves. From summer to autumn, bears clusters of numerous cupped to flat, semi-double, honey-scented white flowers, 2cm (¾in) across. † ↔ 40cm (16in). \*\*\*

**R. 'Graham Thomas'** ■♀ syn. *R. 'Ausmas'*. Vigorous shrub rose of lax, arching habit, with bright green leaves. Quartered-rosette to cupped, fully double, scented yellow flowers, 11cm (4½in) across, are borne from summer to autumn. † 1.2m (4ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Granada'**, syn. *R. 'Donatella'*. Vigorous large-flowered bush rose

with leathery, dark green leaves. High-centred, double, slightly fragrant flowers, 11cm (4½in) across, blended rose-pink, red, and lemon-yellow, are borne from summer to autumn. † 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**R. 'Grandiflora'** ■ syn. *R. pimpinellifolia* var. *altaica*. Vigorous Scots rose of upright habit, with twiggly stems and dark green leaves. Cupped to flat, single, scented, creamy white flowers, 6cm (2½in) across, with yellow stamens are borne in early summer. † to 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Grandpa Dickson'** ■ syn. *R. 'Irish Gold'*. Large-flowered bush rose of neat habit, with glossy, light green leaves. High-centred, fully double, primrose-yellow flowers, 18cm (7in) across, are borne from summer to autumn. † 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Great Maiden's Blush'** ■ syn. *R. 'Cuisse de Nymphe'*, *R. 'La Séduisante'*. Vigorous Alba rose with strong, arching stems and grey-green leaves. Cupped, fully double, very fragrant, pinkish

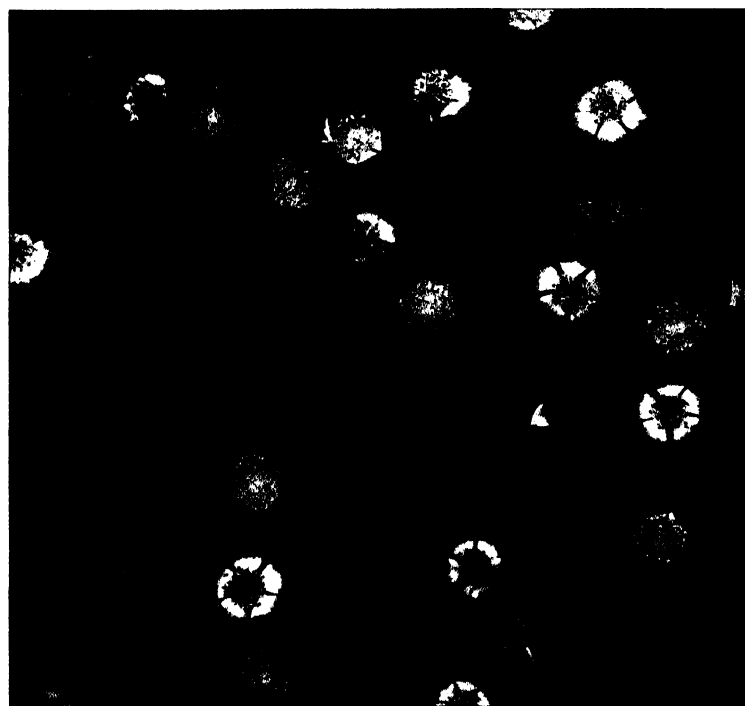
white flowers, 8cm (3in) across, with infolded petals, are borne freely in midsummer. † 2m (6ft), ↔ 1.3m (4½ft). \*\*\*

**R. 'Grouse'** ■ syn. *R. 'Immense'*, *R. 'Korinro'*, *R. 'Lac Rose'*. Very vigorous, trailing ground-cover rose with shiny, dark green leaves. Flat, single, scented, light pink to near white flowers, 4cm (1½in) across, are borne close to the stems in summer. † 60cm (24in), ↔ 3m (10ft). \*\*\*

**R. 'Gruss an Aachen'** ■ Erect cluster-flowered bush rose with leathery, dark green foliage. Rounded, fully double, scented, pale pink to creamy white flowers, 8cm (3in) across, are borne from summer to autumn. † ↔ 45cm (18in). \*\*\*

**R. 'Guinée'**. Vigorous, stiffly branched climber producing leathery, dark green leaves. In summer, bears cupped, fully double, fragrant, blackish red flowers, 11cm (4½in) across. † 5m (15ft), ↔ 2.2m (7ft). \*\*\*

**R. 'Guletta'** see *R. 'Rugul'*.



Rosa 'Hampshire'

**R. 'Hakuun'** ■ Dwarf cluster-flowered bush rose of low, compact habit, with light green foliage. Masses of high-centred to rounded, semi-double, buff to creamy white flowers, 6cm (2½in) across, open from summer to autumn. † 40cm (16in), ↔ 45cm (18in). \*\*\*

**R. 'Hampshire'** ■ syn. *R. 'Korhamp'*. Prostrate ground-cover rose producing glossy, mid-green leaves. From summer to autumn, bears clusters of many flat, single scarlet flowers, 5cm (2in) across, with yellow centres fading to white. † 30cm (12in), ↔ 75cm (30in). \*\*\*

**R. 'Handel'** ■♀ Climber of stiff, erect habit, with glossy, dark green leaves. Open clusters of urn-shaped, double, lightly scented cream flowers, 8cm (3in) across, with pinkish red margins, are borne from summer to autumn. † 3m (10ft), ↔ 2.2m (7ft). \*\*\*

**R. 'Hannah Gordon'** ■ syn. *R. 'Korweiso'*, *R. 'Raspberry Ice'*. Cluster-flowered bush rose of spreading, open habit, with dark green leaves. From summer to autumn, bears sprays of cupped, double, pale pink flowers, 8cm (3in) across, margined reddish pink. † 80cm (32in), ↔ 65cm (26in). \*\*\*

**R. 'Harisonii'** see *R. x harisonii 'Harison's Yellow'*.

**R. x harisonii 'Harison's Yellow'** ♀

syn. *R. 'Harisonii'*. Suckering Scots rose of gaunt habit, with prickly, dark brown stems and small, fern-like, mid-green leaves with 5–7 oval leaflets, 2cm (¾in) long. In summer, bears cupped, semi-double, bright deep yellow flowers, 5cm (2in) across, on short stems, followed by spherical-oblong, blackish red hips. † 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**'Williams' Double Yellow'**, syn. *R. 'Williams' Double Yellow'*, has a suckering, branching habit, and bears loosely double, fragrant flowers.

**R. 'Harpade'** see *R. 'Escapade'*.

**R. 'Harry Wheatcroft'** ■ syn. *R. 'Caribia'*. Vigorous large-flowered bush rose with glossy, reddish green leaves. Bears high-centred, double, scarlet-red flowers, 12cm (5in) across, with yellow-striped petals, from summer to autumn. † 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Harvest Fayre'**, syn. *R. 'Dicnorth'*. Cluster-flowered bush rose with uneven growth and yellowish green leaves. Showy, rounded, double, apricot-orange flowers, 6cm (2½in) across, are borne

*Rosa* 'Henri Martin'*Rosa* 'Heritage'*Rosa* 'Hermosa'*Rosa* 'Hertfordshire'*Rosa* 'High Hopes'*Rosa* 'High Sheriff'*Rosa* 'Hula Girl'*Rosa* 'Iceberg'*Rosa* 'Iced Ginger'*Rosa* 'Ingrid Bergman'*Rosa* 'Intrigue'*Rosa* 'Invincible'

freely from summer to autumn. †75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Heart Throb'** see *R.* 'Paul Shirville'.

**R. 'Heckenzauber'** see *R.* 'Sexy Rexy'.

**R. 'Heidekönigin'** see *R.* 'Pheasant'.

**R. 'Heideröslin'** see *R.* 'Nozomi'.

**R. 'Heidetraum'** see *R.* 'Flower Carpet'.

**R. 'Hello'**, syn. *R.* 'Cochello'. Dwarf

cluster-flowered bush rose with dense, mid-green foliage. Numerous cupped to flat, single crimson flowers, 5cm (2in) across, with white eyes, are borne freely from summer to autumn. †→ 45cm (18in). \*\*\*

**R. 'Helmuth Schmidt'** see *R.* 'Simba'.

**R. 'Henri Martin'** [M] ♀ (Red moss rose).

Vigorous Moss rose of arching growth, with rough, dark green leaves. Rounded, double, scented crimson flowers, 8cm (3in) across, with light green moss on the stems and sepals, open in summer. † to 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Heritage'** [M] syn. *R.* 'Ausblush'.

Vigorous shrub rose with dark green leaves. Open clusters of cupped, fully double, lemon-scented, light pink flowers, 11cm (4½in) across, with infolded petals, are borne from summer to autumn. †→ 1.2m (4ft). \*\*\*

**R. 'Hermosa'** [M] syn. *R.* 'Mélanie

Lemaire', *R.* 'Mme Neumann'. Upright,

bushy China rose with greyish green leaves, and rounded, double, scented, rose-pink flowers, 7cm (3in) across, borne freely from summer to autumn. † 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Hertfordshire'** [M] syn. *R.*

'Kortney'. Ground-cover rose of

compact, uneven, spiky habit, with

dense, bright green leaves. Flat, single,

carmine-pink flowers, 4.5cm (1½in)

across, with paler pink centres, are borne

freely in large clusters on short stems,

from summer to autumn. † 45cm

(18in), ↔ 1m (3ft). \*\*\*

**R. 'Hiawatha'**. Vigorous, spreading

rambler with leathery, semi-glossy, dark

green foliage. In summer, bears large

clusters of cupped, single crimson

flowers, 4cm (1½in) across, with white

eyes. † 5m (15ft), ↔ 4m (12ft). \*\*\*

**R. 'Highdownensis'** ♀ syn. *R.* *moyesii*

'Highdownensis'. Vigorous shrub rose

with dense growth and mid-green

leaves, reddish green when young. Flat,

single, deep pink flowers, 5cm (2in)

across, with yellow stamens, borne close

to the branches in summer, are followed

by large, flask-shaped scarlet hips. † 3m

(10ft), ↔ 2m (6ft). \*\*\*

**R. 'High Hopes'** [M] syn. *R.* 'Haryup'.

Stiff, vigorous, arching climber with

glossy, dark green leaves. Urn-shaped

to rounded, double, scented, light rose-

pink flowers, 8cm (3in) across, are borne

freely from summer to autumn. † 4m

(12ft), ↔ 2.5m (8ft). \*\*\*

**R. 'High Sheriff'** [M] syn. *R.*

'Harwellington'. Tall, free-branching,

vigorous large-flowered bush rose with

glossy, mid-green foliage. From summer

to autumn, bears high-centred, double,

peach-orange flowers, 10cm (4in) across,

red on the reverse of the petals. † 1.2m

(4ft), ↔ 70cm (28in). \*\*\*

**R. 'Hilgold'** see *R.* 'Golden Chersonese'.

**R. 'Hotline'**, syn. *R.* 'Aromikeh'. Fast-

growing, compact miniature bush rose

with light mossing and mid-green leaves.

High-centred to cupped, semi-double,

mid-red flowers, 4cm (1½in) across, are

borne from summer to autumn. † 45cm

(18in), ↔ 35cm (14in). \*\*\*

**R. 'Hugh Dickson'**. Vigorous Hybrid

Perpetual rose with lanky, arching,

prickly stems and rough, dark green

leaves. Rounded, fully double, fragrant

crimson flowers, 10cm (4in) across, are

borne from summer to autumn. † 2.5m

(8ft), ↔ 1.5m (5ft), trained against a

support; † 1.5m (5ft), ↔ 2.5m (8ft),

if pegged down. \*\*\*

**R. hugonis** see *R. xanthina* f. *hugonis*.

**R. 'Hula Girl'** [M] Miniature bush rose

of neat, upright habit, with semi-glossy,

mid-green foliage. Urn-shaped, fully

double, lightly scented, pale orange-pink

flowers, 3cm (1¼in) across, are borne

from summer to autumn. † 50cm

(20in), ↔ 30cm (12in). \*\*\*

**R. 'Iceberg'** [M] ♀ syn. *R.* 'Fée des

Neiges', *R.* 'Korbin', *R.* 'Schneewittchen'.

Vigorous cluster-flowered bush rose of

rounded habit, with abundant light

green foliage. Large clusters of many

cupped, double, creamy to pure white

flowers, 7cm (3in) across, are borne

freely from summer to autumn. † 80cm

(32in), ↔ 65cm (26in). \*\*\*

**R. 'Iced Ginger'** [M] Cluster-flowered

bush rose of lanky habit, with sparse,

light green foliage. High-centred, fully

double, buff to copper-pink flowers,

11cm (4½in) across, are borne from

summer to autumn. † 1m (3ft), ↔ 70cm

(28in). \*\*\*

**R. 'Immensee'** see *R.* 'Grouse'.

**R. 'Incarnata'** see *R.* 'Maiden's Blush'.

**R. 'Indian Summer'**, syn. *R.*

'Peaperfume'. Large-flowered bush rose

of compact habit and uneven growth,

with dark green foliage. Rounded, fully

double, fragrant, creamy orange flowers,

11cm (4½in) across, are borne from

summer to autumn. † 55cm (22in),

↔ 60cm (24in). \*\*\*

**R. 'Ingrid Bergman'** [M] ♀ syn. *R.*

'Poulman'. Large-flowered bush rose

of branching habit, with leathery, dark

green leaves. High-centred, fully double,

dark red flowers, 11cm (4½in) across,

are produced from summer to autumn.

† 80cm (32in), ↔ 65cm (26in). \*\*\*

**R. 'Integrity'** see *R.* 'Savoy Hotel'.

**R. 'Intrigue'** [M] syn. *R.* 'Lavaglut'.

Vigorous, cluster-flowered bush rose

of compact habit, with glossy, purplish

green leaves. Rounded, double, dark red

flowers, 7cm (3in) across, are borne in

large clusters from summer to autumn.

† 70cm (28in), ↔ 60cm (24in). \*\*\*

**R. 'Invincible'** [M] syn. *R.* 'Runatru'.

Cluster-flowered bush rose of neat habit,

with glossy, dark green foliage. Cupped,

double, bright crimson flowers, 9cm

(3½in) across, are borne in open clusters

from summer to autumn. † 70cm (28in),

↔ 50cm (20in). \*\*\*

**R. 'Irish Beauty'** see *R.* 'Elizabeth of

Glamis'.

**R. 'Irish Gold'** see *R.* 'Grandpa

Dickson'.

**R. 'Irish Wonder'** see *R.* 'Evelyn Fison'.

**R. 'Ispahan'** [M] ♀ syn. *R.* 'Pompon des

Princes', *R.* 'Rose d'Isfahan'. Vigorous

Damask rose with abundant grey-green

foliage. Cupped, double, fragrant, clear

pink flowers, 8cm (3in) across, are borne

throughout summer. † 1.5m (5ft),

↔ 1.2m (4ft). \*\*\*

**R. 'Jack Dayson'** see *R.* 'Perfect

Moment'.

**R. 'Jacqueline du Pré'** [M] ♀ Vigorous,

arching shrub rose with shiny, dark

green leaves. Cupped, semi-double,

musk-scented ivory flowers, 10cm (4in)

across, with scalloped petals and red

stamens, are borne from early summer

to autumn. † 1.5m (5ft), ↔ 1.2m (4ft).

\*\*\*

**R. 'Jacques Cartier'** see *R.* 'Marchesa

Boccella'.

**R. 'Jaune Desprez'** see *R.* 'Desprez à

Fleur Jaune'.

**R. 'Jeanne Lajoie'**. Miniature climber

of bushy habit, producing glossy, dark

green leaves and high-centred, fully

double, lavender-pink flowers, 4.5cm

(1½in) across, from summer to autumn.

† to 2m (6ft) on a support, ↔ 70cm

(28in). \*\*\*

**R. 'Jenny Duval'** see *R.* 'Président de

Sèze'.

**R. 'John Cabot'** [M] Vigorous shrub rose

producing abundant light green leaves.

Clusters of cupped, double, scented

magenta flowers, 6cm (2½in) across, are

borne from summer to autumn. † 1.5m

(5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'John Waterer'**. Vigorous large-

flowered bush rose producing deep

green leaves. Bears long-petalled, high-

centred, fully double, scented, dark

crimson flowers, 10cm (4in) across,

from summer to autumn. † 1.1m (3½ft),

↔ 70cm (28in). \*\*\*

**R. 'Josephine Bruce'**. Large-flowered

bush rose with short, splayed growth

and dark green foliage. From summer

to autumn, bears high-centred, double,

fragrant, rich blackish crimson flowers,

12cm (5in) across. Prone to mildew.

† 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Joseph's Coat'**. Vigorous, branching

climber or shrub rose with dark green

leaves. Showy clusters of urn-shaped to

cupped, double yellow flowers, 8cm

(3in) across, suffused orange-pink and

red, are borne from summer to autumn.

†→ 3m (10ft) as a climber; † to 1.2m

(4ft), ↔ 1m (3ft) as a shrub. \*\*\*

**R. 'Judy Garland'**, syn. *R.* 'Harking'.

Vigorous cluster-flowered bush rose

with semi-glossy, mid-green foliage.

Cupped, double, lightly scented yellow

flowers, 7cm (3in) across, the petals

marginated orange-red, are borne freely

from summer to autumn. † 75cm

(30in), ↔ 65cm (26in). \*\*\*

**R. 'Julia's Rose'** [M] Large-flowered bush

rose with spindly, branching growth and

sparse reddish green foliage. High-

centred, double, brownish pink to buff

flowers, 10cm (4in) across, are borne

from summer to autumn. † 75cm (30in),

↔ 45cm (18in). \*\*\*

**R. 'Just Joey'** [M] ♀ Large-flowered bush

rose of open, branching habit, with

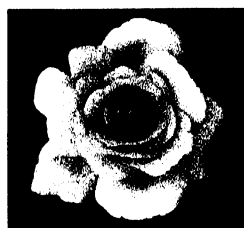
sparse, dark green foliage. Rounded,

fully double, fragrant, copper-pink

flowers, 12cm (5in) across, with wavy-

marginated petals, are borne from summer



*Rosa* 'Ispahan'*Rosa* 'Jacqueline du Pré'*Rosa* 'John Cabot'*Rosa* 'Julia's Rose'*Rosa* 'Just Joey'*Rosa* 'Keepsake'*Rosa* 'Kent'*Rosa* 'Königin von Dänemark'*Rosa* 'Korresia'*Rosa* 'Lady Mitchell'*Rosa* 'Lamarque'*Rosa* 'Laughter Lines'

to autumn. †75cm (30in), ↔ 70cm (28in). \*\*\*

**R. 'Katharina Zeimet'**, syn. *R.* 'White Baby Rambler'. Vigorous Polyantha bush rose producing abundant dark green leaves. From summer to autumn, bears dense clusters of cupped, double white flowers, 4.5cm (1 1/4in) across. †↔ 50cm (20in) or more. \*\*\*

**R. 'Kathleen Harrop'**, Bourbon rose of arching, lax habit, with dark green leaves. Cupped, double, fragrant, pale pink flowers, 8cm (3in) across, are borne from summer to autumn. Susceptible to mildew. †2.5m (8ft), ↔ 2m (6ft). \*\*\*

**R. 'Keepsake'** [■] syn. *R.* 'Esmeralda', *R.* 'Kormalda'. Large-flowered bush rose of uneven habit, with dark green leaves. From summer to autumn, bears well-formed, high-centred, fully double, lightly scented, deep pink flowers, 12cm (5in) across. †75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Kent'** [■] syn. *R.* 'Poulcov', *R.* 'Pyrenees', *R.* 'White Cover'. Compact, spreading, ground-cover shrub rose with shiny, dark green leaves. Cupped to flat, semi-double white flowers, 4.5cm (1 1/4in) across, are borne on short stems from summer to autumn. †45cm (18in), ↔ 1m (3ft). \*\*\*

**R. 'Kew Rambler'**, Vigorous rambler with stiff but pliable growth and dense, grey-green leaves. Clusters of cupped, single, scented pink flowers, 4cm (1 1/2in) across, each with a white eye and yellow stamens, are borne in summer. †5m (15ft), ↔ 4m (12ft). \*\*\*

**R. 'Kiftsgate'** see *R. flipes* 'Kiftsgate'.

**R. 'King's Ransom'**, Large-flowered bush rose producing leathery, glossy, dark green leaves. Bears urn-shaped to cupped, fully double, lightly scented yellow flowers, 12cm (5in) across, on long stems from summer to autumn. †75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Königin von Dänemark'** [■] ♀ syn. *R.* 'Belle Courisane', *R.* 'Queen of Denmark'. Vigorous, lax Alba rose with dull, bluish green leaves. In midsummer, bears quartered-rosette, fully double, very fragrant, deep to light pink flowers, 9cm (3 1/2in) across, with green button eyes. †1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Königliche Hoheit'** see *R.* 'Royal Highness'.

**R. 'Korbin'** see *R.* 'Iceberg'.

**R. 'Kordes Robusta'** see *R.* 'Robusta'.

**R. 'Korp'**, syn. *R.* 'Prominent'. Cluster-flowered bush rose with uneven growth and dark green foliage. Cupped, stiff-petalled, fully double, vivid orange-red flowers, 9cm (3 1/2in) across, are borne on long stems from summer to autumn. †1m (3ft), ↔ 65cm (26in). \*\*\*

**R. 'Korresia'** [■] syn. *R.* 'Friesia', *R.* 'Sunsprite'. Compact cluster-flowered bush rose with light green leaves. Sprays of urn-shaped to cupped, double, fragrant, bright yellow flowers, 8cm (3in) across, with wavy-margined petals, are borne from summer to autumn. †75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'La Belle Sultane'** see *R.* 'Violacea'.

**R. 'Lac Rose'** see *R.* 'Grouse'.

**R. 'Lady Mitchell'** [■] syn. *R.* 'Haryearn'. Large-flowered bush rose with dark green leaves and rounded, fully double, scented, deep pink flowers, 13cm (5in) across, borne from summer to autumn. †1m (3ft), ↔ 65cm (26in). \*\*\*

**R. 'Lady Penzance'**, Vigorous, twiggy, free-branching Sweet Briar rose with apple-scented, shiny, dark green leaves. Cupped, single, copper-pink and yellow flowers, 4cm (1 1/2in) across, are borne briefly in midsummer, followed by ovoid red hips. †↔ 2m (6ft). \*\*\*

**R. 'laevigata'**, syn. *R.* 'Golden Cherry' (Camellia rose, Cherokee rose).

Vigorous species rose with large prickles, arching stems, and attractive, glossy, dark green leaves, each with 3, rarely 5, lance-shaped to elliptic or ovate leaflets, 3–6cm (1 1/4–2 1/2in) long. Solitary, flat, single, scented white flowers, to 10cm (4in) across, with scalloped petals and gold stamens, are borne in summer; they are followed by pear-shaped, bristly, brownish orange-red hips. Evergreen in mild climates. †↔ 2–6m (6–20ft). E. and S. China, Taiwan, S.E. Asia. \*\*\*

**R. 'L'Aimant'**, syn. *R.* 'Harzola'. Vigorous cluster-flowered bush rose with dark green foliage. Cupped, double, fragrant, reddish salmon-pink flowers, 9cm (3 1/2in) across, are borne from summer to autumn. †1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Lamarque'** [■] Vigorous Noisette climbing rose with smooth stems and limp, shiny, bright green foliage. Flat, quartered-rosette, fully double, fragrant, yellowish white flowers, 9cm (3 1/2in) across, are borne on nodding stems from summer to autumn. † to 5m (15ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Landora'** see *R.* 'Sunblest'.

**R. 'La Reine Victoria'** see *R.* 'Reine Victoria'.

**R. 'La Royale'** see *R.* 'Maiden's Blush'.

**R. 'La Séduisante'** see *R.* 'Great Maiden's Blush'.

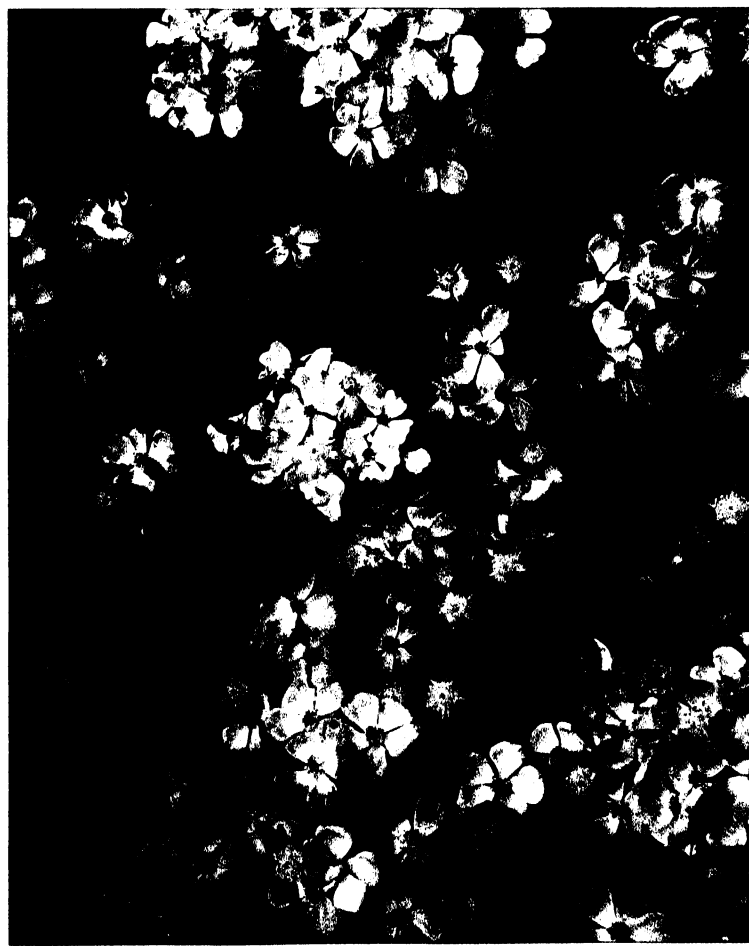
**R. 'Las Vegas'**, syn. *R.* 'Korgane'.

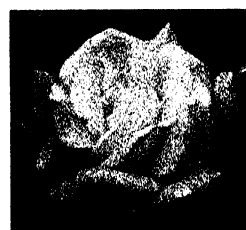
Vigorous large-flowered bush rose with glossy, mid-green foliage. From summer to autumn, bears urn-shaped, double, deep orange flowers, 10cm (4in) across, with a yellow reverse to the petals. †1m (3ft), ↔ 65cm (26in). \*\*\*

**R. 'Laughter Lines'** [■] syn. *R.*

'Dickerry'. Cluster-flowered bush rose of upright habit, with crisp, dark green foliage. Cupped, semi-double, rose-pink flowers, opening wide to 9cm (3 1/2in) across, with red, gold, and white markings, are borne from summer to autumn. †70cm (28in), ↔ 60cm (24in). \*\*\*

**R. 'Laura Ashley'** [■] syn. *R.* 'Chewharla'. Dense, compact ground-cover rose producing abundant mid-green leaves. Large clusters of cupped to flat, single, magenta-pink to lilac flowers, 3cm (1 1/4in) across, with pale yellow centres, cover the plant from summer to autumn. †60cm (24in), ↔ 1.2m (4ft). \*\*\*

*Rosa* 'Laura Ashley'



Rosa 'Laura Ford'



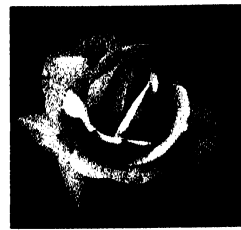
Rosa 'Lavender Jewel'



Rosa 'Little Artist'



Rosa 'Little Bo-Peep'



Rosa 'Lovely Lady'



Rosa 'Lovers' Meeting'



Rosa 'Loving Memory'



Rosa 'Maiden's Blush'



Rosa 'Maigold'



Rosa 'Many Happy Returns'



Rosa 'Marchesa Boccella'



Rosa 'Maréchal Niel'

**R. 'Laura Ford'** ■ syn. *R. 'Chewarvel'*. Stiff, upright, miniature climber with abundant shiny, light green leaves. From summer to autumn, bears clusters of urn-shaped to flat, semi-double, lightly scented yellow flowers, 4.5cm (1½in) across, becoming pink tinged with age. †2.2m (7ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Lavender Jewel'** ■ Miniature bush rose of neat, spreading habit, with dark green foliage. Cupped, double, lavender-pink flowers, 4cm (1½in) across, are produced in clusters from summer to autumn. †→ 30cm (12in). \*\*\*

**R. 'L.D. Braithwaite'**, syn. *R. 'Auscrim'*. Open shrub rose producing greyish green leaves. Loosely formed, rosette-shaped, fully double, scented, bright crimson flowers, 9cm (3½in) across, with infolded petals, are borne from summer to autumn. † 1m (3ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Leda'** (Painted damask rose). Lax Damask rose with prickly stems and grey-green leaves. In summer, bears rosette-shaped, fully double, fragrant, carmine-tipped white flowers, 7cm (3in) across, with button centres, reflexing into a ball. †→ 1m (3ft). \*\*\*

**R. 'Legnews'** see *R. 'News'*.

**R. 'Lemon Pillar'** see *R. 'Paul's Lemon Pillar'*.

**R. 'Leverkusen'**. Vigorous, arching climber producing toothed, glossy, deep green leaves. Clusters of wide-opening, rosette-shaped, double, lightly scented, pale yellow flowers, 8cm (3in) across, are borne from summer to autumn. May be grown as a shrub. † 3m (10ft), ↔ 2.2m (7ft). \*\*\*

**R. 'Little Artist'** ■ syn. *R. 'Top Gear'*. Neat, upright miniature bush rose with mid-green foliage. Cupped to flat, semi-double red flowers, 4.5cm (1½in) across, with white markings, are borne on short, stiff stems from summer to autumn. †→ 30cm (12in). \*\*\*

**R. 'Little Bo-Peep'** ■ syn. *R. 'Poullen'*. Dwarf cluster-flowered bush rose of low, spreading habit, with dark green foliage. Dense clusters of many rounded to flat, semi-double, light pink flowers, 4cm (1½in) across, are borne close to the plant from summer to autumn. † 30cm (12in), ↔ 50cm (20in). \*\*\*

**R. 'Little White Pet'** ■ syn. *R. 'White Pet'*. Vigorous, free-branching Polyantha rose with deep green foliage.

From summer to autumn, red buds open to dense sprays of rosette-shaped, fully double white flowers, 4cm (1½in) across. † 45cm (18in), ↔ 55cm (22in) with hard pruning. \*\*\*

**R. longicuspis of gardens** see *R. mulliganii*.

**R. 'L'Ouche'** see *R. 'Louise Odier'*.

**R. 'Louise Odier'**, syn. *R. 'L'Ouche'*, *R. 'Mme de Stella'*. Bourbon rose of slender, arching growth, with light grey-green foliage. Camellia-shaped, rosetted, fully double, fragrant pink flowers, 9cm (3½in) across, with lilac tints, are borne from summer to autumn. † 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Lovely Lady'** ■ syn. *R. 'Dicjubell'*.

Large-flowered bush rose with a vigorous, free-branching habit and abundant glossy, mid-green leaves. Urn-shaped, fully double, scented, salmon-pink flowers, 10cm (4in) across, are borne from summer to autumn. † 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Lovers' Meeting'** ■ Free-branching large-flowered bush rose of vigorous,

spreading habit, with bronze-green foliage. High-centred, double, reddish orange flowers, 9cm (3½in) across, are borne singly and in wide sprays from summer to autumn. †→ 75cm (30in). \*\*\*

**R. 'Loving Memory'** ■ syn. *R. 'Burgund '81'*, *R. 'Korgund'*.

Robust large-flowered bush rose with dull, dark green leaves. High-centred, fully double, lightly scented, dark red flowers, 12cm (5in) across, are borne on strong, stiff stems from summer to autumn. † 1.1m (3½ft), ↔ 75cm (30in). \*\*\*

**R. lucida** see *R. virginiana*.

**R. 'Lü E'** see *R. x odorata 'Viridiflora'*.

**R. 'Macrantha Raubritter'** see *R. 'Raubritter'*.

**R. macrophylla**. Vigorous species rose producing red stems and mid-green leaves, each composed of 7–11 oval leaflets, to 6cm (2½in) long. Flat, single, scented red flowers, 5–7cm (2–3in) across, are borne singly or in clusters of up to 5 in summer, followed by flask-shaped red hips. † 4m (12ft), ↔ 3m

(10ft). Himalayas, from Pakistan to W. China. \*\*\*

**R. 'Magenta'**. Shrubby, spreading cluster-flowered bush rose with leathery, dark green leaves. Quartered-rosette, fully double, fragrant, pink-magenta flowers, 9cm (3½in) across, are borne in heavy clusters on bowed stems from summer to autumn. † 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Magic Carousel'**. Miniature bush rose of neat, bushy habit, with glossy, mid-green leaves. Rosette-shaped, double, pale yellow flowers, 4cm (1½in) across, with crimson edging, are produced from summer to autumn. † 40cm (16in), ↔ 30cm (12in). \*\*\*

**R. 'Maiden's Blush'** ■ syn. *R. 'Incarnata'*, *R. 'La Royale'*. Vigorous, upright, arching Alba rose with dull, bluish green foliage. Cupped, fully double, fragrant, very pale pink flowers, 7cm (3in) across, with irregular centres, are borne in midsummer. † 1.2m (4ft), ↔ 90cm (36in). \*\*\*

**R. 'Maigold'** ■ Strong, stiff-growing climber with very prickly, arching stems and leathery, dark green leaves. Cupped, semi-double, scented, bronze-yellow flowers, 10cm (4in) across, are borne freely in early summer and sparsely again in autumn. †→ 2.5m (8ft). \*\*\*

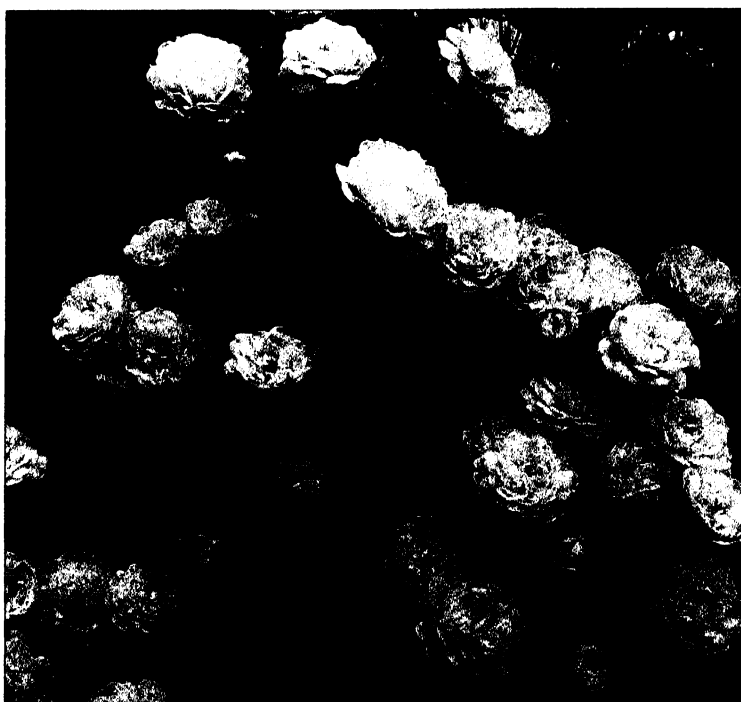
**R. 'Mainzer Fastnacht'** see *R. 'Blue Moon'*.

**R. 'Many Happy Returns'** ■ syn. *R. 'Harwanted'*, *R. 'Prima'*. Cluster-flowered bush rose of shrubby habit, with attractive, shiny, mid-green foliage. Cupped, semi-double, scented, pale pink flowers, 10cm (4in) across, are borne in dense clusters from summer to autumn. †→ 75cm (30in). \*\*\*

**R. 'Marchesa Boccella'** ■ syn. *R. 'Jacques Cartier'*. Portland rose of dense habit, with abundant light green foliage. Quartered-rosette, fully double, scented, rose-pink flowers, 11cm (4½in) across, are borne on short stems from summer to autumn. † 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Maréchal le Clerc'** see *R. 'Touch of Class'*.

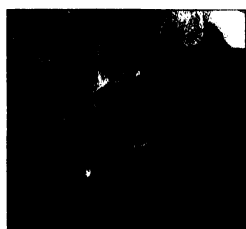
**R. 'Maréchal Niel'** ■ Vigorous Noisette or climbing Tea rose with long, shiny, rich green leaves. High-centred, fully double, scented, clear yellow flowers, 10cm (4in) across, are produced on nodding stems from summer to



Rosa 'Little White Pet'



Rosa 'Margaret Merrill'



Rosa 'Marguerite Hilling'



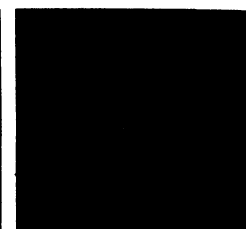
Rosa 'Marion Harkness'



Rosa 'Mary Rose'



Rosa 'May Queen'



Rosa 'Melody Maker'



Rosa 'Mme Alfred Carrière'



Rosa 'Mme de Sancy de Parabère'



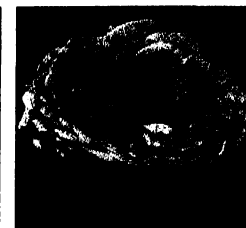
Rosa 'Mme Ernst Calvat'



Rosa 'Mme Hardy'



Rosa 'Mme Isaac Pereire'



Rosa 'Mme Knorr'

autumn. ↑ to 5m (15ft), ↔ 2.5m (8ft). \*\*\* (borderline)

**R. 'Margaret Merrill'** [♀] syn. *R. 'Harkuly'*. Cluster-flowered bush rose with crisp, dark green leaves. Bears high-centred to cupped, double, fragrant, pale pink to white flowers, 10cm (4in) across, with maroon stamens, singly or in clusters from summer to autumn. ↑ 80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Marguerite Hilling'** [♀] syn. *R. 'Pink Nevada'*. Vigorous, arching shrub rose with red stems and dense, light green foliage. Flat, semi-double, scented, rose-pink flowers, 10cm (4in) across, with deeper shading, are borne freely in early summer and sparsely in autumn. ↑ 2.2m (7ft). \*\*\*

**R. 'Mariandel'** see *R. 'The Times'*.

**R. 'Marion Harkness'** [♀] syn. *R. 'Harkantabil'*. Large-flowered bush rose of well-branched habit, with glossy, dark green leaves. Rounded, double yellow flowers, 9cm (3½in) across, shaded orange-red towards the petal tips, are borne freely from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Marjorie Fair'**, syn. *R. 'Red Ballerina'*, *R. 'Red Yesterday'*. Dense Polyantha shrub rose with glossy, mid-green leaves. Mop-headed clusters of many cupped, single, wine-red flowers, 4.5cm (1¾in) across, each with a white eye, are borne from summer to autumn. ↑ 1.2m (4ft). \*\*\*

**R. 'Marlena'**. Cluster-flowered bush rose of compact habit, with dark green leaves. Sprays of cupped, double, bright crimson flowers, 6cm (2½in) across, are borne freely from summer to autumn. ↑ 45cm (18in). \*\*\*

**R. 'Mary Rose'** [♀] syn. *R. 'Ausmary'*. Shrub rose of upright, uneven growth, with matt, mid-green leaves. Cupped, double, scented, deep rose-pink flowers, 9cm (3½in) across, are borne from summer to autumn. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Masquerade'**. Vigorous cluster-flowered bush rose of compact habit, with leathery, dark green leaves. From summer to autumn, bears sprays of cupped to flat, semi-double flowers, to 6cm (2½in) across, changing in colour from yellow to pink and dark red. ↑ 80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Matangi'** syn. *R. 'Macman'*. Compact cluster-flowered bush rose

with abundant glossy, dark green leaves. Showy, open-cupped, double, rich orange-red flowers, 9cm (3½in) across, with white in the centres and on the reverse of the petals, are borne from summer to autumn. ↑ 80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Matthias Meilland'** syn. *R. 'Meifolio'*. Cluster-flowered bush rose with glossy, dark green foliage. Cupped, double, bright deep scarlet flowers, 8cm (3in) across, are borne from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'May Queen'** [♀] Vigorous, arching rambler with abundant glossy, mid-green foliage. In summer, bears clusters of quartered-rosette, apple-scented, double, clear rose-pink flowers, 8cm (3in) across. ↑ 4m (12ft), ↔ 3m (10ft). \*\*\*

**R. 'Meg'**. Stiff, vigorous climber with dark green leaves. Bears open clusters of cupped to flat, semi-double, fragrant, pink-apricot to pink flowers, 12cm (5in) across, with red stamens, from summer to autumn. ↑ 4m (12ft). \*\*\*

**R. 'Mélanie Lemaire'** see *R. 'Hermosa'*.

**R. 'Melody Maker'** [♀] syn. *R. 'Dicqueen'*. Cluster-flowered bush rose of dense habit, with abundant dark green foliage. Freely bears rounded, fully double, light scarlet flowers, 9cm (3½in) across, from summer to autumn. ↑ 70cm (28in), ↔ 60cm (24in). \*\*\*

**R. 'Mermaid'** [♀] Vigorous, slow-growing climber with stiff, red-brown stems, hooked thorns, and shiny, dark green leaves. From summer to autumn, bears cupped to flat, single, primrose-yellow flowers, 11cm (4½in) across, with sulphur-yellow stamens. ↑ to 6m (20ft). \*\*\*

**R. 'Mevrouw Nathalie Nypels'** [♀] Cluster-flowered Polyantha rose of neat habit, with glossy, mid-green leaves. Freely bears cupped, semi-double, rose-pink flowers, 6cm (2½in) across, from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Michèle Meilland'**. Large-flowered bush rose of well-branched, leafy habit, with mid-green foliage. Neatly formed, urn-shaped, double, light pink flowers, 9cm (3½in) across, are borne from summer to autumn. Excellent for flower arrangements. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Mignon'** see *R. 'Cécile Brunner'*.

**R. 'Mildred Scheel'** see *R. 'Deep Secret'*.

**R. 'Minuetto'** see *R. 'Darling Flame'*.

**R. 'Mischief'**. Large-flowered bush rose producing abundant but rust-prone, mid-green leaves. Urn-shaped, double, scented, pink-orange to pink flowers, 10cm (4in) across, are borne from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Mme Alfred Carrière'** [♀] Noisette climbing rose with slender, smooth stems and pale green foliage. Rounded, fully double, fragrant, pale pink to white flowers, 6cm (2½in) across, are borne from summer to autumn. ↑ 5m (15ft), ↔ 3m (10ft). \*\*\*

**R. 'Mme A. Meilland'** see *R. 'Peace'*.

**R. 'Mme Butterfly'**. Large-flowered bush rose with stiff growth and sparse, mid-green foliage. Nearly formed, urn-shaped to cupped, double, fragrant, light pink flowers, 8cm (3in) across, are borne from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*



Rosa 'Mme Grégoire Staechelin'

**R. 'Mme de la Roche-Lambert'** see *R. 'Mme Delaroche-Lambert'*.

**R. 'Mme Delaroche-Lambert'** [♀] syn. *R. 'Mme de la Roche-Lambert'*.

Upright, arching Moss rose with rough, dull, light to mid-green leaves and brownish green moss. Rounded, fully double, scented, purplish pink flowers, 8cm (3in) across, some with button centres, are borne mainly in summer, sometimes also in autumn. ↑ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Mme de Sancy de Parabère'** [♀] Vigorous, arching Boursault climbing rose with smooth green wood and dark green leaves. Rosette-shaped, double, clear rose-pink flowers, 12cm (5in) across, are borne in early summer. ↑ 5m (15ft), ↔ 3m (10ft). \*\*

**R. 'Mme de Stella'** see *R. 'Louise Odier'*.

**R. 'Mme Ernst Calvat'** [♀] Vigorous, arching Bourbon rose with dark green leaves, purplish green when young. From summer to autumn, produces quartered-rosette, fully double, fragrant, rose-pink flowers, 15cm (6in) across. ↑ 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Mme Grégoire Staechelin'** [♀] syn. *R. 'Spanish Beauty'*. Very vigorous, arching climber with masses of large, dark green leaves. Rounded, fully double flowers, 12cm (5in) across, with ruffled, red-flushed, clear pink petals, are borne in early summer. Flowers are followed by large, spherical red hips. ↑ to 6m (20ft), ↔ 4m (12ft). \*\*\*

**R. 'Mme Hardy'** [♀] Vigorous, upright Damask rose with abundant leathery, dark green leaves. Quartered-rosette, fully double, fragrant white flowers, 10cm (4in) across, each with a green button eye, are produced in summer. ↑ 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

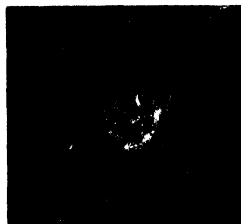
**R. 'Mme Hébert'** see *R. 'Président de Sèze'*.

**R. 'Mme Isaac Pereire'** [♀] Vigorous, arching Bourbon shrub or climbing rose with large, dark green leaves. From summer to autumn, bears quartered-rosette, fully double, fragrant, deep purplish pink flowers, 15cm (6in) across. ↑ 2.2m (7ft), ↔ 2m (6ft). \*\*\*

**R. 'Mme Knorr'** [♀] syn. *R. 'Comte de Chambord'*. Bushy, leafy, vigorous Portland rose with mid-green foliage. From summer to autumn, bears



Rosa 'Moonlight'



Rosa 'Morning Jewel'



Rosa moschata



Rosa 'Mountbatten'



Rosa moyesii 'Geranium'



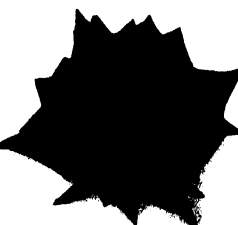
Rosa 'Mrs. John Laing'



Rosa 'Mrs. Oakley Fisher'



Rosa mulliganii



Rosa 'National Trust'



Rosa 'Nevada'



Rosa 'New Dawn'



Rosa 'News'

quartered-rosette, fully double, fragrant, pink, darker-centred flowers, 10cm (4in) across.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Mme Legras de St. Germain'.**

Upright Alba rose with smooth stems and greyish green leaves. Rosette-shaped, fully double, fragrant, lemon-white flowers, 9cm (3½in) across, are borne in midsummer. May be trained on a support.  $\uparrow$  2m (6ft) as a shrub;  $\uparrow$  to 5m (15ft) as a climber. \*\*\*

**R. 'Mme Neumann'** see R. 'Hermosa'.

**R. 'Mme Pierre Oger'.** Lax Bourbon rose with slender stems and light green leaves. From summer to autumn, bears cupped, double, scented, creamy pink flowers, 8cm (3in) across, marked with lilac.  $\uparrow$  2m (6ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Mme Plantier'**  $\square \nabla$  Vigorous, arching Alba shrub or Noisette climbing rose with long, smooth, mid-green leaves. In midsummer, bears clusters of cupped, fully double, scented white flowers, 7cm (3in) across, reflexing into a ball.  $\uparrow$  2m (6ft),  $\leftrightarrow$  to 6m (20ft) on a support.  $\leftrightarrow$  2.5m (8ft) grown as a shrub. \*\*\*

**R. 'Montezuma'.** Tall, strong large-flowered bush rose with stiff stems and leathery leaves. High-centred, fully double, salmon-pink to red flowers, 9cm (3½in) across, are borne singly and in large sprays from summer to autumn.  $\uparrow$  1.3m (4½ft),  $\leftrightarrow$  70cm (28in). \*\*\*

**R. 'Moonlight'**  $\square$  Shrub rose of dense habit, with stems and leaves both reddish green. Clusters of flat, semi-double, scented, lemon-white flowers, 4.5cm (1¾in) across, are borne freely from summer to autumn.  $\uparrow$  1.2m (4ft). \*\*\*

**R. 'Morning Jewel'**  $\square \nabla$  Vigorous, free-branching climber producing glossy, mid-green leaves. Clusters of cupped, double, scented, bright pink flowers, 9cm (3½in) across, are borne from summer to autumn. Tolerates partial shade.  $\uparrow$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). \*\*\*

**R. moschata**  $\square$  (Musk rose). Species rose of tall, lax habit, with dark green stems and purplish green leaves, each comprising 5–7 broadly ovate to broadly elliptic leaflets, 1.5–4cm (½–1½in) long. Few-flowered, loose clusters of flat, single to semi-double, musk-scented, milk-white flowers, 5cm (2in) across, are borne from late summer to autumn; they are followed by spherical to ovoid, orange-red hips.  $\uparrow$  3m (10ft). W. Asia. \*\*\* **var. nivea** see R. 'Dupontii'.

**R. 'Mountbatten'**  $\square \nabla$  syn. R.

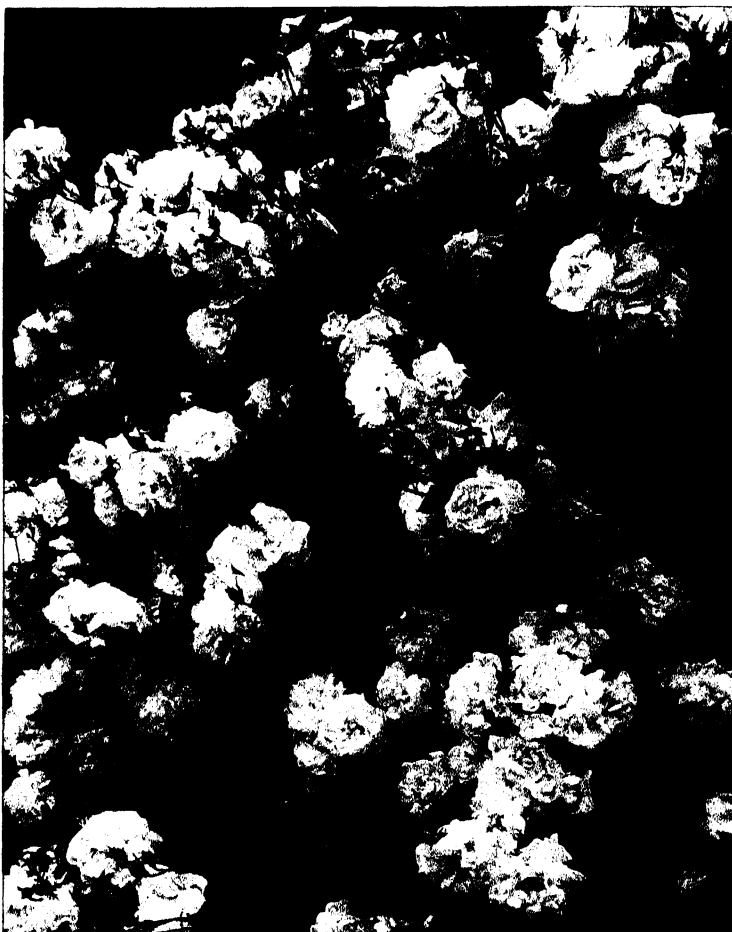
'Harmantelle'. Vigorous cluster-flowered bush rose of shrubby habit, with crisp, leathery, bright green leaves. Rounded, fully double, scented yellow flowers, 10cm (4in) across, are produced from summer to autumn.  $\uparrow$  1.2m (4ft),  $\leftrightarrow$  75cm (30in). \*\*\*

**R. moyesii.** Vigorous, arching species rose producing mid- to dark green leaves, each comprising 7–13 small, broadly elliptic to ovate leaflets, 1–4cm (½–1½in) long. Flat or cupped, single, deep scarlet or pink flowers, 5cm (2in) across, with yellow stamens, are borne singly or in small clusters in summer; they are followed by large, flask-shaped

red hips.  $\uparrow$  4m (12ft),  $\leftrightarrow$  3m (10ft).

W. China. \*\*\* **var. fargesii** is less vigorous, and has pink flowers;  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1.5m (5ft). **'Geranium'**  $\square \nabla$  has a compact habit, and bears brighter, cherry-red flowers with cream stamens, followed by orange-red hips;  $\uparrow$  2.5m (8ft),  $\leftrightarrow$  1.5m (5ft). **'Highdownensis'** see R. 'Highdownensis'.

**R. 'Mr. Lincoln'.** Stiff-stemmed, large-flowered bush rose of upright habit, with leathery, dull, dark green foliage. High-centred to cupped, fully double, fragrant, dark velvety red flowers, 12cm (5in) across, are produced from summer to autumn.  $\uparrow$  1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*\*\*



Rosa 'Mme Plantier'

**R. 'Mrs. John Laing'**  $\square$  Hybrid

Perpetual rose with abundant light green foliage. From summer to autumn, bears rounded, fully double, fragrant, silvery pink flowers, 12cm (5in) across.  $\uparrow$  1m (3ft),  $\leftrightarrow$  75cm (30in). \*\*\*

**R. 'Mrs. Oakley Fisher'**  $\square \nabla$  Large-flowered bush rose with spindly stems and sparse, bronze-green foliage. From summer to autumn, bears cupped to flat, single, scented apricot flowers, 7cm (3in) across, fading to pale buff with age.  $\uparrow$  to 1m (3ft). \*\*\*

**R. 'Mullard Jubilee'**, syn. R. 'Electron'. Vigorous large-flowered bush rose producing abundant mid-green leaves. Urn-shaped, fully double, scented, deep rose-pink flowers, 12cm (5in) across, are borne from summer to autumn.  $\uparrow$  75cm (30in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. mulliganii**  $\square \nabla$  syn. R. *longicuspis* of gardens. Rampant species rose with large, shiny, greyish green leaves, each comprising 5–7 elliptic-ovate to oblong-ovate leaflets, to 6cm (2½in) long. Large clusters of many pendent, cupped to flat, single white flowers, to 6cm (2½in) across, are borne on slender flower-stalks in summer.  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  3m (10ft). W. China. \*\*\*

**R. multiflora.** Upright, arching, very vigorous species rose producing masses of dull, light to mid-green leaves, each with 7–9, rarely 5–11, obovate or elliptic leaflets, 1.5–5cm (½–2in) long. Large clusters of cupped to flat, single, fruit-scented white flowers, to 3cm (1¼in) across, fading to red, are borne freely but fleetingly in summer, followed by ovoid to spherical red hips, to 7mm (¼in) long.  $\uparrow$  to 5m (15ft),  $\leftrightarrow$  3m (10ft). Japan, Korea. \*\*\*

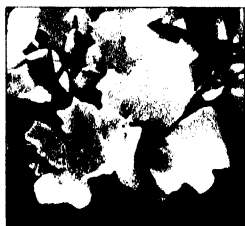
**R. 'Mutabilis'** see R. *x odorata* 'Mutabilis'.

**R. 'National Trust'**  $\square$  syn. R. 'Bad Nauheim'. Compact large-flowered bush rose with abundant dark green foliage. Neatly formed, urn-shaped, fully double, scarlet-crimson flowers, 10cm (4in) across, are borne freely from summer to autumn.  $\uparrow$  60cm (24in). \*\*\*

**R. 'Nevada'**  $\square \nabla$  Vigorous, arching shrub rose with red stems and dense, light green leaves. Flat, semi-double, scented, creamy white flowers, 10cm (4in) across, are borne freely in early summer and sparsely in autumn.  $\uparrow$  2.2m (7ft). \*\*\*



Rosa 'Noisette Carnée'



Rosa 'Nozomi'



Rosa nutkana 'Plena'



Rosa 'Octavia Hill'



Rosa x odorata 'Mutabilis'



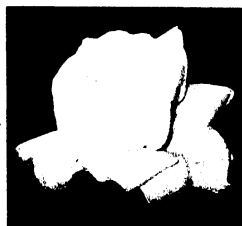
Rosa x odorata 'Pallida'



Rosa x odorata 'Viridiflora'



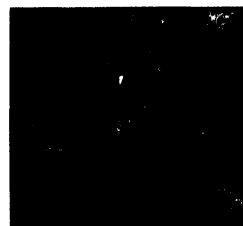
Rosa 'Old Master'



Rosa 'Ophelia'



Rosa 'Oranges and Lemons'



Rosa 'Orange Sunblaze'



Rosa 'Painted Moon'

**R. 'New Dawn'** [M] syn. *R. 'The New Dawn'*. Climber of vigorous, arching habit, with shiny, mid-green leaves. From summer to autumn, bears clusters of cupped, double, fragrant, pale pearl-pink flowers, 8cm (3in) across. Tolerates a partially shaded site. ‡ 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'News'** [M] syn. *R. 'Legnews'*. Cluster-flowered bush rose with dark green foliage. Cupped, wide-opening, double, scented, bright beetroot-purple flowers, 8cm (3in) across, are borne from summer to autumn. ‡ 60cm (24in), ↔ 50cm (20in). \*\*\*

**R. 'Nigel Hawthorne'**, syn. *R. 'Harquibbler'*. Hummock-forming shrub rose with wiry, prickly stems and wrinkled, mid-green leaves. Cupped to flat, single, pale salmon-pink flowers, 5cm (2in) across, each with a deep scarlet eye, are borne in summer. ‡ 60cm (24in), ↔ 75cm (30in). \*\*\*

**R. 'Niphetos'**. Branching, climbing tea rose with lance-shaped, pale green leaves. Pointed buds open to rounded, double, scented, creamy white flowers, 12cm (5in) across, borne on nodding stems, mainly in summer, a few later. ‡ 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Noisette Carnée'** [M] syn. *R. 'Blush Noisette'*. Branching Noisette climbing rose that can be grown as a shrub, with lax stems and matt, mid-green foliage. Cupped, double, spice-scented, pale pink flowers, 4cm (1½in) across, are produced from summer to autumn. ‡ 2–4m (6–12ft), ↔ 2–2.5m (6–8ft). \*\*\*

**R. 'Normandica'** see *R. 'Petite de Hollande'*.

**R. 'Northamptonshire'** syn. *R. 'Mattdor'*. Spreading ground-cover rose with shiny, dark green foliage. Large sprays of cupped, semi-double, pearl-white flowers, 4.5cm (1¾in) across, are borne freely from summer to autumn. ‡ 45cm (18in), ↔ 1m (3ft). \*\*\*

**R. 'Nozomi'** [M] syn. *R. 'Heideröslin'*. Trailing ground-cover rose producing shiny, dark green leaves. Clusters of flat, single, pale pink-white flowers, 2.5cm (1in) across, cover the plant in summer. ‡ 45cm (18in) or to 1.5m (5ft) when trained on a pillar, ↔ 1.2m (4ft). \*\*\*

**R. 'Nuit d'Orient'** see *R. 'Big Purple'*.

**R. 'Nuits de Young'** (Old black rose). Erect Moss rose with wiry stems, brownish green mossing, and dark green

leaves. In summer, bears flat, double, scented, dark maroon-purple flowers, 5cm (2in) across, showing yellow stamens. ‡ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. nutkana** (Nootka rose). Robust species rose with brownish green stems and toothed, mid-green leaves, each with 5–9 ovate to elliptic leaflets, 2–5cm (¾–2in) long. In summer, bears usually solitary, cupped, single, reddish pink flowers, 5–7cm (2–3in) across, followed by spherical, purplish red hips. ‡ to 3m (10ft), ↔ 2m (6ft). North America (Alaska to N. California). **'Plena'** [M] syn. *R. californica* 'Plena', has semi-double pink flowers; ‡ 1.5–2.5m (5–8ft), ↔ 1.2–2m (4–6ft). \*\*\*

**R. 'Ocarina'** see *R. 'Angela Rippon'*.

**R. 'Octavia Hill'** [M] Vigorous shrub rose with abundant glossy, dark green leaves. Sprays of several quartered-rosette, double, scented, clear rose-pink flowers, 8cm (3in) across, are borne from summer to autumn. ‡ 1.1m (3½ft). \*\*\*

**R. x odorata** (*R. chinensis* x *R. gigantea*). Shrubby or climbing China rose with lax, prickly stems and light green leaves comprising 3–5 narrowly ovate leaflets, 4–6cm (1½–2½in) long. From summer to autumn, bears rounded, double, white, pale pink, or pale yellow flowers, 5–8cm (2–3in) across. ‡ 2m (6ft) as shrub; ‡ 5m (15ft), ↔ 3–4m (10–12ft) as a climber. Garden origin. \*\*

**'Mutabilis'** [M] syn. *R. chinensis* 'Mutabilis', *R. 'Mutabilis'*, *R. 'Tipo Ideale'*, is shrubby, with reddish purple, sparsely prickly stems that will climb if supported, and glossy dark green leaves, flushed purple. Bears cupped, single flowers, 6cm (2½in) across, which change from light yellow to copper-pink and then to deep pink. ‡ 1.2m (4ft), ↔ 1m (3ft) as a shrub; ‡ to 3m (10ft), ↔ 2m (6ft) as a climber. \*\*\*

(borderline). **'Pallida'** [M] (Old blush China rose, Parsons' pink China rose) is bushy, with shiny, mid-green leaves. It freely bears cupped, double pink flowers, 6cm (2½in) across. ‡ 1m (3ft), sometimes to 3m (10ft) in mild climates, ↔ 80cm (32in). \*\*\* **'Pseudindica'**, syn. *R. 'Beauty of Glazenwood'*, *R. 'Gold of Ophir'*, *R. 'San Rafael'* (Fortune's double yellow rose) is a lax climber with glossy, light green leaves. It bears high-centred to cupped, semi-double, scented, copper-red to yellow

flowers, 5cm (2in) across. ‡ 2.5–5m (8–15ft), ↔ 1.5–3m (5–10ft). \*\*\*

**'Semperflorens'**, syn. *R. chinensis* 'Semperflorens' (Slater's crimson China rose) is open-branched, with dark green leaves and semi-double, crimson-red flowers, 6cm (2½in) across. ‡ 1m (3ft). \*\*\* (borderline). **'Viridiflora'** [M] syn. *R. chinensis* 'Viridiflora', *R. 'Lü E'*, *R. 'Viridiflora'* (Green rose) is upright, with shiny, dark green leaves and sprays of rosette-shaped, double flowers, 5cm (2in) across, green ageing to purplish green, with narrow petals that resemble sepals. ‡ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. officinalis** see *R. gallica* var. *officinalis*.

**R. 'Old Master'** [M] syn. *R. 'Macesp'*. Vigorous cluster-flowered bush rose with glossy, dark green leaves. Cupped, semi-double flowers, 11cm (4½in) across, shaded and marked carmine-red on a white background, are produced from summer to autumn. ‡ 80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Olympiad'** syn. *R. 'Macauck'*. Large-flowered bush rose with mid-green foliage and high-centred, fully double, velvety, bright red flowers, 10cm (4in) across, borne from summer to autumn. Flowers last well when cut. ‡ 1.2m (4ft), ↔ 65cm (26in). \*\*\*

**R. omeiensis** f. *pteracantha* see *R. sericea* subsp. *omeiensis* f. *pteracantha*.

**R. 'Opa Pötschke'** see *R. 'Precious Platinum'*.

**R. 'Ophelia'** [M] Large-flowered bush rose with stiff growth and sparse, dark green foliage. Neatly formed, urn-shaped to cupped, double, fragrant, creamy pale pink flowers, 8cm (3in) across, are produced from summer to autumn. ‡ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Oranges and Lemons'** [M] syn. *R. 'Macoranlem'*. Vigorous cluster-flowered bush rose with shiny, dark green foliage, reddish green when young. From summer to autumn, bears rounded, fully double flowers, 10cm (4in) across, with stiff, infolded, orange-yellow petals, striped scarlet, fading to pinkish red. ‡ 80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Orange Sensation'**. Vigorous, spreading cluster-flowered bush rose producing shiny, light green foliage. Rounded, double, scented, bright

orange-red flowers, 8cm (3in) across, are borne from summer to autumn. ‡ 70cm (28in), ↔ 60cm (24in). \*\*\*

**R. 'Orange Sunblaze'** [M] syn. *R. 'Meijikitar'*, *R. 'Sunblaze'*. Miniature bush rose of compact habit, with dense, dark green leaves. Cupped, fully double, bright orange-red flowers, 4cm (1½in) across, are borne from summer to autumn. ‡ 30cm (12in). \*\*\*

**R. 'Orange Triumph'**. Stiff, vigorous Polyantha rose with glossy, dark green leaves. Full, showy clusters of cupped, double, dull red flowers, 4cm (1½in) across, are borne from summer to autumn. ‡ 1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Paestana'** see *R. 'Portlandica'*.

**R. 'Painted Moon'** [M] syn. *R. 'Dicpaint'*. Leafy, spreading large-flowered bush rose producing mid-green foliage. Wide sprays of cupped, double flowers, 9cm (3½in) across, light yellow, strongly suffused pink and crimson, are borne from summer to autumn. ‡ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Panachée d'Angers'** see *R. 'Commandant Beaufort'*.

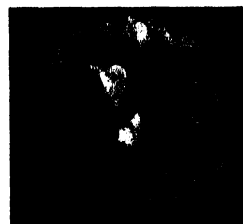
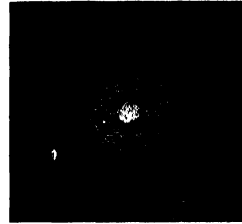
**R. 'Papa Meillard'**. Large-flowered bush rose with a lanky habit and olive-green leaves. High-centred, fully double, very fragrant, dark velvet-crimson flowers, 12cm (5in) across, are borne on long stems from summer to autumn. Prone to mildew. ‡ 1m (3ft), ↔ 60cm (24in). \*\*

**R. 'Paradise'**, syn. *R. 'Burning Sky'*, *R. 'Wezeip'*. Vigorous large-flowered bush rose producing glossy, dark green leaves. From summer to autumn, bears high-centred, double, scented, lavender-pink flowers, 10cm (4in) across, edged ruby-red. ‡ 1.2m (4ft), ↔ 70cm (28in). \*\*\*

**R. 'Parkdirektor Riggers'**. Stiff, vigorous climber with glossy, dark green leaves. Large clusters of cupped, semi-double scarlet flowers, 6cm (2½in) across, with wavy-margined petals, are borne from summer to autumn. ‡ 4m (12ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Party Girl'**. Bushy, compact miniature bush rose with dark green leaves. Neatly formed, high-centred, double, scented, apricot-yellow flowers, 3cm (1¼in) across, suffused salmon-pink, are borne from summer to autumn. ‡ 35cm (14in). \*\*\*

**R. 'Pascali'**. Large-flowered bush rose with sparse, dark green foliage. Neatly

*Rosa* 'Paul Neyron'*Rosa* 'Paul Shirville'*Rosa* 'Paul's Lemon Pillar'*Rosa* 'Peace'*Rosa* 'Pearl Drift'*Rosa* 'Penelope'*Rosa* 'Perle d'Or'*Rosa* 'Pheasant'*Rosa* 'Piccadilly'*Rosa pimpinellifolia* 'Plena'*Rosa* 'Pink Bells'*Rosa* 'Pink Chimo'

formed, urn-shaped, double white flowers, 9cm (3½in) across, are borne from summer to autumn. †75cm (30in), ↔ 50cm (20in). \*\*\*

**R. 'Paul Neyron'** ■♀ Vigorous, upright Hybrid Perpetual rose producing olive-green leaves. Rounded, fully double, scented flowers, to 15cm (6in) across, with ruffled, lilac-tinged, deep pink petals, are borne from summer to autumn. †1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Paul Ricault'**, Hybrid Perpetual rose of open, lax habit, with arching, prickly stems and mid-green leaves. Rounded buds open to flat, quartered-rosette, fully double, fragrant, deep pink flowers, 8cm (3in) across, from summer to autumn. †1.5m (5ft), ↔ 1.2m (4ft). \*\*

**R. 'Paul's Himalayan Musk'** ♀ syn. *R. 'Paul's Himalayan Rambler'*. Rampant climber with trailing shoots and arching, dark green leaves. Large clusters of rosette-shaped, double, pale pink flowers, 4cm (1½in) across, are borne freely in summer. Effective trained on a tree. †→ 10m (30ft). \*\*\*

**R. 'Paul's Himalayan Rambler'** see *R. 'Paul's Himalayan Musk'*.

**R. 'Paul Shirville'** ■♀ syn. *R. 'Harqueterwife'*, *R. 'Heart Throb'*. Large-flowered bush rose of spreading, shrubby habit, with dark reddish green foliage. High-centred, double, fragrant, rose-pink to salmon-pink flowers, 10cm (4in) across, are borne from summer to autumn. †1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Paul's Lemon Pillar'** ■ syn. *R. 'Lemon Pillar'*. Stiff, upright climber with dark green leaves and high-centred to rounded, fully double, lemon-scented white flowers, 12cm (5in) across, borne in summer. †4m (12ft), ↔ 3m (10ft). \*\*\*

**R. 'Paul's Scarlet Climber'**, Very vigorous, arching climber with dense, semi-glossy, mid-green foliage. Clusters of many cupped, double, bright red flowers, 8cm (3in) across, are borne freely in summer. †→ 3m (10ft). \*\*\*

**R. 'Paul Transon'** ♀ Vigorous, lax rambler producing shiny, dark green foliage. Flat, fully double, scented, copper- to salmon-pink flowers, 8cm (3in) across, with pleated petals, are borne in summer, also later in warm sites. †3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Peace'** ■♀ syn. *R. 'Gioia'*, *R. 'Gloria Dei'*, *R. 'Mme A. Meilland'*. Vigorous, shrubby large-flowered bush rose with glossy, dark green foliage. High-centred to rounded, fully double, scented, pink-tinged yellow flowers, 15cm (6in) across, are produced from summer to autumn. †1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Pearl Drift'** ■ syn. *R. 'Leggab'*. Vigorous shrub rose of spreading habit, with abundant glossy, dark green leaves. From summer to autumn, bears clusters of cupped, semi-double, scented, pale pink flowers, 10cm (4in) across. †1m (3ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Peaudouce'** see *R. 'Elina'*.

**R. 'Peek A Boo'**, syn. *R. 'Brass Ring'*, *R. 'Dicgrow'*. Dense, cushion-forming, dwarf cluster-flowered bush rose with narrow, dark green leaves. Sprays of many urn-shaped, double, apricot-pink flowers, 4cm (1½in) across, are borne freely from summer to autumn. †→ 45cm (18in). \*\*\*

**R. 'Peer Gynt'**, Vigorous large-flowered bush rose with abundant rich green foliage. Rounded, fully double, lightly scented yellow flowers, 11cm (4½in) across, edged reddish pink, are borne from summer to autumn. †80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Penelope'** ■♀ Bushy, dense shrub rose with dark green leaves. Large

clusters of well-spaced, cupped to flat, semi-double, scented, pale creamy pink flowers, 7cm (3in) across, are borne from summer to autumn. †→ 1.1m (3½ft). \*\*\*

**R. 'Perfect Moment'**, syn. *R. 'Jack Dayson'*, *R. 'Korwilma'*. Vigorous large-flowered bush rose with glossy, dark green foliage. Rounded, double flowers, 9cm (3½in) across, orange-red shaded with yellow, are borne on stiff stems from summer to autumn. †1.1m (3½ft), ↔ 70cm (28in). \*\*\*

**R. 'Perle d'Or'** ■♀ syn. *R. 'Yellow Cécile Brunner'*. China rose forming a leafy, twiggy shrub with glossy, dark green foliage. From summer to autumn, neatly formed, urn-shaped, fully double, pale apricot flowers, 4cm (1½in) across, are borne in clusters on slender stems. † to 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Pernille Poulsen'**, Vigorous cluster-flowered bush rose with light green foliage. Urn-shaped, semi-double, salmon-pink flowers, 9cm (3½in) across, are borne freely from summer to autumn. †→ 65cm (26in). \*\*\*

**R. 'Perpetual White Moss'** see *R. 'Quatre Saisons Blanche Mousseuse'*.

**R. 'Petite de Hollande'**, syn. *R. 'Normandica'*, *R. 'Petite Junon de Hollande'*, *R. 'Pompon des Dames'*. Vigorous, compact, bushy Centifolia rose with mid-green leaves. Clusters of rounded, fully double, many-petalled, fragrant, rose-pink flowers, 5cm (2in) across, are borne in summer. †→ 1m (3ft). \*\*\*

**R. 'Petite Junon de Hollande'** see *R. 'Petite de Hollande'*.

**R. 'Petite Lisette'**, Damask rose with toothed, greyish green leaves. Well-spaced clusters of pompon, fully double, scented, rose-pink flowers, 2.5cm (1in) across, with infolded centre petals, are borne in summer. †→ 1m (3ft). \*\*\*

**R. 'Petit Four'** ■ syn. *R. 'Interfour'*. Compact, leafy, dwarf cluster-flowered bush rose with mid-green foliage and many flat, semi-double, pink and white flowers, 4cm (1½in) across, borne from summer to autumn. †→ 40cm (16in). \*\*\*

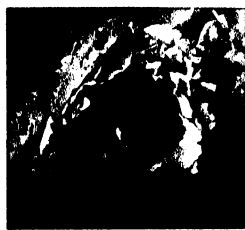
**R. 'Pheasant'** ■ syn. *R. 'Heidekönigin'*, *R. 'Kordapt'*. Ground-cover rose of creeping habit, producing abundant glossy, mid-green leaves. Cupped, double pink flowers, 5cm (2in) across, showing yellow stamens, are borne in

*Rosa* 'Petit Four'





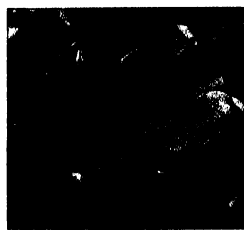
Rosa 'Pink Favorite'



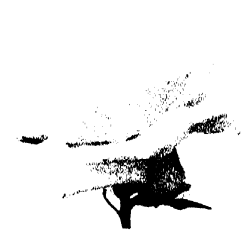
Rosa 'Pink Grootendorst'



Rosa 'Pink Perpetue'



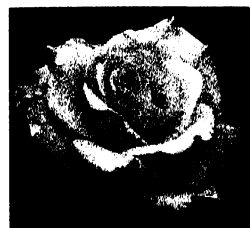
Rosa 'Playgirl'



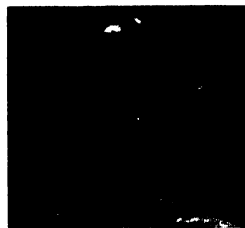
Rosa 'Polar Star'



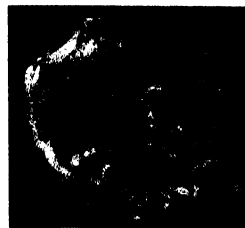
Rosa 'Portlandica'



Rosa 'Pot o' Gold'



Rosa 'Precious Platinum'



Rosa 'Président de Sèze'



Rosa 'Pretty Polly'



Rosa 'Pride of Maldon'



Rosa 'Prima Donna'

clusters along the stems in summer.

↑ 50cm (20in), ↔ 3m (10ft). \*\*\*

**R. 'Phyllis Bide'** ♀ Vigorous climber with many lax shoots and shiny, mid-green leaves with narrow leaflets. From summer to autumn, bears wide clusters of rosette-shaped, double flowers, yellow flushed pink, 5cm (2in) across. ↑ 2.5m (8ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Piccadilly'** ♂ Vigorous large-flowered bush rose producing abundant glossy, reddish green foliage. From summer to autumn, bears high-centred, double, bicoloured, red and yellow flowers, 12cm (5in) across. ↑ 80cm (32in), ↔ 60cm (24in). \*\*\*

**R. 'Piccolo'**, syn. *R. 'Tanolokip'*. Cluster-flowered bush rose with glossy, dark green leaves. Cupped to flat, double, orange-red flowers, 6cm (2½in) across, are borne from summer to autumn. ↑ 50cm (20in). \*\*\*

**R. 'pimpinellifolia'**, syn. *R. spinosissima* (Burnet rose, Scotch rose, Scots rose). Dense, spreading, prickly species rose of suckering habit, with small, fern-like, dark green leaves composed of 7–9, rarely 11, broadly elliptic or broadly obovate to almost rounded leaflets,

0.5–2cm (¼–¾in) long. Solitary, cupped, single, creamy white flowers, 4cm (1½in) across, are borne freely in early summer, followed by spherical, purplish black hips. ↑ to 1m (3ft), ↔ 1.2m (4ft). W. and S. Europe, S.W. and C. Asia to China and Korea. \*\*\*

**var. *altaica*** see *R. 'Grandiflora'*. **'Dunwichensis'** see *R. 'Dunwich Rose'*.

**'Plena'** ♂ has double white flowers. **R. 'Pink Bells'** ♂ syn. *R. 'Poulbells'*.

Vigorous, spreading ground-cover rose of dense habit, with abundant, mid-green foliage. Pompon, fully double, bright pink flowers, 2.5cm (1in) across, are borne along the stems in summer. ↑ 75cm (30in), ↔ 1.5m (5ft). \*\*\*

**R. 'Pink Chimo'** ♂ syn. *R. 'Interchimp'*. Vigorous ground-cover shrub rose with abundant dark green leaves. Cupped to flat, semi-double, deep pink flowers, 5cm (2in) across, are borne freely along the stems from summer to autumn. ↑ 60cm (24in), ↔ 1.5m (5ft). \*\*\*

**R. 'Pink Cover'** see *R. 'Essex'*. **R. 'Pink Favorite'** ♂ Branching large-flowered bush rose with long, shiny dark green leaves. High-centred to cupped, double, bright rose-pink flowers, deeper

in bud, 9cm (3½in) across, are borne freely from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Pink Grootendorst'** ♂♀ Rugosa rose of upright, dense habit, with prickly stems and coarse, leathery, dark green leaves. Crowded clusters of rosette-shaped, double, rose-pink flowers, 4cm (1½in) across, with frilled petals, are borne from summer to autumn. ↑ 1.3m (4½ft), ↔ 1.1m (3½ft). \*\*\*

**R. 'Pink Nevada'** see *R. 'Marguerite Hilling'*.

**R. 'Pink Parfait'**. Cluster-flowered bush rose of neat habit, producing mid-green foliage. High-centred to cupped, double flowers, 9cm (3½in) across, in shades of light pink, are borne freely from summer to autumn. ↑ 70cm (28in), ↔ 60cm (24in). \*\*\*

**R. 'Pink Perpetue'** ♂ Stiffly branched climber with leathery, dark green leaves. Rounded to cupped, double, scented pink flowers, 8cm (3in) across, with a deeper pink reverse to the petals, are borne from summer to autumn. ↑ to 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Pink Symphony'** see *R. 'Pretty Polly'*.

**R. 'Playboy'** ♂ syn. *R. 'Cheerio'*. Cluster-flowered bush rose with dense, glossy, dark green foliage. From summer to autumn, bears cupped, semi-double, orange-yellow flowers, 8cm (3in) across, shaded scarlet, with reflexed petals. ↑ 75cm (30in), ↔ 65cm (26in). \*\*\*

**R. 'Playgirl'** ♂ syn. *R. 'Morplag'*. Cluster-flowered bush rose with dark

green foliage and sprays of cupped, single, deep rose-pink flowers, 8cm (3in) across, with golden stamens, borne freely from summer to autumn. ↑ 75cm (30in), ↔ 65cm (26in). \*\*\*

**R. 'Poesie'** see *R. 'Tournament of Roses'*.

**R. 'Polar Star'** ♂ syn. *R. 'Polarstern'*, *R. 'Tanlarpost'*. Vigorous, free-branching large-flowered bush rose with dark green leaves. High-centred, fully double, creamy white flowers, 11cm (4½in) across, are borne on long, stiff stems, from summer to autumn. ↑ 1m (3ft), ↔ 70cm (28in). \*\*\*

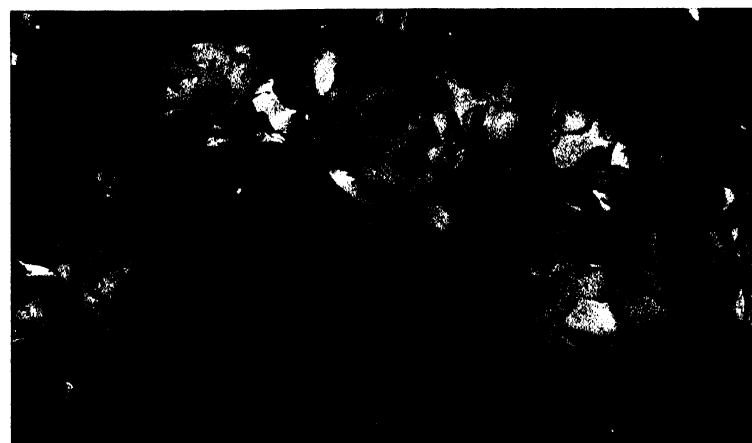
**R. 'Polarstern'** see *R. 'Polar Star'*.

**R. 'Pompon de Paris'** see *R. 'Rouletti'*. **R. 'Pompon des Dames'** see *R. 'Petite de Hollande'*.

**R. 'Pompon des Princes'** see *R. 'Ispahan'*.

**R. 'Popcorn'**. Vigorous miniature bush rose of compact habit, producing small, glossy, dark green leaves. Clusters of numerous cupped to flat, semi-double, honey-scented white flowers, 2.5cm (1in) across, showing yellow stamens, cover the plant from summer to autumn. ↑ 30cm (12in). \*\*\*

**R. 'Portlandica'** ♂ syn. *R. 'Duchess of Portland'*, *R. 'Paestana'* (Portland rose). Vigorous Portland rose of shrubby habit, with dark green leaves. Cupped, single to semi-double, cerise-red flowers, 8cm (3in) across, with golden stamens, are borne in summer, and again in autumn if dead-headed. ↑ 1m (3ft). \*\*\*



Rosa 'Playboy'

**R. 'Pot o' Gold'** ♂ syn. *R. 'Diddivine'*. Large-flowered bush rose of neat, spreading habit, with abundant, mid-green foliage. Rounded, fully double, fragrant, golden yellow flowers, 9cm (3½in) across, are borne from summer to autumn. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Precious Platinum'** ♂ syn. *R. 'Opa Pötschke'*. Vigorous large-flowered bush rose of uneven growth, producing glossy, dark green leaves. Rounded, fully double, bright crimson-scarlet flowers, 10cm (4in) across, are borne from summer to autumn. ↑ 1m (3ft), ↔ 65cm (26in). \*\*\*

**R. 'Preference'** see *R. 'Princesse de Monaco'*.

**R. 'Président de Sèze'** ♂♀ syn. *R. 'Jenny Duval'*, *R. 'Mme Hébert'*. Vigorous Gallica rose of open habit, with greyish green foliage. Quartered-rosette, fully double, fragrant, pale lilac-pink flowers, 10cm (4in) across, with deep magenta margins, are borne in summer. ↑ 1.2m (4ft). \*\*\*

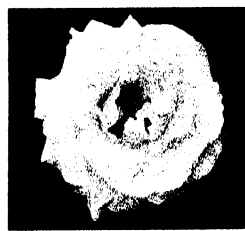
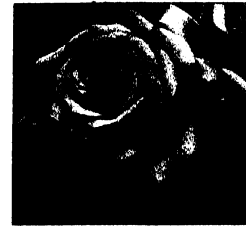
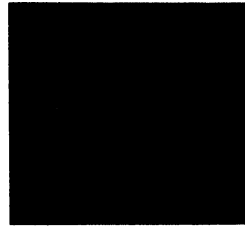
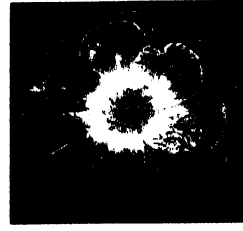
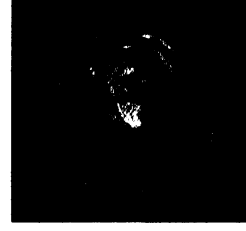
**R. 'Pretty Polly'** ♂ syn. *R. 'Meitonje'*, *R. 'Pink Symphony'*, *R. 'Sweet Sunblaze'*. Dwarf cluster-flowered bush rose of compact, rounded habit, with abundant dark green leaves. Many cupped, fully double, rose-pink flowers, 4.5cm (1¾in) across, are borne from summer to autumn. ↑ 40cm (16in), ↔ 45cm (18in). \*\*\*

**R. 'Pride of Maldon'** ♂ syn. *R. 'Harwonder'*. Vigorous cluster-flowered bush rose of dense, leafy growth, with lustrous, dark green leaves. From summer to autumn, bears many showy, cupped, semi-double orange flowers, 9cm (3½in) across, with a yellow reverse to the petals. ↑ 75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Prima'** see *R. 'Many Happy Returns'*.

**R. 'Prima Ballerina'**. Vigorous large-flowered bush rose, often with scaly marks on the stems, producing leathery, mid-green leaves. Urn-shaped, double, fragrant, warm rose-pink flowers, 10cm (4in) across, are borne from summer to autumn. ↑ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Prima Donna'** ♂ syn. *R. 'Tobone'*. Tall large-flowered bush rose producing mid-green leaves. High-centred, double, deep pink flowers, 10cm (4in) across, are produced on long stems from

*Rosa primula**Rosa* 'Princess Michael of Kent'*Rosa* 'Pristine'*Rosa* 'Queen Elizabeth'*Rosa* 'Queen Mother'*Rosa* 'Radox Bouquet'*Rosa* 'Ramona'*Rosa* 'Raubritter'*Rosa* 'Red Ace'*Rosa* 'Red Blanket'*Rosa* 'Regensburg'*Rosa* 'Reine des Violettes'

summer to autumn. † 1.2m (4ft), ↔ 70cm (28in). \*\*\*

**R. *primula*** [V] (Incense rose). Erect to arching species rose with aromatic, dense, fern-like, mid-green leaves comprising 9, rarely 7–13, elliptic to obovate or inversely lance-shaped leaflets, to 2cm (¾in) long, on slender, reddish green stems. Solitary, cupped, single, scented, pale primrose-yellow flowers, to 5cm (2in) across, are borne in late spring; they are followed by spherical to inversely cone-shaped, brownish maroon hips. † to 3m (10ft), ↔ 2m (6ft). Asia (Turkmenistan to N. China). \*\*\* (borderline)

**R. 'Prince Charles'**. Arching, lax Bourbon rose with smooth stems and leathery, dark green leaves. Loosely formed, rounded to cupped, double, fragrant, crimson-purple flowers, 10cm (4in) across, fading to lilac-red, are borne in summer. † to 1.5m (5ft), ↔ 1.3m (4ft). \*\*\*

**R. 'Princess Alice'** [V] syn. *R.* 'Brite Lites', *R.* 'Hartanna', *R.* 'Zonta Rose'. Cluster-flowered bush rose of narrow

habit, with mid-green leaves comprising lance-shaped leaflets. Long-stemmed sprays of rounded, double, bright yellow flowers, 6cm (2½in) across, are borne from summer to autumn. † 1.1m (3½ft), ↔ 60cm (24in). \*\*\*

**R. 'Princesse de Monaco'**, syn.

*R.* 'Meimagarmic', *R.* 'Preference'.

Vigorous, branching large-flowered bush rose producing dark green foliage. High-centred, fully double, fragrant white flowers, 11cm (4½in) across, with pink-margined petals, are borne from summer to autumn. † 1m (3ft), ↔ 65cm (26in). \*\*\*

**R. 'Princess Michael of Kent'** [V] syn.

*R.* 'Harlightly'. Neat cluster-flowered bush rose with glossy, bright green foliage. Rounded, fully double, scented yellow flowers, 9cm (3½in) across, are borne from summer to autumn. † 60cm (24in), ↔ 50cm (20in). \*\*\*

**R. 'Prinz Eugen van Savoyen'** see *R.* 'Amber Queen'.

**R. 'Pristine'** [V] syn. *R.* 'Jacpico'.

Vigorous large-flowered bush rose producing dark green leaves with very

large leaflets. From summer to autumn, bears high-centred, double, scented flowers, 12cm (5in) across, ivory flushed pale pink with long, overlapping petals. † 1.2m (4ft), ↔ 75cm (30in). \*\*\*

**R. 'Probuzini'** see *R.* 'Awakening'.

**R. 'Prominent'** see *R.* 'Korp'.

**R. 'Prosperity'** [V] Dense, arching shrub rose with many dark green leaves. From summer to autumn, bears large clusters of rosette-shaped, double, scented, creamy white flowers, 5cm (2in) across, flushed pale pink. † to 2.5m (8ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Pyrenees'** see *R.* 'Kent'.

**R. 'Quatre Saisons'** see *R.* x *damascena* var. *sempervirens*.

**R. 'Quatre Saisons Blanche**

*Mousseuse'*, syn. *R.* 'Perpetual White Moss', *R.* 'Rosier de Thionville'. Open, arching Moss rose, a sport of *R.*

x *damascena* var. *sempervirens*, with light green leaves, and stems and buds covered with stiff, brownish green moss. Loosely formed, cupped to flat, double, fragrant white flowers, 9cm (3½in) across, are borne in summer, and sporadically in autumn. † 1.5m (5ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Queen Elizabeth'** [V] [V] syn. *R.*

'The Queen Elizabeth'. Vigorous cluster-flowered bush rose with leathery, dark green leaves. Rounded, fully double pink flowers, 10cm (4in) across, are borne on long, stiff stems from summer to autumn. † to 2.2m (7ft), ↔ 1m (3ft). \*\*\*

**R. 'Queen Mother'** [V] [V] syn. *R.*

'Korquemu'. Dwarf cluster-flowered bush rose of spreading habit, with abundant glossy, mid-green foliage. Many cupped to flat, semi-double, clear pink flowers, 6cm (2½in) across, are borne from summer to autumn. † 40cm (16in), ↔ 60cm (24in). \*\*\*

**R. 'Queen of Beauty & Fragrance'** see *R.* 'Souvenir de la Malmaison'.

**R. 'Queen of Denmark'** see *R.* 'Königin von Dänemark'.

**R. 'Queen of the Violets'** see *R.* 'Reine des Violettes'.

**R. 'Radox Bouquet'** [V] syn. *R.*

'Harmusky', *R.* 'Rosika'. Cluster-flowered bush rose producing shiny, mid-green foliage. Rosette-shaped, fully double, fragrant, rose-pink flowers, 9cm (3½in) across, are borne from summer to autumn. † 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Rambling Rector'** [V] [V] Rampant climber with strong, arching stems and abundant grey-green foliage. Clusters of many cupped to flat, semi-double, scented, creamy white flowers, 4cm (1½in) across, showing golden stamens, are borne in summer, followed by spherical red hips in autumn. † 6m (20ft). \*\*\*

**R. 'Ramona'** [V] syn. *R.* x *anemonoides*

'Ramona', *R.* 'Red Cherokee'. Stiff, open climber with sparse, dark green leaves. Flat, single, carmine-red flowers, 10cm (4in) across, with a greyish red reverse to the petals and gold stamens, are borne in early summer. † 2.5m (8ft), ↔ 3m (10ft). \*\*\*

**R. 'Raspberry Ice'** see *R.* 'Hannah Gordon'.

**R. 'Raubritter'** [V] syn. *R.* 'Macrantha Raubritter'. Shrub rose of lax, spreading habit, with dark greyish green leaves. Clusters of many rounded, semi-double pink flowers, 5cm (2in) across, are borne in summer. † to 1m (3ft), ↔ 2m (6ft). \*\*\*

**R. 'Red Ace'** [V] syn. *R.* 'Amanda', *R.* 'Amruda'. Compact miniature bush rose with mid-green foliage. Clusters of rounded, semi-double, dark crimson flowers, 4cm (1½in) across, are borne from summer to autumn. † 35cm (14in), ↔ 30cm (12in). \*\*\*

**R. 'Red Ballerina'** see *R.* 'Marjorie Fair'.

**R. 'Red Blanket'** [V] [V] syn. *R.* 'Intercell'. Ground-cover shrub rose of spreading habit, with abundant dark green leaves. Semi-double flowers, opening flat, to 7cm (3in) across, are rose-red paling to white at the petal bases, and are borne in wide, showy clusters from summer to autumn. † 75cm (30in), ↔ 1.2m (4ft). \*\*\*

**R. 'Red Cascade'**, syn. *R.* 'Moorcap'. Miniature climber of dense, spreading habit, with dark green leaves. Tight clusters of cupped, fully double, dark red flowers, 4cm (1½in) across, are borne from summer to autumn. † to 1.5m (5ft). \*\*\*

**R. 'Red Cherokee'** see *R.* 'Ramona'.

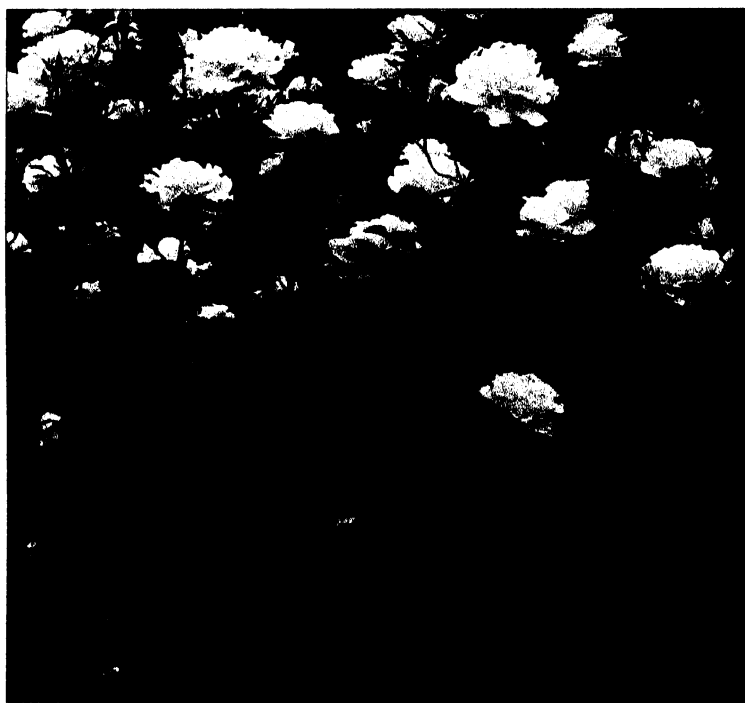
**R. 'Red Dorothy Perkins'** see *R.* 'Excelsa'.

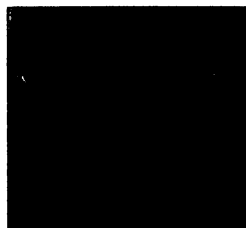
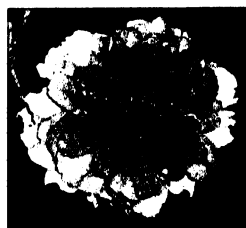
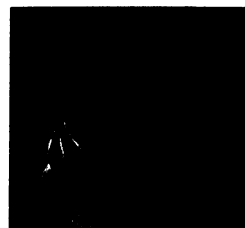
**R. 'Red Prince'** see *R.* 'Fountain'.

**R. 'Red Yesterday'** see *R.* 'Marjorie Fair'.

**R. 'Regensburg'** [V] syn. *R.* 'Buffalo Bill', *R.* 'Macyoumis', *R.* 'Young Mistress'.

R

*Rosa* 'Princess Alice'

*Rosa* 'Reine Victoria'*Rosa* 'Remember Me'*Rosa* 'Rise 'n' Shine'*Rosa* 'Robin Redbreast'*Rosa* 'Robusta'*Rosa* 'Roger Lambelin'*Rosa* 'Rosemary Harkness'*Rosa* 'Rosaie de l'Hay'*Rosa* 'Rosy Cushion'*Rosa* 'Rosy Mantle'*Rosa roxburghii**Rosa* 'Royal William'

Cluster-flowered bush rose of short, dense habit, with glossy, mid-green leaves. Cupped, double flowers, opening to 11cm (4½in) across, deep pink marked with white, are borne in dense clusters from summer to autumn.

‡40cm (16in), ↔50cm (20in). \*\*\*  
**R. 'Reine des Neiges'** see *R. 'Frau Karl Druschki'*.

**R. 'Reine des Violettes'** □ syn. *R. 'Queen of the Violets'*. Arching Hybrid Perpetual rose with smooth stems and greyish green leaves. From summer to autumn, bears quartered-rosette, fully double, fragrant, violet-purple flowers, 8cm (3in) across. ‡1.5m (5ft), ↔1.2m (4ft). \*\*\*

**R. 'Reine Victoria'** □ syn. *R. 'La Reine Victoria'*. Lax Bourbon rose with slender stems and light green leaves. Cupped, double, scented, light rose-pink flowers, 8cm (3in) across, are borne from summer to autumn. ‡2m (6ft), ↔1.2m (4ft). \*\*\*

**R. 'Remember Me'** □ syn. *R. 'Cocdestin'*. Vigorous large-flowered bush rose of stiff habit, with abundant

glossy, dark green leaves. High-centred, fully double, copper-orange flowers, 9cm (3½in) across, are borne singly and in wide sprays from summer to autumn. ‡1m (3ft), ↔60cm (24in). \*\*\*

**R. 'Rise 'n' Shine'** □ syn. *R. 'Golden Sunblaze'*. Miniature bush rose of upright habit, with dark green leaves. Urn-shaped, fully double yellow flowers, 4cm (1½in) across, are borne from summer to autumn. ‡40cm (16in), ↔25cm (10in). \*\*\*

**R. 'Robert le Diable'**. Centifolia rose of bushy, lax habit, with narrow, dark green leaves. In summer, bears cupped to flat, semi-double, scented purple flowers, 8cm (3in) across, shaded slate-grey and splashed with cerise-red. ‡1m (3ft). \*\*\*

**R. 'Robin Redbreast'** □ syn. *R. 'Interrob'*. Dwarf ground-cover rose of dense habit, with many shiny, mid-green leaves. Dense clusters of cupped to flat, single, dark red flowers, 4.5cm (1¾in) across, with pale white centres, are produced from summer to autumn. ‡45cm (18in), ↔60cm (24in). \*\*\*

**R. 'Robusta'** □ syn. *R. 'Kordes Robusta'*. Vigorous, stiff-growing Rugosa rose with prickly stems and leathery, dark green leaves. Clusters of cupped, single, wine-red flowers, 6cm (2½in) across, with wavy-margined petals, are produced from summer to autumn. ‡1.5m (5ft), ↔1m (3ft). \*\*\*

**R. 'Rock 'n' Roll'** see *R. 'Tango'*.

**R. 'Roger Lambelin'** □ Hybrid Perpetual rose with a shrubby habit, which produces dark green leaves. Loosely formed, rounded, double, fragrant flowers, 7cm (3in) across, with maroon, white-margined petals, are borne mainly in summer. Prone to rust. ‡1m (3ft). \*\*\*

**R. 'Rose Capucine'** see *R. foetida* 'Bicolor'.

**R. 'Rose de Meaux'** see *R. 'De Meaux'*.

**R. 'Rose des Maures'** see *R. 'Sissinghurst Castle'*.

**R. 'Rose d'Isfahan'** see *R. 'Isfahan'*.

**R. 'Rose Gaujard'**. Strong-growing large-flowered bush rose with abundant glossy, dark green foliage. Urn-shaped, double, cherry-red flowers, 10cm (4in) across, with a pale pink reverse to the petals, are borne from summer to autumn. ‡1m (3ft), ↔75cm (30in). \*\*\*

**R. 'Rose-Marie Viaud'**. Vigorous rambler with conspicuously veined, light green leaves. Sprays of rosette-shaped, double, lavender-pink to purple flowers, 4cm (1½in) across, fading to greyish mauve, are produced in summer. ‡to 5m (15ft), ↔2.5m (8ft). \*\*\*

**R. 'Rosemary Harkness'** □ syn. *R. 'Harrowbond'*. Vigorous large-flowered bush rose of shrubby habit, with glossy, dark green foliage. Urn-shaped buds open to rounded, double, fragrant, orange to salmon-pink flowers, 10cm (4in) across, from summer to autumn. ‡80cm (32in). \*\*\*

**R. 'Rosaie de l'Hay'** □ syn. Vigorous, dense Rugosa rose with leathery, wrinkled, light green leaves. Cupped to flat, double, strongly scented, rich purple-red flowers, 11cm (4½in) across, are borne from summer to autumn. ‡2.2m (7ft), ↔2m (6ft). \*\*\*

**R. 'Rosette Delizy'**. Vigorous, upright, shrubby Tea rose with glossy, dark green leaves. From summer to autumn, bears high-centred, double, tea-scented, pale

yellow flowers, 9cm (3½in) across, flushed apricot-pink. ‡to 1.2m (4ft), ↔1m (3ft). \*\*\*

**R. 'Rosier de Thionville'** see *R. 'Quatre Saisons Blanche Mousseuse'*.

**R. 'Rosika'** see *R. 'Radox Bouquet'*.

**R. 'Rosy Cushion'** □ syn. *R. 'Interall'*. Dense, spreading shrub rose with abundant glossy, dark green leaves. From summer to autumn, bears clusters of cupped, semi-double, scented pink flowers, 6cm (2½in) across, with off-white centres. ‡1m (3ft), ↔1.2m (4ft). \*\*\*

**R. 'Rosy Mantle'** □ Stiff climber of open habit, with sparse dark green leaves. High-centred, fully double, fragrant, rose- to salmon-pink flowers, 10cm (4in) across, are borne from summer to autumn. ‡2.5m (8ft), ↔2m (6ft). \*\*\*

**R. 'Rouletii'**, syn. *R. chinensis* var. *minima*, *R. 'Pompon de Paris'*. Compact miniature China rose with thin stems and mid-green leaves comprising many lance-shaped leaflets. Cupped, double, deep pink flowers, 2cm (¾in) across, are borne freely from summer to autumn. ‡20cm (8in). \*\*\*

**R. roxburghii** □ syn. *R. roxburghii* 'Plena' (Burr rose, Chestnut rose, Chinquapin rose). Vigorous, stiff-growing species rose with flaky bark and light to mid-green leaves, each comprised of 7, rarely 17–19, narrowly ovate to obovate leaflets, 1.5–2.5cm (½–1in) long. Solitary, neatly formed, rounded, double, lilac-pink flowers, 8cm (3in) across, open from prickly buds in summer. ‡2m (6ft). E. Asia. \*\*\*

**'Plena'** see *R. roxburghii*.

**R. 'Royal Dane'** see *R. 'Troika'*.

**R. 'Royal Highness'**, syn. *R. 'Königliche Hoheit'*. Large-flowered bush rose producing strong stems and leathery, dark green leaves. High-centred, fully double, fragrant, pearl-pink flowers, 12cm (5in) across, are borne from summer to autumn. ‡1.1m (3½ft), ↔60cm (24in). \*\*\*

**R. 'Royal William'** □ syn. *R. 'Duftzauber '84'*, *R. 'Korzaun'*.

Vigorous, large-flowered bush rose with dark green leaves. High-centred, fully double, fragrant, deep crimson flowers, 12cm (5in) across, are borne from summer to autumn. ‡1m (3ft), ↔75cm (30in). \*\*\*

**R. rubiginosa** see *R. eglanteria*.

*Rosa* 'Rambling Rector'

*Rosa rugosa**Rosa* 'Rugul'*Rosa* 'Salet'*Rosa* 'Sally Holmes'*Rosa* 'Sanders' White Rambler'*Rosa* 'Sandringham Centenary'*Rosa* 'Sarah van Fleet'*Rosa* 'Savoy Hotel'*Rosa* 'Seagull'*Rosa* 'Sexy Remy'*Rosa* 'Sheila's Perfume'*Rosa* 'Sheri Anne'

*R. rubrifolia* see *R. glauca*.

*R. rugosa* [Hedgehog rose, Japanese rose, Ramanas rose]. Vigorous, dense species rose with very prickly stems and wrinkled, leathery, dark green leaves, each composed of 7–9, rarely up to 11, narrowly oblong leaflets, 2.5–5cm (1–2in) long. Cupped, single, fragrant, violet-carmine-red flowers, 8cm (3in) across, showing yellow stamens, are borne singly or in small clusters from summer to autumn, followed by tomato-shaped, red to orange-red hips. Good as a hedge.  $\pm$  1–2.5m (3–8ft). E. Russia, N. China, Korea, Japan. \*\*\*  
*var. alba* ♀ has white flowers, to 9cm (3½in) across, opening from pale pink buds. *var. rosea* [ ] has rose-pink flowers. *var. rubra* ♀ syn. f. *rubra*, has purplish red flowers. 'Scabrosa' see *R. 'Scabrosa'*. *R. 'Rugul'* [ ] syn. *R. 'Guletta'*, *R. 'Tapis Jaune'*. Compact, dwarf cluster-flowered bush rose of dense habit, with bright green foliage. Cupped to flat, double yellow flowers, 5cm (2in) across, are produced from summer to autumn.  $\pm$  30cm (12in),  $\leftrightarrow$  35cm (14in). \*\*\*

*R. 'St. Cecilia'*, syn. *R. 'Ausmit'*. Upright shrub rose with mid-green leaves and neatly spaced, cupped, fully double, myrrh-scented, pale apricot-pink to white flowers, 10cm (4in) across, borne on bowed stems from summer to autumn.  $\pm$  1m (3ft),  $\leftrightarrow$  75cm (30in). \*\*\*  
*R. 'St. Nicholas'*. Vigorous, erect, prickly Damask rose with abundant downy, dark green foliage. Cupped, semi-double, scented, rose-pink flowers, 12cm (5in) across, with golden stamens, are borne in summer, followed by ellipsoid, orange-red hips.  $\pm$  to 2m (6ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*  
*R. 'Salet'* [ ] Upright, arching Moss rose with lightly mossed stems and matt, pale green foliage. Bears rounded, double, fragrant, clear rose-pink flowers, 7cm (3in) across, mainly in summer.  $\pm$  1.2m (4ft),  $\leftrightarrow$  1m (3ft). \*\*\*  
*R. 'Sally Holmes'* [ ] ♀ Upright, narrow shrub rose with glossy, dark green leaves. Large clusters of many wide, cupped, single, scented, creamy white flowers, 9cm (3½in) across, are borne on long

stems from summer to autumn.  $\pm$  2m (6ft),  $\leftrightarrow$  1m (3ft). \*\*\*

*R. 'Samaritan'*, syn. *R. 'Fragrant Surprise'*, *R. 'Harverag'*. Large-flowered bush rose with abundant glossy, mid-green foliage. From summer to autumn, wide sprays of pointed buds open to quartered-rosette, fully double, scented flowers, 9cm (3½in) across, which age from apricot-pink to orange-red.  $\pm$  70cm (28in),  $\leftrightarrow$  60cm (24in). \*\*\*

*R. 'Sanders' White Rambler'* [ ] ♀ Vigorous, arching rambler of lax growth, with abundant glossy, light green leaves. Sprays of many rosette-shaped, fully double, scented white flowers, 5cm (2in) across, cover the plant in late summer.  $\pm$  to 4m (12ft). \*\*\*

*R. 'Sandringham Centenary'* [ ] Vigorous large-flowered bush rose producing dark green leaves. High-centred, double, rose- to salmon-pink flowers, 11cm (4½in) across, are borne from summer to autumn.  $\pm$  1.2m (4ft),  $\leftrightarrow$  75cm (30in). \*\*\*

*R. 'San Rafael'* see *R. x odorata* 'Pseudindica'.

*R. 'Sarah van Fleet'* [ ] Vigorous, erect to arching Rugosa rose producing large, wrinkled, bronze-green leaves. Cupped, semi-double, fragrant, clear light pink flowers, 8cm (3in) across, showing yellow stamens, are borne from summer to autumn.  $\pm$  2.5m (8ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

*R. 'Savoy Hotel'* [ ] ♀ syn. *R. 'Harvintage'*, *R. 'Integrity'*. Vigorous large-flowered bush rose with strong stems and dark green leaves. From summer to autumn, bears high-centred to rounded, fully double, light pink flowers, 11cm (4½in) across, with a deeper pink reverse to the petals.  $\pm$  80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

*R. 'Scabrosa'* ♀ syn. *R. rugosa* 'Scabrosa'. Vigorous, dense-growing Rugosa rose of rounded habit, with wrinkled, leathery, light green leaves. Cupped, single, fragrant, reddish mauve flowers, 10cm (4in) across, with prominent yellow stamens, are borne from summer to autumn, followed by tomato-shaped red hips.  $\pm$  to 1.7m (5½ft). \*\*\*

*R. 'Scarlet Fire'* see *R. 'Scharlachglut'*.

*R. 'Scarlet Glow'* see *R. 'Scharlachglut'*.

*R. 'Scharlachglut'* ♀ syn. *R. 'Scarlet Fire'*, *R. 'Scarlet Glow'*. Very vigorous, arching shrub or climbing rose of open

habit, with dark green leaves. Showy, cupped, single, bright crimson-scarlet flowers, 12cm (5in) across, with golden stamens, are borne freely in summer, followed by pear-shaped, bright red hips.  $\pm$  to 3m (10ft),  $\leftrightarrow$  2m (6ft). \*\*\*  
*R. 'Schneewittchen'* see *R. 'Iceberg'*.  
*R. 'Schneezwerg'* ♀ syn. *R. 'Snow Dwarf'*. Rugosa rose of dense, bushy, even habit, with wrinkled, mid-green leaves. From summer to autumn, bears flat, semi-double, scented white flowers, 8cm (3in) across, showing yellow stamens; they are followed by tomato-shaped, orange-red hips.  $\pm$  1.2m (4ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

*R. 'Schoolgirl'*. Stiff, lanky, large-flowered climber producing sparse deep green leaves. High-centred to rounded, fully double, scented, deep apricot flowers, 10cm (4in) across, are borne from summer to autumn.  $\pm$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). \*\*\*

*R. 'Seagull'* [ ] ♀ Rampant rambler of arching habit, with greyish green leaves. Large clusters of numerous cupped to flat, single to semi-double white flowers, 2.5cm (1in) across, with golden stamens, cover the plant in summer.  $\pm$  to 6m (20ft),  $\leftrightarrow$  4m (12ft). \*\*\*

*R. sericea* subsp. *omeiensis* f.

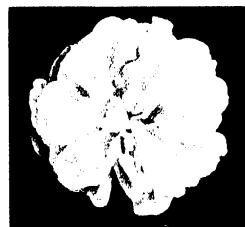
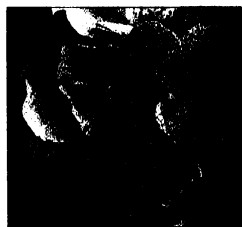
*pteracantha*, syn. *R. omeiensis* f.

*pteracantha* (Winged thorn rose). Stiff, upright, vigorous species rose with large, translucent red prickles, to 3cm (1¼in) or more wide and 2cm (¾in) tall, on young stems. Small, fern-like, light green leaves each have 11–17 elliptic, oblong, or obovate leaflets, 1–3cm (½–1¼in) long. Solitary, flat, usually 4-petalled white flowers, 2.5–6cm (1–2½in) across, are borne briefly along the stems in summer.  $\pm$  2.5m (8ft),  $\leftrightarrow$  2.2m (7ft). W. China. \*\*\*

*R. 'Sexy Remy'* [ ] ♀ syn. *R. 'Heckenzauber'*, *R. 'Macrexy'*. Cluster-flowered bush rose producing abundant glossy, dark green foliage. Showy, heavy heads of camellia-like, rounded, fully double, rose-pink flowers, 8cm (3in) across, are borne from summer to autumn.  $\pm$  70cm (28in),  $\leftrightarrow$  60cm (24in). \*\*\*

*R. 'Sheila's Perfume'* [ ] syn. *R. 'Harsherry'*. Cluster-flowered bush rose with glossy, dark green leaves. Urn-shaped, double, fragrant yellow flowers, 9cm (3½in) across, strongly marked and veined with red, are borne singly or in



*Rosa* 'Silver Jubilee'*Rosa* 'Simba'*Rosa* 'Snowball'*Rosa* 'Southampton'*Rosa* 'Souvenir de la Malmaison'*Rosa* 'Souvenir de St. Anne's'*Rosa* 'Stacey Sue'*Rosa* 'Stanwell Perpetual'*Rosa* 'Sue Lawley'*Rosa* 'Summer Wine'*Rosa* 'Sunblest'*Rosa* 'Surrey'

open clusters from summer to autumn.  $\uparrow$ 75cm (30in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Sheri Anne'**  $\square$  Miniature bush rose of neat, upright habit, with glossy, mid-green leaves. From summer to autumn, bears clusters of many urn-shaped, double, light orange-red flowers, 2.5cm (1in) across, the petals with yellow bases.  $\uparrow$ 35cm (14in),  $\leftrightarrow$  30cm (12in). \*\*\*

**R. 'Shocking Blue'**  $\square$  syn. *R. 'Korblue'*. Cluster-flowered bush rose with dark green leaves. Urn-shaped buds open to rounded, fully double, fragrant, lilac-purple flowers, 10cm (4in) across, borne singly or in clusters from summer to autumn.  $\uparrow$ 75cm (30in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Silver Jubilee'**  $\square$  Large-flowered bush rose of dense, leafy habit, with dark green leaves. High-centred, fully double, rose-pink flowers, to 12cm (5in) across, flushed peach- or salmon-pink, are borne singly or in open clusters on strong stems from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Silver Moon'**. Vigorous, free-branching climber with long, arching stems and glossy, dark green leaves. In summer, freely bears clusters of cupped, semi-double, scented, creamy white flowers, 10cm (4in) across.  $\uparrow$  to 6m (20ft),  $\leftrightarrow$  3m (10ft). \*\*\*

**R. 'Simba'**  $\square$  syn. *R. 'Goldsmith'*, *R. 'Helmut Schmidt'*, *R. 'Korbelma'*. Large-flowered bush rose of neat habit, with mid-green leaves. Urn-shaped buds open to well-formed, rounded, fully double yellow flowers, 9cm (3½in) across, borne from summer to autumn.  $\uparrow$ 60cm (24in),  $\leftrightarrow$  50cm (20in). \*\*\*

**R. 'Sissi'**  $\square$  syn. *R. 'Blue Moon'*. **R. 'Sissinghurst Castle'**  $\square$  syn. *R. 'Rose des Maures'*. Gallica rose of upright, free-suckering habit, with slender, firm stems and dark green leaves. Cupped to flat, semi-double, scented, deep maroon-crimson flowers, 6cm (2½in) across, showing yellow stamens, are borne in summer.  $\uparrow$  to 1m (3ft). \*\*\*

**R. 'Snowball'**  $\square$  syn. *R. 'Angelita'*, *R. 'Macangel'*. Compact miniature bush rose of spreading habit, with many tiny, bright green leaves. Clusters of pompon, narrow-petalled, fully double white flowers, 2.5cm (1in) across, are borne from summer to autumn.  $\uparrow$ 20cm (8in),  $\leftrightarrow$  30cm (12in). \*\*\*

**R. 'Snow Carpet'**  $\square$  syn. *R. 'Maccarpe'*. Prostrate, creeping miniature ground-

cover rose with bright green leaves. In summer, bears pompon, fully double, creamy white flowers, 3cm (1¼in) across.  $\uparrow$ 15cm (6in),  $\leftrightarrow$  45cm (18in). \*\*\*

**R. 'Snow Dwarf'**  $\square$  see *R. 'Schneezwerg'*. **R. 'Snow Queen'**  $\square$  see *R. 'Frau Karl Druschki'*.

**R. 'Sommerwind'**  $\square$  see *R. 'Surrey'*. **R. 'Southampton'**  $\square$   $\square$  syn. *R. 'Susan Ann'*. Cluster-flowered bush rose with shiny, dark green leaves. High-centred, double, scented apricot flowers, 8cm (3in) across, flushed with red, are borne singly or in clusters on firm stems from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  70cm (28in). \*\*\*

**R. 'Souvenir de la Malmaison'**  $\square$  syn. *R. 'Queen of Beauty & Fragrance'*. Dense, spreading Bourbon rose with dark green foliage and quartered-rosette, fully double, spice-scented, pale pink to white flowers, 12cm (5in) across, borne from summer to autumn. Rain may spoil flowers.  $\uparrow$  to 1.5m (5ft). \*\*\*

**R. 'Souvenir de la Princesse de Lamballe'**  $\square$  see *R. 'Bourbon Queen'*. **R. 'Souvenir de St. Anne's'**  $\square$   $\square$  Vigorous Bourbon rose producing abundant dark green foliage. Wide-opening, cupped, semi-double, scented, pearl-pink flowers, 9cm (3½in) across, are borne freely from summer to autumn.  $\uparrow$ 1.5m (5ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Spanish Beauty'**  $\square$  see *R. 'Mme Grégoire Staechelin'*. **R. 'Spanish Shawl'**  $\square$  see *R. 'Sue Lawley'*.

**R. 'Spectacular'**  $\square$  see *R. 'Danse du Feu'*. **R. 'spinosissima'**  $\square$  see *R. 'pimpinellifolia'*.

**R. 'Splendens'**, syn. *R. 'Ayrshire Splendens'* (Myrrh-scented rose). Vigorous climber with dark green leaves. In summer, purple-red buds open to loosely formed, cupped, double, myrrh-scented, pale creamy pink flowers, 4.5cm (1¾in) across, with orange-yellow stamens.  $\uparrow$  to 8m (25ft),  $\leftrightarrow$  3m (10ft). \*\*\*

**R. 'Spring Gold'**  $\square$  see *R. 'Frühlingsgold'*. **R. 'Spring Morning'**  $\square$  see *R. 'Frühlingsmorgen'*.

**R. 'Stacey Sue'**  $\square$   $\square$  Miniature bush rose of neat, spreading habit, with dark green leaves. Rosette-shaped, fully double, rose-pink flowers, 2.5cm (1in) across, are borne in dense sprays from summer to autumn.  $\uparrow$ 25cm (10in),  $\leftrightarrow$  30cm (12in). \*\*\*

**R. 'Stanwell Perpetual'**  $\square$  Scots rose of spreading, twiggly habit, with prickly stems and fern-like, dark greyish green leaves. Loosely formed, cupped, fully double, scented, pale pink flowers, 8cm (3in) across, are borne singly on thin stems from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Starina'**, syn. *R. 'Meigabi'*. Neat miniature bush rose with shiny, dark green leaves. High-centred, fully double, orange-red flowers, 4cm (1½in) across, are borne from summer to autumn.  $\uparrow$  to 35cm (14in). \*\*\*

**R. 'Stars 'n' Stripes'**. Miniature bush rose of uneven, spreading habit, with small, dark green leaves. From summer to autumn, bears cupped, semi-double flowers, 4.5cm (1¾in) across, pale pink to white, striped strawberry-red.  $\uparrow$ 30cm (12in),  $\leftrightarrow$  to 70cm (28in). \*\*\*

**R. stellata var. mirifica** (Sacramento rose). Species rose of suckering habit, with springy, wiry, prickly stems and mid-green leaves, each with 3-5 deeply cut, gooseberry-like, wedge-shaped leaflets, 0.7-1cm (¼-½in) long. In summer bears solitary, wide-opening, cupped to flat, single, scented, pink to deep rose-purple flowers, 3.5-6cm (1½-2¼in) across.  $\uparrow$  to 1.1m (3½ft),  $\leftrightarrow$  1.2m (4ft). USA (New Mexico). \*\*\*

**R. 'Sterling Silver'**. Large-flowered, not very robust bush rose with sparse leathery, mid-green foliage. From summer to autumn, bears high-centred to cupped, double, fragrant, lilac-mauve

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*

**R. 'Suma'**  $\square$   $\square$  syn. *R. 'Harsuma'*. Prostrate ground-cover shrub rose with shiny, dark green foliage, turning burnished crimson in autumn. Clusters of rosette-shaped, double, ruby-red to deep pink flowers, 3cm (1¼in) across, are borne along the stems from summer to autumn.  $\uparrow$ 50cm (20in),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**R. 'Summer Wine'**  $\square$   $\square$  syn. *R. 'Korizont'*. Climber with stiff, branching growth and mid-green leaves. Cupped, single, scented, coral-pink flowers, 10cm (4in) across, shaded yellow at the bases and with folded petals, are produced from summer to autumn.  $\uparrow$ 3m (10ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

**R. 'Sunblaze'**  $\square$   $\square$  see *R. 'Orange Sunblaze'*. **R. 'Sunblest'**  $\square$   $\square$  syn. *R. 'Landora'*. Large-flowered bush rose producing shiny, mid-green leaves. Pointed buds open to cupped, double yellow flowers, 9cm (3½in) across, borne freely from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Sunnyside'**  $\square$   $\square$  see *R. 'Avon'*. **R. 'Sunsprite'**  $\square$   $\square$  see *R. 'Korresia'*. **R. 'Super Star'**, syn. *R. 'Tanorstar'*, *R. 'Tropicana'*. Large-flowered bush rose of open, uneven habit, with small, dark green leaves. Rounded, fully double, lightly scented, vermilion to pale scarlet flowers, 11cm (4½in) across, are borne from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Surrey'**  $\square$   $\square$   $\square$  syn. *R. 'Korlanum'*, *R. 'Sommerwind'*, *R. 'Vent d'Été'*. Vigorous, mound-forming ground-cover shrub rose with abundant dark green foliage. Clusters of cupped, double, rose-pink flowers, 6cm (2½in) across, are borne along the stems from summer to autumn.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Susan Ann'**  $\square$   $\square$  see *R. 'Southampton'*. **R. 'Sutter's Gold'**. Spindly large-flowered bush rose with sparse leathery, dark green foliage. High-centred buds

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*

**R. 'Suma'**  $\square$   $\square$  syn. *R. 'Harsuma'*. Prostrate ground-cover shrub rose with shiny, dark green foliage, turning burnished crimson in autumn. Clusters of rosette-shaped, double, ruby-red to deep pink flowers, 3cm (1¼in) across, are borne along the stems from summer to autumn.  $\uparrow$ 50cm (20in),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**R. 'Summer Wine'**  $\square$   $\square$  syn. *R. 'Korizont'*. Climber with stiff, branching growth and mid-green leaves. Cupped, single, scented, coral-pink flowers, 10cm (4in) across, shaded yellow at the bases and with folded petals, are produced from summer to autumn.  $\uparrow$ 3m (10ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

**R. 'Sunblaze'**  $\square$   $\square$  see *R. 'Orange Sunblaze'*. **R. 'Sunblest'**  $\square$   $\square$  syn. *R. 'Landora'*. Large-flowered bush rose producing shiny, mid-green leaves. Pointed buds open to cupped, double yellow flowers, 9cm (3½in) across, borne freely from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Sunnyside'**  $\square$   $\square$  see *R. 'Avon'*. **R. 'Sunsprite'**  $\square$   $\square$  see *R. 'Korresia'*. **R. 'Super Star'**, syn. *R. 'Tanorstar'*, *R. 'Tropicana'*. Large-flowered bush rose of open, uneven habit, with small, dark green leaves. Rounded, fully double, lightly scented, vermilion to pale scarlet flowers, 11cm (4½in) across, are borne from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Surrey'**  $\square$   $\square$   $\square$  syn. *R. 'Korlanum'*, *R. 'Sommerwind'*, *R. 'Vent d'Été'*. Vigorous, mound-forming ground-cover shrub rose with abundant dark green foliage. Clusters of cupped, double, rose-pink flowers, 6cm (2½in) across, are borne along the stems from summer to autumn.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Susan Ann'**  $\square$   $\square$  see *R. 'Southampton'*. **R. 'Sutter's Gold'**. Spindly large-flowered bush rose with sparse leathery, dark green foliage. High-centred buds

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*

**R. 'Suma'**  $\square$   $\square$  syn. *R. 'Harsuma'*. Prostrate ground-cover shrub rose with shiny, dark green foliage, turning burnished crimson in autumn. Clusters of rosette-shaped, double, ruby-red to deep pink flowers, 3cm (1¼in) across, are borne along the stems from summer to autumn.  $\uparrow$ 50cm (20in),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**R. 'Summer Wine'**  $\square$   $\square$  syn. *R. 'Korizont'*. Climber with stiff, branching growth and mid-green leaves. Cupped, single, scented, coral-pink flowers, 10cm (4in) across, shaded yellow at the bases and with folded petals, are produced from summer to autumn.  $\uparrow$ 3m (10ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

**R. 'Sunblaze'**  $\square$   $\square$  see *R. 'Orange Sunblaze'*. **R. 'Sunblest'**  $\square$   $\square$  syn. *R. 'Landora'*. Large-flowered bush rose producing shiny, mid-green leaves. Pointed buds open to cupped, double yellow flowers, 9cm (3½in) across, borne freely from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Sunnyside'**  $\square$   $\square$  see *R. 'Avon'*. **R. 'Sunsprite'**  $\square$   $\square$  see *R. 'Korresia'*. **R. 'Super Star'**, syn. *R. 'Tanorstar'*, *R. 'Tropicana'*. Large-flowered bush rose of open, uneven habit, with small, dark green leaves. Rounded, fully double, lightly scented, vermilion to pale scarlet flowers, 11cm (4½in) across, are borne from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Surrey'**  $\square$   $\square$   $\square$  syn. *R. 'Korlanum'*, *R. 'Sommerwind'*, *R. 'Vent d'Été'*. Vigorous, mound-forming ground-cover shrub rose with abundant dark green foliage. Clusters of cupped, double, rose-pink flowers, 6cm (2½in) across, are borne along the stems from summer to autumn.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Susan Ann'**  $\square$   $\square$  see *R. 'Southampton'*. **R. 'Sutter's Gold'**. Spindly large-flowered bush rose with sparse leathery, dark green foliage. High-centred buds

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*

**R. 'Suma'**  $\square$   $\square$  syn. *R. 'Harsuma'*. Prostrate ground-cover shrub rose with shiny, dark green foliage, turning burnished crimson in autumn. Clusters of rosette-shaped, double, ruby-red to deep pink flowers, 3cm (1¼in) across, are borne along the stems from summer to autumn.  $\uparrow$ 50cm (20in),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**R. 'Summer Wine'**  $\square$   $\square$  syn. *R. 'Korizont'*. Climber with stiff, branching growth and mid-green leaves. Cupped, single, scented, coral-pink flowers, 10cm (4in) across, shaded yellow at the bases and with folded petals, are produced from summer to autumn.  $\uparrow$ 3m (10ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

**R. 'Sunblaze'**  $\square$   $\square$  see *R. 'Orange Sunblaze'*. **R. 'Sunblest'**  $\square$   $\square$  syn. *R. 'Landora'*. Large-flowered bush rose producing shiny, mid-green leaves. Pointed buds open to cupped, double yellow flowers, 9cm (3½in) across, borne freely from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Sunnyside'**  $\square$   $\square$  see *R. 'Avon'*. **R. 'Sunsprite'**  $\square$   $\square$  see *R. 'Korresia'*. **R. 'Super Star'**, syn. *R. 'Tanorstar'*, *R. 'Tropicana'*. Large-flowered bush rose of open, uneven habit, with small, dark green leaves. Rounded, fully double, lightly scented, vermilion to pale scarlet flowers, 11cm (4½in) across, are borne from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Surrey'**  $\square$   $\square$   $\square$  syn. *R. 'Korlanum'*, *R. 'Sommerwind'*, *R. 'Vent d'Été'*. Vigorous, mound-forming ground-cover shrub rose with abundant dark green foliage. Clusters of cupped, double, rose-pink flowers, 6cm (2½in) across, are borne along the stems from summer to autumn.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Susan Ann'**  $\square$   $\square$  see *R. 'Southampton'*. **R. 'Sutter's Gold'**. Spindly large-flowered bush rose with sparse leathery, dark green foliage. High-centred buds

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*

**R. 'Suma'**  $\square$   $\square$  syn. *R. 'Harsuma'*. Prostrate ground-cover shrub rose with shiny, dark green foliage, turning burnished crimson in autumn. Clusters of rosette-shaped, double, ruby-red to deep pink flowers, 3cm (1¼in) across, are borne along the stems from summer to autumn.  $\uparrow$ 50cm (20in),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**R. 'Summer Wine'**  $\square$   $\square$  syn. *R. 'Korizont'*. Climber with stiff, branching growth and mid-green leaves. Cupped, single, scented, coral-pink flowers, 10cm (4in) across, shaded yellow at the bases and with folded petals, are produced from summer to autumn.  $\uparrow$ 3m (10ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

**R. 'Sunblaze'**  $\square$   $\square$  see *R. 'Orange Sunblaze'*. **R. 'Sunblest'**  $\square$   $\square$  syn. *R. 'Landora'*. Large-flowered bush rose producing shiny, mid-green leaves. Pointed buds open to cupped, double yellow flowers, 9cm (3½in) across, borne freely from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Sunnyside'**  $\square$   $\square$  see *R. 'Avon'*. **R. 'Sunsprite'**  $\square$   $\square$  see *R. 'Korresia'*. **R. 'Super Star'**, syn. *R. 'Tanorstar'*, *R. 'Tropicana'*. Large-flowered bush rose of open, uneven habit, with small, dark green leaves. Rounded, fully double, lightly scented, vermilion to pale scarlet flowers, 11cm (4½in) across, are borne from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Surrey'**  $\square$   $\square$   $\square$  syn. *R. 'Korlanum'*, *R. 'Sommerwind'*, *R. 'Vent d'Été'*. Vigorous, mound-forming ground-cover shrub rose with abundant dark green foliage. Clusters of cupped, double, rose-pink flowers, 6cm (2½in) across, are borne along the stems from summer to autumn.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

**R. 'Susan Ann'**  $\square$   $\square$  see *R. 'Southampton'*. **R. 'Sutter's Gold'**. Spindly large-flowered bush rose with sparse leathery, dark green foliage. High-centred buds

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*

**R. 'Suma'**  $\square$   $\square$  syn. *R. 'Harsuma'*. Prostrate ground-cover shrub rose with shiny, dark green foliage, turning burnished crimson in autumn. Clusters of rosette-shaped, double, ruby-red to deep pink flowers, 3cm (1¼in) across, are borne along the stems from summer to autumn.  $\uparrow$ 50cm (20in),  $\leftrightarrow$  1.5m (5ft). \*\*\*

**R. 'Summer Wine'**  $\square$   $\square$  syn. *R. 'Korizont'*. Climber with stiff, branching growth and mid-green leaves. Cupped, single, scented, coral-pink flowers, 10cm (4in) across, shaded yellow at the bases and with folded petals, are produced from summer to autumn.  $\uparrow$ 3m (10ft),  $\leftrightarrow$  2.2m (7ft). \*\*\*

**R. 'Sunblaze'**  $\square$   $\square$  see *R. 'Orange Sunblaze'*. **R. 'Sunblest'**  $\square$   $\square$  syn. *R. 'Landora'*. Large-flowered bush rose producing shiny, mid-green leaves. Pointed buds open to cupped, double yellow flowers, 9cm (3½in) across, borne freely from summer to autumn.  $\uparrow$ 1m (3ft),  $\leftrightarrow$  60cm (24in). \*\*\*

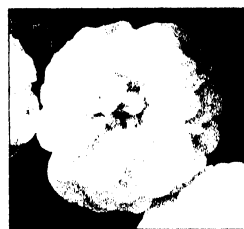
**R. 'Sunnyside'**  $\square$   $\square$  see *R. 'Avon'*. **R. 'Sunsprite'**  $\square$   $\square$  see *R. 'Korresia'*. **R. 'Super Star'**, syn. *R. 'Tanorstar'*, *R. 'Tropicana'*. Large-flowered bush rose of open, uneven habit, with small, dark green leaves. Rounded, fully double, lightly scented, vermilion to pale scarlet flowers, 11cm (4½in) across, are borne from summer to autumn.  $\uparrow$ 1.1m (3½ft),  $\leftrightarrow$  1m (3ft). \*\*\*

**R. 'Surrey'**  $\square$   $\square$   $\square$  syn. *R. 'Korlanum'*, *R. 'Sommerwind'*, *R. 'Vent d'Été'*. Vigorous, mound-forming ground-cover shrub rose with abundant dark green foliage. Clusters of cupped, double, rose-pink flowers, 6cm (2½in) across, are borne along the stems from summer to autumn.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  1.2m (4ft). \*\*\*

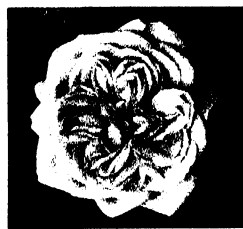
**R. 'Susan Ann'**  $\square$   $\square$  see *R. 'Southampton'*. **R. 'Sutter's Gold'**. Spindly large-flowered bush rose with sparse leathery, dark green foliage. High-centred buds

flowers, 9cm (3½in) across.  $\uparrow$ 80cm (32in),  $\leftrightarrow$  60cm (24in). \*\*\*

**R. 'Stretch Johnson'**  $\square$  see *R. 'Tango'*. **R. 'Sue Lawley'**  $\square$  syn. *R. 'Macspash'*, *R. 'Spanish Shawl'*. Cluster-flowered bush rose with dark green leaves. From summer to autumn, bears sprays of cupped, wide-opening, double, carmine-red flowers, 9cm (3½in) across, with paler pink or white centres and petal margins.  $\uparrow$  to 60cm (24in). \*\*\*



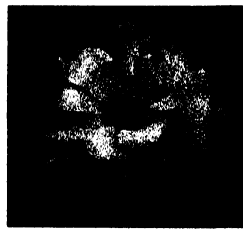
Rosa 'Swany'



Rosa 'Sweet Dream'



Rosa 'Sweetheart'



Rosa 'Sweet Magic'



Rosa 'Tango'



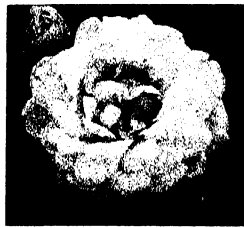
Rosa 'Tequila Sunrise'



Rosa 'The Fairy'



Rosa 'The Times'



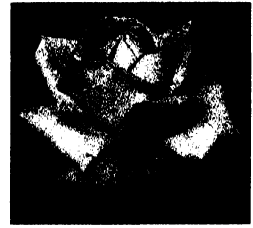
Rosa 'Tigris'



Rosa 'Tour de Malakoff'



Rosa 'Tricolore de Flandre'



Rosa 'Troika'

open to loosely formed, high-centred, double, fragrant, golden orange flowers, 11cm (4½in) across, overlaid with red, from summer to autumn. †1m (3ft), ↔ 60cm (24in). \*\*\*

**R. 'Swany'** [V] syn. *R. 'Meiburenac'*. Vigorous, dense ground-cover shrub rose with shiny, dark green leaves.

Profuse clusters of numerous flat, fully double white flowers, 5cm (2in) across, are borne from summer to autumn. † to 75cm (30in), ↔ 1.7m (5½ft). \*\*\*

**R. 'Sweet Dream'** [V] syn. *R. 'Fryminicot'*. Dwarf cluster-flowered bush rose of neat, leafy habit, with mid-green foliage. Dense clusters of cupped, fully double, peach-apricot flowers, 6cm (2½in) across, are borne on stiff stems from summer to autumn. †40cm (16in), ↔ 35cm (14in). \*\*\*

**R. 'Sweetheart'** [V] syn. *R. 'Cocapeer'*. Large-flowered bush rose of upright habit, with dense, light green foliage. Rounded, double, fragrant, rose-pink flowers, 11cm (4½in) across, are borne from summer to autumn. †90cm (36in), ↔ 60cm (24in). \*\*\*

**R. 'Sweetheart Rose'** see *R. 'Cécile Brunner'*.

**R. 'Sweet Juliet'**, syn. *R. 'Ausleap'*. Large-flowered shrub rose of prolific growth, with mid-green leaves. Cupped, fully double, tea-scented, apricot-yellow flowers, 10cm (4in) across, are borne from summer to autumn. †1.1m (3½ft), ↔ 1m (3ft). \*\*\*

**R. 'Sweet Magic'** [V] syn. *R. 'Dicmagic'*. Neat, dwarf cluster-flowered bush rose with bright green leaves. From summer to autumn, well-spaced clusters of urn-shaped buds open to cupped, double, apricot-orange and yellow flowers, 4cm (1½in) across. †↔ 35cm (14in). \*\*\*

**R. 'Sweet Sunblaze'** see *R. 'Pretty Polly'*.

**R. 'Sylvia'** see *R. 'Congratulations'*.

**R. 'Sympathie'** [V] Free-branching, vigorous climber with dense, glossy, dark green foliage. Cupped, glossy double, bright deep red flowers, 8cm (3in) across, are borne from summer to autumn, usually in clusters. †3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'Taifun'** see *R. 'Typhoon'*.

**R. 'Tall Story'** [V] syn. *R. 'Dickooky'*. Ground-cover shrub rose with abundant glossy, light green leaves. Graceful sprays of cupped, semi-double, scented, light primrose-yellow flowers, 6cm (2½in)

across, are borne on bowed stems from summer to autumn. †75cm (30in), ↔ 1.2m (4ft). \*\*\*

**R. 'Tanellis'** see *R. 'Fragrant Cloud'*.

**R. 'Tango'** [V] syn. *R. 'Macfirwal'*, *R. 'Rock 'n' Roll'*, *R. 'Stretch Johnson'*. Cluster-flowered bush rose with mid-green leaves. From summer to autumn, bears cupped, wide-opening, semi-double, orange-red flowers, 6cm (2½in) across, with petals margined yellowish white and yellow on the reverse sides. †75cm (30in), ↔ 60cm (24in). \*\*\*

**R. 'Tanryrandy'** see *R. 'Cherry Brandy'*.

**R. 'Tapis d'Orient'** see *R. 'Yesterday'*.

**R. 'Tapis Jaune'** see *R. 'Rugul'*.

**R. 'Tapis Persan'** see *R. 'Eye Paint'*.

**R. 'Tequila Sunrise'** [V] syn. *R. 'Dicobey'*. Large-flowered bush rose of open habit, with glossy, dark green leaves. Wide sprays of rounded, fully double yellow flowers, 10cm (4in) across, with scarlet-margined petals, are borne freely from summer to autumn. †75cm (30in), ↔ 60cm (24in). \*\*\*



Rosa 'Sympathie'

with abundant shiny, mid-green leaves. Rosette-shaped, double, light pink flowers, 2.5cm (1in) across, are borne freely from late summer to autumn. †↔ 60–90cm (24–36in). \*\*\*

**R. 'The New Dawn'** see *R. 'New Dawn'*.

**R. 'The Queen Elizabeth'** see *R. 'Queen Elizabeth'*.

**R. 'The Times'** [V] syn. *R. 'Carl Philip'*, *R. 'Christian IV'*, *R. 'Korpeahn'*, *R. 'Mariandel'*. Cluster-flowered bush rose of spreading habit, with abundant purplish green leaves. Cupped to flat, double, dark crimson flowers, 8cm (3in) across, are borne in wide clusters from summer to autumn. †60cm (24in), ↔ 75cm (30in). \*\*\*

**R. 'Thisbe'**. Leafy, bushy cluster-flowered shrub rose producing mid-green leaves with lance-shaped leaflets. Rosette-shaped, fully double, scented, buff yellow flowers, 4.5cm (1¾in) across, fading to cream and showing amber stamens, are borne from summer to autumn. †↔ 1.2m (4ft). \*\*\*

**R. 'Tigris'** [V] syn. *R. 'Harprier'*. Cushion-forming, spreading shrub rose with wiry, prickly, gooseberry-like stems and pale green leaves. In summer, bears pompon, double, canary-yellow flowers, 3cm (1¼in) across, with dark red eyes. †45cm (18in), ↔ 60cm (24in). \*\*\*

**R. 'Tipo Ideale'** see *R. x odorata 'Mutabilis'*.

**R. 'Tobone'** see *R. 'Prima Donna'*.

**R. 'Tocade'** see *R. 'Arizona'*.

**R. 'Top Gear'** see *R. 'Little Artist'*.

**R. 'Touch of Class'**, syn. *R. 'Kricarlo'*, *R. 'Maréchal le Clerc'*. Large-flowered bush rose with dark green leaves. High-centred, double flowers, 12cm (5in) across, pale creamy pink suffused with coral-pink, are borne on long stems from summer to autumn. †1.1m (3½ft), ↔ 70cm (28in). \*\*\*

**R. 'Tour de Malakoff'** [V] Centifolia rose of lax, spreading habit, with dark green leaves. Cupped, double, fragrant flowers, 12cm (5in) across, purplish magenta fading to greyish violet, are borne in summer. †2m (6ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Tournament of Roses'**, syn. *R. 'Berkeley'*, *R. 'Jacient'*, *R. 'Poesie'*. Strong-growing large-flowered bush rose with glossy, dark green leaves. Rounded, double, light rose- to salmon-pink flowers, 10cm (4in) across, are borne

from summer to autumn. †1.1m (3½ft), ↔ 60cm (24in). \*\*\*

**R. 'Tricolore de Flandre'** [V] Vigorous Gallica rose of bushy, upright habit, with dull, dark green leaves. Cupped to flat, fully double, fragrant, pale pink flowers, 6cm (2½in) across, striped with pink and purple, are borne in summer. †↔ 1m (3ft). \*\*\*

**R. 'Trier 2000'** see *R. 'Anna Livia'*.

**R. 'Troika'** [V] syn. *R. 'Royal Dane'*. Vigorous, branching large-flowered bush rose with abundant semi-glossy, mid-green leaves. High-centred, double, fragrant, reddish orange flowers, 15cm (6in) across, with pink flushes, are produced from summer to autumn. †1m (3ft), ↔ 75cm (30in). \*\*\*

**R. 'Tropicana'** see *R. 'Super Star'*.

**R. 'Trumpeter'** [V] syn. *R. 'Mactru'*. Cluster-flowered bush rose of neat habit, with deep green foliage. Showy, cupped, fully double, vivid orange-red flowers, 6cm (2½in) across, are borne from summer to autumn. †60cm (24in), ↔ 50cm (20in). \*\*\*

**R. 'Tuscany Superb'** [V] (Double velvet rose). Vigorous, rounded Gallica rose with dark green leaves. In summer, erect stems bear cupped to flat, double, scented, deep crimson-maroon to purple flowers, 5cm (2in) across, showing gold stamens. †↔ 1m (3ft). \*\*\*

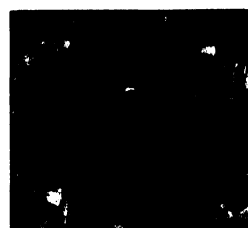
**R. 'Typhoon'** [V] syn. *R. 'Taifun'*. Large-flowered bush rose of even, spreading habit, with burnished, dark green leaves. Rounded, fully double, fragrant, salmon- to orange-pink flowers, 10cm (4in) across, are borne from summer to autumn. †75cm (30in), ↔ 65cm (26in). \*\*\*

**R. 'Valencia'** [V] syn. *R. 'Korekia'*. Large-flowered bush rose of open habit, with leathery, glossy, dark green foliage. From summer to autumn, bears high-centred, fully double, fragrant, amber-yellow flowers, 10cm (4in) across. †75cm (30in), ↔ 65cm (26in). \*\*\*

**R. 'Valentine Heart'** [V] syn. *R. 'Dicogle'*. Cluster-flowered bush rose of open habit, with dark green foliage. From summer to autumn, pale scarlet buds open to cupped, semi-double, scented, pale pink and deeper pink flowers, 7cm (3in) across, with infolded, frilled petals at the centres. †60cm (24in), ↔ 50cm (20in). \*\*\*

**R. 'Variegata di Bologna'**. Willowy, arching, smooth-wooded Bourbon rose





Rosa 'Trumpeter'



Rosa 'Tuscany Superb'



Rosa 'Typhoon'



Rosa 'Valencia'



Rosa 'Valentine Heart'



Rosa 'Veilchenblau'



Rosa 'Warrior'



Rosa 'Westerland'



Rosa 'White Cockade'



Rosa 'William Lobb'



Rosa xanthina 'Canary Bird'



Rosa xanthina f. hugonis

with pale green leaves. Quartered-rosette, fully double, fragrant flowers, 8cm (3in) across, pale pink stippled with purple-crimson, are borne from summer to autumn. Prone to black spot. ‡ 2.2m (7ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Veilchenblau'** [M] ♀ syn. *R. 'Blue Rambler'*, *R. 'Violet Blue'*. Vigorous climber with light green leaves. In summer, bears large clusters of many cupped, double, fruit-scented violet flowers, 3cm (1½in) across, streaked with white. ‡ 4m (12ft). \*\*\*

**R. 'Vent d'Été'** see *R. 'Surrey'*.  
**R. 'Vick's Caprice'**. Upright, bushy Hybrid Perpetual rose with light green leaves. Pink buds open to cupped, fully double, fragrant, pale pink flowers.

10cm (4in) across, striped with pink and with irregular centres, from summer to autumn. Flowers may ball in rain. ‡ 1.2m (4ft), ↔ 1m (3ft). \*\*\*

**R. 'Ville de Chine'** see *R. 'Chinatown'*.  
**R. 'Violacea'**, syn. *R. 'La Belle Sultane'*.

Tall, smooth-stemmed Gallica rose with sparse grey-green foliage. In summer, bears cupped to flat, single, fragrant, violet-purple flowers, 10cm (4in) across, with golden stamens. ‡ 2.2m (7ft), ↔ 1.5m (5ft). \*\*\*

**R. 'Violet Blue'** see *R. 'Veilchenblau'*.  
**R. virginiana** ♀ syn. *R. lucida*. Species rose of erect, suckering habit, with shiny, light to mid-green leaves composed of 5–9 obovate to oblong-elliptic leaflets, 2.5–6cm (1–2½in) long, reddening in autumn. Cupped to flat, single, pale to bright pink flowers, 5–7cm (2–3in) across, are borne singly or in clusters of up to 8 blooms in summer; they are followed by spherical, ruby-red hips in autumn. ‡ 1.2m (4ft), ↔ 1.5m (5ft). E. North America. \*\*\*

**R. 'Viridiflora'** see *R. x odorata* 'Viridiflora'.

**R. 'Warm Welcome'** ♀ syn. *R. 'Chewizz'*. Stiff, arching miniature climber with many dark green leaves. Small clusters of urn-shaped, semi-double, orange-red flowers, 4cm (1½in) across, are borne freely from summer to autumn. ‡ 2.2m (7ft). \*\*\*

**R. 'Warrior'** [M] Low-growing cluster-flowered bush rose with light green foliage, purplish green when young. Cupped, crisp-petaled, double, blood-red flowers, 8cm (3in) across, are borne from summer to autumn. ‡ 40cm (16in), ↔ 45cm (18in). \*\*\*

**R. 'Wedding Day'**. Rampant climber producing shiny, mid-green leaves with lance-shaped leaflets. Large clusters of flat, single, fruit-scented, creamy white flowers, 2.5cm (1in) across, ageing to pale pink, are borne in summer. ‡ to 8m (25ft), ↔ 4m (12ft). \*\*\*

**R. 'Wee Jock'**, syn. *R. 'Cocabest'*. Dense, compact dwarf cluster-flowered bush rose with abundant dark green leaves. From summer to autumn, high-centred buds open to rosette-shaped, fully double, deep crimson flowers, 4cm (1½in) across. ‡ 35cm (14in). \*\*\*

**R. 'Wendy Cussons'**. Strong-branching large-flowered bush rose with dark green leaves. Cherry-red buds open to high-centred, double, fragrant, cerise-pink flowers, 12cm (5in) across, from summer to autumn. ‡ 1m (3ft), ↔ 70cm (28in). \*\*\*

**R. 'Westerland'** [M] ♀ syn. *R. 'Korwest'*. Vigorous, stiff-stemmed cluster-flowered shrub or climbing rose with bright green leaves. From summer to autumn, bears bold clusters of loosely formed, cupped, double, scented, apricot-orange flowers, 8cm (3in) across, suffused yellow. ‡ 2m (6ft), ↔ 1.2m (4ft) as a shrub; ‡ to 2.5m (8ft) as a climber. \*\*\*

**R. 'Whisky'** see *R. 'Whisky Mac'*.  
**R. 'Whisky Mac'**, syn. *R. 'Tanky'*, *R. 'Whisky'*. Large-flowered bush rose with reddish green stems and glossy, dark green foliage. From summer to autumn, produces rounded, double, fragrant, light amber-yellow flowers, 10cm (4in) across. Prone to mildew. ‡ 75cm (30in), ↔ 60cm (24in). \*\*

**R. 'White American Beauty'** see *R. 'Frau Karl Druschki'*.

**R. 'White Baby Rambler'** see *R. 'Katharina Zeimet'*.

**R. 'White Cockade'** [M] ♀ Upright, shrubby, large-flowered climber with dark green leaves. From summer to autumn, bears rounded, fully double, milk-white flowers, 9cm (3½in) across. ‡ 2.2m (7ft), ↔ 1.5m (5ft). \*\*\*

**R. 'White Cover'** see *R. 'Kent'*.

**R. 'White Magic'** see *R. 'Class Act'*.

**R. 'White Pet'** see *R. 'Little White Pet'*.

**R. 'White Wings'**. Large-flowered bush rose with dark green leaves. Cupped to flat, single, scented white flowers, 8cm (3in) across, with chocolate-brown stamens, open from summer to autumn. ‡ 1m (3ft), ↔ 60cm (24in). \*\*\*

**R. wichurana** see *R. wichurana*.

**R. wichurana**, syn. *R. wichurana* (Memorial rose). Vigorous, climbing, semi-evergreen species rose, mound-forming as ground cover, producing numerous small, shiny, dark green leaves comprised of 5–9 elliptic to broadly ovate leaflets, to 2.5cm (1in) long.

Cupped to flat, single, clover-scented white flowers, 4.5cm (1½in) across, with prominent golden yellow stamens, are borne in loose clusters of 6–10 in late summer. Ovoid to spherical hips are orange-red to dark red, and to 1.5cm (½in) long. ‡ 2m (6ft), ↔ 6m (20ft). E. China, Korea, Japan, Taiwan. \*\*\*

**R. 'William Allen Richardson'**. Noisette climbing rose with arching, branching growth and shiny, dark green leaves. From summer to autumn, urn-shaped buds open to quartered-rosette, double, scented, apricot-yellow flowers, 4.5cm (1½in) across, paler towards the petal margins. ‡ 3m (10ft), ↔ 2.5m (8ft). \*\*\*

**R. 'William Lobb'** [M] ♀ syn. *R. 'Duchesse d'Istrie'*. Vigorous Moss rose with arching, prickly stems, abundant mossy growth, and mid-green leaves. Cupped, fully double, scented, purple to lavender-grey flowers, 8cm (3in) across, are borne in summer. Best grown on a support. ‡ 2m (6ft). \*\*\*

**R. 'Williams' Double Yellow'** see *R. x harisonii* 'Williams' Double Yellow'.

**R. 'William III'**. Suckering, spreading Scots rose with wiry stems and grey-green leaves. In early summer, bears cupped, semi-double, scented flowers,

4.5cm (1½in) across, magenta-crimson shaded purplish red or lilac, followed by spherical, brownish red hips in autumn. ‡ 50cm (20in), ↔ 80cm (32in). \*\*\*

**R. xanthina**. Species rose of shrubby, dense growth, with reddish green stems and fern-like, greyish green leaves, each with 7–13 broadly elliptic to obovate leaflets, 1–2cm (½–¾in) long. Loosely formed, cupped to flat, semi-double, scented yellow flowers, 5cm (2in) across, are borne, usually singly, along the stems in late spring. ‡ 2.5m (8ft). N. China, Korea. \*\*\*

**R. 'Canary Bird'** [M] ♀ syn. *R. 'Canary Bird'*, is arching in habit, with cupped, single, musk-scented yellow flowers borne in spring, sometimes sparsely later. ‡ 3m (10ft), ↔ to 4m (12ft). **f. hugonis** [M] ♀ syn. *R. hugonis* (Father Hugo's rose, Golden rose of China) produces cupped, single, lightly scented, pale yellow flowers, 4.5cm (1½in) across, in late spring; ↔ 2m (6ft). W. and C. China.

**f. normalis** bears single flowers.

**R. 'Yellow Cécile Brunner'** see *R. 'Perle d'Or'*.

**R. 'Yesterday'** ♀ syn. *R. 'Tapis d'Orient'*. Polyantha bush rose of uneven growth, with shiny, mid-green leaves. Sprays of rosette-shaped, semi-double, scented, lilac-pink to rose-violet flowers, 2.5cm (1in) across, are borne very freely from summer to autumn. ‡ 1–1.5m (3–5ft). \*\*\*

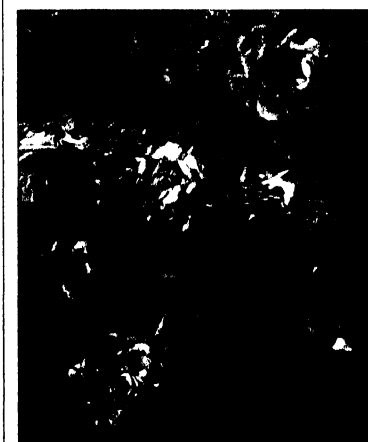
**R. 'Young Mistress'** see *R. 'Regensburg'*.

**R. 'Yvonne Rabier'** ♀ Compact Polyantha rose with abundant bright green leaves. From summer to autumn, bears rounded, fully double, lightly scented, creamy white flowers, 4.5cm (1½in) across. ‡ 40cm (16in). \*\*\*

**R. 'Zéphirine Drouhin'** [M] ♀ (Thornless rose). Bourbon rose with lax, open, thorn-free growth and mid-green leaves. From summer to autumn, freely bears loosely cupped, double, fragrant, deep pink flowers, 8cm (3in) across. Good as a climber or hedge. ‡ to 3m (10ft), ↔ 2m (6ft). \*\*\*

**R. 'Zigeunerknabe'** ♀ syn. *R. 'Gipsy Boy'*. Vigorous, lanky Bourbon rose with coarse, dark green leaves. Cupped to flat, double, scented, purplish crimson flowers, 8cm (3in) across, with prominent golden yellow stamens, are borne from summer to autumn. ‡ 2m (6ft), ↔ 1.2m (4ft). \*\*\*

**R. 'Zonta Rose'** see *R. 'Princess Alice'*.



Rosa 'Zéphirine Drouhin'

## ROSCOEAE

## ZINGIBERACEAE

Genus of about 18 species of tuberous perennials from meadows, slopes, and partially forested areas in the Himalayas and China. They are cultivated for their unusual, hooded, orchid-like flowers, which have prominent, entire or 2-lobed lips. The flowers are surrounded by overlapping bracts, and are produced on leafy stems from the leaf axils in summer or autumn. The arching leaves are stem-sheathing and linear, or lance-shaped to oblong-ovate. Roscoas thrive in cool climates; grow in a peat bed, a woodland garden, or a damp, shady border.

• **HARDINESS** Fully hardy to frost hardy; will survive temperatures to -20°C (-4°F) if planted very deep.

• **CULTIVATION** Plant tubers 15cm (6in) deep in winter or early spring. Grow in moderately fertile, humus-rich, leafy, moist but well-drained soil, in a cool, sheltered site in partial shade. In frost-prone areas, apply a deep winter mulch.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring.



*Roscoeae cauleoides*



*Roscoeae humeana*

• **PESTS AND DISEASES** Slugs and vine weevils may be a problem.

**R. auriculata.** Tuberous perennial with 3–10 linear to broadly lance-shaped, dark green leaves, to 25cm (10in) long. Rich purple flowers, 3.5cm (1½in) across, are produced from the upper leaf axils in late summer or autumn. †25–55cm (10–22in), ↔ 15cm (6in). Nepal, India (Sikkim). \*\*\* (borderline)

**R. capitata of gardens** see *R. scillifolia*.  
**R. cauleoides** ■ ♀ Tuberous perennial with 1–4 linear to lance-shaped, deep to mid-green leaves, 40cm (16in) long, usually to 15cm (6in) long at flowering. In midsummer, produces yellow, white, or purple flowers, 4cm (1½in) across, from the upper leaf axils. † to 55cm (22in), ↔ 15cm (6in). China (Sichuan, Yunnan). \*\*\* (borderline)

**R. humeana** ■ ♀ Sturdy, tuberous perennial bearing a succession of up to 10 rich purple flowers, 4cm (1½in) across, from the upper leaf axils in early summer. The 1 or 2, rarely 3, oblong to ovate, deep green leaves, to 22cm (9in) long, are usually only partially developed at flowering time. †15–25cm (6–10in), ↔ 15cm (6in). China (Sichuan, Yunnan). \*\*\* (borderline)

**R. procera** see *R. purpurea*.

**R. purpurea** ■ syn. *R. procera*. Tuberous perennial with 4–8 lance-shaped to oblong-ovate, deep green leaves, to 25cm (10in) long. Purple, occasionally white or bicoloured flowers, 6cm (2½in) across, are produced in succession from the upper leaf axils in early and mid-summer. †25–40cm (10–16in), ↔ 15cm (6in). Himalayas. \*\*\* (borderline).

**var. procera** see *R. purpurea*.

**R. scillifolia**, syn. *R. capitata* of gardens. Slender, tuberous perennial with 1–5 linear to linear-lance-shaped, mid-green leaves, 6–12cm (2½–5in) long. In summer, produces 2–4 blackish pink or purplish pink flowers, 2cm (¾in) across, on leafless stalks above the leaves. May seed freely. †35cm (14in), ↔ 8cm (3in). China (Yunnan). \*\*\* (borderline)

▷ **Rose** see *Rosa*

**Apothecary's** see *Rosa gallica* var. *officinalis*

**Austrian copper** see *Rosa foetida* 'Bicolor'

**Austrian yellow** see *Rosa foetida*

**Autumn damask** see *Rosa* × *damascena* var. *sempervirens*



*Roscoeae purpurea*

▷ **Rose cont.**

**Burnet** see *Rosa pimpinellifolia*

**Burr** see *Rosa roxburghii*

**Camellia** see *Rosa laevigata*

**Cherokee** see *Rosa laevigata*

**Chestnut** see *Rosa roxburghii*

**Chickasaw** see *Rosa bracteata*

**Chinquapin** see *Rosa roxburghii*

**Christmas** see *Helleborus niger*

**Common moss** see *Rosa* × *centifolia* 'Muscosa'

**Cotton** see *Hibiscus mutabilis*

**Crested moss** see *Rosa* × *centifolia* 'Cristata'

**Crimson damask** see *Rosa gallica* var. *officinalis*

**Desert** see *Adenium*

**Double velvet** see *Rosa* 'Tuscan Superb'

**Double white banksian** see *Rosa banksiae*

**Eglantine** see *Rosa eglanteria*

**Father Hugo's** see *Rosa xanthina* f. *hugonis*

**Fortune's double yellow** see *Rosa* × *odorata* 'Pseudindica'

**Four seasons** see *Rosa* × *damascena* var. *sempervirens*

**Great white** see *Rosa* 'Alba Maxima'

**Green** see *Rosa* × *odorata* 'Viridiflora'

**Guelder** see *Viburnum opulus*

**Hedgehog** see *Rosa rugosa*

**Incense** see *Rosa primula*

**Jacobite** see *Rosa* 'Alba Maxima'

**Japanese** see *Rosa rugosa*

**Lenten** see *Helleborus orientalis*

**Macartney** see *Rosa bracteata*

**Memorial** see *Rosa wichurana*

**Montpellier rock** see *Cistus monspeliensis*

**Musk** see *Rosa moschata*

**Myrrh-scented** see *Rosa* 'Splendens'

**Nootka** see *Rosa nutkana*

**Old black** see *Rosa* 'Nuits de Young'

**Old blush China** see *Rosa* × *odorata* 'Pallida'

**Old glory** see *Rosa* 'Gloire de Dijon'

**Painted damask** see *Rosa* 'Leda'

**Parsons' pink China** see *Rosa* × *odorata* 'Pallida'

**Persian yellow** see *Rosa foetida* 'Persiana'

**Pompon** see *Rosa* 'De Meaux'

**Portland** see *Rosa* 'Portlandica'

**Provins** see *Rosa gallica* var. *officinalis*

**Ramanas** see *Rosa rugosa*

**Red moss** see *Rosa* 'Henri Martin'

**Rock** see *Cistus*, *Helianthemum*

**Rosa mundi** see *Rosa gallica* var. *officinalis* 'Versicolor'

**Sacramento** see *Rosa stellata* var. *mirifica*

**Scotch** see *Rosa pimpinellifolia*

**Scots** see *Rosa pimpinellifolia*

**Single white banksian** see *Rosa banksiae* var. *normalis*

**Slater's crimson China** see *Rosa* × *odorata* 'Sempervirens'

**Snowbush** see *Rosa* 'Dupontii'

**Summer damask** see *Rosa* × *damascena*

**Sun** see *Cistus*, *Helianthemum*

**Sydney rock** see *Boronia serrulata*

**Thornless** see *Rosa* 'Zéphirine Drouhin'

**Winged thorn** see *Rosa sericea* subsp. *omeiensis* f. *pteracantha*

**Wood** see *Merremia tuberosa*

**Yellow banksian** see *Rosa banksiae* 'Lutea'

**York and Lancaster** see *Rosa* × *damascena* 'Versicolor'

▷ **Rose bay** see *Nerium oleander*

▷ **Rosebay, East Indian** see *Tabernaemontana divaricata*

▷ **Rose campion** see *Lychnis coronaria*

▷ **Rosemary** see *Rosmarinus*, *R. officinalis*

**Australian** see *Westringia fruticosa*

**Bog** see *Andromeda*

**Common bog** see *Andromeda*

*polifolia*

**Wild** see *Dampiera rosmarinifolia*

▷ **Roseocactus fissuratus** see *Ariocarpus fissuratus*

▷ **Rose of Castille** see *Rosa*

× *damascena* var. *sempervirens*

▷ **Rose of China** see *Hibiscus rosa-sinensis*

**Golden** see *Rosa xanthina* f. *hugonis*

▷ **Rose of heaven** see *Silene coeli-rosa*

▷ **Rose of Jericho** see *Selaginella lepidophylla*

▷ **Rose of Lancaster, Red** see *Rosa gallica* var. *officinalis*

▷ **Rose of Sharon** see *Hypericum calycinum*

▷ **Rose of York, White** see *Rosa* 'Alba Maxima'

▷ **Roseroot** see *Rhodiola rosea*

▷ **Rosewood, Brazilian** see *Tipuana tipu*

▷ **Rosinweed** see *Grindelia*, *Silphium*

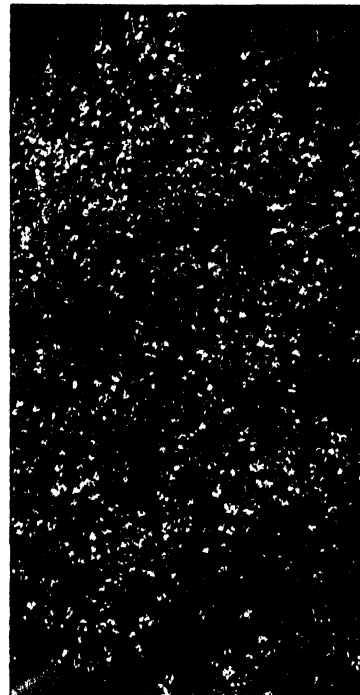
## ROSMARINUS

Rosemary

## LABIATAE/LAMIACEAE

Genus of 2 species of evergreen shrubs found in rocky sites, woodland, and scrub in the Mediterranean region, and cultivated for their aromatic foliage and flowers. The leaves are opposite and narrowly linear; the 2-lipped, tubular flowers are borne in short, few-flowered, axillary whorls. Grow rosemary in a shrub or mixed border, in a herb garden, against a sunny wall, or as a hedge. Low-growing cultivars, such as *R. officinalis* 'Prostratus', are ideal for a rock garden or the top of a dry wall. The leaves are commonly used as a culinary herb.

• **HARDINESS** Frost hardy; *R. officinalis* and most cultivars will withstand falls to -10°C (14°F) in well-drained soil.



*Rosmarinus officinalis*



*Rosmarinus officinalis* 'Prostratus'

- **CULTIVATION** Grow in well-drained, poor to moderately fertile soil in full sun. Pruning group 9. Trim hedges after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Honey fungus may be a problem.

*R. ericalyx* of gardens see *R. officinalis* 'Prostratus'.

*R. lavandulaceus* of gardens see *R. officinalis* 'Prostratus'.

*R. officinalis* ■ (Rosemary). Upright to rounded, dense, bushy, aromatic, evergreen shrub with linear, leathery, dark green leaves, to 5cm (2in) long, white-felted beneath. Whorls of tubular, 2-lipped, purple-blue to white flowers, 1cm (½in) long, are produced from the upper leaf axils from mid-spring to early summer, and often again in autumn. ↑↔ 1.5m (5ft). Mediterranean. ★★.

'Aureovariegatus' see 'Aureus'.

'Aureus', syn. 'Aureovariegatus'.

'Gilded', produces yellow-marked leaves.

'Benenden Blue', syn. 'Collingwood Ingram', has narrow, dark green leaves and vivid blue flowers.

'Collingwood Ingram' see 'Benenden Blue'.

'Fastigiatus' see 'Miss Jessopp's Upright'.

'Gilded' see 'Aureus'.

'Miss Jessopp's Upright' ♀ syn. 'Fastigiatus'.

'Pyramidalis', is vigorous and upright; ↑↔ 2m (6ft).

'Prostratus' ■♀ syn. *R. ericalyx* of gardens.

*R. lavandulaceus* of gardens, is prostrate and the least hardy variant; ↑ 15cm (6in).

'Pyramidalis' see 'Miss Jessopp's Upright'.

'Roseus' has pink flowers.

'Severn Sea' ♀ has a spreading habit, with arching branches and bright blue flowers; ↑ 1m (3ft).

'Tuscan Blue' is upright, bearing dark blue flowers.

## ROSSIOGLOSSUM

ORCHIDACEAE

Genus of 6 species of epiphytic, evergreen orchids from rainforest, up to altitudes of 2,700m (9,000ft), in Central America. At its apex, each conical to ovoid, dark grey-green pseudobulb produces 1–3 broadly oval, dark green to grey- or bluish green leaves, marked brown at the bases. Erect or arching, few-flowered racemes of showy, yellow and brown flowers are produced from the base of new growth from autumn to winter. Use as houseplants.

- **HARDINESS** Frost tender.

- **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost, with added leaf mould and sphagnum, in bright filtered light. In summer, provide good ventilation and, as new growth begins, water freely, applying a balanced liquid fertilizer monthly; keep just moist in winter. See also p.46.
- **PROPAGATION** Divide when the plant fills the pot and "flows" over the sides.
- **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

*R. grande* ♀ syn. *Odontoglossum grande* (Clown orchid, Tiger orchid). Epiphytic orchid with elliptic to lance-shaped, leathery, dark or bluish green leaves, 10–20cm (4–8in) long. From autumn to winter, bears erect racemes of 4–8 rich, glossy, chestnut-brown and yellow flowers, 12cm (5in) across, spotted red, brown, or yellow, with white lips. ↑ 35cm (14in), ↔ 20cm (8in). Mexico, Guatemala. ☼ (min. 10°C/50°F; max. 30°C/86°F)

## ROTHMANNIA

RUBIACEAE

Genus of 25–30 species of evergreen shrubs and small trees from woodland and open savannah in tropical Africa, the Seychelles, Madagascar, and Asia. The leaves are simple and usually in opposite pairs, but sometimes in threes. They are cultivated for their bell- or funnel-shaped flowers, each with 5 spreading petal lobes, borne singly or in terminal and axillary clusters or cymes. Where temperatures fall below 7–10°C (45–50°F), grow in a cool or temperate greenhouse. In milder climates, grow at the base of a warm, sunny wall or in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in full light, with shade from hot sun. When in growth, water freely with soft water and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile, neutral to acid soil in full sun with some midday shade. Pruning group 1; plants under glass may need restrictive pruning.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Whiteflies, stem mealybugs, and root mealybugs may be a problem under glass.

*R. capensis* ♀ syn. *Gardenia capensis*, *G. rothmannia* (Candlewood).

Spreading tree with grey to brown bark. The broadly lance-shaped or elliptic to ovate leaves, 5–10cm (2–4in) long, are lustrous, deep green with conspicuous, sunken veins above, paler green beneath. Solitary, funnel-shaped, fragrant, white, cream, or yellow flowers, to 8cm (3in) long, are borne in summer. ↑ to 14m (46ft), ↔ to 7m (22ft). South Africa. ☼ (min. 7–10°C/45–50°F)

*R. globosa* ♀ syn. *Gardenia globosa* (September bells). Spreading, large shrub or small tree with dark grey to brown bark. Inversely lance-shaped to lance-shaped or elliptic leaves, 6–12cm (2½–5in) long, are bright green with yellow, pink, or maroon veins, more obvious beneath than above. Narrowly bell-shaped, fragrant, ivory to white, occasionally pink-tinged flowers, to 4cm (1½in) long, with arching to reflexed petal lobes, are produced singly or in small clusters in the leaf axils in summer. ↑ 3–7m (10–22ft), ↔ 2–3.5m (6–11ft). South Africa. ☼ (min. 7–10°C/45–50°F)

▷ **Rowan** see *Sorbus aucuparia*

**Hubei** see *S. hupehensis*

▷ **Royal palm** see *Roystonea*

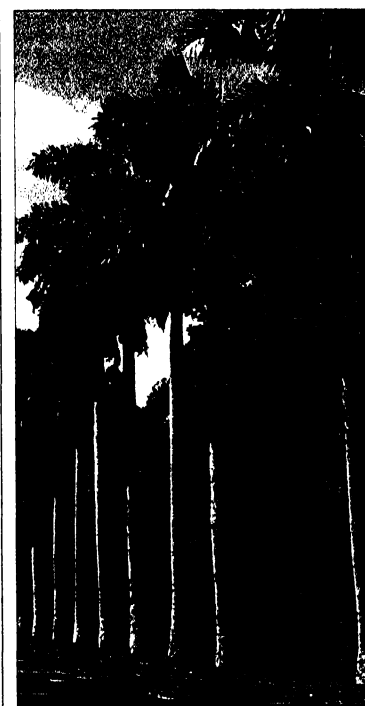
## ROYSTONEA

Royal palm

ARECACEAE/PALMAE

Genus of about 10 species of single-stemmed palms found in moist, rich soil on the Caribbean islands and adjacent coasts. The trunks may be columnar, or swollen in the middle or at the bases, each topped by a crownshaft and a tuft of pinnate, feather-shaped, bright mid-green leaves. The tiny, cup-shaped, 3-petalled flowers are borne in panicles just below the crownshaft. In frost-prone climates, grow young plants in a warm greenhouse. In tropical regions, use as lawn specimens or in an avenue.

- **HARDINESS** Frost tender.



*Roystonea regia*

- **CULTIVATION** Under glass, grow in loamless potting compost in full light, shaded from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pot on or top-dress in spring. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun.

- **PROPAGATION** Sow seed at 27°C

(81°F) in spring.

- **PESTS AND DISEASES** Red spider mites, mealybugs, and scale insects may be a problem under glass.

*R. borinquena* ♀ syn. *R. caribaea*.

Medium-sized palm with a spindle-shaped trunk ringed with old leaf scars. The arching leaves, up to 3m (10ft) long, have many narrow, linear, rich green leaflets in 2 double ranks. Cup-shaped cream flowers, with green-purple anthers, are borne in panicles, 1m (3ft) long, usually in summer. ↑ to 18m (60ft), ↔ to 6m (20ft). Puerto Rico (including Vieques), US Virgin Islands (St. Croix). ☼ (min. 15°C/59°F)

*R. caribaea* see *R. borinquena*.

*R. regia* ■♀ Tall palm with a sturdy trunk, usually thickened at the base and again in the middle, becoming thinner towards the crownshaft. Leaves 3–5m (10–15ft) long, have many linear, rich green leaflets arranged in several ranks. Cup-shaped white flowers are borne in panicles, to 1m (3ft) long, usually in summer. ↑ to 25m (80ft), ↔ to 10m (30ft). Cuba. ☼ (min. 15°C/59°F)

▷ **Rubber plant** see *Ficus elastica*

## RUBUS

ROSACEAE

Genus of 250 or more species of often prickly or bristly, deciduous or evergreen shrubs and climbers, occasionally herbaceous perennials, found worldwide in a range of habitats from coastal sand dunes to thickets, woodland, forest, and mountain slopes. The leaves are alternate and entire, lobed, palmate, or pinnate, each with 3 to many, usually toothed leaflets. The saucer- to cup-shaped, 4- or 5-petalled flowers are borne in racemes or panicles, sometimes singly or in few-flowered clusters, and are pink, white, red, or purple.

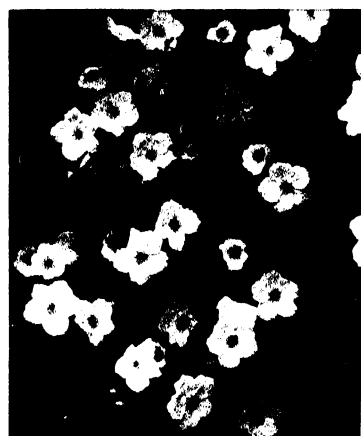
Blackberries or brambles (*R. fruticosus*), raspberries (*R. idaeus*), and hybrids between these and other species are grown for their edible fruits.

Ornamental species are grown for their flowers, their foliage, and sometimes their attractive winter shoots, and are suitable for a shrub border. Prostrate species provide good ground cover in sun or shade. Vigorous species are best grown in a wild or woodland garden.

- **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in well-drained, moderately fertile soil. Grow deciduous species cultivated for their winter shoots in full sun; grow evergreen or semi-evergreen species in sun or partial shade. Pruning group 7 for *R. biflorus*, *R. cockburnianus*, *R. thibetanus*; group 2 for other deciduous species and cultivars; group 11 for *R. henryi*, after flowering, although pruning is seldom needed.

- **PROPAGATION** Divide *R. odoratus* in autumn. Root greenwood cuttings of deciduous species and cultivars in summer, or hardwood cuttings in early

*Rubus* 'Benenden'

winter. Root semi-ripe cuttings of evergreens in summer. Detach rooted pieces of prostrate evergreens between autumn and spring.

• **PESTS AND DISEASES** Grey mould (*Botrytis*) may be a problem.

**R. 'Benenden'** ■♀ Spreading, deciduous shrub with arching, thornless branches, peeling bark, and broadly ovate, shallowly 3- to 5-lobed, dark green leaves, 6-8m (2½-3in) long. Solitary, rose-like, saucer-shaped, pure white flowers, to 7cm (3in) across, are borne profusely in late spring and early summer. 1→3m (10ft). \*\*\*

**R. 'Betty Ashburner'**. Prostrate, evergreen shrub with erect then arching shoots, densely covered in red bristles. Heart-shaped, shallowly 5-lobed, wavy-margined, glossy, mid-green leaves, 6cm (2½in) long, are deeply veined above, glaucous beneath. In summer, produces racemes of saucer-shaped white flowers, 2cm (¾in) across, from the leaf axils. 1→30cm (12in), ↔ indefinite. \*\*\*

**R. biflorus** ■ Erect, prickly, deciduous shrub with chalky-white-bloomed young shoots, particularly conspicuous in winter. Ovate, pinnate leaves, to 25cm

*Rubus biflorus**Rubus henryi* var. *bambusarum*

(10in) long, each have 3, sometimes 5, ovate to elliptic, dark green leaflets, white-felted beneath. In summer, produces saucer-shaped white flowers, 2cm (¾in) across, singly or in clusters of 2 or 3 from the leaf axils, followed by edible, spherical yellow fruit, to 2cm (¾in) across. 1→3m (10ft). Himalayas, China. \*\*\*. **var. quinqueflorus**, the most commonly grown variant, has intensely white stems and bears clusters of 5 or more flowers.

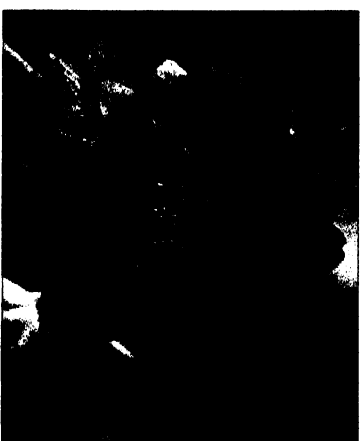
**R. calycinoides** see *R. pentalobus*.

**R. cockburnianus** ♀ Thicket-forming, deciduous shrub producing arching, prickly shoots with a brilliant white bloom in winter. Ovate, pinnate leaves, to 20cm (8in) long, with 5-7, sometimes 9, diamond-shaped or ovate-lance-shaped leaflets, are dark green above and white-hairy beneath, appearing greenish white overall. In summer, bears terminal racemes of saucer-shaped purple flowers, 1cm (½in) across, followed by spherical black, unpalatable fruit, to 1.5cm (½in) across. 1→2.5m (8ft). China. \*\*\*

**R. fockeanus of gardens** see *R. pentalobus*.

**R. henryi** var. *bambusarum* ■ Scrambling, evergreen climber with slender, spiny, white-hairy shoots and lance-shaped, deeply 3-lobed, glossy, dark green leaves, to 12cm (5in) long, white-felted beneath. Long racemes of cup-shaped pink flowers, 2cm (¾in) across, are borne in summer, followed by spherical, glossy black fruit, 1.5cm (½in) across. 1→6m (20ft). W. and C. China. \*\*\*

**R. odoratus** (Flowering raspberry). Fast-growing, thicker-forming, deciduous

*Rubus spectabilis* 'Olympic Double'

shrub with spineless shoots and large, broadly ovate, 5-lobed, velvety, dark green leaves, to 24cm (10in) long. From early summer to early autumn, bears panicles of shallowly cup-shaped, fragrant, purple-pink flowers, to 5cm (2in) across; they are followed by tasteless, flattened hemispherical red fruit, to 2cm (¾in) across. 1→2.5m (8ft) or more. E. North America. \*\*\*

**R. pentalobus**, syn. *R. calycinoides*, *R. fockeanus* of gardens. Prostrate, evergreen shrub with sparsely prickly shoots that root as they creep along the ground. The rounded, shallowly 3- to 5-lobed, glossy, dark green leaves, to 5cm (2in) long, are heart-shaped at the bases, with deeply impressed veins and wrinkled margins. In summer, bears solitary, saucer-shaped white flowers, 2cm (¾in) across, sometimes followed by spherical red fruit, to 10mm (½in) across. 1→10cm (4in), ↔ indefinite. Taiwan. \*\*\*

**R. spectabilis 'Flore Pleno'** see *R. spectabilis* 'Olympic Double'.

**R. spectabilis 'Olympic Double'** ■ syn. *R. spectabilis* 'Flore Pleno'. Thicket-forming, deciduous shrub with upright, slightly prickly shoots and 3-palmate leaves, to 15cm (6in) long, composed of ovate, glossy, mid-green leaflets. Usually solitary, very showy, double, bright purple-pink flowers, 5cm (2in) across, open in mid-spring. 1→2m (6ft). \*\*\*

**R. thibetanus** ♀ Erect, thicker-forming, deciduous shrub with arching, prickly shoots, conspicuously white-bloomed in winter. Triangular, pinnate, dark green leaves, to 22cm (9in) long, have 7-13 lance-shaped to ovate leaflets, densely grey-hairy above, densely white-hairy beneath. In summer, saucer-shaped, red-purple flowers, 1cm (½in) across, are borne singly from the upper leaf axils or in few-flowered terminal racemes, followed by spherical black fruit, to 1.5cm (½in) across, with a whitish bloom. 1→2.5m (8ft). W. China. \*\*\*

**R. tricolor**. Prostrate, evergreen shrub with both creeping and arching shoots, covered in conspicuous red bristles. Ovate, entire or very shallowly 3- to 5-lobed, glossy, dark green leaves, to 10cm (4in) long, are heart-shaped at the bases and white-hairy beneath. Saucer-shaped white flowers, 2.5cm (1in) across, open singly or in few-flowered terminal racemes in summer, followed by edible, raspberry-like red fruit, to 2.5cm (1in) across. 1→60cm (24in), ↔ indefinite.

China (Sichuan, Yunnan). \*\*\*

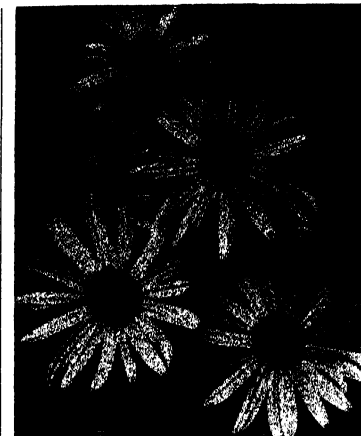
**R. ulmifolius 'Bellidiflorus'**. Fast-growing, deciduous or semi-evergreen shrub of open habit, with long, arching, thorny shoots and 3- to 5-palmate leaves, to 12cm (5in) long, composed of ovate, dark green leaflets. Large panicles of hemispherical, double pink flowers, to 1.5cm (½in) across, are produced in mid- and late summer. 1→2.5m (8ft), ↔ 4m (12ft). \*\*\*

## RUDBECKIA

Coneflower

ASTERACEAE/COMPOSITAE

Genus of about 20 species of annuals, biennials, and perennials (some of which may be grown as annuals), with short rhizomes, from moist meadows and light woodland in North America. They have branched or unbranched stems, and most have alternate, simple to

*Rudbeckia fulgida* var. *sullivantii* 'Goldsturm'

pinnatifid, occasionally pinnate, prominently veined leaves, toothed towards the tips. Usually solitary, daisy-like flowerheads, often with reflexed yellow ray-florets and conical centres consisting of black, brown, or green disc-florets, are borne on long stems over a long period from summer to autumn. Most are good for cut flowers. Grow in a border or naturalize in a meadow or woodland garden. Most cultivars of *R. hirta* are grown as annuals, and are good for bedding or for infilling in borders.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in moderately fertile, preferably heavy but well-drained soil that does not dry out, in full sun or partial shade. *R. fulgida* var. *deamii* is more drought-tolerant than other species. On fertile soils, *R. laciniata* 'Golden Glow' may become invasive.

• **PROPAGATION** Sow seed of perennials in containers in a cold frame in early spring, or divide in autumn or spring. Sow seed of annuals and biennials at 16-18°C (61-64°F) in spring.

• **PESTS AND DISEASES** Slugs may damage young growth. *R. laciniata* 'Golden Glow' is susceptible to aphids.

**R. 'Autumn Sun'** see *R. 'Herbstsonne'*.

**R. columnifera** see *Ratibida columnifera*.

**R. deamii** see *R. fulgida* var. *deamii*.

**R. fulgida** (Black-eyed Susan).

Rhizomatous perennial with branched stems, long-stalked, oblong to lance-shaped, entire basal leaves, to 12cm (5in) long, and lance-shaped, toothed stem leaves; both are mid-green and slightly hairy with prominent veins. Daisy-like flowerheads, to 7cm (3in) across, with orange-yellow ray-florets and conical, blackish brown disc-florets, are borne from late summer to mid-autumn. 1→90cm (36in), ↔ 45cm (18in). E. USA. \*\*\*. **var. deamii** ♀ syn. *R. deamii*, is free-flowering, and has very hairy stems with long-pointed, ovate or oval-ovate, toothed, rough basal and stem leaves; 1→60cm (24in). USA (Indiana). **var. speciosa**, syn. *R. neumanii*, *R. speciosa*, has elliptic to lance-shaped, almost sickle-shaped basal leaves and coarsely toothed stem leaves; USA (New Jersey to Alabama and Georgia). **var. sullivantii**, syn. *R. sullivantii*, has broadly ovate to narrowly ovate-lance-shaped, less hairy, coarsely toothed, dark green basal leaves and



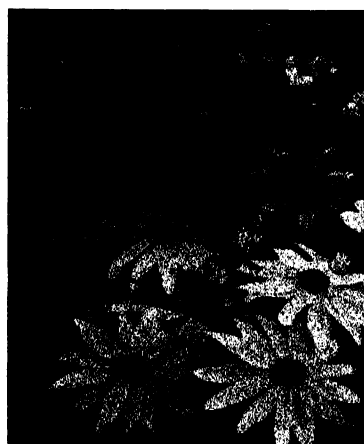
*Rudbeckia* 'Herbstsonne'

stem leaves, which become progressively smaller up the stems. The flowerheads are 8–9cm (3–3½in) across. USA (Michigan to Missouri, Connecticut to W. Virginia). **var. *sullivantii*** 'Goldsturm' ♂♀ has large, golden yellow flowerheads, 9–12cm (3½–5in) across, on shorter stems than the species; ↑ to 60cm (24in).

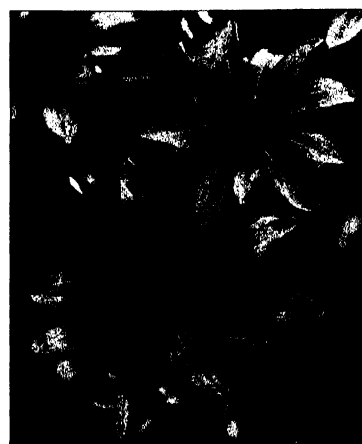
*R. gloriosa* see *R. hirta*.

*R. 'Herbstsonne'* ♂♀ syn. *R. 'Autumn Sun'*. Upright, rhizomatous, clump-forming perennial with oval, toothed or slightly lobed, prominently veined, glossy, mid-green leaves, to 15cm (6in) long. From midsummer to early autumn, branching stems bear daisy-like flowerheads, 10–12cm (4–5in) across, with bright yellow ray-florets and high, conical centres of green disc-florets,

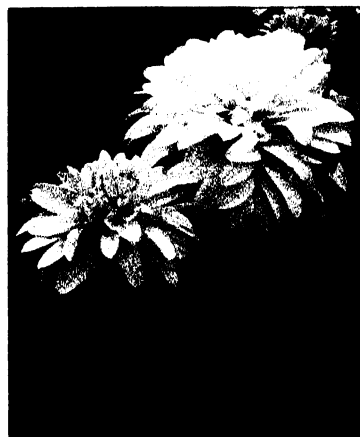
becoming yellowish brown with age. ↑ to 2m (6ft), ↔ 90cm (36in). \*\*\*  
*R. hirta*, syn. *R. gloriosa* (Black-eyed Susan). Erect, stout-stemmed, branching, bristly biennial or short lived perennial, often grown as an annual, with mid-green leaves. The basal leaves are ovate to diamond-shaped, sometimes slightly toothed, strongly 3 veined, and to 10cm (4in) long; stem leaves are usually narrower and ovate to lance-shaped. Daisy-like flowerheads, to 7cm (3in) across, with pale to golden yellow ray-florets and prominent, conical centres of deep brown-purple disc-florets, are borne from summer to early autumn. ↑ 30–90cm (12–36in), ↔ 30–45cm (12–18in). C. USA. \*\*\*  
*'Bambi'* has flowerheads with bronze-brown, chestnut-brown, and golden



*Rudbeckia hirta* 'Becky Mixed'



*Rudbeckia hirta* 'Rustic Dwarfs'



*Rudbeckia laciniata* 'Goldquelle'

yellow ray-florets; ↑ to 30cm (12in).  
*'Becky Mixed'* ♂♀ is very dwarf, and has flowerheads with ray-florets in shades of lemon-yellow, golden yellow, and dark red or reddish brown; ↑ to 25cm (10in).  
*'Goldilocks'* has double and semi-double flowerheads with golden-orange ray-florets; ↑ to 60cm (24in). *'Green Eyes'* see *'Irish Eyes'*. *'Irish Eyes'*, syn. *'Green Eyes'*, has flowerheads with bright yellow ray-florets and green disc-florets; ↑ 60–75cm (24–30in).  
*'Kelvedon Star'* has flowerheads with deep golden yellow ray-florets, zoned in brownish red. *'Marmalade'* is bushy and compact, with large flowerheads, sometimes to 13cm (5in) across, with deep golden orange ray-florets; ↑ to 45cm (18in). *'Rustic Dwarfs'* ♂♀ has flowerheads with golden yellow, brownish red, or bronze-orange ray-florets, with some bicolours; ↑ to 60cm (24in). *'Sonora'* is compact, bearing flowerheads with bright yellow ray-florets; ↑ to 40cm (16in).

*R. laciniata*. Rhizomatous, hairless, glaucous perennial, forming loose clumps of tall, wiry stems, branched towards their tips. Basal leaves, to 10cm (4in) long, are pinnate or pinnatisect, each with deeply 3- to 5-lobed, toothed leaflets and prominent veins; stem leaves become less deeply lobed up the stems. Daisy-like flowerheads, 7–15cm (3–6in) across, with reflexed, pale yellow ray-florets and hemispherical to conical centres of greenish yellow disc-florets, are borne from midsummer to mid-autumn. ↑ 1.5m–3m (5–10ft), ↔ 1m (3ft). C. and E. North America. \*\*\*  
*'Golden Fountain'* see *'Goldquelle'*. *'Golden Glow'* is very vigorous, bearing fully double flowerheads with yellow ray-florets; ↑ to 1.8m (6ft), ↔ 2–2.5m (6–8ft). *'Goldquelle'* ♂♀ syn. *'Golden Fountain'*, is compact, bearing double flowerheads with lemon-yellow ray-florets and green disc-florets that turn yellow as the flowerheads open; ↑ to 90cm (36in), ↔ 45cm (18in). **var. *hortensia*** is the name applied to all variants with double flowerheads.  
*R. newmanii* see *R. fulgida* var. *speciosa*.  
*R. purpurea* see *Echinacea purpurea*.  
*R. speciosa* see *R. fulgida* var. *speciosa*.  
*R. sullivantii* see *R. fulgida* var. *sullivantii*.

▷ **Rue** see *Ruta*

**Common** see *Ruta graveolens*

**Fringed** see *Ruta chalepensis*

**Goat's** see *Galega*

## RUELLIA

syn. DIPTERACANTHUS

ACANTHACEAE

Diverse genus of about 150 species of evergreen perennials and soft-stemmed or woody shrubs and subshrubs, widely distributed in tropical America, warm parts of North America, and Africa and Asia, where they are found in meadows and at woodland margins. The leaves are opposite and entire, and may be stalked or stalkless. Funnel-shaped flowers are produced singly, in clusters from the leaf axils, or in terminal panicles. The tropical species, in particular, are cultivated for their attractive foliage and flowers, and are suitable for informal borders or plantings. In frost-prone climates, grow tender species in a warm greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light with high humidity. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Pinch out the young shoots to encourage branching. Pruning group 10, after flowering. Outdoors, grow in any fertile, humus-rich, moist soil in a site in full sun or partial shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root softwood cuttings in spring or early summer.

• **PESTS AND DISEASES** Trouble free.

*R. amoena* see *R. graecizans*.

*R. devosiana* ♂♀ 1 hairy shrub with soft, purple-flushed stems and broadly lance-shaped, pale-veined, dark green leaves, to 8cm (3in) long, purple beneath. Funnel-shaped, lavender-blue-flushed white flowers, 4–5cm (1½–2in) long, with slender tubes and notched, spreading, purple veined lobes, are produced singly from the leaf axils from spring to summer. ↑ 45cm (18in), ↔ 30cm (12in). Brazil. \* (min. 12°C/54°F)

*R. graecizans*, syn. *R. amoena*. Bushy shrub with soft, spreading stems and ovate to oblong, hairless, mid-green leaves, to 18cm (7in) long. Funnel-shaped scarlet flowers, 2.5cm (1in) long, each with one enlarged sepal, are borne in axillary clusters on long stalks from spring to summer. ↑ 60cm (24in), ↔ 45cm (18in). South America. \* (min. 12°C/54°F)



*Ruellia devosiana*

*Ruellia macrantha*

***R. macrantha*** ■ (Christmas pride). Erect, soft-stemmed subshrub with lance-shaped, hairy, dull, dark green leaves, to 15cm (6in) long. From autumn to winter, funnel-shaped but slightly curved, rich purplish pink flowers, to 8cm (3in) long, with darker veins, are produced singly from the leaf axils. ↑ to 2m (6ft), ↔ 45cm (18in). Brazil. ☀ (min. 12°C/54°F)

***R. makoyana*** ♀ (Monkey plant, Trailing velvet plant). Slender- and soft-stemmed, spreading, hairy perennial with ovate, silver-veined purple leaves, to 8cm (3in) long, dark purple beneath. In summer, produces funnel-shaped, carmine-pink flowers, 5cm (2in) long, singly from the leaf axils. ↑ to 60cm (24in), ↔ 45cm (18in). Brazil. ☀ (min. 12°C/54°F)

## RUMEX

Dock

POLYGONACEAE

Genus of about 200 species of annuals, biennials, and usually tap-rooted, sometimes rhizomatous perennials from a range of habitats including mountains, wasteland, cultivated ground, and streamsides in N. temperate regions. Docks have simple, variably shaped, mainly basal leaves, which occasionally have wavy margins. In summer, the tiny, star-shaped, bisexual or unisexual flowers are borne in whorls in usually erect, dense, terminal panicles or racemes. They are followed by small, triangular, brown to red-brown fruit. Some species are invasive weeds; a few are grown for their decorative foliage or

*Rumex sanguineus*

as herbs. Grow in a herbaceous or mixed border. All parts of docks may cause mild stomach upset if ingested; contact with the foliage may irritate skin.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed *in situ* in spring. Docks also self-seed freely.
- **PESTS AND DISEASES** Susceptible to slug damage and aphids.

***R. sanguineus*** ■ (Bloody dock, Red-veined dock). Tap-rooted, rosette-forming perennial with oblong-lance-shaped, mid- to dark green leaves, 5–15cm (2–6in) long, conspicuously veined blood-red or purple. In early and midsummer, erect, red-tinted flower stems bear panicles of tiny, star-shaped, green then red-brown flowers, 4mm (1/8in) across, followed by dark brown fruit. ↑ to 90cm (36in), ↔ 30cm (12in). Europe, N. Africa, S.W. Asia. \*\*\*

## RUMOHRA

DRYOPTERIDACEAE

Genus of 50 species of epiphytic or terrestrial, rock-dwelling, evergreen ferns occurring in cool woodland or scrub in tropical regions of the S. hemisphere. They have scaly, creeping rhizomes covered in golden brown scales, and triangular, pinnate or 2- or 3-pinnate, leathery fronds. Spores are formed in conspicuous, large, circular spots, each covered with a centrally attached indusium. In frost-prone climates, grow in a warm greenhouse; in warmer areas, grow epiphytically or in a damp, shady border. The fronds are popular for flower arrangements.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow epiphytically on bark, or in shallow pots or hanging baskets in a mix of 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts coarse leaf mould. Provide bright filtered light and moderate humidity. In growth, mist regularly, water freely, and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow epiphytically or in moist, leafy, open, humus-rich soil in partial or light dappled shade.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe, or separate rooted sections of rhizomes in early summer. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*Rumohra adiantiformis*

***R. adiantiformis*** ■ ♀ (Lather fern). Evergreen, terrestrial or epiphytic fern, very variable in size, producing ovate or triangular, 2- or 3-pinnate, leathery, dark green fronds, to 90cm (36in) or more long; the fronds have narrowly diamond-shaped to oblong pinnae. ↑ 0.5–1.5m (20–60in), ↔ to 1m (3ft). Tropical and subtropical areas of S. hemisphere. ☀ (min. 10–13°C/50–55°F)

▷ **Running postman** see *Kennedia prostrata*

## RUPICAPNOS

PAPAVERACEAE

Genus of about 30 species of almost stemless, evergreen perennials found on sunny mountain slopes or cliff faces in Spain and N. Africa. They have pinnate, finely dissected leaves with pinnatisect leaflets, and bear corymb-like racemes of tubular, 4-petalled, spurred flowers in summer. The short-lived *R. africana* is the most commonly cultivated species, and can be successfully grown in a scree bed or alpine house.

- **HARDINESS** Frost hardy. Will survive temperatures to -10°C (14°F), but will not tolerate winter wet.
- **CULTIVATION** Under glass, grow in a mix of 1 part each of loam and leaf mould and 2 parts grit, with additional tufa chippings, in full light. Water moderately in the growing season; keep just moist in winter. Self-seed freely under glass. Outdoors, grow in gritty, sharply drained soil in a scree bed, in full sun with protection from excessive winter wet.
- **PROPAGATION** Collect seed when almost ripe but still green, and sow immediately in containers in a cold frame.
- **PESTS AND DISEASES** Trouble free.

***R. africana*** ■ Short-lived perennial producing basal clumps of fern-like, pinnate, bright grey-blue leaves, 8–10cm (3–4in) long, finely divided into pinnatisect leaflets, which may be linear, ovate, or oblong. Delicate, corymb-like racemes of 4-petalled, spurred, pinkish-purple flowers, to 1.5cm (1/2in) long, with dark purple tips, are borne over a long period in summer. ↑ 15cm (6in), ↔ 20cm (8in). Morocco (Rif Mountains). \*\*\*. **subsp. *decipiens*** bears yellow-marked white flowers; S.W. Spain.

*Rupicapnos africana*

## RUSCHIA

AIZOACEAE

Genus of about 350 species of shrubby or stemless, mat-forming, perennial succulents from semi-desert regions of Namibia and South Africa. Many species branch freely to form tufts or mats; others become shrubby, to 1m (3ft) tall. The leaves are arranged in pairs and are often boat-shaped. Daisy-like flowers open during the day in summer. In warm, dry climates, grow in a raised bed or desert garden. In frost-prone areas, grow prostrate species in a temperate greenhouse, or treat as frost-tender annuals and use for bedding, window-boxes, or hanging baskets.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. Water moderately from spring to autumn, applying a dilute balanced liquid fertilizer once in late spring and once in late summer; keep dry in winter. Outdoors, grow in poor, gritty, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 21°C (70°F) in early spring. Plant out seedlings to be grown as annuals when all danger of frost has passed. Root cuttings of stem sections from spring to summer.
- **PESTS AND DISEASES** Susceptible to mealybugs.

***R. acuminata***. Shrubby succulent with erect or almost prostrate, woody stems. Produces pairs of ovoid, bluntly keeled, sometimes toothed leaves, to 2.5cm (1in) long, with convex sides, narrowing towards the tips. They are roughly papillose, fleshy, and blue-green marked with dull green spots. In summer, bears solitary, terminal or axillary, daisy-like, white or pale pink flowers, 3cm (1 1/4in) across. ↑ 20cm (8in), ↔ 50cm (20in). South Africa (Eastern Cape). ☀ (min. 7°C/45°F)

***R. derenbergiana*** see *Ebracteola derenbergiana*.

***R. macowanii*** ■ Shrubby succulent with short, prostrate, woody stems and erect, fleshy branches. The fleshy, grey-green leaves, to 3.5cm (1 1/2in) long, are boat-shaped to cylindrical, flat above and keeled beneath. In summer, bears solitary, terminal, daisy-like pink flowers, 2cm (3/4in) across, with a darker pink stripe on each petal. ↑ 20cm (8in), ↔ 45cm (18in). South Africa (Western Cape, Northern Cape, Eastern Cape). ☀ (min. 7°C/45°F)

***R. pusilla***. Tufted, prostrate, almost stemless succulent with nearly spherical, fleshy, bright green leaves, 4mm (1/8in) long, keeled beneath. Solitary, terminal or axillary, daisy-like, pale pinkish white flowers, 1cm (1/2in) across, are produced in summer. ↑ 7cm (3in). South Africa (Western Cape, Northern Cape, Eastern Cape). ☀ (min. 7°C/45°F)

***R. pygmaea***. Mat-forming, prostrate succulent with very short, fleshy stems bearing 1 or 2 dissimilar pairs of ovoid or ellipsoid, fleshy, bright green leaves, to 5mm (1/4in) long, keeled beneath, and more or less united almost to the tips. The leaf skins gradually shrivel to disclose a second pair of leaves, which are not united, and these become the





*Ruschia macowanii*

first pair of leaves of the following year's growth. Solitary, terminal or axillary, daisy-like, whitish pink flowers, to 2cm (3/4in) across, are borne in summer.  $\pm$  8cm (3in). Namibia, South Africa (Western Cape, Northern Cape, Eastern Cape).  $\odot$  (min. 7°C/45°F)

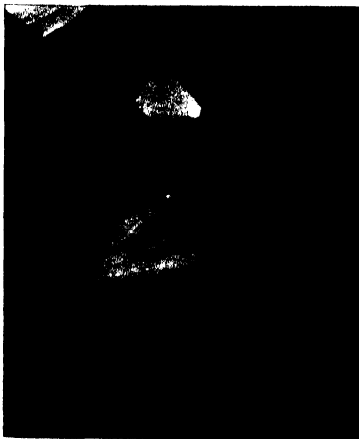
## RUSCUS

Broom

LILLACEAE/RUSCACEAE

Genus of 6 species of rhizomatous, evergreen subshrubs from woodland in Madeira and the Azores, through Europe and N. Africa to Iran. The tiny, true leaves are replaced by flattened, leaf-like shoots (cladophylls) on which the flowers and showy red fruits are borne. The inconspicuous, star-shaped, green or greenish white flowers, to 2mm (1/4in) across, each have 6 tepals. *Ruscus* species are usually dioecious, and plants of both sexes are normally needed to obtain fruit; however, *R. aculeatus* sometimes bears hermaphrodite, self-fertile flowers. Grow in a dry, shady site. The stems may be dried in glycerine and used in floral arrangements. The berries of *R. aculeatus* may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any but waterlogged soil in sun or partial or full shade. Individual shoots are short-lived, but new ones are produced annually; cut out dead stems at the base in spring.
- **PROPAGATION** Sow seed in a seedbed, or in containers in a cold frame, as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Trouble free.



*Ruscus hypoglossum*

*R. aculeatus* (Butcher's broom).

Clump-forming, rhizomatous subshrub with upright, branched shoots bearing ovate, spine-tipped, glossy, dark green cladophylls, to 2.5cm (1in) long. From late summer to winter, female plants produce spherical, bright red berries, 8mm (3/4in) across, on the upper sides of the cladophylls.  $\pm$  75cm (30in),  $\leftrightarrow$  1m (3ft). Europe, N. Turkey, N. Africa, Azores.  $\ast\ast\ast$

*R. hypoglossum*  $\square$  Clump-forming, rhizomatous subshrub producing arching, unbranched shoots and obovate to broadly ovate, glossy, mid-green cladophylls, to 10cm (4in) long. Female plants bear spherical red berries, 1cm (1/2in) across, on the upper sides of the cladophylls, from autumn to winter.  $\pm$  45cm (18in),  $\leftrightarrow$  1m (3ft). Italy, Czech Republic to Turkey.  $\ast\ast$

*R. hypophyllum*. Rhizomatous, clump-forming subshrub with upright shoots and ovate, pointed, dark green cladophylls, to 10cm (4in) long. Female plants bear spherical red berries, 1cm (1/2in) across, on the upper or lower side of the cladophylls, from late summer to winter. Male and female flowers may be borne on the same plant.  $\pm$  60cm (24in),  $\leftrightarrow$  1m (3ft). S.E. France, S. Spain, N. Africa, Sicily.  $\ast\ast$

$\triangleright$  **Rush** see *Juncus*

**Corkscrew** see *Juncus effusus* 'Spiralis'

**Dwarf Japanese** see *Acorus gramineus* 'Pusillus'

**Egyptian paper** see *Cyperus papyrus*

**Flowering** see *Butomus*

**Japanese** see *Acorus gramineus*

**Jointed** see *Juncus articulatus*

**Mat** see *Lomandra*

**Pale mat** see *Lomandra glauca longifolia*

**Spiny-headed mat** see *Lomandra longifolia*

**Variegated Japanese** see *Acorus gramineus* 'Variegatus'

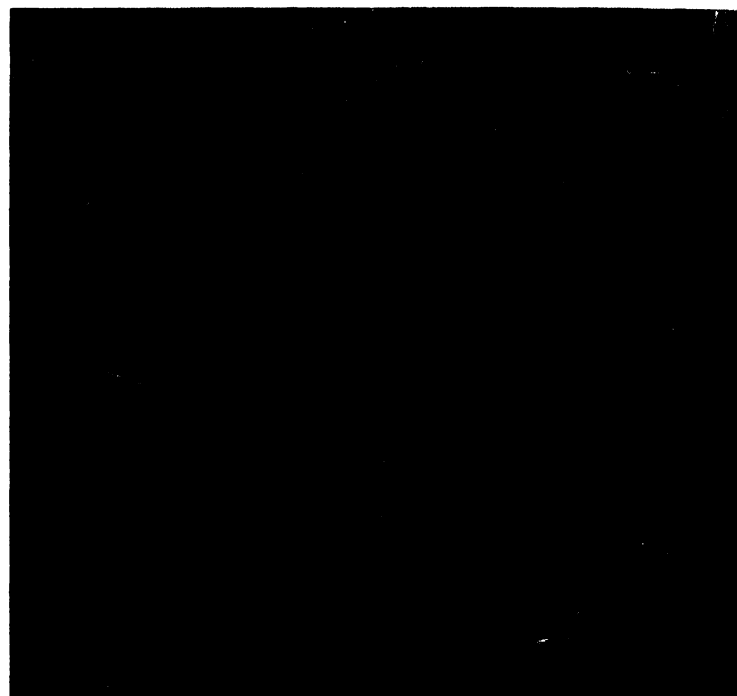
$\triangleright$  **Rushes** see p.54

## RUSSELIA

SCROPHULARIACEAE

Genus of about 50 species of evergreen or deciduous shrubs and subshrubs found at forest margins from Mexico and Cuba to Colombia. The pendent, rush-like stems bear opposite or whorled, often scale-like leaves. Showy, tubular, red, pink, or white flowers are borne in axillary cymes, or sometimes singly. *R. equisetiformis* is the only species commonly cultivated. In frost-prone areas, grow as houseplants, in a cool or temperate greenhouse, or in hanging baskets. In warmer climates, grow at the front of a shrub border, or allow to trail over the edges of a raised bed or wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full or bright filtered light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in a sheltered site in well-drained, humus-rich, moderately fertile soil in full sun. Pruning group 9.
- **PROPAGATION** Divide rooted layers in spring; root softwood cuttings at any time of year.
- **PESTS AND DISEASES** Trouble free.



*Russelia equisetiformis*

*R. equisetiformis*  $\square$   $\triangleright$  *R. juncea* (Coral plant, Firecracker plant). Deciduous, branching subshrub with rush-like, erect and pendent, mid-green stems. The elliptic, scale-like, mid-green leaves, to 1.5cm (1/2in) long, fall early. Tubular scarlet flowers, to 3cm (1 1/4in) long, are borne in pendent cymes from spring to autumn.  $\pm$  1.5m (5ft),  $\leftrightarrow$  2.5m (8ft). Mexico.  $\odot$  (min. 10°C/50°F)

*R. juncea* see *R. equisetiformis*.

$\triangleright$  **Russian vine** see *Fallopia baldschuanica*

$\triangleright$  **Rusty leaf** see *Menziesia ferruginea*

## RUTA

Rue

RUTACEAE

Genus of 8 species of deciduous or evergreen shrubs, subshrubs, and woody-based herbaceous perennials, occurring in dry, rocky habitats in the Canary Islands, the Mediterranean region, N.E. Africa, and S.W. Asia. They are cultivated for their aromatic foliage and flowers. The leaves are alternate, occasionally opposite, broadly ovate to rounded, and pinnatisect to pinnate. The unusual, 4- or 5-petalled, fringed or toothed yellow flowers are produced in terminal cymes. Rue is suitable for growing in a mixed or herbaceous border, or in a rock garden or herb garden. The foliage is sometimes used medicinally or very sparingly as a culinary flavouring. All parts of rue may cause severe discomfort if ingested; the foliage may cause photodermatitis on contact.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, very well-drained soil in full sun or partial shade. Rue will thrive in a hot, dry site. Pruning group 10, in spring or after flowering.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in summer.
- **PESTS AND DISEASES** *Phytophthora* root rot may be a problem.

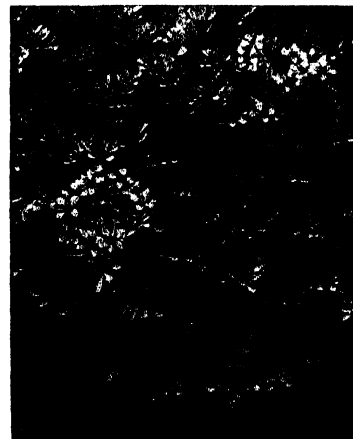
*R. chalepensis* (Fringed rue). Upright subshrub producing broadly ovate, 2- or 3-pinnatisect, aromatic, blue-green leaves, to 12cm (5in) long, with numerous oblong-lance-shaped or obovate lobes. Cup-shaped, dark yellow flowers, 2cm (3/4in) across, each with 4 petals fringed with long hairs, are borne in open cymes in summer.  $\pm$  60cm (24in). S. Europe, N.E. Africa, S.W. Asia.  $\ast\ast$ . 'Dimension Two' is more compact than the species, and almost prostrate.

*R. graveolens* (Common rue). Rounded to erect, evergreen shrub producing alternate, broadly ovate to rounded, 2-pinnatisect, aromatic, glaucous, blue-green leaves, to 15cm (6in) long, with numerous obovate lobes. Cymes of cup-shaped, 4-petalled, dull yellow flowers, 2cm (3/4in) across, are borne in summer.  $\pm$  1m (3ft),  $\leftrightarrow$  75cm (30in). S.E. Europe.  $\ast\ast\ast$ . 'Jackman's Blue'  $\square$   $\triangleright$  is more compact than the species, and has more intensely glaucous, blue-green foliage;  $\pm$  60cm (24in).

$\triangleright$  **Rye,**

**Canadian wild** see *Elymus canadensis*

**Wild** see *Elymus*



*Ruta graveolens* 'Jackman's Blue'

## S

## SABAL

Palmetto

ARECACEAE/PALMAE

Genus of 14 species of single-stemmed or stemless palms, chiefly from low-lying or swampy areas in tropical forest, from S. USA to N. South America, and from the West Indies. They have deeply divided, fan-shaped leaves, which often remain *in situ* when they die, forming a skirt-like bundle just below each crown. Panicles of 3-petalled flowers are borne between the leaves, usually in summer. In frost-prone areas, grow in a cool to warm greenhouse, a conservatory, or as houseplants. In warmer areas, plant the trees as lawn specimens and the stemless species in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in well-drained, loam-based potting compost (J1 No.2) in bright indirect light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly. Pot on or top-dress in spring. Mist over lightly every day in summer. Keep just moist in winter.

Outdoors, grow in moderately fertile, moist but well-drained soil in full sun with some midday shade.

- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Prone to red spider mites and scale insects under glass.

*S. glabra* see *S. minor*.

*S. guatemalensis* see *S. mexicana*.

*S. mexicana* ♀ syn. *S. guatemalensis*, *S. texana* (Texas palmetto). Medium-sized palm with a columnar trunk that bears old leaf bases for several years. Fan-shaped, bright green, often yellowish green leaves, 1m (3ft) long, are divided up to halfway into many slender, pointed lobes. Bears cream flowers in panicles as long as or longer than the leaves, usually in summer. ‡ to 18m (60ft), ↔ to 4m (12ft). USA (Texas), Mexico, Guatemala. ☀ (min. 10–13°C/50–55°F)

*S. minima* see *S. minor*.

*S. minor* ♂♀ syn. *S. glabra*, *S. minima*.

*S. pumila* (Dwarf palmetto, Scrub palmetto). Small palm with a short, buried stem (only the tip visible above the ground) and long-stalked, fan-shaped, blue-green leaves, 1–1.5m (3–5ft) long, divided at least to two-thirds into many slender lobes. Cream flowers are borne, usually in summer, in erect to arching panicles, to 2m (6ft) long. ‡ 1–2m (3–6ft), ↔ to 3m (10ft). S.E. USA. ☀ (min. 3–5°C/37–41°F)

*S. palmetto* ♂♀ (Cabbage palmetto, Common blue palmetto). Large palm with a rough trunk, to 60cm (24in) in diameter. Bears compact, spherical



*Sabal palmetto*

heads of many fan-shaped, rich green leaves, to 2m (6ft) long, divided into numerous long, 2-lobed segments with thread-like filaments hanging between them. Cream flowers are borne in panicles just longer than the leaves, usually in summer. ‡ to 30m (100ft), ↔ 5–7m (15–22ft). USA (N. Carolina to Florida). ☀ (min. 5–7°C/41–45°F)

*S. pumila* see *S. minor*.

*S. texana* see *S. mexicana*.

▷ *Sabina* see *Juniperus*

## SACCHARUM

syn. ERIANTHUS

Plume grass

GRAMINEAE/POACEAE

Genus of about 20 species of reed-like, tufted, clump-forming, or rhizomatous, perennial grasses found by riversides and in valley bottoms, widely distributed in warm-temperate and tropical regions. They are grown for their inflorescences and foliage. Leaves are narrowly lance-shaped to linear. Large, plume-like panicles of crowded flower spikes with silky-hairy spikelets are borne in pairs in summer and autumn. Effective at the back of a herbaceous or mixed border, against a warm, sunny wall, or as free-standing specimens. The cut panicles are useful in fresh and dried arrangements.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun, with shelter from cold, drying winds. Protect crowns from extreme cold with dry mulch or horticultural fleece. Remove any flowerheads left for winter effect by early spring. *S. ravennae* flowers most reliably after a long, hot summer.
- **PROPAGATION** Sow seed in containers under glass or in a cold frame in spring. Divide in mid-spring or early summer.
- **PESTS AND DISEASES** Trouble free.

*S. ravennae*. Robust, densely tufted, perennial grass with arching, linear leaves, 60–90cm (24–36in) long, that are grey-green with central white stripes, purple-tinted in autumn. In late summer and autumn, erect stems bear dense, upright panicles, to 60cm (24in) long, of softly hairy, silver-grey to purple flower spikes. ‡ 2–3m (6–10ft), ↔ 1.2m (4ft). Mediterranean to N. Africa. \*\* (hardy to about -8°C/18°F)

▷ **Sacred flower of the Incas** see *Cantua buxifolia*

## SADLERIA

BLECHNACEAE

Genus of 7 species of evergreen, tree-like ferns from rainforest and exposed sites on lava flows in Hawaii. They each have a stout rhizome, crowned with large, divided fronds. The spores, unlike those of other tree ferns, such as *Cyathea* and *Dicksonia*, are borne in lines along the midribs of the frond segments. *S. cyatheoides* is the only species generally grown. In frost-prone areas, grow in a temperate greenhouse, a conservatory, or as houseplants. In warmer areas, grow in a shrub border, a woodland garden, or as a free-standing specimen.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in equal parts medium-grade bark, perlite, and charcoal, in bright indirect to moderate light, and with moderate to high humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained, acid to neutral soil in partial to deep shade; shelter from cold, dry winds.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*S. cyatheoides*. Tree-like fern with ovate, 2-pinnate, leathery fronds, 90cm (36in) long, dark green above, glaucous beneath; they have narrowly oblong pinnae, and numerous linear segments with the margins rolled under. ‡ 1.5m (5ft), ↔ 1.8m (6ft). USA (Hawaii). ☀ (min. 10°C/50°F)

▷ **Safflower** see *Carthamus*, *C. tinctorius*

▷ **Saffron**,

**False** see *Carthamus tinctorius*

**Meadow** see *Colchicum autumnale*

▷ **Saffron-spike** see *Aphelandra squarrosa*

▷ **Sage** see *Salvia*

**Autumn** see *Salvia greggii*

**Blue** see *Eranthemum pulchellum*

**Bog** see *Salvia uliginosa*

**Common** see *Salvia officinalis*

**Jerusalem** see *Phlomis fruticosa*,

*Pulmonaria saccharata*

**Jim** see *Salvia clevelandii*

**Mealy** see *Salvia farinacea*

**Pineapple** see *Salvia elegans* 'Scarlet Pineapple'

**Purple** see *Salvia officinalis* 'Purpurascens'

**Scarlet** see *Salvia splendens*

▷ **Sagebrush** see *Artemisia*, *Seriphidium tridentatum*

▷ **Sage wood, South African** see *Buddleja salviifolia*

## SAGINA

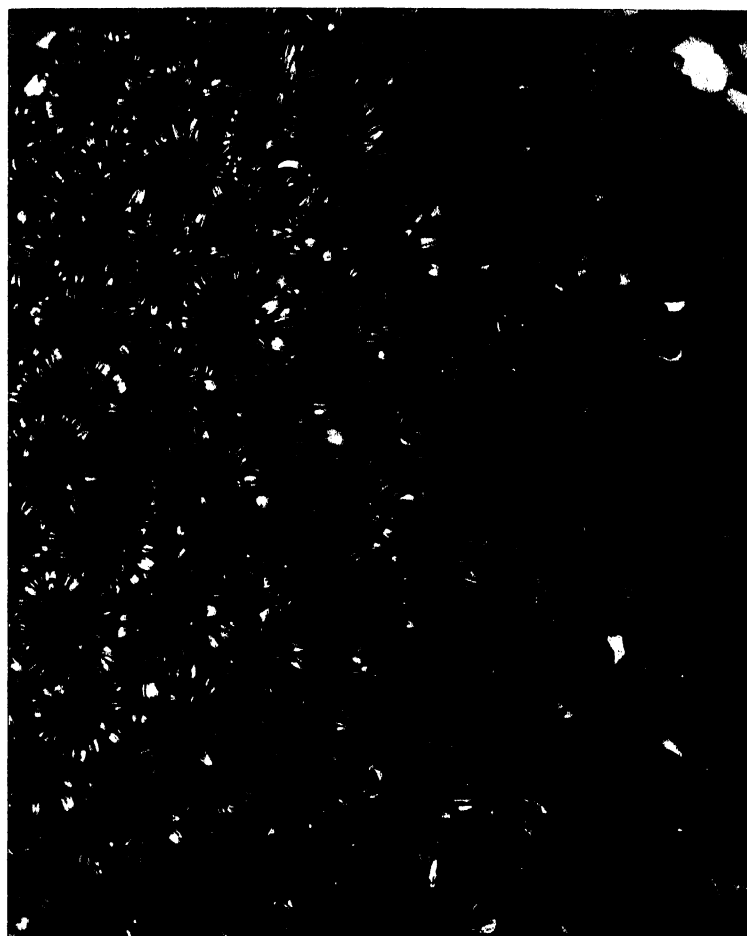
Pearlwort

CARYOPHYLLACEAE

Genus of about 20 species of compact, low-growing annuals and perennials found in a wide range of habitats, extensively distributed throughout the temperate regions of the N. hemisphere. They have linear to narrowly wedge-shaped leaves, arranged in pairs and joined at the bases around the stems. Minute, 4- or 5-petalled, rarely petalless white flowers are produced either singly or in few-flowered cymes. The majority of pearlwort are weeds; those described



*Sabal minor*

*Sagina boydii*

here are cultivated mainly for their dense mats or cushions of leaves, which provide effective ground cover. They are suitable for growing in a rock garden or paving crevice. Alternatively, grow in an alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, acid to neutral, moist but well-drained soil in full sun with some midday shade. *S. boydii* requires very sharply drained, poor soil, and tolerates partial shade. In an alpine house, grow in 3 parts grit or sharp sand and 1 part peat or leaf mould. Dislikes hot, dry conditions.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide *S. subulata* in spring. Root individual rosettes of *S. boydii* as cuttings in early summer.
- **PESTS AND DISEASES** Prone to aphids or red spider mites under glass.

***S. boydii*** ■ Very slow-growing, dense, cushion-forming perennial producing crowded rosettes of rigid, linear to narrowly wedge-shaped, recurved, glossy, dark green leaves, to 2cm (¾in) long. Bears tiny, solitary, normally petalless, mid-green flowers in summer. Best in an alpine house. ‡ 2.5cm (1in), ↔ 8cm (3in). Scotland. \*\*\*

***S. glabra* 'Aurea'** see *S. subulata* 'Aurea'.

***S. subulata* 'Aurea'**, syn. *S. glabra* 'Aurea'. Mat-forming perennial with slender, rooting stems clothed in pointed, linear, yellow-green leaves, to 1cm (½in) long. In summer, bears solitary, 5-petalled white flowers, 4mm

(⅜in) across, on stems to 4cm (1½in) long. Effective low ground cover in a rock garden or between paving stones. ‡ 1cm (½in), ↔ 20cm (8in) or more. W. and C. Europe. \*\*\*

## SAGITTARIA

Arrowhead

ALISMATACEAE

Genus of 20 species of marginal and submerged, herbaceous aquatic perennials and annuals, found mainly on muddy banks or in shallow water in temperate and tropical Europe, Asia, and North, Central, and South America. The often decorative leaves are aerial, floating, or submerged, and linear to elliptic, lance-shaped, ovate, or arrow-shaped. Panicles or racemes of whorled, 3-petalled, saucer-shaped white flowers are borne in summer. Most are excellent for the margins of a wildlife pool, where their tuberous rootstocks may spread; some (including *S. latifolia* and *S. sagittifolia*) produce walnut-sized tubers that attract waterfowl. Grow *S. subulata* in an aquarium for its attractive submerged leaves. In frost-prone areas, grow tender species in a pool in a cool or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow at the margins of a pool, in water no deeper than 22–30cm (9–12in), in full sun. Trim back spreading growth in late summer and remove faded flowers to prevent seeding. In an aquarium, grow in groups of 4 or 5 in a gravelly soil in bright indirect light, with a minimum temperature of 16°C (61°F). Under

glass, grow in baskets at the margins of an indoor pool in bright filtered light, with a water temperature of 10°C (50°F). See also pp.52–53.

- **PROPAGATION** Sow seed as soon as ripe in containers standing in trays of shallow water. Remove runners, or collect and plant overwintering tubers, in spring.
- **PESTS AND DISEASES** Leaves may be damaged by water-lily aphid.

***S. japonica*** see *S. sagittifolia* 'Flore Pleno'.

***S. lancifolia***. Stoloniferous, marginal aquatic perennial producing lance-shaped, leathery, pale green aerial leaves, 15–45cm (6–18in) long. In summer, bears several whorls of white flowers, 3–5cm (1¼–2in) across, on scapes to 2m (6ft) tall. ‡ 1–1.5m (5ft). Tropical and subtropical North, Central, and South America. ☼ (min. 10°C/50°F)

***S. latifolia*** ■ (Duck potato, Wapato).

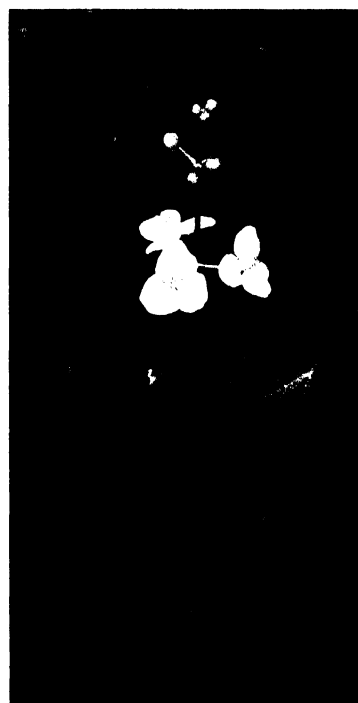
Marginal aquatic perennial with large tubers and variable, mainly arrow-shaped aerial leaves, 10–30cm (4–12in) long. In summer, racemes of whorled white flowers, 3–4cm (1¼–1½in) across, are produced on the triangular flower stems, to 1.2m (4ft) tall.

‡ 45–90cm (18–36in), ↔ 90cm (36in). USA. \*\*\*

***S. sagittifolia*** (Japanese arrowhead).

Marginal aquatic perennial bearing arrow-shaped aerial leaves, 25cm (10in) long, with 2 long, acute, basal lobes. In deep water, produces ribbon-like floating leaves, to 80cm (32in) long. In summer, scapes to 1m (3ft) tall bear racemes of white flowers, to 2.5cm (1in) across, with a purple spot at the base of each petal. ‡ 90cm (36in), ↔ indefinite. Eurasia. \*\*\*. 'Flore Pleno', syn. *S. japonica*, is double-flowered.

***S. subulata***. Stoloniferous aquatic perennial bearing variable, usually linear, frequently bent or crooked submerged leaves, to 1m (3ft) long (depending on the depth of the water), with long, sharp-pointed or rounded

*Sagittaria latifolia*

tips. In shallow water, produces elliptic floating leaves, 5cm (2in) long. White flowers, 1.5–2cm (½–¾in) across, are borne in floating whorls of 1–3, in summer. ‡ to 60cm (24in), ↔ indefinite. E. USA. \*

▷ **Sago, False** see *Cycas circinalis*

▷ **Sago fern** see *Cyathea medullaris*

▷ **Sago palm** see *Cycas, C. circinalis*

**Japanese** see *C. revoluta*

▷ **Sailor caps** see *Dodecatheon hendersonii*

▷ **St. Barbara's herb** see *Barbarea*

▷ **St. Catherine's lace** see *Eriogonum, E. giganteum*

▷ **St. Dabeoc's heath** see *Daboecia cantabrica*

▷ **St. John's wort** see *Hypericum Perforate* see *H. perforatum*

## SAINTPAULIA

African violet

GESNERIACEAE

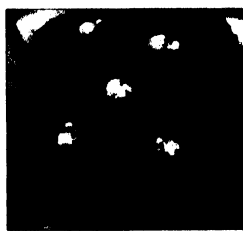
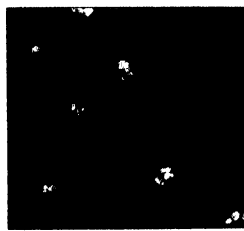
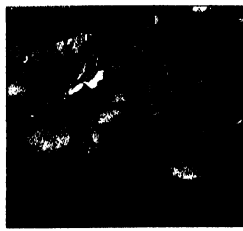
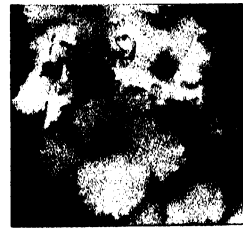
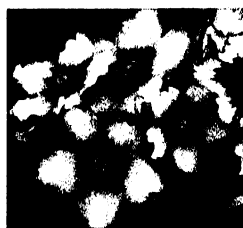
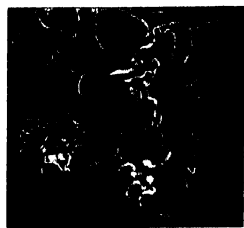
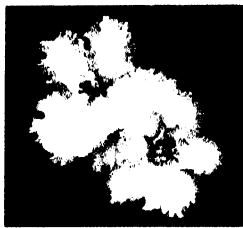
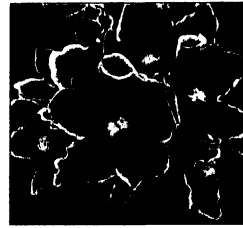
Genus of 20 species of low-growing, evergreen perennials found on banks, streamsides, on or among rocks, or as epiphytes on trees in a very small area of tropical E. Africa. Most are virtually stemless or have very short stems, and form rosettes of rounded to elliptic, somewhat succulent, usually hairy leaves. Trailing African violets produce the rosettes on extended stems, with the leaf-stalks usually longer than the leaf-blades. Flowers normally have 2 smaller petals at the top and 3 larger ones below, and are borne singly or in cymes.

There are over 2,000 cultivars, mainly derived from *S. ionantha*, with white, pink, red, blue, violet, bi- or multi-coloured flowers, 1–6cm (½–2½in) across, borne throughout the year. They may be single (5-petalled), semi-double (with small crests or lobes in the middle of the 5 petals), or fully double (with two or more layers of petals). The flowers are star-shaped, with all 5 petals of the same shape and size, or bell-shaped. Petal edges may be ruffled, rounded, frilled, or fringed. The leaves are usually mid- or dark green, and may be subtly feathered or flecked, or strongly variegated white, pink, or cream; most are broadly ovate to oval, and 4–20cm (1½–8in) long, including the stalks. Grow African violets as houseplants; most greenhouses or conservatories are too hot in summer and too cold in winter.

African violet cultivars are classified by rosette size into 5 groups (see below). The measurement given is the diameter of the rosette; the spread of each cultivar is the same as this.

MICRO-MINIATURE	less than 8cm (3in)
MINIATURE	8–16cm (3–6in)
SEMI-MINIATURE	16–21cm (6–8in)
STANDARD	21–40cm (8–16in)
LARGE	over 40cm (16in)

- **HARDINESS** Frost tender. Ideal temperature is 18–24°C (64–75°F).
- **CULTIVATION** Under glass, grow in well-drained loamless potting compost in bright filtered light and moderate to high humidity. At least 12 hours of light per day is needed for long-term flowering. Avoid direct summer sun, but position in the brightest light in winter; artificial light is useful. From early to

*Saintpaulia* 'Bright Eyes'*Saintpaulia* 'Chantabent'*Saintpaulia* 'Delft'*Saintpaulia* 'Dorothy'*Saintpaulia* 'Fancy Pants'*Saintpaulia* 'Garden News'*Saintpaulia* 'Ice Maiden'*Saintpaulia* 'Kristi Marie'*Saintpaulia* 'Ms. Pretty'*Saintpaulia* 'Rococo Anna'*Saintpaulia* 'Starry Trail'*Saintpaulia* 'Zoja'

late summer, water moderately and apply a high potash and phosphate liquid fertilizer every 2 weeks, or add a quarter-strength fertilizer at every watering. Repot at least once a year, keeping to virtually the same container size; do not overpot.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe or in early spring. Root leaf cuttings or suckers of cultivars at 24–27°C (75–81°F) in summer. Chimaeras (graft hybrids) will not come true from leaf cuttings.

• **PESTS AND DISEASES** Prone to aphids, mealybugs, thrips, tarsonemid mites, vine weevil larvae, grey mould (*Botrytis*), crown rot, and powdery mildew.

**S. 'Bright Eyes'** ■ ♀ (Standard group) Rosetted perennial with dark green leaves and single, deep blue flowers with prominent yellow pollen sacs. ↑ to 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Chantabent'** ■ (Semi-miniature group) Rosetted perennial bearing dark green leaves with deep red undersides. Produces large, single, violet-blue

flowers. ↑ 10–15cm (4–6in). ♀ (min. 15°C/59°F)

**S. 'Chantiana'**. (Miniature group) Rosetted perennial with light green leaves and fully double, light coral-pink flowers. ↑ 8–10cm (3–4in). ♀ (min. 15°C/59°F)

**S. 'Chantora'**. (Miniature group) Rosetted perennial bearing pointed, dark green leaves with dark red undersides, and single, deep red flowers. ↑ 8–10cm (3–4in). ♀ (min. 15°C/59°F)

**S. 'Colorado'** ■ ♀ syn. *S. 'Optimara Colorado'*. (Standard group) Rosetted perennial with mid-green leaves. The single red flowers have frilled margins and bold yellow pollen sacs. ↑ 15–20cm (6–8in). ♀ (min. 15°C/59°F)

**S. 'Dancin' Trail'**. (Semi-miniature group) Trailing, rosetted perennial with pointed, shiny, dark green leaves, red beneath, and fully double, magenta-red flowers. ↑ 10–15cm (4–6in). ♀ (min. 15°C/59°F)

**S. 'Delft'** ■ ♀ (Standard group) Strong-growing, rosetted perennial bearing mid-green leaves and large, semi-double,

cornflower-blue flowers. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Dina Mo'**. (Standard group) Rosetted perennial bearing mid-green leaves and fully double, fuchsia-red flowers with narrow white margins. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Dorothy'** ■ (Standard group) Rosetted perennial bearing long-stalked, light green leaves and large, single, rich pink flowers with frilled white margins. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Dyn-O-Mite'**. (Standard group) Rosetted perennial producing mid-green leaves with red undersides, and semi-double red flowers. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Fancy Pants'** ■ (Standard group) Rosetted perennial bearing mid-green leaves and single white flowers with frilled red margins. ↑ 15–20cm (6–8in). ♀ (min. 15°C/59°F)

**S. 'Fancy Trail'** ♀ (Standard group) Compact, rosetted, trailing perennial with shiny, variegated green and white leaves and fully double pink flowers. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Garden News'** ■ ♀ (Standard group) Rosetted perennial bearing light green leaves and producing fully double white flowers, sometimes tinged pale lilac. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Granger's Wonderland'** see *S. 'Wonderland'*.

**S. 'grotei'**. Trailing, branching perennial with stems to 40cm (16in) long, rooting at the nodes. The rounded leaves, 8cm (3in) long, have prominent veins and coarsely scalloped margins, and are produced on leaf-stalks to 25cm (10in) long. Cymes of 2 or 3 pale mauve flowers, 3cm (1¼in) across, with violet throats, are borne intermittently throughout the year. A parent of the trailing hybrids. ↑ 15–20cm (6–8in), ↔ 30–50cm (12–20in). Tanzania. ♀ (min. 15°C/59°F)

**S. 'Ice Maiden'** ■ ♀ (Standard group) Rosetted perennial bearing mid-green leaves and single white flowers with purple-blue markings. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'ionantha'**. Stemless, rosette-forming perennial bearing ovate to oblong-ovate, scalloped, mid-green leaves, to 5cm (2in) long, paler beneath, on leaf-stalks 6cm (2½in) long. Cymes of 8–10 light to dark blue flowers, 2.5cm (1in) across, are produced intermittently throughout the year. ↑ to 10cm (4in), ↔ 15cm (6in). Tanzania. ♀ (min. 15°C/59°F)

**S. 'King's Treasure'** ♀ (Standard group) Rosetted perennial bearing mid-green leaves and fully double, dark lavender-blue flowers, margined purple, each with a fine white, often green-tinged line at the extreme edges. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Kiwi Dazzler'**. (Standard group) Rosetted perennial with mid-green leaves. Bears fringed, single, bright red flowers, each with a central white stripe. A chimaera (graft hybrid), so propagate from suckers. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

**S. 'Kristi Marie'** ■ (Standard group) Rosetted perennial bearing dark green leaves and producing fully double, dusky-red flowers, with white margins. ↑ 15–20cm (6–8in). ♀ (min. 15°C/59°F)

**S. 'Lila'**. (Standard group) Rosetted perennial producing dark green leaves with red undersides and single, white-margined, lavender-blue flowers. ↑ 15cm (6in). ♀ (min. 15°C/59°F)

*Saintpaulia* 'Colorado'*Saintpaulia* 'Pip Squeek'

**S. 'Maria'** ♀ (Standard group) Rosetted perennial bearing dark green leaves and large, single, clear pink flowers with frilled margins. ↑ 15cm (6in). ☼ (min. 15°C/59°F)

**S. 'Midget Valentine'** ♀ (Miniature group) Rosetted perennial bearing shiny leaves, variegated green and white, and single, fuchsia-red flowers. ↑ 8–10cm (3–4in). ☼ (min. 15°C/59°F)

**S. 'Moon Kissed'** ♀ (Semi-miniature group) Rosetted perennial bearing dark green leaves and fully double white flowers with fuchsia-pink markings. ↑ 8–13cm (3–5in). ☼ (min. 15°C/59°F)

**S. 'Ms. Pretty'** ■ (Standard group) Rosetted perennial bearing dark green leaves and single white flowers with fringed, pink margins. ↑ 15cm (6in). ☼ (min. 15°C/59°F)

**S. 'Nortex's Snowkist Haven'**. (Standard group) Rosetted perennial producing pointed, quilted, mid-green leaves and bearing fringed, single white flowers. ↑ 15cm (6in). ☼ (min. 15°C/59°F)

**S. 'Optimara Colorado'** see *S. 'Colorado'*.

**S. 'Pip Squeek'** ■ (Micro-miniature group) Rosetted, semi-trailing perennial producing tiny, pointed, dark green leaves and bearing single, light pink flowers. ↑ 8–10cm (3–4in). ☼ (min. 15°C/59°F)

**S. 'Rococo Anna'** ■ ♀ syn. *S. 'Rococo Pink'*. (Standard group) Rosetted perennial bearing mid-green leaves with very light green bases and pale undersides, and fully double, deep pink flowers. ↑ 15cm (6in). ☼ (min. 15°C/59°F)

**S. 'Rococo Pink'** see *S. 'Rococo Anna'*. **S. *shumensis***. Compact, rosette-forming perennial with very short stems. Bears ovate to almost round, toothed leaves, 3.5cm (1½in) long, often with red-tinged veins beneath. Bears cymes of up to 5 pale mauve, almost white flowers, 2.5cm (1in) across, with deep purple eyes, intermittently throughout the year. ↑ 6–8cm (2½–3in), ↔ 8–12cm (3–5in). Tanzania. ☼ (min. 15°C/59°F)

**S. 'Snuggles'**. (Miniature group) Rosetted perennial with dark green leaves, feathered and margined white, and large, semi-double pink flowers. ↑ 8–10cm (3–4in). ☼ (min. 15°C/59°F)

**S. 'Starry Trail'** ■ ♀ (Standard group) Rosetted, trailing perennial with dark green leaves. Bears narrow-petalled, semi-double to fully double white flowers, sometimes flushed pale pink. ↑ 15cm (6in). ☼ (min. 15°C/59°F)

**S. 'Tomahawk'** ♀ (Standard group) Rosetted perennial producing dark green leaves and semi-double to fully double, dark red flowers, with fluted petals. ↑ 15–20cm (6–8in). ☼ (min. 15°C/59°F)

**S. 'Wonderland'** ♀ syn. *S. 'Granger's Wonderland'*. (Large group) Rosetted perennial with wavy-margined, olive-green leaves and ruffled, semi-double, light blue flowers. ↑ 15cm (6in). ☼ (min. 10°C/50°F)

**S. 'Zoja'** ■ (Standard group) Rosetted perennial with mid-green leaves and large, single to semi-double, purple-blue flowers with a bold white line at the margin of each petal. ↑ 15cm (6in). ☼ (min. 10°C/50°F)

▷ **Salal** see *Gaultheria shallon*

## SALIX

Willow

SALICACEAE

Genus of approximately 300 species of normally dioecious, deciduous trees and shrubs found in habitats ranging from lowland meadows and riverbanks to sand dunes and mountain screes world-wide, except in Australia. They have simple, entire or toothed, usually alternate leaves, and bear very small flowers in usually erect catkins, before or with the foliage. Of diverse form, willows are cultivated for their habit (particularly the weeping willows), catkins (of which the males are usually the most striking), foliage, and sometimes coloured winter shoots. The largest willows are suitable only for a garden of large proportions; those with a weeping habit are especially effective by water. Grow smaller willows as specimen trees in a small garden, shrubby willows in a shrub border, and dwarf willows in a rock garden or trough.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any deep, moist but well-drained soil in full sun; willows dislike shallow chalk soil. *S. 'Erythroxantha'* needs well drained soil; the dwarf and alpine species need gritty, sharply drained soil. Pruning group 1 for most; group 7, every 1–3 years, for those grown for coloured winter shoots, and to rejuvenate old plants.

• **PROPAGATION** Root greenwood cuttings in early summer, or hardwood cuttings in winter.

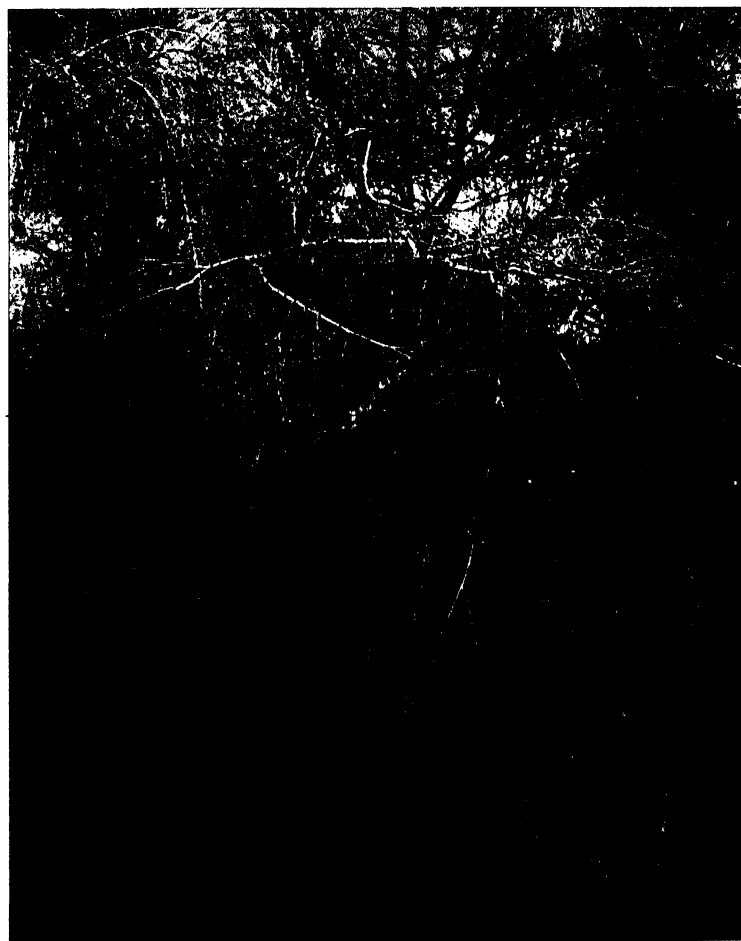


*Salix alba* var. *vitellina* 'Britzensis'

• **PESTS AND DISEASES** Aphids, caterpillars, leaf beetles, sawflies, willow scale, anthracnose, honey fungus, and rust may be a problem.

**S. *acutifolia*** ♀ Spreading tree with slender, arching, deep purple, white-bloomed shoots and narrowly lance-shaped, tapered, dark green leaves, to 10cm (4in) long. Silvery male catkins, 5cm (2in) long, with golden anthers, or pale green female catkins, 2–3cm (¾–1¼) long, are produced in early spring, before the leaves. ↑ 10m (30ft), ↔ 12m (40ft). Russia to E. Asia. \*\*\*  
**'Blue Streak'** ♀ is a male clone, and has blue-black shoots with a vivid blue-white bloom.

**S. *aegyptiaca*** ♀ syn. *S. *medeii** (Musk willow). Strong-growing, bushy shrub or



*Salix alba* var. *vitellina*

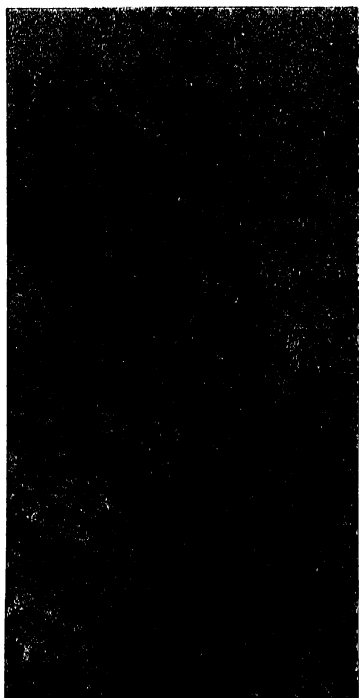


*Salix apoda*

tree with stout, red-purple shoots and oblong, toothed, dark green leaves, to 15cm (6in) long, with glaucous, hairy undersides. Fragrant grey catkins are produced in early spring, before the leaves: males are up to 4cm (1½in) long, with yellow anthers; females are up to 8cm (3in) long. ↑ 4m (12ft), ↔ 5m (15ft). Turkey, Armenia, Iraq, Iran, Afghanistan. \*\*\*

**S. *alba*** ♀ (White willow). Very fast-growing, spreading tree with grey-pink to brown shoots and lance-shaped, saw-toothed, slender-pointed, dull green leaves, to 10cm (4in) long, silky-hairy when young, blue-green beneath. Yellow male catkins, to 5cm (2in) long, or stalkless, yellow-green female catkins, 3cm (1¼in) long, are produced in spring, with the leaves. ↑ 25m (80ft), ↔ 10m (30ft). Europe, N. Africa, C. Asia. \*\*\*  
**f. *argentea*** see var. *sericea*. **var. *caerulea*** (Cricket-bat willow) has upright branches and blue-green leaves. **var. *sericea*** ♀ syn. f. *argentea*. 'Sericea', 'Splendens' (Silver willow) has silvery grey leaves; ↑ 15m (50ft), ↔ 8m (25ft). 'Splendens' see var. *sericea*. 'Tristis' ♀ syn. *S. *vitellina** 'Pendula', has a more weeping habit, and only produces female catkins. 'Tristis' of gardens see *S. x *sepulchralis** 'Chrysocoma'. **var. *vitellina*** ■ (Golden willow) produces bright yellow to orange winter shoots. **var. *vitellina*** 'Britzensis' ■ ♀ is a male clone, with bright orange-red winter shoots. **var. *vitellina*** 'Chermesina' is a male clone, with carmine-red young winter shoots.

**S. *apoda*** ■ Prostrate shrub with obovate, leathery, dark green leaves, 2–8cm (¾–3in) long, hairy when young. Silky, silvery grey male catkins, 3cm (1¼in) long, which become pink-orange with maturity, are borne in early spring, before the leaves. Female clones are rarely cultivated. Suitable for large rock gardens. ↑ 20cm (8in), ↔ to 60cm (24in). E. Europe, Caucasus. \*\*\*  
**S. *arenaria*** see *S. *repens** var. *argentea*. **S. *babylonica*** ♀ (Weeping willow). Rounded, weeping tree with slender, pendent, green to brown shoots. Lance-shaped, saw-toothed, tapered, mid-green leaves, to 10cm (4in) long, are grey-green beneath. Slender, silvery green catkins are produced in spring, with the leaves: the males to 5cm (2in) long with yellow anthers, the females to 2.5cm (1in) long. Largely replaced in gardens by *S. x *sepulchralis** 'Chrysocoma'. ↑ to 12m (40ft). N. China. \*\*\*  
**'Annularis'** see



*Salix babylonica* var. *pekinensis*  
'Tortuosa'

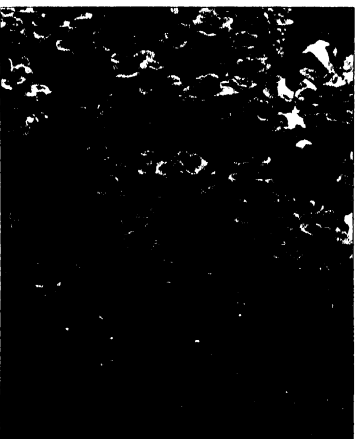
'Crispa'. 'Crispa' ♀ syn. 'Annularis', is slow-growing and upright, and has curiously twisted leaves. var. *pekinensis* 'Tortuosa' ♂♀ syn. *S. matsudana* 'Tortuosa', is fast-growing and upright. It has curiously twisted shoots that are particularly striking in winter, bright green, twisted leaves, and yellow-green catkins; ♂ 15m (50ft), ↔ 8m (25ft).

*S. 'Blanda'* ♀ syn. *S. x pendulina* var. *blanda*. Spreading tree with weeping shoots and lance-shaped, tapered, glossy, dark green leaves, to 15cm (6in) long. Slender, silvery green, usually female catkins, to 3cm (1¼in) long, are produced in spring, with the leaves. ♂↔ 12m (40ft). \*\*\*

*S. bockii*. Bushy shrub with slender, upright, grey-hairy shoots and oblong, glossy, bright green leaves, to 1.5cm (½in) long, with silky-hairy undersides. Usually female in cultivation; bears green catkins, 4cm (1½in) long, in early and mid-autumn. ♂↔ 2.5m (8ft). W. China. \*\*\*

*S. 'Boydii'* see *S. x boydii*.

*S. x boydii* ♂♀ (*S. lapponum* x *S. reticulata*) syn. *S. 'Boydii'*. Very slow-growing, upright shrub with gnarled



924 *Salix x boydii*

branches bearing almost rounded, rough-textured, prominently veined, grey-green leaves, 1–2cm (½–¾in) long. Occasionally produces insignificant female catkins on bare branches in early spring. Suitable for a rock garden or trough. ♂ 30cm (12in), ↔ 20cm (8in). Scotland (Angus Mountains). \*\*\*  
*S. caprea* 'Kilmarnock' ♂♀ syn. *S. caprea* 'Pendula' (Kilmarnock willow). Weeping tree with a dense head of stout, yellow-brown shoots and broadly elliptic, toothed leaves, to 10cm (4in) long, dark green above, grey-green beneath. Grey male catkins, 3cm (1¼in) long, studded with yellow anthers, are produced on the bare shoots in mid- and late spring. ♂ 1.5–2m (5–6ft), depending on grafting height, ↔ 2m (6ft). \*\*\*

*S. caprea* 'Pendula' see *S. caprea* 'Kilmarnock'.

*S. x chrysocoma* see *S. x sepulcralis* 'Chrysocoma'.

*S. daphnoides* ♀ (Violet willow). Initially upright, later spreading tree with purple young shoots, which are white-bloomed in winter, and narrowly oblong, saw-toothed, clearly stalked, dark green leaves, to 12cm (5in) long. Silky grey catkins, to 4cm (1½in) long, are produced in late winter and early spring, before the leaves; male catkins have yellow anthers. ♂ 8m (25ft), ↔ 6m (20ft). Europe to C. Asia. \*\*\*

'Aglia' ♂♀ has glossy red shoots.

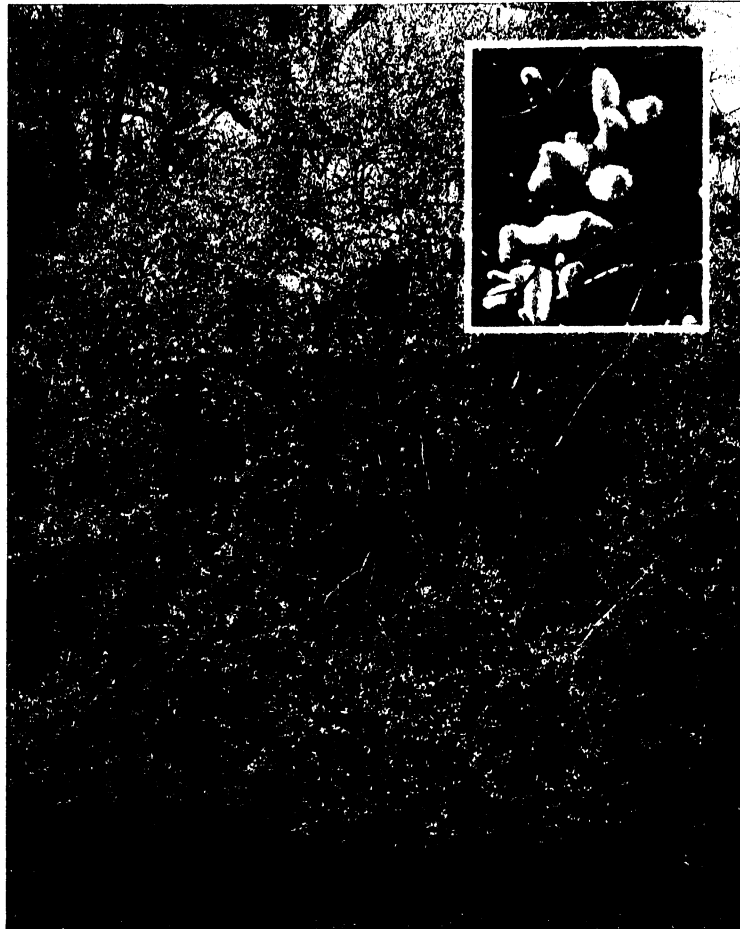
*S. elaeagnos* ♀ syn. *S. incana* (Hoary willow). Dense, upright shrub with slender, grey-velvety, later red-yellow to almost brown shoots. The linear, entire, dark green leaves, to 20cm (8in) long, are grey when young, white-hairy beneath, and turn yellow in autumn. Produces slender green catkins, 3–6cm (1¼–2½in) long, in spring, as the leaves emerge; male catkins have yellow anthers. ♂ 3m (10ft), ↔ 5m (15ft). C. and S. Europe, S.W. Asia. \*\*\*

*S. 'Erythroflexuosa'* ♀ syn. *S. 'Golden Curls'*, *S. matsudana* 'Tortuosa Aureopendula'. Spreading tree with arching branches and spirally twisted, orange-yellow young shoots. The twisted, lance-shaped, glossy, mid-green leaves, to 8cm (3in) long, are glaucous beneath. Produces slender, pale yellow catkins, 3–4cm (1¼–1½in) long, in spring, with the leaves. ♂↔ 5m (15ft). \*\*\*

*S. exigua* ♂ (Coyote willow). Upright, thicket-forming, suckering shrub bearing slender shoots. Produces



*Salix caprea* 'Kilmarnock'



*Salix daphnoides* 'Aglia' (inset: male catkins)

narrowly lance-shaped, tapered, grey-green leaves, to 10cm (4in) long, covered in silky, silvery grey hairs when young. Grey-yellow catkins, the males to 5cm (2in) long, the females to 6cm (2½in) long, are borne in spring, with the leaves. Grows well on sandy soils. ♂ 4m (12ft), ↔ 5m (15ft) or more. W. North America. \*\*\*

*S. fargesii* ♂ syn. *S. moupinensis* of gardens. Open, upright, stoutly branched shrub with glossy green young shoots that turn red-brown, and red winter buds. Produces oblong, finely saw-toothed, glossy, dark green leaves, to 18cm (7in) long, silky beneath. Slender green catkins, the males to 12cm (5in) long, the females to 18cm (7in) long, are borne in spring, with the leaves. ♂↔ 3m (10ft). C. China. \*\*\*



*Salix exigua*

*S. fragilis* ♀ (Crack willow). Spreading tree with brittle, olive-brown shoots. Bears lance-shaped, finely toothed, glossy, dark green leaves, to 15cm (6in) long, blue-green beneath. Bears slender, pendent green catkins, to 7cm (3in) long, in early spring, as the leaves emerge; male catkins have yellow anthers. ♂↔ 15m (50ft). Europe, N. Turkey, Russia (W. Siberia). \*\*\*

*S. 'Golden Curls'* see *S. 'Erythroflexuosa'*.

*S. gracilistyla*. Spreading, bushy shrub with arching shoots, silky-hairy when young, and oval, entire to finely toothed, silky-hairy, grey-green leaves, to 10cm (4in) long, turning glossy green. Silky grey catkins, to 4cm (1½in) long, are produced in early and mid-spring, before the leaves; male catkins have red anthers that turn bright yellow. ♂ 3m (10ft), ↔ 4m (12ft). E. Asia. \*\*\*

'*Melanostachys*' ♂♀ syn. var. *melanostachys*, *S. melanostachys*, is an upright male variant that bears black catkins with brick-red anthers.

*S. hastata* 'Wehrhahnii' ♂♀ Slow-growing, upright shrub with dark purple-brown shoots and oval, entire to finely toothed, bright green leaves, to 6cm (2½in) long. In early spring, bears conspicuous, silvery grey male catkins, to 7cm (3in) long, before the leaves. ♂↔ 1m (3ft). \*\*\*

*S. helvetica* ♂♀ (Swiss willow).

Upright, many-branched shrub with oblong to ovate-lance-shaped, grey-green leaves, 1–3.5cm (½–1½in) long, smooth above, silver-downy beneath. In early spring, silver-grey catkins, to 5cm (2in) long, open from small golden



buds, before the leaves. ↑ 60cm (24in), ↔ 40cm (16in). Alps. \*\*\*

*S. hylematica* of gardens see *S. lindleyana*.

*S. incana* see *S. elaeagnos*.

*S. irrorata*. Upright shrub producing slender purple shoots, which are white-bloomed in winter, and narrowly oblong, entire to sparsely toothed, short-stalked, bright green leaves, to 10cm (4in) long, glaucous beneath. Grey catkins, to 2.5cm (1in) long, are borne in early or mid-spring, before the leaves; male catkins have red anthers that turn yellow. ↑ 3m (10ft), ↔ 5m (15ft). S.W. USA. \*\*\*

*S. lanata* ■♀ (Woolly willow).

Compact, rounded, bushy shrub bearing stout shoots, white-woolly when young. The leaves are broadly rounded, wavy-margined, dull, dark green, to 6cm (2½in) long, and covered with silvery grey wool. Golden yellow male catkins, to 5cm (2in) long, or grey-yellow female catkins, to 8cm (3in) long, are produced in late spring, with the leaves. ↑ 1m (3ft), ↔ 1.5m (5ft). N. Europe. \*\*\*

'Stuartii' see *S. 'Stuartii'*.

*S. lindleyana*, syn. *S. hylematica* of gardens, *S. nepalensis*. Dwarf, procumbent shrub with ovate-spoon-shaped, very glossy, pale green leaves, to 1cm (½in) long, densely set on short branchlets. Bears pinkish brown male catkins, to 1cm (½in) long, or short female catkins, 5mm (¼in) long, in spring, with the leaves. Spreads widely in moist, fertile soils, in partial shade. Much confused with *S. fruticulosa*. ↑ 4cm (1½in), ↔ 60cm (24in) or more. Himalayas. \*\*\*

*S. magnifica* ♀♂ Broadly upright shrub or tree bearing stout, red-purple shoots and broadly oval, blue-green leaves, to 20cm (8in) long. Slender green catkins, the males to 18cm (7in) long, the females to 25cm (10in) long, are produced in late spring, after the leaves. ↑ 5m (15ft), ↔ 3m (10ft). W. China. \*\*\*

*S. 'Mark Postill'*. Spreading shrub with stout green shoots, turning brown purple, and broadly elliptic to rounded, glossy, dark green leaves, to 7cm (3in) long. Stout, initially silvery white, later green female catkins, to 5cm (2in) long, are produced over a long period in spring, before and with the leaves. ↑ 1m (3ft), ↔ 2m (6ft). \*\*\*



*Salix reticulata*

*S. matsudana* 'Tortuosa' see *S.*

*babylonica* var. *pekinensis* 'Tortuosa'.

*S. matsudana* 'Tortuosa

*Aureopendula*' see *S. 'Erythroflexuosa'*.

*S. medemii* see *S. aegyptiaca*.

*S. melanostachys* see *S. gracilistyla* 'Melanostachys'.

*S. moupinensis* of gardens see *S. fargesii*.

*S. nepalensis* see *S. lindleyana*.

*S. x pendulina* var. *blanda* see *S. 'Blanda'*.

*S. pentandra* ♀ (Bay willow).

Spreading, bushy-headed tree with brown-green shoots and oval, finely glandular-toothed leaves, to 12cm (5in) long, glossy, dark green above, pale green beneath. Catkins, 5cm (2in) long, are produced in early summer, after the leaves; male catkins are yellow and very showy, with yellow anthers; female catkins are green. ↑ 10m (30ft). Eurasia. \*\*\*

*S. purpurea* ♀ (Purple osier). Spreading shrub to upright tree with arching, frequently red-tinged shoots and often opposite, oblong, almost entire, dark green to blue-green leaves, to 8cm (3in) long. Slender, silvery green catkins, to 3cm (1¼in) long, are produced in early and mid-spring, before the leaves; male catkins have purple anthers that turn yellow. ↑ 5m (15ft). Europe, N. Africa, C. Asia. \*\*\*. 'Nana', syn. 'Gracilis', is compact, bearing slender shoots and small, grey-green leaves, to 3.5cm (1½in) long. Suitable for growing as a low hedge; ↑ 1m (3ft), ↔ 1.5m (5ft).



*Salix fargesii*



*Salix gracilistyla* 'Melanostachys'



*Salix hastata* 'Wehrhahnii'



*Salix helvetica*



*Salix lanata*



*Salix repens*



*Salix x sepulcralis* 'Chrysocoma'

*S. repens* ■ (Creeping willow).

Prostrate shrub with slender shoots and oblong to oval, grey-green to bright green leaves, to 3.5cm (1½in) long, silvery beneath. Grey male catkins, to 2cm (¾in) long, with golden yellow anthers, are produced in mid- and late spring, before the leaves. ↑ to 60cm (24in), ↔ 1.5m (5ft) or more. Europe. \*\*\*. var. *argentea*, syn. *S. arenaria*, is spreading, with creeping, initially upright, later arching shoots, and obovate, silky grey leaves, to 4cm (1½in) long. Catkins appear in mid-spring; ↑ 1m (3ft), ↔ 2m (6ft). N.W. Europe.

*S. reticulata* ■♀ Dwarf, prostrate shrub with rooting stems bearing rounded-ovate, glossy, dark green leaves, 1–4cm (½–1½in) long, conspicuously veined above, white-hairy beneath. In spring, bears slender yellow catkins, 2.5cm (1in) long, with pink tips. ↑ 8cm (3in), ↔ 30cm (12in). N. Europe, N. Asia, North America. \*\*\*

*S. retusa*. Prostrate, carpeting shrub with rooting stems and ovate-oblong, notched, glossy, mid-green leaves, 1–3cm (½–1¼in) long, mostly clustered towards the twig tips. Bears upright grey catkins, to 2cm (¾in) long, in spring, as the leaves emerge. ↑ 10cm (4in), ↔ 40cm (16in). Mountains of C. Europe. \*\*\*

*S. sachalinensis* 'Sekka'. Vigorous, spreading shrub, forming large, dense thickets, with lance-shaped, shallowly scalloped, bright green leaves, to 12cm (5in) long. In early spring, bears showy, silvery grey male catkins, to 4cm (1½in) long, with golden anthers, on often curiously flattened, twisted red shoots. ↑ 5m (15ft), ↔ 10m (30ft). \*\*\*

*S. x sepulcralis* 'Chrysocoma' ■♀♂ syn. *S. alba* 'Tristis' of gardens, *S.*

*x chrysocoma*, *S. x sepulcralis* var. *chrysocoma* (Golden weeping willow). Fast-growing, wide-spreading tree with slender, golden yellow shoots, pendent to the ground, and narrowly lance-shaped, tapered, bright green leaves, to 12cm (5in) long. Slender catkins, to

5cm (2in) long, both yellow males and green females often present on the same plant, are produced with the leaves, in spring. ↑ 15m (50ft). \*\*\*

*S. x sepulcralis* var. *chrysocoma* see *S. x sepulcralis* 'Chrysocoma'.

*S. serpyllifolia* (Thyme-leaved willow). Prostrate, carpeting shrub with rooting stems and obovate, glossy, mid-green leaves, 1cm (½in) long, that overlap and are pressed closely to the soil. Silvery green catkins, to 5mm (¼in) long, are borne with the leaves, in spring. Very similar to *S. retusa*. ↑ 2.5cm (1in), ↔ 30cm (12in). Alps. \*\*\*

*S. 'Stuartii'*, syn. *S. lanata* 'Stuartii'. Dwarf, slow-growing, bushy shrub with yellow-green winter shoots. Bears oblong, dark green leaves, to 5cm (2in) long, woolly when young, densely white-hairy beneath. Yellow-green, initially silky female catkins, to 5cm (2in) long, are borne from orange buds in early and mid-spring. ↑ 1m (3ft), ↔ 2m (6ft). \*\*\*

*S. viminalis* ♀ (Common osier). Fast-growing, upright shrub or tree with glossy, yellow-green shoots and slender, linear, tapered, dark green leaves, to 15cm (6in) or more long, silver-hairy beneath. Dense, crowded green catkins, to 3.5cm (1½in) long, are produced in late winter and early spring, before the leaves; male catkins have yellow anthers. ↑ 6m (20ft), ↔ 5m (15ft). Eurasia. \*\*\*

*S. vitellina* 'Pendula' see *S. alba* 'Tristis'.

♂ Sallee, White see *Eucalyptus pauciflora*

## SALPIGLOSSIS

SOLANACEAE

Genus of 2 erect to spreading, bushy, sticky-hairy annuals or short-lived perennials found on disturbed ground, in dry canyons, and on rocky slopes in the southern Andes. They have entire to wavy-margined or lobed, oval to lance-shaped, bright mid-green leaves, and

*Salpiglossis sinuata* Casino Series

produce funnel-shaped, richly coloured, red, yellow, bronze, violet-blue, or purple flowers from summer to autumn. Suitable for an annual, herbaceous, or mixed border where summers are warm, sunny, and reasonably dry. In cool-temperate regions, they are effective long-flowering container plants in a warm greenhouse or conservatory, and may be bedded out in summer. They provide moderately long-lasting cut flowers.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in full light with shade from hot sun. During the growing season, maintain low to moderate humidity, water moderately, and apply a balanced liquid fertilizer every 2 weeks. Keep just moist in winter. Overwinter at 16–18°C (61–64°F). Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun; shelter from cold, drying winds. Dead-head to prolong flowering and maintain flower size. Provide brushwood support if grown in a slightly exposed site.

• **PROPAGATION** Sow seed at 18–24°C (64–75°F) in mid-spring, or in autumn or late winter for winter- or early spring-flowering container plants. In very mild areas, sow *in situ* in mid-spring.

• **PESTS AND DISEASES** Aphids, grey mould (*Botrytis*), and foot and root rots may be troublesome.

**S. sinuata.** Erect annual with slender, branching stems bearing alternate, long-stalked, narrowly to broadly lance-shaped, wavy-margined leaves, to 10cm (4in) long. From summer to autumn, broadly funnel-shaped, 5-lobed flowers, to 5cm (2in) across, in a wide variety of colours, and heavily veined in deeper or contrasting colours, are produced singly in the leaf axils of flowering stems. ↑ to 60cm (24in), ↔ to 30cm (12in). Peru, Argentina. \* **Bolero Hybrids** are less floriferous and more straggling than the other cultivars listed, and flower in shades of blue, orange, purple, red, or yellow. Cultivars of **Casino Series** ☐♀ have good weather tolerance, and are compact, branching freely from the bases. Flowers are blue, purple, red, yellow, or orange, often heavily veined. 'Kew Blue' has clear purple-blue flowers, conspicuously veined.

▷ **Salt tree** see *Halimodendron halodendron*

## SALVIA

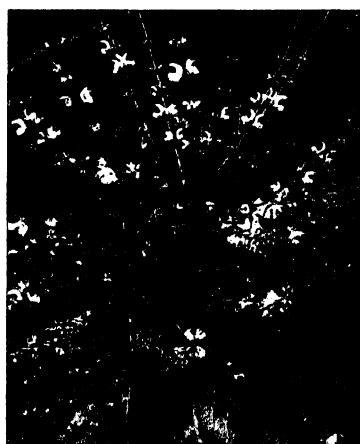
Sage

LABIATAE/LAMIACEAE

Genus of about 900 species of annuals, biennials, herbaceous and evergreen perennials, and shrubs, some rhizomatous or tuberous. Distributed worldwide in temperate and tropical regions (except in very hot, humid areas), they usually grow in sunny sites, including dry meadows, rocky slopes, scrub, light woodland, and moist grassland. They are frequently aromatic and often hairy; some species are very woolly, and others silver in appearance. The usually square stems bear opposite pairs of simple to pinnate, entire, toothed, notched, or scalloped leaves; basal leaves sometimes differ from stem leaves. Flowers are 2-lipped, the upper lips erect and hooded, the lower ones 2-toothed and more spreading. The calyces are sometimes colourful, and tubular to bell- or funnel-shaped; the often leaf-like, colourful bracts are ovate to diamond-shaped. The flowers are borne in panicles, or in axillary whorls on erect stems, forming more or less interrupted terminal spikes or racemes. Sages are effective in a sunny border, light woodland, or wildflower meadow. Annuals, and perennials grown as annuals, provide brilliant colour for bedding, infilling, or containers; less hardy sages may be grown in a cool or temperate greenhouse, either in a border or in large containers. *S. caespitosa* is suitable for a scree bed or alpine house. Many species attract bees; some have culinary or medicinal uses.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in well-drained, loamless or loam-based potting compost (J1 No.2 or 3) in full light with shade from hot sun. While in growth, water freely and apply a balanced liquid fertilizer monthly; water very sparingly in winter, except *S. canariensis*, *S. elegans* and its cultivars, and *S. leucantha*, which should be watered moderately. Maintain low to moderate humidity. Outdoors, grow in light, moderately fertile, humus-rich, moist but well-drained soil in full sun to light dappled shade. Small species with densely hairy or woolly leaves need sharp drainage and full sun. Protect these and frost-hardy species from excessive winter wet, and shelter from cold, drying winds. Pruning group 9, in spring.

*Salvia argentea*

• **PROPAGATION** Sow seed as follows: annuals at 16–18°C (61–64°F) in mid-spring, biennials in containers in a cold frame in summer, and perennials in containers in a cold frame in spring; annuals and biennials may be sown *in situ* after all danger of frost has passed. Divide perennials in spring. For perennials and subshrubs, root basal or softwood cuttings in spring or early summer, or semi-ripe cuttings in late summer or autumn, with bottom heat.

• **PESTS AND DISEASES** Slugs and snails will attack young growth, as well as the fleshy rhizomes of *S. uliginosa*. Under glass, aphids, red spider mites, white-flies, and foot and root rots may be troublesome.

**S. aethiopis.** Rosette-forming, monocarpic perennial or biennial with broadly ovate or elliptic to oblong, deeply toothed, white-woolly leaves, to 20cm (8in) long, clasping the erect upper stems. White, sometimes yellow-lipped flowers, 1.5cm (½in) long, with persistent, broad, spiny bracts, are borne in branching, flat-topped, terminal panicles in mid- and late summer.

↑↔ 60cm (24in). C. and S. Europe to W. Asia. \*\*\*

**S. africana-lutea.** syn. *S. aurea*

(Sandsalvie). Erect to spreading, rounded, evergreen shrub with sparsely to densely downy stems and rounded to narrowly obovate, densely white-woolly leaves, 1–4cm (½–1½in) long, sometimes minutely scalloped, and dotted with glands. From summer to late autumn, bears dense, terminal racemes of golden brown to red-brown or mauve flowers, 3–5cm (1¼–2in) long, with bell-shaped, purple-tinted calyces. ↑↔ to 1m (3ft).

Sandy places in South Africa (Northern Cape, Eastern Cape, Western Cape). \*

**S. ambigens** see *S. guaranitica* 'Blue Enigma'.

**S. angustifolia** see *S. azurea*.

**S. argentea** ☐♀ Rosette-forming biennial or short-lived perennial producing ovate to oblong, toothed, silver-woolly leaves, to 20cm (8in) long. In mid- and late summer, bears many-branched, terminal panicles of white or pinkish-white flowers, to 3cm (1¼in) long, with grey calyces. ↑90cm (36in), ↔ 60cm (24in). S. Europe, N. Africa. \*\*\*

**S. aurea** see *S. africana-lutea*.

**S. azurea.** syn. *S. angustifolia*. Erect, woody-based perennial with several to many simple or sparsely branched stems

*Salvia coccinea* 'Coral Nymph'

bearing linear, elliptic, or lance-shaped, hairless or softly hairy, sometimes toothed, mid- to deep green leaves, 5–10cm (2–4in) long. From late summer to autumn, pure blue or white flowers, 1.5–2cm (½–¾in) long, are produced in dense, terminal racemes. ↑ to 1.5m (5ft), ↔ 60–90cm (24–36in). S.E. USA. \*\*\* **subsp. pitcheri** has very hairy stems; flowers are to 2.5cm (1in) long; S. USA.

**S. bacheriana** of gardens see *S. buechananii*.

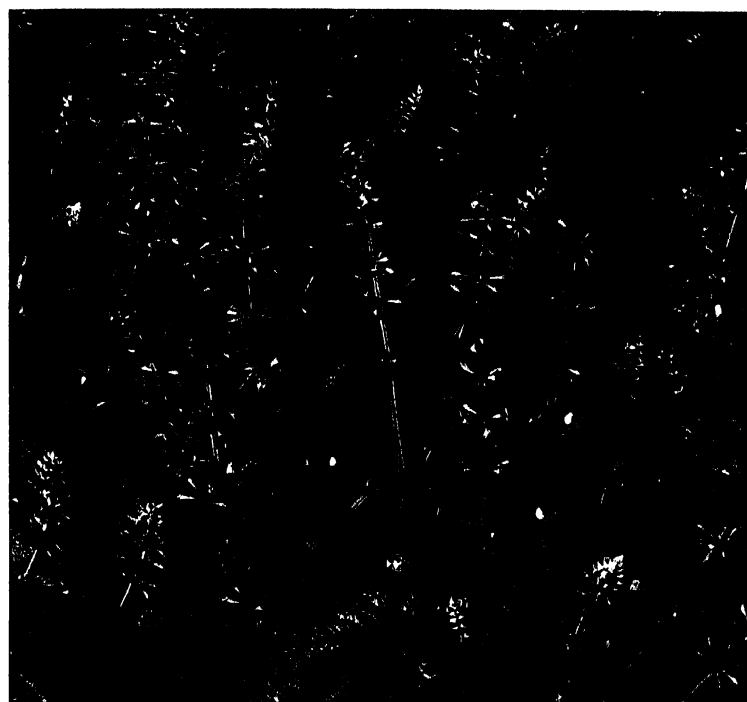
**S. blepharophylla.** Spreading, sub-shrubby, rhizomatous perennial bearing ovate to triangular, irregularly toothed, finely hairy, dark green leaves, 5cm (2in) long. From early summer to early autumn, branched stems bear loose, terminal racemes of bright scarlet flowers, to 2cm (¾in) long, with large lower lips and maroon calyces. ↑40cm (16in), ↔ 45cm (18in). Mexico. \*

**S. buechananii** ♀ syn. *S. bacheriana* of gardens. Woody-based perennial, spreading by runners, with erect, branching stems bearing spoon-shaped to ovate-lance-shaped, finely toothed, leathery, dark green leaves, to 7cm (3in) long. Velvet-hairy, magenta-red flowers, to 5cm (2in) long, with dark purplish brown calyces, are borne in loose, terminal racemes from midsummer to mid-autumn. ↑60cm (24in), ↔ 30cm (12in). Mexico. \*

**S. bulleyana.** syn. *S. flava* var. *megalantha*. Clump-forming perennial with ovate or triangular-ovate, scalloped, prominently veined, sparsely hairy, wrinkled, mostly basal, mid-green leaves, to 12cm (5in) long. In mid- and late summer, bears terminal racemes of paired yellow flowers, to 3cm (1¼in) long, with purple-brown lower lips and bright green calyces. ↑40–90cm (16–36in), ↔ 60cm (24in). W. China. \*\*\*

**S. cacialifolia** ☐♀ Erect, hairy perennial with more or less triangular, entire, mid-green leaves, to 10cm (4in) long. In early summer, branched stems

*Salvia cacialifolia*

*Salvia coccinea* 'Lady in Red'

bear terminal panicles of paired, slightly hairy, deep blue flowers, to 2cm (¾in) long, with much shorter, bell-shaped calyces. ↑90cm (36in), ↔30cm (12in). Mexico, Guatemala. \*

***S. caerulea* of gardens** see *S. guaranitica* 'Black and Blue'.

***S. caespitosa***. Woody-based, mat-forming perennial producing obovate, pinnatisect, silver-hairy leaves, 5cm (2in) long, each with a lance-shaped terminal segment. In summer, bears dense, terminal racemes of wide-tubed, lilac-pink flowers, to 3cm (1¼in) long, with broad lower lips. Resents winter wet. Suitable for an alpine house; can be grown in a scree bed if overhead protection provided in winter. ↑15cm (6in), ↔30cm (12in). Turkey (Anatolia). \*\*

***S. campanulata***. Upright, robust-stemmed perennial with opposite, broadly ovate, mid-green leaves, to 12cm (5in) long, softly hairy on both surfaces and heart-shaped at the bases. In summer, whorls of yellow, rarely blue or purple flowers, 2.5cm (1in) long, each with a bell-shaped calyx, are borne in pairs on spreading panicles. ↑to 1m (3ft), ↔to 60cm (24in). Himalayas. \*\*

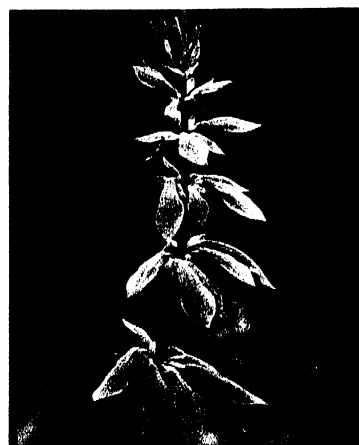
*Salvia confertiflora*

***S. canariensis***. Erect, open, evergreen shrub with sparsely branched, white-downy stems. Lance-shaped to triangular, entire or notched, mid-green leaves, 6–15cm (2½–6in) long, each have 2 spreading lobes at the bases; they are covered with dense white down, at least beneath. From winter to spring, bears small, white to violet or purple flowers, to 2cm (¾in) long, in terminal panicles or racemes. ↑1–2m (3–6ft), ↔0.6–1.2m (2–4ft). Canary Islands. \* (min. 7°C/45°F)

***S. cardinalis*** see *S. fulgens*.

***S. chamaedryoides***. Low-growing, woody-based perennial with branching stems. Elliptic, finely scalloped, mid- to grey-green leaves, to 2cm (¾in) long, are covered in fine hairs, giving them a sage-green appearance. Deep blue flowers, 2.5cm (1in) long, with widely spreading lips, are borne in terminal racemes in late summer. ↑30cm (12in), ↔60cm (24in). USA (Texas), Mexico. \*\*

***S. clevelandii*** (Jim sage). Dwarf, rounded, evergreen shrub, branching mainly from the base, with usually downy stems, and ovate or oblong to elliptic or lance-shaped, wrinkled, toothed, mid-green leaves, to 2.5cm

*Salvia discolor*

(1in) long. In summer, white, blue, or violet flowers, 1.5cm (½in) long, are borne in terminal whorls or short, simple to branched spikes. ↑40–60cm (16–24in), ↔30–60cm (12–24in). USA (California). \*\*

***S. coccinea***. Erect, bushy annual or perennial with oval to heart-shaped, toothed, hairy, dark green leaves, to 6cm (2½in) long. From summer to autumn, soft cherry-red flowers, to 2cm (¾in) long, are borne in slender, open, terminal spikes. ↑60–75cm (24–30in), ↔to 30cm (12in). Tropical South America. \*. **'Coral Nymph'** has coral-pink flowers; ↑40cm (16in). **'Lady in Red'** produces red flowers; ↑40cm (16in). **'Snow Nymph'**, syn. **'White Lady'**, bears white flowers.

**'Starry Eyed'** bears white, red, or coral-pink flowers. **'White Lady'** see 'Snow Nymph'.

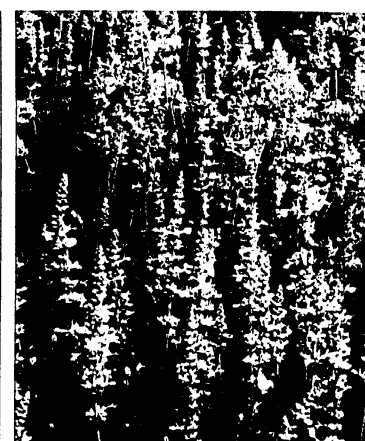
***S. concolor* of gardens** see *S. guaranitica*.

***S. confertiflora***. Woody-based perennial with ovate, scalloped, yellow-green leaves, to 20cm (8in) long, that are densely woolly, especially beneath, and unpleasantly scented if crushed. From late summer to mid-autumn, the unbranched stems bear terminal spikes of orange-red flowers, 1cm (½in) long, with hairy, deep red calyces. ↑to 1.2m (4ft), ↔60cm (24in). Brazil. \*

***S. deserta*** see *S. x sylvestris*.

***S. discolor***. Erect perennial with densely white-woolly, branched stems. Oblong-ovate, entire, mid-green leaves, to 6cm (2½in) long, are densely white-woolly beneath, less hairy above. In late summer and early autumn, bears long, terminal racemes of deep indigo-black flowers, to 2.5cm (1in) long, with finely white-hairy calyces. ↑45cm (18in), ↔30cm (12in). Peru. \*

***S. elegans***. Soft-stemmed herbaceous perennial or subshrub with branching stems and ovate or almost triangular, hairless or softly hairy, toothed, mildly pineapple-scented, mid-green leaves, to 10cm (4in) long. Loose, terminal panicles of bright scarlet flowers, 2.5cm (1in) long, softly hairy inside, are produced from winter to spring. ↑2m (6ft), ↔1m (3ft). Mexico, Guatemala. \* (min. 5°C/41°F). **'Scarlet Pineapple'** syn. *S. rutilans* (Pineapple sage), has leaves that smell strongly of pineapple when crushed, and more densely hairy stems; it bears larger flowers, to 3.5cm (1½in) long; ↑90cm (36in), ↔60cm (24in).

*Salvia elegans* 'Scarlet Pineapple'*Salvia farinacea* f. *alba*

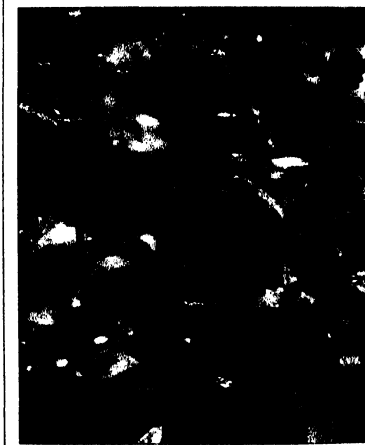
***S. farinacea*** (Mealy sage). Erect, bushy perennial, usually grown as an annual, with white-mealy stems bearing pointed, narrowly to broadly lance-shaped, wavy-margined, glossy, mid-green leaves, to 8cm (3in) long, white-hairy beneath. From summer to autumn, produces deep lavender-blue flowers, to 2cm (¾in) long, in tall, slender, dense, purple-stemmed, terminal or axillary spikes. It may be overwintered in moist peat, if kept frost-free. ↑to 60cm (24in), ↔to 30cm (12in), as an annual. USA (Texas), Mexico. \*. **f. *alba*** bears white flowers. **'Rhea'** is compact and early flowering, with intense dark blue flowers; ↑to 35cm (14in). **'Strata'** has blue and white flowers. **'Victoria'** has deep blue flowers and dense basal branching. **'White Porcelain'** has white flowers.

***S. flava* var. *megalantha*** see *S. bulleyana*.

***S. forskaohlei*** see *S. forskaolii*.

***S. forskaolii***, syn. *S. forskaohlei*. Clump-forming perennial producing ovate or deeply lobed, toothed, softly bristly, mostly basal, mid-green leaves, 5–30cm (2–12in) long, with heart-shaped bases. Stems are sometimes branched and, from early summer to early autumn, bear long, terminal or axillary spikes of white-tubed flowers, to 3cm (1¼in) long, with wide-spreading violet lips, the lower lips marked yellowish white. ↑to 90cm (36in), ↔50cm (20in). Bulgaria, Turkey (Black Sea coast). \*\*

***S. fruticosa***, syn. *S. triloba*. Bushy, evergreen shrub or subshrub with white-hairy, branched stems bearing simple or

*Salvia farinacea* 'Victoria'

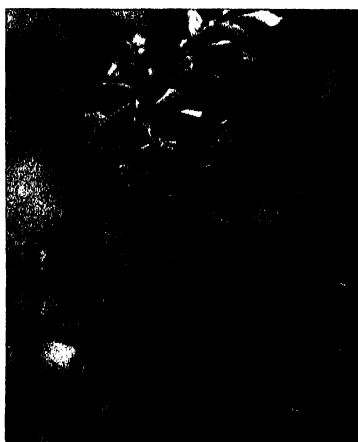
*Salvia fulgens*

pinnate, mid-green leaves, to 5cm (2in) long; the pinnate leaves each have 3 or 5 oblong-elliptic leaflets. In summer, bears purple, lilac-pink, or pink, rarely white flowers, to 2.5cm (1in) long, in terminal or axillary racemes. † to 1.2m (4ft), ↔ to 80cm (32in). C. and E. Mediterranean. \* \*

*S. fulgens* ☐ ♀ syn. *S. cardinalis*. Woody-based perennial or evergreen subshrub, branching mainly from the base, with ovate to narrowly triangular, toothed or notched leaves, 6–12cm (2½–5in) long, rich green above, densely white-woolly beneath. Terminal or axillary spikes or racemes of red flowers, to 3cm (1¼in) long, with densely downy lower lips, are produced in summer. † 50–100cm (20–39in), ↔ 40–90cm (16–36in). Mexico. \*

*S. gesneriiflora*. Subshrubby perennial bearing ovate, scalloped, hairy, mid-green leaves, to 10cm (4in) long, with heart-shaped bases. From early spring to mid-autumn, many-branched stems bear terminal racemes of numerous softly hairy red flowers, 5cm (2in) long, with flattened upper lips. † 60cm (24in), ↔ 20cm (8in). Mexico, Colombia. \*

*S. glutinosa* (Jupiter's distaff). Clump-forming, sticky-hairy perennial with branched or unbranched stems and heart-shaped, toothed, mid-green leaves, to 20cm (8in) long. From midsummer to mid-autumn, bears loose, terminal racemes of softly hairy, pale yellow flowers, to 4cm (1½in) long, heavily spotted maroon and with reddish brown markings on the brighter yellow lower lips. † ↔ 90cm (36in). C. and S. Europe to W. Asia. \* \* \*

*Salvia guaranitica* 'Blue Enigma'*Salvia involucrata* 'Bethellii'

*S. grahamii* see *S. microphylla*.

*S. greggii* (Autumn sage). Dwarf, evergreen shrub or sometimes erect, woody-based perennial, branching mainly from the base, with glandular-hairy stems. Ovate or elliptic to oblong or linear, leathery, entire, mid- to deep green leaves, 2–3cm (¾–1¼in) long, are hairless to softly hairy and dotted with glands. Paired, red to purple, pink, yellow, or violet flowers, 2cm (¾in) long, are borne in terminal racemes from late summer to autumn.

† ↔ 30–50cm (12–20in). USA (Texas), Mexico. \* \*. 'Raspberry Royal' has bright raspberry-red flowers; † to 60cm (24in), ↔ 30cm (12in).

*S. guaranitica* ♀ syn. *S. concolor* of gardens. Subshrubby perennial with branched, dark green stems and ovate, pointed, slightly toothed, hairy, wrinkled, mid-green leaves, to 13cm (5in) long. Deep blue flowers, to 5cm (2in) long, with purplish blue calyces, are borne in terminal or axillary spikes from late summer to late autumn. † 1.5m (5ft), ↔ 60cm (24in). Brazil, Uruguay, Argentina. \*. 'Black and Blue', syn. *S. caerulea* of gardens, bears rich blue flowers with very dark purple-blue calyces; † to 2.5m (8ft), ↔ 90cm (36in). 'Blue Enigma' ☐ syn. *S. ambigua*, bears fragrant, deep blue flowers with bright green calyces; ↔ 90cm (36in). 'Purple Splendour' bears hairless leaves and purple flowers; ↔ 90cm (36in).

*S. haematodes* see *S. pratensis* Haematodes Group.

*S. hians*. Erect, sticky-hairy, pleasantly scented, somewhat short-lived perennial

*Salvia leucantha**Salvia microphylla*

with ovate, toothed, prominently veined, wrinkled, dark green leaves, to 15cm (6in) long. Branched stems bear terminal spikes of purplish blue flowers, to 3.5cm (1½in) long, with spreading lips, the lower lips white-marked, from early to late summer. † ↔ 60cm (24in). Himalayas (mainly Kashmir). \* \* \*

*S. hispanica* see *S. lavandulifolia*.

*S. horninum* see *S. viridis*.

*S. involucrata* ♀ Subshrubby perennial with sparsely branched stems and ovate, tapering, entire or notched, softly hairy, rich green leaves, to 12cm (5in) long. From late summer to mid-autumn, bears dense, terminal racemes of purplish red flowers, to 5cm (2in) long, with pink bracts that fall as the flowers open. † 1.5m (5ft), ↔ 1m (3ft). Mexico. \* \*. 'Bethellii' ☐ has slightly larger, more velvety leaves, and bright purplish crimson flowers. 'Deschampsiana' has leaves that are narrowly acute at the tips, and more ovoid racemes of rose-pink flowers with bright red bracts and calyces; † 90cm (36in).

*S. x jamensis* (*S. greggii* x *S. microphylla*). Bushy shrub with opposite, ovate to elliptic, toothed, mid-green leaves, 2–3.5cm (¾–1½in) long. In summer and autumn, red, rose-pink, salmon-pink, orange, or rarely creamy yellow flowers, 1–2.5cm (½–1in) long, are borne in opposite pairs in terminal racemes. † 0.5–1m (20–39in), ↔ 50cm (20in). Mexico. \*. 'Fuego' bears bright, flame-red flowers. 'James Compton' has leaves to 2cm (¾in) long, and bears racemes of deep crimson flowers, 2.5cm (1in) long; † to 1m (3ft), ↔ 75cm (30in); ☐ (min. 5°C/41°F). 'La Luna' bears creamy yellow flowers, the upper lips covered in buff-coloured hairs. 'Pat Vlasto' has ovate-elliptic, entire leaves, 2cm (¾in) long, and pink-suffused orange flowers, 2–2.5cm (¾–1in) long; † 1m (3ft), ↔ 75cm (30in); ☐ (min. 5°C/41°F).

*S. jurisicii*. Low-growing, hairy perennial with basal rosettes of ovate, scalloped, mid-green leaves, 10cm (4in) long, and many-branched stems producing pinnate leaves, 10cm (4in) long, each divided into 4–6 pairs of linear leaflets. From early to late summer, bears a profusion of terminal racemes of apparently upside-down, violet-blue flowers, to 1cm (½in) long, the upper lips covered with long, violet-blue hairs. † to 60cm (24in), ↔ 45cm (18in). Yugoslavia (Serbia), Macedonia. \* \* \*

*S. lavandulifolia*, syn. *S. hispanica*. Woody-based perennial with mostly basal, long-stalked, narrowly oblong, entire, grey- to white-woolly leaves, to 2.5cm (1in) long. In midsummer, blue-violet flowers, to 2.5cm (1in) long, are produced in terminal and axillary racemes. † to 50cm (20in), ↔ 60cm (24in). Spain. \* \* \* (borderline)

*S. lemmonii* see *S. microphylla* var. *wislizenii*.

*S. leucantha* ☐ ♀ (Mexican bush). Bushy, evergreen subshrub with white-downy stems when young, and ovate or lance-shaped to oblong or linear, toothed or scalloped, mid-green leaves, to 15cm (6in) long, wrinkled above, white-downy beneath. From winter to spring, produces terminal racemes of white flowers, to 1.5–2cm (½–¾in) long, with bell-shaped, downy, purple to lavender-blue calyces. † 60–100cm (24–39in), ↔ 40–90cm (16–36in). Mexico, tropical Central America. \*

*S. microphylla* ☐ syn. *S. grahamii*. Moderately bushy, evergreen shrub or shrubby perennial bearing triangular-ovate to elliptic, softly hairy or hairless, mid- to deep green leaves, 1.5–4cm (½–1½in) long, with rounded teeth. From late summer to autumn, paired or whorled, deep crimson or, less commonly, magenta, pink, or purple flowers, 2.5cm (1in) long, are produced in terminal racemes. † 90–120cm (3–4ft), ↔ 60–100cm (24–39in). USA (Arizona, New Mexico), Mexico. \* \*. var. *neurepia* has pale green leaves, 3.5–5cm (1¼–2in) long, and produces cherry-red flowers, to 3cm (1¼in) long, mainly in autumn. 'Oxford' bears deep rose-crimson flowers. 'Ruth Stungo' has white-splashed leaves. var. *wislizenii*, syn. *S. lemmonii*, is more compact, with triangular leaves, to 3cm (1¼in) long, and dense spikes of vermilion or magenta flowers; † ↔ 1m (3ft).

*S. nemorosa*. Erect, many-branched perennial with ovate or lance-shaped to oblong, notched, wrinkled, mid-green leaves, to 10cm (4in) long. From summer to autumn, bears violet to purple, or white to pink flowers, to 1cm (½in) long, with violet to purple bracts, in dense, terminal racemes. † to 1m (3ft), ↔ 60cm (24in). Europe to C. Asia. \* \* \*. 'East Friesland' see 'Ostfriesland'. 'Lubeca', syn. *S. x superba* 'Lubeca', is dwarf and clump-forming, with greyish green leaves. From midsummer to early autumn, bears violet flowers with reddish purple

*Salvia officinalis* 'Tricolor'



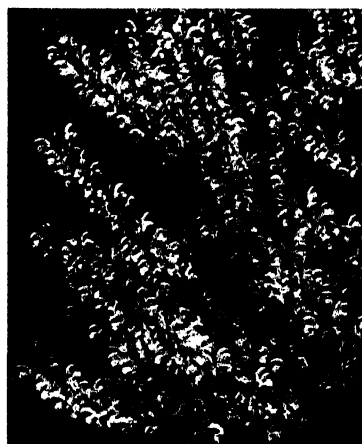
*Salvia patens* 'Cambridge Blue'

bracts that persist long after the flowers fall;  $\pm$  45cm (18in). 'Ostfriesland', syn. 'East Friesland', produces deep blue-violet flowers;  $\pm$  45cm (18in).

*S. officinalis* (Common sage). Subshrubby, erect, hairy, evergreen perennial with oblong-ovate, entire, grey-green-woolly, aromatic leaves, to 8cm (3in) long. Branched stems bear terminal or axillary racemes of lilac-blue flowers, 1.5cm ( $\frac{1}{2}$ in) long, in early and midsummer. A popular culinary herb.  $\pm$  to 80cm (32in),  $\leftrightarrow$  1m (3ft). Mediterranean, N. Africa. \*\*\*.

'Aurea' has a more compact habit, with oblong yellow leaves, and produces small spikes of purplish blue flowers in early summer;  $\pm$  30cm (12in),  $\leftrightarrow$  45cm (18in). 'Icterina'  $\varphi$  has variegated yellow and green leaves. 'Kew Gold' produces golden yellow leaves, sometimes flecked with green, and bears mauve flowers;  $\pm$  20–30cm (8–12in),  $\leftrightarrow$  30cm (12in). 'Purpurascens'  $\varphi$  (Purple sage) has red-purple young leaves. 'Tricolor'  $\square$  bears grey-green leaves, zoned cream and pink to purple; \*\*.

*S. patens*  $\varphi$  Tuberous perennial with erect, branched stems bearing ovate, broadly ovate to triangular, or pentagonal, toothed, hairy, mid-green leaves, to 20cm (8in) long, with spear-shaped bases. From midsummer to mid-autumn, produces few-flowered, loose, sometimes branched, terminal racemes of paired, deep blue flowers, 5cm (2in) long, with wide open mouths.  $\pm$  45–60cm (18–24in),  $\leftrightarrow$  45cm (18in). Mexico. \*\*. 'Cambridge Blue'  $\square$   $\varphi$  produces pale blue flowers.



*Salvia pratensis* Haematodes Group



*Salvia sclarea* var. *turkestanica*

*S. pratensis* (Meadow clary). Clump-forming, woody-based perennial with ovate, blunt-tipped, toothed, wrinkled, mid-green basal leaves, to 15cm (6in) long, and few smaller stem leaves. In early and midsummer, erect, branched or unbranched, slightly sticky-hairy stems bear terminal spikes of violet, rarely pink or white flowers, 2–3cm ( $\frac{3}{4}$ –1 $\frac{1}{4}$ in) long.  $\pm$  to 90cm (36in),  $\leftrightarrow$  30cm (12in). Europe, Morocco. \*\*\*. Cultivars of **Haematodes Group**  $\square$   $\varphi$  syn. *S. haematodes*, are short-lived plants with basal rosettes of large, broadly ovate, wavy-margined, dark green leaves, to 20cm (8in) long. Branched, reddish brown stems bear loose, spreading panicles of bluish violet flowers, with hairy upper lips and paler throats; Greece. 'Mittsommer' produces loose spikes of sky-blue flowers with long, arched upper lips and darker blue calyces and bracts, throughout summer. *S. rutilans* see *S. elegans* 'Scarlet Pineapple'.

*S. sclarea* (Biennial clary). Erect, many-branched, glandular-hairy perennial or biennial with ovate to oblong, notched to irregularly toothed, wrinkled, mid-green leaves, to 23cm (9in) long, with



*Salvia splendens* Cleopatra Series

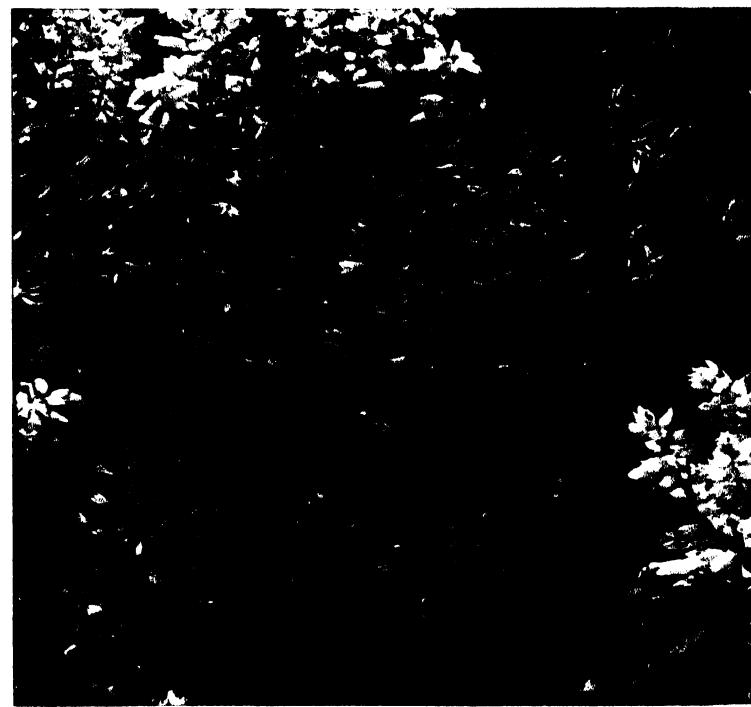


*Salvia splendens* 'Scarlet King'

heart-shaped or perfoliate bases. From spring to summer, bears many-flowered, terminal panicles or racemes of cream and lilac to pink or blue flowers, to 3cm (1 $\frac{1}{4}$ in) long, with prominent lilac bracts.  $\pm$  to 1m (3ft),  $\leftrightarrow$  30cm (12in). Europe to C. Asia. \*\*\*. var.

*turkestanica*  $\square$  has pink stems bearing spikes of pink-flecked white flowers.

*S. splendens* (Scarlet sage). Erect, bushy perennial, usually grown as an annual, with oval, pointed, toothed, slightly hairy, pale to dark green leaves, to 7cm (3in) long. Long-tubed, bright red flowers, 1.5–5cm ( $\frac{1}{2}$ –2in) long, enclosed in red bracts, are borne in dense, terminal spikes from summer to autumn.  $\pm$  to 40cm (16in),  $\leftrightarrow$  23–35cm (9–14in). Brazil. \*. The best of modern seed selections are compact, with very erect flower spikes. Grow red cultivars in full sun; pastel shades need shade from the hottest sun. 'Blaze of Fire', syn. 'Fireball', has pale green leaves and red flowers;  $\pm$  30–40cm (12–16in). Cultivars of **Cleopatra Series**  $\square$  produce flowers in red, salmon-pink, purple, or white;  $\pm$  30–40cm (12–16in). 'Fireball' see 'Blaze of Fire'. **Phoenix Series** cultivars produce flowers in dark salmon-pink,

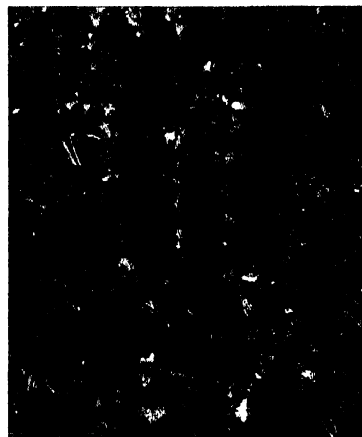


*Salvia splendens* Sizzler Series

pale salmon-pink, purple, white, red, or lilac;  $\pm$  26–30cm (10–12in). 'Rambo' is very tall-growing, vigorous, and bushy, with dark green leaves and scarlet flowers;  $\pm$  to 60cm (24in). 'Red Arrow' has very dark green leaves, and produces scarlet flowers;  $\pm$  to 30cm (12in). 'Red Riches'  $\varphi$  syn. 'Ryco', bears dark green leaves and scarlet flowers;  $\pm$  30–40cm (12–16in). 'Ryco' see 'Red Riches'. 'Scarlet King'  $\square$   $\varphi$  is compact and long-flowering, with dark green leaves and scarlet flowers;  $\pm$  to 25cm (10in). 'Scarlet Queen' bears bright scarlet flowers in early summer;  $\pm$  25cm (10in). **Sizzler Series**  $\square$  cultivars have flowers in bright shades of cerise-red, lavender-blue, salmon-pink, purple, scarlet, or white. They are early flowering, and available as single colours;  $\pm$  25–30cm (10–12in).

*S. x superba*  $\varphi$  (*S. nemorosa* x *S. x sylvestris*). Clump-forming, erect, branched perennial with lance-shaped to oblong, scalloped, mid-green leaves, to 10cm (4in) long, slightly hairy beneath; the basal leaves are stalked, the stem leaves stalkless and sometimes stem-clasping. From midsummer to early autumn, bears slender, terminal racemes of bright violet or purple flowers, to 1.5cm ( $\frac{1}{2}$ in) long.  $\pm$  60–90cm (26–36in),  $\leftrightarrow$  45–60cm (18–24in). Garden origin. \*\*\*. 'Lubeca' see *S. nemorosa* 'Lubeca'.

*S. x sylvestris* (*S. nemorosa* x *S. pratensis*) syn. *S. deserta*. Clump-forming, erect, branched perennial bearing oblong-lance-shaped, scalloped, wrinkled, softly hairy, mid-green leaves, to 7cm (3in) long. Pinkish violet flowers, 1cm ( $\frac{1}{2}$ in) long, are produced in dense, terminal racemes in early and midsummer.  $\pm$  80cm (32in),  $\leftrightarrow$  30cm (12in). Garden origin. \*\*\*. 'Blauhügel', syn. 'Blue Mound', produces pure blue flowers;  $\pm$  50cm (20in),  $\leftrightarrow$  45cm (18in). 'Blaukönigin', syn. 'Blue Queen', bears rich blue-violet flowers;  $\pm$  70cm (28in),  $\leftrightarrow$  45cm (18in). 'Blue Mound' see 'Blauhügel'. 'Blue Queen' see

*Salvia x sylvestris* 'Mainacht'

'Blaukönigin'. 'Mainacht'  $\square$  syn. 'May Night', bears large, indigo-blue flowers, 2cm ( $\frac{3}{4}$ in) long;  $\uparrow$  70cm (28in),  $\leftrightarrow$  45cm (18in). 'May Night' see 'Mainacht'.

'Rose Queen' has rose-pink flowers and grey-tinted leaves;  $\uparrow$  75cm (30in).

*S. triloba* see *S. fruticosa*.

*S. uliginosa*  $\square$   $\varnothing$  (Bog sage). Clump-forming, moisture-loving, rhizomatous perennial with oblong-lance-shaped, deeply toothed, mid-green leaves, to 7cm (3in) long; they are well spaced out and become progressively smaller up the slender, branching stems. From late summer to mid-autumn, bears short, terminal racemes of clear blue flowers, 2cm ( $\frac{3}{4}$ in) long. Needs moist soil and full sun.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  90cm (36in). Brazil, Uruguay, Argentina. \*\*\* *S. verticillata*. Erect herbaceous perennial with opposite, ovate or elliptic to oblong, softly glandular-hairy, mid-green leaves, to 13cm (5in) long, pinnatifid with a larger terminal lobe. In summer, produces branched racemes of violet to lilac-blue, rarely white flowers, 8mm ( $\frac{1}{4}$ in) long, in whorls of 20–40 blooms.  $\uparrow$  to 90cm (36in),  $\leftrightarrow$  to 45cm (18in). Europe to W. Asia. \*\*\* *S. viridis*, syn. *S. horminum* (Annual clary). Erect, bushy annual with ovate to oblong, notched, hairy, mid-green leaves, 5cm (2in) long. In summer, bears terminal spikes of insignificant, whorled, pink to pale purple flowers, 8–15mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) long, each whorl enclosed in 2 showy, pink, purple, or white bracts, to 4cm (1 $\frac{1}{2}$ in) long, with darker veins. Grow as a cut flower for the very long-lasting bracts. May also be dried.  $\uparrow$  45–50cm (18–20in),  $\leftrightarrow$  23cm (9in).

*Salvia uliginosa**Salvia viridis* 'Claryssa'

Mediterranean. \*\*\* 'Bouquet', syn. 'Monarch Bouquet', has blue, rose-pink, white, deep carmine-pink, or purple bracts; also available as single colours.

'Claryssa'  $\square$  is compact and very well-branched, with bracts in rose-pink, blue, purple, or white; also available as single colours;  $\uparrow$  to 40cm (16in). 'Monarch Bouquet' see 'Bouquet'. 'Oxford Blue' has violet-blue bracts;  $\uparrow$  30cm (12in).

'Pink Sundae' has bright carmine-pink bracts. 'White Swan' has white bracts with green veins;  $\uparrow$  30cm (12in).

## SALVINIA

### SALVINIACEAE

Genus of 10 species of aquatic annual ferns found in stagnant or slow-moving water, with a wide tropical and subtropical distribution, especially in tropical Africa and Central and South America; they are also naturalized in some warm-temperate areas. Floating, rootless plants, they have very slender, irregularly branched stems, and bear mostly rounded to ovate leaves in pairs, with a third, finely dissected, root-like, submerged leaf. They are useful for an aquarium, where fish fry can hide in the submerged leaves. In tropical areas, grow in an outdoor pool. In frost-prone areas, grow in an outdoor pool during summer, then lift and store in winter.

• **HARDINESS** Frost tender.

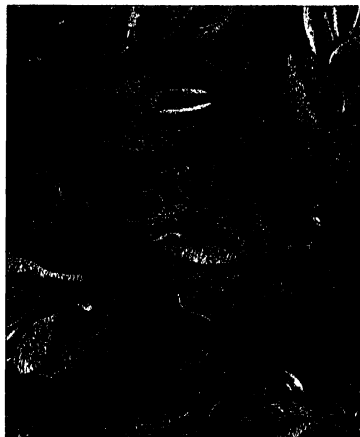
• **CULTIVATION** In an aquarium, grow in nutrient-rich water at 18–24°C (64–75°F) in full light. Tilt the aquarium cover to prevent condensation forming on the leaves, as this may cause scorch in artificial light. Very invasive, so thin regularly. Outdoors, float on the surface of a still-water pool in full sun. In frost-prone areas, lift before the first frosts and store in shallow trays of sandy loam covered with 2.5–5cm (1–2in) of water, in a cool or temperate greenhouse. See also pp.52–53.

• **PROPAGATION** Separate stems in spring or summer.

• **PESTS AND DISEASES** Trouble free.

*S. auriculata*. Floating aquatic fern with whorls of 3 leaves, each consisting of an opposite pair of oval to ovate floating leaves, 3–4cm (1 $\frac{1}{4}$ –1 $\frac{1}{2}$ in) long, covered with fine hairs, and one root-like submerged leaf adapted to a root function.  $\leftrightarrow$  indefinite. Central and South America.  $\bullet$  (min. 10°C/50°F)

*S. natans*  $\square$  Floating aquatic fern bearing paired, elliptic, pale green leaves,

*Salvinia natans*

to 1.5cm ( $\frac{1}{2}$ in) long, with shiny brown hairs beneath, and a submerged, root-like frond, 2–7cm ( $\frac{3}{4}$ –3in) long.  $\leftrightarrow$  indefinite. S. Europe, N. Africa, Asia.  $\bullet$  (min. 10°C/50°F)

## SAMBUCUS

### Elder

### CAPRIFOLIACEAE

Genus of about 25 species of herbaceous perennials and deciduous shrubs and trees from woodland and thickets in temperate and subtropical regions of Eurasia, N. and tropical E. Africa, Australia, and North and South America. They are cultivated for their foliage, flowers, and fruits. They bear opposite, pinnate leaves and dense, flat-topped umbels or panicles of small, white to ivory flowers, followed by red, black, or white fruits. Elders are suitable for a mixed or shrub border, or a wild garden. Those with coloured leaves are effective as free-standing specimens. All parts may cause severe discomfort if ingested, although fruits are safe when cooked; contact with the leaves may irritate skin.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus rich, moist but well-drained soil in full sun or partial shade; those with coloured leaves colour well in sun, but retain colour best in dappled shade. Pruning group 7, for those grown for their coloured or cut leaves; group 1 for the rest. Elders tolerate hard pruning as necessary to restrict size.

• **PROPAGATION** Sow seed in containers in an open frame in autumn. Take hardwood cuttings in winter, or greenwood cuttings in early summer.

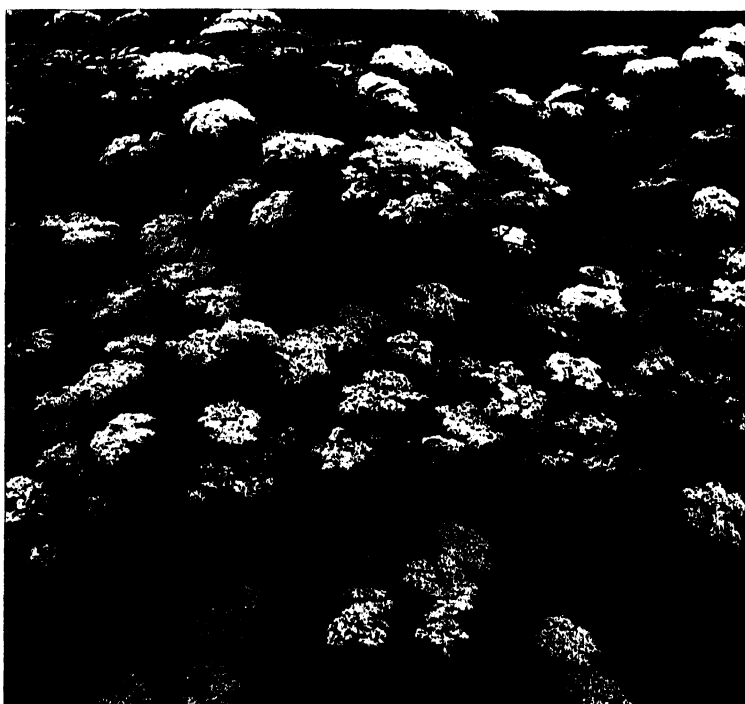
• **PESTS AND DISEASES** Black fly infest the young shoots and foliage, and *Verticillium* wilt may be a problem.

*S. canadensis* (American elder).

Upright shrub with stout shoots and pinnate leaves, to 30cm (12in) long, each composed of 9 or more elliptic to lance-shaped, toothed, light green leaflets. In midsummer, bears small white flowers in flattened panicles, to 20cm (8in) across, followed by spherical, purple-black fruit, to 5mm ( $\frac{1}{4}$ in) across.  $\uparrow$  to 4m (12ft). North America. \*\*\* 'Aurea' has golden yellow foliage and red fruit.

*S. nigra* (Black elder, Bourtree, Common elder, Elderberry, European elder). Upright, bushy shrub with stout shoots. Pinnate leaves, to 25cm (10in) long, each have 5 ovate, toothed, mid-green leaflets. Bears musk-scented white flowers in flattened panicles, to 20cm (8in) across, in early summer, followed by spherical, glossy black fruit, to 8mm ( $\frac{1}{4}$ in) across.  $\uparrow$  to 6m (20ft). Europe, N. Africa, S.W. Asia. \*\*\* 'Aurea'  $\varnothing$  has golden yellow leaves borne on pink-flushed leaf-stalks. 'Aureomarginata' bears yellow-margined, dark green leaves. 'Guincho Purple'  $\square$   $\varnothing$  has dark green leaves, turning blackish purple then red in autumn, and pink-tinged flowers with purple stalks. 'Laciniata'  $\varnothing$  syn. f. *laciniata*, has irregularly and finely cut leaflets.

*S. racemosa* (Red-berried elder). Bushy shrub with arching shoots and pinnate

*Sambucus nigra* 'Guincho Purple'



*Sambucus racemosa* 'Plumosa Aurea'

leaves, to 22cm (9in) long, each with usually 5 oval or ovate, toothed, dark green leaflets. In mid-spring, bears small, creamy yellow flowers in conical panicles, 8cm (3in) long, followed in summer by spherical, glossy red fruit, 4mm (1/8in) across.  $\pm$  3m (10ft). Europe, Russia (W. Siberia). \* \* \*. 'Plumosa' has purple new growth and finely cut leaflets. 'Plumosa Aurea'  $\square$  has finely cut leaflets, bronze when young, turning golden yellow. Foliage may burn in hot sun. 'Sutherland Gold'  $\Delta$  is similar to 'Plumosa Aurea', but less susceptible to sun scorch. 'Tenuifolia'  $\Delta$  is mound-forming, with leaflets very finely cut into long, slender lobes;  $\pm$  1m (3ft),  $\leftrightarrow$  2m (6ft).

## SANCHEZIA

ACANTHACEAE

Genus of about 20 species of soft-stemmed evergreen shrubs and shrubby perennials from tropical rainforest in Central and South America. They have opposite pairs of simple, often entire leaves, and bear terminal or axillary spikes or panicles of tubular, showy, yellow, orange, red, or purple flowers, each with 5 small, rounded lobes, often with coloured bracts. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse or conservatory, or as houseplants. In tropical areas, grow at the base of a warm, sunny wall, or in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered or full light, with shade from hot sun. In growth, water freely and apply a balanced liquid fertilizer every 2 or 3 weeks; water sparingly in winter. Outdoors, grow in moderately fertile, humus rich, moist but well-drained soil, in full sun with some midday shade, or in light dappled shade. Pruning group 8; plants under glass may need restrictive pruning in late winter.
- **PROPAGATION** Root softwood cuttings in spring or semi-ripe cuttings in summer, both with gentle bottom heat.
- **PESTS AND DISEASES** Red spider mites and scale insects may be a problem under glass.

*S. glaucophylla* see *S. speciosa*.  
*S. nobilis* see *S. speciosa*.  
*S. speciosa*  $\square$  syn. *S. glaucophylla*, *S. nobilis*, *S. spectabilis*. Moderately bushy shrub with sparsely branched, sturdy,

*Sanchezia speciosa*

sometimes obscurely angled, smooth, bright green stems and ovate-elliptic to oblong-lance-shaped, glossy, dark green leaves, 15–30cm (6–12in) long, with yellow-, ivory-, or white-banded midribs and main veins. In summer, bears terminal spikes of 6–10 yellow flowers, 4–5cm (1 1/2–2in) long, with red bracts.  $\pm$  1.2–2.2m (4–7ft),  $\leftrightarrow$  90–150cm (3–5ft). Ecuador, Peru. \* (min. 13–15°C/55–59°F)

*S. spectabilis* see *S. speciosa*.

## SANDERSONIA

COLCHICACEAE/LILIACEAE

Genus of one species of tuberous, perennial climber from rocky areas and light woodland in South Africa. Related to *Gloriosa* and *Littonia*, it has alternate leaves, often tipped with tendrils, and solitary flowers. In frost-prone areas, grow in a temperate greenhouse or a conservatory. In frost-free areas, grow in a herbaceous border or among low shrubs.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, plant tubers 7–10cm (3–4in) deep in late winter or early spring, in 4 parts loam-based potting compost (J1 No.2) and 1 part grit, in full light with some midday shade. In growth, water freely and apply a balanced liquid fertilizer every 4 weeks; dry off as leaves fade and keep dry while dormant. Stems need support. Outdoors, grow in moderately fertile to humus-rich, well-drained soil in full sun. Protect from excessive winter wet. In frost-prone areas, lift tubers in autumn and store in dry, frost-free conditions.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) as soon as ripe. Divide in autumn or winter.
- **PESTS AND DISEASES** Trouble free.

*S. aurantiaca*. Perennial climber with slender stems bearing scattered, lance-shaped, mid-green leaves, to 10cm (4in) long, some of which are tipped with tendrils. In summer, pendent, urn-shaped, bright orange flowers, 2.5cm (1in) long, are borne on downcurved stalks, 2–3cm (3/4–1 1/4in) long, from the upper leaf axils.  $\pm$  to 75cm (30in),  $\leftrightarrow$  10cm (4in). South Africa. \*

$\triangleright$  *Sandsalio* see *Salvia africana-lutea*  
 $\triangleright$  *Sandwort* see *Arenaria*  
**Coriscan** see *A. balearica*  
**Pink** see *A. purpurascens*

*Sanguinaria canadensis*

## SANGUINARIA

Bloodroot, Red puccoon

PAPAVERACEAE

Genus of one species of rhizomatous perennial occurring in moist woodland in E. North America. It is cultivated for its cup-shaped, white or pink-tinted flowers, which emerge from between the vertically folded leaves as they unfurl, in spring. *S. canadensis* is excellent for growing in a damp, shaded site in a rock garden, wild or woodland garden, or peat bed. The rhizomes exude red sap when cut, giving rise to the common name, bloodroot.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus rich, moist but well-drained soil in deep or partial shade. Thrives in part-day sun where soils remain reliably moist.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or divide rhizomes immediately after flowering.
- **PESTS AND DISEASES** Trouble free.

*S. canadensis*  $\square$  Rhizomatous perennial producing variably lobed, heart- to kidney-shaped, scalloped, bluish grey-green leaves, 15–30cm (6–12in) across when fully expanded. Solitary, cup-shaped, white, occasionally pink-tinted flowers, to 8cm (3in) across, emerge in spring as the leaves unfold.  $\pm$  15cm (6in),  $\leftrightarrow$  30cm (12in) or more. E. North America. \* \* \*. 'Plena'  $\Delta$  produces many-petalled, double white flowers, which are longer-lasting than those of the species.

## SANGUISORBA

Burnet

ROSACEAE

Genus of approximately 18 species of rhizomatous perennials, most occurring in damp meadows, with a few from dry, grassy or rocky sites, in temperate and cooler regions of the N. hemisphere. They produce alternate, pinnate leaves, with mostly oblong to elliptic, toothed, nearly veined leaflets, which in some species are glaucous. The leafy, wiry stems bear dense or loose, bottlebrush-like, terminal spikes of small, fluffy flowers, with red, pink, white, or greenish white sepals and prominent stamens, but no petals. Burnets are suitable for growing in a herbaceous or mixed border, and for naturalizing in a

damp meadow garden or by water. Many species provide unusual flowers and foliage for cutting.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moderately fertile, moist but well-drained soil that does not dry out, in full sun or partial shade. Taller species usually require support. May become invasive.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide in spring or autumn.
- **PESTS AND DISEASES** Slugs may damage young leaves.

*S. canadensis*  $\square$  (Canadian burnet). Spreading, clump-forming, rhizomatous perennial with upright, simple or branched stems and pinnate, hairy leaves, to 25cm (10in) long, each composed of 7–17 oblong-lance-shaped to ovate leaflets. From midsummer to mid-autumn, long "cones" of green buds open from the bottom up, to form bottlebrush-like spikes, to 20cm (8in) long, of small, fluffy white flowers.  $\pm$  to 2m (6ft),  $\leftrightarrow$  1m (3ft). N.E. North America. \* \* \*

*S. obtusa*. Rhizomatous perennial with upright stems, branched near the ends, bearing numerous pinnate, greyish green leaves, to 40cm (16in) long, each with 13–17 crowded, oblong-elliptic, almost stalkless leaflets. From mid- or late summer to early autumn, bears small, fluffy, rich pink flowers in short, nodding, bottlebrush-like spikes, 7cm (3in) long.  $\pm$  to 60cm (24in). Japan. \* \* \*

*S. officinalis* (Greater burnet). Clump-forming, rhizomatous perennial producing pinnate basal leaves, 50cm (20in) long, each with 7–25 oblong-elliptic leaflets; leaves on the erect, branching, often red stems are smaller. The small, red-brown to maroon flowers are borne in erect, very short, dense, ovoid spikes, 1.5–3cm (3/4–1 1/4in) long, from early summer to mid-autumn.  $\pm$  to 1.2m (4ft),  $\leftrightarrow$  60cm (24in). Europe, N. and W. Asia, North America. \* \* \*

*Sanguisorba canadensis*

## SANSEVIERIA

Bowstring hemp

AGAVACEAE/DRACAENACEAE

Genus of about 60 species of usually stemless, xerophytic, rhizomatous, evergreen perennials from dry, rocky habitats in tropical and subtropical Africa, Madagascar, India, and Indonesia. They are grown for their stiff, fleshy, linear to broadly ovate, upright or more or less spreading leaves, which may be flat, concave, or cylindrical; these are produced in clumps or squat rosettes from spreading, underground or partially exposed rhizomes. Mature plants infrequently bear low racemes or panicles of fragrant, nectar-rich, tubular, 6-lobed flowers in spring. In frost-prone areas, grow in a warm greenhouse or conservatory, or use as houseplants. In warmer areas, grow in a desert garden, in containers on a patio, or in a small courtyard garden. Tolerant of neglect.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in 2 parts loam-based potting compost (J1 No.2) and 1 part coarse grit, in bright filtered light or indirect light. In growth, water moderately and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Pot on only when pot-bound; leaf growth may stop if leaf-tips are damaged. Outdoors, grow in poor to moderately fertile, neutral to slightly alkaline, gritty soil in full sun. Protect from excessive winter wet.

• **PROPAGATION** Remove suckers, or divide, in spring. Root leaf sections with bottom heat from spring to autumn. Offspring from variegated cultivars will lack variegation if raised from leaf cuttings.

• **PESTS AND DISEASES** Vine weevil grubs may be a problem.

**S. cylindrica.** Very slow-growing, woody, rhizomatous perennial with 2-ranked, erect, cylindrical, fleshy, dark green leaves, to 1m (3ft) or more long, with lighter crossbands. Intermittently bears spike-like racemes, 35–75cm (14–30in) long, of tubular, pink or white flowers, 1.5–2.5cm (½–1in) long, the lobes with margins rolled outwards. † to 1.5m (5ft), ↔ 60cm (24in). Angola. ☼ (min. 13°C/55°F)

**S. trifasciata** (Mother-in-law's tongue). Erect, rhizomatous perennial with pointed, lance-shaped, fleshy leaves, to



*Sansevieria trifasciata* 'Laurentii'

1.2m (4ft) or more long, horizontally marbled and banded dark and light green. Racemes, 30–75cm (12–30in) long, of tubular, green or greenish white flowers, 6–10mm (¼–½in) long, are produced intermittently. Dwarf cultivars are suitable for growing in bowls and pans. † 1.2m (4ft), ↔ 50cm (20in). W. tropical Africa. ☼ (min. 13°C/55°F). **'Bantel's Sensation'** ♀ has variable, slender, slightly spiralled, dark green leaves, to 60cm (24in) long, with intermittent, vertical cream stripes. **'Golden Hahnii'** ♂♀ forms dwarf rosettes of broad leaves, to 20cm (8in) long, with bold, golden yellow, vertical stripes, particularly at the margins; rarely flowers; †↔ 12cm (5in). **'Hahnii'** ♀ (Bird's nest) is dwarf, with rosettes of broad, mid-green leaves, 25cm (10in) long, crossbanded with darker green; rarely flowers; † to 15cm (6in), ↔ 18cm (7in). **'Laurentii'** ♂♀ has upright leaves, 45cm (18in) long, horizontally marbled mid- and dark green, with broad yellow margins; † 1–1.2m (3–4ft). **'Silver Hahnii'** ♂ is dwarf, with rosettes of broad, dark green leaves, to 25cm (10in) long, banded silver; flowers are rarely borne; †↔ 12cm (5in).



*Sansevieria trifasciata* 'Golden Hahnii'



*Sansevieria trifasciata* 'Silver Hahnii'

## SANTOLINA

ASTERACEAE/COMPOSITAE

Genus of 18 species of evergreen shrubs occurring in dry, rocky habitats in the Mediterranean. They have alternate, entire, pinnatisect, or pinnate, aromatic leaves, and tiny flowers borne in long-stemmed, dense, button-like heads, surrounded by several rows of involucre bracts. Each individual floret is tubular, usually hermaphrodite, and yellow or white; there are no ray-florets. They are grown mainly for their ornamental and aromatic foliage, and are suitable for a mixed or shrub border or a rock garden; they may also be used for ground cover, edging, or as low hedges.

• **HARDINESS** Frost hardy.

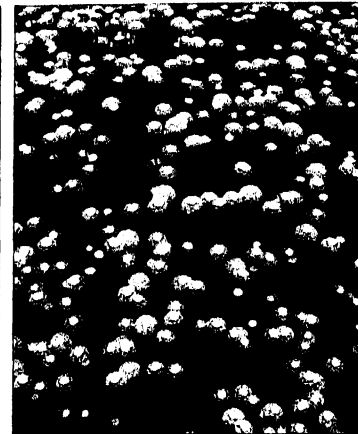
• **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun. Pruning group 10, in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root semi-ripe cuttings with bottom heat in late summer.

• **PESTS AND DISEASES** Trouble free.

**S. chamaecyparissus** ♀ syn. *S. incana* (Cotton lavender). Compact, rounded shrub producing white-woolly young shoots, densely covered with slender, narrowly oblong, toothed to pinnatisect, grey-white leaves, to 4cm (1½in) long, with very fine, toothed divisions. Bright yellow flowerheads, to 1cm (½in) across, are borne on slender stems in mid- and late summer. † 50cm (20in), ↔ 1m (3ft). W. and C. Mediterranean. \*★.

**'Lambrook Silver'** has silver-grey leaves.



*Santolina pinnata* subsp. *neapolitana* 'Sulphurea'

**'Lemon Queen'** ♂ is compact, with lemon-yellow flowerheads; †↔ 60cm (24in). **'Pretty Carol'** is compact, with soft grey foliage; †↔ 40cm (16in).

**'Small-Ness'** is dwarf; †↔ 20cm (8in).

subsp. *tomentosa* see *S. pinnata*.

**'Weston'** is very dwarf, with very silvery foliage; † 15cm (6in), ↔ 20cm (8in).

*S. incana* see *S. chamaecyparissus*.

*S. neapolitana* see *S. pinnata* subsp. *neapolitana*.

*S. pinnata*, syn. *S. chamaecyparissus* subsp. *tomentosa*. Rounded, bushy shrub with slender, pinnate, hairless, slightly aromatic, mid-green leaves, to 4cm (1½in) long, with many cylindrical leaflets. Creamy white flowerheads, 2cm (¾in) across, are borne in midsummer. † 75cm (30in), ↔ 1m (3ft). Italy. \*★.



*Santolina chamaecyparissus* 'Lemon Queen'

## SANTOLINA

Mainly represented in gardens by the following subspecies and its forms.

**subsp. *neapolitana*** ♀ syn. *S. neapolitana*, *S. tomentosa*, has aromatic, grey-green foliage and bright yellow flowerheads. **subsp. *neapolitana* 'Edward Bowles'** has grey-green foliage and creamy white flowerheads. **subsp. *neapolitana* 'Sulphurea'** has grey-green foliage and primrose-yellow flowerheads.

***S. rosmarinifolia***, syn. *S. virens*, *S. viridis*. Dense, rounded, bushy shrub with slender, finely cut, aromatic, bright green leaves, to 5cm (2in) long. Bright yellow flowerheads, 2cm (¾in) across, are produced at the end of slender shoots in midsummer. ‡ 60cm (24in), ↔ 1m (3ft). S.W. Europe. \*\*\*.

**'Primrose Gem'** ♀ has pale yellow flowerheads.

***S. tomentosa*** see *S. pinnata* subsp. *neapolitana*.

***S. virens*** see *S. rosmarinifolia*.

***S. viridis*** see *S. rosmarinifolia*.

## SANVITALIA

Creeping zinnia

ASTERACEAE/COMPOSITAE

Genus of 7 species of creeping and spreading annuals and perennials from rocky slopes and dry river washes in S.W. USA and Mexico. They have opposite, simple, oval leaves, and bear daisy-like, bright yellow, orange, or white flowerheads. Creeping zinnias provide colourful ground cover in an annual or herbaceous border, raised bed, or rock garden, or at the edge of a path. They are also suitable for a trough, or for containers on a patio. Modern cultivars are good for hanging baskets.

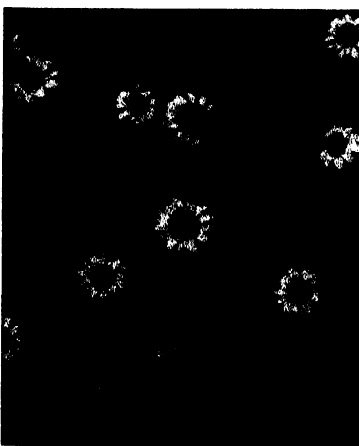
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, well-drained soil in full sun.

• **PROPAGATION** Sow seed *in situ* in autumn or spring. Delay thinning autumn-sown seedlings until spring.

• **PESTS AND DISEASES** Trouble free.

***S. procumbens*** ♂ (Creeping zinnia). Prostrate, mat-forming annual with pointed, oval, mid-green leaves, to 6cm (2½in) long. Bears single, black-centred, bright yellow flowerheads, to 2cm (¾in) across, over a long period from early summer to early autumn. ‡ to 20cm (8in), ↔ to 45cm (18in). Mexico. \*\*\*. **'Gold Braid'** is compact, producing golden yellow flowerheads; ‡ 5–10cm



*Sanvitalia procumbens*



*Sanvitalia procumbens* 'Mandarin Orange'

(2–4in), ↔ 35cm (14in). **'Golden Carpet'** is dwarf, producing very dark green leaves and small, lemon-yellow flowerheads; ‡ to 10cm (4in).

**'Mandarin Orange'** ♂ is compact, with semi-double orange flowerheads; ‡ to 10cm (4in), ↔ 35cm (14in).

## SAPINDUS

SAPINDACEAE

Genus of 13 species of deciduous or evergreen trees, shrubs, and climbers, widely distributed in woodland and on riverbanks in warm-temperate, subtropical, and tropical regions. They are cultivated for their alternate, simple or pinnate leaves, axillary or terminal racemes or panicles of small, 4- or 5-petalled flowers, and fleshy, spherical fruits. They grow best in a continental climate, with long, hot summers, where they are effective shade trees. Useful for gardens with poor, dry soil.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in poor to moderately fertile, well-drained soil in full sun, sheltered from cold winds. Pruning group 1.

• **PROPAGATION** Sow seed of hardy species in containers in a cold frame in spring, after cold stratification for 8 weeks. Sow seed of tender species at 16–18°C (61–64°F) in spring.

• **PESTS AND DISEASES** Trouble free.

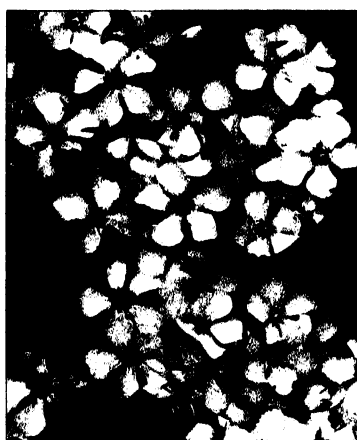
***S. drummondii*** ♂ (Western soapberry). Spreading, deciduous tree producing pinnate leaves, to 40cm (16in) long, with up to 18 lance-shaped, glossy, mid-green leaflets, turning golden yellow in autumn. Small, creamy white flowers are borne in conical, terminal panicles, to 25cm (10in) long, in late spring and early summer; they are followed by spherical, orange-yellow fruit, 1cm (½in) across. ‡ 15m (50ft), ↔ 10m (30ft). S. USA, N. Mexico. \*\*\* (borderline)

## SAPONARIA

Soapwort

CARYOPHYLLACEAE

Genus of about 20 species of annuals and perennials, some with a woody rootstock, mostly from meadows or rocky areas in the mountains of Europe and S.W. Asia. Closely related to *Lychnis* and *Silene*, they differ in having flowers with 2 styles rather than 3 or 5.



*Saponaria caespitosa*

They have opposite, entire, variably shaped, narrow leaves and abundant flat, 5-petalled, clawed flowers, usually in shades of pink, borne in loose or dense heads, panicles, or cymes. The genus includes compact plants, suitable for a rock garden, trough, or raised bed, and taller, spreading plants, useful for a herbaceous or mixed border.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow border perennials in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. More compact species, such as *S. caespitosa*, require gritty, sharply drained soil. Cut *S. ocymoides* back hard after flowering, to maintain a compact habit.

• **PROPAGATION** Sow seed in containers in an open frame in autumn or spring. Divide border perennials in autumn or spring. Root softwood cuttings in early summer.

• **PESTS AND DISEASES** May be damaged by slugs and snails.

***S. 'Bressingham'*** ♀ syn. *S.*

**'Bressingham Hybrid'**. Loose, mat-forming perennial with hairy, narrowly ovate-lance-shaped, mid-green leaves, to 1.5cm (½in) long. Bears many short-stemmed, panicle-like cymes of brilliant deep pink flowers, to 1cm (½in) across, in summer. Ideal for a trough or rock garden. ‡ 8cm (3in), ↔ 30cm (12in). \*\*\*

***S. 'Bressingham Hybrid'*** see *S. 'Bressingham'*.

***S. caespitosa*** ♂ Compact, densely tufted, mat-forming perennial with a woody rootstock and narrowly lance-



*Saponaria ocymoides*

## SAPONARIA

shaped, mid-green leaves, 5mm (¼in) long. Few-flowered heads of pink to purple flowers, 1cm (½in) across, are borne just above the leaves in summer. ‡ 15cm (6in). Pyrenees. \*\*\*

***S. ocymoides*** ♂♀ (Tumbling Ted).

Spreading, mat-forming perennial with ovate-lance-shaped, hairy, bright green leaves, to 1cm (½in) long. A profusion of pink flowers, 1cm (½in) across, opens in loose, panicle-like cymes, in summer. May swamp smaller plants. ‡ 8cm (3in), ↔ 45cm (18in) or more. Mountainous areas from Spain to Yugoslavia. \*\*\*.

**'Alba'** is less vigorous, with white flowers. **'Rubra Compacta'** ♀ has a neat, dense habit, and dark red flowers.

***S. officinalis*** (Bouncing Bet, Soapwort).

Upright perennial, spreading rapidly by rhizomes, with narrowly ovate, rough, prominently veined, mid-green leaves, 4–7cm (1½–3in) long. From summer

to autumn, bears panicle-like cymes of pink, red, or white flowers, to 2cm (¾in) across. ‡ 60cm (24in), ↔ 50cm (20in). Europe. \*\*\*.

**'Alba Plena'** bears abundant double white flowers,

pink in bud. **'Dazzler'**, syn. 'Taff's

Dazzler', 'Variegata', has single pink

flowers, and leaves heavily variegated

cream. Less invasive than the species.

**'Rubra Plena'** tends to spread, and has

double red flowers that fade to pink.

**'Taff's Dazzler'** see 'Dazzler'.

**'Variegata'** see 'Dazzler'.

***S. x olivana*** ♂♀ (*S. pumilio* x *S.*

*ocymoides*). Cushion-forming perennial

with narrowly lance-shaped, mid-green

leaves, 7mm (¼in) long. Produces

branching stems around the edges of the

cushion, each bearing heads of several

pale pink flowers, 1.5cm (½in) across,

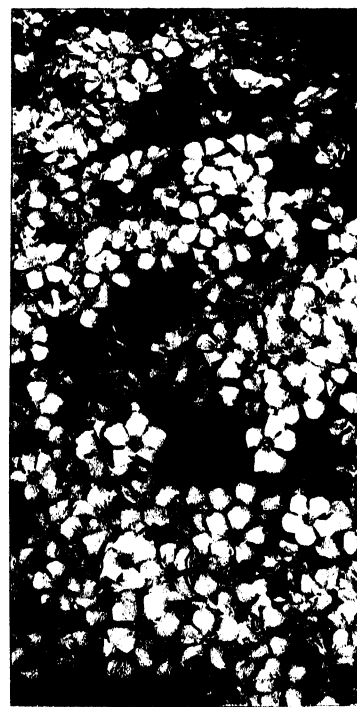
in summer. ‡ 5cm (2in), ↔ 15cm (6in).

Garden origin. \*\*\*

▷ **Sapphire berry** see *Symplocos paniculata*

▷ **Sapphire flower** see *Browallia speciosa*

▷ **Sarana, Black** see *Fritillaria camschatcensis*



*Saponaria x olivana*

## SARCOCAPNOS

PAPAVERACEAE

Genus of 3 or 4 species of dwarf, tufted annuals or perennials from cliff crevices in mountains throughout S.W. Europe and N. Africa. They are grown for their fleshy, simple or 2- or 3-ternate, finely divided leaves, to 15cm (6in) long, and for their terminal racemes of spurred flowers, similar to those of *Corydalis*, which are borne in spring and summer. Grow in a scree bed, raised bed, or in tufa; they are also delicate, short-lived plants for an alpine house.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in moderately fertile, sharply drained, alkaline soil, in full sun with some midday shade; protect from excessive winter wet. In an alpine house, grow in a mix of 2 parts grit and 1 part each loam and leaf mould, with additional tufa chippings.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Plants grown under glass often self-seed.
- **PESTS AND DISEASES** Aphids and red spider mites may be a problem under glass.

**S. enneaphylla.** Tuft-forming annual or short-lived perennial with brittle, branching stems bearing fern-like, 2- or 3-ternate, blue-green leaves, to 10cm (4in) long, consisting of ovate to elliptic leaflets with heart-shaped bases. In spring, produces racemes of 5–15 white or pink flowers, to 2cm (¾in) long, with short spurs. ↑↔ 15cm (6in). S. Spain, Morocco. \*\*

## SARCOCAULON

GERANIACEAE

Genus of about 15 species of freely branching, deciduous, succulent perennials and subshrubs from very dry areas of Angola, Namibia, and South Africa. Stem branches are armed with usually small thorns and have hard, resinous bark. The opposite leaves are of 2 types: primary, with long stalks that become spines, and secondary, with shorter stalks that may persist as blunt stumps in the axils of the primary leaves. Solitary, trumpet-shaped flowers are borne mostly from winter to summer. Where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse or conservatory; in warmer climates, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. In growth, water moderately, and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter, but mist lightly on warmer days. Outdoors, grow in poor to moderately fertile, sharply drained soil in full sun. Protect from excessive winter wet. See also pp.48–49.
- **PROPAGATION** Sow seed at 24°C (75°F) as soon as ripe.
- **PESTS AND DISEASES** Susceptible to mealybugs.

**S. herrei.** Shrubby, succulent perennial with spreading branches marked with leaf scars, and bearing thorns to 2.5cm (1in) long. Triangular to rounded, fleshy, 2- or 3-pinnatisect leaves,

1.5–2cm (½–¾in) long, are yellowish green with silky hairs. White and yellow flowers, 2cm (¾in) across, are borne in winter. ↑↔ to 30cm (12in). South Africa (Western Cape). ☉ (min. 10°C/50°F)

## SARCOCOCCA

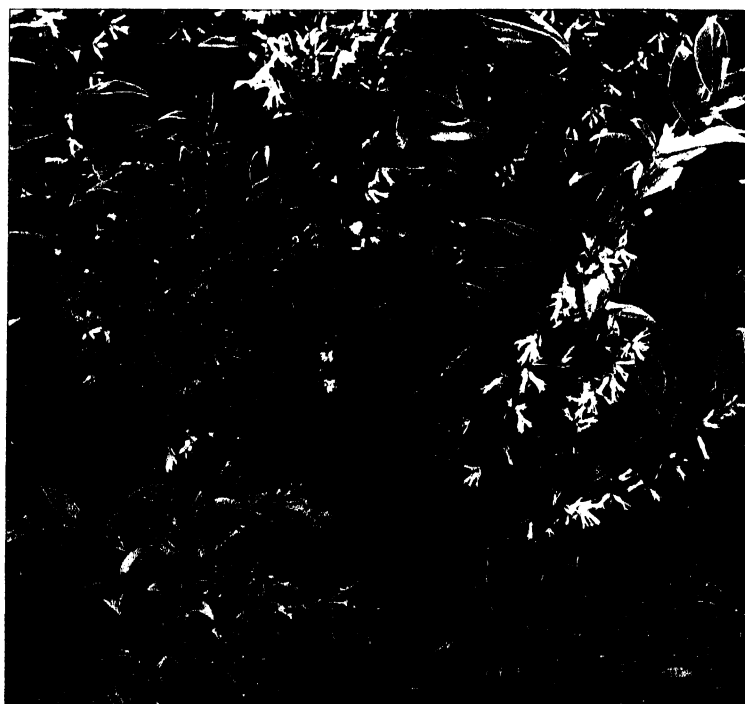
Christmas box, Sweet box

BUXACEAE

Genus of about 14 species of monoecious, evergreen, sometimes rhizomatous shrubs found in moist, shady places, forest, and thickets from China to the Himalayas and S.E. Asia. They are grown for their foliage, usually fragrant flowers, and berry-like fruits. The leaves are mainly alternate, rarely opposite, entire, and narrowly lance-shaped to broadly ovate or elliptic. Tiny, fragrant, petalless, white or whitish green male and female flowers, 5mm (¼in) long, are borne in small clusters or spikes in the leaf axils. The male flowers have conspicuous anthers; the females are produced below the males in the inflorescence. Grow as ground cover in a woodland garden, or use as a low, informal hedge. Tolerant of atmospheric pollution, dry shade, and neglect.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in deep or partial shade. Full sun is tolerated if the soil remains moist. Shelter from cold, drying winds. Pruning group 8.
- **PROPAGATION** Sow seed in containers outdoors in autumn or spring. Take semi-ripe cuttings in late summer. Remove suckers in late winter.
- **PESTS AND DISEASES** Trouble free.

**S. confusa** ☐♀ Dense, rounded, bushy shrub with elliptic, tapered, glossy, dark green leaves, to 6cm (2½in) long. Clusters of about 5 very fragrant white flowers are borne in winter, followed by spherical, glossy black fruit, 5mm (¼in) across. ↑ 2m (6ft), ↔ 1m (3ft). Probably W. China. \*\*\*



Sarcococca confusa



Sarcococca hookeriana var. digyna 'Purple Stem'

**S. hookeriana** ♀ Rhizomatous, thicket-forming, suckering, compact shrub with lance-shaped to oblong, mid- to dark green leaves, to 9cm (3½in) long. Clusters of fragrant white flowers are borne in winter, followed by spherical, black or blue-black fruit, 5mm (¼in) across. ↑ 1.5m (5ft), ↔ 2m (6ft). W. China. \*\*\*. **var. digyna** ♀ has slender, tapered leaves, and male flowers with cream anthers. **var. digyna** 'Purple Stem' ☐ has young shoots flushed dark purple-pink, and pink-tinged flowers. **var. humilis** see *S. humilis*.

**S. humilis** ☐ syn. *S. hookeriana* var. *humilis*. Dwarf, clump-forming shrub, spreading by suckers, with erect shoots and oblong, glossy, dark green leaves, to 8cm (3in) long. In winter, bears clusters of fragrant, pink-tinged white flowers, the males with pink anthers, followed by spherical, dark blue-black fruit, 5mm (¼in) across. ↑ 60cm (24in), ↔ 1m (3ft). W. China. \*\*\*

**S. ruscifolia.** Dense, bushy shrub with arching shoots and ovate, tapered, glossy, dark green leaves, to 6cm (2½in) long. Clusters of fragrant, creamy white flowers are produced in winter, and are



Sarcococca humilis

followed by spherical, dark red fruit, 5mm (¼in) across. ↑↔ 1m (3ft). W. and C. China. \*\*\*. **var. chinensis** ♀ has narrowly ovate to lance-shaped leaves. **S. saligna.** Thicket-forming shrub with erect shoots and narrowly lance-shaped, finely tapered leaves, to 14cm (5½in) long, dark green above, pale green beneath. In winter and early spring, bears spikes, to 1.5cm (½in) long, of unscented, greenish white flowers, followed by ovoid purple fruit, to 1cm (½in) long. ↑ 1m (3ft), ↔ 2m (6ft). Afghanistan to Nepal (Himalayas). \*\*

## SARITAEAE

BIGNONIACEAE

Genus of a single species of woody-stemmed, evergreen tendril climber from woodland in N. South America. It produces opposite pairs of leaves and cyme-like panicles of tubular-bell-shaped flowers, with 5 spreading petal lobes. Where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse. In warmer regions, grow over a pergola or arch, or through the branches of a tree.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light. When in growth, water freely and apply a balanced liquid fertilizer monthly; maintain moderate to high humidity. Water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil, in full sun with some midday shade, or in partial shade. Pruning group 11, in early spring.
- **PROPAGATION** Sow seed at about 16°C (61°F) in spring. Root semi-ripe cuttings with bottom heat in late summer. Layer in early spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**S. magnifica**, syn. *Arrabidaea magnifica*. Vigorous, erect climber with leaves composed of 2 obovate, rich green leaflets, to 10cm (4in) long, those on the main climbing stems having hook-tipped tendrils. Cyme-like panicles of tubular-bell-shaped, pale purple to rose-pink flowers, 7–9cm (3–3½in) across, with light yellow to white, V-shaped markings inside, are borne in several flushes throughout the year. ↑ to 10m (30ft) or more. Colombia, Ecuador. ☉ (min. 10°C/50°F)

## SARMIENTA

GESNERIACEAE

Genus of one species of small, shrubby, creeping, evergreen perennial growing epiphytically on trees in cool rainforest in temperate Chile. It has simple leaves in opposite pairs, and 5-lobed, tubular, axillary flowers. Where temperatures fall below 5°C (41°F), grow in a cool or temperate greenhouse, or conservatory. In milder areas, grow over mossy rocks, or epiphytically on a tree.

- **HARDINESS** Frost tender, but may survive short spells down to 0°C (32°F).
- **CULTIVATION** Under glass, grow in 2 parts loamless potting compost and 1 part each fine-grade granulated bark and leaf mould, or grow epiphytically. Provide bright indirect light. In growth, water freely, applying a balanced liquid fertilizer monthly. Mist daily in summer. Water sparingly in winter. Outdoors, grow in fertile, humus-rich soil, ideally mixed with sphagnum moss, in light dappled shade or partial shade.
- **PROPAGATION** Sow seed at 16–21°C (61–70°F) in spring. Root stem-tip cuttings in late summer, with bottom heat. Separate rooted stems in spring.
- **PESTS AND DISEASES** Red spider mites may infest plants grown under glass.

*S. repens* ♀ syn. *S. scandens*. Creeping or low-climbing perennial with semi woody, rooting stems and obovate to elliptic, minutely glandular, light to mid-green leaves, to 2.5cm (1in) long, with 3–5 shallow to deep teeth at the tips. In summer, bears solitary, pendent, tubular scarlet flowers, 2–2.5cm (¾–1in) long. ♂ prostrate, ↔ to 30cm (12in) or more. S. Chile. ☼ (min. 5°C/41°F)

*S. scandens* see *S. repens*.

## SARRACENIA

Pitcher plant

SARRACENIACEAE

Genus of 8 species of evergreen or deciduous, carnivorous perennials found in acid and nutrient-deficient bogs from the Canadian Arctic to Florida, USA. Short, stout rhizomes bear sparse, wiry roots and rosettes of phyllodes, some or all of which are modified into nectar-secreting, insect-catching pitchers. The mostly vertical, sometimes horizontal, attractively marked pitchers, 5–90cm (2–36in) long, have lateral wings and hooded lids. Mainly in spring, solitary, nodding or pendent, more or less cup-shaped flowers, with 4 or 5 sepals and 5 petals, are borne above the pitchers. Where temperatures fall below -5°C (23°F), grow in a cold or cool greenhouse or on a sunny window-sill. In warmer areas, grow on a damp, shaded peat terrace.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Under glass, grow in half pots of 3 parts sphagnum moss and 1 part each leaf mould and lime-free coarse sand or grit, in full light with shade from hot sun. In growth, apply a balanced liquid fertilizer monthly. In summer, stand containers in trays of lime-free water. In winter, keep just moist, cool, and well ventilated. Outdoors, grow in humus-rich, moist but sharply drained, acid soil in full sun. Irrigate with lime-free water.

- **PROPAGATION** Sow seed of species at 16–21°C (61–70°F) in spring, after cold stratification for 2 weeks; place the pot in a tray of lime-free water. Prick out seedlings when 3 tiny pitchers appear. Divide in spring.

- **PESTS AND DISEASES** Prone to scale insects, mealybugs, aphids, and tortrix moth caterpillars.

*S. drummondii* see *S. leucophylla*.

*S. flava* ♂♀ (Yellow trumpet). Very variable perennial bearing erect, yellow-green pitchers, 30–90cm (12–36in) long, with round mouths and raised lids, often veined red. Phyllodes that do not produce pitchers are linear, and persist throughout the winter. In spring, bears yellow flowers, to 10cm (4in) across. ♂ 50–100cm (20–39in), ↔ to 1m (3ft). USA (Virginia to Alabama, Florida). \*\*.

'Burgundy' has pitchers plum-coloured outside. 'Maxima' has pitchers 90cm (36in) long, with purple-veined lids and stems.

*S. leucophylla* ♀ syn. *S. drummondii* (White trumpet). Semi-evergreen perennial bearing erect, slender pitchers, 25–100cm (10–39in) long, with narrow wings and erect lids with wavy margins. The lids and tops are typically white, often with light or heavy purple-red netting, gradually merging into green bases. In spring, bears purple flowers, to 7cm (3in) across. ♂ 50–90cm (20–39in), ↔ to 1m (3ft). USA (Missouri to Florida). \*\*.

*S. purpurea* (Huntsman's cup). Very variable perennial bearing horizontal, purple-veined, purple or green pitchers, 5–50cm (2–20in) long, with upcurved

ends, broad wings, and erect, entire, smooth, often glossy, broad lids. Dark purple-red and pink to dark red flowers, occasionally yellow, to 5cm (2in) across, are produced in spring. ♂ 10–15cm (4–6in), ↔ 1m (3ft). Canadian Arctic to USA (New Jersey). \*\*\*.

**subsp. *venosa*** has more inflated, rough, green to purple pitchers, with broader, wavy lids that extend beyond the mouths; flowers are purple or rose-pink; USA (New Jersey to Louisiana), naturalized in Ireland; \*\*.

## SASA

GRAMINEAE/POACEAE

Genus of 40–50 species of small to medium-sized bamboos, with running rhizomes, closely related to *Sasaella*, to which several species of *Sasa* have now been transferred. They are found in damp hollows and woodland in Japan, Korea, and China. The ascending canes are smooth and cylindrical, with persistent, bristly sheaths and a white-waxy bloom beneath the nodes. The large, usually broad, thick, toothed, and tessellated leaves often wither at the margins in winter, giving a variegated effect. Use as ground cover under trees, or as a hedge; sasas tolerate deep shade.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun to deep shade; tolerant of most soils, but avoid dry soils when planting in full sun. To restrict spread, plant in containers and plunge into the soil.
- **PROPAGATION** Divide or cut sections of the youngest rhizomes in spring.



*Sarracenia flava*



*Sasa veitchii*

- **PESTS AND DISEASES** Emergent shoots may be eaten by slugs.

*S. albomarginata* see *S. veitchii*.

*S. humilis* see *Pleioblastus humilis*.

*S. masumuneana* 'Albostrigata', syn.

*Sasaella masumuneana* f. *albostrigata*. Low-growing, moderately spreading bamboo with very slender, green or brown canes, producing a single branch at each node. The narrowly elliptic, mid-green leaves, 10–19cm (4–7in) long, are conspicuously white-striped when young, becoming yellow as they mature in autumn, and fading in winter. ♂ to 1.5m (5ft), ↔ indefinite. \*\*\*.

*S. palmata* f. *nebulosa*. Vigorous bamboo with wide-spreading rhizomes and stout, upward-curved, usually purple-streaked canes that produce a single branch at each node. The broadly elliptic, tapered, smooth, glossy, bright green leaves, 35–40cm (14–16in) long, are paler green beneath, and have yellow midribs. The leaves generally wither at the margins and tips in winter. ♂ to 2m (6ft), ↔ indefinite. Japan. \*\*\*.

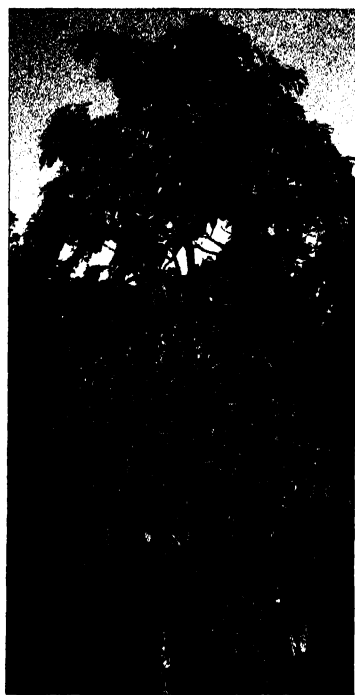
*S. ramosa*, syn. *Arundinaria vagans*, *Sasaella ramosa*. Extremely vigorous, low-growing bamboo with slender, glossy, bright green canes producing a single branch at each node. Elliptic, mid-green leaves, to 20cm (8in) long, have yellow midribs, and wither at the margins and tips in winter. ♂ 0.6–1.5m (2–5ft), ↔ indefinite. Japan. \*\*\*.

*S. ruscifolia* see *Shibataea kumasasa*.

*S. veitchii* ♂ syn. *S. albomarginata*. Moderately spreading bamboo with slender, glaucous, usually purple canes, producing a single branch at each node. The broadly lance-shaped-ovate, ribbed leaves are glossy, dark green, to 25cm (10in) long, and wither at the margins from late autumn. ♂ to 2m (6ft), usually 1–1.2m (3–4ft), ↔ indefinite. Japan. \*\*\*.

▷ *Sasaella masumuneana* f. *albostrigata* see *Sasa masumuneana* 'Albostrigata'

▷ *Sasaella ramosa* see *Sasa ramosa*

*Sassafras albidum*

## SASSAFRAS

### LAURACEAE

Genus of 3 species of generally dioecious, deciduous trees from woodland and thickets in China, Taiwan, and North America. They are cultivated for their stately habit and glossy, aromatic foliage, which colours attractively in autumn. They have deeply fissured bark, and produce alternate, often 1- to 3-lobed, elliptic, oval, ovate, or obovate leaves. Clustered racemes of small, yellow-green flowers are borne in spring, either before or as the leaves emerge. Where plants of both sexes are grown together, the flowers on female plants are followed by ovoid fruits. Grow as specimen trees in a woodland garden or at woodland margins.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich, preferably acid, deep soil in full sun or partial shade. Cut out suckers as they arise. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Take root cuttings in winter.
- **PESTS AND DISEASES** Trouble free.

**S. albidum** [□] Broadly columnar to upright tree, spreading by suckers. The elliptic to ovate, entire or shallowly to deeply 3-lobed, aromatic, dark green leaves, to 15cm (6in) long, turn yellow to orange or purple in autumn. Tiny yellow flowers are produced in racemes to 5cm (2in) across, in spring, as the leaves emerge. If pollinated, the flowers on female plants are followed by red-stalked, ovoid, dark blue fruit, 1cm (½in) long, ↑25m (80ft), ↔15m (50ft). E. North America. \*\*\*

▷ **Sassafras, Australian** see *Atherosperma moschatum*

▷ **Satin flower** see *Clarkia amoena*, *Lunaria*, *L. annua*

▷ **Satinwood** see *Phebalium squameum*

## SATUREJA

### Savory

#### LABIATAE/LAMIACEAE

Genus of approximately 30 species of annuals, perennials, and subshrubs, widely distributed throughout the N. hemisphere, occurring in dry, sunny sites and often found on cliffs. They are cultivated for their aromatic leaves, which are opposite, linear to lance-shaped, or oblong-obovate to spoon-shaped, and for their cyme-like or spike-like inflorescences; these consist of whorls of stalkless, tubular, 2-lipped flowers, borne in summer, which are attractive to bees and other insects. Suitable for growing in a mixed border or rock garden. *S. hortensis* and *S. montana* are used as culinary herbs.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Protect from excessive winter wet. Cut back old shoots of subshrubs in early spring.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in late winter or early spring; seed of *S. hortensis* may be sown *in situ* in spring or, in mild climates, in autumn. Take greenwood cuttings of subshrubs in summer.
- **PESTS AND DISEASES** Trouble free.

**S. hortensis** (Summer savory). Bushy, aromatic annual with linear to narrowly lance-shaped, fresh green leaves, to 3cm (1¼in) long. In summer, bears crowded or lax, whorl-like spikes of 2–5 white or pink flowers, to 7mm (¼in) long. ↑25cm (10in), ↔30cm (12in). S.E. Europe. \*\*

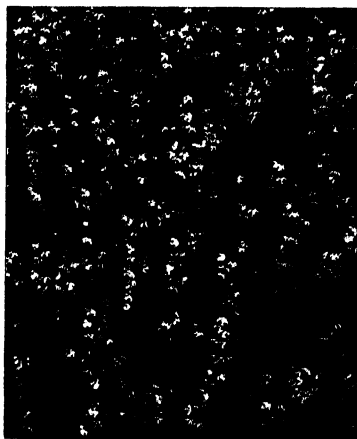
**S. montana** [□] (Winter savory). Dwarf subshrub producing stalkless, linear to inversely lance-shaped, leathery, smooth or sparsely hairy, dark greyish green leaves, 0.5–3cm (¼–1¼in) long. For long periods throughout summer, bears whorls of up to 14 lavender-pink to purple flowers, to 8mm (⅓in) long, in dense, upright spikes. ↑40cm (16in), ↔20cm (8in). S. Europe. \*\*\*.

'Prostrate White' [□] is more compact, with erect white flower spikes; ↑ to 15cm (6in).

**S. repanda** see *S. spicigera*.

**S. reptans** see *S. spicigera*.

**S. spicigera**, syn. *S. repanda*, *S. reptans*. Creeping, aromatic subshrub with procumbent stems and linear to lance-shaped, mid-green leaves, to 2.5cm (1in)

*Satureja montana**Satureja montana* 'Prostrate White'

long. In summer, bears lax cymes of white flowers, 1cm (½in) long, in whorls of up to 16. ↑15cm (6in), ↔30cm (12in). Turkey, Iran, Caucasus. \*\*\*

## SAUROMATUM

### ARACEAE

Genus of 2 species of tuberous perennials from woodland and shady cliffs in the Himalayas and E. and W. Africa, cultivated for their large spathes borne in spring or early summer, followed by single, pedate, long-stalked leaves. In frost-prone areas, grow in a cool greenhouse, or outdoors in summer; elsewhere, grow in a woodland garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Plant tubers 15cm (6in) deep in late winter. Under glass, grow in loam-based potting compost in bright filtered or indirect light. In growth, water moderately; keep completely dry in winter. Tubers will flower on a saucer without soil or water. Outdoors, grow in well-drained, fertile, humus-rich, neutral to slightly acid soil in partial shade.
- **PROPAGATION** Remove offsets when dormant in winter.
- **PESTS AND DISEASES** Trouble free.

*Sauromatum venosum*

**S. guttatum** see *S. venosum*.

**S. venosum** [□] syn. *S. guttatum* (Monarch of the East, Voodoo lily). Tuberous perennial with an oblong-lance-shaped, yellowish or greenish white spathe, 30–70cm (12–28in) long, heavily spotted purple, with a foul-smelling, greenish purple spadix, to 35cm (14in) long, produced in late spring and early summer. The spathe is followed by a single, rounded leaf, to 35cm (14in) long, with many oblong-lance-shaped segments. ↑30–45cm (12–18in), ↔15cm (6in). Himalayas. ☼ (min. 5°C/41°F)

▷ **Sausage tree** see *Kigelia*

▷ **Savin** see *Juniperus sabina*

▷ **Savory** see *Satureja*

Summer see *S. hortensis*

Winter see *S. montana*

▷ **Saw palm** see *Acoelorrhaphe*

Silver see *A. wrightii*

## SAXEGOTHAEA

### PODocarpaceae

Genus of one species of monoecious, evergreen, coniferous tree or shrub from dense forest in Chile and Argentina. It has whorled branches with irregularly set, yew-like foliage, and bears fleshy, spherical green female cones and tiny male cones. Grow in a woodland garden among other conifers or as a free-standing specimen.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly acid soil, in full sun with some midday shade, or in partial shade. Shelter from cold, drying winds.
- **PROPAGATION** Take semi-ripe cuttings in late summer or early autumn.
- **PESTS AND DISEASES** Trouble free.

**S. conspicua** [□] (Prince Albert's yew). Slender, conical, coniferous tree or shrub, bushy in cold areas, with smooth, purple-brown bark and whorled branches bearing green shoots. Linear to linear-lance-shaped, dark green leaves, to 3cm (1¼in) long, each have 2 silver crossbands beneath, and persist for 5 or 6 years. Fleshy, spherical, prickly, glaucous-green female cones, 1.5cm (½in) across, contain about 6 seeds, and develop from terminal clusters of scales in autumn. Male cones are cylindrical, dark purple, and borne at the bases of the shoots. ↑to 20m (70ft), ↔5–8m (15–25ft). S. Chile to Argentina. \*\*\*

*Saxegothaea conspicua*



## SAXIFRAGA

Saxifrage

SAXIFRAGACEAE

Genus of about 440 species of mostly mat- or cushion-forming, evergreen, semi-evergreen, or deciduous perennials, biennials, and a few annuals, mostly from mountains in the N. hemisphere. Those described are evergreen and perennial unless stated. Varying greatly in habit and leaf form, they produce flat, star-shaped, or shallowly cup-shaped flowers, either singly or in cymes, racemes, or panicles. The rosettes of monocarpic saxifrages die after flowering and are replaced by daughter rosettes. Saxifrages are suitable for rock gardens, mixed borders, and woodland gardens.

Saxifrages are classified botanically into sections, subsections, and series. Those of most horticultural value are as follows.

### Section *Gymnopera* (Robertsonia)

Saxifrages with evergreen, rosetted leaves, and flowers in panicles on leafless flower stems. Contains London pride (*S. x urbium*) and similar shade-lovers.

**Section *Irregulares*** (Diptera) Woodland plants with rosettes of basal, usually deciduous leaves (often evergreen under glass); flower panicles, on leafless stems, appear in summer and autumn.

**Section *Ligulatae*** (Euaizonia) The silver or encrusted saxifrages, which have evergreen, monocarpic rosettes with a conspicuous calcareous (lime) encrustation. Cushion- or mat-forming; flower panicles are borne on leafy stems.

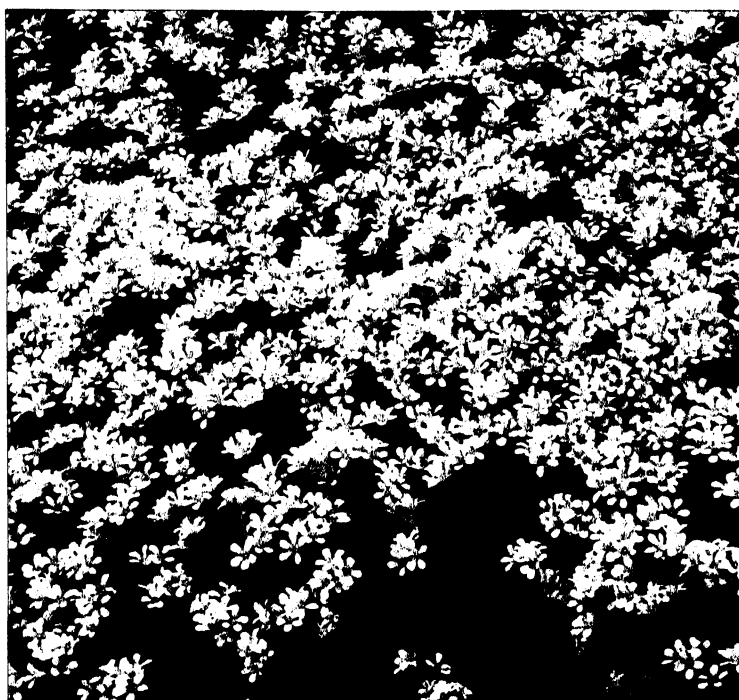
**Section *Porphyron*** (Porophyllum) Cushion- or mat-forming, evergreen perennials with rosettes or leafy shoots, usually with lime-encrusted leaves. The section includes the following horticulturally important subsections.

***Engleria*** saxifrages with rosettes of leaves alternately arranged, the margins translucent. Flower stems are leafy and distinct, with coloured bracts, and flowers have erect sepals largely hiding the pink, purple, white, or yellow petals, which have basal fringes of hairs; they are borne singly or in small cymes or racemes. ***Kabschia*** saxifrages with leafy shoots, and alternate leaves with translucent margins. The leafy flowering stems are short or distinct (with up to 15 flowers), and bear white, pink, purple, or yellow flowers, singly or in small cymes or racemes. ***Oppositifoliae*** saxifrages with opposite leaves, usually without translucent margins. Purple, pink, or white flowers are borne in short cymes of up to 3. Flowering stems are short and leafy or absent.

### Section *Saxifraga* (Dactyloides)

Perennial, rarely annual or biennial, usually evergreen saxifrages, sometimes summer-dormant; they produce bulbils. Of varied habit, their often leafy shoots form cushions or mats, with soft, lobed or scalloped leaves, lacking chalk glands. Bears cymes of white, rarely red, pink, or yellow flowers on usually leafy stems. Includes the mossy saxifrages.

**Section *Xanthizoon*** are mat- or cushion-forming, evergreen perennials with fleshy, narrow, stalkless leaves, with or without functional chalk glands. Yellow or orange flowers are borne in loose cymes on leafy stems.

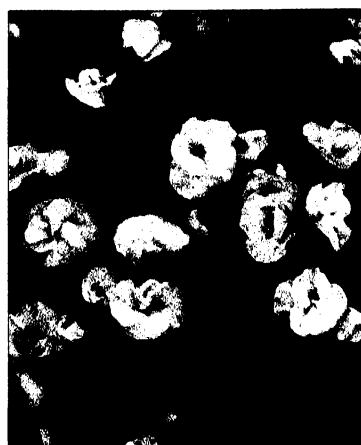


*Saxifraga x apiculata*

- **HARDINESS** Fully hardy; *S. stolonifera* and its cultivars are frost hardy.
- **CULTIVATION** Requirements fall broadly into 4 groups.

1. Grow in moist but well-drained, humus-rich soil in deep or partial shade. Suitable for a border or rock garden.
2. Grow in humus-rich, moist but very sharply drained, neutral to alkaline soil in light shade. Suitable for a rock crevice, scree bed, or alpine house.
3. Grow in moderately fertile, very well-drained, neutral to alkaline soil; keep roots moist. Tolerant of full sun in cool areas, but protect from hot sun in warm areas to prevent leaf scorch. Suitable for a rock garden or trough.
4. Grow in moderately fertile, very sharply drained, alkaline soil or scree in full sun. Suitable for a rock garden, trough, alpine house, or tufa. Some are intolerant of winter wet. In an alpine house, grow in shallow pans in 2 parts loam-based compost (J1 No.1) and 1 part limestone chippings.

- **PROPAGATION** Sow seed in autumn in containers in an open frame. Divide herbaceous perennials in spring. Detach individual rosettes and root as cuttings in late spring or early summer.



*Saxifraga x boydii* 'Hindhead Seedling'

- **PESTS AND DISEASES** Aphids, slugs, vine weevil grubs, and red spider mites may be a problem.

***S. aizoides*** (Yellow mountain saxifrage). Mat-forming Xanthizoon saxifrage with branching stems bearing tight rosettes of linear to oblong, fleshy, glossy, mid-to dark green leaves, 0.4–2cm (1/8–1/2in) long, with 2 short teeth near the tips, and bristly margins. In summer and early autumn, erect, hairy stems bear star-shaped, red-spotted, deep orange flowers, 8mm (1/8in) across, in few-flowered cymes. Cultivation group 2. 15cm (6in), 20cm (8in). Arctic, alpine areas of Europe, Asia, North America. \*\*\*

***S. aizoon*** see *S. paniculata*.

***S. x anglica*** (*S. aretioides* x *S. lilacina* x *S. media*). Dense, mat- or rosette-forming Kabschia saxifrage with linear-oblong to spoon-shaped, dark green or grey-green to silver, encrusted leaves, 0.3–1.5cm (1/8–1/2in) long. Cup-shaped, pink to pink-purple flowers, to 2cm (1/2in) across, are borne singly or in 2- or 3-flowered cymes in early and mid-spring. Cultivation group 3 or 4. 2–6cm (3/4–2 1/2in), 5–30cm (2–12in). Garden origin. \*\*\*.

**'Cranbourne'** ♀ has linear, grey-green leaves and, in early summer, bears solitary, almost stemless, deep rose-pink flowers; 2.5cm (1in), 20cm (8in). **'Myra'**, syn. *S. 'Myra'*, is very compact and slow-growing, with narrowly lance-shaped leaves, to 1cm (1/2in) long. Bears deep red-purple flowers, 1cm (1/2in) across, in early spring; 5cm (2in), 10cm (4in).

***S. x apiculata*** ♀ (*S. marginata* x *S. sancta*). Cushion-forming Kabschia saxifrage with tight rosettes of linear-lance-shaped, slightly lime-encrusted, deep green leaves, 1cm (1/2in) long. Produces cymes of 4–12 cup-shaped yellow flowers, 8mm (3/8in) across, in early spring. Cultivation group 3. 10cm (4in), 30cm (12in). Garden origin. \*\*\*. **'Gregor Mendel'** ♀ has

glossy, pale green leaves and pale yellow flowers. Good for a rock garden or wall.

***S. aretioides***. Compact Kabschia saxifrage bearing rosettes of pointed, oblong-lance-shaped, blue-green leaves, 5mm (1/4in) long. Produces flat-topped cymes of up to 5 open cup-shaped yellow flowers, 8–10mm (3/8–1/2in) across, in early spring. Cultivation group 3. 8cm (3in), 15cm (6in). N.W. Spain, Pyrenees. \*\*\*.

***S. 'Bob Hawkins'***. Mossy, mat-forming Saxifraga saxifrage with large, soft rosettes of deeply divided, linear, white-variegated, mid-green leaves, to 2cm (3/4in) long. In summer, bears cymes of 5–12 upturned, cup-shaped, greenish white flowers, to 2cm (3/4in) across, on upright stems. Cultivation group 2. 15cm (6in), 30cm (12in). \*\*\*.

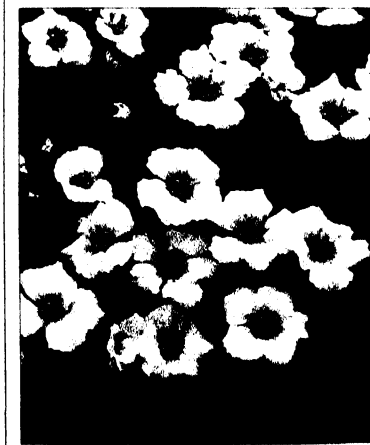
***S. x boydii*** (*S. aretioides* x *S. burseriana*). Dense, rosette-forming Kabschia saxifrage with linear to lance-shaped, often pointed, grey-green to silver-green leaves, 3–10mm (1/8–1/2in) long. In spring, cup-shaped yellow flowers, to 1.5cm (1/2in) across, are borne singly or in 2- or 3-flowered cymes. Cultivation group 3 or 4. 3–8cm (1 1/4–3in), 15cm (6in). Garden origin. \*\*\*.

**'Faldonside'** ♀ is vigorous, with irregular cymes of star-shaped, bright yellow flowers, to 2.5cm (1in) across; 5cm (2in). **'Hindhead Seedling'** ♀ syn. *S. 'Hindhead Seedling'*, has spiny, blue-green leaves, 5–10mm (1/4–1/2in) long, and mostly solitary, yellow-centred, creamy white flowers, to 2.5cm (1in) across; 5cm (2in).

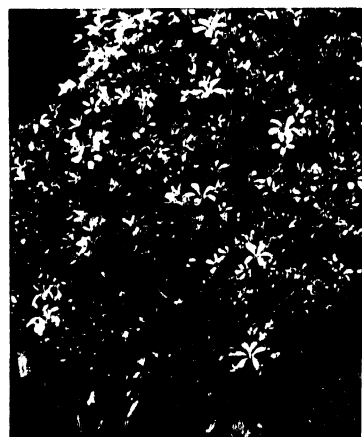
***S. burseriana*** ♀ Kabschia saxifrage with firm rosettes of pointed, narrowly lance-shaped, lime-encrusted, grey-green leaves, to 1cm (1/2in) long. Solitary, cup-shaped white flowers, 1cm (1/2in) across, open on short red stems in early spring. Cultivation group 3 or 4. 1 to 5cm (2in), 15cm (6in). E. Alps. \*\*\*. **'Gloria'** ♀ has larger flowers, 3cm (1 1/4in) across, with yellow centres, on bright red stems.

***S. callosa*** ♀ syn. *S. lingulata*. Rosette-forming Ligulatae saxifrage with linear, lime-encrusted silver leaves, to 8cm (3in) long. In early summer, arching stems bear narrow panicles, 5–20cm (2–8in) long, of 3–7 star-shaped white flowers, 1cm (1/2in) across. Cultivation group 4. 25cm (10in), 20cm (8in). N.E. Spain, S.W. Alps. Apennines to S. Italy, Sicily, Sardinia. \*\*\*.

***S. cochlearis***. Dense, cushion-forming Ligulatae saxifrage with compact rosettes of spoon-shaped, mid-green leaves, 4cm



*Saxifraga burseriana*

*Saxifraga coryledon*

(1½in) long, with lime-encrusted margins. In early summer, bears densely hairy panicles, 6–10cm (2½–4in) long, of 15–25 (occasionally up to 60) rounded, sometimes red-spotted white flowers, 1cm (½in) or more across. Cultivation group 3 or 4. ↑ 20cm (8in), ↔ 15cm (6in). France (Maritime Alps). \*\*\*. 'Minor' is lower-growing, and has smaller rosettes; ↑ 10cm (4in). *S. cortusifolia*. Deciduous or evergreen Irregulares saxifrage with loose rosettes of kidney-shaped to rounded, 5- or 7-lobed, fleshy, glossy, mid-green leaves, 5–8cm (2–3in) long, with scalloped margins. In late summer, produces pyramidal panicles, to 20cm (8in) long, of cup-shaped white flowers, to 3.5cm (1½in) across, spotted yellow or red.

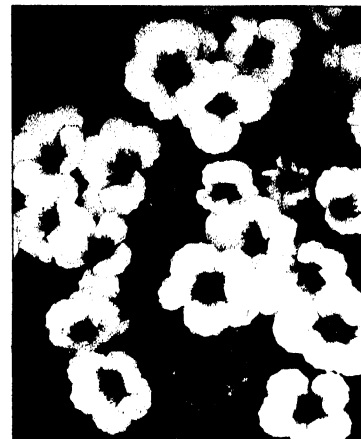
*Saxifraga exarata* subsp. *moschata*  
'Cloth of Gold'*Saxifraga fortunei**Saxifraga frederici-augusti* subsp.  
*grisebachii* 'Wisley Variety'

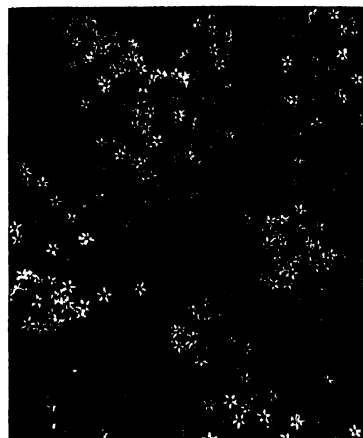
Each flower has 3 or 4 upper petals and 1 or 2 much longer lower petals. Cultivation group 1. ↑ 15cm (6in), ↔ 20cm (8in). Japan. \*\*\*. var. *fortunei* see *S. fortunei*. *S. coryledon* □ Rosette-forming Ligulatae saxifrage with oblong to inversely lance-shaped, pale green leaves, to 8cm (3in) long, with lime-encrusted teeth. In late spring and early summer, bears loose, pyramidal panicles, to 70cm (28in) long, of cup-shaped white flowers, to 1cm (½in) across, often marked red. Cultivation group 3 or 4. ↑ 30–70cm (12–28in), ↔ 20cm (8in). Iceland, Scandinavia, Alps, Pyrenees. \*\*\*. *S. cuneifolia*. Mat-forming Gymnopera saxifrage bearing rosettes of stalked, usually wedge-shaped, occasionally ovate to rounded, leathery, fresh green leaves, to 2.5cm (1in) long, purple beneath. In spring and early summer, produces loose panicles, 5–18cm (2–7in) long, of 3–12 (rarely up to 30) star-shaped white flowers, 7mm (¼in) across, frequently spotted yellow, sometimes red, on red-tinged stems. Cultivation group 1. ↑ 20cm (8in), ↔ 30cm (12in). Europe (Carpathians to Pyrenees). \*\*\*. *S. exarata* subsp. *moschata*, syn. *S. moschata*. Mossy, mat- or cushion-forming Saxifraga saxifrage with rosettes of variably shaped, entire or 3-lobed, pale green leaves, 0.4–2cm (¼–¾in) long. From late spring to early autumn, bears flat-topped cymes of 1–7 star-shaped, cream or yellow, occasionally pink-tinged flowers, to 8mm (⅓in) across. Cultivation group 2. ↑ 10cm (4in), ↔ 30cm (12in). C. and S. Europe. \*\*\*. 'Cloth of Gold' □ has golden foliage; best grown in shade. *S. ferdinandi-coburgi* ♀ Dense, irregular cushion-forming Kabschia saxifrage with rosettes of oblong-lance-shaped, chalk-grey, lime-encrusted leaves, to 8mm (⅓in) long, incurved at the tips. In early spring, produces cymes of 7–12 open cup-shaped, rich yellow flowers, 1cm (½in) across, on red-tinged stems. Cultivation group 3. ↑ 10cm (4in), ↔ 15cm (6in). Macedonia, N. Greece, E. Bulgaria. \*\*\*. *S. fortunei* □ syn. *S. cortusifolia* var. *fortunei*. Deciduous or semi-evergreen, clump-forming Irregulares saxifrage with kidney-shaped to rounded, 7-lobed, mid-green leaves, 6–10cm (2½–4in) across, often red-purple beneath or purple-tinged with age; they have deeply heart-shaped bases and scalloped

margins. In late summer or autumn, bears loose, pendent, red-stemmed panicles, to 50cm (20in) long, of white flowers, 1cm (½in) across, with 3 upper petals and 1 or 2 longer lower petals. Cultivation group 1. ↑ 30cm (12in). Japan. \*\*\*. 'Rubrifolia' is compact, with strongly red-suffused leaves and deep red stems; ↑ 20cm (8in). *S. frederici-augusti*. Cushion-forming Engleria saxifrage with flat rosettes of obovate to spoon-shaped, grey-green, usually lime-encrusted leaves, 1–3.5cm (½–1½in) long. The red stems, which bear several leaves, and flower-stalks are partially covered in long, bright cherry-red to dark purple, glandular hairs. In late spring, produces slender racemes, 3–10cm (1¼–4in) long, of 15–25 cup-shaped, purplish pink flowers, 6mm (¼in) across. Cultivation group 4. ↑ 7–20cm (3–8in), ↔ 15cm (6in). Macedonia, Albania, Greece, Bulgaria. \*\*\*. subsp. *grisebachii* 'Wisley Variety' □ ♀ has spoon-shaped, silver-grey leaves, arching stems clothed in green-tipped, red-purple bracts, and red-purple flowers; ↑ 10cm (4in). *S. x geum* □ (*S. hirsuta* x *S. umbrosa*). Mat-forming Gymnopera saxifrage with rosettes of long-stalked, sparsely hairy, spoon-shaped, scalloped, mid-green leaves, to 8cm (3in) long. In summer, bears loose panicles, 6–20cm (2½–8in) long, of 2–12 star-shaped white flowers, 7–8mm (¼–⅓in) across, spotted with red. Cultivation group 1. ↑ 20cm (8in). Pyrenees. \*\*\*. *S. granulata* □ (Fair maids of France, Meadow saxifrage). Clump-forming, summer-dormant Saxifraga saxifrage with stem and root bulbils, and loose rosettes of kidney-shaped, toothed or scalloped, pale to mid-green leaves, to 3cm (1¼in) long. In late spring, bears panicles, 8–20cm (3–8in) long, of 10–20 rounded white flowers, to 1.5cm (½in) across, on sticky, erect stems. May be naturalized in grass. Cultivation group 2; tolerates full sun in moist soil. ↑ 20–35cm (8–14in), ↔ 30cm (12in). Europe (mostly W.), N. Africa. \*\*\*. 'Plena' has double flowers. *S. 'Hindhead Seedling'* see *S. x boydii* 'Hindhead Seedling'. *S. x irvingii* 'Jenkinsiae' □ ♀ syn. *S. x jenkinsiae*. Dense, mound-forming, slow-growing Kabschia saxifrage with tight rosettes of wedge-shaped, lime-encrusted, grey-green leaves, 7mm (¼in) long. In early spring, bears abundant solitary, open cup-shaped, dark-centred,

*Saxifraga x geum**Saxifraga granulata*


pale pink flowers, to 2cm (¾in) across, on short red stems. Cultivation group 3. ↑ 5cm (2in), ↔ 20cm (8in). \*\*\*. *S. x jenkinsiae* see *S. x irvingii* 'Jenkinsiae'. *S. juniperifolia* subsp. *sancta* see *S. sancta*. *S. 'Kathleen Pinsent'* □ ♀ Rosette-forming Ligulatae saxifrage with narrowly spoon-shaped, silvery leaves, 2–7cm (¾–3in) long, recurved at the tips. In late spring and early summer, bears arching panicles, to 20cm (8in) long, of open cup-shaped, rose-pink flowers, to 2cm (¾in) across. Cultivation group 3 or 4. ↑ 20cm (8in). \*\*\*. *S. lingulata* see *S. callosa*. *S. longifolia* □ (Pyrenean saxifrage). Ligulatae saxifrage with a single rosette of linear, lime-encrusted silver leaves, 6–11cm (2½–4½in) long, silver-grey beneath. After 3 or 4 years, produces a huge pyramidal panicle, to 70cm (28in) long, of up to 80 rounded, 5-petaled, open cup-shaped white flowers, 1cm (½in) across, in summer. Cultivation group 4. May only be propagated from seed. ↑ 60cm (24in), ↔ 20cm (8in). Pyrenees. \*\*\*. 'Tumbling Waters' see *S. 'Tumbling Waters'*. *S. marginata*. Vigorous, cushion- to mat-forming Kabschia saxifrage with rosettes of narrowly elliptic to obovate, lime-encrusted, silver-grey leaves, to 1.5cm (½in) long. Compact panicles, 1–5cm (½–2in) long, of 5–9 open cup-shaped, white, sometimes pink-flushed flowers, to 2cm (¾in) across, are borne in early spring. Cultivation group 3. ↑ 8cm (3in), ↔ 30cm (12in). S. Italy, Balkans, Romania. \*\*\*.

*Saxifraga x irvingii* 'Jenkinsiae'

*Saxifraga* 'Kathleen Pinsent'

*S. moschata* see *S. exarata* subsp. *moschata*.

*S. 'Myra'* see *S. x anglica* 'Myra'.

*S. oppositifolia*  (Purple saxifrage). Flat mat-forming Oppositifoliae saxifrage with rosettes of stiff, oblong or elliptic, dark green leaves, to 5mm (1/4in) long, on branching stems. In early summer, bears solitary, almost stemless, cup-shaped, deep red-purple to pale pink or white flowers, to 2cm (3/4in) across. Cultivation group 2.  $\updownarrow$  2.5cm (1in),  $\leftrightarrow$  20cm (8in) or more. Arctic, mountains of Europe, W. Asia, North America. \*\*\*. 'Ruth Draper' has large, bright rose-pink flowers, to 3cm (1 1/4in) across.

*S. paniculata*, syn. *S. aizoon*. Variable, mat-forming Ligulatae saxifrage bearing rosettes of incurved, broadly linear or narrowly obovate, grey-green leaves, 0.5–6cm (1/4–2 1/2in) long, with lime-encrusted margins. In early summer, numerous cup-shaped flowers open in narrow, flat panicles, 3–20cm (1 1/4–8in) long. The primary branches each have 1–3, rarely 4, rounded, creamy white, rarely pink flowers, to 1cm (1/2in) across. Cultivation group 4.  $\updownarrow$  15cm (6in),  $\leftrightarrow$  25cm (10in). Norway, C. and S.

*Saxifraga longifolia**Saxifraga oppositifolia*


Europe, Caucasus, Canada, Greenland, Iceland. \*\*\*. **var. *baldensis***, syn. 'Baldensis', 'Minutifolia', produces much smaller rosettes and red-tinged flower stems;  $\updownarrow$  10cm (4in),  $\leftrightarrow$  15cm (6in). 'Baldensis' see var. *baldensis*. 'Minutifolia' see var. *baldensis*.

*S. porophylla* **var. *thessalica*** see *S. sempervivum*.

*S. 'Primulaize'* see *S. x primulaize*.

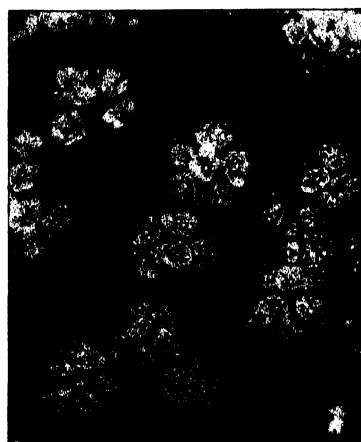
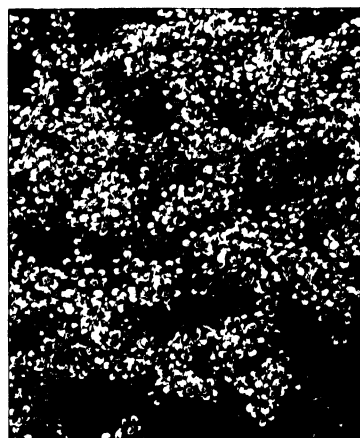
*S. x primulaize* (*S. aizoides* x *S. x urbium* or *S. umbrosa*), syn. *S. 'Primulaize'*. Loose, rosette-forming saxifrage, a hybrid of Section Xanthizoon and Section Gymnopera, resembling a miniature *S. x urbium*. Fleshy, narrowly ovate, glossy, mid-green leaves are 2–6cm (3/4–2 1/2in) long. In summer, bears loose panicles, 15cm (6in) long, of star-shaped, crimson- or salmon-pink flowers, to 1.5cm (1/2in) across. Cultivation group 1.  $\updownarrow$  8cm (3in),  $\leftrightarrow$  15cm (6in). Garden origin. \*\*\*.

*S. primuloides* see *S. umbrosa* var. *primuloides*.

*S. sancta*  syn. *S. juniperifolia* subsp. *sancta*. Cushion-forming Kabschia saxifrage with rosettes of narrowly lance-shaped, lime-encrusted, bright green leaves, to 1cm (1/2in) long. Cymes of 3–7 upward-facing, open cup-shaped, deep yellow flowers, 7–9mm (1/4–3/8in) across, with prominent anthers, are borne in spring. Cultivation group 3.  $\updownarrow$  5cm (2in),  $\leftrightarrow$  20cm (8in). N.E. Greece. \*\*\*.



*S. sarmentosa* 'Tricolor' see *S. stolonifera* 'Tricolor'.

*S. scardica*. Dense, cushion-forming, slow-growing Kabschia saxifrage with firm rosettes of fleshy, oblong, lime-encrusted, blue-green leaves, to 1.5cm

*Saxifraga sancta**Saxifraga* 'Southside Seedling'



(1/2in) long. In spring, bears cymes of 4–13 upward-facing, cup-shaped white flowers, to 1.5cm (1/2in) across, on red-tinged stems. Prefers light dappled shade. Cultivation group 3.  $\updownarrow$  8cm (3in),  $\leftrightarrow$  15cm (6in). Balkans. \*\*\*.

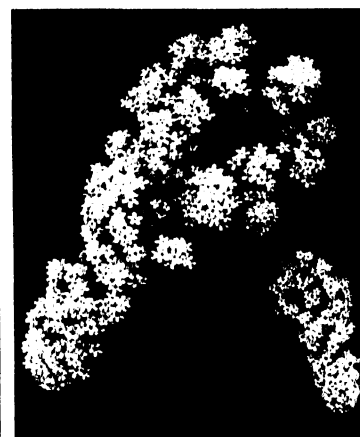
*S. sempervivum*, syn. *S. porophylla* var. *thessalica*. Loose, cushion-forming Engleria saxifrage with rosettes of linear, lime-encrusted, silvery green leaves, to 2cm (3/4in) long. In spring, crozier-like, silver-hairy stems bear racemes, 2–8cm (3/4–3in) long, of 7–20 pendent, open cup-shaped, deep reddish purple flowers, to 6mm (1/4in) across. Cultivation group 4.  $\updownarrow$  10cm (4in),  $\leftrightarrow$  20cm (8in). Balkans, N.W. Turkey. \*\*\*.

*S. 'Southside Seedling'*   Mar-forming Ligulatae saxifrage similar to, and possibly a cultivar of, *S. coryledon*, with rosettes of oblong to spoon-shaped, pale green leaves, to 12cm (5in) long. Arching panicles, 30cm (12in) long, of open cup-shaped white flowers, 1cm (1/2in) across, heavily spotted red, are borne in late spring and early summer. Cultivation group 3 or 4.  $\updownarrow$  30cm (12in),  $\leftrightarrow$  20cm (8in). \*\*\*.


*S. spruneri*. Cushion-forming, slow-growing Kabschia saxifrage. Hairy, oblong or spoon-shaped, lime-encrusted, mid-green leaves, to 7mm (1/4in) long, are in small rosettes. In late spring, bears flat-topped cymes of 6–10 star-shaped, yellowish white flowers, to 1cm (1/2in) across. Cultivation group 3.  $\updownarrow$  8cm (3in),  $\leftrightarrow$  10cm (4in). Balkans. \*\*\*.



*S. stolonifera* 'Magic Carpet' see *S. stolonifera* 'Tricolor'.

*S. stolonifera* 'Tricolor'   syn. *S. sarmentosa* 'Tricolor', *S. stolonifera*

*Saxifraga stolonifera* 'Tricolor'*Saxifraga stribrnyi**Saxifraga* 'Tumbling Waters'

'Magic Carpet' (Mother of thousands). Stolonerous, rosette- or tuft-forming Irregulares saxifrage with kidney-shaped to rounded, deeply cut, mid- to dark green leaves, 4–9cm (1 1/2–3 1/2in) long, strongly patterned in red and white. In summer, bears loose panicles, 20–40cm (8–16in) long, of tiny white flowers, to 8mm (1/4in) across, spotted yellow or red, with 3 or 4 upper petals and 1 or 2 longer lower petals, on slender, upright stems. Cultivation group 1  $\updownarrow$  to 30cm (12in). \*\*.

*S. stribrnyi*  Mound-forming Engleria saxifrage with tight rosettes of pointed, inversely lance-shaped to spoon-shaped, lime-encrusted, blue-green leaves, 1–2.5cm (1/2–1in) long. Bears branched, arching, crozier-like stems with racemes, 2–5cm (3/4–2in) long, of 10–30 open cup-shaped, deep violet-purple flowers, to 1cm (1/2in) across, in late spring and early summer. Cultivation group 4.  $\updownarrow$  10cm (4in),  $\leftrightarrow$  20cm (8in). Balkans. \*\*\*.

*S. 'Tumbling Waters'*   syn. *S. longifolia* 'Tumbling Waters'. Slow-growing Ligulatae perennial with large, clustered rosettes of narrow, linear, lime-encrusted, silvery green leaves, to 15cm (6in) long. Bears dense, arching, conical panicles, 30–70cm (12–28in) long, of small, open cup-shaped white flowers, to 1cm (1/2in) across, in spring, after several years. Cultivation group 4.  $\updownarrow$  45cm (18in),  $\leftrightarrow$  30cm (12in). \*\*\*.

*S. umbrosa* var. *primuloides*, syn. *S. primuloides*. Gymnopera saxifrage with neat, compact rosettes of ovate to spoon-shaped, crinkled, regularly scalloped leaves, to 8cm (3in) long, mid-

green above, reddish green beneath. Bears loose panicles, to 25cm (10in) long, of star-shaped, red-spotted white flowers, 6–8mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) across, in summer. Cultivation group 1.  $\pm$  30cm (12in). Pyrenees. \*\*\*. 'Clarence Elliott' see 'Elliott's Variety'. 'Elliott's Variety', syn. *S. primuloides* 'Clarence Elliott', *S. primuloides* 'Elliott's Variety', *S. umbrosa* var. *primuloides* 'Clarence Elliott', is more compact, with leaves to 6cm ( $\frac{2}{3}$ in) long, and red-stemmed, rose-pink flowers, 8–10mm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) across;  $\pm$  15cm (6in).

*S. x urbium* ♀ (*S. spathularis* x *S. umbrosa*) (London pride). Vigorous, spreading Gymnopera saxifrage with large rosettes of spoon-shaped, toothed, leathery, mid-green leaves, 2–4cm ( $\frac{3}{4}$ –1 $\frac{1}{2}$ in) across. Upright, branching stems bear loose panicles, to 30cm (12in) long, of tiny, star-shaped, pink-flushed white flowers, to 8mm ( $\frac{1}{2}$ in) across, in summer. Good ground cover, even in poor soil. Cultivation group 1.  $\pm$  30cm (12in),  $\leftrightarrow$  indefinite. Garden origin. \*\*\*

↳ **Saxifrage** see *Saxifraga*

**Elephant-eared** see *Bergenia*

**Golden** see *Chrysosplenium*

**Meadow** see *Saxifraga granulata*

**Purple** see *Saxifraga oppositifolia*

**Pyrenean** see *Saxifraga longifolia*

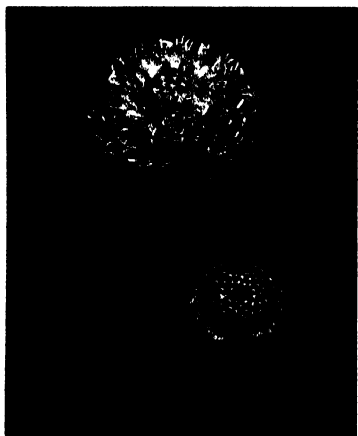
**Yellow mountain** see *Saxifraga aizoides*

## SCABIOSA

Pincushion flower, Scabious

DIPSACACEAE

Genus of about 80 species of annuals, biennials, and perennials from sunny sites, dry meadows, and rocky slopes, mostly in the Mediterranean region, but also in the rest of Europe, the Caucasus, Africa, Asia, and Japan. They have mainly basal leaves, which are simple and entire or lobed, pinnatifid, or pinnatisect, and produce compound or solitary, blue, white, yellow, or pink flowerheads with domed, pincushion-like central florets and larger marginal florets. The smaller perennial species are ideal for a rock garden, while the taller ones are suitable for a sunny herbaceous or mixed border, or a wild garden; the annuals are excellent in borders. Long-flowering species and cultivars are ideal for window-boxes or containers on a patio. Many are also good for cutting. All are attractive to bees and butterflies.



*Scabiosa atropurpurea* 'Blue Cockade'



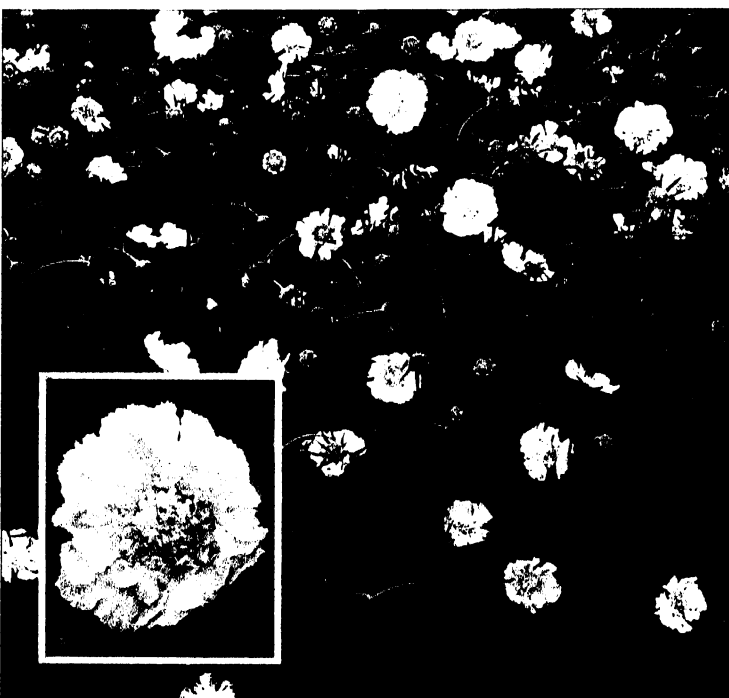
*Scabiosa caucasica* 'Clive Greaves'

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Protect from excessive winter wet. Dead-head to prolong flowering. Divide and replant perennials in fresh or replenished soil every 3 years.
- **PROPAGATION** Sow seed of annuals and biennials at 6–12°C (43–54°F) in early spring, or *in situ* in mid-spring; sow seed of perennials in containers in a cold frame as soon as ripe or in spring. Divide, or take basal cuttings of perennials, in spring.
- **PESTS AND DISEASES** Trouble free.

*S. alpina* see *Cephalaria alpina*.

*S. arvensis* see *Knaulia arvensis*.

*S. atropurpurea* (Pincushion flower, Sweet scabious). Erect, branching, wiry-stemmed biennial or short-lived perennial with mid-green leaves, 3–12cm (1 $\frac{1}{4}$ –5in) long; the basal leaves are oblong-spoon-shaped and entire or coarsely toothed; the stem leaves are pinnatifid, composed of entire or toothed segments. Solitary, fragrant, dark purple to lilac flowerheads, to 5cm (2in) across, are borne in summer.  $\pm$  to



*Scabiosa caucasica* 'Miss Willmott' (inset: flower detail)



*Scabiosa columbaria* 'Butterfly Blue'

90cm (36in),  $\leftrightarrow$  to 23cm (9in). *S. Europe*. \*\*\*. 'Blue Cockade'  $\square$  has lavender-blue to purple-blue flowerheads, sometimes over 5cm (2in) across. 'Double' is a mixture with fully double, white, dark purple, blue, or pink flowerheads, which need support. 'Dwarf Double' is a mixture with fully double flowerheads in white, dark purple, blue, or pink;  $\pm$  to 45cm (18in).

*S. 'Butterfly Blue'* see *S. columbaria* 'Butterfly Blue'.

*S. 'Butterfly Pink'* see *S. columbaria* 'Pink Mist'.

*S. caucasica*. Clump-forming perennial with lance-shaped, entire, grey-green basal leaves, to 15cm (6in) long, with partly winged stalks, and usually unbranched stems bearing pinnatifid leaves. Solitary, pale blue or lavender-blue flowerheads, to 8cm (3in) across, are borne in mid- and late summer.  $\pm$  60cm (24in). Caucasus, N.E. Turkey, N. Iran. \*\*\*. 'Bressingham White'  $\square$  produces lavender-blue flowerheads. 'Floral Queen' has pale blue flowerheads;  $\pm$  to 75cm (30in).

'Miss Willmott'  $\square$  has white flowerheads;  $\pm$  to 90cm (36in).



*Scabiosa lucida*

*S. columbaria* (Small scabious).

Branched, hairy perennial with long-stalked, ovate to lance-shaped, simple or pinnatifid basal leaves, 5–15cm (2–6in) long, and pinnatifid, 2-pinnatifid, or pinnatisect stem leaves, the uppermost very finely divided; all are light, mid-, or greyish green. From summer to early autumn, bears solitary, bluish lilac flowerheads, to 4cm (1 $\frac{1}{2}$ in) across.  $\pm$  50–70cm (20–28in),  $\leftrightarrow$  to 1m (3ft) or more. Europe, W. Asia. \*\*\*. The following cultivars are probably hybrids of *S. columbaria*.

'Butterfly Blue'  $\square$  syn. *S. 'Butterfly Blue'*, has grey-green leaves, and produces lavender-blue flowerheads in mid- and late summer;  $\pm$  40cm (16in). 'Pink Mist', syn. *S. 'Butterfly Pink'*, *S. 'Pink Mist'*, is similar to 'Butterfly Blue', with grey-green leaves and deep pink flowerheads, paler in the centres, borne over long periods in summer;  $\pm$  to 40cm (16in).

*S. gigantea* see *Cephalaria gigantea*.

*S. graminifolia*. Evergreen, clump-forming perennial with tufts of silver-hairy, entire, linear-lance-shaped, mid-green leaves, to 15cm (6in) long. In summer, solitary, spherical, lilac to violet flowerheads, to 4cm (1 $\frac{1}{2}$ in) across, are borne on stiff, slender stems.  $\pm$  25cm (10in),  $\leftrightarrow$  30cm (12in). *S. Europe*. \*\*\*. 'Pinkushion' is mat-forming, with rose-pink flowerheads.

*S. lucida*  $\square$  Clump-forming, occasionally branched perennial producing tufts of ovate-lance-shaped, toothed basal leaves and pinnatifid stem leaves; both are silvery green and to 12cm (5in) long. In summer, solitary, pale lilac flowerheads, to 4cm (1 $\frac{1}{2}$ in)



*Scabiosa stellata* 'Paper Moon'

across, are borne on slender, erect stems.  $\uparrow$  20cm (8in),  $\leftrightarrow$  30cm (12in). C. Europe. \*\*\*

**S. 'Pink Mist'** see *S. columbaria* 'Pink Mist'.

**S. rumelica** see *Knautia macedonica*.

**S. stellata**. Erect, branching, wiry-stemmed, hairy annual with lance-shaped to ovate, pinnatifid, mid-green leaves, 18cm (7in) long. Solitary, spherical, pale blue flowerheads, to 3cm (1 1/4in) across, are borne in summer. They are followed by silvery cream seed heads, to 8cm (3in) across, formed by clustered, cup-shaped, green- or maroon-centred bracts, enlarged after flowering. The seed heads are excellent for dried flower arrangements.  $\uparrow$  to 45cm (18in),  $\leftrightarrow$  23cm (9in). S. Europe. \*\*\*. **'Drum Stick'**  $\varnothing$  has light blue flowerheads, turning bronze;  $\uparrow$  to 30cm (12in). **'Paper Moon'**  $\square$  produces pale, watery blue seed heads. **'Ping Pong'** bears small white seed heads.

**S. succisa** see *Succisa pratensis*.

**S. tatarica** see *Cephalaria gigantea*.

$\blacktriangleright$  **Scabious** see *Scabiosa*

**Devil's bit** see *Succisa pratensis*

**Field** see *Knautia arvensis*

**Giant** see *Cephalaria gigantea*

**Sheep's bit** see *Jasione laevis*

**Shepherd's** see *Jasione laevis*

**Small** see *Scabiosa columbaria*

**Sweet** see *Scabiosa atropurpurea*

**Yellow** see *Cephalaria gigantea*

## SCADOXUS

Blood lily

AMARYLLIDACEAE

Genus of 9 species of bulbous and rhizomatous perennials from rocky cliffs and woodland in tropical regions of Africa and the Arabian Peninsula. They are closely related to *Haemanthus*, but are distinguished by the spiral arrangement of their leaves, and by their rhizomatous bulbs. They are cultivated for their spectacular, crowded, conical to spherical flowerheads of cylindrical red flowers, with 6 spreading or erect tepals, borne on leafless stems from spring to summer, and followed by spherical, yellow, orange, or red berries. In frost-prone areas, grow blood lilies in a temperate or warm greenhouse or conservatory; elsewhere, use in a border, or at the base of a warm, sunny wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Plant bulbs in autumn or winter with the necks at soil level.



*Scadoxus multiflorus* subsp. *katherinae*

Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. Move into partial shade as buds open. When in active growth, water freely and apply a half-strength balanced liquid fertilizer monthly. Dry off completely as leaves fade. Pot on in spring if necessary.

Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or light dappled shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe. Separate offsets in spring.

• **PESTS AND DISEASES** Trouble free.

**S. multiflorus**, syn. *Haemanthus multiflorus*. Bulbous perennial with semi-erect, broad, lance-shaped to ovate, basal leaves, to 30cm (12in) long. In summer, produces spherical heads, 10–15cm (4–6in) across, of up to 200 narrow-lobed red flowers, with conspicuous stamens, followed by small orange berries, 5–10mm (1/4–1/2in) across.  $\uparrow$  to 60cm (24in),  $\leftrightarrow$  15cm (6in). Tropical Africa, South Africa, Yemen.  $\otimes$  (min. 10–15°C/50–59°F). **subsp.**

**katherinae**  $\square$   $\varnothing$  syn. *Haemanthus katherinae*, has wavy-margined leaves;  $\uparrow$  to 1.2m (4ft); E. southern Africa.

**S. puniceus**, syn. *Haemanthus magnificus*, *H. natalensis*, *H. puniceus*. Bulbous perennial with semi-erect, elliptic, wavy-margined, basal leaves, to 30cm (12in) long, that form a "stem", to 50cm (20in) long, of sheathed leaf-stalks. From spring to summer, bears conical heads, 10cm (4in) across, of up to 100 tiny, yellowish green to pink or scarlet flowers, surrounded by conspicuous red bracts; they are followed by yellow berries, 1cm (1/2in) across.  $\uparrow$  50cm (20in),  $\leftrightarrow$  15cm (6in). E. and southern Africa.  $\otimes$  (min. 10–15°C/50–59°F)

## SCAEVOLA

GOODENIACEAE

Genus of about 96 species of mostly short-lived, mainly evergreen perennials, but also scrambling climbers, shrubs and small trees, occurring in habitats ranging from coastal dunes to damp, subalpine regions in Australia and Polynesia. They have alternate, rarely opposite, rounded to linear, entire or toothed leaves, and produce solitary or few-flowered cymes or racemes of distinctive, fan-shaped flowers. In frost-prone areas, grow in a cool greenhouse or conservatory, or grow outdoors in containers or hanging baskets during summer. In warmer climates, grow in a border.

• **HARDINESS** Frost tender, but may tolerate falls in temperature to around -3°C (27°F), or perhaps lower, if soil is very sharply drained.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright indirect light. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Keep just moist in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or light dappled shade.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root softwood cuttings in late spring or summer, with bottom heat.

• **PESTS AND DISEASES** Trouble free.



*Scaevola aemula*

**S. aemula**  $\square$  (Fairy fan-flower). Variable, tufted, evergreen perennial with spoon-shaped, toothed basal leaves, to 9cm (3 1/2in) long, and smaller stem leaves, borne on erect or sometimes procumbent stems, with yellow or brown hairs. Leafy racemes of purple-blue or blue flowers, to 2.5cm (1in) across, are borne during summer.  $\uparrow$  to 50cm (20in). S. and E. Australia.  $\otimes$  (min. 5°C/41°F). **'Blue Wonder'**, syn. *S. 'Blue Wonder'*, is shrubby, with vigorous, trailing stems and inversely lance-shaped leaves, 1cm (1/2in) long. Lilac-blue flowers, 1cm (1/2in) across, are borne almost continuously and in great profusion from spring to autumn;  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 1.5m (5ft).

**S. 'Blue Wonder'** see *S. aemula* 'Blue Wonder'.

**S. 'Mauve Clusters'**. Vigorous, shrubby, evergreen perennial with a trailing habit and inversely lance-shaped leaves, 1cm (1/2in) long. Leafy racemes of lilac-mauve flowers, 1cm (1/2in) across, are borne freely for much of the year, but particularly in summer.  $\uparrow$  10–15cm (4–6in),  $\leftrightarrow$  to 1.5m (5ft). Australia.  $\otimes$  (min. 5°C/41°F)

$\blacktriangleright$  **Scarlet runner** see *Kennedia prostrata*

## SCHEFFLERA

syn. BRASSAIA  
ARALIACEAE

Genus of at least 900 species of mostly evergreen shrubs, trees, and climbers (some epiphytic when juvenile) from warm-temperate and tropical areas of S.E. Asia to the Pacific islands and Central and South America. They are grown mainly for their spiralled, fine, long-stalked, usually rounded, fully divided leaves, each with 3–30 stalked leaflets. In summer, autumn, or winter, mature trees bear compound umbels, panicles, racemes, or spikes of usually tiny flowers with 4 or 5 yellow-green to greenish red petals. The flowers are followed by mostly spherical or ovoid, black or purple fruits. In frost-prone areas, grow in a warm greenhouse or as houseplants. In warmer areas, grow at the back of a shrub border or as an informal hedge or windbreak.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered or indirect light. In growth, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Pot on in spring.



*Schefflera actinophylla*

Outdoors, grow in fertile, humus-rich, moist but well-drained soil in partial to deep shade. Shelter from cold, drying winds. Pruning group 1; clip hedges in late summer.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Air layer in spring.

• **PESTS AND DISEASES** Scale insects, thrips, and mealybugs may be a problem under glass.

**S. actinophylla**  $\square$   $\varnothing$   $\square$  syn. *Brassaia actinophylla* (Australian ivy palm, Octopus tree, Queensland umbrella tree). Erect, large shrub or small tree with stiff, thick, sparsely branched stems. Large leaves, 10–30cm (4–12in) long, divided into 7–16 ovate-oblong, leathery, glossy, deep bright green leaflets, to 30cm (12in) long, are borne in terminal rosettes on the branches. Leaves of juvenile plants have fewer, smaller leaflets than adult plants. Bears upright, terminal, compound panicles, to 80cm (32in) long, of tiny, brownish pink to red flowers in summer, followed by spherical black fruit. Often grown as juvenile plants.  $\uparrow$  to 12m (40ft),  $\leftrightarrow$  to 6m (20ft). N. and N.E. Australia, S. and S.E. New Guinea.  $\otimes$  (min. 13°C/55°F). **S. elegantissima**  $\square$   $\varnothing$   $\square$  syn. *Aralia elegantissima*, *Dizygotheca elegantissima* (False aralia). Erect, sparsely branched, large shrub or small tree with leaves, 8–40cm (3–16in) long, composed of 7–11 linear, deeply toothed leaflets, 15–23cm (6–9in) long; when young, they are glossy, dark green above, dark brown-green beneath, with white



*Schefflera elegantissima*

## SCHEFFLERA

midribs; adult plants have broader, stiffer, less glossy leaflets. In autumn and winter, bears yellowish green flowers in terminal umbels, to 30cm (12in) long, followed by spherical black fruit.

‡ 8–15m (25–50ft), ↔ 2–3m (6–10ft). New Caledonia. ☀ (min. 13–15°C/55–59°F)

***S. heptaphylla*** ☐ syn. *S. octophylla* (Fukanoki, Ivy tree). Dense, spreading, evergreen or semi-evergreen tree with loose rosettes of leaves, to 13cm (5in) long, each composed of 6–8 elliptic to oblong-elliptic, glossy, deep green leaflets, 10–20cm (4–8in) long, often white beneath. From autumn to early winter, produces yellowish green flowers in terminal panicles, to 30cm (12in) long, followed by spherical, blue-black fruit. ‡ 12–25m (40–80ft), ↔ 5–10m (15–30ft). E. Asia, Philippines. ☀ (min. 13–15°C/55–59°F)

***S. octophylla*** see *S. heptaphylla*.

## SCHIMA

THEACEAE

Genus of one very variable species of evergreen tree or shrub extensively distributed in forest from S.W. China and the E. Himalayas to S.E. Asia. It is grown for the attractive spiral arrangement of its simple, glossy leaves, and for its fragrant, camellia-like flowers, usually solitary, sometimes in raceme-like inflorescences. In frost-prone areas, grow in a cool greenhouse; elsewhere, use as a specimen tree in a woodland garden.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in bright filtered light or indirect light; provide moderate humidity. During the growing season, water freely and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in humus-rich, leafy, moist but well-drained, neutral to acid soil in full sun with some midday shade, or in partial shade. Shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed at 6–12°C (43–54°F) in autumn. Root semi-ripe cuttings with bottom heat in late summer.

• **PESTS AND DISEASES** Trouble free.

***S. argentea*** see *S. wallichii*.

***S. khasiana*** see *S. wallichii*.

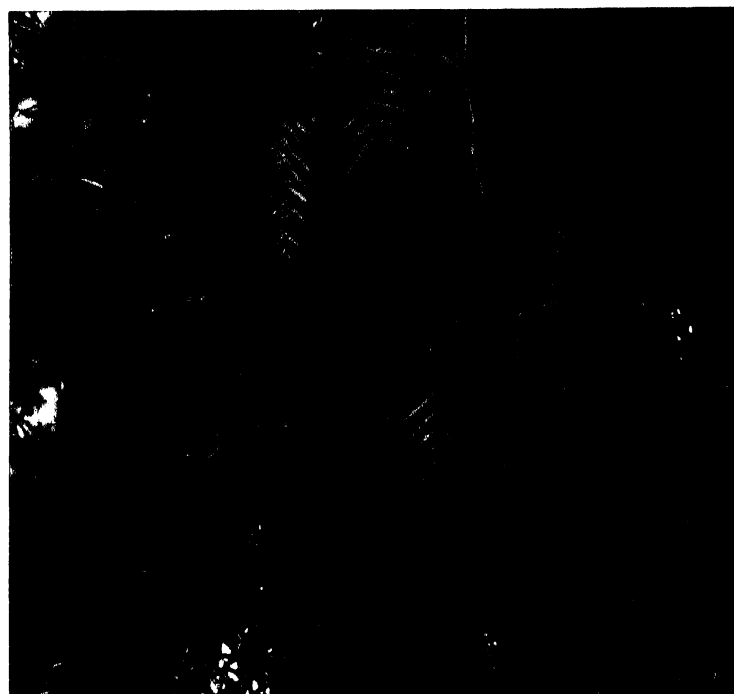
***S. wallichii*** ☐ syn. *S. argentea*, *S. khasiana*. Broadly conical tree or shrub. The oblong, lance-shaped, ovate, or obovate, tapered leaves are entire, shallowly scalloped, or toothed, 7–24cm (3–10in) long, papery or leathery in texture, and glossy, dark green, with red veins, often reddish beneath. From late summer to autumn, red-ringed buds open to solitary, cup-shaped, fragrant white flowers, to 7cm (3in) across, with 5 or 6 rounded petals. ‡ 10m (30ft), ↔ 6m (20ft). Himalayas to S.E. Asia. \*

## SCHINUS

ANACARDIACEAE

Genus of about 30 species of usually dioecious, evergreen shrubs and trees occurring in woodland from Mexico to Uruguay. They are grown mainly for their alternate leaves, which may be simple or pinnate, entire or toothed.

Tiny, 4- or 5-petalled flowers are borne



*Schinus molle*

in terminal or axillary panicles. When plants of both sexes are grown together, the flowers are followed on female plants by small, red to purple fruits (drupes). In frost-prone areas, grow in a temperate greenhouse or conservatory; elsewhere, use smaller species in a shrub border and larger ones as specimen trees.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. When in active growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun, or with some midday shade. Pruning group 1.

• **PROPAGATION** Sow seed at 19–21°C (66–70°F) in spring. Root semi-ripe cuttings with bottom heat during late summer. Air layer in spring.

• **PESTS AND DISEASES** Scale insects and red spider mites may be troublesome under glass.

***S. molle*** ☐☐ (Pepper tree, Peruvian mastic tree). Usually broad-headed tree with slender, pendent branches. The arching or semi-pendent, pinnate leaves, 10–30cm (4–12in) long, are composed of 19–41 narrow, lance-shaped, toothed, glossy, mid- to deep green leaflets. Pendent panicles, 8–20cm (3–8in) long, of tiny, whitish yellow flowers are borne from late winter to summer, followed by rose-pink fruit. ‡ 10–25m (30–80ft), ↔ 3–5m (10–15ft). Mexico, Brazil, Bolivia, Chile, N. Argentina, Paraguay, Uruguay. ☀ (min. 10°C/50°F)

***S. terebinthifolius*** ☐ (Brazilian pepper tree, Christmas berry tree). Moderately bushy, large shrub or small tree with erect to spreading stems bearing pinnate leaves, 10–17cm (4–7in) long, with winged midribs and 3–13 (normally 7) oblong, deep green leaflets, which are paler beneath. From summer to autumn, produces panicles, to 15cm (6in) long, of tiny white flowers, followed by red

fruit. Contact with the seeds may irritate skin and cause respiratory problems.

‡ 5–7m (15–22ft), ↔ 3–5m (10–15ft).

Venezuela to Argentina, S. Brazil.

☀ (min. 7°C/45°F)

## SCHISANDRA

SCHISANDRACEAE

Genus of about 25 species of twining, woody, monoecious or dioecious, deciduous or evergreen climbers found in woodland in E. Asia, with one species from S.E. USA. They are grown for their cup-shaped, red, pink, yellow, or white flowers, borne singly or in clusters or short spikes in the leaf axils, and for their spikes of spherical, brightly coloured fruits. Leaves are alternate, entire or toothed, and usually lance-shaped or ovate to elliptic. Both male and female plants of dioecious species must be grown to obtain fruit. Grow in woodland, or train on a wall or pergola.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Tie in shoots of young plants until established. Pruning group 12, in early spring.



*Schisandra rubriflora*

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Take greenwood cuttings in early or mid-summer; root semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***S. chinensis***. Twining, woody, deciduous climber with red shoots and producing elliptic to obovate, minutely toothed, glossy, dark green leaves, to 14cm (5½in) long. From late spring to summer, bears small clusters of cream to pale pink flowers, to 2cm (¾in) across; these are followed, on female plants, by pendent spikes, to 15cm (6in) long, of fleshy, red or pink fruit. ‡ 10m (30ft). E. Asia. \*\*\*

***S. henryi***. Twining, woody, deciduous climber with angled shoots, winged when young, and oval, finely toothed, leathery, glossy, mid-green leaves, to 10cm (4in) long. In spring, bears small clusters of white flowers, 1cm (½in) across; these are followed, on female plants, by pendent spikes, to 7cm (3in) long, of fleshy red fruit. ‡ 3–4m (10–12ft). W. China. \*\*\*

***S. rubriflora*** ☐ Twining, woody, deciduous climber with slender red shoots and lance-shaped to narrowly elliptic or inversely lance-shaped, slightly toothed to entire, dark green leaves, to 12cm (5in) long, yellow in autumn. Produces solitary, dark crimson flowers, to 2.5cm (1in) across, from late spring to summer, followed, on female plants, by pendent spikes, to 15cm (6in) long, of fleshy red fruit. ‡ 10m (30ft). India, W. China, Burma. \*\*\*

## SCHIZACHYRIUM

GRAMINEAE/POACEAE

Genus of about 100 species of deciduous, perennial grasses native to grasslands worldwide. Closely related to *Andropogon*, they are distinguished by their solitary, terminal, obliquely branched racemes of stalked spikelets. Suitable for a herbaceous or mixed border. The flowerheads may be dried.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, sharply drained soil in full sun. Cut down old stems in early winter.

• **PROPAGATION** Sow seed at 13–15°C (55–59°F), or divide, in spring.

• **PESTS AND DISEASES** Trouble free.

***S. scoparium***, syn. *Andropogon scoparius* (Little bluestem). Densely tufted, perennial grass, spreading slowly to form clumps of upright stems with linear, mid-green to grey-green leaves, to 45cm (18in) long, that turn purple to orange-red in autumn. From late summer to mid-autumn, bears narrow racemes, to 15cm (6in) long, of wispy, long-awned spikelets. ‡ to 1m (3ft), ↔ 30cm (12in). North America. \*\*\*

## SCHIZANTHUS

Butterfly flower, Poor man's orchid

SOLANACEAE

Genus of 12–15 erect to spreading, bushy, soft-stemmed, downy annuals, and some biennials, from dry, rocky slopes and canyons in Chile. They have alternate, pinnatisect to 3-pinnatisect or deeply lobed leaves. They are cultivated for their terminal cymes of showy, 2-





*Schizanthus pinnatus* 'Hit Parade'

lipped, orchid-like flowers of various colours, which are borne from spring to winter. In cool-temperate regions, grow either in a conservatory or cool greenhouse, as half-hardy annuals in a sheltered annual border, or in containers on a patio or in a courtyard garden. In warmer climates, grow in a border. They provide long-lasting cut flowers.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, or in bright filtered light. In growth, water moderately, and apply a high-potash liquid fertilizer every 2 weeks. Support flowering stems. Excessive heat produces elongated plants. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pinch back young growth to promote bushiness.
- **PROPAGATION** Sow seed at 16°C (61°F) in mid-spring for summer- to autumn-flowering plants. Sow in late summer at 16°C (61°F) for winter-flowering container plants.
- **PESTS AND DISEASES** Aphids may be a problem under glass.

*S. pinnatus* (Poor man's orchid). Erect annual with almost fern-like, lance-shaped to inversely lance-shaped, pinnatisect to 3-pinnatisect, light green leaves, to 12cm (5in) long. From spring to autumn, bears terminal, open cymes of tubular, then flared, 2-lipped, white, yellow, pink, purple, or red flowers, to 8cm (3in) across; they often have yellow throats with violet markings, further streaked and spotted in contrasting colours. ↑ 20–50cm (8–20in), ↔ 23–30cm (9–12in). Chile. ☼ (min. 5°C/41°F). 'Hit Parade' ■ has flowers with clear, contrasting markings; ↑ 23–30cm (9–12in). 'Star Parade' is compact, with a distinctive pyramidal habit; ↑ 20–25cm (8–10in).

*S. x wisetonensis* (*S. grahamii* x *S. pinnatus*). Erect annual with lance-shaped to inversely lance-shaped, pinnatisect to 3-pinnatisect, light green

leaves, to 12cm (5in) long. From spring to summer, bears terminal, open cymes of tubular, then flared, 2-lipped, white, pale blue, pink, or red-brown flowers, to 8cm (3in) across, often flushed yellow on the central lobe of the upper lips. ↑ to 45cm (18in), ↔ 23–30cm (9–12in). Garden origin. ☼ (min. 5°C/41°F)

▷ *Schizocodon* see *Shortia*

## SCHIZOPETALON

BRASSICACEAE/CRUCIFERAE

Genus of about 8 species of erect, slender-stemmed, hairy annuals from rocky slopes and disturbed ground in Chile. They have alternate, wavy-margined, toothed, simple or pinnatifid, linear to ovate leaves. From late spring to early autumn, they bear leafy racemes of star-shaped, white or purple flowers, each with 4 fringed petals. Grow at the edge of a border, in a rock garden or raised bed, or in containers. They are particularly effective grown near a patio or paved area where the evening scent of the blooms may be best appreciated.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed at 19–21°C (66–70°F) in mid-spring.
- **PESTS AND DISEASES** Trouble free.

*S. walkeri*. Upright, slightly branching annual producing deeply pinnatifid, linear to lance-shaped leaves, to 14cm (5½in) long. Terminal racemes of almond-scented, spreading, deeply cut, star-shaped, pure white flowers, to 4cm (1½in) across, are borne from summer to early autumn. ↑ 15–35cm (6–14in), ↔ 20cm (8in). Chile. ★★

## SCHIZOPHRAGMA

HYDRANGEACEAE

Genus of 2 species of woody, deciduous root climbers from woodland and cliffs in China, Korea, and Japan. They bear opposite pairs of simple, long-stalked, entire or toothed, ovate, dark green leaves. Schizophragmas are cultivated for their showy flowerheads, similar to those of "lacecap" hydrangeas, but with large, conspicuous, bract-like, sterile, outer flowers. Best grown against a wall, fence, or large tree, to which the plant will attach itself by aerial roots.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil, in full sun or partial shade. Plant at least 60cm (24in) away from a host plant or support. Tie in to a support and train until established. Pruning group 11, in spring.
- **PROPAGATION** Take greenwood cuttings in early or midsummer; take semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*S. hydrangeoides*. Woody root climber with long-stalked, broadly ovate, sharply toothed, dark green leaves, to 15cm (6in) long. In midsummer, small, slightly fragrant, creamy white flowers are borne in broad, flattened, terminal cymes, to 25cm (10in) across, with conspicuous, ovate, creamy, marginal bracts, to 6cm (2½in) long. ↑ 12m (40ft). Korea, Japan. ★★. 'Roseum' has pink bracts.



*Schizophragma integrifolium*

*S. integrifolium* ■ ♀ Woody root climber with long-stalked, ovate, entire or finely toothed, dark green leaves, to 18cm (7in) long. In midsummer, small, slightly fragrant, creamy white flowers are borne in broad, flattened, terminal cymes, to 30cm (12in) across, with conspicuous, ovate, creamy, marginal bracts, to 9cm (3½in) long. ↑ 12m (40ft). C. and W. China. ★★

*S. viburnoides* see *Pileostegia viburnoides*

## SCHIZOSTYLIS

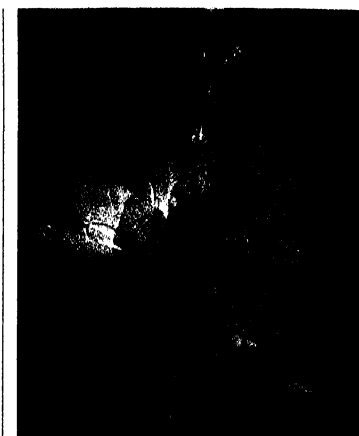
Kaffir lily

IRIDACEAE

Genus of a single species of virtually evergreen, rhizomatous perennial from damp water-meadows and streambanks in southern Africa. Kaffir lilies are cultivated for their showy, gladiolus-like spikes of open cup-shaped flowers, which are produced from late summer to early winter. They are suitable for growing at the front of a herbaceous or mixed border, at the base of a warm, sunny wall, or in a small courtyard garden. *S. coccinea* and its cultivars are also effective grown *en masse* in large



*Schizostylis coccinea* 'Major'



*Schizostylis coccinea* 'Sunrise'

containers in a cool greenhouse, where they will flower for long periods during the winter months. Excellent for cut flowers.

- **HARDINESS** Hardy to -10°C (14°F), although flower spikes will be damaged by frost.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. Keep the roots moist. Shelter from cold, drying winds. Provide an organic mulch in winter.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Divide species and cultivars in spring.
- **PESTS AND DISEASES** Trouble free.

*S. coccinea*. Vigorous, clump-forming, rhizomatous perennial with erect, keeled, narrow, sword-shaped leaves, to 40cm (16in) long, with distinct midribs. Spikes of 4–14 open cup-shaped scarlet flowers, 2cm (¾in) across, are produced in autumn. ↑ to 60cm (24in), ↔ 30cm (12in). South Africa, Lesotho, Swaziland. ★★. *var. alba* bears white flowers. 'Grandiflora' see 'Major'. 'Jennifer' ♀ is robust, bearing large, mid-pink flowers, 5–6cm (2–2½in) across, in late summer. 'Major' ■ ♀ syn. 'Grandiflora', is robust, producing large red flowers, 5–6cm (2–2½in) across, on stiff stems in late summer. 'Sunrise' ■ ♀ syn. 'Sunset', produces large, salmon-pink flowers, 5–6cm (2–2½in) across, in autumn. 'Sunset' see 'Sunrise'. 'Viscountess Byng' ■ bears pale pink flowers, 3cm (1¼in) across, with narrow petals, in late autumn; its flowers are particularly vulnerable to damage by frost.



*Schizostylis coccinea* 'Viscountess Byng'

## SCHLUMBERGERA

Christmas cactus

CACTACEAE

Genus of about 6 species of bushy, epiphytic or rock-dwelling, perennial cacti from tropical rainforest in S.E. Brazil, cultivated for their attractive flowers. Erect then pendent, fleshy stems are divided into flattened, oblong or obovate, normally truncate, leaf-like segments, usually with marginal, often prominent notches, almost tooth-like in some species. The areoles often have a few fine bristles; those near the tips of the upper segments bear open trumpet-shaped, narrow-petalled flowers, most in late winter and early spring, others in summer or autumn. Where temperatures fall below 10°C (50°F), grow Christmas cacti as houseplants, or in a temperate or warm greenhouse. In warmer areas, they are suitable for growing in a raised bed in a courtyard garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in epiphytic cactus compost in bright indirect light. Water moderately and maintain moderate humidity. Apply a high-potash liquid fertilizer every 4 weeks when in growth; keep just moist after flowering. Repot every 3 or 4 years in spring. Outdoors, grow in humus-rich, acid to neutral, moist but well-drained soil, with added leaf mould and grit, in light dappled to partial shade. Protect from excessive rain; shelter from strong winds. Buds may drop in dry conditions. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–21°C (66–70°F) in spring, or take cuttings of stem sections in spring or early summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

*S. bridgesii* see *S. x buckleyi*.

*S. 'Bristol Beauty'*. Epiphytic cactus with oblong, bright green stem segments, 2.5cm (1in) long, with 4–6 marginal notches. In late winter and early spring, produces reddish purple flowers, 7cm (3in) long, with silvery white tubes. ↑ to 35cm (14in), ↔ 30cm (12in). ☀ (min. 10°C/50°F)

*S. x buckleyi* ♀ (*S. russelliana* x *S. truncata*) syn. *S. bridgesii* (Christmas cactus). Epiphytic cactus with oblong or obovate, truncate, scalloped, mid-green stem segments, 2–5cm (¾–2in) long. Produces bright red flowers, to 7cm (3in) long, in late winter. ↑ to 35cm



*Schlumbergera* 'Spectabile Coccineum'

(14in), ↔ 1m (3ft). Garden origin. ☀ (min. 10°C/50°F)

*S. 'Gold Charm'* ■ Epiphytic cactus with oblong, mid-green stem segments, 3–5cm (1¼–2in) long, with 6–8 prominent, tooth-like marginal notches. Flowers, 6cm (2½in) long, are yellow in autumn but may turn pinkish if kept below 14°C (57°F). ↑ to 30cm (12in), ↔ 30cm (12in). ☀ (min. 10°C/50°F)

*S. opuntoides*, syn. *Epiphyllanthus obovatus*. Epiphytic or rock-dwelling cactus with thick, obovate to oblong, deep green stem segments, 5–7cm (2–3in) long, often tinged red, bearing white areoles, with minute spines, on both surfaces and margins. Deep pink flowers, 6cm (2½in) long, are borne in spring. Allow houseplants a brief, dry period after flowering. ↑ to 40cm (16in), ↔ 22cm (9in). S.E. Brazil. ☀ (min. 10°C/50°F)

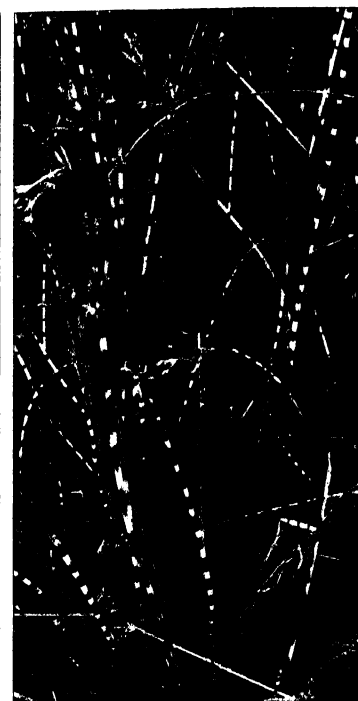
*S. orrsichiana*. Epiphytic cactus with oblong, dark green stem segments, to 5cm (2in) long, with 4–6 prominent, tooth-like marginal notches, with areoles set in the angles. White flowers, to 9cm (3½in) long, purplish pink towards the petal tips, are borne from late summer

to winter. ↑ to 30cm (12in), ↔ to 35cm (14in). S.E. Brazil. ☀ (min. 10°C/50°F)

*S. 'Spectabile Coccineum'* ■ Epiphytic cactus with oblong, dark green stem segments, to 2.5cm (1in) long, with 3–5 tooth-like marginal notches. Bears bright red flowers, to 8cm (3in) long, in late winter and early spring. ↑ to 28cm (11in), ↔ 25cm (10in) or more. ☀ (min. 10°C/50°F)

*S. truncata* ■ syn. *Zygocactus truncatus* (Crab cactus). Epiphytic cactus with oblong, bright green stem segments, 4–6cm (1½–2½in) long, with 4–8 prominent, tooth-like marginal notches. Deep pink, red, orange, or white flowers, to 8cm (3in) long, are borne from late autumn to winter. ↑ to 30cm (12in), ↔ 30cm (12in). S.E. Brazil. ☀ (min. 10°C/50°F)

*S. 'Wintermärchen'*. Epiphytic cactus bearing oblong, glossy, mid-green stem segments, 4cm (1½in) long, with 4–6 tooth-like marginal notches. Delicate pale pink, almost white flowers, 6–7cm (2½–3in) long, are produced in late autumn, and turn pinkish white in winter. ↑ to 35cm (14in), ↔ 30cm (12in). ☀ (min. 10°C/50°F)



*Schoenoplectus lacustris* subsp. *tabernaemontani* 'Zebrinus'

## SCHOENOPLECTUS

CYPERACEAE

Genus, formerly included in *Scirpus*, of 80 species of evergreen, rhizomatous, marginal aquatic perennials and annuals usually found on the banks of lakes and slow-running streams, almost worldwide. Leaves are grass-like and are often borne under water. Insignificant flowers are borne in inflorescences on cylindrical or 3-angled stems, in summer. The plant described is grown for its striped stems, and is suitable for cultivation in a bog garden, or as a marginal aquatic plant in still or slow-moving water.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in fertile, wet soil, or in water up to 30cm (12in) deep, in full sun. In small pools, restrict growth by cutting back the rhizomes annually. See also pp.52–53.

• **PROPAGATION** Root sections of rhizome from mid-spring to mid-summer.

• **PESTS AND DISEASES** Trouble free.

*S. lacustris* subsp. *tabernaemontani* 'Zebrinus' ■ (Club-rush). Rhizomatous perennial with virtually leafless, grey-green stems banded creamy white, arising at intervals along the rhizome. Bears branched clusters, 5–10mm (¼–½in) across, of brown spikelets from early to late summer. Cut reverting stems back to the rhizomes. ↑ 1m (3ft), ↔ 60cm (24in) or more. \*\*\*

## SCHOMBURGKIA

ORCHIDACEAE

Genus, closely related to *Laelia*, of about 12–15 species of large, evergreen, epiphytic or lithophytic orchids from rainforest and moist cliffs or rocks, at low to medium altitudes in the West Indies and tropical America. They have stout, elongated, spindle-shaped to cylindrical, sometimes hollow pseudo-



*Schlumbergera* 'Gold Charm'



*Schlumbergera truncata*

bulbs, each with 1–3 leathery, semi-rigid, ovate to oblong leaves. Racemes or panicles of showy flowers are produced from the tips of the pseudobulbs, and may be extremely long.

• **HARDINESS** Frost tender.

• **CULTIVATION** Intermediate-growing orchids. Grow in epiphytic orchid compost in containers or slatted baskets. In the growing season, water freely and apply a half-strength balanced liquid fertilizer every 4 weeks; provide high humidity and bright indirect light. Water sparingly and provide full light in winter. See also p.46.

• **PROPAGATION** Divide when the plant "overflows" the sides of the container. Remove backbulbs and pot them up separately.

• **PESTS AND DISEASES** Scale insects, red spider mites, aphids, whiteflies, and mealybugs may be troublesome.

*S. tibicinis*, syn. *Myrmecophila tibicinis*. Epiphytic orchid with stoutly cylindrical, hollow pseudobulbs and 2 or 3 elliptic to oblong leaves, 45cm (18in) long. Variable, fragrant, brown to rich purple flowers, 6cm (2½in) across, with yellow, white, and purple lips, are produced in extended racemes, 1.5m (5ft) or more long, in summer. ↕→ 60cm (24in). Mexico to Panama. ☼ (min. 13°C/55°F; max. 30°C/86°F)

## SCHOTIA

CAESALPINIACEAE/LEGUMINOSAE

Genus of 4 or 5 species of deciduous or semi-evergreen shrubs and trees from open deciduous woodland, dry woodland, and scrub in southern Africa. They are cultivated for their pinnate leaves, and for their 5-petalled, red or pink flowers, which are borne in summer in axillary or terminal panicles, often on bare stems and sometimes directly from older wood. Where temperatures regularly fall below 0°C (32°F), grow in a cool or temperate greenhouse. In milder climates, use in a shrub border or as specimen plants.

• **HARDINESS** Half hardy to frost tender, but may withstand temperatures down to -5°C (23°F) if the wood has been well ripened in summer.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun with shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Whiteflies and red spider mites may be troublesome under glass.

*S. brachypetala* ♀ (African walnut, Tree fuchsia, Weeping boerboon). Spreading to arching, semi-evergreen, large shrub or small tree with red-brown bark and grey twigs. The pinnate leaves, to 18cm (7in) long, each have 8–15 oblong or oval leaflets, which emerge rose-red and mature through copper to bright green. From summer to late autumn, bears fragrant flowers in nodding to pendent, usually crowded

panicles, to 13cm (5in) across, on leafless or almost leafless twigs; each flower has 5 minute petals and 4 spreading crimson sepals, to 1cm (½in) long. Bean-like pods, 5–17cm (2–7in) long, contain large seeds that are edible when roasted. ↕ 10–15m (30–50ft), ↕→ 5–10m (15–30ft). Zimbabwe, Mozambique, South Africa (Northern Transvaal, KwaZulu/Natal), Swaziland. ☼ (borderline)

## SCHWANTESIA

AIZOACEAE

Genus of 10 species of dwarf, compact, cushion-forming, perennial succulents from hillsides and lowlands of Namibia and S. South Africa. They have unequal pairs of fleshy, keeled, bluish green leaves, and bear daisy-like, bright yellow flowers, which open during the day, in summer. Where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse; in warmer climates, schwantesias are suitable for cultivation in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun; provide low humidity. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; keep just moist in winter. Outdoors, grow in poor to moderately fertile, humus-rich, sharply drained soil in full sun. Protect from excessive rain in summer and winter. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–21°C (66–70°F) in spring. Divide offsets from spring to early summer.

• **PESTS AND DISEASES** Prone to aphids while flowering.

*S. herrei*. Cushion-forming, succulent perennial with 2 or 3 pairs of 3-angled, keeled, fleshy, pale blue-green leaves, 2.5–3.5cm (1–1½in) long, sometimes with a few terminal teeth. Bright yellow flowers, 4cm (1½in) across, are borne in summer. ↕→ 14cm (5½in). Namibia, South Africa (Northern Cape, Western Cape). ☼ (min. 10°C/50°F)

*S. ruedebschii* ♀ Clump-forming, succulent perennial producing slightly angular, very fleshy, white-mottled, greyish green leaves, 3–5cm (1¼–2in) long, the upper surfaces slightly convex, the lower ones more rounded, and the tips widening and bearing 3–7 thick blue teeth, to 4mm (⅛in) long. Bright



*Schwantesia ruedebschii*

pale yellow flowers, to 4cm (1½in) across, are borne in summer. ↕ 10cm (4in), ↕→ 15cm (6in). Namibia, South Africa (Northern Cape, Western Cape). ☼ (min. 10°C/50°F).

## SCIADOPITYS

SCIADOPITYACEAE/TAXODIACEAE

Genus of one species of monoecious, evergreen, coniferous tree from forest in Japan. It has peeling, red-brown bark, and the glossy, linear leaves, sometimes in fused pairs, are borne in whorls at the shoot-tips, like the spokes of an umbrella. Use as a specimen tree.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained, neutral to slightly acid soil, in full sun with some midday shade, or in partial shade. May need several years training to maintain a central leader.

• **PROPAGATION** Sow seed in containers in a cold frame in spring, or take semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*S. verticillata* ♀♂ (Japanese umbrella pine). Conical or columnar-conical tree with red-brown bark, peeling in ribbons, and brown shoots. Linear, grooved, glossy, dark green leaves, 5–12cm (2–5in) long, olive-green beneath, are borne in terminal whorls of 15–25, and persist for 3 or 4 years. Single, ovoid female cones, 5–8cm (2–3in) long, ripen in the second year. Spherical male cones, 3–8mm (⅛–⅜in) across, are borne in clusters. ↕ 10–20m (30–70ft), ↕→ 6–8m (20–25ft). S. Japan. ☼☼☼



*Sciadopitys verticillata* (inset: female cone detail)

## SCILLA

HYACINTHACEAE/LILIACEAE

Genus of about 90 species of bulbous perennials found in a range of habitats including subalpine meadows, rocky slopes, woodland, and sea shores in Europe, southern Africa, and Asia. They are grown for their terminal racemes or corymbs of small, usually blue but also pink, purple, or white, bell-shaped to flat, or star-shaped flowers, borne in spring, summer, and autumn. Most have semi-erect, linear to elliptic, sometimes channelled, basal leaves. Naturalize under trees and shrubs or in grass; small species are suitable for an alpine house.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Plant bulbs 8–10cm (3–4in) deep in late summer or early autumn. Under glass, grow in 2 parts loam-based potting compost (J1 No.2) and 1 part each leaf mould and grit. Provide full light. When in growth, water freely; keep dry during summer dormancy. *S. peruviana* does not have a dormant period. Outdoors, grow in moderately fertile, humus-rich, well-drained soil in full sun or partial shade.

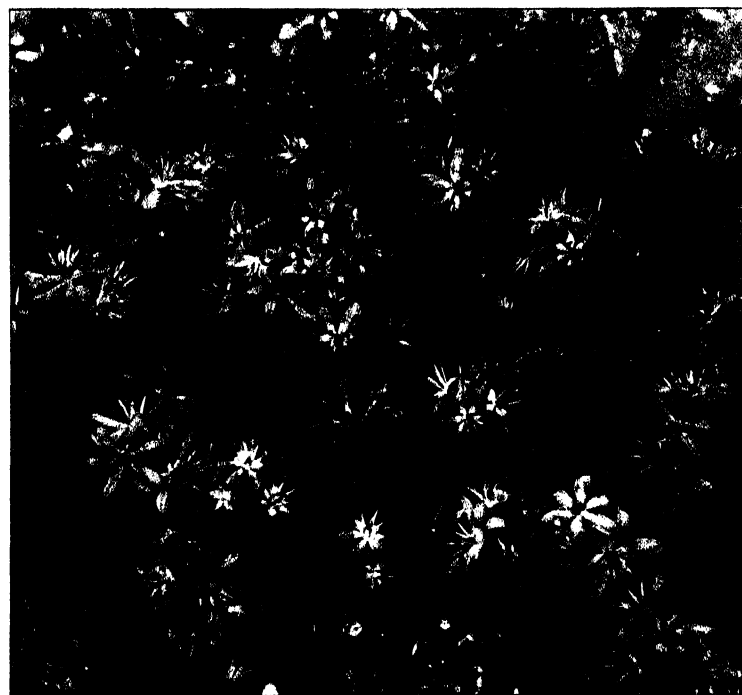
• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide and pot up offsets when dormant.

• **PESTS AND DISEASES** Prone to viruses.

*S. adlamii* see *Ledebouria cooperi*.

*S. amethystina* see *S. liardierei*.

*S. amoena*. Small, bulbous perennial with 3–5 flaccid, linear, basal leaves, 15–22cm (6–9in) long, emerging before the small, compact racemes of 3–6 star-

*Scilla bifolia*

shaped blue flowers, 1.5–2cm (½–¾in) across, in spring. Similar to *S. bithynica* but lacks bracts. Good for naturalizing. ‡ 15–20cm (6–8in), ↔ 5cm (2in). Probably S.E. Europe. \*\*\*

***S. bifolia*** ■ ♀ Small, bulbous perennial with 2 semi-erect, broadly linear, basal leaves, 5–20cm (2–8in) long, borne in early spring, at the same time as slightly one-sided racemes of up to 10 star-shaped, blue to purple-blue flowers, 2.5–4cm (1–1½in) across. Excellent for naturalizing. ‡ 8–15cm (3–6in), ↔ 5cm (2in). C. and S. Europe, Turkey. \*\*\*

***S. bithynica*** ■ Small, bulbous perennial with 3–5 flaccid, linear, basal leaves, to 20cm (8in) long, borne in spring, at the same time as compact, conical racemes of 6–12 star-shaped blue flowers, to 2cm (¾in) across. Excellent for naturalizing. ‡ 10–15cm (4–6in), ↔ 8cm (3in). Bulgaria, Turkey. \*\*\*

***S. campanulata*** see *Hyacinthoides hispanica*.

***S. chinensis*** see *S. scilloides*.

***S. cilicica*** ■ Bulbous perennial, sometimes confused with *S. hobenackeri*, producing 3 or 4 erect, broadly linear, basal leaves, 15–25cm (6–10in) long, in autumn. In spring, bears loose racemes

of 5–15 star-shaped, pale or lavender-blue flowers, 2–3cm (¾–1¼in) across, with reflexed segments. Easily grown in a bulb frame or alpine house. ‡ 15–35cm (6–14in), ↔ 8cm (3in). Turkey. \*\*\*

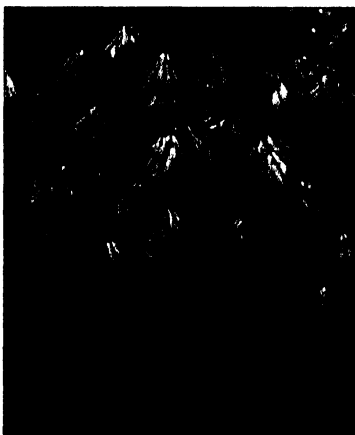
***S. cooperi*** see *Ledebouria cooperi*.

***S. hispanica*** see *Hyacinthoides hispanica*.

***S. hobenackeri*** ■ Bulbous perennial, similar to *S. cilicica*, with 3–5 flaccid, linear, basal leaves, 10–25cm (4–10in) long, produced in spring before loose racemes of 4–12 star-shaped, pale blue flowers, 1.5cm (½in) across, with reflexed segments. Easily grown in partial shade. ‡ 10–20cm (4–8in), ↔ 5cm (2in). Azerbaijan, Iran. \*\*\*

***S. japonica*** see *S. scilloides*.

***S. liliohyacinthus*** ■ Small, clump-forming, bulbous perennial with relatively large, lily-like bulbs, with yellow scales. In late spring, produces a basal cluster of 6–10 erect, inversely lance-shaped, glossy leaves, 15–30cm (6–12in) long, and dense, conical racemes of 5–20 star-shaped, bright lilac-blue to purplish blue, rarely white flowers, 1.5cm (½in) across. Prefers a cool site. ‡ 15–25cm (6–10in), ↔ 7cm (3in). S.W. France, Spain. \*\*\*

*Scilla peruviana* f. *alba**Scilla siberica* 'Spring Beauty'

***S. litardierei***, syn. *S. amethystina*, *S. pratensis*. Clump-forming, bulbous perennial with a basal cluster of 3–6 semi-erect, linear leaves, 15–30cm (6–12in) long, borne in early summer, at the same time as dense racemes of 15–35 star-shaped, pale bluish violet flowers, 6mm (¼in) across. ‡ 10–20cm (4–8in), ↔ 5cm (2in). Coast of former Yugoslavia. \*\*\*

***S. mischtschenkoana***, syn. *S. tubergeniana*. Dwarf, bulbous perennial with 3–5 semi-erect, linear to inversely lance-shaped, basal leaves, 4–10cm (1½–4in) long, borne in late winter or early spring. At the same time, racemes of 2–6 star-shaped, silvery blue flowers, 2cm (¾in) across, with darker stripes, open just above the ground. Stems and racemes gradually elongate. ‡ 10–15cm (4–6in), ↔ 5cm (2in). Georgia, Armenia, Azerbaijan, Iran. \*\*\*

***S. natalensis*** ■ Bulbous perennial with 4–8 semi-erect, lance-shaped, basal leaves, to 20cm (8in) long when they emerge at flowering time, later growing to 30–60cm (12–24in). Tall racemes of up to 100 flattish, light violet-blue, pink, or white flowers, 1.5cm (½in) across, are produced in summer. The flowering stems gradually elongate. ‡ 30–120cm (12–48in), ↔ 8cm (3in). South Africa, Lesotho. \*

***S. non-scripta*** see *Hyacinthoides non-scripta*.

***S. nutans*** see *Hyacinthoides non-scripta*.

***S. peruviana*** ■ Virtually evergreen, clump-forming, bulbous perennial with a basal cluster of 5–15 semi-erect, lance-shaped leaves, 40–60cm (16–24in) long, developing in autumn as older leaves fade. In early summer, produces tall, conical racemes of 50–100 star-shaped, deep purplish blue or white flowers, 1.5cm (½in) across. ‡ 15–30cm (6–12in), ↔ 10cm (4in). Portugal, Spain, Italy, N. Africa. \*\*\* f. *alba* ■ has large heads of white flowers.

***S. pratensis*** see *S. litardierei*.

***S. scilloides***, syn. *S. chinensis*, *S. japonica*. Slender, bulbous perennial with 2–7 semi-erect, flaccid, linear, basal leaves, 15–25cm (6–10in) long, borne in late summer and early autumn, with slender racemes of 40–80 star-shaped, mauve-pink flowers, 4mm (⅛in) across. Easily grown in full sun or in an alpine house. ‡ 15–20cm (6–8in), ↔ 5cm (2in). China, Korea, Taiwan, Japan (including Ryukyu Islands). \*\*\*

***S. siberica*** ♀ (Siberian squill). Bulbous perennial with 2–4 semi-erect, broadly linear, basal leaves, 10–15cm (4–6in) long, produced in spring, at the same time as loose racemes of up to 4 or 5 pendent, bowl-shaped, bright blue flowers, 1.5cm (½in) across. Stems gradually elongate. ‡ 10–20cm (4–8in), ↔ 5cm (2in). Ukraine, Russia, Georgia, Azerbaijan, N. Iran. \*\*\*. 'Alba' has white flowers. 'Atrococerulea' see 'Spring Beauty'. 'Spring Beauty' ■ syn. 'Atrococerulea', has deep blue flowers; ‡ to 20cm (8in).

***S. socialis*** see *Ledebouria socialis*.

***S. tubergeniana*** see *S. mischtschenkoana*.

***S. violacea*** see *Ledebouria socialis*.

▷ ***Scindapsus aureus*** see *Epipremnum aureum*

▷ ***Scindapsus pictus*** 'Argyraeus' see *Epipremnum pictum* 'Argyraeum'

## SCIRPOIDES

### CYPERACEAE

Genus, formerly included in *Scirpus*, of one species of deciduous or semi-evergreen, fleshy-rooted, rhizomatous, perennial sedge found in damp, sandy, coastal areas and damp or wet meadows inland, from Europe to S.W. Asia. *S. holoschoenus* has almost leafless stems, and produces long-stalked, spherical flowerheads from midsummer to early autumn. Suitable for a wild garden. Grow *S. holoschoenus* 'Variegatus' at the margins of a pool or in a bog garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, constantly moist soil in full sun. Submerge in water to 23cm (9in) deep if grown as a marginal aquatic plant. Cut back stems left for winter effect by early spring. See also pp.52–53.

• **PROPAGATION** Sow seed at 6–12°C (43–54°F) in spring, in permanently moist seed compost. Divide between mid-spring and early summer.

• **PESTS AND DISEASES** Trouble free.

***S. holoschoenus***, syn. *Scirpus holoschoenus* (Round-headed club-rush). Tufted perennial with upright, smooth, rounded, mid-green stems, to 1m (3ft) long, turning orange-brown in autumn; they occasionally bear linear, round-tipped, rough-margined, mid-green, basal leaves. From midsummer to early autumn, produces lax, terminal umbels of dense, long-stalked, spherical heads, 1cm (½in) long, consisting of ovoid, pale brown spikelets. ‡ 1m (3ft), ↔ 45cm (18in). Europe, S.W. Asia. \*\*\*. 'Variegatus' has leaves and stems ringed yellow.

▷ ***Scirpus holoschoenus*** see *Scirpoides holoschoenus*

▷ ***Scirpus lacustris*** 'Spiralis' see *Juncus effusus* 'Spiralis'

## SCLEROCACTUS

syn. ANCI-STROCACTUS

### CACTACEAE

Genus, closely allied to and sometimes merged with *Pediocactus*, of 3 or 4 species of depressed-spherical to club-shaped or cylindrical, perennial cacti from relatively arid areas of the USA and Mexico. They have a long, fleshy tap root and deeply notched or warty ribs. The areoles are nectar-secreting and bear

*Sclerocactus scheeri*

prominent spines, the centrals often slightly hooked; flowering areoles extend in a furrow. Diurnal, trumpet-shaped flowers are borne in summer, followed by juicy, ovoid to cylindrical or club- or barrel-shaped, mid-green fruits, scaly on the upper part, smooth below. Where temperatures fall below 7–10°C (45–50°F), grow in a temperate greenhouse; elsewhere, use in a desert garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light with shade from hot sun. When in growth, water moderately and apply a half-strength balanced liquid fertilizer monthly; keep completely dry in winter. Outdoors, grow in poor to moderately fertile, sharply drained, neutral to slightly alkaline soil in full sun with some midday shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 16–21°C (61–70°F) in spring. Graft on to a sturdy rootstock of *Cereus peruvianus* or *Hylocereus undatus* in early summer.
- **PESTS AND DISEASES** Prone to mealybugs.

*S. scheeri* ■ syn. *Ancistrocactus megarhizus*, *A. scheeri*, *Echinocactus scheeri*. Spherical to narrowly club-shaped, dark green, perennial cactus bearing about 13 ribs with warts that have areoles at the tips, and yellow spines (12–20 radials to 1cm (½in) long and 1–4 centrals to 5cm (2in) long, the lowest hooked). Bears greenish yellow flowers, 3cm (1¼in) across, in summer. ↑12cm (5in), ↔8cm (3in). USA (Texas), Mexico. ☼ (min. 7–10°C/45–50°F)

*S. uncinatus*, syn. *Ancistrocactus uncinatus*, *Echinocactus uncinatus*, *Glandulicactus uncinatus*, *Hamatocactus uncinatus*. Depressed-spherical to short-cylindrical, bluish green, perennial cactus with 13 ribs. Hairy areoles bear prominently hooked, reddish brown spines (7–11 radials to 5cm (2in) long; 1–4 centrals, the upper 3, where present, nearly straight or incurved, and to 2.5cm (1in) long, the lowest one strongly hooked, ascending, and to 9cm (3½in) long). In summer, bears deep pinkish red to brownish red flowers, 2.5cm (1in) across. ↑20cm (8in), ↔10cm (4in). USA (Texas), N. to C. Mexico. ☼ (min. 7–10°C/45–50°F).

**var. crassihamatus**, syn. *Ancistrocactus crassihamatus*, *Ferocactus crassihamatus*, *Glandulicactus crassihamatus*, *Hamatocactus crassihamatus*, has large areoles with red spines (7 or 8 radials to 3cm (1¼in) long and 1–4 centrals to 5cm (2in) long, the lowest spine hooked). Flowers, 2cm (¾in) across, have white-margined purple tepals; ↑to 10cm (4in), ↔to 15cm (6in); Mexico.

## SCOLIOPUS

LILIACEAE/TRILLIACEAE

Genus, allied to *Trillium*, of 2 species of herbaceous perennials found in woodland in the W. USA. They have short, underground stems and usually paired, ovate or oblong to elliptic, boldly veined, basal leaves, sometimes with brown-purple markings. In spring, stalkless umbels of flowers, each with 3 narrow, upright inner tepals and 3 spreading outer tepals, arise directly from buds on the rootstock. Grow for their unusual but malodorous flowers



*Scoliopus bigelovii*

and attractive foliage in a rock garden, peat bed, or alpine house.

- **HARDINESS** Hardy to -10°C (14°F).
- **CULTIVATION** Grow in humus-rich, leafy, moist but well-drained, acid to neutral soil in deep to partial shade. Provide a dry winter mulch. In an alpine house, grow in loamless potting compost with added leaf mould in filtered light.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.
- **PESTS AND DISEASES** Young foliage may be damaged by slugs and snails.

*S. bigelovii* ■ syn. *S. bigelovii* (Footed adder's tongue, Stink pod). Compact herbaceous perennial producing pairs of broadly oblong to elliptic, boldly veined, purple-mottled, dull dark green leaves, 10–20cm (4–8in) long. In early spring, bears umbels of 3–12 trillium-like flowers, to 5cm (2in) across, with narrow, erect, deep purple inner tepals, and greenish white outer tepals, striped brown-purple. ↑10cm (4in), ↔15cm (6in). USA (California). \*\*

*S. bigelowii* see *S. bigelovii*.

▷ *Scolopendrium vulgare* see *Asplenium scolopendrium*

## SCOPOLIA

SOLANACEAE

Genus of 5 species of rhizomatous, creeping perennials from woodland in C. and S. Europe, and Siberia (Russia) to the Himalayas, China, and Japan. Scopolias have alternate, simple, entire, boldly veined leaves. They die back after producing solitary, pendent, bell-shaped flowers in spring. Grow in woodland. All parts are highly toxic if ingested.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in humus-rich, leafy, moist but well-drained, neutral to slightly alkaline soil in partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn, or *in situ* in autumn or spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.



*Scopolia carnolica*

*S. carnolica* ■ Creeping, rhizomatous perennial with ovate or ovate-oblong, pointed, veined, wrinkled leaves, to 20cm (8in) long. Solitary, 5-pointed, bell-shaped, brownish purple to red flowers, 2.5cm (1in) long, yellow-green inside, are borne from the leaf axils in mid- and late spring. ↑to 60cm (24in). C. and S.E. Europe, Caucasus. \*\*\*.

**subsp. bladenkiana** has brighter, buff-yellow flowers, greenish yellow inside.

▷ **Scorpion weed** see *Phacelia*

▷ **Scots heather** see *Calluna vulgaris*

▷ **Scots pine** see *Pinus sylvestris*

## SCROPHULARIA

Figwort

SCROPHULARIACEAE

Genus of about 200 species of subshrubs and herbaceous perennials, mainly found in marshes, moist meadows, woodland, scrub, and drier wasteland in N. temperate regions, with a few species occurring in tropical North and Central America. Often coarse and unpleasantly scented, they have erect, square stems, opposite, simple, entire or toothed, scalloped or lobed leaves, and small,



*Scrophularia auriculata* 'Variegata'

2-lipped, foxglove-like, greenish yellow, purple, or red flowers, borne in terminal, panicle-like cymes. Suitable for a wild or woodland garden. *S. auriculata* may also be grown as a marginal aquatic plant.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in humus-rich, moist but well-drained soil in dappled to partial shade. If *S. auriculata* and its cultivars are grown as marginal aquatic plants, submerge to about 15cm (6in) deep. See also pp.52–53. To maintain *S. auriculata* 'Variegata' as a foliage plant, remove flowering stems as they form.
- **PROPAGATION** Sow seed of perennials *in situ* in autumn or spring. *S. auriculata* 'Variegata' will not come true from seed. Divide in spring. Root basal cuttings in a cold frame in spring, or root softwood cuttings in summer.
- **PESTS AND DISEASES** Prone to damage from slugs, caterpillars, and figwort weevils.

*S. aquatica* see *S. auriculata*.

*S. auriculata*, syn. *S. aquatica* (Water betony, Water figwort). Marginal aquatic perennial, or moisture-loving herbaceous perennial. Erect, square, winged stems produce ovate, wrinkled, toothed, dark green leaves, 5–25cm (2–10in) long. Panicle-like cymes of 2-lipped, yellowish green flowers, to 1cm (½in) long, each with a brown upper lip, are borne above the leaves from early summer to early autumn. ↑to 90cm (36in). W. Europe. \*\*\*.

'**Variegata**' ■ bears leaves boldly marked cream.

## SCUTELLARIA

Helmet flower, Skullcap

LABIATAE/LAMIACEAE

Genus of about 300 species of erect or spreading annuals, rhizomatous and clump-forming herbaceous perennials, and, more rarely, subshrubs, widespread in temperate regions and on mountains in tropical areas. Leaves are opposite and entire, rarely pinnatifid or toothed. The tubular, 2-lipped, blue, violet, yellow, or white flowers, often with coloured bracts, are borne singly or in pairs from the leaf axils, or in terminal spikes or racemes. Grow smaller species in a rock garden or alpine house; use taller species at the front of a herbaceous border.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, light, gravelly, well-drained, neutral to alkaline soil in full sun or light dappled shade. In very cold areas, apply a deep winter mulch. In an alpine house, grow in equal parts loam, leaf mould, and grit.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in autumn or spring. Take basal and softwood cuttings in late spring or early summer.
- **PESTS AND DISEASES** Prone to aphids and red spider mites under glass.

*S. alpina*. Spreading, tuft-forming perennial with ovate, toothed, hairy, grey-green leaves, to 2.5cm (1in) long. In summer, bears erect purple flowers, 2.5cm (1in) long, with yellow-white lower lips, in dense, 4-angled racemes. ↑15cm (6in), ↔30cm (12in). S. Europe to Russia (Siberia). \*\*\*

*Scutellaria orientalis*

**S. baicalensis.** Bushy perennial with angular, decumbent then erect, purple-tinged stems, and short-stalked, lance-shaped, hairy-margined, mid-green leaves, to 4cm (1½in) long. From early summer to early autumn, produces dense, one-sided racemes of hairy flowers, to 2.5cm (1in) long, upper lips dark blue, lower lips paler. ± 20–30cm (8–12in). Mongolia, China, Japan. \*\*\*

**S. indica.** Slender, upright, rhizomatous perennial with white-hairy, shallowly toothed, broadly ovate to heart-shaped, mid-green leaves, to 2.5cm (1in) long. Bears dense, 4-angled racemes of long-tubed, grey-blue or rarely white flowers, to 2cm (¾in) long, in summer. ± 20–20cm (8in). Mountains of China, Korea, Japan. \*\*\* **var. parvifolia.** syn. **var. japonica**, has lilac-blue flowers; ± 25cm (10in), ± 30cm (12in).

**S. orientalis** ■ Woody-based, rhizomatous perennial with grey-hairy, rooting stems, and ovate-oblong to broadly ovate, deeply toothed to pinnatisect, dark green leaves, 1.5cm (½in) long, grey-woolly beneath. In summer, bears dense, erect, 4-angled racemes of bright yellow flowers, 1.5–3cm (½–1¼in) long, marked red on the lower lips, and with yellow-green or purple-tinted bracts. ± 25cm (10cm), ± 30cm (12in). S.E. Europe. \*\*\*

▷ **Sea buckthorn** see *Hippophae rhamnoides*

▷ **Seafortia elegans** see *Ptychosperma elegans*

▷ **Sea kale** see *Crambe maritima*

▷ **Sea lavender** see *Limonium*, *L. latifolium*

▷ **Sea onion** see *Urginea maritima*  
False see *Ornithogalum longibracteatum*

▷ **Sea pink** see *Armeria*

▷ **Sedge** see *Carex*

**Bowles' golden** see *Carex elata* 'Aurea'

**Drooping** see *Carex pendula*

**Hook** see *Uncinia*

**Leatherleaf** see *Carex buchananii*

**Mace** see *Carex grayi*

**Palm branch** see *Carex muskingumensis*

**Pendulous** see *Carex pendula*

**Variegated russet** see *Carex saxatilis* 'Ski Run'

**Weeping** see *Carex pendula*

▷ **Sedges** see p.54

▷ **Sedirea japonica** see *Aerides japonica*

## SEDUM syn. HYLOTELEPHIUM

Stonecrop

CRASSULACEAE

Genus of about 400 species of usually succulent annuals and evergreen, semi-evergreen, or deciduous biennials, perennials, subshrubs, and shrubs, a few of which are sometimes included in the genus *Hylotelephium*. They are widely distributed, most found in mountains of the N. hemisphere, but some in arid areas of South America. Stonecrops are very variable, with alternate, opposite, or whorled, fleshy, cylindrical or flattened leaves and usually terminal, often compound, cymes, panicles, or corymbs of generally star-shaped and 5-petalled flowers, borne mostly in summer and autumn. Grow hardy species in a rock garden or at the front of a herbaceous or mixed border. In frost-prone climates, grow tender species as houseplants, or in a temperate greenhouse or conservatory. All parts of the plants may cause mild stomach upset if ingested; contact with the sap may irritate skin.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow tender species in a mix of 3 parts loam-based potting compost (J1 No.2), 2 parts grit, and 1 part leaf mould, in full light with good ventilation. In growth, water moderately and apply a half-strength balanced liquid fertilizer every month; water sparingly in winter.

Outdoors, grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Vigorous species tolerate light shade. Cut back spreading species after flowering, to maintain shape.

Divide larger, herbaceous species every 3 or 4 years to improve flowering.

• **PROPAGATION** Sow seed of hardy species in containers in a cold frame in autumn. Sow seed of annuals and biennials at 13–16°C (55–61°F) in early spring, or *in situ* in mid-spring. Sow tender species at 15–18°C (59–64°F) in early spring. Divide in spring. For perennials, subshrubs, and shrubs, take softwood cuttings of non-flowering shoots in early summer.

• **PESTS AND DISEASES** Outdoors, prone to slugs and snails; may be affected by fungal and bacterial crown and root rots. Under glass, prone to aphids, and may be infested by scale insects, mealybugs, and vine weevil grubs.

**S. acre** ■ (Biting stonecrop, Common stonecrop, Wallpepper). Mat-forming, evergreen perennial with erect or trailing stems densely clothed in overlapping, triangular, pale green leaves, to 6mm (¼in) long. Flat-topped cymes, 2.5–4cm (1–1½in) across, of star-shaped, yellow-green flowers, 1.5cm (½in) across, are produced in abundance over long periods in summer. ± 5cm (2in), ± 60cm (24in) or more. Europe, Turkey, N. Africa. \*\*\*. 'Aureum' ■ bears bright yellow leaves.

**S. aizoon**, syn. *S. maximowiczii*. Rhizomatous, deciduous perennial with a stout rootstock and upright, unbranched, hairless stems bearing alternate, stalkless, ovate-lance-shaped, coarsely toothed, light green leaves, to 8cm (3in) long. In summer, produces star-shaped yellow flowers, 1.5cm (½in) across, with conspicuous stamens, in

terminal, flattened, cyme-like clusters, to 4cm (1½in) across. ± 45cm (18in). Russia (Siberia), China, Japan. \*\*\*. 'Aurantiacum' ■ has dark red stems, dark green leaves, and red-tinted buds opening to yellow-orange flowers, followed by spherical to ovoid red fruit. 'Euphorbioides' is more compact, and has deeper yellow flowers; ± 35cm (14in), ± 30cm (12in).

**S. alboroseum** see *S. erythrostictum*.

**S. 'Autumn Joy'** see *S. 'Herbstfreude'*.

**S. caeruleum.** Branching, spreading annual with alternate, spoon-shaped, ovate to oblong-ovate, pale green leaves, 1–2cm (½–¾in) long. In summer, bears star-shaped, 7-petalled, pale blue flowers, 6mm (¼in) across, in cymes to 2.5cm (1in) across. Leaves and stems gradually flush red during flowering. Self-seeds freely. ± 10–15cm (4–6in), ± 15cm (6in). France (Corsica), Italy (Sardinia, Sicily), coastal Tunisia and Algeria. \*\*\*

**S. caudicola** ♀ Trailing, stoloniferous, sometimes woody-based, deciduous perennial with purple-tinged stems bearing opposite, bluntly toothed, rounded to spoon-shaped or obovate, grey-green leaves, to 2.5cm (1in) long.

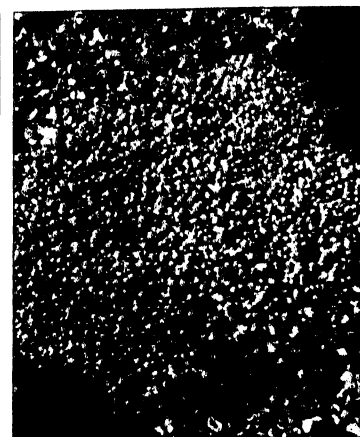
In early autumn, branching stems bear terminal, slightly rounded, panicle-like cymes, to 10cm (4in) across, of star-shaped, pink-purple flowers, to 9mm (¾in) across, ageing to carmine-red. ± 8cm (3in), ± 30cm (12in). Japan. \*\*\*

**S. crassipes** see *Rhodiola wallichiana*.

**S. erythrostictum**, syn. *Hylotelephium roseum*, *S. alboroseum*. Clump-forming, deciduous perennial, similar to *S. spectabile*, with unbranched, spreading, woody stems bearing usually opposite, ovate, sometimes toothed, glaucous, grey-green leaves, to 8cm (3in) long. In late summer, bears terminal, corymb-like clusters, to 15cm (6in) across, of star-shaped, greenish white flowers, 1cm (½in) across, with pink carpels. ± 30cm (12in), ± 60cm (24in). E. Asia. \*\*\*

'Mediovariegatum' produces larger flower clusters, and leaves with central, creamy white splashes, which are especially striking in spring. Grow in partial shade and cut out reverting green shoots; ± 45cm (18in).

**S. eversii.** Low-branching, deciduous perennial with opposite, stalkless, rounded to broadly ovate, entire or slightly toothed, grey-blue leaves, to 2cm (¾in) long, heart-shaped at the bases. In summer, produces dense,

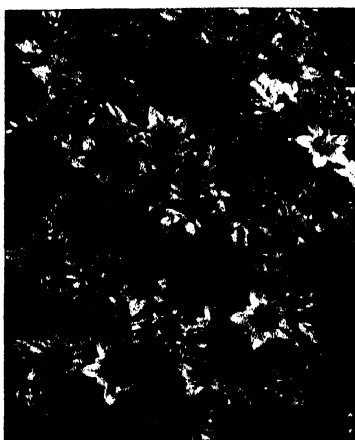
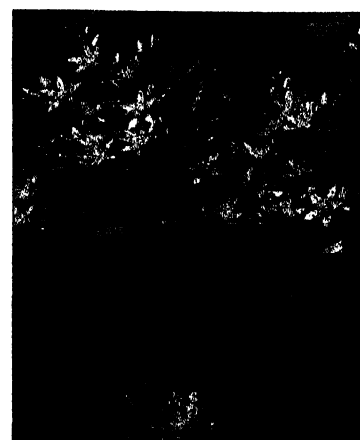
*Sedum acre* 'Aureum'

rounded cymes, to 10cm (4in) across, of star-shaped, pinkish red flowers, to 8mm (⅜in) across. Similar to, but often later flowering than *S. caudicola*. ± 8cm (3in), ± 30cm (12in). C. Asia, Himalayas, Mongolia, China. \*\*\* **S. frutescens.** Shrubby, semi-evergreen perennial bearing woody, branching stems, to 1cm (½in) thick, clothed in papery, peeling bark. Alternate, pointed, linear-elliptic, bright green leaves, 2–6cm (¾–2½in) long, are usually produced in terminal clusters. In summer, star-shaped white flowers, to 1.5cm (½in) across, are produced in few-flowered, terminal cymes. ± 1m (3ft), ± 40cm (16in). Mexico. ☼ (min. 5–7°C/41–45°F)

**S. 'Herbstfreude'** ♀ syn. *S. 'Autumn Joy'*. Clump-forming, bushy deciduous perennial with unbranched, glaucous, mid-green stems bearing alternate, oblong to obovate, toothed, glaucous, dark green leaves, to 12cm (5in) long. In early autumn, produces flat corymbs, to 20cm (8in) across, of star-shaped flowers, 5mm (¼in) across, deep pink at first, then turning through pinkish bronze to copper-red. ± 60cm (24in). \*\*\*

**S. heterodontum** see *Rhodiola heterodonta*.

**S. humifusum** ■ Mat-forming, evergreen perennial with creeping, branching stems bearing tight rosettes of overlapping, blunt, obovate, mid-green leaves, 4mm (⅜in) long, ageing to red. Solitary, terminal, bright yellow flowers, 9mm (¾in) across, are borne in early summer. ± 1cm (½in), ± 10cm (4in). Mexico. \*\*\*

*Sedum acre**Sedum aizoon* 'Aurantiacum'



*Sedum humifusum*

***S. kamschaticum*** ♀ Clump-forming, semi-evergreen perennial with stout rhizomes and alternate, inversely lance-shaped to spoon-shaped, glossy, deep green leaves, to 4cm (1½in) long, coarsely toothed towards the tips. In late summer, bears short-stemmed, flat cymes, to 5cm (2in) across, of star-shaped, deep golden yellow flowers, 1.5cm (½in) across, opening from pink buds. †10cm (4in), ↔ 25cm (10in). Russia (Siberia, Kamchatka), N. and C. China, Japan. \*\*\*. '**Variegatum**' ♀ has pink-tinted, mid-green leaves with cream margins, and yellow flowers, ageing to crimson. Tolerant of partial shade.

***S. lydium*** ♂ Stem-rooting, mat-forming, evergreen perennial with tight rosettes of cylindrical, red-tipped, bright to mid-green leaves, to 6mm (¼in) long. In summer, bears flat-topped, terminal corymbs, 2.5cm (1in) across, of star-shaped white flowers, 6mm (¼in) across. †5cm (2in), ↔ 20cm (8in). W. and C. Turkey. \*\*\*

***S. maximowiczii*** see *S. aizoon*.

***S. morganianum*** ♂ Pendent, evergreen perennial (prostrate in the wild) with fleshy, woody-based stems and

bearing alternate, oblong-lance-shaped, fleshy, glaucous, greenish blue leaves, to 2cm (¾in) long. In spring and summer, star-shaped, pale pink to deep scarlet-purple flowers, 1cm (½in) across, are produced in cymes to 2.5cm (1in) across. †↔ 30cm (12in). Mexico.

⚬ (min. 5–7°C/41–45°F)

***S. obtusatum*** ♂ syn. *S. rubroglaucum*. Evergreen perennial with terminal rosettes of spoon-shaped, blunt-tipped, glaucous, mid-green leaves, 0.5–2.5cm (¼–1in) long, flushed crimson in autumn. In summer, bears star-shaped, bright yellow flowers, to 1cm (½in) across, in flat, panicle-like cymes, to 10cm (4in) across. †5cm (2in), ↔ 20cm (8in). USA (California). \*\*\*

***S. oxypetalum***. Many-branched, semi-evergreen perennial with fleshy, woody stems, clothed in papery, peeling bark. The alternate, inversely lance-shaped to obovate, minutely papillose, greyish green leaves are 5cm (2in) long. Diurnal, star-shaped, fragrant, pink or dull red flowers, to 1.5cm (½in) across, usually with pink-marked petals, open in cymes 4cm (1½in) across, in summer. †50–90cm (20–36in), ↔ 45cm (18in). Mexico. ⚬ (min. 5–7°C/41–45°F)

*Sedum morganianum*

***S. pilosum***. Densely grey-hairy, rosette-forming, evergreen biennial. Incurved, oblong to narrowly spoon-shaped, dark green leaves are to 2cm (¾in) long. Bears dense, flat corymbs, 5cm (2in) across, of many short-stemmed, bell-shaped, rose-red flowers, 9mm (⅜in) across, in summer. †8cm (3in), ↔ 15cm (6in). W. Asia (Turkey to Iran). \*\*

***S. populifolium*** ♂ Slowly spreading, deciduous subshrub with slightly decumbent, branched, dark brown stems bearing alternate, ovate, toothed, light green leaves, to 4cm (1½in) long, heart-shaped at the bases. Corymb-like cymes, 5cm (2in) across, of star-shaped, fragrant white flowers, 1cm (½in) across, pink-tinged on the reverse, are borne in late summer and early autumn. †20–30cm (8–12in), ↔ 45cm (18in). Russia (Siberia). \*\*\*

***S. reflexum*** see *S. rupestre*.

***S. rhodiola*** see *Rhodiola rosea*.

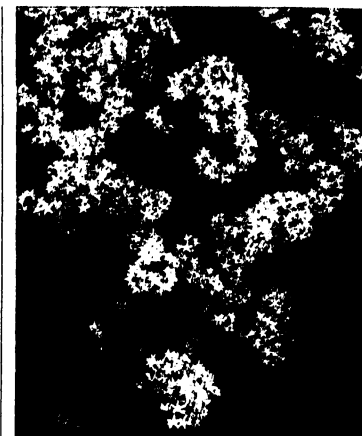
***S. rosea*** see *Rhodiola rosea*.

***S. rosea* var. *heterodontum*** see *Rhodiola heterodonta*.

***S. rubroglaucum*** see *S. obtusatum*.

***S. rubrotinctum***. Evergreen subshrub with numerous arching, rooting, branching stems bearing alternate, blunt, cylindrical, mid-green leaves, 1.5cm (½in) long, often flushed red. Loose, many-flowered cymes, 4cm (1½in) across, of star-shaped, pale yellow flowers, 1cm (½in) across, are borne in winter. †24cm (10in), ↔ 20cm (8in). Mexico. \*\* (borderline)

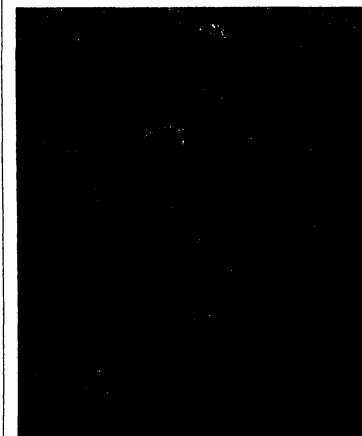
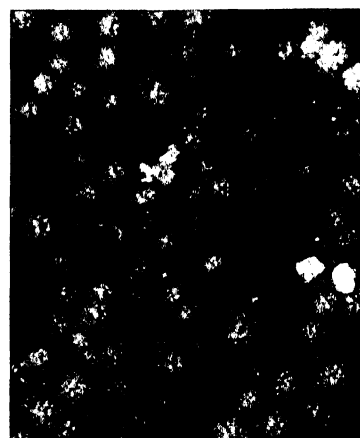
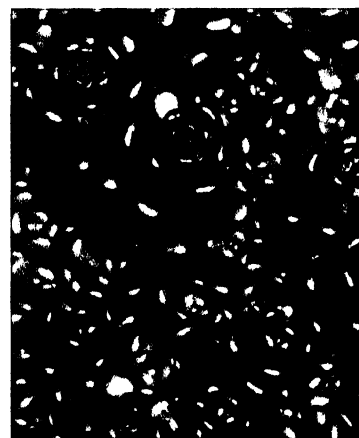
***S. 'Ruby Glow'*** ♂♀ Low-growing deciduous perennial with spreading, unbranched red stems bearing opposite, elliptic, toothed, green-purple leaves,

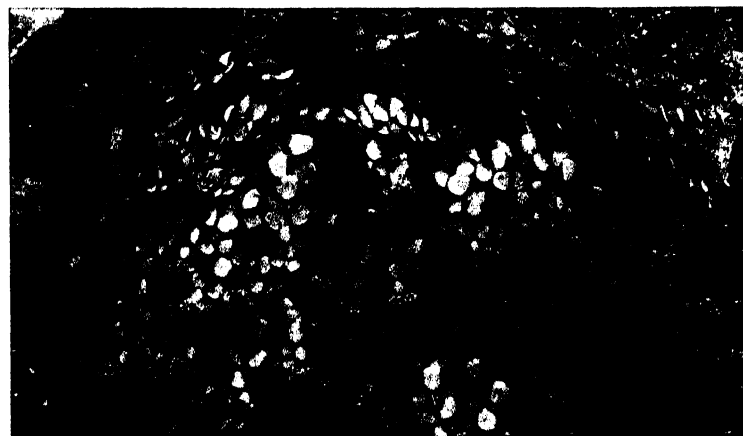
*Sedum populifolium*

5cm (2in) long. Numerous loose cymes, 6cm (2½in) across, of star-shaped, ruby-red flowers, 1cm (½in) across, are produced from midsummer to early autumn. †25cm (10in), ↔ 45cm (18in). \*\*\*

***S. rupestre*** ♂ syn. *S. reflexum* (Stone orpine). Vigorous, mat-forming, evergreen perennial with alternate, pointed, cylindrical, grey-green leaves, to 1–2cm (½–¾in) long. Upright, leafy, woody stems bear terminal, umbel-like cymes, 6cm (2½in) across, of star-shaped yellow flowers, 1.5cm (½in) across, pendent in bud, but erect as they open in summer. Spreads freely; best in a large rock garden. †10cm (4in), ↔ 60cm (24in) or more. Mountains of C. and W. Europe. \*\*\*

***S. sarcocaulis*** see *Crassula sarcocaulis*.

*Sedum 'Ruby Glow'**Sedum kamschaticum* 'Variegatum'*Sedum lydium**Sedum obtusatum**Sedum rupestre*



*Sedum sieboldii* 'Mediovariegatum'

***S. sempervivoides***. Rosette-forming, evergreen biennial producing pointed, ovate to diamond-shaped, hairy, blue-green leaves, to 3cm (1¼in) long, flushed red-purple at the bases. In summer, bears domed, corymb-like panicles, 4–5cm (1½–2in) across, of many star-shaped, carmine-red flowers, 1.5cm (½in) across. Dislikes winter wet; best in an alpine house. †10cm (4in), ↔15cm (6in). Caucasus, Georgia, N. Iran, S.W. Asia. \*\*

***S. sieboldii***. Spreading, tuberous, tufted, deciduous perennial with whorls of 3 rounded, glaucous, blue-green, occasionally purple-tinted leaves, to 2cm (¾in) long, some irregularly toothed and red-margined towards the tips. Star-shaped pink flowers, to 1.5cm (½in) across, are borne in flat-topped cymes,

6cm (2½in) across, in late summer. Use as a houseplant, or in an alpine house. †10cm (4in), ↔20cm (8in). Japan. \*\*.

**'Mediovariegatum'** [M] ♀ syn. 'Foliis Mediovariegatis', 'Foliis Variegatis', 'Variegatum', has glaucous-blue leaves, marbled cream and occasionally with red margins.

***S. spathulifolium***. Vigorous, mat-forming, evergreen perennial with branching, fleshy stems bearing terminal rosettes of brittle, spoon-shaped, silvery or mid-green leaves, to 2cm (¾in) long, usually tinted bronze-purple. Short-stemmed, star-shaped, bright yellow flowers, 1.5cm (½in) across, are borne in flat cymes, 2.5cm (1in) across, in summer. Tolerates light shade. †10cm (4in), ↔60cm (24in). W. North America. \*\*\*.

**'Cape Blanco'** [M] ♀ syn. 'Cappa Blanca', has the innermost leaves of its rosettes heavily powdered with white bloom. **'Purpureum'** [M] ♀ produces leaves richly suffused reddish purple.

***S. spectabile*** ♀ (Ice plant). Clump-forming, deciduous perennial. Upright, unbranched green stems bear opposite or whorled, ovate to elliptic or obovate, slightly scalloped, toothed, grey-green leaves, to 8cm (3in) long. In late summer, star-shaped pink flowers, to 1cm (½in) across, with prominent stamens, are borne in dense, flat cymes, to 15cm (6in) across, often causing the stems to bend. Attractive to bees. †→45cm (18in). China, Korea. \*\*\*.

**'Brilliant'** [M] ♀ bears flowers with bright pink petals and darker pink carpels and anthers. **'Carmen'** is a slightly darker mauve-pink. **'Iceberg'** has paler green leaves than the species, and pure white flowers; †30–45cm (12–18in), ↔35cm (14in). **'Septemberglut'**, syn. 'September Glow', has glowing, rich pink flowers; †to 50cm (20in).

***S. spurium***. Vigorous, mat-forming, evergreen perennial with branching red stems bearing opposite, obovate, toothed, mid-green leaves, to 2.5cm (1in) long. Star-shaped, pinkish purple or white flowers, 2cm (¾in) across, are produced in rounded corymbs, 4cm (1½in) across, in late summer. †10cm (4in), ↔60cm (24in) or more. Caucasus, Armenia, N. Iran. \*\*\*.

**'Dragon's Blood'** see 'Schorbuser Blut'. **'Purple Carpet'** see 'Purpurteppich'. **'Purpurteppich'**, syn. 'Purple Carpet', is compact, with deep plum-purple leaves and dark purplish red flowers. **'Schorbuser Blut'** [M] ♀ syn. 'Dragon's



*Sedum spectabile* 'Brilliant'

**Blood'**, has green leaves, purple-tinted when mature, and deep pink flowers.

***S. telephium*** (Orpine). Clump-forming, rhizomatous, deciduous perennial. Erect, unbranched, pale green stems bear alternate, oblong to oblong-ovate, toothed, glaucous, grey-green leaves, to 8cm (3in) long. Dense, axillary and terminal cymes, to 12cm (5in) across, of star-shaped, purplish pink flowers, to 1cm (½in) across, are borne in late summer and early autumn. †to 60cm (24in), ↔30cm (12in). Europe, Russia (Siberia), China, Japan. \*\*\*.

**subsp. maximum 'Atropurpureum'** [M] ♀ has glaucous, very dark purple stems and leaves, and smaller cymes of pink flowers with orange-red centres, appearing buff-white; †45–60cm (18–24in). **'Munstead Dark Red'** has purple-tinted, dark green leaves and dark purplish red flowers, becoming even darker with age; †to 60cm (24in).

***S. 'Vera Jameson'*** ♀ Deciduous perennial with spreading purple stems and opposite, ovate, toothed, glaucous, purple-pink leaves, to 10cm (4in) long, appearing almost pink at flowering time. In late summer and early autumn, bears



*Sedum telephium* subsp. maximum 'Atropurpureum'

rounded cymes, 6cm (2½in) across, of star-shaped, soft rose-pink flowers, 6–10mm (¼–½in) across. †20–30cm (8–12in), ↔45cm (18in). \*\*\*.

***S. wallichianum*** see *Rhodiola wallichiana*.

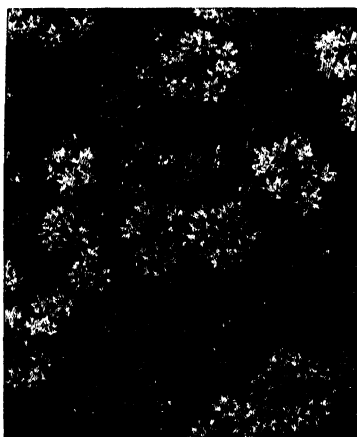
***S. weinbergii*** see *Graptopetalum paraguayense*.

▷ *Seemannia gymnostoma* see *Gloxinia gymnostoma*

## SELAGINELLA

### SELAGINELLACEAE

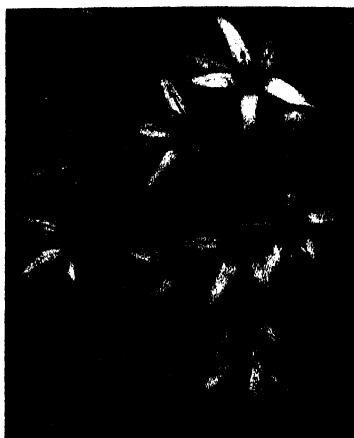
Genus of approximately 700 species of evergreen, rhizomatous perennials found in a range of habitats, from semi-desert to rainforest, mostly in tropical regions, with some species in temperate and alpine zones. Grown for their foliage, they vary from small, moss-like tufts to tall, scrambling plants. They have long, creeping, branched stems, often rooting along their length, which are clothed in scale-like leaves, to 3mm (½in) long. Spores form in small, leafy, terminal spikes. Use as ground cover or in hanging baskets. In frost-prone areas,



*Sedum spathulifolium* 'Cape Blanco'



*Sedum spathulifolium* 'Purpureum'



*Sedum spurium* 'Schorbuser Blut'



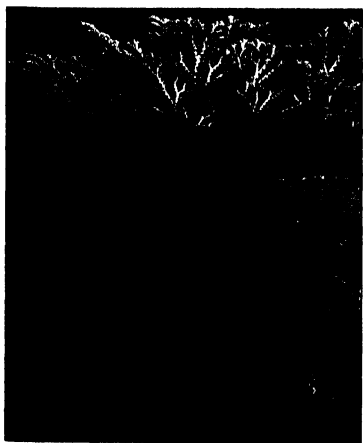
*Selaginella kraussiana*

*Selaginella lepidophylla*

grow in a cool, temperate, or warm greenhouse, or as houseplants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of 2 parts loam-based potting compost (J1 No.2) and 1 part leaf mould, in bright filtered or indirect light; *S. uncinata* and *S. willdenovii* are best in bright filtered light. In growth, water freely and apply a balanced liquid fertilizer monthly. Maintain high humidity. Keep just moist in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained, neutral to slightly acid soil in partial shade. *S. lepidophylla* tolerates drier conditions and prefers alkaline soil. Shelter from cold, drying winds.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Divide rhizomes or rooted stems in spring.
- **PESTS AND DISEASES** Trouble free.

*S. emmeliana* see *S. pallescens*.  
*S. kraussiana* ■ ♀ (Krauss's spikemoss). Mat-forming perennial producing trailing stems clothed in pinnatisect, bright green foliage. ↑ 2.5cm (1in), ↔ indefinite. Tropical and southern Africa, Azores. ☼ (min. 5–7°C/41–45°F). 'Aurea' has yellow-green foliage. 'Brownii' ♀ forms small cushions: ↑ 5cm (2in), ↔ 15cm (6in). 'Variegata' ♀ produces cream-splashed foliage.  
*S. lepidophylla* ■ (Resurrection plant, Rose of Jericho). Small, spreading perennial with dense tufts of dark green leaves. When dry, curls into a ball that opens into a flat rosette when soaked with water. Dry plants are often sold

*Selaginella martensii**Selaginella willdenovii*

as curiosities. ↑ to 8cm (3in), ↔ 15cm (6in). USA (Arizona, Texas) to Peru. ☼ (min. 5–7°C/41–45°F)  
*S. martensii* ■ ♀ Trailing perennial with many-branched stems bearing frond-like, glossy, bright green foliage. ↑ to 15cm (6in), ↔ 20cm (8in). Central America. ☼ (min. 5–7°C/41–45°F). 'Variegata' has white-flecked foliage.  
*S. pallescens*, syn. *S. emmeliana*. Perennial with a densely tufted stem, branching from the base, with short, much-divided branches. Leaves are light yellow-green, white beneath. ↑ to 15cm (6in), ↔ 30cm (12in). North America to N. Colombia and Venezuela. ☼ (min. 10–15°C/50–59°F)  
*S. umbrosa*. Perennial with erect, regularly branched, red-tinged stems, and triangular, 3-pinnate branches with light green leaves. ↑ to 40cm (16in), ↔ indefinite. Central and South America. ☼ (min. 10–15°C/50–59°F)  
*S. uncinata* ♀ Perennial with slender, trailing, rooting stems bearing alternate, short, pinnate branches and leaves with a distinct metallic blue sheen. ↑ 2.5–5cm (1–2in), ↔ indefinite. China. ☼ (min. 5–7°C/41–45°F)  
*S. willdenovii* ■ Perennial climber with a nearly leafless stem bearing densely branched, leafy sideshoots. Leaves are mid-green, ageing to pinkish yellow or plum, with a metallic blue sheen. ↑ 3–6m (10–20ft) or more. Himalayas to S. China and Indonesia. ☼ (min. 10–15°C/50–59°F)

## SELAGO

### SCROPHULARIACEAE

Genus of about 150 species of evergreen shrubs, subshrubs, and annuals from grassland, rocky places, moist sites, and forest margins in tropical Africa and South Africa. Their simple, often very narrow leaves are usually clustered or solitary, and borne at alternate nodes or occasionally in opposite pairs. Selagos are grown mainly for their heads, spikes, corymbs, or panicles of usually small,

tubular flowers, each with 5 spreading petal lobes. In frost-prone climates, grow in a temperate greenhouse. In milder areas, grow at the front of a shrub border, in a raised bed, or at the base of a warm, sunny wall. *S. serrata* is also effective grown in a container in a courtyard garden.

- **HARDINESS** Frost tender, although some may survive temperatures near 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, or in bright filtered light. In growth, water freely, and apply a balanced liquid fertilizer monthly; maintain low to moderate humidity. Keep just moist in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun. Dead-head regularly. Pruning group 9.
- **PROPAGATION** Sow seed at 13–15°C (55–59°F) in spring. Root softwood cuttings in spring or early summer, with bottom heat. Layer or air layer in spring or early summer.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*S. serrata*. Initially erect, then spreading to decumbent, evergreen shrub with crowded, stalkless, obovate or oblong, boldly toothed, firm, deep green leaves, to 2.5cm (1in) long. Fragrant purple to pale blue flowers are borne in compact corymbs, to 5cm (2in) across, in summer. ↑↔ 30–90cm (12–36in). South Africa. ☼ (min. 5°C/41°F)

## SELENICEREUS

### CACTACEAE

Genus of approximately 20 species of mostly scandent or semi-pendent, epiphytic or rock-dwelling, perennial cacti from forest and woody areas of Texas (USA), Mexico, Central America, Colombia, and the West Indies. They produce short-hairy, generally spiny areoles, and most have aerial roots. Stems are slender, ribbed, or, more rarely, angled or flattened. The large, trumpet-shaped, mainly nocturnal flowers are usually borne in summer. In areas where temperatures fall below 15°C (59°F), grow in a warm greenhouse, in hanging baskets or in containers with support for climbing stems. In warmer climates, grow in containers in a courtyard garden, or at the base of a warm, sunny wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in epiphytic cactus compost in bright indirect to moderate light. In the growing season, water freely and apply a half-strength balanced liquid fertilizer monthly; keep just moist in winter. Maintain moderate to high humidity. Outdoors, grow in moderately fertile, humus-rich, moist but sharply drained, neutral to slightly alkaline soil, with additional grit and leaf mould, in light dappled to partial shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 16–19°C (61–66°F) as soon as ripe or in spring. Root cuttings of stem segments in a closed, slightly shaded propagating case in spring or summer.
- **PESTS AND DISEASES** Scale insects and mealybugs may be a problem.

*Selenicereus grandiflorus*

*S. anthonyanus*, syn. *Cryptocereus anthonyanus*. Semi-pendent, scandent, epiphytic cactus with flattened, leaf-like, bright green stems, 7–15cm (3–6in) across, with prominent marginal notches, 4.5cm (1½in) deep, forming lobes. The areoles bear 2–4 short, pale brown spines. In summer, produces nocturnal, fragrant, yellowish or creamy white flowers, 12cm (5in) long, with maroon-red outer segments. ↑ to 75cm (30in), ↔ indefinite. S.E. Mexico. ☼ (min. 15°C/59°F)

*S. chrysocardium* see *Epiphyllum chrysocardium*.

*S. grandiflorus* ■ (Queen of the night). Scandent, epiphytic cactus producing 5- to 8-ribbed, mid-green stems, 1–2.5cm (½–1in) thick, with areoles bearing 6–18 yellow spines that turn grey. The nocturnal, fragrant white flowers, 30cm (12in) long, with spreading, pale yellowish brown outer segments, are borne in summer. ↑ 5m (15ft). Mexico, West Indies. ☼ (min. 15°C/59°F)

*S. hamatus*. Scandent, epiphytic cactus with 3- or 4-angled, dark green stems, 1.5cm (½in) thick, bearing hooked warts. The areoles have 5–9 white or brown spines. The nocturnal, scented white flowers are 20–35cm (8–14in) long, with yellow and red outer segments, and produced during summer. ↑ 4m (12ft). Mexico, West Indies. ☼ (min. 15°C/59°F)

*S. innesii*. Scandent or trailing, epiphytic cactus with 4- or 5-ribbed, mid-green stems, 1cm (½in) thick, and woolly areoles bearing 1 or 2 thick, pale yellow spines and 3–7 slender ones. In summer, produces diurnal white flowers, 4–5cm (1½–2in) long, with extended petals, to 6cm (2½in) across, the outer petals tinged magenta-pink; some plants produce only male flowers, others produce only female. ↑ to 2m (6ft). West Indies (St. Vincent). ☼ (min. 15°C/59°F)

*S. pteranthus*. Scandent, epiphytic cactus with 4- to 6-angled, purplish green stems, 2.5–5cm (1–2in) thick, and white-woolly areoles bearing 6–12 thick, yellowish grey spines. Nocturnal, white or pale cream flowers, 30cm (12in) long, with long, slender, recurved, pale purple outer segments, are produced in summer. ↑ 4m (12ft). Mexico. ☼ (min. 15°C/59°F)

*S. wercklei*. Semi-pendent, freely branching, epiphytic cactus with mid green stems, 1cm (½in) thick, each with

## SELENICEREUS

up to 12 shallow ribs. Areoles are mostly spineless, but a few brown spines form on the flower tubes. Nocturnal white flowers, 15cm (6in) long, with red outer segments, are produced in summer. †75cm (30in), ↔ indefinite. Costa Rica. ☀ (min. 15°C/59°F)

▷ **Self-heal** see *Prunella*  
**Large** see *P. grandiflora*

## SELINUM

APIACEAE/UMBELLIFERAE

Genus of 6 species of tap-rooted perennials from rocky slopes, mountain meadows, and scrub in temperate areas of Europe and the Himalayas. The tall stems bear finely cut leaves and large, flattish umbels of small, star-shaped white flowers, rarely purple-tinged. Few species are grown, but *S. wallichianum* is suitable for an informal mixed or shrub border or a woodland garden, and is effective grown as a specimen to display the tiered effect of its floral umbels.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun or partial shade. Tolerant of a wide range of conditions.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; prick out into deep containers as soon as possible to avoid tap-root damage. Divide carefully in early spring; selinums resent disturbance.
- **PESTS AND DISEASES** Overwintering buds are especially prone to slug and snail damage. Powdery mildew may be a problem in dry conditions.

*S. tenuifolium* see *S. wallichianum*.  
*S. wallichianum* ☐ syn. *S. tenuifolium*. Clump-forming perennial with erect, branched stems, usually shaded or lined reddish purple, as are the leaf-stalks, which are 20–30cm (8–12in) long. Triangular leaf-blades, to 50cm (20in) long, are 2- or 3-pinnate, the final segments elliptic and toothed. Tiny,



*Selinum wallichianum*

star-shaped white flowers are borne in terminal umbels, to 20cm (8in) across, from midsummer to early autumn. † to 1.8m (6ft), ↔ 60cm (24in). W. Pakistan, Himalayas, India. \*\*\*

## SEMELE

Climbing butcher's broom

LILIACEAE/RUSCACEAE

Genus of one species of evergreen, woody climber from laurel forest in S. Spain, S.E. France, Sicily, N. Africa, and the Canary Islands. The true leaves are scale-like, their function taken over by leaf-like stems, on which clusters of tiny, star-shaped, 6-tepalled flowers are borne in late spring and early summer. These are sometimes followed by single-seeded, orange-red berries. In frost-prone areas, grow as a foliage plant in a cool greenhouse. In warmer climates, use to provide handsome foliage cover on a warm, sunny wall.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, or in bright filtered light. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Maintain low to moderate humidity. Outdoors, grow in moderately fertile, well-drained soil in full sun. Provide the stems with support. Pruning group 11, in late winter or early spring.
- **PROPAGATION** Sow seed at 16–19°C (61–66°F) in spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

*S. androgyna* (Liana). Moderately bushy, twining climber, with the main stems arising at ground level, bearing lance-shaped to ovate, sometimes shallowly lobed, glossy, mid-green, leaf-like stems, to 2.5cm (1in) long. Clusters of 2–6 tiny, star-shaped cream flowers are produced in late spring and early summer; the females are 6mm (¼in) across, the males 9mm (¾in) across. †5–7m (15–22ft). S. Spain, S.E. France (Hyères Isles), Sicily, N. Africa, Canary Islands. \*

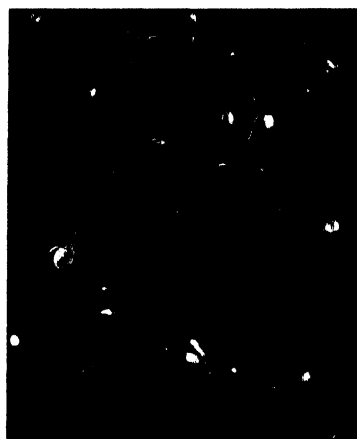
## SEMAQUILEGIA

RANUNCULACEAE

Genus of 7 species of small, sometimes short-lived perennials from mountain habitats in E. Asia. They resemble columbines (*Aquilegia*), but have spurless flowers, swollen or pouched at the bases, borne in corymb-like panicles in spring or summer. Leaves are ternate or 2-ternate, and often further divided. They are most effective when grown in a rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, neutral to slightly acid soil in full sun with some midday shade, or in partial shade. Provide shelter from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe.
- **PESTS AND DISEASES** Susceptible to damage by slugs and snails.

*S. ecalcarata* ☐ Short-lived, erect perennial with long-stalked, 2-ternate, mid-green leaves, to 8cm (3in) long, the leaflets purple beneath. In early summer,



*Semiaquilegia ecalcarata*

produces loose, corymb-like panicles of pendent, open bell-shaped, dusky pink to deep purple-red flowers, 1.5cm (½in) long. †30cm (12in), ↔ 20cm (8in). W. China. \*\*\*

## SEMIARUNDINARIA

GRAMINEAE/POACEAE

Genus of 10–20 species of tall, upright bamboos from deciduous woodland, upland slopes, and ravines in China and Japan. They generally have running rhizomes, but form dense clumps in cool climates. Smooth, cylindrical canes, with short-lived cane-sheaths, some with upper internodes grooved or flattened, produce 3–7 branches at each node, with tessellated, narrowly lance-shaped leaves. Grow in a woodland garden, as a specimen plant, or as an informal hedge.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or light dappled shade.
- **PROPAGATION** Divide, or cut up sections of youngest rhizomes, in spring.
- **PESTS AND DISEASES** Young shoots may be damaged by slugs.



*Semiarundinaria fastuosa*

## SEMPERVIVUM

*S. fastuosa* ☐ syn. *Arundinaria fastuosa* (Narihira bamboo). Tall, erect, tree-like bamboo, either with spreading rhizomes or forming dense clumps. The shining, mid-green canes are striped purple-brown, markedly so when young; cane-sheaths open to reveal polished, deep red-purple interiors. Bears lance-shaped, glossy, mid-green leaves, 12–15cm (5–6in) long, mainly on the upper part of the plant. † to 7m (22ft), ↔ 2m (6ft) or more. Japan. \*\*\*

▷ **Seminole bread** see *Zamia pumila*

## SEMPERVIVUM

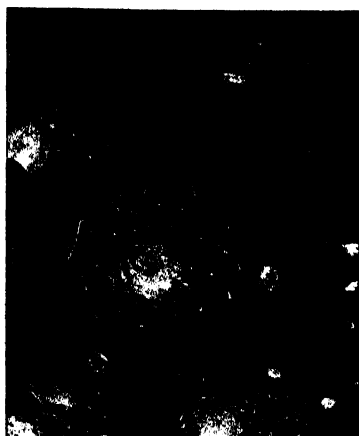
Houseleek

CRASSULACEAE

Genus of about 40 species of dense, mat-forming, evergreen succulent perennials, mainly from the mountains of Europe and Asia. They bear rosettes of thick, pointed leaves, often with bristle-fringed margins, and sometimes covered with a web of white hairs. Flat, branching, terminal, panicle-like cymes of star-shaped, white, yellow, red, or purple flowers are borne on upright stems in summer. The rosettes die after flowering, but are replaced by new, offset rosettes, borne on lateral runners. Numerous cultivars of hybrid origin are available. Grow in a rock garden, scree bed, wall crevice, or trough, or in containers in an alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, sharply drained soil, with added grit, in full sun. Some, particularly softly hairy species, resent winter wet, and are best grown in an alpine house in areas with wet winters. In an alpine house, grow in a mix of equal parts loam-based potting compost (J1 No.2) and grit. See also pp.48–49.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Root offsets in spring or early summer.
- **PESTS AND DISEASES** May be affected by *Endophyllum sempervivi* (rust).

*S. arachnoideum* ☐ (Cobweb houseleek). Mat-forming, rosetted succulent with fleshy, obovate, mid-green to red leaves, to 1cm (½in) long. The rosettes, 1–2.5cm (½–1in) across, are cobwebbed with white hairs. In summer, bears flat cymes, to 2.5cm (1in) across, of reddish pink flowers on leafy stems. †8cm (3in), ↔ 30cm (12in). Europe (Alps, Apennines; Carpathians). \*\*\*



*Sempervivum arachnoideum*

*Sempervivum ciliosum*

*S. arboreum* see *Aeonium arboreum*.

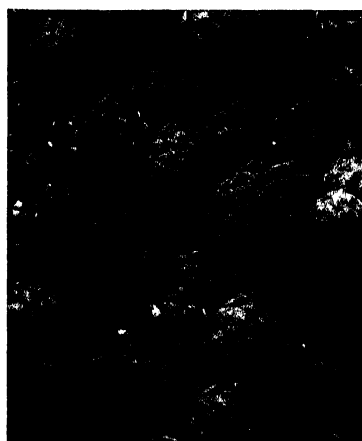
*S. balsamiferum* see *Aeonium balsamiferum*.

*S. ciliosum* ■ ♀ Mat-forming succulent with very hairy rosettes, to 5cm (2in) across, of incurved, inversely lance-shaped, grey-green leaves, 2.5cm (1in) long, convex on both surfaces. Bears flat, compact cymes, 2.5cm (1in) across, of greenish yellow flowers in summer. Best in an alpine house. ↓ 8cm (3in), ↔ 30cm (12in). Former Yugoslavia, Bulgaria, N.W. Greece. \*\*\*

*S. 'Commander Hay'* ♀ Succulent, similar to *S. tectorum*, bearing rosettes, to 10cm (4in) across, of inversely lance-shaped, glossy, deep red-purple leaves, to 4cm (1½in) long, with mid-green tips. In summer, produces cymes, 5–10cm (2–4in) across, of greenish red flowers. ↓ 10cm (4in), ↔ 30cm (12in). \*\*\*

*S. complanatum* see *Aeonium tabuliforme*.

*S. giuseppii* ■ Vigorous, mat-forming succulent with rosettes, 2.5–3.5cm (1–1½in) across, of ovate, pea-green leaves, 1.5cm (½in) long, hairy when young, and dark-spotted at the tips. Red flowers are produced in cymes, 3.5cm

*Sempervivum giuseppii*

(1½in) across, in summer. ↓ 8cm (3in), ↔ 30cm (12in). Spain. \*\*\*

*S. grandiflorum*. Variable, mat-forming succulent bearing rosettes, 5–10cm (2–4in) across, of sharp-pointed, oblong-triangular, very hairy, dark green leaves, 2.5–5cm (1–2in) long, which are often tipped with brown. In summer, yellow flowers, stained purple at the bases, are produced in cymes 10cm (4in) across. Prefers acid soil. ↓ 10cm (4in), ↔ 30cm (12in). Europe (W. and C. Alps). \*\*\*

*S. haworthii* see *Aeonium haworthii*.

*S. helveticum* see *S. montanum*.

*S. hirtum* see *Jovibarba hirta*.

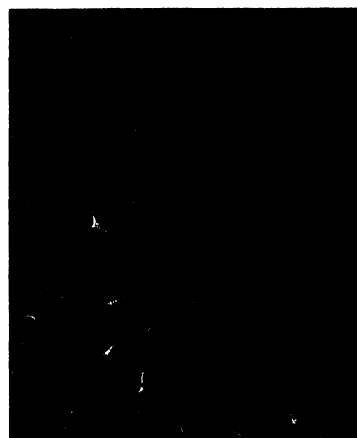
*S. masferrerii* see *Aeonium sedifolium*.

*S. montanum* ■ syn. *S. helveticum*. Vigorous, mat-forming succulent with clustered, open rosettes, 2–8cm (¾–3in) across, of sharp-pointed, inversely lance-shaped, finely hairy, fleshy, dull, dark green leaves, to 1cm (½in) long. Red-purple flowers are borne in loose cymes, to 6cm (2½in) across, in summer. Hybridizes freely. ↓ 10cm (4in), ↔ 30cm (12in) or more. C. Europe. \*\*\*

*S. nobile* see *Aeonium nobile*.

*S. patens* see *Jovibarba heuffelii*.

*S. soboliferum* see *Jovibarba sobolifera*.

*Sempervivum montanum**Sempervivum tectorum*

*S. tectorum* ■ ♀ (Common houseleek). Mat-forming succulent with open rosettes, to 10cm (4in) across, of thick, obovate to narrowly oblong, bristle-tipped, blue-green leaves, to 4cm (1½in) long, often suffused red-purple. In summer, bears cymes, 5–10cm (2–4in) across, of red-purple flowers on upright, hairy stems. ↓ 15cm (6in), ↔ 50cm (20in). Mountains of S. Europe. \*\*\*

↳ *Seneca* see *Polygala*

## SENECIO

ASTERACEAE/COMPOSITAE

Large genus of more than 1,000 species of annuals, biennials, herbaceous perennials, climbers, shrubs, and small trees, some of them succulent. They are found worldwide in habitats ranging from mountains to sea shores, and in dry to moist soils. Basal leaves are entire or variably lobed, sometimes white or silver; stem leaves, if present, are smaller and alternate. The flowerheads, either solitary or borne in corymbs, are usually terminal and daisy-like (some species lack ray-florets), and yellow, white, red, blue, or purple, sometimes orange; they mainly have yellow, sometimes purple disc-florets. Use annuals for bedding, or in containers; grow small perennials in a scree bed or rock garden, and tall ones in a border or wild garden. In frost-prone areas, grow tender species in a cool or temperate greenhouse. All parts may cause severe discomfort if ingested.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** For ease of reference, cultivation has been grouped as follows: 1. Grow in poor, gritty, sharply drained soil in full sun.

2. Grow in moderately fertile, well-drained soil in full sun.

3. Grow in moderately fertile, moist to boggy soil (such as in a bog garden) in full sun or partial shade.

4. Under glass, grow in a mix of 2 parts loam-based potting compost (J1 No.1) and 1 part each leaf mould and grit in full light with good ventilation. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Maintain moderate humidity. Keep just moist in winter. Outdoors, in frost-free areas, grow as for group 2.

5. Under glass, grow in a mix of 2 parts loam-based potting compost (J1 No.1) and 1 part each leaf mould and grit in full light with good ventilation. When in growth, water moderately, maintain

low humidity, and apply a half-strength balanced liquid fertilizer monthly. Keep just moist in winter at a minimum of 7–10°C (45–50°F). Outdoors, in frost-free areas, grow as for group 1, in neutral to slightly alkaline soil.

Pruning group 8 or 9 for shrubs; group 11, after flowering, for climbers.

• **PROPAGATION** Sow seed in spring; for cultivation groups 2, 4, and 5 at 19–24°C (66–75°F); for groups 1 and 3 in containers in a cold frame. Divide groups 1 and 3 and *S. doronicum* in spring; take basal cuttings in early spring. Divide groups 4 and 5 as growth begins; take softwood cuttings in early summer or semi-ripe cuttings in mid- or late summer. Take semi-ripe cuttings of silver and white forms of group 2 in mid- or late summer.

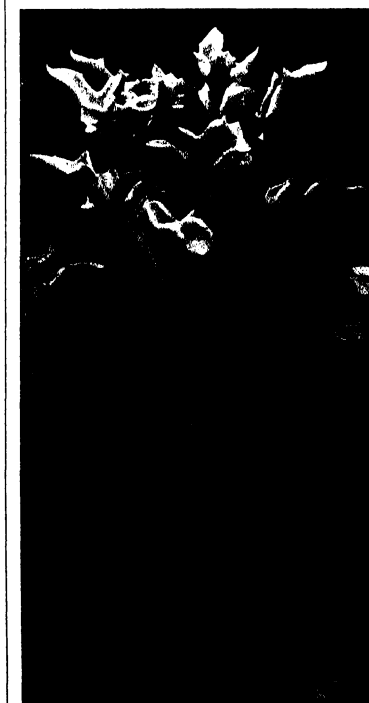
• **PESTS AND DISEASES** Prone to rust, particularly *S. cineraria* and its cultivars. Whiteflies, aphids, and red spider mites may be a problem under glass.

*S. abrotanifolius*. Evergreen subshrub with spreading or erect, hairless or downy stems, and 2- or 3-pinnatisect, glossy, dark green leaves, to 8cm (3in) long, the upper leaves less divided. From midsummer to early autumn, bears yellow to orange-scarlet flowerheads, to 4cm (1½in) across, singly or in few-flowered corymbs. Cultivation group 1. ↓ 15–45cm (6–18in), ↔ 30cm (12in). Mountains of C. and E. Europe. \*\*\*

*S. articulatus* (Candle plant). Erect, perennial succulent with cylindrical, jointed, fleshy, grey-veined, silvery blue stems, each segment to 15cm (6in) long. Bears ovate, 3- to 5-lobed, stalked, blue-green leaves, to 5cm (2in) long. Yellow flowerheads, 1cm (½in) across, are borne in small corymbs from spring to autumn. Cultivation group 5. ↓ to 60cm (24in), ↔ indefinite. South Africa.

• (min. 7°C/45°F). 'Variegatus' ■ has bold, pink or cream marks and shading on the leaves and flowerheads.

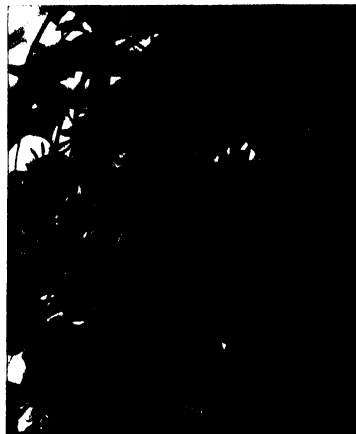
*S. bicolor* subsp. *cineraria* see *S. cineraria*.

*Senecio articulatus* 'Variegatus'



*Senecio cineraria* 'Cirrus'

*S. bidwillii* see *Brachyglottis bidwillii*.  
*S. candicans* see *S. cineraria*.  
*S. cineraria*, syn. *Cineraria maritima*, *S. bicolor* subsp. *cineraria*, *S. candicans*, *S. maritimus*. Mound-forming, evergreen subshrub or shrub, usually grown as an annual, with ovate to lance-shaped or elliptic, shallowly to deeply pinnatisect or pinnate, felted, silvery grey leaves, to 15cm (6in) long. Loose corymbs of mustard-yellow flowerheads, to 2.5cm (1in) across, are borne in midsummer, in the second year after sowing. Cultivation group 2. Dead-head regularly.  $\updownarrow$  to 60cm (24in). W. and C. Mediterranean. \*\*\* Dwarf cultivars, with a range of foliage characteristics, are popular. 'Alice' has deeply cut, silver-stained white leaves;  $\updownarrow$  to 30cm (12in). 'Cirrus'  $\square$  produces elliptic, finely toothed or lobed, silvery green to white leaves;  $\updownarrow$  to 30cm (12in). 'Silver Dust'  $\square$  has deeply pinnatisect, lacy, almost white leaves;  $\updownarrow$  to 30cm (12in). 'White Diamond'  $\square$  has deeply divided, almost oak-like, grey-white leaves; usually grown as a perennial;  $\updownarrow$  30–40cm (12–16in),  $\leftrightarrow$  30cm (12in).  
*S. clivorum* see *Ligularia dentata*.  
*S. compactus* see *Brachyglottis compacta*.



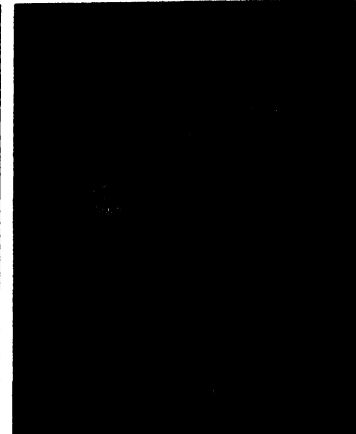
*Senecio confusus*

*S. confusus*  $\square$  syn. *Pseudogynoxys chenopodioides*. Moderately bushy, evergreen, twining climber with lance-shaped to narrowly ovate, thick, toothed, mid-green leaves, to 8cm (3in) long. Fragrant flowerheads, 5cm (2in) across, are bright orange fading to red, and are profusely borne in small, axillary and terminal corymbs, mainly in summer. Cultivation group 4.  $\updownarrow$  to 6m (20ft) or more. Mexico to Honduras.  $\odot$  (min. 7–10°C/45–50°F)  
*S. cruentus* see *Pericallis x hybrida*.  
*S. doronicum* (Leopard's bane ragwort). Clump-forming, deciduous perennial with upright, sometimes branched stems and ovate to lance-shaped or elliptic, toothed, dark green leaves, to 25cm (10in) long, cobweb-hairy beneath. Bright orange-yellow to rich yellow flowerheads, to 6cm (2½in) across, are borne singly or in loose corymbs in early and midsummer. Cultivation group 2.  $\updownarrow$  15–40cm (6–16in),  $\leftrightarrow$  30cm (12in). Mountainous regions of C. and S. Europe. \*\*\*  
*S. Dunedin Hybrids* see *Brachyglottis Dunedin Hybrids*.  
*S. elaeagnifolius* see *Brachyglottis elaeagnifolia*.



*Senecio grandifolius*

*S. elegans*. Erect annual with branched stems and oblong-ovate, pinnately lobed or coarsely toothed, deep green leaves, to 8cm (3in) long. In summer, bears corymbs of flowerheads, 2.5cm (1in) across, with yellow disc-florets and purple, reddish purple, or occasionally white ray-florets. Cultivation group 2.  $\updownarrow$  to 60cm (24in),  $\leftrightarrow$  to 35cm (14in). South Africa. \*\*  
*S. grandifolius*  $\square$  syn. *Telanthophora grandifolia*. Evergreen shrub, rounded when young, but becoming erect, with very thick, sparsely branched, purple-downy stems bearing ovate to elliptic, usually wavy-lobed, sometimes toothed, semi-lustrous, mid- to deep green leaves, 20–45cm (8–18in) long, downy, rust-brown beneath. Small, 5-rayed, bright yellow flowerheads, to 1cm (½in) across, are borne in dense, widely domed corymbs, to 30cm (12in) across, mainly in winter. Cultivation group 4.  $\updownarrow$  to 2–3m (6–10ft), sometimes more. Mexico.  $\odot$  (min. 7–10°C/45–50°F)  
*S. greyi* see *Brachyglottis greyi*.  
*S. greyi of gardens* see *Brachyglottis Dunedin Hybrids*.  
*S. hectoris* see *Brachyglottis hectoris*.  
*S. huntii* see *Brachyglottis huntii*.  
*S. x hybridus* see *Pericallis x hybrida*.  
*S. laxifolius* see *Brachyglottis laxifolia*.  
*S. laxifolius of gardens* see *Brachyglottis Dunedin Hybrids*.  
*S. leucostachys* see *S. viravira*.  
*S. macroglossus* (Cape ivy, Natal ivy). Evergreen, twining climber with semi-succulent growth at first, then eventually woody stems, which branch moderately. Triangular to spear-shaped, mid-green leaves, to 8cm (3in) long, have 3–5

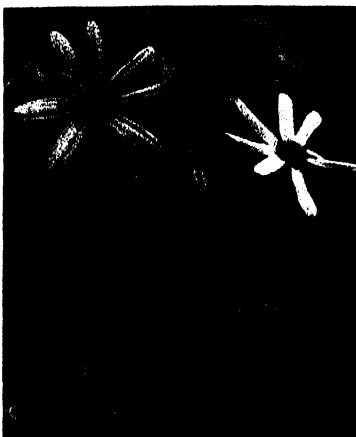


*Senecio pulcher*

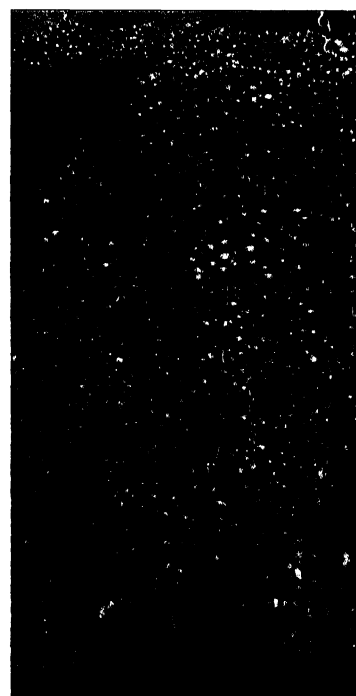
pointed lobes. Flowerheads, 5–6cm (2–2½in) across, with white to pale yellow ray-florets, are usually borne singly, sometimes in twos or threes, in summer and winter. Cultivation group 4, with shade from midday sun.  $\updownarrow$  to 3m (10ft), sometimes more. Zimbabwe to Mozambique, E. South Africa.  $\odot$  (min. 5–7°C/41–45°F). 'Variegatus'  $\square$   $\square$  has foliage with irregular, cream to light yellow margins.  
*S. maritimus* see *S. cineraria*.  
*S. mikanioides*, syn. *Delairea odorata* (German ivy, Parlour ivy). Evergreen, twining climber with succulent young stems, woody when mature. Fleshy, bright green leaves, 8–10cm (3–4in) across, are triangular to triangular-ovate, with 5–7 broad, pointed lobes. Small, groundsel-like yellow flowerheads, 8mm (⅜in) across, without ray-florets, are borne in dense, axillary and terminal corymbs, 8cm (3in) across, from autumn to early winter. Cultivation group 4.  $\updownarrow$  to 6m (20ft). South Africa.  $\odot$  (min. 3–5°C/37–41°F)  
*S. 'Moira Read'* see *Brachyglottis Dunedin Hybrids 'Moira Read'*.  
*S. monroi* see *Brachyglottis monroi*.  
*S. przewalskii* see *Ligularia przewalskii*.



*Senecio cineraria* 'Silver Dust'



*Senecio macroglossus* 'Variegatus'



*Senecio rowleyanus*





*Senecio smithii*

***S. pulcher*** ■ Erect, deciduous or semi-evergreen perennial, woolly in early growth, becoming hairless, with leathery, mid-green leaves, to 20cm (8in) long. Basal leaves are elliptic with scalloped margins; stem leaves are lance-shaped with toothed margins. In mid- and late autumn, bears solitary corymbs of carmine-purple flowerheads, 5–8cm (2–3in) across. Cultivation group 4; may survive outdoors in a sheltered, sunny site, in cool, deep, fertile soil; severe weather harms leaves and flowers.

‡ 45–60cm (18–24in), ↔ 50cm (20in). S. Brazil, Uruguay, Argentina. \* \*

***S. radicans***. Mat-forming, perennial succulent with prostrate, rooting stems and cylindrical, straight or slightly curved, fleshy, glaucous, mid-green leaves, to 2.5cm (1in) long, each with a darker stripe down the middle. Solitary or paired white flowerheads, 3–5mm (1/8–1/4in) across, are borne sporadically during the year. Cultivation group 5.

‡ 8–10cm (3–4in), ↔ 15–30cm (6–12in). South Africa. \* \*

***S. reinholdii*** see *Brachyglottis rotundifolia*.

***S. reniformis*** see *Cremanthodium reniforme*.

***S. rotundifolius*** see *Brachyglottis rotundifolia*.

***S. rowleyanus*** ■ syn. *Kleinia rowleyana* (String of beads). Pendent or creeping, perennial succulent with adventitious roots on the stems and spherical, slightly pointed, mid-green leaves, to 1cm (1/2in) long. Bears solitary, funnel-shaped, cinnamon-scented white flowerheads, to 1cm (1/2in) long, with protruding brown stamens, in summer. Cultivation group

5. ‡ 60cm (24in) or more, ↔ indefinite. S.W. Africa. ☼ (min. 7–10°C/45–50°F)

***S. scandens***. Evergreen, twining climber, woody-based and usually bushy when mature, with ovate or narrowly triangular, almost entire to sharply toothed or lobed, bright green leaves, to 10cm (4in) long. From autumn to winter, bears yellow flowerheads, 1.5cm (1/2in) across, in panicle-like corymbs, 13cm (5in) across. Cultivation group 4. ‡ 2.5–5m (8–15ft). E. Asia. ☼ (min. 7°C/45°F)

***S. serpens***. syn. *Kleinia repens*.

Shrubby, perennial succulent with semi-erect, fleshy, blue-frosted shoots, 7mm (1/4in) thick. Cylindrical, fleshy, waxy, bluish grey leaves, to 3cm (1 1/4in) long, grooved on the upper surfaces, are crowded at the stem and branch tips. In summer, bears whitish yellow flowerheads, 1cm (1/2in) long, lacking ray-florets. Cultivation group 5. ‡ 30cm (12in). South Africa. ☼ (min. 7°C/45°F)

***S. smithii*** ■ Vigorous, deciduous, clump-forming, woolly perennial with oblong-ovate, toothed, leathery, glossy, dark grey-green basal and stem leaves, to 30cm (12in) long. From early to late summer, stout, upright, unbranched stems bear large corymbs, 10–15cm (4–6in) across, of numerous yellow-centred white flowerheads, to 5cm (2in) across. Cultivation group 3, but best in moist soil. ‡ to 1.2m (4ft), ↔ 60cm (24in). S. Chile, W. Argentina, Falkland Islands. \* \* \*

***S. stapeliiformis*** see *Kleinia stapeliiformis*.

***S. 'Sunshine'*** see *Brachyglottis* Dunedin Hybrids 'Sunshine'.

***S. tanguticus***. syn. *Ligularia tangutica*, *Sinacalia tangutica* (Chinese groundsel). Clump-forming, deciduous perennial with upright, unbranched black stems and ovate, deeply pinnatisect, jagged, dark green leaves, to 18cm (7in) long. In early and mid-autumn, bears pyramidal panicles or loose corymbs of bright yellow flowerheads, 2mm (1/16in) across. Cultivation group 3; invasive, so best in a large, wild garden, near water. ‡ to 1.2m (4ft) or more, ↔ 1.1m (3 1/2ft). N.W. China. \* \* \*

***S. viravira*** ■ syn. *S. leucostachys*. Open, spreading, evergreen subshrub with densely white-hairy shoots and deeply pinnatisect, silvery white leaves, to 8cm (3in) long, with 5–9 linear lobes that are usually further divided. Loose corymbs of small, pale yellow flowerheads, 5mm (1/4in) across, without ray-florets, are produced from summer to autumn. Cultivation group 2. ‡ 60cm (24in), ↔ 1m (3ft). Argentina. \* \*

## SENNA

CAESALPINIACEAE/LEGUMINOSAE

Genus, often included in *Cassia*, of about 260 species of evergreen and deciduous trees, shrubs, and perennials from semi-desert, scrub, and savannah in dry, tropical and warm-temperate regions. Leaves are alternate and pinnate, with linear to nearly rounded leaflets. Sennas are cultivated for their yellow or rarely white, pea-like flowers, borne in terminal or axillary racemes, corymbs, or panicles. In frost-prone climates, grow in a temperate or warm greenhouse. In frost-free areas, grow in a shrub border.

• **HARDINESS** Frost tender.



*Senna artemisioides*

- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light and moderate humidity. In growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, moderately fertile soil in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Divide perennials in spring. Root semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

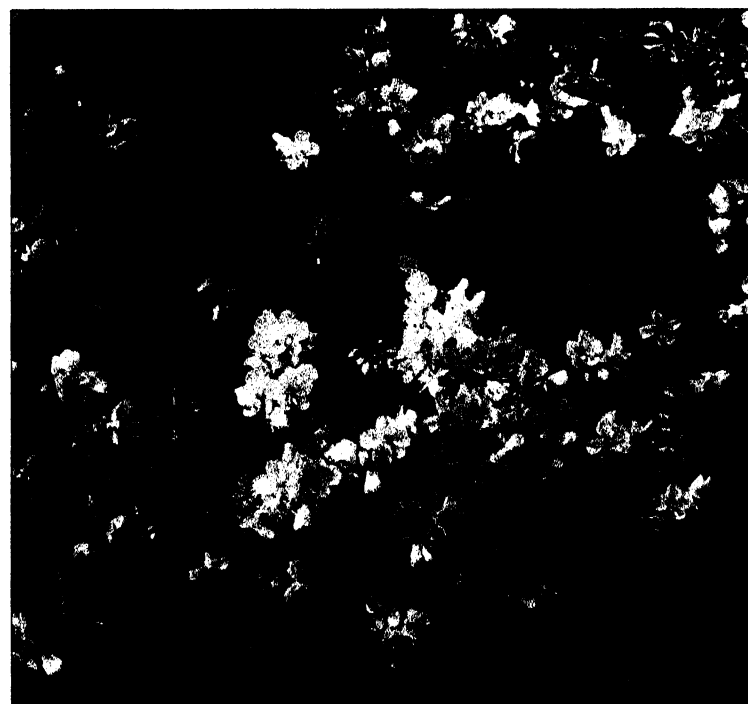
***S. alata*** ♀ syn. *Cassia alata* (Empress candle plant). Erect to spreading, evergreen shrub or small tree. Broadly oblong to obovate, pinnate leaves, 20–75cm (8–30in) long, have 14–28 oblong, bright green leaflets. Bears numerous bright yellow flowers, to 2.5cm (1in) across, in tall, erect, axillary racemes, 15–60cm (6–24in) long, mainly from late summer to autumn; flowers are protected by broad, yellowish green bracts when in bud. ‡ 2–10m (6–30ft), ↔ 2–5m (6–15ft). Africa to S.E. Asia, Pacific islands, tropical America. ☼ (min. 5–7°C/41–45°F)

***S. artemisioides*** ■ ♀ syn. *Cassia artemisioides* (Silver cassia). Erect to spreading, evergreen shrub with pinnate leaves, 3–6cm (1 1/4–2 1/2in) long, composed of 6–8 short, narrowly linear, thickly downy, grey-green leaflets. Stems are covered in ash-white hairs. Bears axillary racemes, to 8cm (3in) long, of 4–12 fragrant, pale to rich yellow flowers, to 1cm (1/2in) across, intermittently throughout the year. ‡ 1–2m (3–6ft), ↔ 1m (3ft). Australia (Northern Territory, South Australia, New South Wales). ☼ (min. 10–13°C/50–55°F)

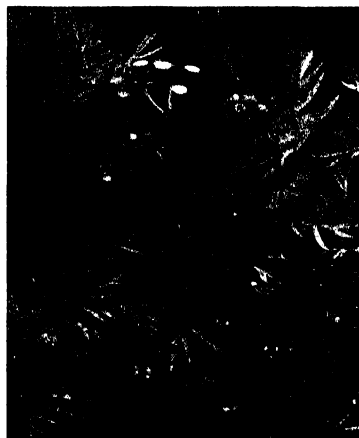
***S. corymbosa*** ■ ♀ syn. *Cassia corymbosa*. Erect to spreading, evergreen shrub or small tree producing pinnate, yellowish-green leaves, 40–90cm (16–36in) long, with 6–8 oblong-lance-shaped leaflets. Axillary corymbs, 10cm (4in) across, of up to 20 golden yellow flowers, to 2cm (3/4in) across, are borne in late summer. ‡ 2–4m (6–12ft), ↔ 1.5–3m (5–10ft). Argentina, Uruguay. ☼ (min. 5–7°C/41–45°F)

***S. didymobotrya*** ♀ syn. *Cassia didymobotrya*. Erect to spreading, evergreen shrub or small tree with pinnate, mid-green leaves, 10–50cm (4–20in) long, composed of 16–32 elliptic-obovate leaflets. Numerous golden yellow flowers, to 3cm (1 1/4in) across, with blackish brown bracts covering the buds, are borne in tall, erect, terminal or axillary racemes, 15–60cm (6–24in) long, mainly from late summer to autumn. ‡ 2.5m (8ft), ↔ 1.5–3m (5–10ft). Tropical Africa; naturalized in India, Malaysia. ☼ (min. 13°C/55°F)

***S. x floribunda*** (*S. multiglandulosa* x *S. septentrionalis*) syn. *Cassia corymbosa* var. *plurijuga*, *C. x floribunda*. Many-branched, evergreen or deciduous shrub with pinnate, mid-green leaves, 6–8cm (2 1/2–3in) long, comprising 12 oblong-elliptic leaflets. From summer to winter, often-branched, axillary racemes, 10cm (4in) long, produce up to 20 rich yellow flowers, to 2cm (3/4in) across. ‡ 1–3m (3–10ft), ↔ 1–2.5m (3–8ft). Garden origin. ☼ (min. 7°C/45°F)



*Senna corymbosa*



*Senecio viravira*

*S. siamea* ♀ syn. *Cassia siamea* (Kassod tree). Open, fast-growing, evergreen tree with hairless young stems. Pinnate, deep yellow-green leaves, 10–35cm (4–14in) long, each have 14–24 narrowly elliptic to oblong leaflets. Dense, erect, terminal, corymb-like panicles, 15–35cm (6–14in) long, of 10–60 yellow flowers, to 2cm (¾in) across, are borne from spring to summer. †10m (30ft), ↔ 7m (22ft). Indonesia, Malay Peninsula. ☼ (min. 16–18°C/61–64°F)

*S. sturtii*. Spreading or rounded, evergreen shrub. Pinnate, mid-green leaves, 4–5cm (1½–2in) long, have 4–16 linear to elliptic leaflets. In early summer, bears short, axillary racemes, to 10cm (4in) across, of 4 or 5 yellow flowers, 1cm (½in) across. †1–2m (3–6ft), ↔ 1–1.5m (3–5ft). Australia. ☼ (min. 10°C/50°F)

▷ **Senna**,

**Bladder** see *Colutea*, *C. arborescens*

**Scorpion** see *Coronilla emerus*

▷ **Sensitive plant** see *Mimosa pudica*

▷ **September bells** see *Rothmannia globosa*

## SEQUOIA

TAXODIACEAE

Genus of one species of very tall, fast-growing, monoecious, evergreen, coniferous tree from coastal forest in California and Oregon, USA. It has thick, soft bark, whorled branches when young, and yew-like foliage. Useful where a tall, evergreen tree is needed quickly; it thrives in climates with cool, damp summers, and is tolerant of pollution and wind. It is one of the few

conifers that will coppice, or make new shoots from the base if cut down. The genus contains the tallest tree and also some of the oldest trees in the world.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun to light dappled shade.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root softwood cuttings in summer, or semi-ripe cuttings in late summer or autumn.

• **PESTS AND DISEASES** Trouble free.

*S. sempervirens* ♂ ♀ (Coastal redwood). Columnar-conical tree with horizontal or downcurved branches, thick, fissured, soft, red-brown bark, and mid-green, later red-brown shoots with decurrent leaf bases. The hard, linear, sharp-pointed, deep green leaves, 2cm (¾in) long, silvery white beneath, are 2-ranked. On very strong shoots, the leaves are scale-like. Cones are spherical-cylindrical: the terminal, mid-green female cones, 3cm (1¼in) long, ripen in their first autumn; the tiny, terminal and axillary, brownish green male cones are to 4mm (¼in) long. † to 112m (365ft), but mainly 20–30m (70–100ft), ↔ 6–9m (20–28ft). USA (coastal California and Oregon). \*\*\*

'**Adpressa**' has short, broad leaves, to 1cm (½in) long, creamy white when young and lying flat along the shoots; †6–9m (20–28ft), ↔ 4–6m (12–20ft).

'**Pendula**' produces arching branches with pendent branchlets. '**Prostrata**' is dwarf, with spreading branches and broader, glaucous, dark green leaves; † to 1.5m (5ft), ↔ 2–3m (6–10ft).

## SEQUIADENDRON

TAXODIACEAE

Genus of one species of monoecious, evergreen, coniferous tree from forest in the mountains of California, USA. It is related to *Sequoia* but has narrowly wedge-shaped leaves and thicker, harder bark, and cones that ripen in the second year rather than the first; it thrives in a cooler, drier atmosphere than *Sequoia*. An excellent, but very tall specimen tree.

• **HARDINESS** Fully hardy.

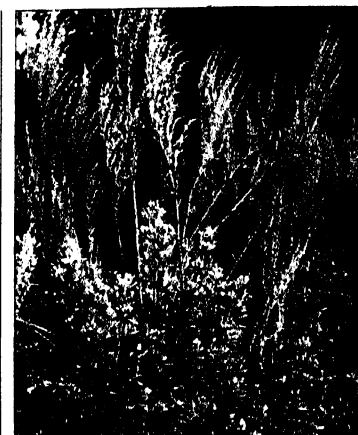
• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun or light dappled shade.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root softwood cuttings in summer, or semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Susceptible to honey fungus.

*S. giganteum* ♂ ♀ (Big tree, Giant redwood, Sierra redwood, Wellingtonia). Conical tree, becoming columnar, with downcurved branches, very thick, fissured, red-brown bark, and mid-green, later red-brown shoots. Awn-shaped, grey-green leaves, to 7mm (¼in) long, are arranged radially and point forwards on the shoots. Bears ovoid, mid-green female cones, 4.5cm (1¾in) long, ripening brown and persisting for several years. †25–80m (80–260ft), ↔ 7–10m (22–30ft). USA (Sierra Nevada, California). \*\*\*

'**Pendulum**' has pendent side branches, giving a curtain-like effect, although the main shoot grows rather erratically.



*Seriphidium tridentatum*

## SERIPHIDIUM

ASTERACEAE/COMPOSITAE

Genus of 60–130 species of annuals, herbaceous or evergreen perennials, and mainly evergreen subshrubs from dry steppes, chaparral, and rocky or stony ground in Europe, N. Africa, temperate Asia, and North America. They are grown for their silver or grey, alternate, simple, pinnatisect, often aromatic leaves. Yellow to purple flowerheads, consisting only of disc-florets, are borne in terminal or axillary spikes, panicles, or racemes in summer or autumn. Grow in a shrub border. Tolerant of neglect.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in poor to moderately fertile, dry, sharply drained soil in full sun. Pruning group 9.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root semi-ripe cuttings in late summer, with bottom heat.

• **PESTS AND DISEASES** Trouble free.

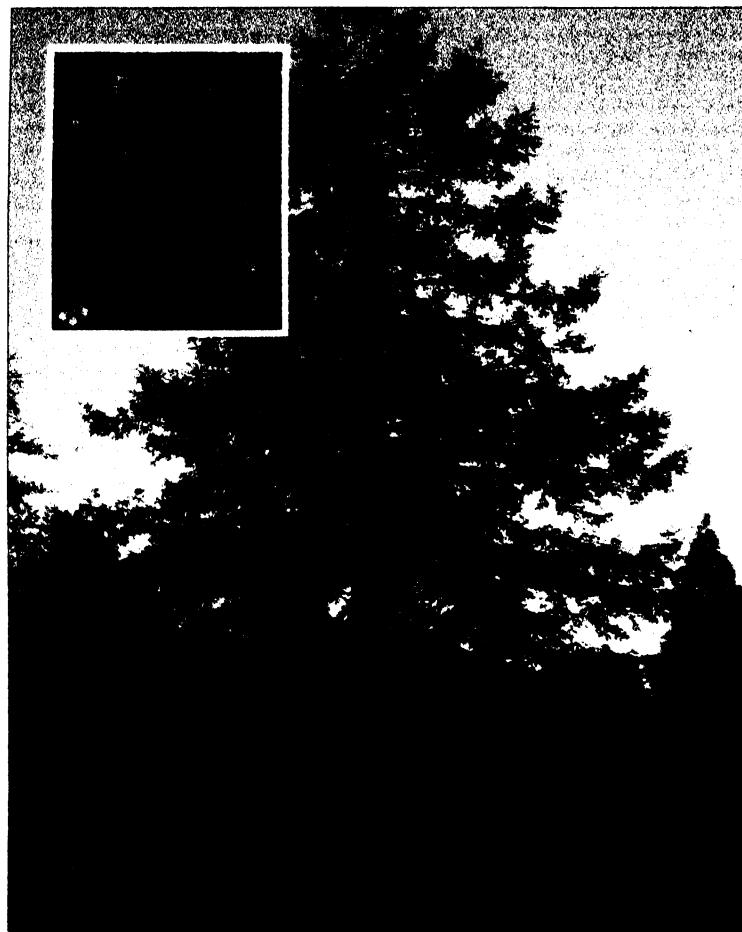
*S. nutans*, syn. *Artemisia nutans*. Woody-based, evergreen perennial producing 2- or 3-pinnatisect, aromatic, silvery grey leaves, 5–10cm (2–4in) long, with small, linear lobes. In late summer and early autumn, bears pale yellow flowerheads, 6mm (¼in) across, in dense, leafy, pyramidal panicles, to 12cm (5in) long. † to 1m (3ft), ↔ 60cm (24in). S.E. Russia. \*\*\*

*S. tridentatum* ♂ syn. *Artemisia tridentata* (Sagebrush). Woody-based, evergreen perennial or spreading subshrub with a short trunk or few stems, white-woolly at first, becoming pale brown as bark forms. Densely clustered, wedge-shaped, aromatic, silvery grey-downy leaves, 1–4cm (½–1½in) long, often have 3-toothed tips. In mid-autumn, bears feathery, greyish white or yellow flowerheads, to 4mm (¼in) across, in slender panicles, to 45cm (18in) long. † to 2.5m (8ft). USA (S. California). \*\*\* (borderline)

## SERISSA

RUBIACEAE

Genus of one species of small, evergreen shrub from moist, open woodland in S.E. Asia. Its leaves are simple, borne in opposite pairs, and foetid when crushed. Small, funnel-shaped flowers, with tubular calyces and 4–6 spreading petal lobes, are borne singly or in clusters in



*Sequoia sempervirens* (inset: leaf and cone detail)



*Sequoiadendron giganteum*

summer. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse, mainly as a foliage plant. In warmer areas, grow at the base of a house wall, in a shrub border, or as a low hedge.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Shelter from cold, drying winds. Pruning group 9. Trim hedges after flowering or in late winter.

• **PROPAGATION** Root softwood cuttings in spring or early summer, or semi-ripe cuttings in late summer, both with bottom heat. Layer in spring.

• **PESTS AND DISEASES** Scale insects may be a problem under glass.

*S. foetida*, syn. *S. japonica*. Wiry-stemmed, eventually domed, bushy shrub producing crowded, tiny, ovate, leathery, deep green leaves, to 2cm (¾in) long. In summer, pink buds open to star-shaped white flowers, to 1.5cm (½in) across. ↑ 30–60cm (12–24in), ↔ 30–75cm (12–30in). S.E. Asia. ☼ (min. 7°C/45°F). 'Flore Pleno' is smaller, with double flowers; ↑ to 45cm (18in), ↔ 30cm (12in). 'Variegata' has leaves with cream margins. 'Variegated Pink' has cream-margined foliage and bears a profusion of pink flowers. *S. japonica* see *S. foetida*.

## SERRURIA

PROTEACEAE

Genus, related to *Protea*, of about 55 species of evergreen shrubs from dry heathland scrub in South Africa. They have alternate, usually finely divided leaves, and bear dense heads of small, 4-petalled flowers from early spring to autumn, surrounded in *S. florida* by showy, petal-like bracts. In frost-prone areas, grow in a temperate greenhouse. In warmer areas, grow in a shrub border or at the base of a warm, sunny wall.

• **HARDINESS** Frost tender, but may survive short spells at about 0°C (32°F).

• **CULTIVATION** Under glass, grow in 1 part loam-based potting compost (J1 No.1) and 3 parts 50/50 mix of perlite and peat (or coir) in full light, with good ventilation. During the growing season, water moderately; after the first year, apply a half-strength phosphate-free liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in poor to moderately fertile, well-drained, neutral to slightly acid soil in full sun. May become chlorotic if deficient in magnesium. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed singly in pots at 16–21°C (61–70°F) as soon as ripe or in spring. Root semi-ripe cuttings in late summer, with bottom heat.

• **PESTS AND DISEASES** Trouble free.

*S. florida* ☼ (Blushing bride). Airy shrub with erect, purple-tinged branches bearing pinnate or 2-pinnate, greyish green leaves, 4–6cm (1½–2½in) long, with numerous almost cylindrical, sharp-pointed leaflets. From spring



*Serruria florida*

to autumn, produces salmon-pink flowerheads, 2–2.5cm (¾–1in) across, each with a cup-shaped ring of pink-tinted white bracts. ↑ 1.5–2m (5–6ft), ↔ 1–1.5m (3–5ft). South Africa (Western Cape, Eastern Cape). ☼ (min. 7–10°C/45–50°F)

▷ **Serviceberry, Allegheny** see *Amelanchier laevis*

▷ **Service tree** see *Sorbus domestica*

▷ **Service tree of Fontainebleau** see *Sorbus latifolia*

## SESBANIA

syn. DAUBENTONIA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 50 species of short-lived, evergreen perennials, shrubs, and small trees found on streambanks and on moist soils in tropical and subtropical regions worldwide. Sesbanias are cultivated for their showy, pea-like flowers, borne in loose racemes from the leaf axils in summer. The leaves are alternate and pinnate, with many leaflets, each leaf terminating in a short extension of the axis. In frost-prone areas, grow in a cool to warm greenhouse, or in a conservatory. In warmer areas, grow in a shrub border, or at the base of a warm, sunny wall.

• **HARDINESS** Frost tender, but a few species, including *S. punicea*, may survive temperatures around 0°C (32°F), if wood has been well ripened in summer.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 9.

• **PROPAGATION** Sow seed at 15–19°C (59–66°F) in spring. Root semi-ripe cuttings in late summer, with bottom heat.

• **PESTS AND DISEASES** Prone to red spider mites and whiteflies under glass.

*S. punicea* ☼ syn. *Daubentonia punicea*. Erect to spreading, large shrub or small tree. Pinnate leaves, 20–30cm (8–12in) long, have 6–20 pairs of oblong, mid- to deep green leaflets. In summer, bears pea-like, red-purple flowers, 2cm (¾in) across, in racemes to 10cm (4in) long. ↑ 2–4m (6–12ft), ↔ 1.5–2.5m (5–8ft). S. Brazil, N.E. Argentina, Uruguay. ☼ (min. 5°C/41°F)

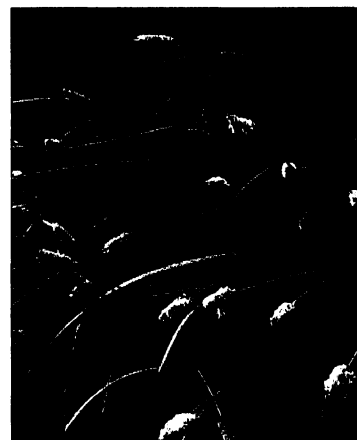
## SESLERIA

GRAMINEAE/POACEAE

Genus of 33 species of tufted or clump-forming, evergreen, perennial grasses found mainly in damp or dry grasslands in the hills and mountains of Europe. They bear narrow, usually linear leaves and dense, spherical to cylindrical, spike-like panicles of flowers. Cultivated mainly for their colourful foliage, they are suitable for the front of a herbaceous or mixed border, in a rock garden, or in a wildflower meadow.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun or light dappled shade.



*Sesleria nitida*

• **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

*S. albicans*, syn. *S. caerulea* subsp. *calcareae* (Blue moor grass). Vigorous, densely tufted, mound-forming, evergreen perennial with round-tipped, flat or channelled, linear, pale blue-grey leaves, to 30cm (12in) long, glossy, dark green beneath. Bears bluish purple, rarely greenish white spikelets, in dense, ovoid panicles, to 1–3cm (½–1¼in) long, just above the foliage from mid-spring to early summer. ↑ to 30cm (12in), ↔ 25cm (10in). Europe. \*\*\* *S. caerulea* subsp. *calcareae* see *S. albicans*.

*S. heufleriana* (Balkan moor grass). Densely tufted, mound-forming, evergreen perennial with linear, bright green leaves, to 45cm (18in) long, greyish green beneath, and initially glaucous. White spikelets, ageing to deep purple, are borne in panicles 1–3cm (½–1¼in) long, from late spring to late summer. ↑ to 60cm (24in), ↔ 45cm (18in). S.E. Europe. \*\*\*

*S. nitida* ☼ (Nest moor grass). Densely tufted, mound-forming, evergreen perennial with smooth, linear, sharp-pointed, pale grey-green to grey-blue leaves, to 45cm (18in) long. In late spring and early summer, long stems bear panicles, 2–3cm (¾–1¼in) long, of whitish green spikelets. ↑ to 60cm (24in), ↔ 40cm (16in). C. and S. Italy. \*\*\*

▷ *Setcreasea purpurea* see *Tradescantia pallida* 'Purpurea'

▷ *Setcreasea striata* see *Callisia elegans*

▷ *Sevenbark* see *Hydrangea arborescens*

▷ *Seville orange* see *Citrus aurantium*

▷ *Shadbush* see *Amelanchier*, *A. canadensis*

▷ *Shallon* see *Gaultheria shallon*

▷ *Shamrock* see *Oxalis*, *Trifolium repens*

▷ *Shamrock pea* see *Parochetus africana*

▷ *Shasta daisy* see *Leucanthemum* x *superbum*

▷ *Shaving brush plant* see *Haemanthus albiglossus*

▷ *Sheepberry* see *Viburnum lentago*

▷ *Sheep's bit* see *Jasione*

▷ *Shell flower* see *Moluccella laevis*, *Pistia*, *P. stratiotes*

## SHEPHERDIA

ELAEAGNACEAE

Genus of 3 species of dioecious, evergreen or deciduous shrubs or small trees found in rocky and sandy habitats, and on streambanks, in North America. They have opposite, simple, ovate or oblong leaves and, in spring, before the leaves appear, bear short spikes or racemes of tiny, tubular, petalless flowers, each with a 4-lobed calyx. On female plants, the flowers are followed by spherical or ovoid, red or yellowish red fruits. Valued for their ornamental fruit and foliage, shepherdias are suitable for the back of a mixed or shrub border; they are particularly useful on poor, dry soils, and excellent for sites in exposed coastal regions. Male and female plants must be grown together to obtain fruit.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Pruning group 1.

- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root green-wood cuttings in early summer, with gentle bottom heat.
- **PESTS AND DISEASES** Trouble free.

*S. argentea* (Buffalo berry). Upright, bushy, deciduous shrub, often tree-like, with oblong leaves, to 5cm (2in) long, covered in silvery scales. In spring, produces insignificant, yellow-green flowers, followed on female plants by ovoid, sour-tasting, bright red fruit, 5mm (1/4in) long.  $\pm$  4m (12ft). North America. \*\*\*

## SHIBATAEA

GRAMINEAE/POACEAE

Genus of about 5 species of low-growing, clump-forming, evergreen bamboos from deciduous woodland and valley slopes in China and Japan. They have slowly spreading rhizomes and slender canes, slightly flattened on one side and slightly bent at the nodes, creating a zigzag effect. Each node bears 2–5 short branches with narrowly ovate to elliptic, tessellated leaves. Grow for their foliage in a mixed border, a gravel planting, or a container on a patio, or, if densely planted, as ground cover.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained or damp soil in partial shade, or in full sun where soil stays damp in spring and summer.
- **PROPAGATION** Divide or transplant sections of young rhizomes in spring.
- **PESTS AND DISEASES** Young shoots may be damaged by slugs.

*S. kumasasa* ■ syn. *Sasa ruscifolia*. Evergreen, clump-forming bamboo with short-jointed, greenish brown canes and abundant long-stalked, broadly lance-shaped, taper-pointed, rich dark green leaves, 5–11cm (2–4 1/2in) long. New shoots appear very early in spring.  $\pm$  0.6–1.5m (2–5ft),  $\leftrightarrow$  60cm (24in). Japan. \*\*\*



*Shibataea kumasasa*

- ▷ **Shield, Carolina water** see *Cabomba caroliniana*
- ▷ **Shield fern** see *Polystichum*
- ▷ **Hard** see *P. aculeatum*
- ▷ **Prickly** see *P. aculeatum*
- ▷ **Soft** see *P. setiferum*
- ▷ **Shingle plant** see *Rhaphidophora celatocaulis*
- ▷ **Shinleaf** see *Pyrola*
- ▷ **Shoo-fly** see *Nicandra*, *N. physalodes*
- ▷ **Shooting star** see *Dodecatheon*, *D. meadia*, *Thymophylla tenuiloba*

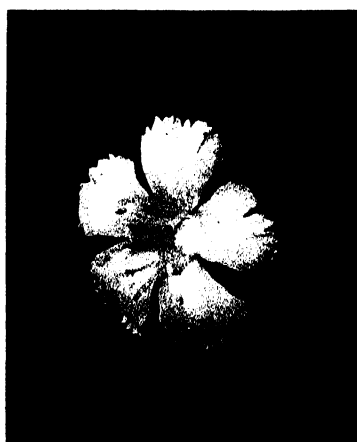
## SHORTIA syn. SCHIZOCODON

DIAPENSACEAE

Genus of 6 species of evergreen perennials, spreading by runners, from woodland in E. Asia, with one species from North America. The rounded, heart-shaped, or elliptic, toothed, leathery, glossy, usually dark green leaves often turn red in autumn and winter. Bell-, trumpet-, or funnel-shaped, white or deep pink flowers, with toothed or deeply fringed petals, are borne either singly or in terminal racemes, in spring. These attractive, shade-loving plants are suitable for cultivation in a rock garden, peat bed, open glade in a woodland garden, or an alpine house. They grow best in areas with cool, damp summers.

- **HARDINESS** Fully hardy; without snow cover, buds may be damaged by frost.
- **CULTIVATION** Grow in humus-rich, leafy, moist but well-drained, acid soil in deep to partial shade. Difficult to grow in dry climates, even with frequent watering. Under glass, grow in lime-free (ericaceous) potting compost, and keep cool and well ventilated, with moderate to high humidity.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe; keep moist at all times. Remove small, rooted runners carefully in spring; shortias dislike root disturbance. Take basal cuttings in early summer.
- **PESTS AND DISEASES** Prone to slugs and snails outdoors; may be infested with aphids under glass.

*S. galacifolia* (Oconee bells). Clump-forming perennial with rounded, blunt-toothed, glossy, dark green leaves, 2–7cm (3/4–3in) long, with wavy margins, turning bronze-red in autumn. In late spring, bears solitary, funnel-shaped white flowers, to 2.5cm (1in) across, often flushed pink, with toothed petals and pink calyces.  $\pm$  15cm (6in),  $\leftrightarrow$  25cm (10in). E. USA. \*\*\*



*Shortia uniflora* 'Grandiflora'

*S. soldanelloides*. Mat-forming perennial producing ovate to rounded, coarsely toothed, glossy, dark green leaves, 5cm (2in) long, rounded or heart-shaped at the bases. In late spring, bears narrowly trumpet-shaped, deep pink flowers, to 2.5cm (1in) across, with deeply fringed petals, usually in one-sided racemes.  $\pm$  10–30cm (4–12in),  $\leftrightarrow$  25cm (10in). Japan. \*\*\*. **var. ilicifolia** has smaller leaves with triangular teeth, and white or rarely pink flowers.

*S. uniflora* 'Grandiflora' ■ Vigorous, mat-forming perennial with rounded, toothed, glossy, mid-green leaves, 2–7cm (3/4–3in) long, heart-shaped at the bases and with wavy margins. In spring, bears a profusion of solitary, widely bell-shaped, shell-pink flowers, 5cm (2in) across, with toothed petals.  $\pm$  15cm (6in),  $\leftrightarrow$  25cm (10in). Japan. \*\*\*

- ▷ **Shot plant, Indian** see *Canna*
- ▷ **Shower tree, Golden** see *Cassia fistula*
- ▷ **Shrimp bush** see *Justicia brandegeana*
- ▷ **Shrimp plant** see *Justicia brandegeana*
- ▷ **Shrubs** see pp.34–35

## SIBIRAEA

ROSACEAE

Genus, closely related to *Spiraea*, of one species of deciduous shrub found on cliffs and in rocky places in E. Europe, Russia (Siberia), and China. The leaves are alternate (occasionally appearing whorled on short, lateral shoots), entire, linear-oblong to narrowly obovate, and mid- or blue-green. Racemes of tiny, cup-shaped, white or yellowish green flowers are produced in summer; the flowers are usually either male or female. Grow *S. laevigata* for its foliage and flowers in a mixed or shrub border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Pruning group 2 or 4.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root softwood cuttings in spring or summer, with gentle bottom heat.
- **PESTS AND DISEASES** Trouble free.

*S. altaiensis* see *S. laevigata*.

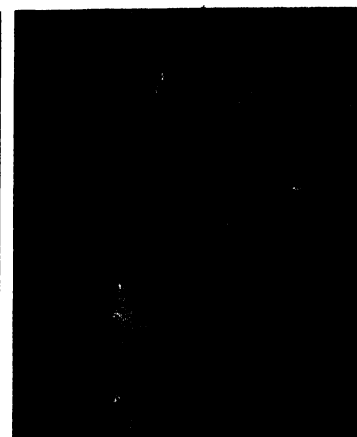
*S. laevigata*, syn. *S. altaiensis*. Spreading, sparsely branched shrub with stout, purple-brown shoots and linear-oblong to narrowly obovate, mid- or blue-green leaves, to 10cm (4in) long. Tiny, cup-shaped, white or yellowish green flowers are borne in terminal racemes, to 12cm (5in) long, in early summer.  $\pm$  1m (3ft),  $\leftrightarrow$  1.5m (5ft). Russia (Siberia), Balkans, W. China. \*\*\*

## SIDALCEA

False mallow, Prairie mallow

MALVACEAE

Genus of approximately 20–25 species of annuals and perennials, some rhizomatous, occurring in grassland, woodland glades, and on mountain streamsides in W. and C. North America. They form clumps of rounded to kidney-shaped, palmately lobed or toothed, mid-green basal leaves, from



*Sidalcea malviflora* 'Elsie Heugh'

which arise erect, sometimes branched, stiff, flowering stems. The flowering stems produce palmately lobed, mid-green stem leaves and long-lasting, hollyhock-like, white, pink, or purple-pink flowers in dense, upright, terminal racemes. Each flower has 5 spreading, sometimes fringed, silky petals and numerous prominent stamens. Sidalceas are suitable for growing in a mixed or herbaceous border, and provide good cut flowers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, light, sandy, neutral to slightly acid soil in full sun. Sidalceas will tolerate a wide range of soil conditions, but resent waterlogging. Provide a dry winter mulch of bracken or straw during prolonged frosty periods without protective snow cover. Cut stems back hard after flowering, to prevent seed formation and to encourage a further flush of blooms.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide cultivars in autumn or spring.
- **PESTS AND DISEASES** Prone to slug damage and susceptible to rust.



*Sidalcea malviflora* 'Oberon'

*S. candida*. Rhizomatous perennial with rounded, 7-lobed basal leaves, to 20cm (8in) long, and smaller, rounded leaves on the erect, unbranched stems. Dense racemes of open funnel-shaped, white or cream flowers, to 2.5cm (1in) across, are produced in mid- and late summer. ‡30–80cm (12–32in), ↔45cm (18in). USA (Wyoming, Nevada, Utah, Colorado, New Mexico). \*\*\*

*S. malviflora* (Checkerbloom). Erect to slightly decumbent perennial producing rounded to kidney-shaped, shallowly lobed basal leaves, 4–8cm (1½–3in) long, and more deeply lobed stem leaves. In early and midsummer, bears racemes of funnel-shaped, pink or lilac-pink flowers, 5cm (2in) across. ‡to 1.2m (4ft), ↔45cm (18in). USA (Oregon, California), Mexico (Baja California). \*\*\*. Most of the cultivars described are hybrids between *S. candida* and *S. malviflora*. 'Croftway Red' has rich reddish pink flowers; ‡90cm (36in). 'Elsie Heugh' ■ has large, satin-textured, purple-pink flowers, the petals fringed; ‡90cm (36in). 'Loveliness' is compact, with pale pink flowers; ‡75cm (30in). 'Oberon' ■ has clear rose-pink flowers. 'Puck' is compact and upright, bearing deep pink flowers in midsummer; ‡to 40cm (16in). 'Reverend Page Roberts' has silvery, pale rose-pink flowers. 'Sussex Beauty' has satin-textured, clear pink flowers. 'William Smith' ♀ has deep rose-pink flowers, tinted salmon-pink; ‡90cm (36in).

## SIDERITIS

LABIATAE/LAMIACEAE

Genus of about 100 species of annuals, perennials, and evergreen shrubs and subshrubs from coastal plains to forest or laurel-covered clifftops in the Mediterranean and Atlantic islands. They are grown mainly for their simple, often softly hairy or white-woolly leaves, arranged in opposite pairs. Tubular to bell-shaped, 2-lipped flowers are borne in whorled spikes in summer. They need long, hot summers to thrive. In warm, dry climates, grow at the front of a mixed or shrub border, in a rock garden, or in a small courtyard garden. Where winters are cold and damp, grow as foliage plants in a cool greenhouse.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, sharply drained, neutral to slightly alkaline soil in full sun. Provide a dry winter mulch. Pruning group 9.
- **PROPAGATION** Sow seed of tender species at 13–16°C (55–61°F) in spring; sow seed of hardier species in containers in a cold frame in spring. Divide perennials in early spring. Root soft-wood cuttings of shrubs in late spring, with bottom heat; take semi-ripe cuttings in late summer.
- **PESTS AND DISEASES** Trouble free.

*S. candicans*. Erect to spreading, many-branched shrub with ovate to heart-shaped, densely white-woolly, scalloped leaves, 5–10cm (2–4in) long. In summer, bears erect, terminal spikes,

15–28cm (6–11in) long, of 20–30 small, light yellow flowers, 8mm (⅜in) long, tipped orange and red-brown. ‡60–90cm (24–36in), ↔45–80cm (18–32in). Canary Islands (Tenerife). \*

▷ *Sieversia reptans* see *Geum reptans*

▷ *Sigmatostalix radicans* see *Ornithophora radicans*

## SILENE

Campion, Catchfly

CARYOPHYLLACEAE

Genus of about 500 species of annuals, biennials, and deciduous or evergreen perennials, some subshrubby, widely distributed in habitats ranging from open woodland to meadows and mountain scree in the N. hemisphere; most occur around the Mediterranean, but some are found in the mountains of tropical Africa and in South America. The variable leaves are opposite, linear to ovate or obovate, and entire. The flowers have 5 often notched or split, clawed petals and a tubular, often conspicuously inflated calyx; they are borne singly or in sprays, clusters, broad or narrow panicle-like cymes, or corymb-like panicles. Most silenes are easily grown, and often self-seed freely. Smaller perennials are excellent for a rock garden, and taller ones for the front of a herbaceous border, or for a wild garden. Use annuals as bedding in mixed or annual borders. Some silenes resent winter wet and are best grown in a scree bed or alpine house.

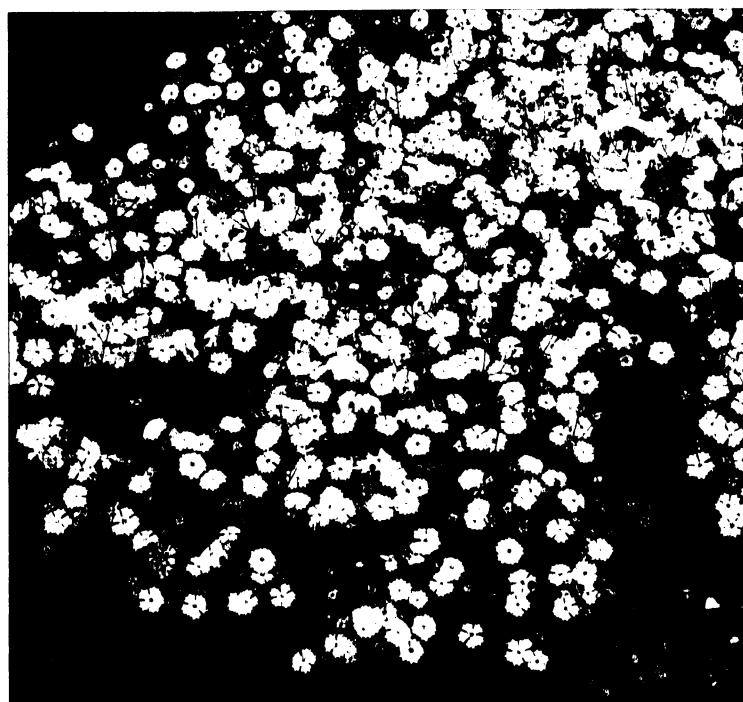
- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained, neutral to slightly alkaline soil in full sun or light dappled shade. *S. hookeri* needs acid soil. *S. dioica* 'Rosea Plena' needs moist but well-drained soil in light dappled shade. Grow smaller alpine species in sharply drained, gritty soil in a scree bed, or in a mix of equal parts loam-based potting compost (J1 No.2) and sharp grit, in containers in an alpine house.



*Silene armeria* 'Electra'

- **PROPAGATION** Sow seed of perennials in containers in a cold frame in autumn. Sow seed of hardy annuals *in situ* in autumn or spring; sow half-hardy annuals at 16–19°C (61–66°F) in spring and harden off before planting out after last frosts. Divide rooted offshoots of *S. dioica* 'Rosea Plena' from midsummer to autumn. Root basal cuttings of perennials in spring.
- **PESTS AND DISEASES** Outdoors, susceptible to slug and snail damage; under glass, often infested by aphids, whiteflies, and red spider mites. *S. dioica* 'Rosea Plena' is prone to smut fungus and, in dry conditions, to powdery mildew.

*S. acaulis* (Moss campion). Very dwarf, evergreen perennial forming moss-like cushions of tiny, linear, bright green leaves, 6–10mm (¼–½in) long. In summer, produces solitary, almost stemless, deep pink, sometimes white flowers, to 1cm (½in) across, with entire or notched petals. Suitable for a scree bed, but rarely bears abundant flowers in cultivation. ‡5cm (2in), ↔20cm (8in). Arctic, mountains of Eurasia, North America. \*\*\*



*Silene alpestris*



*Silene coeli-rosa*

*S. alpestris* ■ syn. *Heliosperma alpestris*. Loosely tufted, branching, evergreen perennial with linear-lance-shaped, mid-green leaves, to 3cm (1¼in) long. In early summer, bears open sprays of rounded, white, sometimes pink-flushed flowers, 1cm (½in) across, with fringed petals. ‡15cm (6in), ↔20cm (8in). Europe (E. Alps). \*\*\*

*S. armeria*. Sticky-hairy annual or biennial with upright stems. Produces grey-green leaves, 1–4cm (½–1½in) long, the basal leaves spoon-shaped, the stem leaves lance-shaped. In late summer, bears broad, dense, rounded, corymb-like panicles of deep carmine-pink flowers, to 1.5cm (½in) across, with shallowly notched petals. Treat as an annual. ‡30cm (12in), ↔15cm (6in). C. and S. Europe. \*\*\*

'Electra' ■ is very free-flowering.

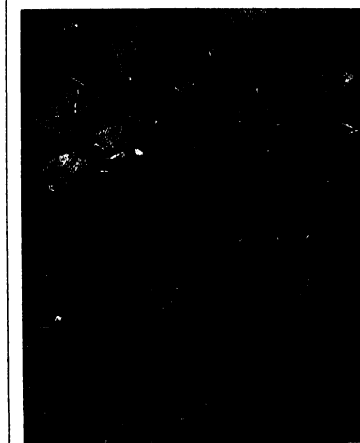
*S. coeli-rosa* ■ syn. *Agrostemma coeli-rosa*, *Lychnis coeli-rosa*, *Viscaria elegans* (Rose of heaven). Erect, slender, hairless annual with oblong to lance-shaped, grey-green leaves, 1–5cm (½–2in) long. In summer, bears loose, long-stalked clusters of spreading, white-centred, rose-pink flowers, to 2.5cm (1in) across, with deeply notched petals and prominently toothed calyces. Good for cut flowers. ‡to 50cm (20in), ↔to 15cm (6in). Mediterranean. \*\*\*

**Angel Series** cultivars flower in 2 separate, soft, clear colours; ‡25–30cm (10–12in). 'Blue Angel' has lavender-blue flowers. 'Rose Angel' ■ has deep pink-magenta flowers.

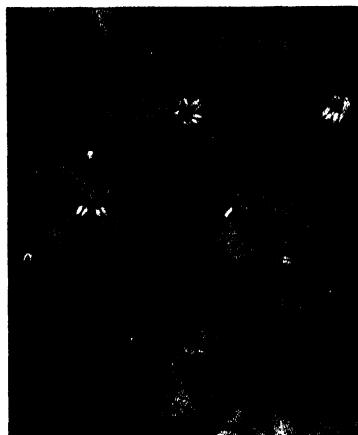
*S. conica* 'Balletje Balletje'. Erect,

slender, sticky-stemmed annual with

narrowly lance-shaped, grey-green



*Silene coeli-rosa* 'Rose Angel'

*Silene keiskei* var. *minor*

leaves, 1–4cm (½–1½in) long. In summer, produces cymes of 5–30 rose-pink flowers, to 5mm (¼in) across, but is grown for its oval, sticky-hairy, grey-green calyces, with bright green ribs, which enlarge in fruit and are good for flower arrangements. †15–50cm (6–20in), ↔ to 15cm (6in). \*\*\*  
***S. dioica* 'Rosea Plena'**. Clump-forming, semi-evergreen perennial with erect, branched flowering stems. Bears dark green leaves, most to 9cm (3½in) long, the basal leaves obovate, the stem leaves oblong-obovate, becoming smaller and almost stalkless towards the stem tips. From late spring to midsummer, bears loosely branched, panicle-like cymes of large, rounded, double flowers, 4cm (1½in) across, with notched, dusky-pink petals, white at the bases. †to 80cm (32in), ↔ 45cm (18in). \*\*\*

***S. elisabethae***, syn. *Melandrium elisabethae*. Tufted, semi-evergreen perennial with loose rosettes of lance-shaped, glossy, mid-green leaves, 6cm (2½in) long. In early summer, spreading stems bear usually solitary, large, deep red-purple flowers, 5cm (2in) across, with 2-lobed petals. Resents winter wet. †to 25cm (10in), ↔ 15cm (6in). Limestone screes in the Italian Alps. \*\*\*  
***S. hookeri***. Tufted, prostrate, deciduous perennial with lance-shaped, grey-hairy, mid-green leaves, 5–7cm (2–3in) long. In late summer, bears solitary, clear pale pink to salmon-pink flowers, to 6cm (2½in) across, with very deeply lobed white petals. Resents winter wet; needs acid soil. †to 5cm (2in), ↔ to 15cm (6in). USA (California). \*\*\*

*Silene schafta*

***S. keiskei* var. *minor*** ■ Tufted, evergreen perennial, similar to *S. elisabethae*, with hairy, narrowly lance-shaped, dark green leaves, to 3cm (1¼in) long, on slender stems. Bears loosely branching sprays of deep rose-pink flowers, 2–3cm (¾–1¼in) across, with shallowly notched petals, in late summer. †10cm (4in), ↔ 20cm (8in). Japan. \*\*\*

***S. maritima* 'Flore Pleno'** see *S. uniflora* 'Flore Pleno'.

***S. pendula*** (Nodding catchfly). Erect to spreading, glandular-hairy, bushy annual with ovate to lance-shaped, hairy, mid-green leaves, to 6cm (2½in) long. In summer, bears loose clusters of slightly pendent, single or double, pale pink flowers, to 1.5cm (½in) across, with prominently toothed calyces. Good for edging or for hanging baskets. †to 15–23cm (6–9in). Mediterranean. \*\*\*

\*\*\* **'Peach Blossom'** has double flowers, opening deep rose-pink and maturing through pale pink to white, showing a range of colours at the same time on a single plant; †15cm (6in). **'Snowball'** has double white flowers. **'Triumph'** has double, deep pinkish red flowers.

***S. schafta*** ■ Clump-forming, slender-stemmed, semi-evergreen perennial with lance-shaped, bright green leaves, 1–2cm (½–¾in) long. Profusely bears sprays of long-tubed, deep magenta flowers, 2cm (¾in) across, with notched petals, from late summer to autumn. Suitable for a rock garden. †25cm (10in), ↔ 30cm (12in). W. Asia. \*\*\*

\*\*\* **'Shell Pink'**, syn. 'Ralph Haywood', has clear pale pink flowers. ***S. uniflora* 'Flore Pleno'**, syn. *S. maritima* 'Flore Pleno', *S. vulgaris* subsp. *maritima* 'Flore Pleno' (Double sea campion). Lax, prostrate, deeply rooting, semi-evergreen perennial with fleshy, lance-shaped, grey-green leaves, to 2cm (¾in) long, fringed with fine hairs. In summer, erect, branching stems produce double white flowers, to 2.5cm (1in) across, with deeply cut petals, either singly or in few-flowered clusters. †15cm (6in), ↔ 20cm (8in). \*\*\*  
***S. vulgaris* subsp. *maritima* 'Flore Pleno'** see *S. uniflora* 'Flore Pleno'.

- ▷ **Silk cotton tree** see *Bombax*, *Ceiba*
- ▷ **Red** see *Bombax ceiba*
- ▷ **White** see *Ceiba pentandra*
- ▷ **Silk-tassel bush** see *Garrya elliptica*
- ▷ **Silk tree** see *Albizia julibrissin*
- ▷ **Floss** see *Chorisia speciosa*
- ▷ **Silk vine** see *Periploca graeca*
- ▷ **Silkweed** see *Asclepias*

## SILPHIUM

Prairie dock, Rosinweed

ASTERACEAE/COMPOSITAE

Genus of about 20 species of tall herbaceous perennials from fields, prairies, and open woodland and scrub (some in moister areas) in Canada and C. and E. USA. Their erect, sparsely branched stems exude resinous sap with a strong turpentine-like scent. The opposite or alternate, coarse leaves, sometimes all basal, are lance-shaped to ovate or triangular, some toothed or pinnatifid. Sunflower-like yellow flowerheads are borne in branching corymbs. Excellent for naturalizing in a wild or woodland garden.

*Silphium perfoliatum*

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist, deep, neutral to slightly alkaline soil in full sun or partial shade; best in heavy soil. *S. perfoliatum* prefers damper soil.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

***S. laciniatum*** (Compass plant, Pilot plant, Polar plant). Upright, clump-forming perennial with stiffly hairy stems bearing alternate, erect, pinnatifid or 2-pinnatifid, fern-like, hairy leaves, to 50cm (20in) long, becoming smaller up the stems; the flat sides face east and west, hence the plant's common names. In late summer and early autumn, bears terminal, narrow, raceme-like corymbs of nodding yellow, eastward-facing flowerheads, to 12cm (5in) across, with darker disc-florets. †to 3m (10ft), ↔ 60cm (24in). E. and C. USA. \*\*\*  
***S. perfoliatum*** ■ (Cup plant). Erect, hairless or nearly hairless, clump-forming perennial producing opposite, triangular-ovate, coarsely toothed, bristly leaves, to 35cm (14in) long, with winged stalks. The upper leaves are perfoliate. From midsummer to early autumn, bears terminal, open-branched, corymb-like inflorescences of yellow flowerheads, to 8cm (3in) across, with darker disc-florets. †to 2.5m (8ft), ↔ 1m (3ft). North America (Ontario to Oklahoma and Georgia). \*\*\*

- ▷ **Silver bell** see *Halesia*
- ▷ **Silver berry** see *Elaeagnus commutata*
- ▷ **Silver fir** see *Abies*, *A. alba*
- ▷ **European** see *A. alba*
- ▷ **Silver net leaf** see *Fittonia verscheckellii* var. *argyroneura*
- ▷ **Silver thatch** see *Coccothrinax fragrans*
- ▷ **Silver torch** see *Cleistocactus strausii*
- ▷ **Silver tree** see *Leucadendron argenteum*
- ▷ **Silver vine** see *Actinidia polygama*

## SILYBUM

ASTERACEAE/COMPOSITAE

Genus of 2 species of erect, rosette-forming, thistle-like annuals or biennials from the mountains of E. Africa and from stony slopes, steppes, and thickets in W. Africa, the Mediterranean, and Europe to C. Asia. They have broad, shallowly to deeply lobed, obovate to inversely lance-shaped, spiny, light to dark green leaves, and bear spherical,

*Silybum marianum*

- single, purple-pink flowerheads, enclosed in spiny bracts. Cultivated for their foliage and flowers, silybums are suitable for growing in a mixed or herbaceous border or a gravel garden.
- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Protect from excessive winter wet. Remove flowering stems as they form, to retain foliage effect.
- **PROPAGATION** Sow seed *in situ* in late spring or early summer and thin seedlings to 60cm (24in) apart. To grow for foliage effect alone, sow in a cold greenhouse in late winter or very early spring; prick out into 9cm (3½in) containers and grow on to plant out in late spring.
- **PESTS AND DISEASES** Prone to slug and snail damage.

***S. marianum*** ■ (Blessed Mary's thistle). Rosette-forming biennial with a flat, basal rosette of deeply lobed, obovate, spiny, heavily white-veined and marbled, glossy, dark green leaves, to 50cm (20in) long. In the second year after sowing, bears thistle-like, slightly scented, purple-pink flowerheads, to 5cm (2in) across, from summer to autumn. †to 1.5m (5ft), ↔ 60–90cm (24–36in). S.W. Europe to Afghanistan, N. Africa. \*\*\*

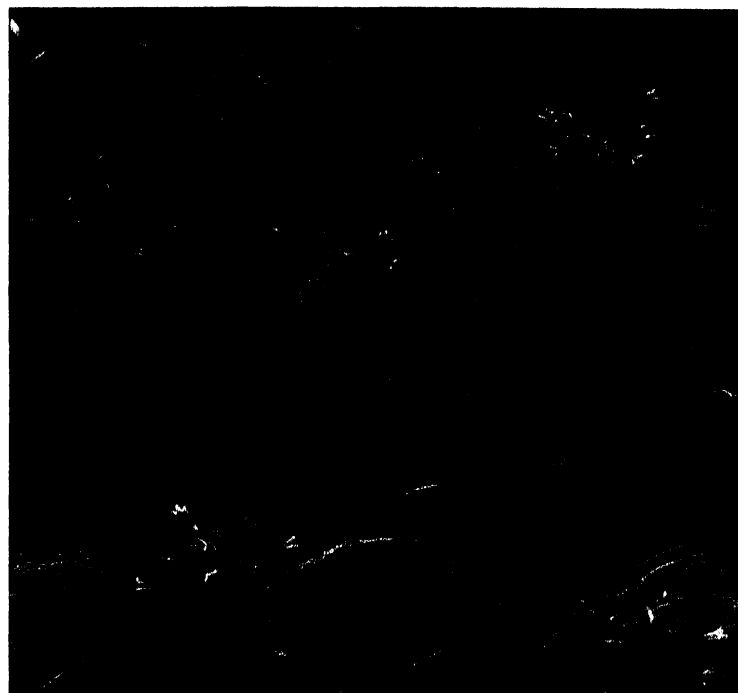
- ▷ ***Sinacalia tangutica*** see *Senecio tanguticus*
- ▷ ***Sinarundinaria jaunsarensis*** see *Yushania anceps*
- ▷ ***Sinarundinaria muriei*** see *Fargesia muriei*
- ▷ ***Sinarundinaria nitida*** see *Fargesia nitida*

## SINNINGIA

GESNERIACEAE

Genus, including species formerly classified under *Gloxinia* and *Reichsteinia*, of about 40 species of tuberous perennials and deciduous or evergreen, low-growing shrubs from tropical forest in Central and South America. They have usually ovate to elliptic, fleshy leaves, in opposite pairs or in whorls of 6 or more, often crowded at the stem bases. They are grown for their showy, solitary or clustered, tubular, trumpet-shaped, or bell-shaped flowers, generally borne in summer. In frost-prone areas or in areas with high winter rainfall, grow as



*Sinningia cardinalis*

houseplants or in a warm greenhouse or conservatory. In frost-free areas, they are suitable for a trough, raised bed, peat bed, terrace, or woodland garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered or indirect light. Most are best maintained with high humidity at 18–24°C (64–75°F); grow *S. cardinalis* and *S. pusilla* at 19°C (66°F) or more. In the growing season, water moderately and apply a half-strength high-potash fertilizer every 2 weeks. Dry off tubers in autumn and keep completely dry in winter. Start into growth in early spring in shallow trays of peat; pot up individually into 9–10cm (3½–4in) containers when young shoots are 5–7cm (2–3in) long. Outdoors, grow in moist but well-drained, humus-rich, acid to neutral soil in light dappled or partial shade.

• **PROPAGATION** Surface-sow seed at 15–21°C (59–70°F) in spring. Divide tubers in spring. Take stem-tip cuttings of miniature species and cultivars in late spring or early summer. Root leaf cuttings in spring or summer, with bottom heat.

*Sinningia* 'Switzerland'

• **PESTS AND DISEASES** Leafhoppers and western flower thrips may be a problem.

*S. canescens* ♀ syn. *Reichsteineria leucotricha*, *S. leucotricha* (Brazilian edelweiss). Upright, densely woolly, tuberous perennial. Whorls of obovate, sage-green leaves, to 15cm (6in) long, are covered with silvery white hairs. In summer, short-lived, nodding, narrowly tubular, pinkish orange-red to rose-pink flowers, 2.5cm (1in) long, are borne in clusters of 3–5. ↑ 30cm (12in), ↔ 35cm (14in). Brazil. ☼ (min. 15°C/59°F)

*S. cardinalis* ■ (Cardinal flower, Helmet flower). Tuberous perennial with short white hairs covering both the stems and the pairs of ovate, scalloped, mid-green leaves, 7–15cm (3–6in) long. Clustered, upwardly angled, hooded, tubular, blood-red flowers, 5cm (2in) long, open in succession for up to 3 months from late summer to autumn. ↑↔ to 30cm (12in). Brazil. ☼ (min. 15°C/59°F)

*S. leucotricha* see *S. canescens*.

*S. 'Mont Blanc'*. Rosette-forming, tuberous perennial with ovate, velvety, mid-green leaves, 20–24cm (8–10in) long. In summer, bears solitary, erect, trumpet-shaped, pure white flowers, 4cm (1½in) long. ↑ to 30cm (12in), ↔ 45cm (18in). ☼ (min. 15°C/59°F)

*S. pusilla*. Prostrate, miniature perennial with pea-sized tubers, bearing pairs of ovate, hairy, dark olive-green leaves, to 1cm (½in) long, red-veined beneath. Solitary, nodding, tubular lilac flowers, 2cm (¾in) long, with white throats, are produced on hairy stalks, 1cm (½in) long, in summer. Blooms almost continuously in a terrarium. ↑↔ 2.5–5cm (1–2in). Brazil. ☼ (min. 15°C/59°F). 'White Sprite' bears white flowers.

*S. regina* (Cinderella slippers).

Tuberous perennial with pairs of ovate to elliptic, finely scalloped, dark green leaves, 10–20cm (4–8in) long, velvety above and pale green in the vein areas.

Clusters of 4–6 nodding, trumpet-shaped, rich purple flowers, 5cm (2in) long, each with a pale yellow band, are produced in summer. ↑ 20cm (8in), ↔ 35cm (14in). Brazil. ☼ (min. 15°C/59°F)

*S. speciosa*, syn. *Gloxinia speciosa* (Florists' gloxinia). Tuberous perennial with rosettes of ovate to oblong, scalloped, dark green leaves, 20–30cm (8–12in) long, covered with velvety hairs, and red-flushed beneath. Produces solitary or clustered, nodding, tubular-bell-shaped, red, violet-blue, or white flowers, 3.5cm (1½in) long, in summer. ↑↔ 30cm (12in). Brazil. ☼ (min. 15°C/59°F)

*S. 'Switzerland'* ■ Tuberous perennial with rosettes of ovate, velvety, mid-green leaves, 20–24cm (8–10in) long. In summer, produces solitary, upright, trumpet-shaped, bright scarlet flowers, 4cm (1½in) long, with wavy white margins. ↑ to 30cm (12in), ↔ 45cm (18in). ☼ (min. 15°C/59°F)

*S. 'Waterloo'*. Rosette-forming, tuberous perennial with ovate, velvety, mid-green leaves, 20–24cm (8–10in) long. In summer, bears solitary, upright, trumpet-shaped, bright scarlet flowers, 4cm (1½in) long. ↑ to 30cm (12in), ↔ 45cm (18in). ☼ (min. 15°C/59°F)

▷ *Sinocalamus giganteus* see *Dendrocalamus giganteus*

## SINOCALYCANTHUS

CALYCANTHACEAE

Genus of one species of deciduous shrub, related to *Calycanthus*, occurring in woodland in China. It produces simple, opposite leaves and is grown for its showy, single white flowers, borne in early summer. Use in a shrub border or wild garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun, or with some midday shade. Shelter from cold, drying winds. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root soft-wood cuttings in late spring or early summer, with bottom heat.

• **PESTS AND DISEASES** Trouble free.

*S. chinensis*, syn. *Calycanthus chinensis*. Spreading shrub with broadly oval, short-tapered, glossy, mid-green leaves, to 15cm (6in) long. Cup-shaped, slightly pink-flushed white flowers, 7cm (3in) across, marked white and maroon inside, are produced singly, close to the shoot-tips, in early summer. ↑ 3m (10ft), ↔ 4m (12ft). E. China. \*\*\*

## SINOFRANCHETIA

LARDIZABALACEAE

Genus of one species of twining, woody, dioecious, deciduous climber occurring in woodland in China. It has alternate, 3-palmate leaves, and produces pendent racemes of tiny white flowers; on female plants, these are followed by grape-like berries. Cultivated for its attractive foliage and fruit, it may be grown through a tree, over a large shrub, or against a wall. Female plants can bear fruit without a male.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or partial shade. Pruning group 11, in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root soft-wood cuttings in late spring or early summer.

• **PESTS AND DISEASES** Trouble free.

*S. chinensis*. Twining, woody climber with glaucous, purple-spotted stems and long-stalked leaves, to 15cm (6in) long, composed of 3 ovate, dark green leaflets, glaucous beneath. In late spring, bears tiny white flowers in pendent racemes, to 10cm (4in) long. In summer, female plants produce spherical, grape-like purple berries, to 2cm (¾in) long. ↑ 12m (40ft). W. and C. China. \*\*\*

## SINOJACKIA

STYRACACEAE

Genus of 2 species of deciduous shrubs or small trees from woodland in China. They are valued for their small racemes of white flowers, which are borne close to the tips of short, leafy shoots in late spring and early summer. The leaves are simple and alternate. Grow sinojackias in a woodland garden among other trees and shrubs.

• **HARDINESS** Fully hardy.

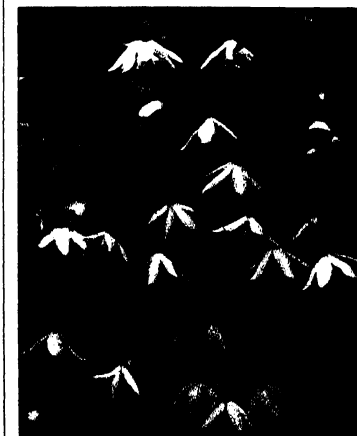
• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained, acid soil in full sun with some midday shade, or in partial shade. Avoid very exposed sites. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root green-wood cuttings in early summer, with bottom heat.

• **PESTS AND DISEASES** Trouble free.

*S. rehderiana* ■◐ Bushy shrub, or sometimes spreading tree, with elliptic to elliptic-obovate, glossy, dark green leaves, to 9cm (3½in) long. In late spring and early summer, produces pendent, star-shaped white flowers, 2cm (¾in) across, with yellow stamens. ↑↔ to 5m (15ft). E. China. \*\*\*

*S. xylocarpa* ◐ Bushy shrub, or sometimes spreading tree, with obovate, glossy, dark green leaves, to 8cm (3in) long, wedge-shaped at the bases and with pointed tips. Star-shaped white flowers, 2.5cm (1in) across, with yellow stamens, are borne in late spring and early summer. ↑↔ to 6m (20ft). E. China. \*\*\*

*Sinojackia rehderiana*

## SINOWILSONIA

HAMAMELIDACEAE

Genus of one species of monoecious, deciduous shrub or small tree, related to witch hazels (*Hamamelis*), found on streambanks in the mountains of China. It has simple, alternate leaves, and is mainly cultivated for its catkin-like racemes of small flowers, borne in late spring before the leaves. Grow in a shrub border or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich, acid soil, in full sun with some midday shade, or in partial shade. Shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root green-wood cuttings with bottom heat in early summer.
- **PESTS AND DISEASES** Trouble free.

*S. henryi* ♀ Spreading shrub or small tree with broadly oval to elliptic, tapered, bristle-toothed leaves, to 18cm (7in) long. In late spring, bears catkin-like racemes of small green flowers: males are 6cm (2½in) long, females are to 3cm (1¼in) long, and elongate to 15cm (6in) in fruit. The fruit is woody, 2-valved capsules, 2cm (¾in) across. 8m (25ft), ↔ 5m (15ft). C. and W. China. \*\*\*

▷ *Siphonosmanthus delavayi* see *Osmanthus delavayi*

## SISYRINCHIUM

IRIDACEAE

Genus of about 90 species of annuals and rhizomatous perennials, some of which are semi-evergreen. Native to North and South America (although some are widely naturalized elsewhere), they thrive in habitats ranging from mountainous areas to meadows and coastal sands. They produce clumps of linear to sword-shaped, mostly basal leaves, often forming fans. In spring and summer, upright, often winged stems bear star-, cup-, or shallowly trumpet-shaped, blue, yellow, mauve, white, or rarely pink flowers, either singly or in umbel-like clusters of 2–8; each cluster is enclosed in a pair of spathe bracts. Grow smaller species in a rock garden or gravel planting, taller species in a herbaceous border. In frost-prone areas, grow half-hardy plants in a cool green-



*Sisyrinchium* 'E.K. Balls'



*Sisyrinchium graminoides*

house or alpine house. Some species self-seed freely. A few species, especially the larger perennials, are shallow rooted, and may die suddenly after several years.

- **HARDINESS** Fully hardy to half hardy.
- **CULTIVATION** Grow in poor to moderately fertile, well-drained, neutral to slightly alkaline soil in full sun. Protect from excessive winter wet.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or early spring. Divide in spring.
- **PESTS AND DISEASES** May be affected by root rot outdoors, and infested by aphids and red spider mites under glass.

*S. angustifolium* see *S. graminoides*.  
*S. 'Ball's Mauve'* see *S. 'E.K. Balls'*.  
*S. bellum* of gardens see *S. idahoense*.  
*S. bermudiana* see *S. graminoides*.  
*S. birameum* of gardens see *S. graminoides*.

*S. 'Biscutella'*. Clump-forming, semi-evergreen perennial with linear leaves, to 18cm (7in) long. In summer, upright stems bear a succession of individually short-lived, shallowly trumpet-shaped, dull yellow flowers, 2cm (¾in) across, heavily veined and suffused brownish purple. 30cm (12in), ↔ 15cm (6in). \*\*\*

*S. boreale* see *S. californicum*.

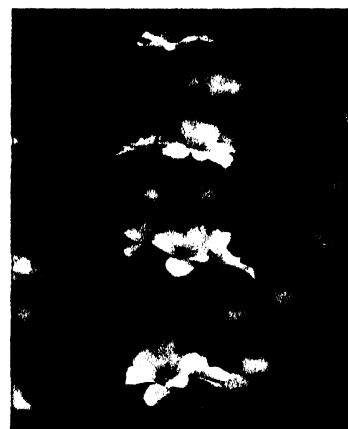
*S. brachypus* see *S. californicum*.

*S. californicum*, syn. *S. boreale*, *S. brachypus*. Short-lived, semi-evergreen perennial with sword-shaped, grey-green leaves, to 15cm (6in) long. In summer, broadly winged stems bear a succession of star-shaped, dark-veined, bright yellow flowers, 1–2cm (½–¾in) across. Self-seeds freely. 60cm (24in), ↔ to 15cm (6in). W. North America (Vancouver to California). \*\*

*S. douglasii* see *Olsynium douglasii*.

*S. 'E.K. Balls'* ■ syn. *S. 'Ball's Mauve'*. Clump-forming, semi-evergreen perennial with fans of narrow, sword-shaped leaves, to 25cm (10in) long. Erect stems bear individually short-lived, star-shaped mauve flowers, 2cm (¾in) across, in summer. 25cm (10in), ↔ 15cm (6in). \*\*\*

*S. graminoides* ■ syn. *S. angustifolium*, *S. bermudiana*, *S. birameum* of gardens (Blue-eyed grass). Clump-forming, semi-evergreen perennial with linear leaves, to 50cm (20in) long. In summer, erect stems bear a long succession of individually short-lived, iris-like, deep blue, yellow-throated flowers, 2cm (¾in) across. Self-seeds freely. 50cm (20in), ↔ 15cm (6in). North America. \*\*\*



*Sisyrinchium striatum*

*S. grandiflorum* see *Olsynium douglasii*.  
*S. idahoense*, syn. *S. bellum* of gardens, *S. macounii*. Clump-forming, semi-evergreen perennial with narrowly linear leaves, 7–30cm (3–12in) long. Upright stems bear star-shaped, deep violet-blue flowers, 2.5cm (1in) across, with yellow throats, during summer. Self-seeds freely. 12cm (5in), ↔ 15cm (6in). USA (Washington and Idaho to California). \*\*\*. 'Album', syn. *S. 'May Snow'*, has white flowers with yellow throats.

*S. macounii* see *S. idahoense*.

*S. 'May Snow'* see *S. idahoense* 'Album'.

*S. 'North Star'* see *S. 'Pole Star'*.

*S. odoratissimum* see *Olsynium biflorum*.

*S. 'Pole Star'*, syn. *S. 'North Star'*.

Clump-forming, semi-evergreen perennial with linear leaves, to 40cm (16in) long. In summer, erect stems bear a succession of star-shaped white flowers, to 3cm (1¼in) across. 15cm (6in). \*\*\*

*S. striatum* ■ syn. *Phaiophleps*

*nigricans*. Clump-forming, evergreen perennial with linear to lance-shaped, iris-like but 2-ranked, stiff, greyish green leaves, to 40cm (16in) long. In early and midsummer, unbranched stems bear



*Sisyrinchium striatum* 'Aunt May'

stalkless clusters of open cup-shaped, pale yellow flowers, 2.5cm (1in) across, with tepal backs striped purple-brown. 90cm (36in), ↔ 25cm (10in). Chile, Argentina. \*\*\*. 'Aunt May' ■ syn. 'Variegatum', is less vigorous, with leaves striped creamy yellow; 50cm (20in). 'Variegatum' see 'Aunt May'.

▷ *Sitka spruce* see *Picea sitchensis*

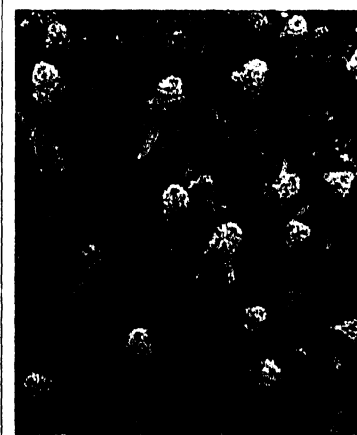
## SKIMMIA

RUTACEAE

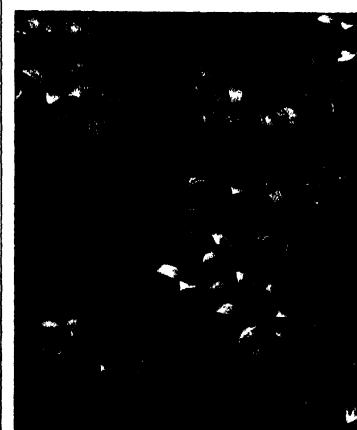
Genus of 4 species of monoecious or dioecious, occasionally hermaphrodite, evergreen shrubs and trees found in woodland from the Himalayas to S.E. Asia, China, and Japan. They are grown for their attractive leaves, flowers, and fruits. Leaves are alternate, simple, aromatic, obovate to inversely lance-shaped or elliptic, and mainly borne in terminal clusters. In spring, they bear terminal panicles of star-shaped flowers, strongly scented in some species, followed, on female and hermaphrodite plants, by fleshy, spherical, red or black fruits. Skimmias are suitable for a shrub border or woodland garden. With dioecious species, both male and female plants are needed to obtain fruit. Skimmias tolerate shade, atmospheric pollution, and neglect. The fruits may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in light dappled shade to deep shade; *S. x confusa* 'Kew Green' tolerates full sun. May become chlorotic



*Skimmia x confusa* 'Kew Green'



*Skimmia japonica*

*Skimmia japonica* 'Bronze Knight'

on poor, dry soil or if over-exposed to sun. Pruning group 8, if necessary.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings with bottom heat in late summer.

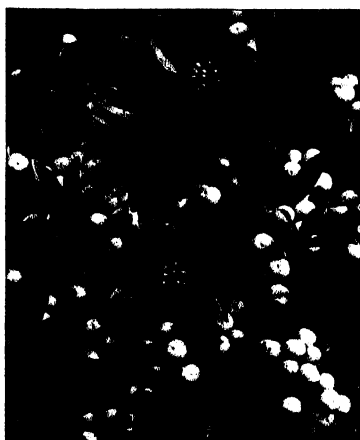
• **PESTS AND DISEASES** Prone to scale insects.

*S. anquetilia*. Creeping or erect, dome-shaped shrub producing inversely lance-shaped to oblong-elliptic, leathery, strongly aromatic, dark or yellowish green leaves, to 18cm (7in) long. In mid- and late spring, bears small, yellow-green flowers, 4mm (1/8in) across, in compact, nearly spherical panicles, 5cm (2in) across, followed on female plants by scarlet fruit, 1cm (1/2in) across.  $\pm$ → 2m (6ft). W. Himalayas. \*\*\*

*S. x confusa* 'Kew Green'  $\square$   $\varnothing$  Compact, dome-shaped shrub with inversely lance-shaped to elliptic, pointed, aromatic, mid-green leaves, to 11cm (4 1/2in) long. Fragrant, creamy white male flowers, 3–5mm (1/8–1/4in) across, open in dense, conical panicles, to 15cm (6in) long, in spring.  $\pm$  0.5–3m (1 1/2–10ft),  $\leftrightarrow$  1.5m (5ft). \*\*\*

*S. x foremanii* of gardens see *S. japonica* 'Veitchii'.

*S. japonica*  $\square$  Dome-shaped to erect or creeping shrub with oval to obovate or inversely lance-shaped, slightly aromatic, dark green leaves, to 10cm (4in) long. Fragrant white flowers, 6mm (1/4in) across, sometimes tinged pink or red, often opening from red buds, are borne in dense panicles, to 8cm (3in) long, in mid- and late spring; they are followed on female plants by red fruit, 8mm

*Skimmia japonica* 'Fructu Albo'*Skimmia japonica* subsp. *reevesiana*

(1/8in) across.  $\pm$ → to 6m (20ft). China, Japan, S.E. Asia. \*\*\*. 'Bowles' Dwarf' is compact, with leaves to 4cm (1 1/2in) long, and red winter flower buds; both male and female clones are available;  $\pm$  15cm (6in),  $\leftrightarrow$  45cm (18in). 'Bronze Knight'  $\square$  is a male clone of open habit, with dark red winter buds. 'Cecilia Brown' has large fruit clusters. 'Foremanii' see 'Veitchii'. 'Fragrans'  $\varnothing$  syn. *S. laureola* 'Fragrant Cloud', is an erect, compact, free-flowering male clone, with narrowly oval leaves;  $\pm$ → 1m (3ft). 'Fructu Albo'  $\square$  has green flower buds and white fruit;  $\pm$  60cm (24in),  $\leftrightarrow$  1m (3ft). 'Nymans'  $\varnothing$  is a spreading female clone, with inversely lance-shaped leaves;  $\pm$  1m (3ft),  $\leftrightarrow$  2m (6ft). subsp. *reevesiana*  $\square$  syn. *S. reevesiana*, is hermaphrodite, with narrowly elliptic, tapered leaves and ovoid fruit;  $\pm$  to 7m (22ft),  $\leftrightarrow$  90cm (36in); China, Taiwan. subsp. *reevesiana* 'Robert Fortune'  $\varnothing$  is hermaphrodite, with pale green leaves margined dark green. 'Rogersii' is a dense female clone, with thick, twisted leaves and abundant fruit;  $\pm$ → 75cm (30in). 'Rubella'  $\square$   $\varnothing$  is a compact male clone, with red-margined leaves, and dark red flower buds in autumn and

*Skimmia japonica* 'Rubella'

winter. 'Veitchii', syn. *S. x foremanii* of gardens, 'Foremanii', is a vigorous, upright female clone. 'Wakehurst White' has white fruit.

*S. laureola* 'Fragrant Cloud' see *S. japonica* 'Fragrans'.

*S. reevesiana* see *S. japonica* subsp. *reevesiana*.

▷ **Skullcap** see *Scutellaria*

▷ **Skunk cabbage** see *Lysichiton*

White see *L. camtschaticensis*

Yellow see *L. americanus*

▷ **Sky flower** see *Duranta erecta*

▷ **Slipper flower** see *Calceolaria*

▷ **Slipperwort** see *Calceolaria*

▷ **Sloe** see *Prunus spinosa*

▷ **Smallweed** see *Calamagrostis*

## SMILACINA

False Solomon's seal

CONVALLARIACEAE/LILIACEAE

Genus of 25 species of mainly rhizomatous perennials from woodland in Asia and North and Central America. Similar to Solomon's seal (*Polygonatum*), they have unbranched, often arching stems with alternate, ovate-lance-shaped, stalkless or short-stalked leaves, and bear terminal racemes or panicles of star-shaped, short-stalked, scented, creamy white flowers, followed by green berries, usually ripening to red. Excellent in a woodland garden or shaded border.

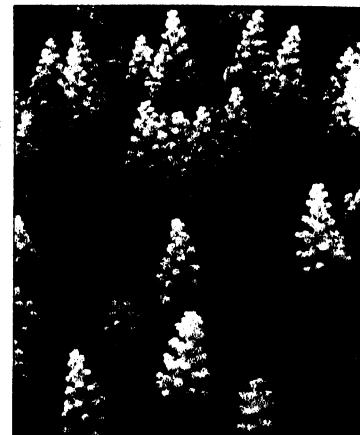
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, lime-free, moist but well-drained soil in light dappled shade or deep shade. Shelter from cold winds.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide rhizomes in spring.

• **PESTS AND DISEASES** Trouble free.

*S. racemosa*  $\square$   $\varnothing$  syn. *Maianthemum racemosum* (False spikenard). Clump-forming, rhizomatous perennial with narrowly ovate or elliptic, pointed, prominently veined, mid-green leaves, to 15cm (6in) long, downy beneath and

*Smilacina racemosa*

yellow in autumn. Terminal panicles of many white to creamy white, sometimes green-tinged flowers, 6mm (1/4in) across, are produced in mid- and late spring, occasionally followed by green, later red berries.  $\pm$  to 90cm (36in),  $\leftrightarrow$  60cm (24in). North America, Mexico. \*\*\*

## SMILAX

LILIACEAE/SMILACACEAE

Genus of about 200 species of usually dioecious, woody, deciduous or evergreen climbers, and herbaceous perennials, grown for their foliage and fruits. They are widespread in tropical and temperate regions, in woodland and thickets. The alternate, simple, sometimes shallowly lobed leaves are lance-shaped to elliptic, or broadly ovate to rounded, some truncate or heart-shaped at the bases; they have curled tendrils, and are often borne on prickly stems. The small, star-shaped flowers are green, greenish white, yellow, or brown, and are followed by spherical, black or red berries. Train into a tree, on to a pillar, or against a warm, sunny wall. In frost-prone areas, grow tender species in a temperate or warm greenhouse.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow against a support in moderately fertile, well-drained soil in full sun or partial shade. Pruning group 11, after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in autumn or spring.

• **PESTS AND DISEASES** Trouble free.

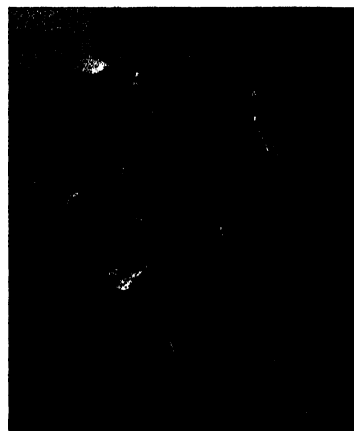
*S. china*. Scrambling, woody, deciduous climber with sparsely prickly shoots and broadly ovate to rounded, tapered, dark green leaves, to 8cm (3in) long. Small umbels of tiny, yellow-green flowers, 2–3mm (1/16–1/8in) across, are borne in spring, followed on female plants by spherical, bright red berries, 8mm (1/4in) across, in autumn.  $\pm$  5m (15ft). China, Korea, Japan. \*\*

## SMITHIANTHA

Temple bells

GESNERIACEAE

Genus of 4 species of rhizomatous perennials from moist, tropical woodland and rocks in Mexico, grown for their flowers and foliage. They have opposite, heart-shaped, fleshy leaves, with a velvet sheen of fine, red or purple hairs. Terminal racemes of nodding,



Smithiantha 'Orange King'

tubular to tubular-bell-shaped, red, orange, or yellow flowers are borne in summer and autumn. In frost-prone climates, grow in a temperate or warm greenhouse, in a conservatory, or as houseplants. In frost-free areas grow in a border or lightly shaded raised bed; they grow best in areas with dry winters.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in half pots of well-drained, loamless potting compost. Provide high humidity and bright filtered to indirect light. In growth, water moderately and apply a quarter-strength high-potash liquid fertilizer at each watering; maintain at 19°C (66°F). Keep completely dry when dormant in winter. Pot on each spring, and water sparingly until in full growth. Do not overwater. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained, neutral to slightly acid soil, in full sun with some midday shade, or in light dappled shade. Protect from winter wet.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F), or divide rhizomes, in spring.

• **PESTS AND DISEASES** Prone to aphids.

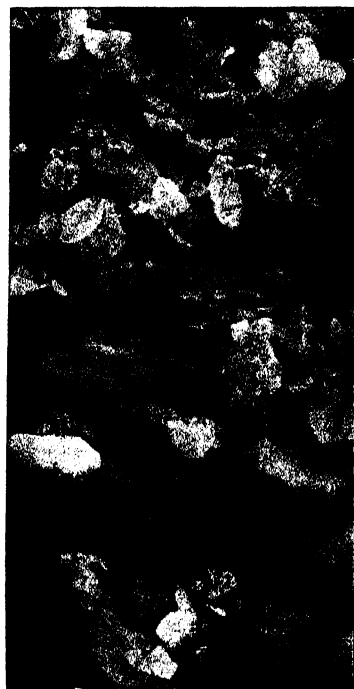
*S. cinnabarina*, syn. *Naegelia cinnabarina*. Rhizomatous perennial with stem-sheathing, heart-shaped, densely red-hairy, deep green leaves, 15cm (6in) long, marked purple along the veins. From summer to autumn, bears brick-red flowers, 3.5cm (1½in) long, paler or white-spotted in the throats. ↑ to 45cm (18in), ↔ 30cm (12in). Mexico. ☼ (min. 10°C/50°F)

*S. 'Orange King'* ☼ Rhizomatous perennial with heart-shaped, scalloped, densely red-purple-hairy, rich mid-green leaves, 15cm (6in) long, marked dark red along the veins. From summer to autumn, bears orange flowers, 3–4cm (1¼–1½in) long, with red-spotted throats and yellow lips. ↑ to 60cm (24in). ☼ (min. 10°C/50°F)

*S. zebrina*, syn. *Gesneria zebrina*, *Naegelia zebrina*. Rhizomatous perennial producing heart-shaped, deep green leaves, 18cm (7in) long, marked darker green and purple-brown along the veins. Scarlet and yellow flowers, 3.5cm (1½in) long, with red-spotted yellow throats, are borne in summer. ↑ to 75cm (30in), ↔ 35cm (14in). Mexico. ☼ (min. 10°C/50°F)

▷ **Smoke bush** see *Cotinus*, *C. coggygria*

▷ **Smoke tree, American** see *Cotinus obovatus*



Smyrniium perfoliatum

## SMYRNIUM

APIACEAE/UMBELLIFERAE

Genus of approximately 8 erect, branching biennials or short-lived, monocarpic perennials found in rocky places, scrub, fields, and at woodland margins in Europe, Africa, and W. Asia. They produce broadly oblong, divided basal leaves and rounded, usually entire upper leaves. In late spring and early summer, they bear branched, terminal umbels of numerous tiny, greenish yellow flowers. Ideal for naturalizing in a large border or in a wild or woodland garden. They also provide unusual cut flowers.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun to partial shade. Will also naturalize well in grass.

• **PROPAGATION** Sow seed *in situ* in autumn or late spring, or in containers in a cold frame in spring. Germination is often erratic.

• **PESTS AND DISEASES** Trouble free.

*S. perfoliatum* ☼ (Perfoliate Alexanders). Upright biennial with stout, ribbed stems, pinnate or 2-pinnate basal leaves, 5–20cm (2–8in) long, and perfoliate, simple, rounded, bract-like, bright yellow-green upper leaves, 3–10cm (1¼–4in) long, borne on the flowering stems. Many tiny flowers are produced in dome-shaped, 7- to 12-rayed umbels, to 10cm (4in) across, in spring of the second year after germination. ↑ 0.6–1.5m (2–5ft), ↔ 60cm (24in). N. Czech Republic, Slovakia, S. Europe, N. Africa, S.W. Asia. \*\*\*

▷ **Snail bean** see *Vigna caracalla*

▷ **Snail flower** see *Vigna caracalla*

▷ **Snakeroot** see *Polygala*

▷ **White** see *Eupatorium rugosum*

▷ **Snake root, Black** see *Cimicifuga racemosa*

▷ **Snapdragon** see *Antirrhinum*

▷ **Dwarf** see *Chaenorrhinum*

▷ **Violet twining** see *Maurandella antirrhiniflora*

▷ **Sneezeweed** see *Helenium autumnale*

▷ **Sneezewort** see *Achillea ptarmica*

▷ **Snowball bush** see *Viburnum macrocephalum*

▷ **Japanese** see *Viburnum plicatum*

▷ **Snowball tree** see *Viburnum opulus* 'Roseum'

▷ **Snowbell** see *Soldanella*

▷ **Alpine** see *Soldanella alpina*

▷ **American** see *Styrax americanus*

▷ **Fragrant** see *Styrax obassia*

▷ **Japanese** see *Styrax japonicus*

▷ **Least** see *Soldanella minima*

▷ **Snowberry** see *Symphoricarpos*, *S. albus* var. *laevigatus*

▷ **Snow bush** see *Breytia disticha*

▷ **Snowdrop** see *Galanthus*

▷ **Common** see *G. nivalis*

▷ **Snowdrop tree** see *Halesia*

▷ **Snowflake** see *Leucojum*

▷ **Spring** see *Leucojum vernum*

▷ **Summer** see *Leucojum aestivum*

▷ **Water** see *Nymphoides indica*

▷ **Snow in summer** see *Cerastium tomentosum*, *Ozothamnus thyrsoides*

▷ **Snow in the jungle** see *Porana paniculata*

▷ **Snow on the mountain** see *Euphorbia marginata*

▷ **Soapberry, Western** see *Sapindus drummondii*

▷ **Soapwort** see *Saponaria*, *S. officinalis*

## SOBRALIA

ORCHIDACEAE

Genus of about 50 species of mostly large, evergreen, terrestrial, occasionally epiphytic orchids from Central America and tropical South America, occurring at altitudes of up to 3,400m (11,300ft), sometimes on rocks by streams. They have slender, cane-like stems, with foliage borne along almost all the stem length. The leathery, mid-green leaves are oblong to broadly oval or lance-shaped, and often folded. Short-lived, cattleya-like blooms, with a delicate, papery texture, are borne in succession every 3–4 days, at the stem tips.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in containers of terrestrial orchid compost in bright filtered light, and maintain moderate to high humidity. When in active growth, water freely, mist the foliage daily, and apply a quarter-strength balanced liquid fertilizer monthly. Water sparingly in winter. Pot on when the plant fills the container and "flows" over the sides. See also p.46.

• **PROPAGATION** Divide after flowering. Offshoots may be rooted successfully in spring.

• **PESTS AND DISEASES** Red spider mites, aphids, whiteflies, and mealybugs may be troublesome.

*S. macrantha*. Terrestrial or epiphytic orchid producing lance-shaped leaves, 15–30cm (6–12in) long. Delicate, papery, white to pink-purple flowers, 15–18cm (6–7in) across, with yellow on the lips, are borne from spring to summer. ↑ 2m (6ft), ↔ 1.2m (4ft). Mexico to Costa Rica. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F)

## SOLANDRA

Chalice vine

SOLANACEAE

Genus of 8 species of woody-stemmed, evergreen, scrambling climbers found in tropical forest in Mexico, the West Indies, and South America. They are grown for their large, solitary, funnel- or trumpet-shaped, night-scented flowers, each with 5 reflexed lobes. The lustrous, rich green leaves are alternate, simple, ovate to obovate, and usually leathery. Where temperatures fall below 7–10°C (45–50°F), grow chalice vines in a temperate greenhouse. In warmer climates, use to clothe a pergola, arch, or wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. During the growing season, water moderately and apply a balanced liquid fertilizer every 4 weeks. Water more sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun. Provide support for the climbing stems. Pruning group 11, in late winter or early spring, if necessary to restrict size.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Air layer in spring.

• **PESTS AND DISEASES** Red spider mites and scale insects may be troublesome under glass.

*S. grandiflora*. Vigorous, semi-scandent climber with robust, sparsely branched stems clothed in elliptic to obovate leaves, to 13cm (5in) long. In spring, produces funnel-shaped, violet-tinged white flowers, 15–24cm (6–10in) long, which become tawny yellow with age. ↑ to 12m (40ft) or more. Jamaica. ☼ (min. 7–10°C/45–50°F)

*S. hartwegii* see *S. maxima*.

*S. maxima* ☼ syn. *S. hartwegii*, *S. nitida* (Cup of gold). Scandent, moderately dense climber producing branching stems clothed in elliptic leaves, to 15cm (6in) long. Trumpet-shaped yellow flowers, 15–20cm (6–8in) long, with purple veins, are produced in summer; the inside of each flower is marked with purple ridges. ↑ to 12m (40ft). Mexico to Colombia and Venezuela. ☼ (min. 7–10°C/45–50°F)

*S. nitida* see *S. maxima*.



Solandra maxima

# SOLANUM syn. LYCIANTHES

## SOLANACEAE

Genus of about 1,400 species of annuals, biennials, herbaceous perennials, and evergreen, semi-evergreen, and deciduous shrubs, trees, and twining climbers from a range of habitats world-wide. The genus includes a number of vegetables, such as potato (*S. tuberosum*) and aubergine (*S. melongena*), and also ornamental plants, described below, which are cultivated for their flowers and decorative fruits. The leaves are alternate, and entire, lobed, or pinnately divided. The small, 5-petalled, bell- or shallowly trumpet-shaped, sometimes star-shaped, blue, purple, or white, yellow-anthered flowers are borne singly or in cymes, cyme-like umbels, corymbs, or panicles, from spring to autumn, later followed by fruits. Train climbers on a warm, sunny wall. Shrubs are suitable for a sheltered border. In frost-prone regions, grow tender species in a cool or temperate greenhouse. All parts of most species, especially the fruits of *S. capsicastrum* and *S. pseudocapsicum*, can cause severe discomfort if ingested.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, or in bright indirect light. In growth, water freely, apply a balanced liquid fertilizer monthly, mist daily, and maintain moderate humidity. Apply a high-potash liquid fertilizer every 2 or 3 weeks to *S. capsicastrum* and *S. pseudocapsicum* until fruit ripens. Water sparingly when dormant. Outdoors, grow in moderately fertile, moist but well-drained, neutral to slightly alkaline soil in full sun. Support plants and tie in young shoots regularly. Pruning group 9 for shrubs; group 12 for climbers, after flowering.

• **PROPAGATION** Sow seed at 18–20°C (64–68°F) in spring. Root semi-ripe cuttings of shrubs and climbers with gentle bottom heat from summer to early autumn.

• **PESTS AND DISEASES** Prone to aphids, red spider mites, tomato spotted wilt, and grey mould (*Botrytis*), under glass.

*S. aviculare* (Kangaroo apple). Erect to spreading, open, evergreen, hairless shrub with narrowly lance-shaped, simple to irregularly pinnatifid, deep green leaves, 12–20cm (5–8in) long. In spring and summer, bears axillary cymes,



*Solanum jasminoides* 'Album'

5–13cm (2–5in) across, of 3–8 shallowly lobed, blue-purple or white flowers, 3–4cm (1¼–1½in) across, followed by ovoid green fruit, 1.5cm (½in) long, ripening yellow. ↑ 1.8–3.5m (6–11ft), ↔ 1.5–2.5m (5–8ft). Australia (Queensland to Tasmania), New Zealand. \*

*S. capsicastrum* (False Jerusalem cherry, Winter cherry). Erect, bushy, evergreen, downy-stemmed shrub, often grown as a winter-fruiting annual. Oblong to lance-shaped, wavy-margined leaves, 5–7cm (2–3in) long, are downy, dark green. In summer, bears axillary cymes, 5cm (2in) long, of star-shaped white flowers, to 1.5cm (½in) across, followed by oblong-ellipsoid to ovoid, pointed, red or orange-red fruit, 2cm (¾in) or more long. ↑↔ 30–60cm (12–24in), in containers. Brazil. ☼ (min. 5°C/41°F)

*S. crispum* (Chilean potato tree). Fast-growing, scrambling, evergreen or semi-evergreen climber with ovate, dark green leaves, to 12cm (5in) long. In summer, bears fragrant, lilac- to purple-blue flowers, 2.5cm (1in) across, in terminal corymbs, to 15cm (6in) across; they are followed by yellowish white fruit, 6–9mm (¼–¾in) across. ↑ 6m (20ft). Peru, Chile. \*✱. 'Glasnevin' ☼♀ syn.

'Autumnale', bears deep purple-blue flowers from summer to autumn.

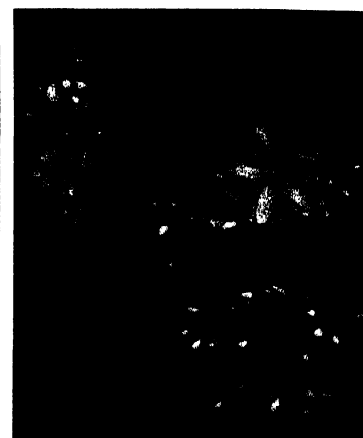
*S. jasminoides* (Potato vine).

Scrambling, evergreen or semi-evergreen climber with narrowly ovate to lance-shaped, glossy, dark green leaves, to 5cm (2in) long, sometimes 3- to 5-lobed or with separate ovate leaflets at the bases. In summer and autumn, bears fragrant, blue-white flowers, 2.5cm (1in) across, with yellow anthers, in terminal and axillary clusters, 5–7cm (2–3in) across, followed by ovoid black fruit, 9mm (⅜in) across. ↑ 6m (20ft). Brazil. \*✱. 'Album' ☼♀ has white flowers.

*S. laciniatum* (Kangaroo apple).

Vigorous, erect, evergreen shrub with purple-tinged shoots and lance-shaped to deeply pinnatisect, mid-green leaves, to 20cm (8in) long. In summer and autumn, bears dark blue flowers, 5cm (2in) across, in axillary cymes, to 15cm (6in) long, followed by ovoid, bright orange fruit, 2cm (¾in) long. ↑ 2m (6ft), ↔ 1.5m (5ft). Australia, New Zealand. \*

*S. pseudocapsicum* (Christmas cherry, Jerusalem cherry, Winter cherry). Erect, bushy, evergreen shrub, often grown as a winter-fruiting annual. Wavy-margined, elliptic leaves, to 8cm (3in) long, are



*Solanum wendlandii*

glossy, dark green. In summer, bears axillary cymes, 5cm (2in) across, of up to 3 star-shaped white flowers, to 1.5cm (½in) across, followed by long-lasting, spherical, red, yellow, or orange-red fruit, 1.5–2cm (½–¾in) across.

↑↔ 30–45cm (12–18in), in containers.

E. South America. ☼ (min. 5°C/41°F).

'Cherry Jubilee' has white, yellow, or orange fruit. 'Fancy' is compact, with bright scarlet fruit; ↑ to 30cm (12in).

'Joker' is dwarf, with yellow fruit turning orange and red; ↑↔ 20cm (8in).

'Jubilee' is dwarf, with pale lime-green fruit, ripening deep orange; ↑↔ 15cm (6in). 'Red Giant' ☼ has large, orange-red fruit, to 2.5cm (1in) across.

*S. rantonnetii*, syn. *Lycianthes*

*rantonnetii* (Blue potato bush). Lax, evergreen shrub, usually many-branched when mature, producing ovate to lance-shaped, often wavy-margined, smooth, mid- to deep green leaves, 6–10cm (2½–4in) long. In summer and autumn, bears axillary clusters, to 6cm (2½in) across, of 2–5 shallowly trumpet-shaped, dark blue to violet-blue or pale blue flowers, 1–2.5cm (½–1in) across, with paler blue or yellow-tinged centres, followed by ovoid red fruit, 2.5cm (1in) long. ↑↔ 1–2m (3–6ft). Paraguay, Argentina. ☼ (min. 7°C/45°F). 'Royal Robe' ☼ has fragrant, deep violet-blue flowers with yellow centres.

*S. seafortianum* (Italian jasmine, St. Vincent lilac). Spreading, evergreen, hairless, scandent climber with broadly elliptic, rich green leaves, 10–20cm (4–8in) long, either entire or pinnatifid with 3–9 lobes. In summer, bears blue, purple, pink, or white flowers, to 2cm (¾in) across, in pendent panicles, to 15cm (6in) across, followed by ovoid red fruit, 6–10mm (¼–½in) across. ↑ to 6m (20ft). Tropical South America. ☼ (min. 7–10°C/45–50°F)

*S. wendlandii* ☼ (Paradise flower, Potato vine). Spreading, evergreen or semi-evergreen, scrambling climber with hooked barbs on the stems and foliage. Bright green leaves, 10–25cm (4–10in) long, are pinnate (with 8–13 leaflets), oblong with heart-shaped bases, or 3-palmate. In summer, bears shallowly trumpet-shaped, lilac-blue flowers, 4–6cm (1½–2½in) across, in terminal, pendent, cyme-like panicles, to 15cm (6in) long, followed by spherical to ovoid orange fruit, 8–10cm (3–4in) across. ↑ 5m (15ft) or more. Costa Rica. ☼ (min. 7–10°C/45–50°F). 'Albescens' has off-white flowers.



*Solanum crispum* 'Glasnevin'



*Solanum pseudocapsicum* 'Red Giant'



*Solanum rantonnetii* 'Royal Robe'

## SOLDANELLA

Snowbell

PRIMULACEAE

Genus of about 10 species of small, spring-flowering, evergreen perennials from the mountains of Europe, usually found in alpine turf or among rocks, often flowering through the melting snow. They have basal rosettes of long-stalked, rounded or kidney-shaped, leathery leaves. The nodding to pendent, funnel- or bell-shaped, purple to white flowers have fringed petals and are borne in umbels, rarely singly. Grow in a rock garden, alpine house, or peat bed.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in humus-rich, moist, sharply drained soil in full sun with some midday shade, or in partial shade in warm areas. Top-dress with sharp grit, and protect from excessive winter wet. Under glass, grow in shallow pans of equal parts lime-free (ericaceous) potting compost, leaf mould, and grit.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Divide in early spring.

• **PESTS AND DISEASES** Young growth is prone to slug and snail damage.

**S. alpina** [■] (Alpine snowbell). Clump-forming perennial with thick, rounded to kidney-shaped, dark green leaves, 4cm (1½in) long. In early spring, each erect scape bears 2–5 nodding, funnel-shaped, bluish violet flowers, to 1.5cm (½in) long, with fringed petals cut to half their lengths and marked red inside. 1–12cm (5in). C. and S. Europe. \*\*\*

**S. carpatica** ♀ Clump-forming perennial with rounded, dark green leaves, 5cm (2in) long, violet-purple beneath. In early spring, each scape bears 2–5 funnel-shaped, violet-blue flowers, to 1.5cm (½in) across, resembling those of *S. alpina*, but more freely borne, with fringed petals cut to two-thirds of their lengths. 1–15cm (6in). E. Europe (W. Carpathians). \*\*\*



Soldanella alpina



Soldanella villosa

**S. minima** (Least snowbell). Dwarf, clump-forming perennial with rounded, glossy, mid-green leaves, 1cm (½in) long. In early spring, scapes bear usually solitary, narrowly bell-shaped, white or pale blue flowers, to 1.5cm (½in) long, with darker streaks, the fringed petals cut to a quarter of their lengths. 1–10cm (4in), 2–20cm (8in). S. central Europe (E. Alps, C. Apennines). \*\*\*

**S. montana**. Mound-forming perennial producing shallowly toothed, rounded or kidney-shaped, bright green leaves, 2–7cm (¾–3in) long, violet-tinted beneath. In early spring, each scape bears 3–10 pendent, bell-shaped, lavender-blue flowers, to 2cm (¾in) long, with fringed petals cut to three-quarters of their lengths. 1–30cm (12in), 2–20cm (8in). S. central Europe (N. Alps, Carpathians, Balkan peninsula). \*\*\*

**S. villosa** [■] Vigorous, clump-forming perennial with rounded, hairy-stalked, mid-green leaves, 7cm (3in) long, paler green beneath. In early spring, each scape bears 3 or 4 nodding, bell-shaped violet flowers, 1.5cm (½in) long, with fringed petals cut to three-quarters of their lengths. Relatively easy to grow. 1–30cm (12in), 2–20cm (8in). S.W. Europe (W. Pyrenees). \*\*\*

▷ **Soldiers and sailors** see *Pulmonaria officinalis*

## SOLEIROLIA syn. HELXINE

URTIACEAE

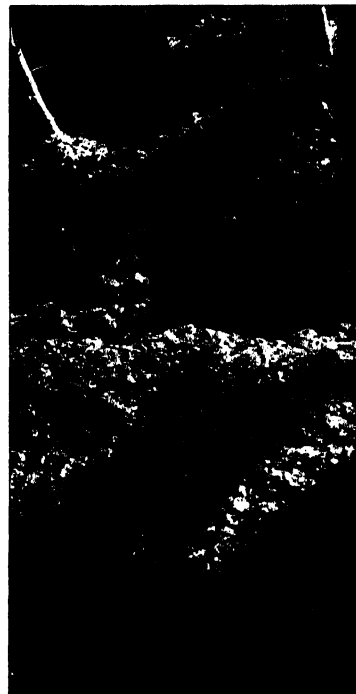
Genus of one species of vigorous, dwarf, monoecious, evergreen perennial from moist, shaded sites in W. Mediterranean islands. It is cultivated for its fresh green foliage, and tolerates a wide range of conditions. Where temperatures fall below -5°C (23°F), grow as a houseplant, in a terrarium, or in a cool to warm greenhouse or conservatory. In warmer areas, it provides ground cover in difficult sites outdoors, but is often invasive; it is difficult to eradicate.

• **HARDINESS** Fully hardy (borderline); becomes deciduous below 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) with added grit, in full light with shade from hot sun, or in partial shade. When in growth, water freely; water sparingly in winter. Outdoors, grow in any soil in sun or shade. May be damaged by frost, but quickly recovers in spring.

• **PROPAGATION** Divide in late spring.

• **PESTS AND DISEASES** Trouble free.



Soleirolia soleirolii

**S. soleirolii** [■] syn. *Helxine soleirolii* (Baby's tears, Mind your own business, Mother of thousands). Slender, mat-forming perennial with branched, translucent, pale green, sometimes pink-tinted stems and alternate, rounded, minutely hairy, short-stalked leaves, 2–6mm (¼–¼in) long. Produces tiny, solitary, tubular, 4-lobed, pink-tinted white flowers from the leaf axils in summer. 1–5cm (2in), 2–indefinite. W. Mediterranean islands. \*\*\* (borderline). 'Aurea', syn. 'Golden Queen', has gold-green leaves. 'Golden Queen' see 'Aurea'. 'Silver Queen' see 'Variegata'. 'Variegata', syn. 'Silver Queen', has variegated silver leaves.

## SOLENOPSIS syn. ISOTOMA

CAMPANULACEAE

Genus of about 25 species of annuals and perennials from dry, exposed sites in Australia as well as Central and South America. They have alternate, lobed to pinnatisect, linear to ovate or oblong leaves, and bear solitary, terminal or axillary, long-tubed, salverform flowers, each with 5 usually narrow, star-like petal lobes. In frost-prone areas, grow in



Solenopsis axillaris

a temperate or warm greenhouse, in containers, or use for summer bedding. In warmer climates, grow as accent plants in a border or for bedding. Contact with the sap may irritate skin.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in growth, water moderately and apply a balanced liquid fertilizer every 4 weeks; maintain low humidity. Water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. In frost-prone areas, plant out after last frosts. Dead-head regularly.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Root softwood cuttings in summer.

• **PESTS AND DISEASES** Aphids may be a problem in hot, dry conditions.

**S. axillaris** [■] syn. *Isotoma axillaris*, *Laurentia axillaris*. Woody-based perennial with erect, branched stems bearing ovate, pinnatisect leaves, 3–12cm (1¼–5in) long, with very narrow lobes. Star-shaped, pale to deep blue flowers, to 4cm (1½in) across, are borne in great abundance from spring to late autumn. 1–30cm (12in). Australia. ♀ (min. 7°C/45°F)

## SOLENOSTEMON

Coleus, Flame nettle, Painted nettle

LABIATAE/LAMIACEAE

Genus of about 60 species of evergreen, bushy, erect to spreading, subshrubby perennials from forest in tropical Africa and Asia. They are mainly cultivated for their opposite, coarsely toothed, often hairy, mostly ovate, colourful leaves. Throughout the year, they bear raceme-like whorls of tiny, tubular, 2-lipped, blue, white, or purple flowers. In frost-prone climates, grow in a temperate greenhouse or as houseplants, or use outdoors as summer bedding. In warmer areas, coleus are good bedding plants for shady positions.

• **HARDINESS** Frost tender.

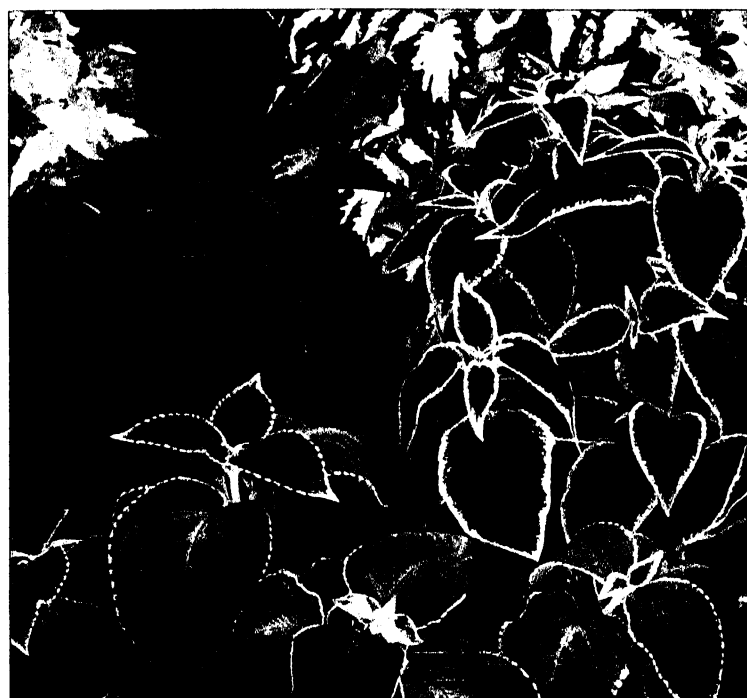
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered to moderate light. In growth, water freely and apply a high-nitrogen fertilizer every 2 weeks. Keep just moist in winter. Put on annually in spring. Outdoors, grow in humus-rich, moist but well-drained soil, enriched with well-rotted organic matter. Provide a sheltered position in full sun or partial shade. Water freely in dry weather. Pinch out young shoots to promote bushiness.

• **PROPAGATION** Surface-sow seed at 22–24°C (72–75°F) in early spring. Root softwood cuttings with bottom heat in spring or summer.

• **PESTS AND DISEASES** Mealybugs, scale insects, and whiteflies may be a problem under glass.

**S. scutellarioides**, syn. *Coleus blumei* var. *verschaffeltii* (Flame nettle, Painted nettle). Finely hairy, evergreen perennial, usually grown as an annual or short-lived perennial for its foliage. Semi-succulent, 4-angled stems bear broadly to narrowly ovate, toothed, sometimes frilly-margined, multi-coloured leaves, to 15cm (6in) long, often heart-shaped at the bases and hairy beneath.





*Solenostemon scutellarioides* Wizard Series

Terminal, whorled racemes, to 15cm (6in) long, of tiny, blue or white flowers, 1.5cm (½in) long, are borne at any time of year. Dead-head to maintain foliage colour. †↔ to 60cm (24in), in containers. S.E. Asia (including Malaysia). ☼ (min. 4°C/39°F). Seed selections and named cultivars are usually highly patterned, the light to dark green leaves veined and freckled pink, red, yellow, purple, brown, or creamy white. 'Pineapple Beauty' is vigorous, with yellow-green leaves that turn gold, and with brown-purple markings at the bases and on the stems; excellent for training into pyramids or standards; †↔ 50–100cm (20–39in).

**Rainbow Series** cultivars are vigorous and good for summer bedding; † to 40cm (16in). 'Royal Scot' is bushy, with long-pointed, triangular leaves, bright red with green-brown centres and deeply lobed yellow margins. Cultivars of **Wizard Series** ■ are compact, and branched from the base; † to 20cm (8in).

## SOLIDAGO

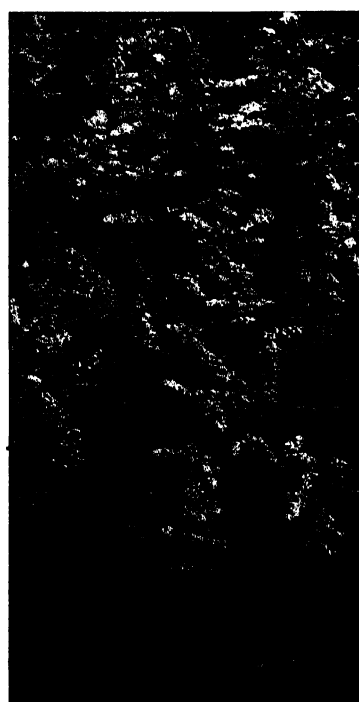
Aaron's rod, Golden rod

ASTERACEAE/COMPOSITAE

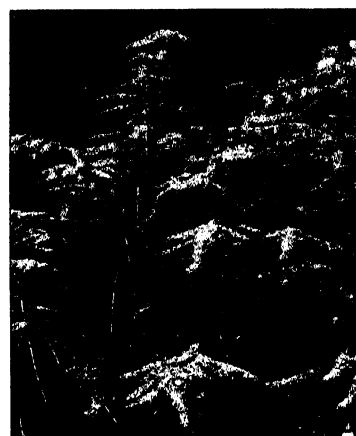
Genus of about 100 species of woody-based perennials occurring on roadsides, prairies, and riverbanks; most are found in North America, a few in South America and Eurasia. They are valued for their small, elongated flowerheads, borne in one-sided, upward-facing racemes or spike-like panicles. Stiff, branched stems bear alternate, narrowly elliptic to lance-shaped, entire or toothed, prominently veined, usually mid-green leaves, 10–30cm (4–12in) or more long. Most species are coarse and invasive, and are best grown in a wild garden, although *S. virgaurea* subsp. *minuta* is suitable for a rock garden. Named hybrids are robust, less invasive, and more colourful, with slightly larger flowerheads. They are ideal for a late-summer border or wild garden, and provide good cut flowers.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in poor to moderately fertile, preferably sandy, well-drained soil in full sun. Remove flowered stems to prevent seeding.
- **PROPAGATION** Divide in autumn or spring.
- **PESTS AND DISEASES** Powdery mildew may be a problem.

*S. 'Crown of Rays'*, syn. *S. 'Strahlenkrone'*. Erect, clump-forming perennial with mid-green leaves. Bears golden yellow flowerheads in flattened, radiating, corymb-like panicles, to 25cm (10in) long, in mid- and late summer. † 60cm (24in), ↔ 45cm (18in). \*\*\*  
*S. 'Goldenmosa'* ■♀ Compact, bushy perennial with wrinkled, mid-green



*Solidago 'Goldenmosa'*



*Solidago 'Golden Wings'*

leaves. In late summer and early autumn, bears yellow-stalked, bright yellow flowerheads in conical panicles, to 30cm (12in) long. † to 75cm (30in), ↔ 45cm (18in). \*\*\*

*S. 'Golden Wings'* ■ Erect perennial with mid-green leaves, and spreading, corymb-like panicles, to 25cm (10in) long, of golden yellow flowerheads borne in late summer and early autumn. Thrives in poor soil. † to 1.8m (6ft), ↔ 90cm (36in). \*\*\*

*S. 'Lemore'* see *x Solidaster luteus 'Lemore'*.

*S. 'Loddon Gold'*. Erect perennial with mid-green leaves. In late summer and early autumn, bears deep yellow flowerheads in conical panicles, to 20cm (8in) long. † to 90cm (36in), ↔ 45cm (18in). \*\*\*

*S. 'Strahlenkrone'* see *S. 'Crown of Rays'*.

*S. virgaurea* subsp. *alpestris* see *S. virgaurea* subsp. *minuta*.

*S. virgaurea* subsp. *minuta*, syn. *S. virgaurea* subsp. *alpestris*. Mound-forming perennial with leathery, lance-shaped, toothed, mid-green leaves, 2–10cm (¾–4in) long. From late summer to autumn, bears compact, erect, spike-like racemes, 3cm (1¼in) long, of deep yellow flowerheads, 6–8mm (¼–⅓in) across. Good for a rock garden, in moist soil. † 5–20cm (2–8in), ↔ 20cm (8in). N., C., and E. Europe. \*\*\*

## X SOLIDASTER

ASTERACEAE/COMPOSITAE

Hybrid genus of one clump-forming perennial, possibly the result of a cross between *Solidago canadensis* and *Aster ptarmicoides*. It is valued for its daisy-like yellow flowerheads, profusely borne from midsummer to early autumn. The leaves are alternate, and lance-shaped to linear-elliptic or narrowly inversely lance-shaped. Suitable for a mixed or herbaceous border; the flowers are good for cutting.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.
- **PROPAGATION** Divide, or take basal cuttings, in spring.
- **PESTS AND DISEASES** Prone to powdery mildew in dry summers.

*x S. hybridus* see *x S. luteus*.

*x S. luteus* ■ syn. *x S. hybridus*. Clump-forming perennial with erect, branched



*x Solidaster luteus*

stems bearing leaves to 15cm (6in) long, toothed at the tips. From midsummer to early autumn, bears branched, corymb-like panicles of daisy-like flowerheads, to 1cm (½in) across, with pale yellow ray-florets and golden yellow disc-florets. † to 90cm (36in), ↔ 30cm (12in). Garden origin. \*\*\*. 'Lemore' ♀ syn. *Solidago 'Lemore'*, has pale lemon ray-florets; †↔ to 80cm (32in).

## SOLLYA

PITTOSPORACEAE

Genus, related to *Billardiera*, of 3 species of evergreen, twining climbers or scandent shrubs or subshrubs found in light woodland in Australia. They are cultivated for their 5-petalled, bell-shaped, usually blue flowers, which are terminally borne, either singly or in pendent cymes, from summer to autumn. Stalkless, narrow, entire or slightly wavy-margined, oblong to ovate or obovate leaves are arranged alternately or in spirals. Where temperatures fall below 5°C (41°F), grow in a cool or temperate greenhouse. In warmer areas, train over an arch, pergola, or shrub.

- **HARDINESS** Frost tender, but may survive temperatures near to 0°C (32°F).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun, or in bright filtered light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; maintain low to moderate humidity. Water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun with some midday shade, or in light dappled shade. Apply a dry winter mulch. Support the climbing stems. Pruning group 12, in late winter or early spring.
- **PROPAGATION** Sow seed at 10–16°C (50–61°F) in spring. Root softwood cuttings in late spring or early summer.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*Sollya heterophylla*

*S. fusiformis* see *S. heterophylla*.

*S. heterophylla* ♀ syn. *S. fusiformis* (Bluebell creeper). Weak-stemmed, eventually bushy, twining climber with ovate to narrowly oblong or obovate, mid- to deep green leaves, 2.5–5cm (1–2in) long, paler beneath. Bell-shaped blue flowers, 1.5cm (½in) across, are borne singly or in cymes of 4–8 or more, from early summer to autumn; they are followed by edible, cylindrical blue berries, to 2.5cm (1in) long. ‡ 1.5–2m (5–6ft). Australia (Western Australia). \* (borderline)

▷ **Solomon's seal** see *Polygonatum*  
**Common** see *Polygonatum*  
**x hybridum**

**False** see *Smilacina*

**Whorled** see *Polygonatum verticillatum*

## SONERILA

MELASTOMATACEAE

Genus of about 175 species of evergreen perennials and small shrubs from tropical woodland in Asia, cultivated for their foliage and flowers. The leaves are opposite, whorled, or in basal rosettes, and mainly oval to elliptic, with bold veins. Flowers are star-, saucer-, or cup-shaped, and are borne in curved, spike-like racemes or corymbs. In frost-prone regions, grow in a warm greenhouse or conservatory, as houseplants, or in a terrarium. In warmer climates, use as ground cover among shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in half pots or shallow pans of loamless potting compost with added fine-grade, granulated bark, in bright filtered light. Maintain steady temperatures and high humidity to prevent leaf drop. When in growth, water moderately and apply a half-strength balanced liquid fertilizer monthly. Keep just moist in winter. Pot on in spring; trim regularly to maintain dense growth. Outdoors, grow in humus-rich, moist but well-drained, acid to neutral soil with added leaf mould and grit, in light dappled to partial shade. Shelter from cold, drying winds.

• **PROPAGATION** Root softwood cuttings with bottom heat in spring or summer.

• **PEST AND DISEASES** Trouble free.

*S. margaritacea* ♀ Evergreen perennial with weak, 4-angled red stems bearing opposite, ovate to lance-shaped, glossy, dark green leaves, 10cm (4in) long, with

*Sonerila margaritacea* 'Hendersonii'

numerous oval, pearl-white spots above, purple veins beneath, and purple-red leaf-stalks. Racemes of 8–10 star-shaped, 3-petalled, reddish pink flowers, 1cm (½in) long, are borne from summer to autumn. ‡ 25cm (10in). Burma to Indonesia (Java). ☀ (min. 19°C/66°F). 'Argentea' (Pearly sonerila) has claret-red leaves, densely spotted silver. 'Hendersonii' ♀ has dark olive-green leaves, covered with white spots above, and purple-red beneath.

▷ **Sonerila, Pearly** see *Sonerila margaritacea* 'Argentea'

## SOPHORA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 50 species of herbaceous perennials and deciduous and evergreen trees and shrubs, widely distributed in tropical and temperate regions, found mostly in dry valleys and woodland, and on rocky slopes of hills and mountains. They are cultivated for their elegant, alternate, pinnate leaves and racemes or panicles of pea-like flowers, with upright standards or with all petals forward-pointing. Grow in a shrub border, or as specimen plants. In frost-prone areas, grow tender sophoras at the base of a warm, sunny wall, or in a temperate or warm greenhouse. They need long, hot summers to flower well.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root

*Sophora davidii**Sophora japonica* 'Violacea'

semi-ripe cuttings of evergreen species with bottom heat in summer or autumn. Graft *S. japonica* cultivars in late winter.

• **PESTS AND DISEASES** Trouble free.

*S. davidii* ♀ syn. *S. viciifolia*. Bushy or spreading, deciduous shrub with pinnate leaves, to 9cm (3½in) long, each composed of up to 17 oval or obovate, grey-green leaflets. In late spring and early summer, produces terminal racemes, to 15cm (6in) long, of small, pea-like, purple-blue and white flowers, to 2cm (¾in) long. ‡ 2.5m (8ft), ↔ 3m (10ft). China. \*\*\*

*S. japonica* ♀ (Japanese pagoda tree). Spreading, deciduous tree with pinnate leaves, to 25cm (10in) long, composed of up to 17 ovate to lance-shaped, glossy, dark green leaflets that turn yellow in autumn. In late summer and early autumn, mature trees bear small, fragrant, pea-like white flowers, 1.5cm (½in) long, in terminal panicles to 30cm (12in) long. ‡ to 30m (100ft), ↔ 20m (70ft). China, Korea. \*\*\*

'Pendula' ♀ has long, pendent branches, and rarely flowers; ‡ 3m (10ft). 'Violacea' ♀ has white flowers tinged lilac-pink.

*Sophora microphylla* 'Sun King' (inset: flower detail)

*S. microphylla* ♀ syn. *Edwardsia microphylla*. Spreading, evergreen, small tree or shrub producing pinnate leaves, to 15cm (6in) long, each with up to 40 pairs of ovate or elliptic-oblong, dark green leaflets, borne on silky shoots. In spring, bears small, axillary, pendent racemes, to 5cm (2in) long, of pea-like, dark yellow flowers, 5cm (2in) long, with all petals pointing forwards. ‡ 8m (25ft). New Zealand, Chile. \*\*\* 'Sun King' ♀ is bushy, and bears long-lasting flowers in late winter and early spring; ‡ 3m (10ft); \*\*\*

*S. tetraptera* ♀ (Kowhai).

Spreading, evergreen tree or shrub with pinnate leaves, to 17cm (7in) long, each composed of up to 20 pairs of ovate or elliptic-oblong, dark green leaflets. In late spring, produces racemes, to 6cm (2½in) long, of 4–10 golden yellow flowers, to 5cm (2in) long, with all the petals pointing forwards. ‡ 10m (30ft), ↔ 5m (15ft). New Zealand. \*\*\*

*S. viciifolia* see *S. davidii*.

## X SOPHROLAELIO-CATTLEYA

ORCHIDACEAE

Trigeneric hybrid genus of evergreen orchids derived from crosses between *Sophranitis*, *Laelia*, and *Cattleya*. They are vegetatively similar to laeliocattleyas and brassolaeliocattleyas, and all are loosely referred to as cattleyas. The spindle-shaped or elongated pseudobulbs support 1 or 2 semi-rigid, elliptic leaves, to 15cm (6in) long. Flowers 10cm (4in) across, in a range of rich colours from vibrant reds to fiery oranges and yellows, are borne singly or in racemes of up to 6 blooms; they are produced from the bases of the pseudobulbs at any time of year.

• **HARDINESS** Frost tender.

• **CULTIVATION** Intermediate-growing orchids. Grow in containers of terrestrial orchid compost. During the growing season, provide bright indirect light, and water freely; apply a half-strength



x *Sophrolaeliocattleya* Hazel Boyd 'Apricot Glow'



x *Sophrolaeliocattleya* Trizac 'Purple Emperor'

balanced liquid fertilizer monthly; mist daily and maintain high humidity. In winter, provide full light and water sparingly. See also p.46.

• **PROPAGATION** Divide when the plant "overflows" the container. Remove backbulbs and pot them up separately.

• **PESTS AND DISEASES** Scale insects, red spider mites, aphids, and mealybugs may be troublesome.

x *S. Hazel Boyd* 'Apricot Glow' ■ Evergreen orchid with spindle-shaped pseudobulbs and elliptic leaves, 10cm (4in) long. Bears racemes of rich orange-red flowers, marked red on the lips, at any time of year. ‡ 20cm (8in), ↔ 30cm (12in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

x *S. Jewel Box* 'Dark Waters'. Evergreen orchid with spindle-shaped pseudobulbs and elliptic-ovate leaves, 10cm (4in) long. Produces racemes of deep vibrant red flowers at any time of year. ‡ 30cm (12in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

x *S. Tangerine Jewel*. Evergreen orchid with elongated pseudobulbs and elliptic leaves, 10cm (4in) long. Orange-yellow flowers, 10cm (4in) across, are borne in racemes at any time of year. ‡ 30cm (12in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

x *S. Trizac* 'Purple Emperor' ■ Evergreen orchid with spindle-shaped pseudobulbs and elliptic leaves, 10cm (4in) long. Bears racemes of deep purple flowers at any time of year. ‡ 30cm (12in). ☼ (min. 13°C/55°F; max. 30°C/86°F)

## SOPHRONITIS

ORCHIDACEAE

Genus of about 8 species of small, evergreen, epiphytic or lithophytic orchids from E. Brazil and Paraguay, found at medium altitudes in humid, shady cloud forest. They have small, elongated to oval, often clustered pseudobulbs, each with a single leathery, ovate to elliptic or oblong, purple-tinted, dark green leaf. Richly coloured flowers are borne singly, or in short-stemmed racemes of up to 5 flowers, at any time of year. The plants resemble miniature cattleyas, and will interbreed with them and other related genera to produce brilliantly coloured hybrids, such as the *sophrolaeliocattleyas*.

• **HARDINESS** Frost tender.

• **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in small containers or wooden slatted baskets, or epiphytically on bark. In growth, provide bright indirect light, water moderately, and maintain high humidity; apply a half-strength balanced liquid fertilizer monthly. In winter, admit full light and water more sparingly. See also p.46.

• **PROPAGATION** Divide when the plant "overflows" the sides of the container.

• **PESTS AND DISEASES** Prone to red spider mites, aphids, and mealybugs.

*S. coccinea* ♀ syn. *S. grandiflora*. Epiphytic orchid with small, oval or spindle-shaped pseudobulbs and elliptic to ovate, purple-tinted, sometimes glaucous, dark green leaves, 3–6cm (1¼–2½in) long. Bears yellow to red or pinkish red flowers, 6–7cm (2½–3in) across, at any time of year. ‡ 5cm (2in), ↔ 10cm (4in). E. Brazil. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F)

*S. grandiflora* see *S. coccinea*.

## SORBARIA

ROSACEAE

Genus of 10 species of suckering, deciduous shrubs, often with star-shaped hairs, mainly occurring on riverbanks from the Himalayas to E. Asia. They are cultivated for their elegant foliage and flowers. The leaves are alternate and pinnate; the 5-petalled, star-like white flowers are borne in large, conical, terminal panicles in mid- and late summer. Sorbarias are good for a large shrub border, a wild or woodland garden, where they may form thickets, or for a waterside planting.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained, neutral to slightly alkaline soil in full sun to partial shade. Remove excess suckers to restrict spread. Pruning group 2 or 6.

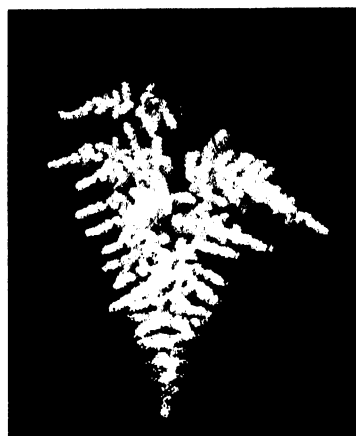
• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take semi-ripe cuttings in midsummer. Transplant rooted suckers in autumn or winter.

• **PESTS AND DISEASES** Trouble free.

*S. aitchisonii* see *S. tomentosa* var. *angustifolia*.

*S. arborea* see *S. kirilowii*.

*S. kirilowii* ■ syn. *S. arborea*, *Spiraea arborea*. Vigorous, spreading shrub with arching shoots and pinnate leaves, to 30cm (12in) long, each composed of 13–17 (rarely 9) lance-shaped, tapered,



*Sorbaria kirilowii*

dark green leaflets. In mid- and late summer, bears white flowers, to 6mm (¼in) across, in terminal, arching, conical panicles, to 40cm (16in) long. ‡ 1.3–8m (4½–25ft). W. China, S.E. Tibet. \*\*\*

*S. lindleyana* see *S. tomentosa*.

*S. sorbifolia* ■ syn. *Spiraea sorbifolia*. Upright, thicket-forming shrub with erect branches and pinnate leaves, to 25cm (10in) long, each with up to 25 lance-shaped or oblong, tapered, dark green leaflets. In mid- and late summer, produces small white flowers, to 8mm (⅜in) across, in erect, terminal, conical panicles, to 25cm (10in) long. ‡ 2m (6ft), ↔ 3m (10ft). N. Asia, Japan. \*\*\*

*S. tomentosa*, syn. *S. lindleyana*. Strong-growing, spreading shrub with pinnate leaves, to 45cm (18in) long, composed of up to 23 lance-shaped, tapered, dark green leaflets. In mid- and late summer, bears small, creamy white flowers, 6mm (¼in) across, in terminal, conical panicles, to 40cm (16in) long. ‡ 6m (20ft). Himalayas. \*\*\*. var.

*angustifolia*, syn. *S. aitchisonii*, *Spiraea aitchisonii*, is shorter, with red shoots and slender leaflets; ‡ 3m (10ft); Afghanistan to W. Nepal.



*Sorbaria sorbifolia*

## SORBUS

ROSACEAE

Genus of about 100 species of deciduous trees and shrubs, widely distributed in N. temperate regions, found in woodland, on hills and mountains, and on scree. *Sorbus* species and cultivars are valued for their ornamental leaves, which are alternate, variable, and either simple and toothed to lobed, or pinnate; they often colour well in autumn. They are also grown for their terminal, sometimes panicle-like corymbs of small, white, rarely pink flowers, 0.8–2cm (⅜–¾in) across, borne in spring or early summer, and for their mostly spherical, white, yellow, orange, red, or brown fruits (berries). Tolerant of atmospheric pollution, they are ideal as specimen trees in a small garden, or wild or woodland garden. The raw fruit may cause mild stomach upset if ingested.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moderately fertile, humus-rich, well-drained soil in full sun or light dappled shade. *Sorbus* species and cultivars with pinnate leaves grow best in moist but well-drained, acid to neutral soil. *S. aria* will thrive on dry, chalky soil as well as on acid soil. Pruning group 1, if necessary.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take greenwood cuttings in early summer; not all will root readily. Bud in summer. Graft in winter.

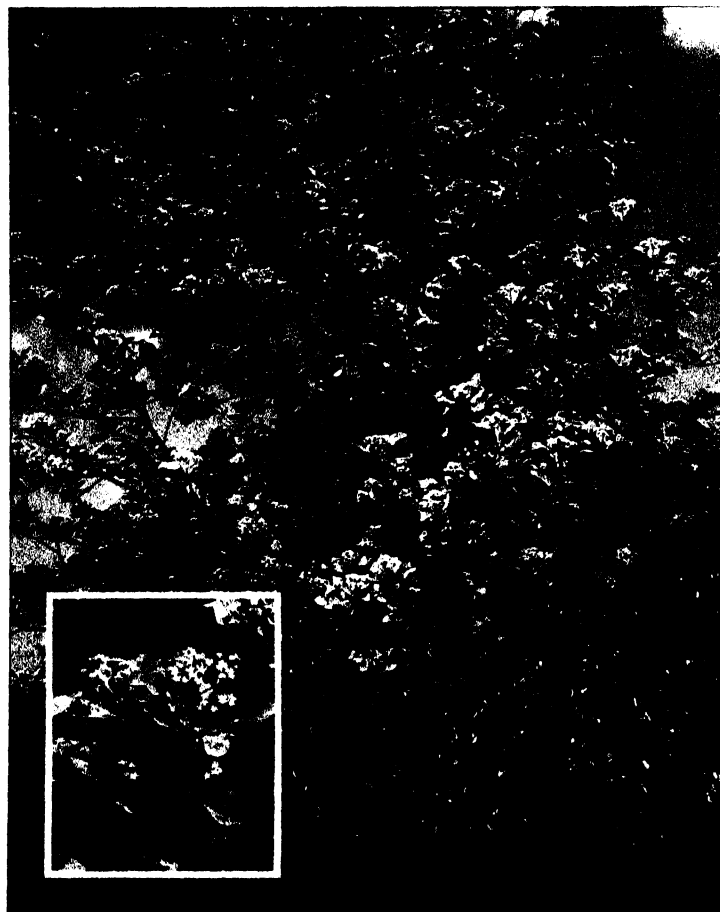
• **PESTS AND DISEASES** Prone to aphids, blister beetles, red spider mites, scale insects, sawfly larvae, canker, silver leaf, honey fungus, and fireblight.

*S. alnifolia* △ (Korean mountain ash). Broadly conical tree with simple, ovate to lance-shaped, toothed, dark green leaves, to 10cm (4in) long, turning yellow to orange or red in autumn. In mid-spring, bears dense corymbs, 8cm (3in) across, of small white flowers, followed in autumn by spherical, deep pink to red berries, 1cm (½in) across. ‡ 20m (70ft), ↔ 8m (25ft). E. Asia. \*\*\*

*S. americana* ■ △ (American mountain ash). Rounded tree or shrub producing pinnate leaves, to 25cm (10in) long, each with up to 15 oblong to lance-shaped, toothed, light green leaflets, turning yellow or red in autumn. In late spring and early summer, bears dense corymbs, 14cm



*Sorbus americana*



*Sorbus aria* 'Lutescens' (inset: flower detail)

(5½in) across, of white flowers, followed by spherical, orange-red berries, 8mm (⅜in) across. †10m (30ft), ↔ 7m (22ft). E. North America. \*\*\*

**S. aria** ♀ (Whitebeam). Broadly columnar tree producing simple, elliptic to broadly ovate or obovate, toothed, glossy, dark green leaves, to 12cm (5in) long, white-hairy beneath. White flowers are borne in corymbs 8cm (3in) across, in late spring; they are followed by ovoid to spherical, brown-speckled, dark red berries, 1cm (½in) across. †10–25m (30–80ft), ↔ 10m (30ft). Europe. \*\*\*. **'Chrysophylla'** has golden yellow juvenile leaves; †10m (30ft), ↔ 7m (22ft). **'Decaisneana'** see **'Majestica'**. **'Lutescens'** ♀ is compact in habit, with silvery grey, later grey-green foliage; †10m (30ft), ↔ 8m (25ft). **'Magnifica'** has large, very glossy leaves, to 12cm (5in) long. **'Majestica'** ♀ syn. **'Decaisneana'**, has leaves to 15cm (6in) or more long.

**S. aucuparia** ♂ ♀ (Mountain ash, Rowan). Broadly conical to rounded tree with mid- to dark green leaves, turning red or yellow in autumn. Leaves are oblong-lance-shaped to elliptic, to 20cm (8in) long, with 1 or 2 pairs of separate leaflets at the bases, or pinnate, with up to 12 oblong-lance-shaped, sharply toothed leaflets. In late spring, bears white flowers in corymbs to 12cm (5in) across, followed by spherical, orange-red berries, 8mm (⅜in) across. †15m (50ft), ↔ 7m (22ft). Europe, Asia. \*\*\*. **'Asplenifolia'** has leaflets pinnately divided at the bases.

**'Beissneri'** ♀ syn. **S. moravica** **'Laciniata'**, is upright, with coppery

bark, and red shoots and leaf-stalks; yellow-green leaves turn yellow in autumn; †10m (30ft), ↔ 5m (15ft).

**'Cardinal Royal'** ♀ is upright and vigorous, and fruits profusely.

**'Fastigiata'** ♂ syn. **S. decora** var. **nana**, **S. scopulina** of gardens, is dense in habit, with upright branches, conical when mature; it bears dark red berries, 1cm (½in) across; †8m (25ft), ↔ 5m (15ft).

**'Fructu Luteo'** ♀ ♀ syn. **'Xanthocarpa'**, is spreading, with orange-yellow berries; †→ 8m (25ft). var. **pluripinnata** see **S. scalaris**. **'Sheerwater Seedling'** ♀ ♀ is narrowly upright; †10m (30ft), ↔ 5m (15ft). **'Xanthocarpa'** see **'Fructu Luteo'**.

**S. cashmiriana** ♂ ♀ ♀ Spreading tree or shrub with pinnate leaves, to 20cm (8in) long, composed of 17–21 lance-shaped, dark green leaflets. In late spring, bears pink or white flowers in corymbs 12cm (5in) across, followed by spherical white berries, to 1.5cm (½in) across, pink-tinged at first. †8m (25ft), ↔ 7m (22ft). W. Himalayas. \*\*\* **S. 'Chinese Lace'** ♀ Upright tree with pinnate leaves, to 20cm (8in) long, composed of numerous deeply cut, elliptic to oblong, dark green leaflets. Small white flowers, in corymbs to 15cm (6in) across, are produced in late spring, followed by spherical, orange-red berries, 1cm (½in) across. †6m (20ft), ↔ 5m (15ft). \*\*\*

**S. commixta** ♂ ♀ syn. **S. discolor** of gardens, **S. reflexipetala**. Compact, broadly conical tree or shrub with erect branches and pinnate leaves, to 25cm (10in) long, each with up to 17 elliptic to lance-shaped, tapered, dark green



*Sorbus aucuparia*

leaflets, turning yellow to red or purple in autumn. In late spring, bears white flowers in corymbs 15cm (6in) across, followed by spherical, orange-red or red berries, 8mm (⅜in) across. †10m (30ft), ↔ 7m (22ft). Korea, Japan. \*\*\*.

**'Embley'** ♀ has bright red leaves in late autumn, and fruits profusely.

**S. conradinae** see **S. esserteauana**.

**S. conradinae** of gardens see **S. pohuashanensis**.

**S. cuspidata** see **S. vestita**.

**S. decora** ♂ ♀ Upright tree or shrub with pinnate leaves, to 15cm (6in) long, composed of up to 15 elliptic to oval-lance-shaped, dark blue-green leaflets, turning orange-red in autumn. In late spring, bears white flowers in corymbs to 10cm (4in) across, followed by spherical, bright red berries, 1cm (½in) across. †8m (25ft), ↔ 5m (15ft).

Canada (Newfoundland), Greenland, N.E. USA. \*\*\*. var. **nana** see **S. aucuparia** **'Fastigiata'**.

**S. discolor** of gardens see **S. commixta**.

**S. domestica** ♀ (Service tree). Broadly columnar tree with pinnate leaves, to 20cm (8in) long, composed of up to 21 narrowly oblong, dark green leaflets, turning yellow or red in autumn. In late

spring, bears white flowers in conical corymbs, 10cm (4in) across; they are followed by spherical or pear-shaped, yellow-green, red-flushed berries, to 3cm (1¼in) across. †20m (70ft), ↔ 12m (40ft). C. and S. Europe, N. Africa, Turkey, Caucasus, Ukraine (Crimea), Moldavia. \*\*\*. **'Maliformis'** see **f. pomifera**. **f. pomifera**, syn. **'Maliformis'**, bears spherical berries. **f. pyriformis** ♂ syn. var. **pyriformis**, produces pear-shaped berries.

**S. esserteauana** ♀ syn. **S. conradinae**.

Spreading tree with large, pinnate leaves, to 25cm (10in) long, composed of up to 15 oblong-lance-shaped, tapered, dark green leaflets, white-felted beneath, turning red in autumn. In late spring, bears white flowers in corymbs 12cm (5in) across, followed by spherical, dark red berries, 8mm (⅜in) across. †→ 10m (30ft). China (W. Sichuan). \*\*\*.

**'Flava'** has orange-yellow berries.

**S. folgeri** **'Lemon Drop'** ♀ Arching tree with slightly pendent branches and simple, narrowly ovate, dark green leaves, to 10cm (4in) long, white beneath. In late spring, produces white flowers, in corymbs 10cm (4in) across, followed by ovoid, bright yellow berries, 1cm (½in) across. †→ 8m (25ft). \*\*\*.

**S. forrestii** ♀ Spreading tree with pinnate leaves, to 20cm (8in) long, composed of up to 19 elliptic-oblong, dark blue-green leaflets. In late spring, bears white flowers in corymbs 10cm (4in) across, followed by spherical white berries, 1cm (½in) across, tinged dark pink at the tips. †→ 6m (20ft). China (N.W. Yunnan). \*\*\*.

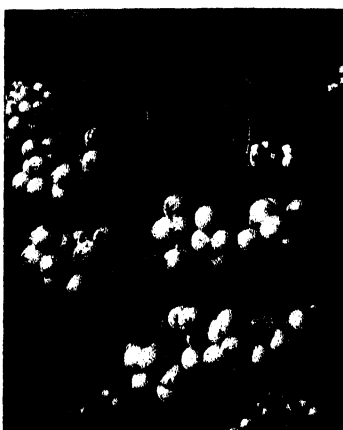
**S. glabrescens** see **S. hupehensis**.

**S. hupehensis** ♀ ♀ syn. **S. glabrescens** (Hubei rowan). Broadly columnar tree with pinnate leaves, to 15cm (6in) long, each with up to 15 ovate, blue-green leaflets, turning red in autumn. In late spring, bears pyramidal, panicle-like corymbs, to 12cm (5in) long, of white flowers, followed by spherical white berries, 8mm (⅜in) across, slightly flushed pink. †→ to 8m (25ft). China (Hubei). \*\*\*. var. **obtusata** ♂ syn. **'Rosea'**, has berries ripening dark pink.

**S. x hybrida** of gardens see **S.**

**x thuringiaca**.

**S. intermedia** ♀ (Swedish whitebeam). Compact, rounded tree with elliptic to oblong-elliptic, toothed, dark green leaves, to 12cm (5in) long, lobed near the bases. In late spring, bears dense corymbs, 12cm (5in) across, of white flowers, followed by ovoid-oblong,



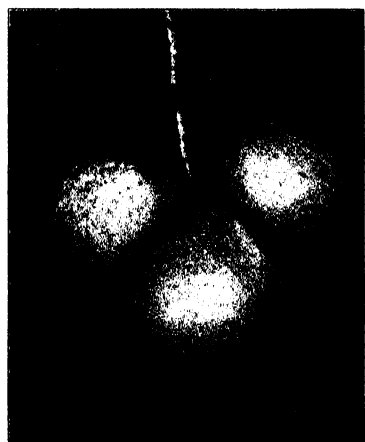
*Sorbus cashmiriana*



*Sorbus commixta*

*Sorbus decora* (inset: fruit detail)

bright red berries, 1.5cm (½in) long. ↑↔ 12m (40ft). N.W. Europe. \*\*\*  
***S. 'Joseph Rock'*** [■] ♀ Broadly upright tree with pinnate leaves, to 15cm (6in) long, composed of up to 21 narrowly oblong, sharply toothed, bright green leaflets, turning orange, red, and purple in autumn. In late spring, bears white flowers, in corymbs 10cm (4in) across, followed by spherical, pale yellow, later orange-yellow berries, 1cm (½in) across. Prone to fireblight. ↑ 10m (30ft), ↔ 7m (22ft). \*\*\*  
***S. x kewensis*** ♀ (♂ *S. pohuashanensis* x *S. aucuparia*) syn. *S. pohuashanensis* of gardens. Slow-growing, rounded, shrubby tree with pinnate leaves, to 30cm (12in) long, composed of 4–9 pairs of oblong-elliptic or oblong-lance-shaped, coarsely toothed, mid-green leaflets. In late spring, bears white flowers in corymbs 13cm (5in) across, followed by ovoid, bright red berries, 8mm (⅜in) across. ↑ 2.5m (8ft), ↔ 2m (6ft). Garden origin. \*\*\*  
***S. koehneana*** ♀ Spreading, small tree or shrub with pinnate leaves, to 15cm (6in) long, composed of up to 25 or more oblong to ovate, sharply toothed, dark green leaflets. In late

*Sorbus domestica* f. *pyriformis*

spring, produces small corymbs, 8cm (3in) across, of white flowers, followed by small, spherical, mid-green berries, 6mm (¼in) across, ripening to white, on red stalks. Often confused with *S. fruticosa*, which is very similar but only grows to 2m (6ft) in height. ↑ 5m (15ft), ↔ 6m (20ft). China. \*\*\*  
***S. lanata*** of gardens see *S. vestita*.  
***S. latifolia*** [■] (Service tree of Fontainebleau). Broadly columnar tree with broadly elliptic, sharply toothed, glossy, dark green leaves, to 10cm (4in) long, lobed towards the bases. In late spring, bears white flowers in corymbs 8cm (3in) across, followed by spherical, yellow-brown berries, 1cm (½in) across. ↑ 10–20m (30–70ft), ↔ 5–8m (15–25ft). W. Europe. \*\*\*

*Sorbus hupehensis* var. *obtusata**Sorbus* 'Joseph Rock'

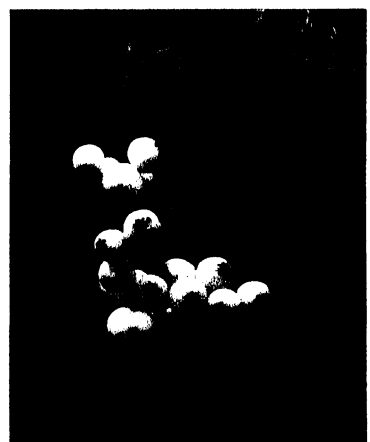
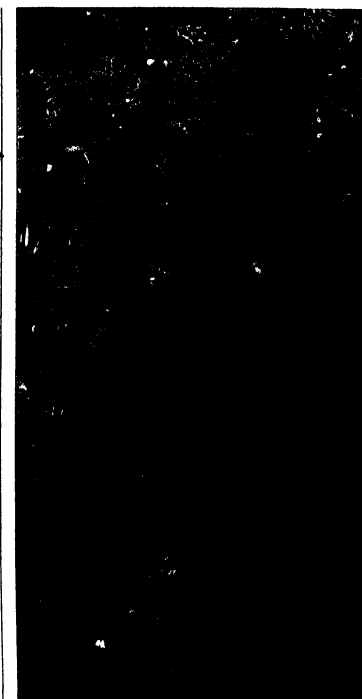
***S. megalocarpa*** [■] ♀ Spreading tree or shrub with arching branches and oval, finely toothed, dark green leaves, to 25cm (10in) long, red when young and in autumn. In early spring, bears pungent, creamy white flowers in dense corymbs, to 15cm (6in) across, before or with the young leaves, followed by ovoid, russet-brown berries, 3cm (1¼in) long. ↑ 8m (25ft), ↔ 10m (30ft). C. to S. China. \*\*\*

***S. microphylla*** [■] ♀ Elegant, spreading tree or shrub with pinnate leaves, to 17cm (7in) long, each with up to 33 oblong, sharply toothed, dark green leaflets, red in autumn. In late spring, bears small corymbs, to 8cm (3in) across, of pale pink to almost crimson flowers, followed by spherical, white or pink berries, 8mm (⅜in) across. ↑↔ 6m (20ft). W. China, E. Himalayas. \*\*\*  
***S. 'Mitchellii'*** see *S. thibetica* 'John Mitchell'.

***S. moravica*** 'Laciniata' see *S. aucuparia* 'Beissneri'.

***S. 'Pearly King'*** [■] ♀ Spreading tree with slender shoots and pinnate leaves, to 15cm (6in) long, each comprising up to 17 elliptic, glossy, dark green leaflets, turning yellow or red in autumn. In late spring, bears white flowers in corymbs 10cm (4in) across, followed by spherical pink, later white-flushed berries, 1.5cm (½in) across. ↑↔ 6m (20ft). \*\*\*

***S. pohuashanensis*** [■] syn. *S. conradinae* of gardens. Spreading tree with pinnate leaves, to 18cm (7in) long, composed of up to 15 elliptic to oblong-lance-shaped, dark green leaflets. In late spring, produces dense corymbs, to 12cm (5in) across, of white flowers, followed by

*Sorbus prattii**Sorbus reducta*

spherical red berries, 8mm (⅜in) across. ↑ to 20m (70ft), ↔ 8m (25ft). Probably N. China. \*\*\*

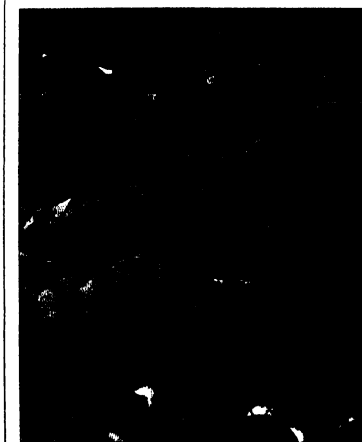
***S. pohuashanensis*** of gardens see *S. x kewensis*.

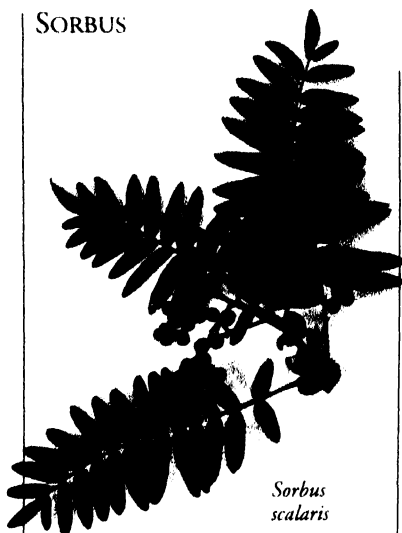
***S. prattii*** [■] ♀ Spreading tree with pinnate leaves, to 15cm (6in) long, composed of up to 31 oblong, sharply toothed, dark green leaflets. In late spring, bears small corymbs, 8cm (3in) across, of white flowers, followed by spherical green berries, 8mm (⅜in) across, ripening to white. ↑↔ 6m (20ft). China (Sichuan). \*\*\*

***S. reducta*** [■] ♀ Thicket-forming, usually suckering shrub with upright shoots. Pinnate leaves, to 10cm (4in) long, composed of up to 15 ovate, glossy, dark green leaflets, turn red and purple in autumn. In late spring, bears white flowers in small, open corymbs, to 8cm (3in) across, followed by spherical, crimson then white berries, 1cm (½in) across. ↑ 1–1.5m (3–5ft), ↔ 2m (6ft) or more. W. China. \*\*\*

***S. reflexipetala*** see *S. commixta*.

***S. sargentiana*** [■] ♀ Broadly upright, slow-growing tree with stout shoots and large, sticky red winter buds. Large, pinnate leaves, to 35cm (14in) long,

*Sorbus sargentiana*



*Sorbus  
scalaris*

each with up to 13 oblong-lance-shaped, dark green leaflets, turn orange and red in autumn. In early summer, bears white flowers in broad corymbs, 20cm (8in) across, followed by spherical red berries, 8mm (3/16in) across.  $\pm$  10m (30ft). W. China. \*\*\*

***S. scalaris*** [M] ♀ syn. *S. aucuparia* var. *pluripinnata*. Spreading tree with pinnate leaves, to 20cm (8in) long, composed of up to 33 narrowly oblong, glossy, dark green leaflets, turning red and purple in late autumn. In late spring and early summer, bears flattened corymbs, 15cm (6in) across, of white flowers, followed by spherical red berries, 6mm (1/4in) across.  $\pm$  10m (30ft). China (W. Sichuan). \*\*\*

***S. scopulina***. Erect shrub with pinnate leaves, 3–6cm (1 1/4–2 1/2in) long, each composed of up to 15 oblong-lance-shaped, dark green leaflets. In late spring and early summer, bears white flowers in corymbs to 10cm (4in) across, followed by spherical, glossy red berries, 1cm (1/2in) across.  $\pm$  to 2m (6ft),  $\leftrightarrow$  1.5m (5ft). North America (British Columbia to New Mexico). \*\*\*

***S. scopulina*** of gardens see *S. aucuparia* 'Fastigiata'.

***S. thibetica*** Δ Broadly conical tree with elliptic to rounded, sharply toothed, dark green leaves, to 13cm (5in) long, densely white-hairy when young, remaining white-hairy beneath when mature. In late spring and early summer, bears white flowers in corymbs to 6cm (2 1/2in) across, followed by spherical to pear-shaped green berries, 1.5cm (1/2in) across, ripening orange or yellow.  $\pm$  20m (70ft),  $\leftrightarrow$  15m (50ft). S.W. China.



*Sorbus x thuringiaca*



*Sorbus vilmorinii*

Himalayas. \*\*\*. **'John Mitchell'** ♀ syn. *S. 'Mitchellii'*, produces broadly rounded leaves.

***S. x thuringiaca*** [M] Δ (*S. aria* x *S. aucuparia*) syn. *S. x hybrida* of gardens. Compact, broadly conical tree with ovate to elliptic, deeply lobed, glossy, dark green leaves, warm yellow-brown in autumn, to 15cm (6in) long, often with separate leaflets at the bases. In late spring, bears white flowers in corymbs to 12cm (5in) across, followed by spherical to ellipsoid, bright red berries, 1cm (1/2in) across.  $\pm$  to 15m (50ft),  $\leftrightarrow$  8m (25ft). Europe. \*\*\*. **'Fastigiata'** Δ–Δ is very compact and narrowly upright, becoming broadly conical with age.

***S. vestita*** Δ syn. *S. cuspidata*, *S. lanata* of gardens. Broadly conical tree with simple, elliptic, sharply toothed, sometimes shallowly lobed leaves, to 20cm (8in) long. Leaves are white-hairy when young; mature leaves are glossy, dark green above, white-hairy beneath. In late spring, bears white-woolly corymbs, to 8cm (3in) across, of white flowers, followed by spherical, brown-speckled, yellow-green berries, 2cm (3/4in) across.  $\pm$  to 25m (80ft),  $\leftrightarrow$  10m (30ft). Himalayas, N. Burma. \*\*\*

***S. vilmorinii*** [M] ♀ Δ Spreading shrub or tree with arching branches and pinnate leaves, to 15cm (6in) long, composed of up to 29 glossy, dark green leaflets. In late spring and early summer, bears white flowers in corymbs 10cm (4in) across, followed by spherical, dark red berries, 1cm (1/2in) across, ageing pink then white.  $\pm$  5m (15ft). S.W. China. \*\*\*

***S. 'Wilfrid Fox'*** Δ–Δ Upright tree, broadly conical when mature, with elliptic, glossy, dark green leaves, to 12cm (5in) long, densely white-hairy beneath. White flowers are produced in corymbs 10cm (4in) across, in late spring, followed by spherical, yellow-brown, red-flushed berries, to 1.5cm (1/2in) across.  $\pm$  15m (50ft),  $\leftrightarrow$  10m (30ft). \*\*\*

## SORGHASTRUM

GRAMINEAE/POACEAE

Genus of about 16 species of clump-forming, annual and perennial grasses from prairies and savannah in Africa and tropical and temperate North, Central, and South America. They are cultivated for their open or narrow, terminal panicles of late-summer flowerheads (which may be dried and dyed), and for

their linear, flat or rolled leaves. Suitable for a mixed or herbaceous border.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Protect from excessive winter wet.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in mid-spring or early summer.
- **PESTS AND DISEASES** Trouble free.

***S. avenaceum*** see *S. nutans*.

***S. nutans***, syn. *S. avenaceum* (Indian grass, Wood grass). Slowly spreading, perennial grass forming loose clumps of erect stems with arching, broadly linear, bluish green leaves, to 60cm (24in) long. From summer to autumn, produces narrow, terminal panicles, to 35cm (14in) long, of golden brown spikelets.  $\pm$  1.2m (4ft),  $\leftrightarrow$  60cm (24in). E. and C. USA. \*\*\*. **'Sioux Blue'** is strongly erect, with metallic blue-green leaves, turning purple in autumn, and glossy, red-brown spikelets with yellow anthers.

▷ **Sorrel** see *Oxalis*

▷ **Sorrel tree** see *Oxydendrum arboreum*

▷ **Sourwood** see *Oxydendrum arboreum*

▷ **Southernwood** see *Artemisia*

*abrotanum*

▷ **Sowbread** see *Cyclamen*

▷ **Spanish bayonet** see *Yucca aloifolia*

▷ **Spanish chestnut** see *Castanea sativa*

▷ **Spanish dagger** see *Yucca gloriosa*

▷ **Spanish shawl** see *Heterocentron elegans*

## SPARAXIS

Harlequin flower

IRIDACEAE

Genus of 6 species of cormous perennials from moist, rocky sites in South Africa. They are grown for their loose spikes of up to 5 widely funnel-shaped, brightly coloured flowers, borne in spring or summer. The sword-, sickle-, or lance-shaped, ribbed leaves, are often produced in an erect, basal fan. In frost-prone regions, grow in a cool

greenhouse, or outdoors at the base of a warm, sunny wall in summer. In warmer areas, use in a raised bed or at the front of a border.

• **HARDINESS** Half hardy.

• **CULTIVATION** Plant corms 10cm (4in) deep. Under glass, plant in early to late autumn in loam-based potting compost (J1 No.2), with added sand and leaf mould, in full light with shade from hot sun. Water sparingly when in growth, and keep cool; dry off as flowers fade. Keep completely dry when dormant. Outdoors, plant in late autumn in moderately fertile, well-drained soil in full sun. Shelter from cold, drying winds. Provide a dry winter mulch.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Remove offsets when corms are dormant.

• **PESTS AND DISEASES** Trouble free.

***S. elegans***, syn. *Streptanthera cuprea*, *Streptanthera elegans*. Cormous perennial with basal fans of sword-shaped leaves, 8–25cm (3–10in) long. In spring and summer, bears up to 5 stems, each with a spike of up to 5 widely funnel-shaped, orange or red, rarely white flowers, 4cm (1 1/2in) long, fading to pink, and marked with yellow and violet.  $\pm$  10–30cm (4–12in),  $\leftrightarrow$  8cm (3in). South Africa (Western Cape). \*

***S. fragrans***. Cormous perennial with basal fans of lance- or sickle-shaped leaves, to 30cm (12in) long. In spring and summer, bears spikes of up to 6 flatish, widely funnel-shaped flowers, 5–6cm (2–2 1/2in) long, with cream, yellow, red-purple, or violet-purple lobes, sometimes with darker markings, and yellow, purple, or black tubes.  $\pm$  8–45cm (3–18in),  $\leftrightarrow$  8cm (3in). South Africa (Western Cape). \*

**subsp.** ***grandiflora***, syn. *S. grandiflora*, is less vigorous, bearing reddish purple flowers with yellow tubes.

***S. grandiflora*** see *S. fragrans* subsp. *grandiflora*.

***S. pillansii***. Cormous perennial with basal fans of 8 or 10 narrowly sword-



*Sparaxis tricolor*



shaped leaves, to 35cm (14in) long. In spring, bears 2–4 stems, each with spikes of 4–9 flattish, widely funnel-shaped flowers, to 6cm (2½in) across, with rose-pink lobes, marked yellow and purple-edged at the bases, and yellow tubes. ↑ to 60cm (24in), ↔ 8cm (3in). South Africa (Western Cape, Northern Cape). \*

**S. tricolor** ■ Cormous perennial with basal fans of erect, lance-shaped leaves, to 30cm (12in) long. From spring to early summer, produces 1–5 stems that bear 2–5 widely funnel-shaped, orange, red, or purple flowers, 5–8cm (2–3in) across, each with a black or dark red central mark. ↑ 10–40cm (4–16in), ↔ 8cm (3in). South Africa (Western Cape). \*

## SPARGANIUM

Burr reed

SPARGANIACEAE/TYPHACEAE

Genus of 21 species of deciduous or semi-evergreen, rhizomatous, marginal aquatic perennials, widely distributed in temperate regions worldwide, where they form vigorous stands of lush growth at the edges of lakes and rivers. Strong rhizomes support erect, linear, deep green, sometimes brown-green leaves, and produce spikes or racemes of inconspicuous, spherical, male and female flowerheads, followed by fleshy, burr-like fruits. Best grown in the shallows of a large wildlife pool.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in large drifts in a shallow pool margin, to 45cm (18in) deep, in full sun or partial shade. In winter, leave the foliage to provide shelter for wildlife. Remove dead foliage in spring. See also pp.52–53.

• **PROPAGATION** Sow seed at 15°C (59°F) as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Trouble free.

**S. emersum**. Vigorous, submerged, floating, or erect, semi-evergreen, marginal aquatic perennial with erect, boldly keeled, linear leaves, 20–50cm (8–20in) long, longer and wider on sterile plants. In summer, erect, unbranched flower spikes, 20–80cm (8–32in) long, bear densely packed, spherical, white to yellow-green flowerheads, to 2.5cm (1in) across, followed by ellipsoid, spiky brown fruit, 4–6mm (¼–¼in) across. ↑ 20–70cm (10–28in), ↔ indefinite. Eurasia, North America. \*\*\*

**S. erectum**, syn. *S. ramosum*. Vigorous, erect, rarely floating or submerged, semi-evergreen, marginal aquatic perennial with keeled, linear leaves, 1.5m (5ft) long. In summer, branched flower spikes, 20–100cm (8–39in) long, bear spherical, greenish brown flowerheads, 1–2cm (½–½in) across, followed by ellipsoid to conical, prickly brown fruit, 6–9mm (¼–½in) across. ↑ 1.5m (5ft), ↔ indefinite. Eurasia. \*\*\*

**S. minimum** see *S. natans*.

**S. natans**, syn. *S. minimum*. Slender, floating, deciduous or semi-evergreen, marginal aquatic perennial with thin, flat, translucent, dark green, submerged, sometimes floating leaves, 6–40cm (2½–16in) long. In summer, floating stems, 8–40cm (3–16in) long, bear unbranched spikes, 50–150cm (20–60in) or more long, of spherical,

brownish green flowerheads, 1–2cm (½–½in) across, followed by ovoid, spiky, green or brown fruit, 6–10mm (¼–½in) across. ↔ indefinite. Arctic, Eurasia, North America. \*\*\*

**S. ramosum** see *S. erectum*.

↳ *Sparrmannia* see *Sparrmannia*

## SPARRMANNIA

syn. SPARMANNIA

TILIACEAE

Genus of 3–7 species of evergreen shrubs and small trees found in open woodland in tropical Africa, South Africa, and Madagascar. They are grown for their 4-petalled, white or pink to purple flowers, each with a showy boss of stamens, produced in long-stalked umbels from the upper leaf axils. Leaves are alternate, simple or palmately 3- to 7-lobed, toothed, narrow to broadly ovate, and often heart-shaped at the bases. In frost-prone climates, grow in a cool or temperate greenhouse. In warmer areas, grow sparrmannias in a shrub border.

• **HARDINESS** Frost tender.

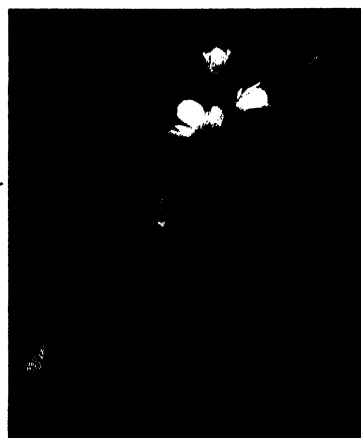
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 9, in late winter. Needs restrictive pruning under glass.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Air layer in spring.

• **PESTS AND DISEASES** Whiteflies and red spider mites may be troublesome under glass.

**S. africana** ■ ♀ (African hemp).

Large shrub or small, upright tree with vigorous, many-branched, hairy stems and long-stalked, ovate to broadly ovate or rounded, shallowly palmately lobed, hairy, light green leaves, to 21cm (8in) long. In late spring and early summer, bears umbels of up to 20 cup-shaped white flowers, 3–4cm (1¼–1½in) across, with long, yellow and red-purple stamens. ↑ 3–6m (10–20ft), ↔ 2–4m (6–12ft). South Africa. ☼ (min. 7°C/45°F). 'Flore Pleno', syn. 'Plena', produces double flowers. 'Plena' see 'Flore Pleno'. 'Variegata' has leaves marked with white.



*Sparrmannia africana*



*Spartium junceum*

## SPARTIUM

Broom, Spanish broom

LEGUMINOSAE/PAPILIONACEAE

Genus of a single species of deciduous shrub occurring in dry places, open woodland, and on roadsides mainly in the Mediterranean region, including Portugal. *S. junceum* is cultivated for its terminal racemes of fragrant, pea-like yellow flowers and rich dark green, broom-like stems. The leaves are sparse, alternate, simple, and dark green. It is suitable for a shrub border, or for growing against a warm, sunny wall.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun.

Thrives in coastal situations and on chalky soils. Pruning group 9. To renovate older specimens, cut back to the ground in spring.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. May self-seed.

• **PESTS AND DISEASES** Young plants may be damaged by rabbits.

**S. junceum** ■ ♀ Upright shrub with slender, dark green shoots and few linear-oblong to narrowly lance-shaped, dark green leaves, to 3cm (1¼in) long, silky-hairy beneath. A profusion of fragrant, pea-like, golden yellow flowers, 2.5cm (1in) long, is borne in terminal racemes, to 45cm (18in) long, from early summer to early autumn; flowers are followed by flattened, dark brown seed pods, to 8cm (3in) long. ↑ 3m (10ft). S. Europe, Ukraine (Crimea), Turkey, Syria, N. Africa. \*\*\*

## SPATHIPHYLLUM

Peace lily

ARACEAE

Genus of 36 species of rhizomatous, evergreen perennials from damp tropical forest in Indonesia, the Philippines, and tropical North, Central, and South America. They are cultivated for their stately, long-stemmed, white or cream-coloured spathes, set against dark green, lance-shaped, inversely lance-shaped, or oblong-ovate leaves with prominent midribs. In frost-prone climates, grow in a warm greenhouse or in a conservatory. In warmer areas, use in a humid, shady border. Some *Spathiphyllum* species can be grown as houseplants. All parts of the plants may cause mild stomach upset if



*Spathiphyllum* 'Mauna Loa'

ingested, and contact with the sap may irritate skin.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in well-drained, loamless compost or loam-based potting compost (J1 No.2). Water freely in growth, applying a balanced liquid fertilizer monthly; maintain high humidity. Provide bright indirect light throughout the year. Pot on when root growth has overfilled the container.

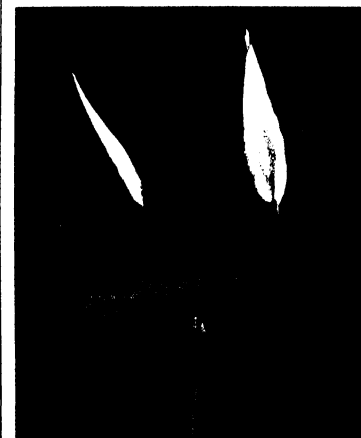
Outdoors, grow in moist but well-drained, humus-rich soil in deep shade.

• **PROPAGATION** Sow seed at 23–27°C (73–81°F) as soon as ripe, or in spring on sphagnum moss. Divide in winter or immediately after flowering.

• **PESTS AND DISEASES** Trouble free.

**S. 'Mauna Loa'** ■ ♀ Vigorous but compact, rhizomatous perennial with inversely lance-shaped, glossy, dark green leaves, to 30cm (12in) long. Oval, fragrant, pure white spathes, to 20cm (8in) long, surrounding green and white spadices, to 8cm (3in) long, are produced in spring and summer. ↑ 1m (3ft), ↔ 60cm (24in). ☼ (min. 15°C/59°F)

**S. wallisii** ■ (Peace lily) Rhizomatous perennial with lance-shaped-elliptic to oblong-elliptic, wavy-margined, dark green leaves, to 35cm (14in) long. Ovate to oblong-elliptic, fragrant white spathes, to 17cm (7in) long, ageing to green, and surrounding green and white spadices, to 10cm (4in) long, are borne above the foliage in spring and summer. ↑ 65cm (26in), ↔ 50cm (20in). Costa Rica, Panama, Colombia, Venezuela. ☼ (min. 10°C/50°F)



*Spathiphyllum wallisii*

## SPATHODEA

African tulip tree

BIGNONIACEAE

Genus of one species of usually evergreen tree from forest margins and gorges in tropical Africa. It is grown for its showy, bell-shaped flowers and large, pinnate leaves. Where temperatures fall below 13°C (55°F), grow *S. campanulata* in a warm greenhouse; it seldom blooms in containers. In tropical climates, use as a specimen tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in large containers or in a greenhouse border, in loam-based potting compost (J1 No.3) in full light. When in growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist soil in full sun. Pruning group 1; needs restrictive pruning under glass, in late winter or after flowering.

• **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Root semi-ripe cuttings with bottom heat in summer. Air layer in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*S. campanulata* ■♂ Moderately branched, open, leafy tree with opposite, pinnate leaves, to 45cm (18in) long, each comprising 9–19 oblong to ovate, leathery, deep green leaflets. Terminal racemes or panicles of asymmetrical, bell-shaped, yellow-rimmed, scarlet to blood-red flowers, 5–10cm (2–4in) long, yellowish green inside, are borne

mainly in spring and summer; they have a crêpe-like texture, fox-like scent, and abundant nectar. Large, woody, canoe-shaped seed pods release papery-winged seeds. † 18–25m (60–80ft), ↔ 10–18m (30–60ft). Tropical Africa. ☀ (min. 13–15°C/55–59°F)

▷ **Spatterdock** see *Nuphar*

**American** see *N. advena*

▷ **Speargrass** see *Aciphylla*, *A. colensoi*

▷ **Spearmint** see *Mentha spicata*

▷ **Spearwort**,

**Greater** see *Ranunculus lingua*

**Lesser** see *Ranunculus flammula*

▷ **Specularia speculum-veneris** see

*Legousia speculum-veneris*

▷ **Speedwell** see *Veronica*

**Digger's** see *Parabebe perfoliata*

**Germander** see *Veronica chamaedrys*

**Prostrate** see *Veronica prostrata*

**Rock** see *Veronica fruticans*

**Silver** see *Veronica spicata* subsp. *incana*

## SPHAERALCEA

syn. *ILIAMNA*

False mallow, Globe mallow

MALVACEAE

Genus of about 60 species of downy annuals, perennials, and deciduous or evergreen subshrubs and shrubs found in well-drained sites (many on mountain slopes, in wasteland, or in scrub) in warmer regions of North America, with a few in South America and southern Africa. The upright or decumbent stems bear spirally arranged, linear-lance-shaped to rounded, simple or lobed to palmate, toothed leaves. Saucer- or cup-

*Sphaeralcea munroana*

shaped, mallow-like flowers, the stamens joined into a column around the styles, are produced singly or in racemes or panicles from summer to autumn. Suitable for a gravel garden, raised bed, or stony bank, with protection from excessive winter wet; may also be grown in a cold greenhouse.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Outdoors, grow in moderately fertile, sharply drained, gravelly soil in full sun; in colder areas, plant in a warm, dry, sheltered position, and protect from winter wet. Under glass, grow in loam-based potting compost (J1 No.2) with added grit, in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Repot annually in early spring.

• **PROPAGATION** Sow seed at 13°C (55°F) in spring. Divide perennials as growth begins in spring. Root basal or softwood cuttings with bottom heat in spring or early summer.

• **PESTS AND DISEASES** Hollyhock rust may be a problem.

*S. coccinea*, syn. *Malvastrum coccineum* (Prairie mallow). Spreading, grey- or white-hairy perennial with rounded,

deeply 3- to 5-lobed, mid-green leaves, to 4cm (1½in) long, each lobe further divided. Decumbent, branching stems bear short, terminal racemes of cup-shaped, orange to red flowers, to 4cm (1½in) across, throughout summer. † to 60cm (24in), ↔ 35cm (14in). S. Canada, C. and S.W. USA. \*\*\*

*S. fendleri*. Hairy, subshrubby perennial with upright, branching stems and ovate to oblong, 3-lobed, toothed leaves, to 6cm (2½in) long, mid-green above, paler and often densely white-hairy beneath. From early summer to mid-autumn, saucer-shaped, reddish orange to pinkish violet flowers, to 2.5cm (1in) across, are borne in tight, axillary panicles, forming long, interrupted spikes. † 1.2m (4ft), ↔ 45cm (18in). S.W. USA. \*\*

*S. munroana* ■ Grey-hairy perennial with upright, unbranched stems and ovate to almost diamond-shaped, shallowly 3- to 5-lobed or scalloped, mid-green leaves, to 6cm (2½in) long. From midsummer to early autumn, bears saucer-shaped, reddish orange flowers, 2.5cm (1in) across, in many-flowered, axillary and terminal panicles. † to 80cm (32in), ↔ 45cm (18in). W. North America. \*\*\*

▷ **Spicebush** see *Calycanthus*

▷ **Spice bush** see *Lindera benzoin*

▷ **Spider flower** see *Cleome*

**Brazilian** see *Tibouchina urvilleana*

▷ **Spider lily**,

**Golden** see *Lycoris aurea*

**Red** see *Lycoris radiata*

▷ **Spider orchid** see *Brassia lawrenceana*

▷ **Spider plant** see *Chlorophytum*

*comosum*, *Cleome hassleriana*

▷ **Spiguel** see *Meum athamanticum*

▷ **Spikemoss, Krauss's** see *Selaginella kraussiana*

▷ **Spikenard, False** see *Smilacina*

*racemosa*

▷ **Spiloxene capensis** see *Hypoxis capensis*

▷ **Spinach**,

**Chinese** see *Amaranthus tricolor*

**Red mountain** see *Atriplex hortensis*

▷ **Spindle**,

**Japanese** see *Fuonyms japonicus*

**Winged** see *Fuonyms alatus*

▷ **Spindle tree** see *Fuonyms*

## SPIRAEA

ROSACEAE

Genus of about 80 species of deciduous or semi-evergreen shrubs found in rocky places, thickets, woodland, at woodland margins, and on riverbanks, widely distributed in N. temperate regions of Europe, Asia, and North America, including Mexico. The alternate leaves are entire, toothed, or lobed, and are decorative in some species. Spiraeas are cultivated mainly for their terminal, umbel-like racemes, panicles, cymes, or corymbs of small, mostly saucer-, cup-, or bowl-shaped, white, yellow, pink, or purple flowers; these are 0.5–1cm (¼–½in) across, sometimes slightly larger, and are profusely borne in spring or summer. Grow in a mixed or shrub border. Compact spiraeas are ideal for a rock garden; use low-growing variants of *S. japonica* as ground cover; use taller spiraeas as informal hedging.

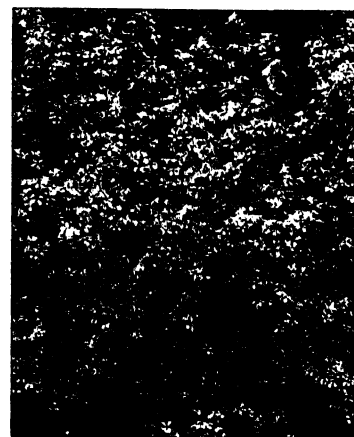
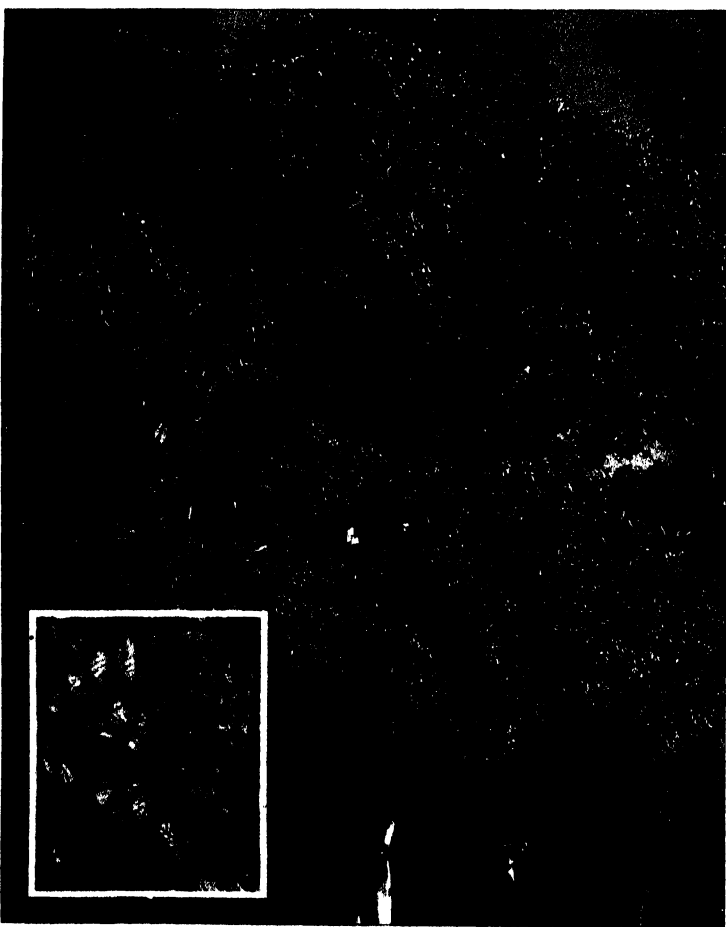
• **HARDINESS** Fully hardy, although new growth on early-flowering species and cultivars may be damaged by late frosts.

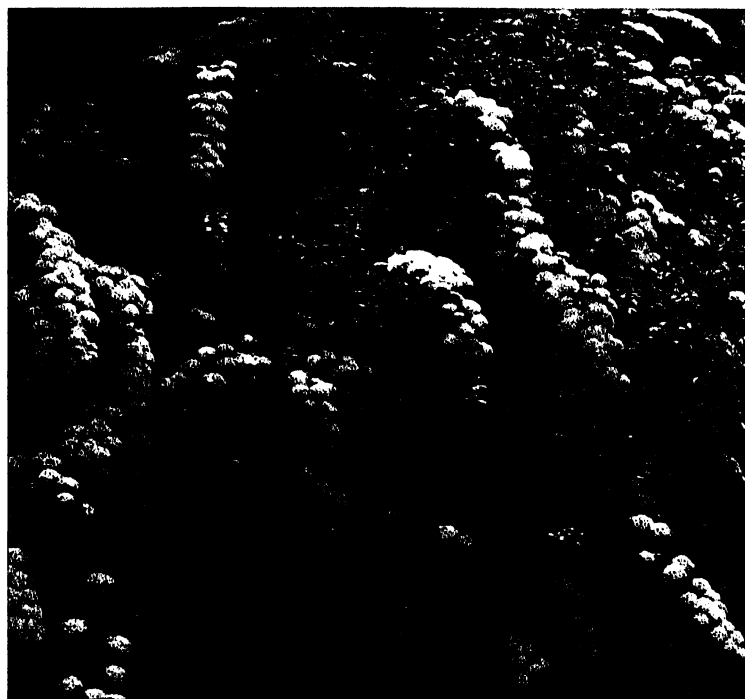
• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun.

Pruning group 2 for spiraeas flowering on previous year's wood; group 6 for those flowering on current season's wood (*S. douglasii* and *S. japonica*).

• **PROPAGATION** Take greenwood cuttings in summer. Divide suckering species, such as *S. x billiardii* and *S. douglasii*, in late autumn or early spring.

• **PESTS AND DISEASES** Trouble free.

*Spiraea 'Arguta'**Spathodea campanulata* (inset: flower detail)

*Spiraea canescens*

*S. aitchisonii* see *Sorbaria tomentosa* var. *angustifolia*.

*S. albiflora* see *S. japonica* var. *albiflora*.

*S. arborea* see *Sorbaria kirilowii*.

*S. 'Arguta'* ■ (Bridal wreath, Foam of May). Dense, rounded, deciduous shrub with slender, arching shoots and lance-shaped to narrowly oblong, toothed, bright green leaves, to 4cm (1½in) long. In spring, produces saucer-shaped white flowers in terminal corymbs, to 6cm (2½in) across, on short, leafy, lateral branches of the previous season's growth. 1½–2.5m (8ft). \*\*\*

*S. aruncus* see *Aruncus dioicus*.

*S. x billiardii* (*S. douglasii* x *S. salicifolia*). Upright, thicket-forming, suckering, deciduous shrub with oval to narrowly oblong, toothed, mid- or dark green leaves, to 10cm (4in) long. Cup-shaped, purple-pink flowers are borne in dense, terminal panicles, to 20cm (8in) long, in mid- and late summer. 1–2m (3–6ft), ↔ 2m (6ft). Garden origin. \*\*\*. *'Triumphans'* has dark green leaves, 6cm (2½in) long; 1½–2.5m (8ft).

*S. x bumalda* see *S. japonica* 'Bumalda'.

*S. canescens* ■ Upright, deciduous shrub with arching shoots and elliptic to obovate, grey-green leaves, to 2.5cm

(1in) long, toothed at the tips. Bowl-shaped, creamy white flowers, in corymbs to 5cm (2in) across, are borne at the tips of short, lateral shoots in mid- and late summer. 1.3m (10ft), ↔ 2m (6ft). Himalayas. \*\*\*

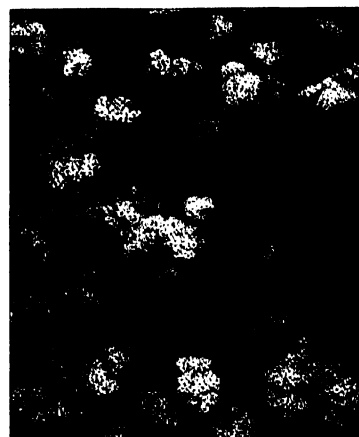
*S. cantoniensis* ■ Spreading, deciduous or semi-evergreen shrub with arching shoots and lance-shaped, toothed, blue-green leaves, to 6cm (2½in) long. In early summer, short, lateral shoots bear corymbs, to 5cm (2in) across, of bowl-shaped white flowers. 1.2m (6ft), ↔ 3m (10ft). \*\*\*. *'Flore Pleno'*, syn. *'Lanceata'*, has double white flowers.

*'Lanceata'* see *'Flore Pleno'*.

*S. crispifolia* see *S. japonica* 'Bullata'.

*S. douglasii*. Vigorous, suckering, erect, thicket-forming, deciduous shrub with narrowly oblong, dark green leaves, to 10cm (4in) long, toothed at the tips and densely grey-felted beneath. In early and midsummer, bears bowl-shaped, purple-pink flowers in dense, terminal panicles, to 20cm (8in) long. 1.2–2.5m (8ft), ↔ 1.5m (5ft). W. North America. \*\*\*. *subsp. menziesii*, syn. *S. menziesii*, has pink flowers, and leaves without felt beneath.

*S. japonica*. Clump-forming, deciduous shrub with erect shoots. Ovate to lance-

*Spiraea japonica* 'Froebelii'

shaped, sharply toothed, dark green leaves, to 12cm (5in) long, are grey-green beneath. In mid- and late summer, bears bowl-shaped, pink or white flowers in terminal corymbs, to 20cm (8in) across. 1.2m (6ft), ↔ 1.5m (5ft). China, Japan. \*\*\*. *'Alba'* see var. *albiflora*. var. *albiflora*, syn. *'Alba'*, *S. albiflora*, has pale green leaves, and white flowers in corymbs 10cm (4in) across; 1.6m (24in), ↔ 90cm (36in).

*'Allgold'* has golden yellow leaves and pink flowers; 1.45cm (18in), ↔ 60cm (24in).

*'Anthony Waterer'* ■ ♀ has dark pink flowers, and leaves often margined creamy white, bronze-red when young; 1 to 1.5m (5ft). *'Bullata'*, syn. *S. crispifolia*, is slow-growing and compact, with small, very dark green leaves, to 2.5cm (1in) long, and deep pink flowers in corymbs 8cm (3in) across; 1 to 40cm (16in), ↔ to 50cm (20in). *'Bumalda'*, syn. *S. x bumalda*, has bronze young leaves and dark pink flowers; 1½–1m (3ft). *'Froebelii'* ■ has bronze-red young leaves and large corymbs of deep pink flowers. *'Golden Princess'* ■ has bronze-red, later bright yellow leaves, red in autumn, and bright purplish pink flowers. *'Goldflame'* ■ ♀ has bronze-red young leaves, turning bright yellow then mid-green, and dark pink flowers; 1½–75cm (30in). *'Little Princess'* ■ forms a dense mound, with small leaves, 2.5cm (1in) long, and rose-pink flowers in corymbs 4cm (1½in) across; 1.50cm (20in), ↔ 1m (3ft). *'Nana'* ♀ syn. *'Nyewoods'*, forms a dwarf mound, with small leaves, to 1cm (½in) long, and dark pink flowers in corymbs 2.5cm (1in) across; 1.45cm (18in), ↔ 60cm

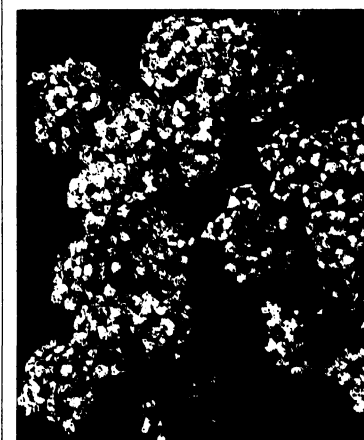
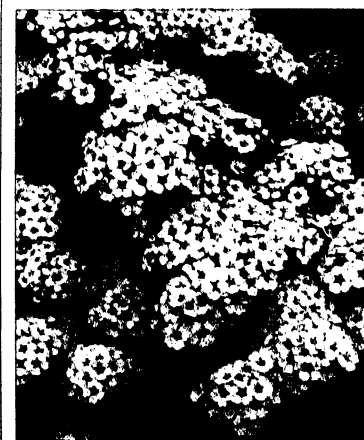
*Spiraea japonica* 'Goldflame'

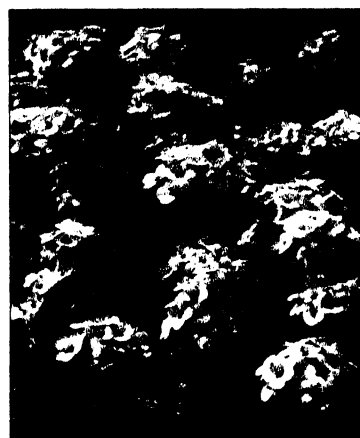
(24in). *'Nyewoods'* see *'Nana'*. *'Shiburi'* see *'Shirobana'*. *'Shirobana'* ♀ syn.

*'Shiburi'*, has both dark pink and white flowers on each plant; 1½–60cm (24in).

*S. menziesii* see *S. douglasii* subsp. *menziesii*.

*S. nipponica*. Upright to spreading, deciduous shrub with arching branches and ovate to rounded, dark green leaves, 1.5–3cm (½–1¼in) long, entire or with a few teeth at the tips, bluish green beneath. In midsummer, bowl-shaped white flowers open in terminal corymbs, 2.5–4cm (1–1½in) across, 1½–1.2–2.5m (4–8ft). Japan. \*\*\*. *'Halward's Silver'* is erect but compact, and flowers freely; 1½–1m (3ft). *'Snowmound'* ■ ♀ syn. var. *tosaensis* of gardens, is fast-growing and spreading. var. *tosaensis* of gardens see *'Snowmound'*.

*Spiraea japonica* 'Little Princess'*Spiraea cantoniensis**Spiraea japonica* 'Anthony Waterer'*Spiraea japonica* 'Golden Princess'*Spiraea nipponica* 'Snowmound'

*Spiraea x vanhouttei*

*S. opulifolius* see *Physocarpus opulifolius*.  
*S. palmata* see *Filipendula palmata*.

*S. prunifolia*, syn. *S. prunifolia* 'Plena'. Arching, deciduous shrub with ovate, finely toothed leaves, to 4.5cm (1 3/4in) long, glossy, bright green above, grey-downy beneath, turning bronze-yellow to red in autumn. Double white flowers are produced in stalkless corymbs, to 6cm (2 1/2in) across, on short laterals along the shoots, in mid- and late spring. ↗ 2m (6ft). China, Taiwan, Japan. \*\*\*. 'Plena' see *S. prunifolia*.  
*S. 'Snow White'*, syn. *S. trichocarpa* 'Snow White'. Bushy, deciduous shrub with arching shoots and ovate, bright mid-green leaves, to 5cm (2in) long, with a few teeth at the tips. Small, cup-shaped white flowers are borne in dense corymbs, to 5cm (2in) across, on short laterals, in late spring and early summer. ↗ 2m (6ft). \*\*\*.

*S. sorbifolia* see *Sorbaria sorbifolia*.

*S. thunbergii* ♀ Dense, bushy, deciduous or semi-evergreen shrub with arching branches and slender, lance-shaped, sparsely toothed, light green leaves, to 4cm (1 1/2in) long. In spring and early summer, bears bowl- or saucer-shaped white flowers in stalkless corymbs, to 5cm (2in) across, on short laterals along the shoots. ↗ 1.5m (5ft), ↗ 2m (6ft). China, Japan. \*\*\*.

*S. trichocarpa* 'Snow White' see *S. 'Snow White'*.

*S. ulmaria* see *Filipendula ulmaria*.

*S. x vanhouttei* ♂ ♀ (*S. cantoniensis* x *S. trilobata*). Compact, bushy, deciduous shrub with slender, arching shoots. The diamond-shaped to obovate leaves, to 4.5cm (1 3/4in) long, are scalloped or coarsely toothed, occasionally 3- to 5-lobed at the tips, and dark green above, blue-green beneath. Bowl-shaped white flowers are borne in dense corymbs, to 5cm (2in) across, on short laterals along the shoots, in early summer. ↗ 2m (6ft), ↗ 1.5m (5ft). Garden origin. \*\*\*. 'Pink Ice' is slow-growing, with white-flecked leaves.

*S. veitchii*. Upright, deciduous shrub with long, arching shoots, red when young, and elliptic to oblong, entire, mid-green leaves, to 5cm (2in) long, glaucous beneath. In early and mid-summer, bears bowl-shaped white flowers in dense corymbs, 6cm (2 1/2in) across, on short laterals along the shoots. ↗ 4m (12ft), ↗ 3m (10ft). W. and C. China. \*\*\*.

## SPIRANTHES

### ORCHIDACEAE

Genus of about 50 species of usually small, evergreen or deciduous, terrestrial or rarely epiphytic orchids from grassland or woodland habitats, often close to water, in temperate and tropical regions, mainly in North America, with a few in Europe and Asia. They have tuberous roots and basal rosettes of papery or fleshy, lance-shaped or ovate to almost rounded leaves. Tiny white flowers are borne in spiral racemes along erect stems. May form large colonies outdoors.

• **HARDINESS** Fully hardy to frost tender.  
 • **CULTIVATION** Cool-growing orchids. Under glass, grow in terrestrial orchid compost in bright filtered light. In growth, water freely and apply fertilizer at every third watering. Keep almost dry and frost-free when dormant. Outdoors, plant hardy species, when dormant, in moist but well-drained, fertile, humus-rich, leafy soil in a sheltered site in partial shade. Provide a deep, dry winter mulch in frost-prone areas. See also p.46.

• **PROPAGATION** Divide tubers when dormant.

• **PESTS AND DISEASES** Susceptible to red spider mites and aphids under glass.

*S. cernua* ♂ (Nodding ladies' tresses). Deciduous, terrestrial orchid producing broadly linear, acute leaves, 5–24cm (2–10in) long. Bears racemes of almost translucent white flowers, 5mm (1/4in) long, with yellow centres, in autumn. ↗ 60cm (24in), ↗ 8cm (3in). E. Canada, USA. ☼ (min. 2°C/36°F) in containers.

*Spiranthus cernua*

▷ *Spironema fragrans* see *Callisia fragrans*

▷ *Spleenwort* see *Asplenium*

**Maidenhair** see *A. trichomanes*

**Mother** see *A. bulbiferum*

**Shining** see *A. oblongifolium*

▷ **Spotted dog** see *Pulmonaria officinalis*

▷ **Spotted orchid** see *Dactylorhiza*

**Heath** see *D. maculata*

## SPREKELIA

### AMARYLLIDACEAE

Genus of a single species of bulbous perennial occurring on rocky slopes in Mexico and Guatemala. It has semi-erect, strap-shaped, basal leaves, and is grown for its large, showy, 6-tepalled red flowers, sometimes marked or striped yellow, borne in spring. In frost-prone areas, grow in a temperate greenhouse or conservatory; in warmer areas, grow in a sunny border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Plant in autumn with the neck and shoulders of the bulb above soil level. Under glass, grow in loam-based potting compost (J1 No.3) in full light. When in growth, water moderately and apply a half-strength balanced liquid fertilizer every 2 weeks after flowering. Reduce water as foliage fades; keep almost dry when dormant. Repot every 2–3 years. Outdoors, grow in well-drained, moderately fertile soil in full sun. Roots resent disturbance.

• **PROPAGATION** Separate offsets when dormant in early autumn.

• **PESTS AND DISEASES** Trouble free.

*S. formosissima* ♂ ♀ (Aztec lily, Jacobean lily). Bulbous perennial with strap-shaped, mid-green leaves, to 50cm (20in) long. In spring, produces solitary, bright scarlet to deep crimson flowers, 12cm (5in) across, each with a broad, erect upper tepal, 2 narrower, horizontal tepals, and 3 narrow, pendent tepals. ↗ 15–35cm (6–14in), ↗ 15cm (6in). Mexico, Guatemala. ☼ (min. 7–10°C/45–50°F)

▷ **Spring beauty** see *Claytonia*

▷ **Spruce** see *Picea*

**Black** see *P. mariana*

**Brewer** see *P. breweriana*

**Caucasian** see *P. orientalis*

**Colorado** see *P. pungens*

**Dragon** see *P. asperata*

**Engelmann** see *P. engelmannii*

**Hondo** see *P. jezoensis* subsp.

*hondoensis*

*Sprekelia formosissima*

▷ **Spruce cont.**

**Lijiang** see *P. likiangensis*

**Morinda** see *P. smithiana*

**Norway** see *P. abies*

**Oriental** see *P. orientalis*

**Purple-cone** see *P. purpurea*

**Sargent** see *P. brachytyla*

**Serbian** see *P. omorika*

**Sitka** see *P. sitchensis*

**Taiwan** see *P. morrisonicola*

**White** see *P. glauca*

▷ **Spurge** see *Euphorbia*

**Caper** see *E. lathyris*

**Cypress** see *E. cyparissias*

**Hairy** see *E. pilosa*

**Honey** see *E. mellifera*

**Portland** see *E. portlandica*

**Wood** see *E. amygdaloides*

▷ **Squill**,

**Sea** see *Urginea maritima*

**Siberian** see *Scilla siberica*

## STACHYS

syn. BETONICA

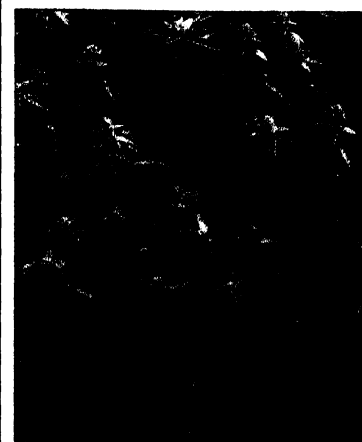
Betony, Hedge nettle, Woundwort

### LABIATAE/LAMIACEAE

Genus of about 300 species of annuals, mostly rhizomatous and stoloniferous perennials, and a few evergreen shrubs, widely distributed in a range of habitats, including mountains, dry, rocky hills, scrub, wasteland, meadows, forest clearings, and streamsides, especially in N. temperate regions. The leaves on the square stems are short-stalked or stalkless, opposite, and become progressively smaller up the stems; basal leaves are lance-shaped or elliptic to ovate, entire to scalloped or toothed, wrinkled, prominently veined, hairy and stalked. Many species are aromatic, occasionally unpleasantly so. The tubular, 2-lipped, often hooded, usually white, yellow, pink, red, or purple flowers are borne in racemes or spikes of axillary whorls. Most are attractive to bees and butterflies. Grow taller perennials in a mixed or herbaceous border. *S. byzantina* is ideal as edging or as ground cover. Low-growing, hairy-leaved species, such as *S. candida*, *S. citrina*, and *S. lavandulifolia*, are suitable for a dry bank, gravel garden, raised bed, or rock garden, but need protection from excessive winter wet; they are best grown in an alpine house. Grow *S. sylvatica* in a wild garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Outdoors, grow in well-drained, moderately fertile soil in full sun; *S. macrantha*, *S. officinalis*, and *S. sylvatica* tolerate partial shade. Grow

*Stachys byzantina*

*Stachys byzantina* 'Big Ears'

rock garden species in sharply drained, gritty soil in a sunny site; protect from excessive winter wet. In an alpine house, grow in loam-based potting compost (J1 No.2) with added grit, in full light.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide or remove rooted sections of perennials in spring as growth begins. Take greenwood cuttings of shrubs and subshrubs in early summer.

• **PESTS AND DISEASES** Slugs may be a problem. *S. byzantina*, in particular, is susceptible to powdery mildew.

*S. betonica* see *S. officinalis*.  
*S. byzantina* ■ syn. *S. lanata*, *S. olympica* (Lambs' ears, Lambs' lugs, Lambs' tails, Lambs' tongues). Mat-forming, densely white-woolly perennial with rosettes of entire, oblong-elliptic to lance-shaped, thick, wrinkled, veined, grey-green leaves, to 10cm (4in) long. Erect stems bear interrupted spikes of woolly, pink-purple flowers, 1.5cm (½in) long, from early summer to early autumn. ‡ 45cm (18in), ↔ 60cm (24in). Caucasus to Iran. \*\*\*. 'Big Ears' ■ has large, greyish white-felted, mid-green leaves, 25cm (10in) long, and

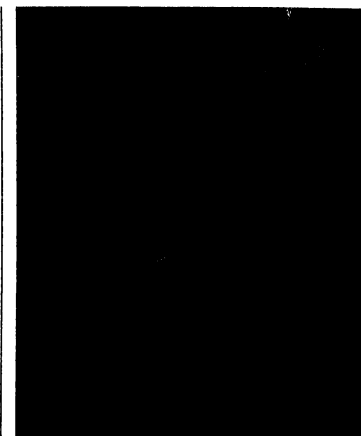
*Stachys byzantina* 'Primrose Heron'

purple flowers. 'Cotton Boll', syn. 'Sheila McQueen', has leaves 11cm (4½in) long, and clusters of modified flowers forming cotton-wool-like balls along the stems. 'Primrose Heron' ■ syn. *S. 'Primrose Heron'*, has yellowish grey leaves. 'Sheila McQueen' see 'Cotton Boll'. 'Silver Carpet' ■ syn. *S. 'Silver Carpet'*, is non-flowering, and has intensely silvered, greyish white leaves. *S. candida* ■ Spreading subshrub producing rounded, white-felted, grey-green leaves, to 2.5cm (1in) long. In summer, bears leafy spikes of hooded white flowers, 1cm (½in) or more long, streaked and spotted purple. ‡ 15cm (6in), ↔ 30cm (12in). S. Greece. \*\*\*. *S. citrina*. Spreading, woody-based perennial producing elliptic to ovate-oblong, minutely round-toothed, grey-hairy, soft, lime-green leaves, to 5cm (2in) long. Short, dense, sometimes interrupted spikes of sulphur-yellow flowers, 2–2.5cm (¾–1in) long, are borne in summer. ‡ 20cm (8in), ↔ 30cm (12in). Turkey. \*\*\*. *S. coccinea*. Spreading, softly hairy perennial with entire, ovate-lance-shaped or oblong-triangular, wrinkled, veined, mid-green leaves, to 7cm (3in)

*Stachys byzantina* 'Silver Carpet'*Stachys candida*

long. Upright stems bear slender spikes of narrow scarlet flowers, to 2cm (¾in) long, from mid-spring to mid-autumn. ‡ 60cm (24in), ↔ 45cm (18in). USA (Arizona, Texas) to Mexico. \*\*\*. *S. grandiflora* see *S. macrantha*. *S. lanata* see *S. byzantina*. *S. lavandulifolia*. Spreading, woody-based perennial with oblong-lance-shaped, toothed, grey-hairy, grey-green leaves, 2–6cm (¾–2½in) long. Upright spikes of purplish pink flowers, to 1.5cm (½in) long, are produced in summer. ‡ 30cm (12in). Turkey, Iraq. \*\*\*. *S. macrantha*, syn. *S. grandiflora*, *S. spicata*. Erect, hairy perennial with rosettes of broadly ovate, scalloped, wrinkled, veined, dark green leaves, to 7cm (3in) long, heart-shaped at the bases. Dense spikes of hooded, pinkish purple flowers, 3cm (1¼in) long, are produced on erect stems from early summer to early autumn. ‡ 60cm (24in), ↔ 30cm (12in). Caucasus, N.E. Turkey, N.W. Iran. \*\*\*. 'Superba' ■ has slightly deeper pinkish purple flowers. *S. officinalis* ■ syn. *Betonica officinalis*, *S. betonica* (Bishop's wort, Wood betony). Erect, almost hairless to densely hairy perennial with rosettes of ovate-oblong to oblong, scalloped, wrinkled, veined, mid-green leaves, to 12cm (5in) long, heart-shaped at the bases. Upright stems bear dense, oblong spikes of reddish purple, pink, or white flowers, to 1.5cm (½in) long, from early summer to early autumn. ‡ 60cm (24in), ↔ 30cm (12in). Europe. \*\*\*. 'Rosea Superba' has rose-pink flowers and slightly paler green leaves.

*S. olympica* see *S. byzantina*.

*Stachys macrantha* 'Superba'*Stachys officinalis*

*S. 'Primrose Heron'* see *S. byzantina* 'Primrose Heron'.

*S. 'Silver Carpet'* see *S. byzantina* 'Silver Carpet'.

*S. spicata* see *S. macrantha*.

*S. sylvatica* (Hedge woundwort).

Unpleasant smelling, creeping, glandular-hairy perennial producing heart- to lance-shaped, toothed, mid-green leaves, 4–14cm (1½–5½in) long. Spikes of usually white-marked, dull reddish purple, occasionally pink or white flowers, to 1.5cm (½in) long, are borne from summer to autumn. ‡ to 1m (3ft), ↔ 40–120cm (16–48in). Europe, W. Asia. \*\*\*.

## STACHYURUS

### STACHYURACEAE

Genus of about 6 species of deciduous or semi-evergreen shrubs, occasionally small trees, found in woodland and thickets in the Himalayas and E. Asia. They are cultivated for their pendent racemes of small, 4-petalled flowers, produced from the leaf axils on bare shoots, before the leaves emerge. The alternate, simple, usually lance-shaped-oblong to broadly ovate, toothed leaves are borne on slender, glossy, red-brown shoots. Suitable for a shrub border, or for growing in a woodland garden or against a wall.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in light, moist but well-drained, humus-rich, fertile, acid soil in full sun or partial shade, with shelter from cold, drying winds. Pruning group 1; cut out flowered shoots to the base on mature plants, after flowering.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take heeled, semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*S. chinensis*. Spreading, deciduous shrub with arching shoots and ovate, abruptly pointed, dark green leaves, to 12cm (5in) long. Bell-shaped, pale yellow flowers, 8mm (⅜in) across, are borne in racemes, to 13cm (5in) long, in late winter and early spring. ‡ 2m (6ft), ↔ 4m (12ft). China. \*\*\*.

*S. praecox* ♀ Open, spreading, deciduous shrub with arching, red-purple shoots and ovate, tapered, mid-green leaves, to 18cm (7in) long. Bell-shaped, pale yellow-green flowers, 8mm (⅜in) across, are borne in racemes, to 10cm (4in) long, in late winter and early spring. ‡ 1–4m (3–12ft), ↔ 3m (10ft).



*Stachyurus praecox* 'Maggie' (inset: flower detail)

Japan. \*\*\*. 'Maggie' (■) is less vigorous than the species, with broad, creamy white margins to the leaves; ↑ 1.5m (5ft), ↔ 2m (6ft).

- ▷ **Staff tree** see *Celastrus scandens*
- ▷ **Stagger-bush** see *Lyonia mariana*
- ▷ **Staghorn, South American** see *Platycerium alcorni*
- ▷ **Staghorn fern** see *Platycerium*
- Common** see *P. bifurcatum*

## STANGERIA

STANGERIACEAE

Genus of one species of fern-like cycad found in dry, open woodland and scrub in South Africa. It has a swollen, woody, largely underground stem, from the tip of which it produces rosettes of oval to oblong, pinnate leaves, which lack the leathery texture typical of cycads. Separate male and female, cone-like spikes ("cones") of flowers are borne from the centres of the rosettes, usually in summer. In frost-prone regions, grow *S. eriopus* in a warm greenhouse or as a houseplant. In warmer climates, grow in a border, or as a specimen plant.

- **HARDINESS** Frost tender.



*Stangeria eriopus*

- **CULTIVATION** Under glass, grow in a mix of equal parts loam, grit, coarse bark, and leaf mould, in bright filtered light with high humidity. In growth, water freely and apply a foliar fertilizer monthly. Water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, humus-rich, moist but well-drained soil in dappled shade.
- **PROPAGATION** Surface-sow seed on damp sand at 24–30°C (75–86°F) in spring. Pot up as soon as the tap root begins to form.
- **PESTS AND DISEASES** Susceptible to mealybugs and scale insects under glass.

**S. eriopus** (■) Fern-like cycad with a cylindrical to turnip-shaped stem or trunk, to 10cm (4in) across, with only the tip above ground. Bears one to several rosettes of long-stalked, pinnate leaves, 0.25–2m (¾–6ft) long, each with 10–40 lance-shaped to oblong, wavy, often papery, olive- to deep green leaflets, with entire or toothed margins. Cylindrical, felted, grey to yellow-brown flowering cones, to 18cm (7in) long, are produced mainly in summer. ↑ to 1m (3ft) or more, ↔ 1–2m (3–6ft). South Africa (Eastern Cape, KwaZulu/Natal). ♀ (min. 15°C/59°F)

## STANHOPEA

ORCHIDACEAE

Genus of about 30 species of evergreen, epiphytic orchids from moist forest, 1,000–2,000m (3,250–7,000ft) high, in Mexico and Central and South America. The conical, ribbed pseudobulbs each bear a single, large, semi-rigid, folded, elliptic to oblong-lance-shaped leaf. Pendent racemes of 2–10 very fragrant, short-lived flowers arise from the bases of the pseudobulbs over a long period.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool- to intermediate-growing orchids. Grow epiphytically on bark, or in epiphytic orchid compost in moss-lined, slatted baskets, to allow the pendent racemes to spread freely down-



*Stanhopea tigrina*

wards. Provide high humidity and bright filtered light in summer, and full light in winter. In full growth, water and mist freely, and apply a half-strength balanced liquid fertilizer monthly. Water sparingly when inactive, which may be in early summer. See also p.46.

- **PROPAGATION** Divide when the plants "overflow" their containers, or remove backbulbs and pot up separately.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

**S. oculata.** Epiphytic orchid with one broadly elliptic or broadly lance-shaped leaf, 45cm (18in) long. Pendent racemes of waxy, maroon-spotted, light yellow, orange, or white flowers, 12cm (5in) across, are borne in summer or autumn. ↑ 45cm (18in), ↔ 60cm (24in). S. Mexico to Venezuela, N. Peru. ♀ (min. 11–13°C/52–55°F; max. 30°C/86°F)

**S. tigrina** (■) Epiphytic orchid with one broad, oblong leaf, 40cm (16in) long. Pendent racemes of fleshy yellow flowers, 15cm (6in) across, with dark red markings, are borne from summer to autumn. ↑ 45cm (18in), ↔ 60cm (24in). Mexico. ♀ (min. 11–13°C/52–55°F; max. 30°C/86°F)

**S. wardii.** Epiphytic orchid with one elliptic leaf, 30–45cm (12–18in) long. Pendent racemes of yellow-orange flowers, 12cm (5in) across, lightly spotted purple, are borne in summer. ↑ 45cm (18in), ↔ 60cm (24in). S. Mexico to Venezuela, N. Peru. ♀ (min. 11–13°C/52–55°F; max. 30°C/86°F)

## STAPELIA

Carrión flower

ASCLEPIADACEAE

Genus of about 45 species of perennial succulents from low, hilly, often rocky terrain, mainly in tropical and southern Africa. They have generally erect, angular, coarsely toothed, fleshy stems, which branch from the bases to form large clumps. The rudimentary, fleshy leaves are borne at the tips of the stem teeth. Diurnal, star-shaped, often foul-smelling, solitary or clustered flowers, pollinated by blowflies and bluebottles, are produced in summer, usually from the stem bases. Where temperatures fall below 11°C (52°F), grow in a temperate or warm greenhouse. In warm, dry areas, grow in a raised bed or desert garden. Many species originally included in *Stapelia* are now classified as *Orbea*, *Orbeopsis*, *Huernia*, and other genera.



*Stapelia gigantea*

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts loam-based potting compost (J1 No.2) and grit; top-dress with grit. Provide full light with shade from hot sun, and low humidity. When in growth, water moderately and apply a low-nitrogen fertilizer monthly. Water very sparingly at other times. Outdoors, grow in moderately fertile, gritty, sharply drained soil, in full sun with some midday shade. See also pp.48–49.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Separate rooted sections, or take cuttings of stem sections, from spring to summer.
- **PESTS AND DISEASES** Susceptible to mealybugs, root mealybugs, and black root rot.

**S. europaea** see *Caralluma europaea*.

**S. flaviviridis** see *S. grandiflora*.

**S. gigantea** (■) syn. *S. nobilis*. Very variable, clump-forming succulent with erect, 4-angled, velvety, light green stems, 3cm (1¼in) thick, with small teeth. In summer, produces malodorous, pale ochre-yellow and dark red flowers, 25–35cm (10–14in) across, with silky red hairs, numerous minute, transverse red wrinkles, and petals with white-hairy margins. ↑ to 20cm (8in), ↔ indefinite. E. southern Africa. ♀ (min. 11°C/52°F)

**S. grandiflora** (■) syn. *S. flaviviridis*. Clump-forming succulent with erect, toothed, mid-green stems, 2–3cm (¾–1¼in) thick, with slightly winged angles, and covered with minute, velvety hairs. In summer, bears dull, purplish red flowers, to 22cm (9in) across, with hairy margins and wrinkled lobes, lined



*Stapelia grandiflora*



## STAPELIA

with purple and yellow, becoming rich dull purple at the tips.  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  indefinite. South Africa (Western Cape, Eastern Cape), Lesotho.  $\odot$  (min. 11°C/52°F)

*S. nobilis* see *S. gigantea*.

*S. variegata* see *Orbea variegata*.

## STAPELIANTHUS

ASCLEPIADACEAE

Genus, closely related to *Huernia*, of about 8 species of perennial succulents from hilly lowlands in S. and S.W. Madagascar. They have often prostrate, 4- to 8-angled, fleshy, branching stems, which root down as the plant spreads; the stems sometimes have rudimentary leaves. Diurnal flowers are borne singly or in clusters from leaf axils at the bases of the stems in summer; each flower has a corona forming an erect, 5-lobed head above the staminal column. Where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse. In warm, dry climates, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in shallow pans in a mix of equal parts loam-based potting compost (J1 No.2) and grit; top-dress with grit. Provide bright filtered light and low humidity. In growth, water moderately and apply a low-nitrogen fertilizer monthly. Water sparingly at other times. Outdoors, grow in gritty, sharply drained, moderately fertile soil in full sun with some midday shade. See also pp.48-49.

• **PROPAGATION** Sow seed at 18-21°C (64-70°F) in spring. Take cuttings of stem sections in spring and summer.

• **PESTS AND DISEASES** Trouble free.

*S. hardyi*. Mat-forming succulent with prostrate, 4- to 6-angled, greyish green stems, 8mm ( $\frac{1}{8}$ in) thick, producing small, rudimentary leaves at the tips. Bell-shaped, fleshy, yellowish pink and purplish brown flowers, 1.5cm ( $\frac{1}{2}$ in) across, with triangular, pointed lobes, densely covered in soft, purplish brown hairs, are borne in summer.  $\uparrow$  8cm (3in),  $\leftrightarrow$  15cm (6in). Madagascar.  $\odot$  (min. 10°C/50°F)

*S. madagascariensis*. Semi-erect or creeping succulent with 6- to 8-angled, red-spotted, grey-green stems, to 8mm ( $\frac{1}{8}$ in) thick, with tubercles bearing small, thin, linear, scale-like leaves. In summer, produces bell-shaped, pale yellow, red-marked flowers, to 2cm ( $\frac{1}{2}$ in) across; they have triangular, broadly spreading lobes with red papillae on the upper surfaces.  $\uparrow$  to 5cm (2in),  $\leftrightarrow$  12cm (5in). Madagascar.  $\odot$  (min. 10°C/50°F)

## STAPELIOPSIS

ASCLEPIADACEAE

Genus of 5 or 6 species of perennial succulents from hilly lowlands of Namibia and South Africa. They have 4-angled, fleshy, minutely hairy, usually toothed, purple-spotted, mid-green stems; in some species these bear tiny leaves. Diurnal, stalked, urn-shaped flowers develop from the bases of new shoots in summer. Where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse. In warm, dry areas, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in shallow pans in a mix of equal parts loam-based potting compost (J1 No.2) and grit; top-dress with grit. Provide bright filtered light and low humidity. In the growing season, water moderately and apply a low-nitrogen fertilizer monthly. Water sparingly at other times. Outdoors, grow in moderately fertile, gritty, sharply drained soil in full sun, with midday shade. See also pp.48-49.

• **PROPAGATION** Sow seed at 18-21°C (64-70°F) in spring. Take cuttings of stem sections in spring and summer.

• **PESTS AND DISEASES** Trouble free.

*S. pillansii*, syn. *Pectinaria pillansii*. Clustering succulent with usually prostrate, 4-angled, dark green stems, 1cm ( $\frac{1}{2}$ in) thick, with prominent brown teeth. Red flowers, 7mm ( $\frac{1}{4}$ in) across, pale red inside, with watery papillae, are produced at ground level in summer.  $\uparrow$  8cm (3in),  $\leftrightarrow$  18cm (7in). South Africa (Eastern Cape).  $\odot$  (min. 10°C/50°F)

*S. urniflora*. Clump-forming succulent with prostrate, brown-marked, rounded, 4-angled, minutely papillose, greyish green, partially subterranean stems, 2cm ( $\frac{1}{2}$ in) thick. The stems have laterally compressed teeth, and tiny, scale-like, deciduous leaves, to 2mm ( $\frac{1}{16}$ in) long. Red flowers, 1.5cm ( $\frac{1}{2}$ in) across, hairless outside, densely hairy and papillose inside, are borne in summer.  $\uparrow$  to 8cm (3in). Namibia.  $\odot$  (min. 10°C/50°F)

## STAPHYLEA

Bladdernut

STAPHYLEACEAE

Genus of about 11 species of deciduous shrubs or small trees found in woodland and thickets in N. temperate regions. They are grown for their bell- or cup-shaped, white, cream, or pink flowers, borne in terminal panicles, and for their curious, bladder-like, 2- or 3-lobed fruits. The opposite leaves are pinnate or 3- to 5-palmate. Suitable for a shrub border or woodland garden.



*Staphylea pinnata*

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any moist but well-drained soil in full sun or partial shade. Pruning group 1 or 2.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root green-wood cuttings in early summer, or semi-ripe cuttings in midsummer, both with bottom heat.

• **PESTS AND DISEASES** Trouble free.

*S. colchica*  $\Sigma$  Upright shrub with stout shoots and pinnate, glossy, mid-green leaves, each with 3-5 ovate-oblong leaflets, 4-9cm (1½-3½in) long. In late spring, bears bell-shaped, fragrant white flowers, to 2cm ( $\frac{1}{2}$ in) long, in panicles to 12cm (5in) long; they are followed by greenish white fruit, to 10cm (4in) long.  $\uparrow$  to 3.5m (11ft). Caucasus.  $\ast\ast\ast$

*S. holocarpa*  $\odot$  Upright shrub or spreading, small tree bearing 3-palmate, blue-green leaves with oblong to lance-shaped leaflets, 3-10cm (1¼-4in) long. Bell-shaped, white to pink flowers, to 1.5cm ( $\frac{1}{2}$ in) long, are borne in nodding panicles, to 10cm (4in) long, in mid- and late spring, before the leaves; they are followed by greenish white fruit, to 5cm (2in) long.  $\uparrow$  10m (30ft),  $\leftrightarrow$  6m (20ft). China.  $\ast\ast\ast$ . 'Rosea'  $\Sigma$  has bronze young leaves and pink flowers.

*S. pinnata*  $\square$  (Bladdernut). Upright shrub with stout shoots and pinnate leaves, each comprised of 5-7 ovate-oblong leaflets, 5-10cm (2-4in) long, dark green above, slightly glaucous beneath. In late spring and early summer, bears bell-shaped, fragrant, pink-tinged white flowers, 1cm ( $\frac{1}{2}$ in) long, in pendent panicles, to 10cm (4in) long; they are followed by greenish white fruit, to 4cm (1½in) long.  $\uparrow$  to 5m (15ft). Europe, Turkey, Caucasus.  $\ast\ast\ast$

$\Delta$  **Star cluster** see *Pentas lanceolata*

**Egyptian** see *P. lanceolata*

$\Delta$  **Starfish plant** see *Cryptanthus*

$\Delta$  **Starflower** see *Calytrix*, *Hypoxis*, *Mentzelia*

$\Delta$  **Starfruit** see *Damasonium*

$\Delta$  **Star glory** see *Ipomoea quamoclit*

$\Delta$  **Star-of-Bethlehem** see *Campanula isophylla*, *Ornithogalum*, *O. umbellatum*

$\Delta$  **Star of the veldt** see *Dimorphotheca sinuata*

$\Delta$  **Starwort**,

**Autumn** see *Callitriche hermaphrodita*

**Water** see *Callitriche*

$\Delta$  **Statice** see *Limonium*, *L. sinuatum*, *Psylliostachys*

**Tatarian** see *Goniolimon tataricum*

$\Delta$  **Statice bellidifolia** see *Limonium bellidifolium*

$\Delta$  **Statice minuta** see *Limonium minutum*

$\Delta$  **Statice spicata** see *Psylliostachys spicata*

$\Delta$  **Statice suworowii** see *Psylliostachys suworowii*

## STAUNTONIA

LARDIZABALACEAE

Genus of up to 16 species of twining, woody, mostly dioecious, evergreen climbers occurring in woodland from Burma to Taiwan and Japan. They are cultivated for their handsome, alternate, palmate leaves, for their bell-shaped flowers, borne in few-flowered, axillary racemes, and for their ellipsoid, edible

## STENANTHIUM



*Stauntonia hexaphylla*

fruits. Grow over a large shrub or through a tree, or train on wires against a wall. In areas of severe frost, grow stauntonias in a cool greenhouse.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, with shade from hot sun. When in full growth, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter.

Outdoors, grow in fertile, well-drained soil, in a warm, sheltered site in full sun or partial shade, with suitable support. Pruning group 11, in early spring.

• **PROPAGATION** Sow seed at 13-16°C (55-61°F) in spring. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*S. hexaphylla*  $\square$  Fast-growing, dioecious, evergreen climber producing 3- to 7-palmate, mid- to dark green leaves, to 15cm (6in) long, with oval to elliptic, leathery leaflets. Racemes of cup-shaped, fragrant, violet-tinged white flowers, 2cm ( $\frac{1}{2}$ in) across, are borne in spring. If pollinated, females produce ellipsoid, edible purple fruit, 5cm (2in) long.  $\uparrow$  10m (30ft) or more. S. Korea, Japan.  $\ast\ast$

$\Delta$  **Steironema ciliata** see *Lysimachia ciliata*

## STENANTHIUM

LILIACEAE/MELANTHIACEAE

Genus of about 5 species of bulbous perennials from moist slopes in grassland or open woodland on Sakhalin Island (Russia), and in North America,

## STENANTHIUM

keeled, channelled, bright green, basal leaves, 30–40cm (12–16in) long. In summer, bears star-shaped, fragrant, white or greenish white to purple flowers, to 2cm (¾in) across, in dense, often arching panicles, to 60cm (24in) long. ↑ 1–2m (3–6ft), ↔ 30cm (12in). S.E. USA. ★★. **var. robustum**, syn. *S. robustum*, has broader leaves and white or green flowers; ↑ to 1.8m (6ft). *S. robustum* see *S. gramineum* var. *robustum*.

## STENOCACTUS

syn. *ECHINOFOSSULOCACTUS*

CACTACEAE

Genus of about 10 species of variable, simple, rarely clustering, spherical, perennial cacti from shaded lowlands in Mexico. The stems have numerous, frequently undulating ribs, often with tubercles, and well-spaced areoles bearing variable spines, which are curved or straight, sometimes flat and dagger-like. Bell- or funnel-shaped, sometimes striped flowers develop from the crowns in spring, often in clusters. In frost-prone areas, grow as houseplants or in a temperate greenhouse. In warm, dry climates, use in a desert garden.

• **HARDINESS** Frost tender.

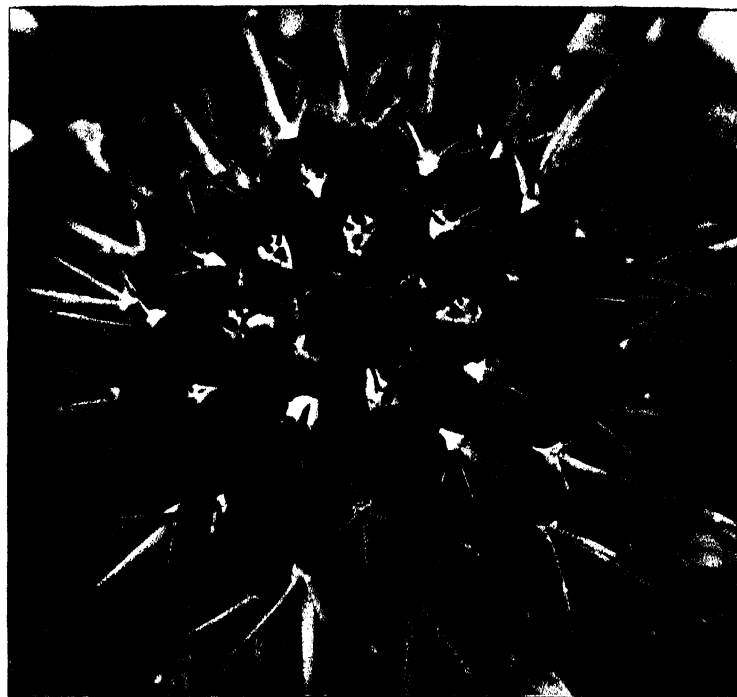
• **CULTIVATION** Under glass, grow in standard cactus compost in full light with low humidity. When in growth, water moderately and apply a low-nitrogen liquid fertilizer at every third or fourth watering. Keep completely dry at other times. Outdoors, grow in poor, humus-rich, gritty, sharply drained soil in full sun, with some midday shade. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in early spring.

• **PESTS AND DISEASES** Susceptible to aphids while flowering.

*S. coptonogonus* ■ syn.

*Echinofossulocactus coptonogonus*. Simple cactus producing a depressed-spherical to spherical, grey to blue-green stem with 10–14 deeply scalloped, acute ribs. White areoles bear 3–5 flat, upward-curving, pale brownish red spines, fading to very pale brown, the upper spines to 3cm (1½in) long, the lower ones to 1.5cm (½in). In spring, bears clusters of funnel-shaped, white to purple flowers, 3cm (1½in) long, with a pink-purple or violet mid-stripe on each petal. ↑ to 10cm (4in), ↔ 16cm (6in). C. Mexico. ♀ (min. 7°C/45°F)



*Stenocactus obvallatus*

*S. crispatus*, syn. *Echinofossulocactus lamellosus*. Simple or clustering cactus with spherical, dark green to blue-green stems, each with 26–60 wavy ribs.

White-woolly areoles bear brown-tipped white spines: 6–10 flat, straight radials, to 2cm (1¼in) long; 3 or 4 flattened, slightly curved centrals, 3.5cm (1½in) long. Solitary, funnel-shaped, carmine-red flowers, 4cm (1½in) long, are borne in spring. ↑ 10cm (4in), ↔ 8cm (3in). C. to S. Mexico. ♀ (min. 7°C/45°F)

*S. multicostatus*, syn. *Echinofossulocactus multicostatus*. Simple or clustering cactus producing flattened-spherical to spherical, pale green stems with 100 or more wavy ribs; each rib bears about 2 white-woolly areoles with 6–18 flat, straight or curved, yellow or grey spines, the upper ones to 8cm (3in) long, the lower to 1.5cm (½in). In spring, bears clusters of funnel-shaped flowers, 2.5cm (1in) long, pinkish purple or white with a purplish violet or faint pink stripe on each petal. ↑↔ 10cm (4in). N.E. Mexico. ♀ (min. 7°C/45°F)

*S. obvallatus* ■ syn. *Echinofossulocactus pentacanthus*, *E. violaciflorus*. Simple cactus producing a spherical, greyish blue-green stem with 20–50 wavy-margined ribs. White areoles bear 5–12 flat, straight or curved, greyish brown spines, the upper and lateral ones to 5cm (2in) long, the lower to 1cm (½in). In spring, bears solitary, funnel-shaped, pale yellow or pale pink flowers, 2cm (¾in) long, with a purplish red stripe on each petal. ↑↔ 8cm (3in). N. and E. central Mexico. ♀ (min. 7°C/45°F)

## STENOCARPUS

PROTEACEAE

Genus of up to 22 species of evergreen shrubs and trees from Malaysia, New Caledonia, and Australia. The trees usually grow in rainforest; the shrubs are found in open scrub, often along water-courses. They have alternate, simple to pinnatifid leaves and, in summer, bear axillary umbels of tubular, cream to red

flowers, each with a knob-shaped stigma protruding through a split on the lower side of the tube. In frost-prone areas, use in a temperate greenhouse as foliage plants (flowering is rare in containers). In warmer areas, use as specimen plants.

• **HARDINESS** Frost tender, but some species may survive brief falls in temperature to around 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light, shaded from hot sun. When in growth, water moderately and apply a balanced liquid fertilizer every month. Water sparingly in winter. Outdoors, grow in fertile, humus-rich, moist but well drained soil in full sun, with some midday shade; shelter from cold, drying winds. Pruning group 1; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 15–20°C (59–68°F) as soon as ripe or in spring (seedlings take about 7 years to flower). Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

*S. sinuatus* ■ (Firewheel tree). Slow-growing, columnar tree with erect branches and branchlets. The leathery,



*Stenocarpus sinuatus*

## STENOCEREUS

wavy-margined, glossy, deep green leaves, 60cm (24in) long, are sometimes red beneath, and may be oblong-lance-shaped or deeply lobed, with up to 8 lance-shaped lobes, to 10cm (4in) long. Plants over 3m (10ft) tall bear wheel-like umbels of 12–20 scarlet flowers, to 2.5cm (1in) long, in summer. ↑ 20–30m (70–100ft), ↔ 5–15m (15–50ft). Australia (Queensland, New South Wales). ♀ (min. 7–10°C/45–50°F)

## STENOCEREUS

CACTACEAE

Genus of about 25 species of tree-like or shrubby, sometimes clump-forming, perennial cacti found on low hillsides in the USA (Arizona), Mexico, Central America, Colombia, Venezuela, and the West Indies. The prominently ribbed stems are often densely spined. The funnel- or bell-shaped, usually nocturnal flowers, borne in spring or summer, are followed by ovoid, fleshy, spiny fruits. Where temperatures fall below 13°C (55°F), grow in a warm greenhouse. In warmer climates, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mix of 3 parts standard cactus compost and 1 part leaf mould, in full light with low humidity. From mid-spring to early autumn, water moderately and apply a low-nitrogen liquid fertilizer monthly. Keep completely dry at other times.

Outdoors, grow in poor to moderately fertile, humus-rich, sharply drained, gritty soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring. Take cuttings of stem sections in summer.

• **PESTS AND DISEASES** Prone to scale insects and aphids while flowering.

*S. eruca* ■ syn. *Machaerocereus eruca* (Creeping devil). Bushy, creeping cactus that roots all along its prostrate, 10- to 12-ribbed, mid-green stems, 4–10cm (1½–4in) thick, with only the stem tips erect. Brown areoles bear pale yellow to white spines (about 20 radials, 1 flattened, dagger-like central). In spring, produces nocturnal, funnel-shaped, white or pale yellow, sometimes pink-tinged flowers, 10–14cm (4–5½in) long. ↑ to 30cm (12in), ↔ indefinite. N.W. Mexico. ♀ (min. 13°C/55°F)

*S. marginatus*, syn. *Marginatocereus marginatus*. Tree-like cactus with erect, freely branching, 5- to 7-ribbed, dark greyish green stems, to 30cm (12in)



*Stenocereus eruca*

thick. Brown-woolly areoles bear brown spines (7–9 radials, 1 or 2 centrals), which fall as the plant matures. Diurnal, bell-shaped white flowers, red outside, 4–5cm (1½–2in) long, are produced at the stem tips in summer. ♂↔6m (20ft). C. and S. Mexico. ☀ (min. 13°C/55°F)

***S. thurberi***, syn. *Lemaireocereus thurberi*. Columnar cactus, branching from the base to form clumps, with erect, greyish green stems, 10–20cm (4–8in) thick, with 12–19 prominent ribs. Brown areoles bear almost black or brown spines (7–10 radials, 1–3 longer centrals). Mainly nocturnal, funnel-shaped, purple or pink flowers, 6–8cm (2½–3in) long, with red sepals, are borne in summer. ♂↔3–7m (10–22ft), ♂↔1m (3ft). USA (Arizona), Mexico (Baja California). ☀ (min. 13°C/55°F)

▷ *Stenobium stans* see *Tecoma stans*

## STENOMESSON

syn. URCEOLINA

AMARYLLIDACEAE

Genus of about 20 species of bulbous perennials from rocky, upland slopes and meadows in the Andes, South America. They are grown for their umbels of pendent, tubular, brightly coloured flowers, borne on solid, sometimes 4-angled stems mainly from spring to summer. The semi-erect, linear to lance-shaped, occasionally channelled or keeled, basal leaves often elongate after flowering. In frost-prone areas, grow in a temperate greenhouse or conservatory. In warmer areas, grow in a border.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Plant in autumn with the neck and shoulders of the bulb above soil level. Under glass, grow in loam-based potting compost (J1 No.2) in full light, shaded from hot sun. Water sparingly until in active growth, then water moderately and apply a balanced liquid fertilizer every 2 weeks. Reduce water as leaves wither, and keep barely moist when dormant. Pot on every 3 years. Outdoors, grow in well-drained, moderately fertile soil in a sheltered site in full sun; protect with a mulch in winter. Roots resent disturbance.
- **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Divide in autumn.
- **PESTS AND DISEASES** Trouble free.

***S. coccineum***. Bulbous perennial with narrow, strap-shaped leaves, to 30cm (12in) long, which appear as the flowers



*Stenomesson miniatum*

open, and then elongate. Umbels of 4–8 nodding, tubular, bright crimson flowers, 4cm (1½in) long, are produced from spring to summer. ♂↔30cm (12in), ♂↔15cm (6in). Peru. ☀ (min. 7–10°C/45–50°F)

***S. incarnatum*** see *S. variegatum*.

***S. miniatum*** □ syn. *Urceolina pendula*, *U. peruviana*. Bulbous perennial bearing umbels of 3–6 pendent, tubular, bright red or orange flowers, 3–3.5cm (1¼–1½in) long, with protruding stamens, from spring to summer.

Narrow, strap-shaped leaves, to 40cm (16in) long, develop after the flowers.

♂↔30cm (12in), ♂↔15cm (6in). Peru, Bolivia. ☀ (min. 7–10°C/45–50°F)

***S. variegatum***, syn. *S. incarnatum*.

Bulbous perennial with strap-shaped leaves elongating to 60–75cm (24–30in) long after flowering. In spring, usually 4-angled stems bear umbels of up to 6 pendent, tubular, white, yellow, pink, or scarlet flowers, to 13cm (5in) long, sometimes with bands of another colour, all with a green mark on each tepal. ♂↔40–60cm (16–24in), ♂↔24cm (10in). Ecuador, Peru, Bolivia. ☀ (min. 7–10°C/45–50°F)

## STENOTAPHRUM

GRAMINEAE/POACEAE

Genus of about 6 species of annual and perennial grasses, widespread in tropical and subtropical regions worldwide, on seashores or near the coast, occasionally inland. The creeping or ascending stems root at the nodes, and bear linear to lance-shaped, flat or folded, upright leaves, sheathing at the bases. Greenish brown spikelets are borne in axillary and terminal racemes. *S. secundatum* and *S. secundatum* 'Variegatum' are the most commonly grown, and are valued for their foliage. In frost-prone climates, treat perennials as annuals, or grow in a cool greenhouse as ground cover or in hanging baskets. Use as lawn grasses in tropical and subtropical climates; *S. secundatum* 'Variegatum' is also suitable for a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in growth, water freely and apply a balanced liquid fertilizer every 2 weeks. Water sparingly in winter. Container-grown plants thrive and continue to look attractive if given a winter minimum temperature of 12°C (54°F). Outdoors, grow in moist but well-drained, fertile soil in full sun. In frost-prone areas, plant out only when danger of frost has passed.
- **PROPAGATION** Divide in spring. Take nodal cuttings in late spring or during summer.
- **PESTS AND DISEASES** Trouble free.

***S. secundatum*** (Buffalo grass, St. Augustine grass). Stoloniferous, prostrate, evergreen, perennial grass. Almost rigid, flattened, branching stems bear linear-oblong, flat to folded, bluish green leaves, to 15cm (6in) long. In late summer and early autumn, produces greenish brown, flattened, spike-like racemes, to 10cm (4in) long. ♂↔15cm (6in), ♂↔indefinite. Central America, tropical South America. ☀ (min. 5°C/41°F). 'Variegatum' ♀ has pale green leaves with ivory-white stripes.

## STENOTUS

ASTERACEAE/COMPOSITAE

Genus of 18 species of tufted, evergreen subshrubs found in dry, rocky places in W. North America. They produce mainly basal, alternate, leathery, simple, entire leaves and solitary, daisy-like flowerheads. Grow in a rock garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in gritty, poor to moderately fertile, sharply drained soil in full sun.
- **PROPAGATION** Sow seed in containers in a cold frame in spring.
- **PESTS AND DISEASES** Trouble free.

***S. acaulis***, syn. *Haplopappus acaulis*.

Mat-forming subshrub producing erect, slender stems and inversely lance-shaped, tapered, dark green leaves, to 6cm (2½in) long. Solitary, daisy-like yellow flowerheads, to 2.5cm (1in) across, are borne in summer. ♂↔15cm (6in), ♂↔45cm (18in). W. USA. \*\*\*

## STEPHANANDRA

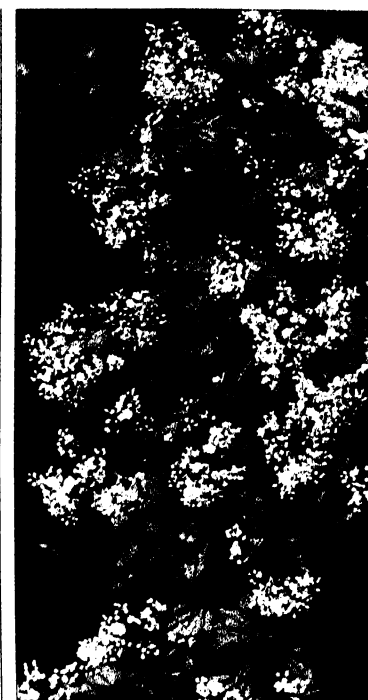
ROSACEAE

Genus, related to *Spiraea*, of 4 species of suckering, deciduous shrubs occurring in thickets and at woodland margins in E. Asia. They have attractive leaves, which are alternate, narrowly ovate to ovate, lobed, and sharply toothed, and have good autumn colour. The tiny, star-shaped, greenish white or yellow-green flowers are produced in terminal, corymb-like panicles during summer. Suitable for a shrub border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but well-drained, fertile soil in full sun or partial shade. Pruning group 2.
- **PROPAGATION** Separate rooted suckers from autumn to early spring. Take greenwood cuttings in early summer, semi-ripe cuttings in summer, or hardwood cuttings in late autumn.
- **PESTS AND DISEASES** Trouble free.



*Stephanandra incisa* 'Crispa'



*Stephanandra tanakae*

***S. incisa***. Thicket-forming shrub with arching shoots, rich brown in winter, and ovate, sharply lobed, toothed, mid-green leaves, to 8cm (3in) long, turning orange-yellow in autumn. Greenish white flowers are produced in panicles, to 8cm (3in) long, in early summer. ♂↔2m (6ft), ♂↔3m (10ft). Korea, Japan, Taiwan. \*\*\*. 'Crispa' □ has deeply lobed, wavy-margined leaves; ♂↔60cm (24in).

***S. tanakae*** □ Thicket-forming shrub with arching, orange-brown shoots and broadly ovate, 3- to 5-lobed, sharply toothed, mid-green leaves, to 12cm (5in) long, turning orange and yellow in autumn. In early and midsummer, bears yellow-green flowers in panicles to 10cm (4in) long. ♂↔3m (10ft). Japan. \*\*\*

## STEPHANOCEREUS

## CACTACEAE

Genus of one species of columnar, rarely branching, ribbed, perennial cactus from stony, rocky sites in E. Brazil. The stems, with rings of bristles at the joints, eventually develop woolly cephaliums at the tips; during summer, the tips bear tubular, nocturnal flowers, followed by ovoid, mid-green fruit, 5cm (2in) long, which take many weeks to ripen. Where temperatures fall below 13°C (55°F), grow *S. leucostele* in a warm greenhouse. In warmer areas, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost with added limestone chips, in full light with low humidity. In spring and summer, water moderately and apply a low-nitrogen liquid fertilizer every 4–5 weeks. Water sparingly at other times. Outdoors, grow in sharply drained, gritty, poor, humus-rich, neutral to alkaline soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 24°C (75°F) in spring.

• **PESTS AND DISEASES** Trouble free.

*S. leucostele*. Erect, columnar cactus with 12- to 18-ribbed, blue-green stems, to 10cm (4in) thick. Close-set, white-hairy areoles each bear about 22 spines (20 white to yellow radials, 1 or 2 longer yellow centrals). In summer, the densely woolly cephalium produces white flowers, to 7cm (3in) long, with scaly yellow tubes. ↑ to 3m (10ft), ↔ 45cm (18in). E. Brazil. ☼ (min. 13°C/55°F)

## STEPHANOTIS

## ASCLEPIADACEAE

Genus of 5–15 species of evergreen, woody-stemmed climbers from tropical woodland in Africa, Madagascar, and Asia. They are grown for their strongly perfumed, waxy, tubular, usually white flowers, each with 5 spreading lobes, borne in short-stalked, axillary cymes. Leaves are opposite, ovate to elliptic, and leathery. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse or as houseplants. In warmer areas, train over a pergola or on a wall.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light, with shade from hot sun. In the growing season, water



*Stephanotis floribunda*

and mist freely, and apply a balanced liquid fertilizer every 2 or 3 weeks. Water sparingly in winter. Outdoors, grow in moderately fertile, humus-rich, moist but well-drained soil in full sun, with some midday shade. Support climbing stems. Pruning group 11, in late winter or early spring.

• **PROPAGATION** Sow seed at 18–21°C (64–70°C) in spring. Root semi-ripe cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Under glass, may be infested by red spider mites, scale insects, mealybugs, and root mealybugs.

*S. floribunda* ☼☼ syn. *S. jasminoides* (Bridal wreath, Floradora, Madagascar jasmine). Sparsely branched, twining climber with oval to broadly elliptic, thick, glossy, mid- to deep green leaves, to 10cm (4in) or more long. From spring to autumn, bears cymes of 3–6 fragrant, waxy white flowers, 4–6cm (1½–2½in) long. ↑ 3–6m (10–20ft) or more. Madagascar. ☼ (min. 15°C/59°F)

*S. jasminoides* see *S. floribunda*.

▷ *Sterculia acerifolia* see *Brachychiton acerifolius*

▷ *Sterculia diversifolia* see *Brachychiton populneus*

▷ *Sterculia platanifolia* see *Firmiana simplex*

## STERNBERGIA

## Autumn daffodil

## AMARYLLIDACEAE

Genus of about 8 species of bulbous perennials found on stony hillsides, in fields, and in sparse scrub or pine woodland from S. Europe and Turkey to C. Asia. They are cultivated for their crocus-like, mainly solitary, funnel- or goblet-shaped, occasionally narrow-repalled and star-like, usually bright yellow flowers, borne on leafless stems. The erect, basal leaves are linear or strap-shaped to narrowly lance-shaped. Grow in a sunny rock garden. In frost-prone areas, grow all species except *S. lutea* and *S. sicula* in an alpine house or bulb frame; they are intolerant of winter wet.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant bulbs 15cm (6in) deep in late summer; plant *S. candida* and *S. fischeriana* 20cm (8in) deep.

Under glass, grow in equal parts loam, leaf mould, and sharp sand, in full light. Water sparingly in growth, reduce water as leaves wither, and keep completely dry when dormant. Outdoors, grow in sharply drained, moderately fertile soil in full sun. Allow large clumps to form; divide only if flowering is impaired.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) as soon as ripe. Separate offsets when dormant.

• **PESTS AND DISEASES** Prone to narcissus viruses. May be infested with large and small narcissus bulb flies and eelworms.

*S. candida* ☼ Bulbous perennial with lance- to strap-shaped, grey-green leaves, 15cm (6in) long, followed in late winter and early spring by cup-, goblet-, or funnel-shaped, fragrant white flowers, 5cm (2in) across. ↑ 10–20cm (4–8in), ↔ 10cm (4in). S.W. Turkey. \*\*

*S. clusiana*, syn. *S. macrantha*. Bulbous perennial producing funnel-shaped yellow flowers, 7cm (3in) across, in



*Sternbergia candida*

autumn, before the strap-shaped, grey-green leaves, to 30cm (12in) long, develop. ↑ 10cm (4in), ↔ 8cm (3in). Turkey, Israel, Jordan, Iran. \*\*

*S. fischeriana*. Bulbous perennial with goblet-shaped, pale yellow flowers, 3.5cm (1½in) across, borne in winter, after the strap-shaped, glossy, dark grey-green leaves, to 35cm (14in) long. Tends to divide into small, non-flowering bulbs. ↑ 8–15cm (3–6in), ↔ 8cm (3in). Caucasus to India (Kashmir). \*\*

*S. lutea* ☼ Very free-flowering, bulbous perennial producing goblet-shaped, deep yellow flowers, 4cm (1½in) across, in autumn, at the same time as narrowly lance-shaped, deep green leaves, to 30cm (12in) long. ↑ 15cm (6in), ↔ 8cm (3in). Spain to Afghanistan. \*\*

*S. macrantha* see *S. clusiana*.

*S. sicula*. Variable, bulbous perennial with very narrow, strap-shaped, dark green leaves, 25cm (10in) long, with central grey stripes; these emerge before or with the star-shaped, deep yellow flowers, 1.5–3.5cm (½–1½in) across, with rounded or pointed segments, in autumn. ↑ 7cm (3in), ↔ 5cm (2in). Italy (including Sicily), Greece (including Aegean Islands, Crete), W. Turkey. \*\*



*Sternbergia lutea*

## STEWARTIA syn. STUARTIA

## THEACEAE

Genus, related to *Camellia*, of 15–20 species of deciduous or evergreen trees and shrubs from woodland in E. Asia and S.E. USA. They are grown for their often peeling bark, their simple, usually toothed leaves, which colour well in autumn, and their cup-shaped white flowers with bold stamens, borne in the leaf axils. Use as specimens in woodland.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich, neutral to acid soil in full sun or light dappled shade, with shelter from strong winds. They resent transplanting. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take green-wood cuttings in early summer, or semi-ripe cuttings in mid- to late summer. Layer in autumn.

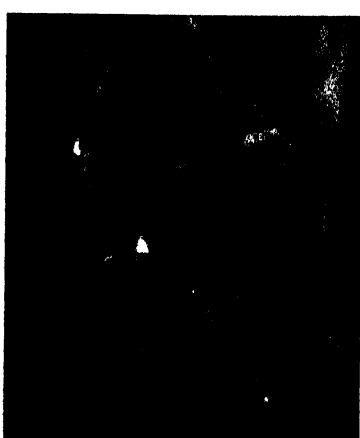
• **PESTS AND DISEASES** Trouble free.

*S. koreana* see *S. pseudocamellia* Korean Group.

*S. malacodendron* ☼ Broadly columnar, deciduous tree or upright, bushy shrub with ovate, finely toothed, dark green leaves, to 10cm (4in) long, downy beneath. Rose-like white flowers, 10cm (4in) across, cup-shaped at first, with purple stamens and often purple streaks on the petals, are borne singly along the shoots in midsummer. ↑ 7m (22ft), ↔ 3m (10ft). S.E. USA. \*\*

*S. monadelpha* ☼☼☼ Broadly columnar to conical, deciduous tree or shrub with peeling, grey and red-brown bark. Ovate, elliptic, or lance-shaped, toothed, glossy, dark green leaves, to 10cm (4in) long, turn orange and red in autumn. In midsummer, cup-shaped white flowers, 4cm (1½in) across, with creamy filaments and violet anthers, are borne singly or in pairs along the shoots. ↑ to 25m (80ft), ↔ 8m (25ft). Korea, S. Japan. \*\*\*

*S. ovata*. Broadly upright, bushy, deciduous shrub bearing ovate to lance-shaped, toothed or entire, dark green leaves, to 15cm (6in) long, red-tinged when young, downy beneath, turning orange and red in autumn. Rose-like, cup-shaped white flowers, to 10cm (4in) across, with creamy yellow or rose-pink stamens, are produced singly along the shoots in mid- and late summer. ↑ 6m (20ft), ↔ 4m (12ft). S.E. USA. \*\*\*



*Stewartia monadelpha*

## STEWARTIA



*Stewartia  
pseudocamellia*

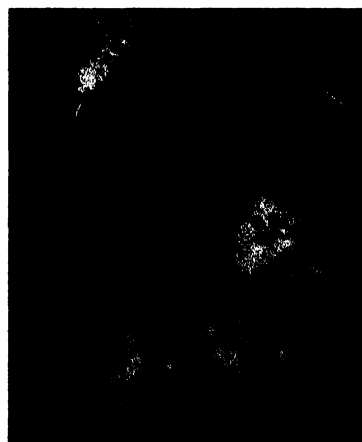
***S. pseudocamellia*** ■ ♀ □ Broadly columnar, deciduous tree with peeling, pink to red-brown and grey bark. Ovate to elliptic, finely toothed, dark green leaves, to 10cm (4in) long, turn yellow to orange and red in autumn. Rose-like, cup-shaped white flowers, 6cm (2½in) across, with creamy yellow stamens, are borne singly or in pairs along the shoots in midsummer. ↑ 20m (70ft), ↔ 8m (25ft). Japan. \*\*\*. **Koreana Group** ♀ syn. *S. koreana*, *S. pseudocamellia* var. *koreana*, has flowers that open more widely, to 7cm (3in) across; Korea. ***S. sinensis*** ♀ □ Broadly conical, deciduous tree with peeling, red-brown bark and ovate or elliptic, toothed, dark green leaves, to 10cm (4in) long, turning brilliant red in autumn. Rose-like, cup-shaped, fragrant white flowers, 5cm (2in) across, are borne singly along the shoots in midsummer. ↑ 20m (70ft), ↔ 7m (22ft). C. and E. China. \*\*\*

## STIGMAPHYLLON

MALPIGHIACEAE

Genus of about 110 species of evergreen, woody-stemmed climbers, shrubs and perennials occurring in tropical woodland in Central and South America and the Caribbean, with one species from West Africa. They have simple or lobed, sometimes toothed leaves, borne in opposite pairs or nearly alternately. From spring to autumn, wide open, 5-petaled flowers are produced in short, dense, corymb-like racemes. In frost-prone areas, grow in a temperate greenhouse. In warmer climates, grow over a pergola or arch, or allow to cascade from a tree.

• **HARDINESS** Frost tender.



*Stigmaphyllon ciliatum*

- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.3) in full light, shaded from hot sun. In growth, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter. Outdoors, grow in fertile, moist soil in full sun with some shade. Support climbing stems. Pruning group 11, in late winter.
- **PROPAGATION** Root semi-ripe cuttings with bottom heat in summer. Layer in autumn or spring.
- **PESTS AND DISEASES** Trouble free.

***S. ciliatum*** ■ Twining, evergreen climber with slender, branched stems and broadly ovate, hairy-margined, light green leaves, 4–10cm (1½–4in) long, each with 2 ear-shaped lobes at the bases. Axillary, corymb-like racemes of 3–7 saucer-shaped, rich bright yellow flowers, 3–4cm (1¼–1½in) across, are produced in autumn; each flower has 1 small and 4 large, rounded, clawed, fringed petals. ↑ 5–8m (15–25ft). Belize to Uruguay. ☼ (min. 7–10°C/45–50°F)

† **Stinking Benjamin** see *Trillium erectum*

† **Stinking gladwyn** see *Iris foetidissima*

† **Stinking madder** see *Putoria calabrica*

† **Stinking nightshade** see *Hyoscyamus niger*

† **Stink pod** see *Scoliotopus bigelovii*

† **Stinkwort** see *Helleborus foetidus*

## STIPA

syn. *ACHINATHERUM*  
Feather grass, Needle grass, Spear grass  
GRAMINEAE/POACEAE

Genus of about 300 species of bristly, tufted, evergreen or deciduous, perennial (rarely annual) grasses from open woodland and stony slopes in temperate and warm-temperate areas worldwide. They have linear, pleated, inrolled, sometimes flat leaves, and bear narrow panicles of flat spikelets, often with long, feathery or bristly awns, from early summer to autumn. They are grown for their habit, and also for their inflorescences, which



*Stipa calamagrostis*

may be dried and dyed for use in flower arrangements. Use in a mixed or shrub border. *S. gigantea* is effective set against a dark backdrop of shrubs or conifers.

• **HARDINESS** Fully hardy to frost hardy; *S. arundinacea* will withstand short periods around -10°C (14°F).

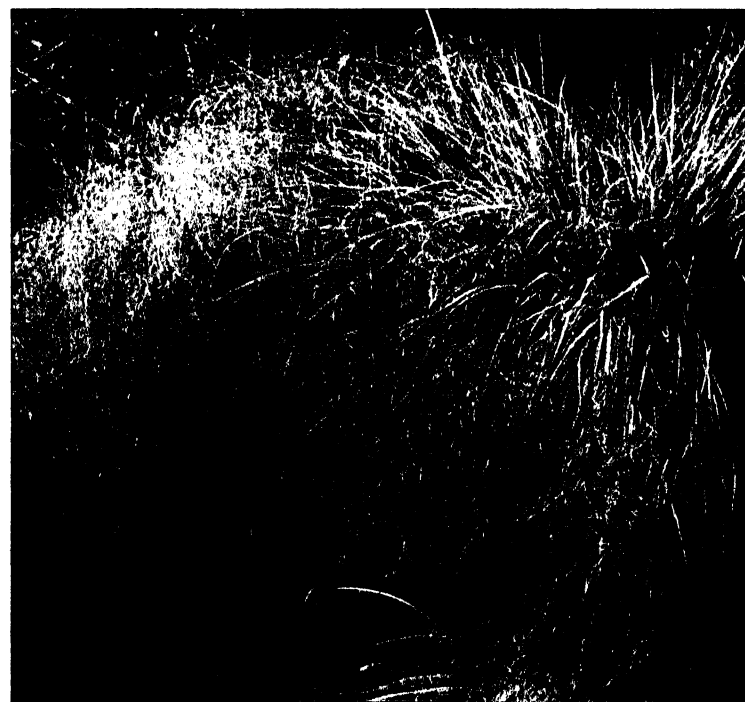
• **CULTIVATION** Grow in moderately fertile, medium to light, well-drained soil in full sun; *S. arundinacea* tolerates heavier soils and partial shade. Cut back deciduous species in early winter; remove dead leaves on evergreens in early spring.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide from mid-spring to early summer.

• **PESTS AND DISEASES** Trouble free.

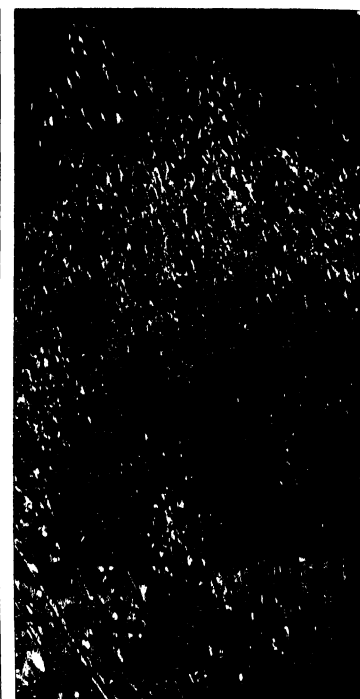
***S. arundinacea*** ■ syn. *Calamagrostis arundinacea* (Pheasant's tail grass).

Loosely tufted, rhizomatous, evergreen perennial with arching, flat or inrolled, leathery, dark green leaves, to 30cm (12in) long, streaked orange-brown in summer, and turning orange-brown all over in winter. From midsummer to early autumn, bears pendent panicles, to 75cm (30in) long, of purplish green spikelets. ↑ 1m (3ft), ↔ 1.2m (4ft). New Zealand. \*\*



*Stipa arundinacea*

## STIPA



*Stipa gigantea*

***S. calamagrostis*** ■ syn. *S. lasiagrostis*.

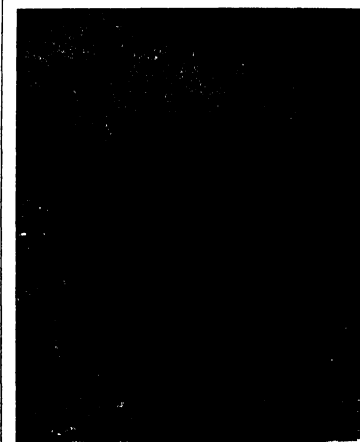
Densely tufted, deciduous perennial with mounds of arching, linear, inrolled, blue-green leaves, to 30cm (12in) long. In summer, bears silvery, purple-tinted to buff spikelets in nodding, feathery, lax panicles, to 80cm (32in) long. ↑ 1m (3ft), ↔ 1.2m (4ft). S. Europe. \*\*\*

***S. gigantea*** ■ ♀ (Giant feather grass, Golden oats). Densely tufted, evergreen or semi-evergreen perennial forming lax clumps of linear, inrolled, mid-green leaves, to 70cm (28in) long. Bristled, silvery, purplish green spikelets, turning gold when ripe, are borne in long-stemmed, oat-like panicles, to 50cm (20in) long, in summer. ↑ to 2.5m (8ft), ↔ 1.2m (4ft). Spain, Portugal. \*\*\*

***S. lasiagrostis*** see *S. calamagrostis*.

***S. splendens***. Densely tufted, deciduous perennial forming large mounds of arching, linear, pleated, dark green leaves, to 50cm (20in) long. Purple-tinted white spikelets, in large, loose panicles, to 50cm (20in) long, are borne above the foliage in early and mid-summer. ↑ to 2.5m (8ft), ↔ 1.2m (4ft). C. Asia, Russia (Siberia), Chile. \*\*\*

***S. tenuissima*** ■ Densely tufted, deciduous perennial with erect, narrowly



*Stipa tenuissima*

linear to filament-like, tightly inrolled, bright green leaves, 30cm (12in) or more long. Throughout summer, bears a profusion of narrow, nodding, softly feathery panicles, to 30cm (12in) long, greenish white at first, becoming buff. The whole plant billows in the slightest breeze. † 60cm (24in), ↔ 30cm (12in). USA (Texas, New Mexico), Mexico, Argentina. \*\*\*

- ▷ **Stock** see *Matthiola*, *M. incana*  
**Night-scented** see *Matthiola longipetala* subsp. *bicornis*  
**Virginia** see *Malcolmia maritima*

## STOKESIA

Stokes' aster

ASTERACEAE/COMPOSITAE

Genus of one species of erect perennial from conifer woods on moist, acid soil in S.E. USA. The evergreen, simple, smooth leaves are entire, sometimes with spines towards the bases, and are borne in basal rosettes. The long-lasting, colourful, terminal, cornflower-like flowerheads are solitary or produced in few- to many-flowered corymbs; they are good for cutting. Grow in a warm position in a herbaceous border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, fertile, moist but well-drained, acid soil in full sun. Liable to rot in damp, heavy soils. Provide twiggy support. Dead-head to prolong flowering. Provide a deep, dry mulch in areas with severe winters.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring, or take root cuttings in late winter.
- **PESTS AND DISEASES** Trouble free.

*S. laevis* ☐ Rosette-forming, evergreen perennial with elliptic to lance-shaped, mid-green basal leaves, to 20cm (8in) long, slightly spiny near the bases, and with conspicuous, pale greenish white midribs. From midsummer to early autumn, upright stems, with smaller, stalkless leaves, bear solitary, terminal, cornflower-like flowerheads, to 10cm (4in) across; these have spreading, fringed ray-florets in purplish blue, pink, or white, and disc-florets in paler or darker shades of the same colours. † to 60cm (24in), ↔ 45cm (18in). S.E. USA. \*\*\*. 'Blue Star' has large, light blue flowerheads with whitish blue disc-florets. 'Silver Moon' has silvery white flowerheads.



Stokesia laevis

## STOMATIUM

AIZOACEAE

Genus of about 40 species of mainly mat-forming, perennial succulents from semi-desert areas of Botswana and South Africa. They have very short stems and unequal pairs of angular or rounded, often keeled, rough, fleshy leaves, sometimes with marginal teeth and white or transparent dots. Solitary, daisy-like, scented flowers are borne in the middle of the stems in summer; they often open in late afternoon and stay open all night. In frost-prone areas, grow in a temperate greenhouse. In warm, dry areas, use in a desert garden or raised bed.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in standard cactus compost in full light. From spring to summer, apply a low-nitrogen fertilizer monthly and water moderately. Water very sparingly at other times. Outdoors, grow in sandy, poor, humus-rich, sharply drained soil in full sun. See also pp.48–49.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or take cuttings of stem sections, from spring to summer.
- **PESTS AND DISEASES** Susceptible to aphids while flowering.

*S. agninum*. Clustering succulent with pairs of 3-angled to semi-cylindrical, oblong, obtuse, very convex and keeled, dull grey-green leaves, 4–5cm (1½–2in) long, roughened by green papillae, and sometimes with 3–5 short, marginal teeth. Pale yellow flowers, 2–2.5cm (¾–1in) across, open in late afternoon or early evening in summer. † 5cm (2in), ↔ 45cm (18in). South Africa (Western Cape). ☼ (min. 7°C/45°F). var. *integrifolium* ☐ has smooth leaves.  
*S. patulum*. Clustering succulent with crowded pairs of 3-angled to semi-cylindrical, pale greyish green leaves, 2cm (¾in) long, with rough white dots, and with 2–9 pointed tubercles on the upper surfaces. Pale yellow flowers, 2cm (¾in) across, open in the evening in summer. † 3cm (1¼in), ↔ 45cm (18in). South Africa. ☼ (min. 7°C/45°F).

- ▷ **Stone cress** see *Aethionema*  
 ▷ **Stonecrop** see *Sedum*  
**Biting** see *S. acre*  
**Common** see *S. acre*  
 ▷ **Stone orpine** see *Sedum rupestre*  
 ▷ **Stone pine** see *Pinus pinea*  
 ▷ **Stone plant** see *Lithops*



Stomatium agninum var. integrifolium

- ▷ **Storax** see *Styrax officinalis*  
 ▷ **Stork's bill** see *Erodium*  
 ▷ **Strangueja spicata** see *Bellevalia hyacinthoides*  
 ▷ **Stranvaesia** see *Photinia*  
*S. davidiana* see *P. davidiana*  
*S. nussia* see *P. nussia*

## STRATIOTES

HYDROCHARITACEAE

Genus of one species of vigorous, dioecious, submerged aquatic perennial found in still and slow-moving water in Eurasia. It has rosettes of narrow, prickly, saw-toothed, submerged leaves, which rise to the surface at flowering time. An attractive foliage plant for a sunny pool, it acts to some extent as a filter and oxygenator, but must be kept in check.

- **HARDINESS** Fully hardy.
- **CULTIVATION** In summer, scatter new plants into a pool of slightly alkaline water over 30cm (12in) deep. Remove runners as necessary to control spread.
- **PROPAGATION** Detach winter buds or young plantlets in spring.
- **PESTS AND DISEASES** Trouble free.

*S. aloides* (Water soldier). Aquatic perennial with short runners producing stalkless rosettes of linear to lance-shaped, sharp-pointed, toothed, deep olive-green leaves, to 50cm (20in) long. In midsummer, bears cup-shaped, white, sometimes pink-tinged flowers, 3cm (1¼in) across, from 2-leaved bracts: the males in pairs or threes, the females solitary. ↔ indefinite. Eurasia. \*\*\*

- ▷ **Strawberry** see *Fragaria*  
**Indian** see *Duchesnea indica*  
**Mock** see *Duchesnea indica*  
 ▷ **Strawberry bush** see *Calycanthus floridus*  
 ▷ **Strawberry tree** see *Arbutus*, *A. unedo*  
**Grecian** see *A. andrachne*  
 ▷ **Strawflower** see *Bracteantha bracteata*, *Rhodanthe*

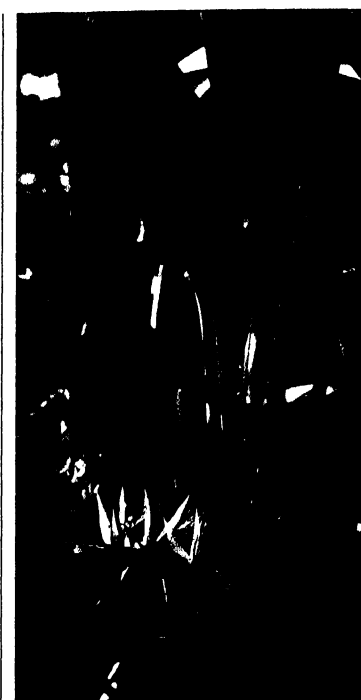
## STRELITZIA

Bird of paradise

STRELITZIACEAE

Genus of about 5 species of clump-forming, evergreen perennials found in habitats ranging from riverbanks to open glades in the bush of South Africa. They have large, long-stalked, mostly oblong to lance-shaped leaves with woody bases forming a "trunk" that may reach 10m (30ft) tall. Their exotic inflorescences, produced intermittently from the leaf axils, consist of usually horizontal, waxy, stiff, boat-shaped spathes, from the top of which crest-like flowers arise sequentially, often in contrasting colours; they are very long-lasting when cut. In frost-prone areas, grow in a warm greenhouse; move outdoors in summer. In warmer areas, grow as specimen plants.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in large containers or in a greenhouse border in loam-based potting compost (J1 No.3). Provide full light with shade from hot sun, and ventilate freely when temperatures exceed 20°C (68°F). In the growing season, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Top-dress annually and repot every second year.



Strelitzia nicolai

Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade, with shelter from strong winds.

- **PROPAGATION** Sow seed at 18–21°C (64–70°F), or divide rooted suckers, in spring. Seed-raised plants may take 3 or more years to flower.
- **PESTS AND DISEASES** Susceptible to scale insects.

*S. alba*. Clump-forming perennial with oblong to lance-shaped leaf-blades, 2m (6ft) long, on leaf-stalks 1m (3ft) long. Bears purple-glaucous spathes, 25–30cm (10–12in) long, with white flowers, 20cm (8in) long, usually in spring. † to 10m (30ft), ↔ to 3m (10ft). South Africa (Western Cape, Northern Cape, Eastern Cape). ☼ (min. 10°C/50°F)  
*S. juncea*, syn. *S. reginae* var. *juncea*. Clump-forming perennial with rush-like leaves, 50cm (20in) long, without leaf-blades. From winter to spring, produces green spathes, 12cm (5in) long, and flowers, 3–4cm (1¼–1½in) long, with orange calyces and blue corollas. † to 1.5m (5ft), ↔ 1m (3ft). South Africa (Eastern Cape). ☼ (min. 10°C/50°F)  
*S. nicolai* ☐ Clump-forming perennial with oblong leaf-blades, 1.5m (5ft) long,



Strelitzia reginae



rounded or heart-shaped at the bases, on leaf-stalks 2m (6ft) long. In spring, bears 3–5 brownish red spathes, 40–45cm (16–18in) long, and white flowers, 20cm (8in) long, with light purplish blue corollas. Needs ample space. ↓ to 10m (30ft), ↔ to 5m (15ft). South Africa (Northern Cape, Eastern Cape, KwaZulu/Natal). ☼ (min. 10°C/50°F) **S. reginae** ☼♀ (Crane flower). Clump-forming perennial with oblong-lance-shaped leaf-blades, to 50cm (20in) long, with round or tapered bases, on stalks to 1m (3ft) long. From winter to spring, bears purple- and orange-flushed green spathes, 12cm (5in) long, and flowers 10cm (4in) long, with orange or yellow calyces and blue corollas. ↓ to 2m (6ft), ↔ to 1m (3ft). South Africa. ☼ (min. 10°C/50°F). **'Humilis'**, syn. **'Pygmaea'**, is dwarf, forming dense clumps, and has ovate-oblong leaves; it grows well in containers; ↓ 80cm (32in). **'Pygmaea'** see **'Humilis'**. **var. juncea** see **S. juncea**.

▷ **Streptanthera cuprea** see *Sparaxis elegans*

▷ **Streptanthera elegans** see *Sparaxis elegans*

## STREPTOCARPUS

Cape primrose

GESNERIACEAE

Genus of about 130 species of annuals and perennials, some monocarpic, or rarely subshrubs, often found in rain-forest, sometimes as epiphytes, and on damp banks and rocks or in grassland. They occur from tropical to southern Africa, in Madagascar, and in China, with 4 species from S.E. Asia. Linear to rounded, hairy, often mid-green, veined, wrinkled leaves are borne singly or in opposite pairs on erect, fleshy stems, or in stemless rosettes. Cymes of tubular, often 2-lipped flowers, with 5 spreading lobes, are axillary or borne from the leaf rosettes. In frost-prone areas, grow in a temperate or warm greenhouse. Use in a humid, shady border in warmer areas.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loamless potting compost in bright filtered light, with shade from hot sun. When in growth, water freely, allowing compost to dry out between waterings (overwatering results in basal rot); apply a high-potash fertilizer every 2 weeks. Reduce humidity and keep just moist in winter. Repot annually in spring. Remove faded flowers and stalks to



*Streptocarpus* 'Constant Nymph'

discourage seeding. Outdoors, grow in fertile, leafy, humus-rich, moist but well-drained soil in partial shade.

• **PROPAGATION** Surface-sow seed in late winter or spring, at 18°C (64°F). Divide, or take leaf cuttings, in spring or early summer. Root stem-tip cuttings, 5–8cm (2–3in) long, of bushy and trailing plants in spring, with bottom heat.

• **PESTS AND DISEASES** Leafhoppers, mealybugs, thrips, tarsonemid mites, and vine weevil larvae may be a problem.

**S. 'Albatross'** ♀ Robust, rhizomatous perennial with rosettes of broad, strap-shaped, finely hairy leaves, 25cm (10in) long. Cymes of up to 5 yellow-throated white flowers, 6cm (2½in) across, open from spring to autumn. ↓ 30cm (12in), ↔ 55cm (22in). ☼ (min. 10°C/50°F)

**S. caulescens** ☼ Erect perennial with fleshy, deep brown stems and opposite, elliptic to ovate, softly hairy leaves, 6cm (2½in) long. Cymes of 6–12 violet or white flowers, 1.5–2cm (½–¾in) across, with purple throats, are borne throughout the year. ↓ ↔ to 60cm (24in). Kenya. ☼ (min. 10°C/50°F)

**S. 'Concord Blue'**. Erect, bushy perennial producing fleshy stems and



*Streptocarpus* 'Lisa'

opposite, rounded, softly hairy leaves, 2.5cm (1in) long. Cymes of many mid-blue flowers, 2cm (¾in) across, open from spring to autumn. ↓ 30cm (12in), ↔ 50cm (20in). ☼ (min. 10°C/50°F)

**S. 'Constant Nymph'** ☼ Stemless, rhizomatous perennial with rosettes of lance-shaped, finely hairy leaves, to 30cm (12in) long. From spring to autumn, bears cymes of up to 5 blue flowers, 6cm (2½in) across, with pale yellow throats and deep violet veins on the 3 lower lobes. ↓ 30cm (12in), ↔ 60cm (24in). ☼ (min. 10°C/50°F)

**S. 'Heidi'** ♀ Rhizomatous perennial with rosettes of strap-shaped, finely hairy leaves, to 22cm (9in) long. From spring to autumn, bears cymes of up to 5 clear blue flowers, 6cm (2½in) across, with purple markings on the lower 3 lobes. ↓ 24cm (10in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**S. 'Joanna'**. Vigorous, rhizomatous perennial with rosettes of strap-shaped, finely hairy leaves, 35cm (14in) long. From spring to autumn, bears cymes of up to 5 frilled, deep velvet-red flowers, 8cm (3in) across, with darker markings. ↓ 30cm (12in), ↔ 75cm (30in). ☼ (min. 10°C/50°F)



*Streptocarpus* 'Nicola'

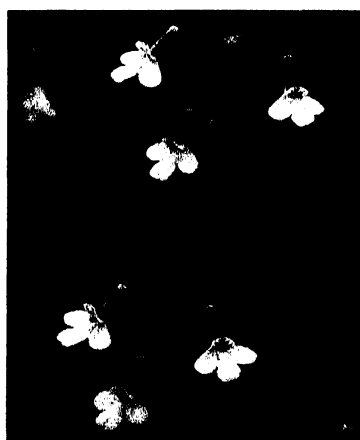
**S. 'Kim'** ☼♀ Rhizomatous perennial with rosettes of strap-shaped, finely hairy leaves, 15cm (6in) long. From spring to summer, bears cymes of many dark purple flowers, 3.5cm (1½in) across, with white throats. ↓ 20cm (8in), ↔ 35cm (14in). ☼ (min. 10°C/50°F)

**S. 'Lisa'** ☼♀ Rhizomatous perennial with rosettes of strap-shaped, finely hairy leaves, 30cm (12in) long. Many cymes of up to 5 white-throated, shell-pink flowers, 6cm (2½in) across, open from spring to autumn. ↓ 35cm (14in), ↔ 65cm (26in). ☼ (min. 10°C/50°F)

**S. 'Nicola'** ☼ Rhizomatous perennial with erect rosettes of strap-shaped, finely hairy leaves, 20cm (8in) long. From spring to autumn, bears many cymes of up to 5 semi-double, deep pink flowers, 3cm (1¼in) across. ↓ 35cm (14in), ↔ 45cm (18in). ☼ (min. 10°C/50°F)

**S. rexii**. Rhizomatous perennial with rosettes of strap-shaped, blunt-tipped, finely hairy leaves, to 30cm (12in) long. Violet-tinged white, or violet flowers, 3.5–4.5cm (1½–1¾in) across, with violet lines on the lower lobes, are borne usually singly or in pairs, or in cymes of up to 6, from spring to autumn. ↓ to 25cm (10in), ↔ to 50cm (20in). South Africa (Western Cape, Eastern Cape, S. KwaZulu/Natal). ☼ (min. 10°C/50°F)

**S. saxorum** ☼♀ Prostrate, sparsely branched, woody-based perennial with opposite, elliptic to ovate, finely hairy, thick, grey-green leaves, 2.5cm (1in) long. Axillary, pale lilac, white-throated flowers, 3cm (1¼in) across, are borne singly or in pairs, in spring and early summer. ↓ 15cm (6in), ↔ 60cm (24in). E. Africa. ☼ (min. 10°C/50°F)



*Streptocarpus caulescens*



*Streptocarpus* 'Kim'



*Streptocarpus saxorum*

## STREPTOSOLEN

SOLANACEAE

Genus of one species of evergreen shrub found in open woodland from Colombia to Peru and Ecuador, grown for its clusters of colourful, salverform flowers. It is loosely scrambling, with alternate, simple leaves. Below 7°C (45°F), grow in a cool or temperate greenhouse. In warmer areas, grow against a wall or among other shrubs.

• **HARDINESS** Frost tender; may survive temperatures near to 0°C (32°F).  
• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. When in growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 8 or 9, in late winter or early spring; group 13 if wall-trained; may need restrictive pruning under glass.

• **PROPAGATION** Root softwood cuttings in early summer, or semi-ripe cuttings in mid- to late summer, both with bottom heat. Layer in late summer.

• **PESTS AND DISEASES** Whiteflies, red spider mites, and aphids may be troublesome under glass.

*S. jamesonii* ■ ♀ (Marmalade bush). Tall, slender-stemmed shrub, semi-scandent unless annually pruned, with ovate to elliptic, finely wrinkled, mid- to deep green leaves, 2.5–5cm (1–2in) long. From late spring to late summer, produces yellow to orange-yellow

flowers, 3–4cm (1¼–1½in) long, with slender, twisted tubes and spreading petal lobes, in large, terminal corymbs, to 15cm (6in) across. ↑ 2–3m (6–10ft), ↔ 1–2.5m (3–8ft). Colombia, Ecuador, Peru. ☼ (min. 7°C/45°F)

▷ **String of beads** see *Senecio rowleyanus*

## STROBILANTHES

ACANTHACEAE

Genus of 250 species of evergreen or deciduous perennials or soft-stemmed shrubs from woodland margins in Asia and Madagascar. They are grown for their tubular to funnel-shaped, 2-lipped, often hooded, 5-lobed, blue to purple, white, or rarely yellow flowers, borne in terminal or axillary, usually cone-shaped inflorescences, sometimes loose panicles or spikes. The leaves are opposite, ovate to lance-shaped or elliptic, entire or toothed, often in unequal pairs. In frost-prone areas, grow hardy species in a herbaceous border; grow tender species as summer bedding or in a warm greenhouse. In warmer areas, use in a border.

• **HARDINESS** Mostly frost tender; *S. atropurpureus* is fully hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. In growth, water freely; apply a balanced liquid fertilizer every 4 weeks. Water moderately in winter. Outdoors, grow in light, fertile, free-draining soil in full sun or partial shade. Pinch out young growth to induce bushiness. In frost-prone climates, protect *S. atropurpureus* with a dry winter mulch. Pruning group



*Strobilanthes atropurpureus*

9 for shrubby species; they may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root basal or softwood cuttings in spring or early summer, with bottom heat.

• **PESTS AND DISEASES** Red spider mites may be troublesome.

*S. anisophyllus*. Small subshrub with unequal pairs of lance-shaped, toothed, dark green leaves, 9cm (3½in) long. Tubular, lavender-blue flowers, 2.5cm (1in) long, with curved corolla tubes, are borne in cone-shaped inflorescences in spring and winter. ↑ 1–2m (3–6ft), ↔ 75cm (30in). Himalayas. ☼ (min. 12°C/54°F)

*S. atropurpureus* ■ Erect, branching perennial with long-stalked, ovate, toothed, dark green leaves, 10cm (4in) long. Dense spikes of tubular, indigo or purple flowers, 4cm (1½in) long, are produced in summer. ↑ 1.2m (4ft), ↔ 1m (3ft). N. India. \*\*\*

*S. dyerianus* ♀ (Persian shield). Soft-stemmed shrub with unequal pairs of elliptic, toothed, dark green leaves, to 15cm (6in) long, flushed purple with a silver overlay above, dark purple beneath. Bears short spikes of funnel-shaped, pale blue flowers, 3cm (1¼in) long, in autumn. ↑ 1.2m (4ft), ↔ 1m (3ft). Burma. ☼ (min. 12°C/54°F)

## STROMANTHE

MARANTACEAE

Genus of 13 species of evergreen, rhizomatous herbaceous perennials from forest floors and clearings in Central and South America. They are grown for their foliage and showy flower bracts. Obovate, ovate, elliptic, or lance-shaped to linear-lance-shaped leaves are borne basally and on the slender, often many-branched stems. Cup-shaped, yellow, red, or white flowers, with colourful bracts, are borne in racemes or panicles, often several on a stem, in winter, spring, and summer. In frost-prone areas, grow in a warm greenhouse. In warmer areas, use in a damp, humid border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a greenhouse border in loamless or loam-based potting compost (J1 No.3) in bright filtered light, allowing a free root run. In growth, water freely, maintain high humidity, and apply a low-nitrogen liquid fertilizer every 2 or 3 weeks. Water moderately in winter. Outdoors,

grow in moist, fertile soil in full sun or dappled shade.

• **PROPAGATION** Sow seed at 18°C (64°F) in early spring. Divide when dormant or after flowering, minimizing root damage.

• **PESTS AND DISEASES** Red spider mites may be troublesome in dry conditions.

*S. jacquinii*, syn. *S. lutea*. Rhizomatous perennial with branching stems and oblong-ovate to elliptic, mid-green leaves, 35cm (14in) long. In winter and spring, bears pale yellow flowers, 9mm (⅜in) long, with bright yellow bracts, in panicles 5–8cm (2–3in) across. ↑ 3m (10ft), ↔ 1m (3ft). Panama, Colombia, Venezuela. ☼ (min. 10°C/50°F)

*S. lutea* see *S. jacquinii*.

*S. sanguinea*. Erect, rhizomatous perennial. Branching stems bear lance-shaped to linear-lance-shaped, dark olive-green leaves, 50cm (20in) long, red beneath and 2-ranked at the bases. Bears white-petalled flowers, to 1cm (½in) long, with orange-red sepals, among red bracts, in panicles 5–8cm (2–3in) across, in winter and spring. ↑ to 1.5m (5ft), ↔ 1m (3ft). Brazil. ☼ (min. 10°C/50°F)

## STROMBOCACTUS

CACTACEAE

Genus of one species of perennial cactus from rocky fissures in C. Mexico. It has a mainly flattened-spherical stem, with ribs divided into prominent tubercles, spirally arranged; the areoles produce a few bristles, which fall as the plant matures. It produces solitary, funnel-shaped flowers from the crown in summer, followed by thin-walled, dry fruit containing minute seeds. Where temperatures drop below 10°C (50°F), grow in a warm greenhouse; in warmer climates, use in a desert garden.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost, with added limestone chips, in full light and low humidity. Water moderately in spring and summer, applying a balanced liquid fertilizer every 3 or 4 weeks. Keep completely dry at other times. Outdoors, grow in gritty, sharply drained, poor, humus-rich, preferably neutral to slightly alkaline soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring; seedlings may be difficult to establish.

• **PESTS AND DISEASES** Trouble free.



*Streptosolen jamesonii*

*Strombocactus disciformis*

**S. disciformis** ■ Simple, occasionally offsetting, flattened-spherical, greyish green cactus, bearing a few persistent, off-white, dark-tipped spines at the crown and 12–18 ribs closely set with diamond-shaped tubercles. Each tubercle has a central white areole bearing 1–5 bristly white radial spines (there are no centrals). Produces funnel-shaped, white or yellow flowers, with red throats, 3cm (1¼in) across, by day in summer. ↕ to 12cm (5in). C. Mexico. ☼ (min. 10°C/50°F)

## STRONGYLODON

LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of evergreen shrubs or woody-stemmed, twining climbers from tropical woodland in S.E. Asia and the Pacific islands. Alternate, 3-palmate leaves have lance-shaped to rounded leaflets, the terminal one largest. From winter to summer, they bear pendent racemes of pea-like, red, orange, blue, or bluish green flowers with pointed, upturned keel petals. Below 15°C (59°F), grow in a warm greenhouse. In warmer areas, train over an arch or pergola.

*Strongylodon macrobotrys*

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. In growth, water freely; apply a balanced liquid fertilizer every 2 or 3 weeks. Water moderately to sparingly in winter. Outdoors, grow in fertile, humus-rich, neutral to acid soil in full sun or partial shade. Support climbing stems. Pruning group 11; or 12, after flowering.
- **PROPAGATION** Sow seed at 27–30°C (81–86°F) as soon as ripe. Root semi-ripe stem sections in summer, with bottom heat. Air layer in spring.
- **PESTS AND DISEASES** Scale insects may be troublesome under glass.

**S. macrobotrys** ■ (Emerald creeper, Jade vine). Strong-growing, evergreen, twining climber. Leaves, to 15cm (6in) long, with 3 oblong to elliptic leaflets, are pinkish bronze, turning glossy, rich green. From winter to spring, rarely in summer, bears pea-like, luminous, blue-green flowers, 8cm (3in) long, in dense racemes, 40–90cm (16–36in) long. ↕ to 20m (70ft). Philippines. ☼ (min. 15°C/59°F)

▷ *Stuartia* see *Stewartia*

## STYLIDIUM

STYLIDIACEAE

Genus of about 150 species of annuals, herbaceous perennials, and subshrubs from dry scrub in Australia (one species from New Zealand). They are grown for their glossy, grass-like foliage and their flowers. The usually very narrow leaves, to 50cm (20in) long, are alternate or in basal rosettes. Pink, white, yellow, or purple flowers are borne in racemes, panicles, or corymbs in summer. The flowers are asymmetrical: each has 5 petals, one very small, with a central column combining stamens and style. A trigger action in the stamens aids insect pollination. In frost-prone areas, grow in a cool to temperate greenhouse. In warmer areas, use in a sunny border.

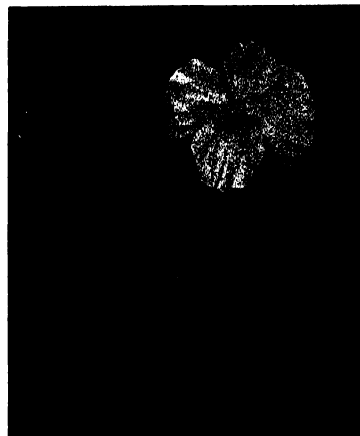
- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in full light. When in full growth, water sparingly and apply a balanced liquid fertilizer monthly. Keep almost dry in winter. Outdoors, grow in well-drained, fertile soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F), or divide, in spring.
- **PESTS AND DISEASES** Trouble free.

**S. graminifolium** (Trigger plant). Tufted perennial with basal rosettes of stiffly erect to arching, linear leaves, to 24cm (10in) long. Produces tiny, pink to magenta flowers in terminal, erect, narrow racemes, to 30cm (12in) long, in summer. ↕ 30cm (12in), ↔ 45cm (18in). Australia. ☼ (min. 7°C/45°F)

## STYLOPHORUM

PAPAVERACEAE

Genus of 3 species of herbaceous perennials from woodland in E. Asia and E. North America. The pinnatisect leaves have long stalks in the basal rosettes, and are stalkless on the upright, branching, ridged stems. The flowers are saucer-shaped, poppy-like, and yellow or

*Stylophorum diphyllum*

orange, borne in terminal umbels in spring and summer. Stylophorums are attractive plants for a woodland garden, a shady border among shrubs, or a large rock garden. They may self-seed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, moderately fertile, humus-rich soil in deep or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring; may be slow to re-establish.
- **PESTS AND DISEASES** May be attacked by slugs and snails.

**S. diphyllum** ■ (Celandine poppy). Downy, rosette-forming perennial with deeply incised, hairy, mid-green leaves, 20–30cm (8–12in) long, each with 5–7 oblong-ovate, irregularly scalloped and toothed lobes. Bright golden yellow flowers, to 2.5cm (1in) across, are borne in summer. ↕ to 30cm (12in). E. USA. \*\*\*

## STYPHELIA

EPACRIDACEAE

Genus of 12 species of wiry-stemmed, evergreen shrubs from dry forest and woodland; they occur in Australia, except for one species found in New Guinea. They have small, simple, aromatic, rigidly leathery leaves, arranged alternately or in spirals. Long, slender, tubular flowers, each with 5 reflexed or rolled-back lobes, are borne singly or in small groups from the upper leaf axils in summer. In frost-prone areas, grow in a cool greenhouse. In milder climates, grow in a shrub border.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light with good ventilation. In the growing season, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, humus-rich, neutral to acid soil in full sun. Pruning group 10, after flowering.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) as soon as ripe or in spring. Root semi-ripe cuttings in summer, with bottom heat. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

**S. colensoi** see *Cyathodes colensoi*.  
**S. triflora** (Pink fivecorner). Erect, moderately dense shrub bearing elliptic to oblong-elliptic leaves, 1.5–3cm (½–1¼in) long, with sharp points. In

summer, tubular, 5-angled, usually pink to red, occasionally cream or pale yellow-green flowers, 2cm (¾in) long, with strongly rolled-back lobes, are produced singly or in twos or threes. ↕ 0.4–2m (16–72in), ↔ 60–90cm (24–36in). S.W. Australia. \*

## STYRAX

STYRACACEAE

Genus of approximately 100 species of deciduous or evergreen shrubs and small trees found in woodland and thickets in Europe, Asia, and North America, including Mexico. Of graceful habit, they have alternate, short-stalked, variably shaped, entire or toothed leaves. The dainty, nodding, bell-shaped or cup-shaped, fragrant white flowers may be solitary, borne in pendent, terminal or axillary racemes or panicles, or produced in clusters on short branchlets; they appear on the previous year's wood in spring or summer. Grow in a woodland garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moist but well-drained, fertile, humus-rich, neutral to acid soil in full sun or partial shade, with shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed as soon as ripe; keep at 15°C (59°F) for 3 months, then at 0–5°C (32–41°F) for 3 months; keep seedlings frost-free until they are established. Take greenwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**S. americanus** (American snowbell). Rounded, deciduous shrub with elliptic to oblong, entire or toothed, dark green leaves, to 8cm (3in) long. Nodding, bell-shaped white flowers, 2cm (¾in) long, with narrow, backward-curving petals, are produced singly or in small clusters of up to 4 from the leaf axils, in early and midsummer. ↕ 3m (10ft), ↔ 2.5m (8ft). S.E. USA. \*\*\*  
**S. hemsleyanus** ♀ □ Broadly columnar, deciduous tree with oval to obovate, toothed, dark green leaves, to 12cm (5in) long. Bell-shaped white flowers, 1.5cm (½in) long, are borne in terminal racemes or few-branched panicles, to 15cm (6in) long, in early summer. ↕ 8m (25ft), ↔ 5m (15ft). C. China. \*\*\*  
**S. japonicus** ■ ♀ □ (Japanese snowbell). Graceful, spreading, deciduous tree bearing elliptic-oblong, minutely toothed, glossy, mid- to dark

*Styrax japonicus*



*Styrax obassia* (inset: flower detail)

green leaves, to 10cm (4in) long, turning yellow or red in autumn. Bell-shaped, white, sometimes pink-tinged flowers, 1.5cm (½in) long, are produced singly or in clusters of 3–6 along the undersides of the branches, in early and midsummer. †10m (30ft), ↔ 8m (25ft). China, Korea, Japan. \*\*\*. 'Pink Chimes' bears a profusion of pink flowers.

**S. obassia** ◻ ♀ ◻ (Fragrant snowbell). Broadly columnar, deciduous tree bearing elliptic to rounded, dark green leaves, 7–15cm (3–6in) long, distinctly toothed except towards their bases, and blue-grey beneath, turning yellow in autumn. Bell-shaped white flowers, 2.5cm (1in) long, are produced in spreading, terminal racemes, to 20cm (8in) long, in early and midsummer.

†12m (40ft), ↔ 7m (22ft). N. China, Korea, Japan. \*\*\*

**S. officinalis** ◻ ◻ (Storax). Spreading, deciduous shrub or tree with ovate, entire, dark green leaves, grey-white beneath, to 8cm (3in) long. Bell-shaped white flowers, 2.5cm (1in) long, are produced in pendent clusters of 3–8 near the shoot tips, in early summer. †6m (20ft), ↔ 5m (15ft). S. Europe, S.W. Asia. \*\*

**S. wilsonii**. Rounded, bushy, deciduous shrub with slender shoots and oval to diamond-shaped, dark green leaves, to 2.5cm (1in) long, with a few teeth near the tips. Broadly bell-shaped white flowers, 1.5cm (½in) across, are borne singly or in clusters of up to 4 along the shoots, in early summer. †↔ 2.5m (8ft). W. China. \*\*\*



*Styrax officinalis*

## SUCCISA

### DIPSACACEAE

Genus of one species of perennial found in boggy meadows and moorland from Europe to W. Siberia, and in N.W. Africa. Minutely hairy, it bears rosettes of obovate to elliptic basal leaves and erect or decumbent stems with smaller, narrower leaves. Its pincushion-like flowerheads, late- and long-flowering, are similar to those of *Scabiosa*. Grow in a damp wild garden or meadow.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor to moderately fertile, peaty soil that is moist at least through the growing season, in full sun or partial shade.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Root basal cuttings in spring.

• **PESTS AND DISEASES** Trouble free.

**S. pratensis**, syn. *Scabiosa succisa* (Blue buttons, Devil's bit scabious). Rosette-forming, rhizomatous perennial with thin, branched, softly hairy stems and obovate to elliptic, usually entire, mainly basal leaves, to 30cm (12in) long. From midsummer to late autumn, bears solitary, pincushion-like, violet, rarely white or pink flowerheads, to 2.5cm (1in) across. †15–60cm (6–24in), ↔ to 60cm (24in). Europe, N.W. Africa, Caucasus, Russia (W. Siberia). \*\*\*

▷ **Succulents** see pp.48–49

▷ **Sugar-almond plant** see *Pachyphytum oviferum*

▷ **Sugarberry** see *Celtis occidentalis*, *C. reticulata*

▷ **Sugarbush** see *Protea repens*

▷ **Sulcorebutia** see *Rebutia*

**S. rauschii** see *R. rauschii*

▷ **Sulphur flower** see *Eriogonum gracilipes*, *E. umbellatum*

▷ **Sumach** see *Rhus*

**Dwarf** see *Rhus copallina*

**Fragrant** see *Rhus aromatica*

**Scarlet** see *Rhus glabra*

**Shining** see *Rhus copallina*

**Smooth** see *Rhus glabra*

**Stag's horn** see *Rhus typhina*

**Velvet** see *Rhus typhina*

**Venetian** see *Cotinus coggygia*

▷ **Summer-sweet** see *Clethra*

▷ **Sundew** see *Drosera*

**Cape** see *D. capensis*

▷ **Sundrops** see *Oenothera*, *O. fruticosa*, *O. perennis*

**Ozark** see *O. macrocarpa*

▷ **Sunflower** see *Helianthus*, *H. annuus*

**Dark-eye** see *Helianthus atrorubens*

**Mexican** see *Tithonia*, *T. rotundifolia*

**Thin-leaved** see *Helianthus*

*decapetalus*

**Willow-leaved** see *Helianthus*

*salicifolius*

**Woolly** see *Eriophyllum*

▷ **Sun plant** see *Portulaca grandiflora*

▷ **Supple Jack** see *Berchemia scandens*

## SUTERA

### SCROPHULARIACEAE

Genus of 130 species of annuals, soft-stemmed perennials, and small, woody, evergreen shrubs, mostly from woodland margins in South Africa. They have opposite, toothed, scalloped, or lobed leaves. From summer to autumn, white, pale mauve, or blue, salverform flowers,

with tubular corollas and 5 spreading lobes, are produced singly from the leaf axils or in axillary or terminal cymes, racemes, spikes, or panicles. In frost-prone areas, use as summer bedding or grow in a temperate greenhouse. In warmer areas, grow as border edging.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter. Outdoors, grow in well-drained, fertile soil in full sun.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F), or divide, in spring. Root stem-tip cuttings in spring or summer, with bottom heat.

• **PESTS AND DISEASES** Prone to aphids.

**S. grandiflora** (Purple glory plant). Many-branched perennial, woody at the base, with elliptic, deeply scalloped leaves, 2.5cm (1in) long. From summer to autumn, produces racemes, 30cm (12in) long, of salverform, lavender-blue, white-throated flowers, 2–3cm (¾–1¼in) long. †1m (3ft), ↔ 60cm (24in). South Africa. ☼ (min. 5°C/41°F)

## SUTHERLANDIA

### LEGUMINOSAE/PAPILIONACEAE

Genus of 5 species of evergreen shrubs found on dry slopes and grassland in southern Africa. They are grown for their showy, pea-like, red to purple flowers, borne in slender, axillary racemes from late spring to summer, and for their bladder-like fruits. Leaves are alternate and pinnate. In frost-prone climates, grow in a cool greenhouse; in milder areas, plant at the base of a sunny wall.

• **HARDINESS** Frost tender; may survive short periods close to 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. During growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in well-drained, poor to moderately fertile soil in full sun; dry soils are tolerated. Pruning group 8; may need restrictive pruning under glass, in late winter.

• **PROPAGATION** Sow seed at 15°C (59°F) in spring. Root semi-ripe cuttings in summer, with bottom heat.

• **PESTS AND DISEASES** Earwigs and red spider mites may be a problem.



*Sutherlandia frutescens*

*S. frutescens* ■ (Balloon pea, Duck plant). Evergreen shrub with slender, erect, twiggy, white-downy stems and pinnate, hairy, grey-green leaves, 6–10cm (2½–4in) long, each composed of 13–21 small, oblong to linear-elliptic leaflets on densely white-downy midribs. From late spring to summer, bears racemes, to 8cm (3in) long, of pea-like, bright red flowers, 2.5–5cm (1–2in) long, followed by inflated, broadly ellipsoid to almost spherical, greenish yellow, occasionally red-flushed seed pods, to 5cm (2in) long, ‡ 0.6–2m (2–6ft), ↔ 1–1.5m (3–5ft). Southern Africa. ☼ (min. 5°C/41°F)

## SWAINSONA

syn. SWAINSONIA

LEGUMINOSAE/PAPILIONACEAE

Genus of 50 species of annuals, perennials, and subshrubs occurring on stony slopes and grassland and in open woodland in Australia (one species in New Zealand). They have alternate, pinnate leaves and pea-like, usually purple, sometimes white, pink, yellow, orange, or red flowers, with very broad standard petals, borne in erect, axillary racemes from spring to summer. In frost-prone areas, grow in a cool greenhouse. Elsewhere, use in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. In growth, water moderately and apply a low-phosphate fertilizer monthly. Water sparingly in winter. Outdoors, grow in sharply drained, moderately fertile soil

in full sun. Pruning group 10, after flowering (or late winter, if under glass).

- **PROPAGATION** Sow pre-soaked seed at 15°C (59°F) in spring. Root semi-ripe cuttings in summer, with bottom heat.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*S. galegifolia* ■ Loose, evergreen subshrub with spreading to semi-scandent stems. Pinnate leaves, 5–8cm (2–3in) long, have 11–21 small, oblong, grey-to deep green leaflets. From spring to summer, bears racemes, 8–15cm (3–6in) long, of red, pink, purple, or blue flowers, 1.5cm (½in) long, ‡ 1–2m (3–6ft). Australia (Queensland, New South Wales). ☼ (min. 5–7°C/41–45°F). 'Albiflora' has pure white flowers and light green leaves. 'Violacea' bears rose-red to purple flowers.

▷ *Swainsonia* see *Swainsona*

▷ *Swallow-wort* see *Asclepias curassavica*

▷ *Swan plant* see *Gomphocarpus physocarpus*

▷ *Sweet basil* see *Ocimum basilicum*

▷ *Sweetbells* see *Leucothoe racemosa*

▷ *Sweet briar* see *Rosa eglanteria*

▷ *Sweet Cicely* see *Myrrhis, M. odorata*

▷ *Sweetcorn* see *Zea mays*

▷ *Sweet gale* see *Myrica gale*

▷ *Sweet gum* see *Liquidambar styraciflua*

*Oriental* see *L. orientalis*

▷ *Sweetheart plant* see *Philodendron scandens*

▷ *Sweetheart vine* see *Ceropegia linearis* subsp. *woodii*

▷ *Sweet pea* see *Lathyrus odoratus*

▷ *Sweet pepper bush* see *Clethra, C. alnifolia*

▷ *Sweetshrub, Common* see *Calycanthus floridus*

▷ *Sweetspire* see *Itea virginica*

▷ *Sweet sultan* see *Amberboa, A. moschata*

▷ *Sweet William* see *Dianthus barbatus*

*Wild* see *Phlox divaricata*

▷ *Sweetwood* see *Glycyrrhiza glabra*

▷ *Swida alba* see *Cornus alba*

▷ *Swida alternifolia* see *Cornus alternifolia*

▷ *Swida amomum* see *Cornus amomum*

▷ *Swida controversa* see *Cornus controversa*

▷ *Swiss chard* see *Beta vulgaris* subsp. *cicla*

▷ *Swiss cheese plant* see *Monstera deliciosa*

▷ *Switch grass* see *Panicum virgatum*

▷ *Switch ivy* see *Leucothoe fontanesiana*

## SYAGRUS syn. ARECASTRUM

AREACEAE/PALMAE

Genus of 32 species of often low-growing, single- or cluster-stemmed, sometimes stemless palms, from habitats including shrubby vegetation to woodland, often on rocky ridges, in South America. Leaves are pinnate, arranged in spiralling, terminal tufts; the ovoid, 3-petalled flowers appear in spikes or panicles between them. In frost-prone climates, grow in a temperate or warm greenhouse, or as houseplants. In warmer areas, use tall species as lawn specimens, and smaller ones in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in bright filtered light. In growth, water

freely; apply a balanced liquid fertilizer monthly. Water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in fertile, moist but well-drained soil in full sun or partial shade.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*S. flexuosa* ■✱ (Palmito do campo). Small palm with slender, single or clustered stems bearing pinnate leaves, 1–2m (3–6ft) long, composed of many linear, mid- to deep green leaflets each side. Green flowers appear in panicles, to 45cm (18in) or more long, usually in summer. ‡ 2–5m (6–15ft), ↔ 2–4m (6–12ft). Brazil. ☼ (min. 13°C/55°F)

*S. petraea* ✱ Usually stemless palm with pinnate leaves, to 1m (3ft) long, composed of many linear, rich green leaflets in 2 flat ranks. Green flowers are borne in simple or branched spikes, to 30cm (12in) long, usually in summer. ‡ to 1m (3ft), ↔ 2m (6ft) or more. Bolivia, Brazil. ☼ (min. 13°C/55°F)

*S. romanzoffiana* ✱ syn. *Arecastrum romanzoffianum* (Queen palm). Small to medium-sized palm with a sturdy trunk, sometimes swollen around the middle. Pinnate leaves are 3–5m (10–15ft) long, each with many linear, mid-green leaflets borne singly or in clusters of 2–5. Orange-glanded green flowers are borne in panicles, to 1m (3ft) long, usually in summer. ‡ to 20m (70ft), ↔ 6–10m (20–30ft). Brazil. ☼ (min. 13°C/55°F)

*S. weddelliana* see *Lytocaryum weddellianum*.

▷ *Sycamore* see *Acer pseudoplatanus*

*American* see *Platanus occidentalis*

*California* see *Platanus racemosa*

## X SYCOPARROTIA

HAMAMELIDACEAE

Hybrid genus of one species of semi-evergreen shrub with alternate, simple, glossy, dark green leaves and dense clusters of flowers. Grow in a shrub border, as a specimen plant on a lawn, or in light woodland.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moderately fertile, moist but well-drained, neutral to acid soil in full sun or partial shade. Pruning group 1.

• **PROPAGATION** Take semi-ripe cuttings in summer.

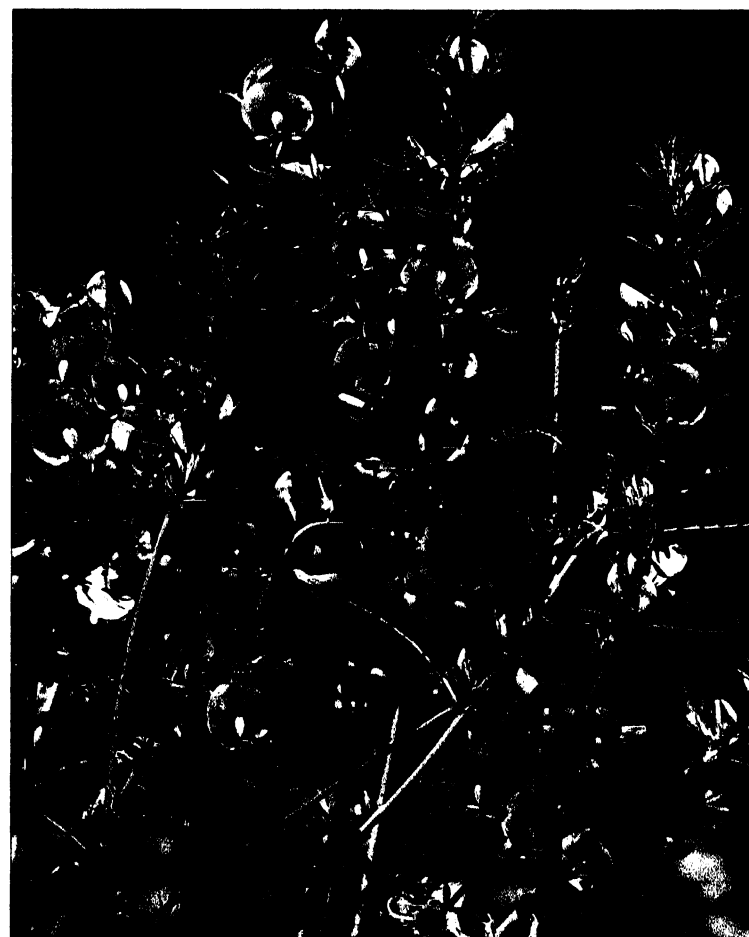
• **PESTS AND DISEASES** Trouble free.

✱ *S. semidecidua* (*Parrotia persica* ✱ *Sycopsis sinensis*). Spreading shrub with oblong-elliptic, glossy, dark green leaves, to 8cm (3in) long; some turn yellow in autumn. In spring, brown-woolly flower buds reveal dense clusters, 2.5cm (1in) across, of bright red anthers surrounded by small brown bracts. ‡ 4m (12ft), ↔ 6m (20ft). Garden origin. ✱✱✱

## SYCOPSIS

HAMAMELIDACEAE

Genus of 7 species of evergreen shrubs and trees from woodland in China, the Himalayas, and S.E. Asia. They bear alternate, simple, ovate to oblong, entire or finely toothed leaves and, in spring, racemes or heads of small, petalless, male or bisexual flowers. Only *S. sinensis* is



*Swainsona galegifolia*



*Syagrus flexuosa*

*Sycopsis sinensis*

generally cultivated, for its flowers; use in a shrub border or woodland garden.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in moist but well-drained, moderately fertile, humus-rich, neutral to acid soil in full sun or partial shade, sheltered from strong, and cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed as soon as ripe, in lime-free (ericaceous) seed compost in containers in a cold frame. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**S. sinensis** ■ Conical shrub with upright branches and oblong, leathery, dark green leaves, to 10cm (4in) long, pale green beneath. In spring, short, dense clusters, 2.5cm (1in) across, of brown-felted buds open to reveal petalless flowers with red anthers and yellow filaments. ↑ 6m (20ft), ↔ 4m (12ft). C. China. \*\*

## SYMPHORICARPOS

Snowberry

CAMPANULACEAE

Genus of about 17 species of deciduous shrubs found in woodland and thickets and on prairies and plains in W. China and North and Central America. They are grown for their spherical or ovoid, fleshy, white to pink, or dark blue or purple fruits, which last well into winter, and their tiny, bell- or funnel-shaped, nectar-rich, white to pink flowers, which attract bees. The flowers are borne singly or in terminal or axillary clusters, spikes, or dense racemes. The leaves are simple

*Symphoricarpos albus* var. *laevigatus**Symphoricarpos* x *doorenbosii* 'White Hedge'

and opposite. Very hardy, and tolerant of poor soil, pollution, and exposed sites. Good for a shrub border, screen, or informal hedge. Use *S. x chenaultii* 'Hancock' as ground cover. Fruits may cause mild stomach upset if ingested; contact with them may irritate skin.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any fertile, reasonably well-drained soil in full sun or partial shade. Pruning group 1 or 2.
- **PROPAGATION** Divide in autumn if suckering. Take greenwood cuttings in summer, or hardwood cuttings in autumn.
- **PESTS AND DISEASES** Trouble free.

**S. albus** var. *laevigatus* ■ syn. *S. rivularis* (Snowberry). Thicket-forming shrub with upright, arching shoots and oval to oval-oblong, rarely lobed, dark green leaves, to 5cm (2in) long. Tiny, bell-shaped pink flowers are produced in pairs on spike-like racemes in summer, followed by spherical, pure white fruit, 1cm (½in) across. ↑ 2m (6ft). W. North America. \*\*\*

**S. x chenaultii** (*S. microphyllus* x *S. orbiculatus*). Upright, many-branched shrub with ovate, dark green leaves, to 2.5cm (1in) long, glaucous and densely hairy beneath. In late summer, bears short spikes of small, open bell-shaped, greenish white flowers, followed by spherical, red-stippled white fruit, 6mm (¼in) across. ↑ 2m (6ft), ↔ 1.2m (4ft). Garden origin. \*\*\*. 'Hancock' is low and spreading, self-layering to form a broad mound; bears white flowers and sparse, dark pink fruit; ↑ 3m (10ft).

**S. x doorenbosii** (*S. albus* var. *laevigatus* x *S. x chenaultii*). Thicket-forming shrub with elliptic to broadly ovate, dark green leaves, 2–4cm (¾–1½in) long, lighter beneath. In mid- and late summer, bears short racemes of small, bell-shaped, greenish white flowers, followed by dense clusters of spherical white fruit, to 1.5cm (½in) across, with a pink blush. ↑ 2m (6ft), ↔ indefinite. Garden origin. \*\*\*. 'Mother of Pearl' has arching shoots bearing dense crops of fruit.

'White Hedge' ■ is compact and upright, with white fruit; ↑ 1.5m (5ft). **S. microphyllus**. Upright shrub with ovate, blue-green leaves, to 6cm (2½in) long, with pointed tips, softly hairy beneath. In late summer, bears small, cup-shaped white flowers, which are solitary, in axillary pairs, or in short, terminal spikes, followed by spherical,

*Symphoricarpos orbiculatus* 'Foliis Variegatis'

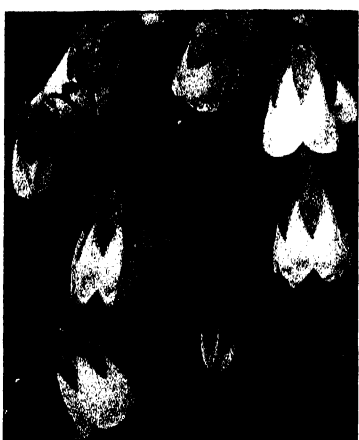
semi-translucent, pink or white fruit, 8mm (⅜in) across. ↑ 1–2m (3–6ft), ↔ 0.6–1.2m (2–4ft). Mexico. \*\*\* **S. orbiculatus** (Coralberry, Indian currant). Dense, bushy shrub with broadly elliptic to ovate, dark green leaves, to 3cm (1¼in) long. In late summer and early autumn, bears dense clusters of tiny, bell-shaped, white, sometimes pink-tinged flowers, followed by ovoid-spherical, dark purple-red fruit, 6mm (¼in) across. Fruits most freely after a hot summer. ↑ 2m (6ft). E. USA, Mexico. \*\*\*. 'Foliis Variegatis' ■ syn. 'Variegatus', has irregularly yellow-margined leaves. **S. rivularis** see *S. albus* var. *laevigatus*.

## SYMPHYANDRA

CAMPANULACEAE

Genus of about 12 species of often monocarpic, sometimes rhizomatous perennials from mountains in the E. Mediterranean and the Caucasus to C. Asia and Korea. They are grown for their tubular-bell-shaped or bell-shaped flowers, borne on branched stems in racemes, corymbs, or panicles over long periods in summer. Leaves are long-stalked, often heart-shaped, toothed, hairy, and mainly basal. Grow in a herbaceous or mixed border, or rock garden. They are very free-flowering, but usually short-lived. May self-seed.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, fertile, well-drained soil in full sun or light dappled shade. Often die after flowering; collect seed and propagate regularly.

*Symphyandra hofmannii*

- **PROPAGATION** Sow seed at 13°C (55°F) in winter or early spring, or in containers in a cold frame when ripe.
- **PESTS AND DISEASES** Susceptible to slugs and snails, especially new growth.

**S. armena**. Upright or spreading, densely hairy, rhizomatous perennial with long-stalked, pointed, heart-shaped, velvety-hairy, irregularly lobed and toothed leaves, to 25cm (10in) long. During summer, produces pendent, bell-shaped, velvet-textured, white or pale blue flowers, to 2cm (¾in) long, usually in terminal corymbs, sometimes solitary. ↑ to 50cm (20in), ↔ to 30cm (12in). Caucasus, Turkey, Iran. \*\*\* **S. hofmannii** ■ Rosette-forming, usually short-lived, often monocarpic perennial with ovate to lance-shaped, toothed basal leaves, 15cm (6in) long, with winged stalks. Erect stems produce a few alternate, shorter-stalked leaves, and, from early to late summer, they bear terminal racemes of long-lasting, pendent, tubular-bell-shaped, hairy, white to cream flowers, to 3cm (1¼in) long. ↑ 30–60cm (12–24in), ↔ 30cm (12in). Bosnia & Herzegovina. \*\*\* **S. pendula**, syn. *Campanula ossetica*. Arching, spreading, often woody-based perennial with broadly ovate, hairy, pale green leaves, to 15cm (6in) long, heart-shaped at the bases, and with round-toothed margins. In summer, bears short panicles of bell-shaped, velvet-textured, creamy white flowers, to 5cm (2in) long. ↑ to 50cm (20in), ↔ to 30cm (12in). Caucasus. \*\*\*

**S. wanneri** ■ syn. *Campanula wanneri*. Upright, downy, monocarpic perennial with rosettes of lance-shaped, roughly hairy, irregularly toothed leaves, to 10cm (4in) long, stalkless or with winged stalks. Bears pendent, narrowly bell-shaped, deep violet-blue flowers, to 3.5cm (1½in) long, in pyramidal, terminal or axillary panicles, over long periods in summer. ↑ to 30cm (12in). Mountains of Romania, Bulgaria, Serbia, Montenegro, Macedonia. \*\*\*

*Symphyandra wanneri*



## SYMPHYTUM

Comfrey

BORAGINACEAE

Genus of 25–35 species of coarse, sometimes invasive, bristly or hairy, rhizomatous perennials from damp, often shady habitats, including woodland, scrub, wasteland, streamsides, and roadsides, in Europe, N. Africa, and W. Asia. Some are used medicinally or for liquid plant food or green manure. They have fleshy roots and long-stalked, oblong- to ovate-lance-shaped or elliptic, wrinkled, prominently veined, mostly basal leaves. Erect, usually branched stems often become decumbent; they bear smaller, more or less stalkless leaves and terminal cymes of pendent, tubular flowers in blue, purple, pink, yellowish white, or white. Excellent ground-cover plants for a shady border or woodland garden, but they can be rampant. Roots and leaves may cause severe discomfort if ingested; contact with foliage may irritate skin.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist, moderately fertile soil in full sun or partial shade. Site carefully as all but variegated cultivars may be very invasive; even small pieces of detached root will form new plants. Remove flower stems of variegated cultivars as they form, to keep the foliage attractive. For plant food, grow *S. officinale* and *S. x uplandicum* in a permanent, sunny site in a vegetable garden; mulch with well-rotted manure in spring; compost the leaves, or steep in water until decayed, in summer; then use the liquid obtained diluted 1:20.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide in spring. Take root cuttings in early winter.

• **PESTS AND DISEASES** Trouble free.

*S. caucasicum* ■ Clump-forming, hairy, rhizomatous perennial with rosettes of oblong-lance-shaped to ovate-lance-shaped, mid-green leaves, to 25cm (10in) long. Bears cymes of bright blue flowers, to 1.5cm (½in) long, on erect then decumbent stems from early to late summer. ± 60cm (24in), later spreading widely. Caucasus, Iran. \*\*\*  
*S. 'Goldsmith'* ■ syn. *S. ibericum* 'Jubilee', *S. ibericum* 'Variegatum', *S. 'Jubilee'*. Spreading, hairy, rhizomatous perennial with ovate-lance-shaped, dark green leaves, to 25cm (10in) long, with gold and cream markings. Bears cymes



Symphytum caucasicum



Symphytum 'Goldsmith'

of pale blue, cream, or pink flowers, to 1.5cm (½in) long, in mid- and late spring. ± 30cm (12in). \*\*\*

*S. grandiflorum* of gardens see *S. ibericum*.

*S. 'Hidcote Blue'*. Erect then decumbent, hairy, rhizomatous perennial with ovate to elliptic, mid-green leaves, to 25cm (10in) long. In mid- and late spring, cymes of red buds open to pale blue flowers, to 1.5cm (½in) long, fading with age. ± 45cm (18in). \*\*\*

*S. 'Hidcote Pink'*, syn. *S. 'Roseum'*.

Erect then decumbent, hairy, rhizomatous perennial with ovate to elliptic, mid-green leaves, to 25cm (10in) long. Cymes of pale pink and white flowers, to 1.5cm (½in) long, fading with age, are produced in mid- and late spring. ± 45cm (18in). \*\*\*



Symphytum tuberosum

*S. ibericum*, syn. *S. grandiflorum* of gardens. Erect then decumbent, hairy, rhizomatous perennial. Ovate to elliptic or ovate-lance-shaped, mid-green leaves, are to 25cm (10in) long. In late spring and early summer, cymes of red-tipped buds open to pale yellow flowers, to 1.5cm (½in) long. ± 40cm (16in), ± 60cm (24in), later more. Turkey (N.E. Anatolia), Georgia. \*\*\*

'Jubilee' see *S. 'Goldsmith'*.

'Variegatum' see *S. 'Goldsmith'*.

*S. 'Jubilee'* see *S. 'Goldsmith'*.

*S. officinale* (Common comfrey).

Vigorous, clump-forming perennial with winged, upright stems and coarse, hairy, ovate to lance-shaped, dark green leaves, 25cm (10in) long, with winged stalks. From late spring to summer, bears forked cymes of purple-violet, pink, or creamy yellow flowers, to 2cm (¾in) long. ± 1.5m (5ft), ± 2m (6ft) or more. Europe, W. Asia. \*\*\*. Non-invasive, sterile clones, such as 'Bocking', are available.

*S. peregrinum* of gardens see *S. x uplandicum*.

*S. 'Roseum'* see *S. 'Hidcote Pink'*.

*S. tuberosum* ■ (Tuberous comfrey).

Coarse, creeping perennial producing tuberous rhizomes. Upright, hairy stems bear ovate to lance-shaped, dark green leaves, to 25cm (10in) long, and in early summer produce spiralled cymes of pale yellow flowers, 1.5–2cm (½–¾in) long. ± 40–60cm (16–24in), ± 1m (3ft). Europe (Pyrenees to Balkans), N.W. Turkey. \*\*\*

*S. x uplandicum* (*S. asperum* x *S. officinale*), syn. *S. peregrinum* of gardens. Erect, bristly perennial bearing oblong



Symphytum x uplandicum 'Variegatum'

to elliptic-lance-shaped, mid-green, basal leaves, to 35cm (14in) long, decurrent at the bases. From late spring to late summer, many-branched stems bear cymes of pinkish blue buds, opening to blue-purple flowers, to 2cm (¾in) long. ± 2m (6ft), ± 1.2m (4ft) or more. Garden origin (naturalized in N. Europe). \*\*\*. 'Variegatum' ■ ♀ has greyish green leaves with broad and irregular cream margins, and pale lilac-pink flowers. Liable to revert, especially if roots are damaged or in poor soil; ± 90cm (36in), ± 60cm (24in).

## SYMPLOCOS

SYMPLOCACEAE

Genus of about 250 species of evergreen or deciduous trees and shrubs widely distributed, mainly in woodland, from E. Asia to Australasia and in North and South America. Leaves are alternate and simple. Star-shaped, 5-petalled, usually yellow or white flowers are produced singly or in racemes, panicles, or spikes, followed by blue, black, purple, or white ovoid fruits. Only *S. paniculata* is generally cultivated, for its flowers and fruit; grow in a shrub border. It fruits best when several seedlings are planted together, and in hot summers.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in fertile, moist but well-drained, neutral to acid soil in full sun, avoiding very exposed positions. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take green-wood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*Symplocos paniculata*

**S. paniculata** ☐ ♀ (Sapphire berry). Deciduous, upright, bushy shrub or spreading tree with elliptic to oblong-ovate, finely toothed, sparsely hairy, dark green leaves, to 8cm (3in) long. In late spring and early summer, small, star-shaped, fragrant white flowers, with many prominent stamens, are borne in terminal panicles to 8cm (3in) long, before ovoid, metallic blue fruit, 8mm (1/4in) across. 1-5m (15ft), rarely to 12m (40ft). Himalayas, E. Asia. \*\*\*

## SYNADENIUM

EUPHORBIACEAE

Genus of about 20 species of evergreen shrubs and small trees from dry slopes and banks in tropical Africa to the Mascarene Islands. Their smooth, fleshy stems contain a milky sap. Leaves are alternate, simple, obovate or lance-shaped, and fleshy; insignificant, petal-less flowers are borne from the upper leaf axils. *S. compactum* var. *rubrum* is most often grown, for its foliage. Where temperatures fall below 10°C (50°F), grow in a temperate or warm greenhouse, or as a houseplant. In warmer, dry areas, grow in a shrub border. All parts of *Synadenium* species are highly toxic if ingested; sap may irritate skin.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, well-drained soil in full sun. Pruning group 9; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 15–20°C (59–68°F) in spring. Root semi-ripe cuttings in summer, with bottom heat.
- **PESTS AND DISEASES** Root mealybugs may be a problem under glass.

**S. compactum** var. *rubrum*, syn. *S. grantii* 'Rubrum', *S. grantii* var. *rubrum*. Erect, succulent shrub, eventually moderately bushy, with obovate, finely toothed red leaves, 8–18cm (3–7in) long, red-purple beneath. Throughout the year, bears cup-shaped, yellow-green floral bracts with red glands, in cymes 10–15cm (4–6in) long. 1 to 3m (10ft), 1 to 2m (6ft). ☐ (min. 10°C/50°F). **S. grantii** 'Rubrum' see *S. compactum* var. *rubrum*. **S. grantii** var. *rubrum* see *S. compactum* var. *rubrum*.

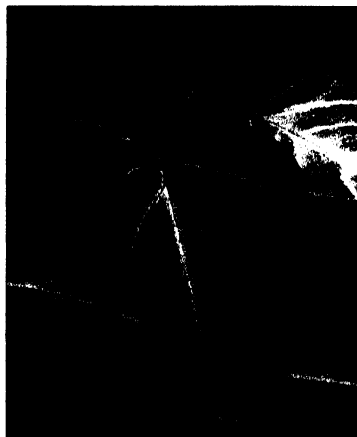
## SYNGONIUM

ARACEAE

Genus of 33 species of evergreen, root climbers from woodland in tropical Central and South America. The alternate leaves are initially simple and ovate to triangular, becoming larger, long-stalked, arrow-shaped, then 3- to 5-lobed or pedate as the plants mature. Tiny, petalless flowers are borne on spadices surrounded by pale green and cream to purplish green spathes, which often become bright red at fruiting time. They rarely flower in cultivation, and are grown for foliage. Where temperatures fall below 15°C (59°F), grow in a warm greenhouse or as houseplants. In warmer climates, use as ground cover, or to clothe a wall. All parts may cause mild stomach upset if ingested; contact with the sap may irritate skin.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loamless potting compost, in bright indirect light for green-leaved species, or in bright filtered light for variegated ones. Provide moderate humidity. When in growth, water freely and apply a balanced liquid fertilizer every 3 or 4 weeks. Water moderately in winter. Support with a moss pole. Outdoors, grow in fertile, moist soil in light dappled or partial shade. Pruning group 11, in late winter or early spring.
- **PROPAGATION** Root stem-tip cuttings or leaf-bud cuttings in summer, with bottom heat.
- **PESTS AND DISEASES** Mealybugs and red spider mites may be a problem under glass.

**S. auritum**, syn. *Philodendron auritum* of gardens, *P. trifoliatum* (Five fingers). Sparsely branched trailer or climber. Juvenile leaves are ovate to triangular, often arrow-shaped, glossy, mid- to deep green, and to 15cm (6in) long; mature leaves are pedate, each with usually 3 or 5 elliptic, deep green leaflets, the central

*Syngonium podophyllum**Syngonium podophyllum* 'Trileaf Wonder'

one broadly elliptic and 10–30cm (4–12in) long, the others much smaller. In summer, green and cream spathes, to 9cm (3 1/2in) long, are borne in groups from the leaf axils. 1 to 3m (10ft) or more. Cuba, Jamaica, Haiti, Dominican Republic. ☐ (min. 15°C/59°F). 'Fantasy' has white-mottled leaves. **S. erythrophyllum**. Sparsely branched climber with ovate juvenile leaves, heart-shaped at the bases, to 10cm (4in) long; adult leaves are each composed of 3 elliptic leaflets, the central one largest, 10–22cm (4–9in) long, pale at first, then very dark green above and purple-flushed beneath. Green and white spathes, 8–11cm (3–4 1/2in) long, with longer spadices, are produced from the leaf axils in summer. 1–3m (6–10ft) or more. Panama. ☐ (min. 15°C/59°F). **S. podophyllum** ☐ ♀ syn. *Nephtytis triphylla* of gardens (Goosefoot). Sparsely branched climber, compact or trailing when young. Juvenile leaves, 7–14cm (3–5 1/2in) long, are ovate with heart-shaped bases; when mature they are arrow-shaped, later pedate, each with 5–11 elliptic leaflets, the largest leaflet 16–40cm (6–16in) long; all are dark green above, sometimes with grey-green markings, paler beneath. In summer, green and greenish white to cream or, more rarely, yellow spathes, 11cm (4 1/2in) long, are borne in groups of 4–11 from the leaf axils. 1–2m (3–6ft) or more. Mexico to Brazil. ☐ (min. 15°C/59°F). 'Trileaf Wonder' ☐ produces leaves with silvery grey veins. 'Variegatum' has arrow-shaped leaves splashed creamy white.

## SYNNOTIA

IRIDACEAE

Genus, sometimes included in *Sparaxis*, of 5 species of small, spring-flowering, cormous perennials from low-altitude grassland and scrub in South Africa. They have basal fans of 2-ranked, linear or oblong to lance-shaped leaves. Branched or unbranched stems bear short spikes of funnel-shaped, cream, yellow, lilac, or mauve flowers, hooded like gladioli. In frost-prone areas, grow in a cool greenhouse or bulb frame. In warmer areas, grow in a sunny border.

- **HARDINESS** Half hardy.
- **CULTIVATION** Plant corms in autumn, 10cm (4in) deep. Under glass, grow in loam-based potting compost (J1 No.2), with added sand and leaf mould, in full

light. Keep cool and only slightly moist until roots are well developed. Water sparingly when in growth, and dry off as the leaves wither; keep dry and frost-free when dormant in summer. Outdoors, grow in a warm, sheltered site in moderately fertile, well-drained soil in full sun. Provide a dry winter mulch, and keep dry in summer.

- **PROPAGATION** Sow seed at 16°C (61°F) as soon as ripe, or in spring. Remove offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

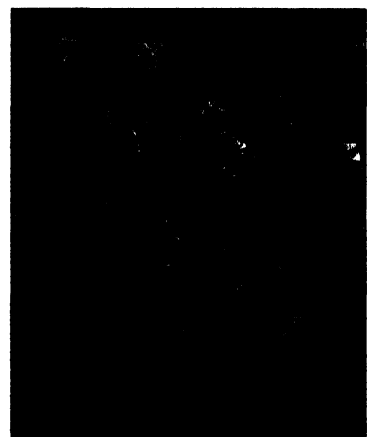
**S. variegata**. Cormous perennial with a fan of oblong, basal leaves, each to 15cm (6in) long. In spring, an unbranched or 1- to 3-branched stem produces up to 7 hooded flowers, 3cm (1 1/4in) across, evenly coloured yellow and violet, or lavender-blue to deep purple with yellow stripes on the lower lips and in the throats. 15–40cm (6–16in). 1 to 8cm (3in). South Africa (Western Cape). \* **var. metelerkampiae** has a branched stem, each branch bearing a sparse spike of violet flowers, marked orange on each of the lower 3 petals.

## SYNTHYRIS


SCROPHULARIACEAE

Genus of about 14 species of tufted, low-growing, usually rhizomatous perennials, mainly from woodland in W. and C. North America. They have radical, heart-shaped, kidney-shaped, or pinnatifid leaves. Unbranched, leafy, upright stems produce narrow, upright, spike-like racemes of small, tubular to bell-shaped, violet to blue, or rarely pink or white flowers, mainly in spring. Grow in a woodland or rock garden, or at the front of a shady, herbaceous border. Grow *S. pinnatifida* var. *lanuginosa* in a scree bed or alpine house; it is hard to grow and flower buds often abort.

- **HARDINESS** Fully hardy, but intolerant of winter wet.
- **CULTIVATION** Grow in fertile, moist but well-drained, humus-rich soil in partial or deep shade. For *S. pinnatifida* var. *lanuginosa*: in a scree bed, grow in gritty, poor to moderately fertile, humus-rich soil in full sun with some midday shade; in an alpine house, use a mix of equal parts loam, leaf mould, and grit, water moderately when in growth, and keep just moist in winter.
- **PROPAGATION** Sow seed in containers in an open frame in autumn. Divide in early spring as growth begins.


*Synthyris missurica*

• **PESTS AND DISEASES** Prone to attack by slugs and snails. Aphids and red spider mites may damage *S. pinnatifida* var. *lanuginosa* under glass.

***S. missurica***  Clump-forming herbaceous perennial with rounded-heart-shaped to kidney-shaped, shallowly lobed, bluntly toothed, leathery, dark green leaves, to 5cm (2in) across. Over long periods in spring, bears tubular-bell-shaped, deep lavender-blue flowers, to 2cm (3/4in) long, with prominent styles and anthers, in abundant dense, upright, spike-like racemes, 5–10cm (2–4in) long.  $\uparrow$  to 25cm (10in),  $\leftrightarrow$  to 30cm (12in). Arctic Canada to N. and C. USA. \*\*\*

***S. pinnatifida*** Clump-forming herbaceous perennial bearing ovate, pinnate, mid-green leaves, to 10cm (4in) long, with linear, toothed segments. In late spring, produces racemes 10–15cm (4–6in) long, of tubular, lavender-blue flowers, to 5cm (2in) long, with silver calyces.  $\uparrow$  to 15cm (6in). USA (Washington). \*\*\*. var. *lanuginosa* forms a low mound, with silvery grey leaves, and bears deep blue flowers, to 2cm (3/4in) long, in racemes 3–6cm (1 1/4–2 1/2in) long;  $\uparrow$  to 10cm (4in).

***S. reniformis*** Clump-forming, ever-green perennial with shallowly rounded-lobed, rounded-heart-shaped, dark green leaves, to 5cm (2in) long, paler beneath. In spring, bears bell-shaped, blue, pink, or white flowers, to 9mm (3/8in) long, in short racemes, to 3cm (1 1/4in) long.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 25cm (10in). USA (Washington, Oregon). \*\*\*

***S. stellata***  Clump-forming herbaceous perennial with rounded-heart-shaped, hairy, dark green leaves, to 5cm (2in) across, deeply and doubly toothed. From spring to early summer, bears dense, spike-like racemes, 8–15cm (3–6in) long, of bell-shaped, violet-blue flowers, to 6mm (1/4in) long, with conspicuous, sharply toothed bracts.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 25cm (10in). USA (Washington, Oregon). \*\*\*



*Synthyris stellata*

## SYRINGA

Lilac

OLEACEAE

Genus of about 20 species of deciduous shrubs and trees found in woodland and scrub from S.E. Europe to E. Asia. They are grown for their often pyramidal or conical panicles of small, tubular, usually very fragrant flowers, which may be white, pink, almost red, magenta, lilac (light purplish pink), or blue. They have opposite, entire, lance-shaped, rounded, usually ovate, rarely pinnate leaves. Most garden cultivars are grouped under *S. vulgaris*. Grow lilacs in a shrub border or as specimen trees.


• **HARDINESS** Fully hardy, but late frosts may damage new growth.

• **CULTIVATION** Grow in fertile, humus-rich, well-drained, neutral to alkaline soil in full sun. Mulch regularly. Dead-head newly planted lilacs before fruits form. Pruning group 1 or 2, but prune only lightly; group 1 for *S. reticulata*, *S. vulgaris*, and cultivars; *S. vulgaris* tolerates hard renovation pruning.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Take greenwood cuttings, or layer, in early summer. Graft in winter or bud in midsummer.





• **PESTS AND DISEASES** May be affected by lilac blight, honey fungus, leaf miners, thrips, and willow scale.

***S. afghanica*** see *S. protolaciniata*.

***S. x chinensis*** (*S. x persica* x *S. vulgaris*) (Rouen lilac). Bushy shrub with arching branches and oval leaves, to 8cm (3in) long. In late spring, produces fragrant, lilac-purple flowers in large, nodding panicles, to 15cm (6in) long.  $\uparrow$  to 4m (12ft). Garden origin. \*\*\*. 'Alba'  bears white flowers. 'Saugeana' has lilac-red flowers.



***S. emodi*** (Himalayan lilac). Vigorous, upright shrub with stout shoots and elliptic-oblong leaves, to 15cm (6in) long. Unpleasantly scented, pale lilac flowers are produced in large, upright panicles, to 15cm (6in) long, in early summer.  $\uparrow$  5m (15ft),  $\leftrightarrow$  4m (12ft). Afghanistan, Himalayas. \*\*\*



***S. 'Fountain'*** Upright shrub with ovate, tapered leaves, 5–15cm (2–6in) long, mid-green above, blue-green and softly hairy beneath. In early summer, bears single, pale pink flowers in narrow, conical, nodding panicles, to 15cm (6in) long.  $\uparrow$  3–4m (10–12ft),  $\leftrightarrow$  2–3m (6–10ft). \*\*\*

***S. x hyacinthiflora*** (*S. oblata* x *S. vulgaris*). Spreading shrub, upright when young, with broadly heart-shaped leaves, bronze when young, often purple in autumn. In mid- and late spring, bears fragrant, single or double, variably coloured flowers, in large panicles, to 12cm (5in) long.  $\uparrow$  to 5m (15ft). Garden origin. \*\*\*. 'Alice Eastwood' bears double, claret-purple flowers in slender panicles. 'Blue Hyacinth'  has single, lilac to blue flowers. 'Clarke's Giant'  has large, single flowers, purple in bud, opening lilac, in panicles to 30cm (12in) long. 'Cora Brandt'  has double white flowers in large, open panicles, 20–23cm (8–9in) long. 'Esther Staley'  is vigorous, with profuse single, lilac-pink flowers opening from mauve-red buds. ***S. 'Isabella'*** see *S. x prestoniae* 'Isabella'.



*Syringa x chinensis* 'Alba' (inset: flower detail)

***S. x josiflexa*** (*S. josikaea* x *S. komarovii* subsp. *reflexa*). Upright shrub with ovate to oblong-lance-shaped, mid-green leaves, 8–15cm (3–6in) long, white-hairy beneath. In early summer, bears fragrant, lavender-pink flowers in conical to cylindrical panicles, 10–20cm (4–8in) long.  $\uparrow$  3m (10ft),  $\leftrightarrow$  2m (6ft). Garden origin. \*\*\*. 'Bellicent'  has tapered, dark green leaves, and bears clear pink flowers in late spring and early summer;  $\uparrow$  4m (12ft),  $\leftrightarrow$  5m (15ft). ***S. x laciniata***  (*S. protolaciniata* x *S. vulgaris*). Spreading shrub with lance-shaped to pinnate leaves, to 8cm (3in) long, composed of up to 9 narrowly

elliptic, dark green leaflets. Fragrant lilac flowers, in panicles to 10cm (4in) long, are produced in late spring.  $\uparrow$  2m (6ft),  $\leftrightarrow$  3m (10ft). Garden origin. \*\*\*. ***S. meyeri***. Compact, rounded shrub with oval leaves, 1–3cm (1/2–1 1/4in) long. Bears fragrant, bluish pink or lavender-pink flowers in small panicles, 3–8cm (1 1/4–3in) long, in late spring and early summer.  $\uparrow$  1.5–2m (5–6ft),  $\leftrightarrow$  1.2m (4ft). \*\*\*. 'Palibin'   syn. *S. palibiniana* of gardens, *S. patula* of gardens, *S. velutina* of gardens, is slow-growing, with lavender-pink flowers in dense panicles, to 10cm (4in) long;  $\leftrightarrow$  1.5m (5ft).



*Syringa x hyacinthiflora* 'Blue Hyacinth'



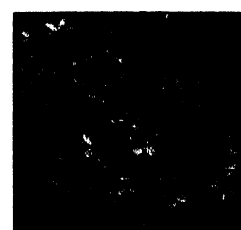
*Syringa x hyacinthiflora* 'Clarke's Giant'



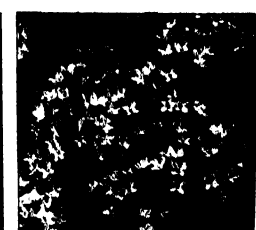
*Syringa x hyacinthiflora* 'Cora Brandt'



*Syringa x hyacinthiflora* 'Esther Staley'



*Syringa x laciniata*



*Syringa meyeri* 'Palibin'

*Syringa x persica*

*S. microphylla* see *S. pubescens* subsp. *microphylla*.

*S. oblata* var. *dilatata* ♀ Vigorous, upright, later spreading shrub or small tree with broadly heart-shaped, tapered leaves, to 8cm (3in) long, bronze when young, then glossy, mid-green, turning purple in autumn. Fragrant, pale lilac flowers, in broad panicles, to 12cm (5in) long, are produced in mid-spring. ♂ 5m (15ft). Korea. \*\*\*

*S. palibiniana* of gardens see *S. meyeri* 'Palibin'.

*S. patula* see *S. pubescens* subsp. *patula*.

*S. patula* of gardens see *S. meyeri* 'Palibin'.

*S. pekinensis* see *S. reticulata* subsp. *pekinensis*.

*S. x persica* ♂♀ (*S. afghanica* x *S. laciniata*) (Persian lilac). Compact, bushy shrub with lance-shaped, rarely 3-lobed, dark green leaves, to 6cm (2½in) long. In late spring, profusely bears fragrant purple flowers in small, dense panicles, to 5cm (2in) long. ♂ 2m (6ft). Garden origin. \*\*\*.

'Alba' ♀ has white flowers. *S. pinnatifolia*. Open, upright shrub with peeling bark on older branches. Each pinnate leaf, to 6cm (2½in) long, has up to 11 ovate to lance-shaped, dark green leaflets. In late spring, bears fragrant, lilac-flushed white flowers, in panicles to 7cm (3in) long. ♂ to 4m (12ft), ♂ 2.5m (8ft). W. China. \*\*\*

*S. x prestoniae* ♀ (*S. reflexa* x *S. villosa*). Vigorous, upright shrub or small tree

with oval, dark green leaves, to 15cm (6in) long. In early summer, bears fragrant, white, pink, lavender-pink, lavender-blue, violet, magenta, or deep purple flowers in large, erect to nodding panicles, 10–16cm (4–6in) long. ♂ 4m (12ft). Garden origin. \*\*\*. 'Audrey' has dark pink flowers. 'Coral' bears pale pink flowers, fading to nearly white.

'Elinor' ♀ bears pale lavender-blue flowers from purple buds. 'Isabella', syn. *S. 'Isabella'*, flowers purple-pink.

*S. protolaciniata*, syn. *S. afghanica*. Graceful, open, spreading shrub with slender, purplish brown shoots and pinnate leaves, to 7cm (3in) long, each with 3–9 narrowly elliptic to lance-shaped, dark green leaflets. In late spring, bears fragrant lilac flowers, in panicles to 7cm (3in) long. ♂ 3m (10ft), ♂ 1.5m (5ft). W. China. \*\*\*

*S. pubescens*. Erect, spreading, often bushy shrub with slender branches, red-green when young, and lance-shaped to ovate or elliptic, glossy, dark green leaves, to 9cm (3½in) long, densely white-hairy beneath. In spring and early summer, bears strongly scented, white-throated, purplish lilac flowers, in panicles to 12cm (5in) long. ♂ to 6m (20ft), ♂ 6m (20ft). N. central China. \*\*\*.

subsp. *microphylla*, syn. *S. microphylla*, is conical and spreading or upright. Lilac-pink flowers are borne in small panicles, to 7cm (3in) long, in early summer, often again in autumn; W. China. subsp. *microphylla*

'Superba' ♂♀ has rose-pink flowers. After initial flowering, it blooms irregularly until autumn. subsp. *patula*, syn. *S. patula*, has dull green leaves, 5–11cm (2–4½in) long, with purple young shoots. Purplish lilac flowers, in nodding panicles, open from lilac buds; ♂ 4m (12ft), ♂ 2m (6ft); N. China, Korea. subsp. *patula* 'Miss Kim' ♀ is similar to subsp. *patula*, but mound-forming; leaves may turn purple in autumn; ♂ 2m (6ft), ♂ 1.5m (5ft).

*S. reflexa* ♀ Vigorous, upright shrub with stout shoots and oval, dark green leaves, to 15cm (6in) long. Bears rich purple-pink flowers in slender, nodding panicles, to 16cm (6in) long, in late spring and early summer. ♂ 4m (12ft). C. China. \*\*\*

*S. reticulata* ♀ Upright shrub or broadly conical tree with an oval crown

*Syringa vulgaris* 'Monge' (inset: flower detail)

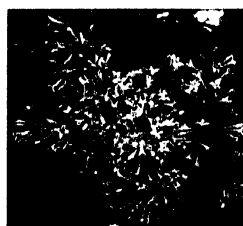
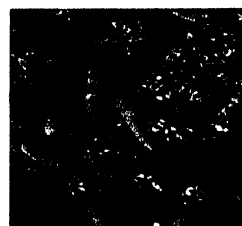
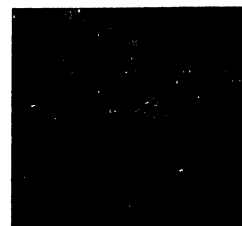
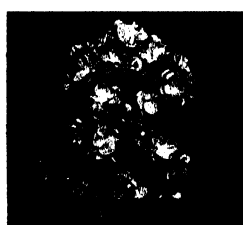
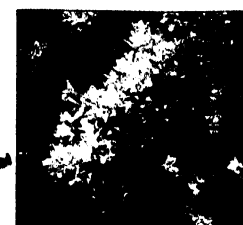
and reddish brown, shining bark when young. Leaves are lance-shaped to ovate, sharp-pointed, and to 15cm (6in) long. Bears fragrant, creamy white flowers, in large, showy panicles, to 20cm (8in) long, in early and midsummer. ♂ 10m (30ft), ♂ 6m (20ft). Japan. \*\*\*.

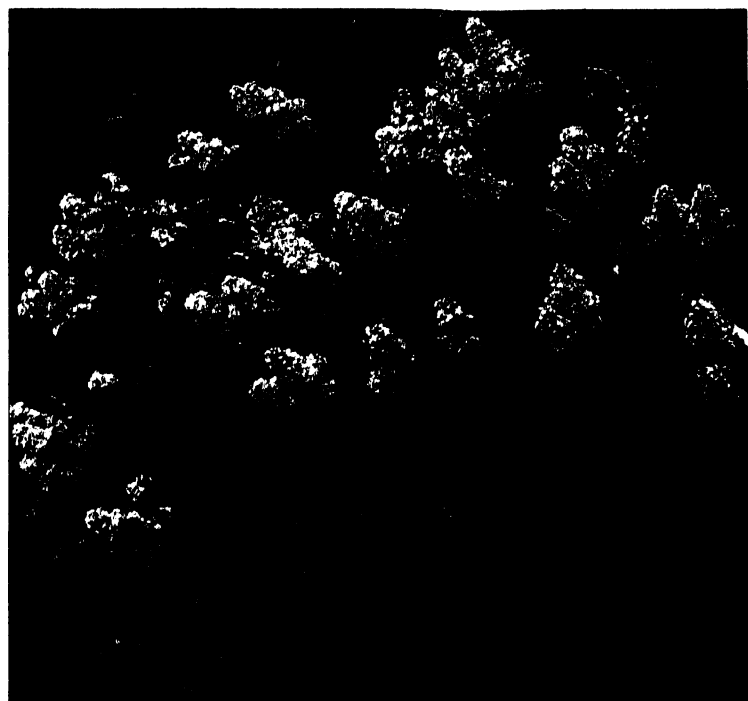
'Ivory Silk' is compact, and flowers profusely, even when young; ♂ 3–4m (10–12ft), ♂ 2m (6ft). subsp. *pekinensis* ♀ syn. *S. pekinensis*, is spreading, with arching branches and dark green leaves, to 8cm (3in) long; ♂ 5m (15ft); Mongolia, N. China.

*S. x sweginzowii* (*S. reflexa* x *S. sweginzowii*). Upright shrub with

purple-grey young stems and oblong-lance-shaped to oval leaves, 5–12cm (2–5in) long. Fragrant pink flowers, opening from deep red buds, are produced in nearly cylindrical, nodding panicles, 10–20cm (4–8in) long, in late spring and early summer. ♂ 4m (12ft), ♂ 2.5m (8ft). Garden origin. \*\*\*

*S. sweginzowii* ♂ Upright shrub with red-purple shoots and elliptic-oblong to lance-shaped leaves, to 10cm (4in) long. Fragrant, pale pink to lilac-pink or white flowers, in upright panicles, to 20cm (8in) long, are produced in late spring and early summer. ♂ 4m (12ft), ♂ 2.5m (8ft). S.W. China. \*\*\*

*Syringa pubescens* subsp. *microphylla* 'Superba'*Syringa sweginzowii**Syringa vulgaris* 'Charles Joly'*Syringa vulgaris* 'Charles X'*Syringa vulgaris* 'Congo'*Syringa vulgaris* 'Decaisne'*Syringa vulgaris* 'Jan van Tol'*Syringa vulgaris* 'Katherine Havemeyer'*Syringa vulgaris* 'Maréchal Foch'*Syringa vulgaris* 'Michel Buchner'*Syringa vulgaris* 'Mme Antoine Buchner'*Syringa vulgaris* 'Mme Florent Stepmann'



*Syringa vulgaris* 'Président Grévy'

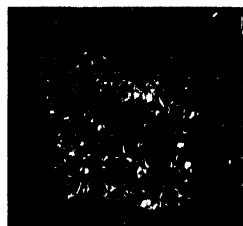
*S. velutina* of gardens see *S. meyeri* 'Palibin'.

*S. villosa*. Compact, rounded shrub with upright shoots and ovate to oblong leaves, to 20cm (8in) long. Fragrant pink flowers, in large, conical panicles, to 20cm (8in) long, are produced in late spring and early summer.  $\pm$  4m (12ft). N. China. \*\*\*

*S. vulgaris* ♀ (Common lilac). Spreading shrub or small tree, upright when young, with heart-shaped to ovate leaves, to 10cm (4in) long. Very fragrant, single or double lilac flowers are produced in dense, conical panicles, to 10–20cm (4–8in) long, in late spring and early summer.  $\pm$  7m (22ft). E. Europe. \*\*\*. 'Alphonse Lavallée' bears double, lilac-blue flowers, from purple buds. 'Ami Schott' bears double, cobalt-blue flowers. 'Andenken an Ludwig Späth' ♀ syn. 'Souvenir de Louis Späth', produces slender panicles, to 30cm (12in) long, of single, dark purple-red flowers. 'Belle de Nancy' produces large panicles of double,

mauve-pink flowers, from purple buds. 'Cavour' bears upright panicles of single, violet-blue flowers. 'Charles Joly' ♀ bears double, dark purple flowers. 'Charles X' ♀ produces single, purple-red flowers. 'Christophe Colomb', syn. 'Christopher Columbus', bears single, deep lilac-pink flowers. 'Congo' ♀ bears large, single, dark lilac-purple flowers, from purple-red buds. 'Decaisne' ♀ is compact, with many single, light purplish blue flowers;  $\pm$  to 2.5m (8ft),  $\leftrightarrow$  1.5m (5ft). 'Edith Cavell' bears panicles, to 30cm (12in) long, of large, double, creamy white flowers. 'Firmament' ♀ produces single, light blue flowers. 'Glory of Horstenstein' see 'Ruhm von Horstenstein'. 'Jan van Tol' ♀ bears panicles, to 35cm (14in) long, of single, pure white flowers. The vigorous 'Katherine Havemeyer' ♀ bears double, lavender-blue flowers, from purple buds. 'Lucie Baltet' bears single, pale pink flowers, from purple-pink buds. 'Maréchal Foch' ♀ bears single, carmine-pink flowers. 'Maréchal

Lannes' bears double, pale violet flowers. 'Masséna' bears loose panicles of large, single, dark purple flowers. 'Maud Notcutt' produces single, pure white flowers. 'Michel Buchner' ♀ bears large panicles, to 30cm (12in) long, of double, rose-lilac, white-centred flowers. 'Mme Antoine Buchner' ♀ bears slender panicles of double, pale mauve-pink flowers, from dark purple-red buds. 'Mme Florent Stepman' ♀ bears large panicles, to 25cm (10in) long, of single white flowers. 'Mme F. Morel' ♀ produces large panicles of single, dark mauve-pink flowers. 'Mme Lemoine' ♀ bears compact panicles of large, double white flowers, from creamy buds. 'Monge' ♀ bears a profusion of very large, single, dark purple-red flowers. 'Montaigne' bears double, pale pink flowers, from purple-pink buds. 'Mont Blanc' produces large panicles, to 35cm (14in) long, of single white flowers. 'Mrs. Edward Harding' ♀ bears large panicles, to 25cm (10in) long, of double, purple-red flowers. 'Night' bears single, dark purple flowers. 'Olivier de Serres' bears large panicles, to 35cm (14in) long, of large, double, lavender-blue flowers, from purple-blue buds. 'Paul Hariot' bears slender panicles of large, double, dark violet-red flowers. 'Paul Thirion' ♀ produces double, lilac-pink flowers, from dark purple-red buds. 'Président Grévy' ♀ bears very large panicles, to 25cm (10in) long, of double, lilac-blue flowers, from red-violet buds. 'Primrose' ♀ bears small panicles of fragrant, single, pale creamy yellow flowers. 'Ruhm von Horstenstein', syn. 'Glory of Horstenstein', is vigorous, with compact panicles of single, dark lilac-red flowers. 'Souvenir de Louis Späth' see 'Andenken an Ludwig Späth'. 'Vestale' ♀ bears many single, pure white flowers. 'Victor Lemoine' bears slender panicles of double, pale lavender-pink to lilac-blue flowers. 'Violetta' bears long, slim panicles of double, dark violet flowers. *S. yunnanensis* ♀ Upright shrub with elliptic-oblong leaves, to 10cm (4in) long. Fragrant, pale pink to nearly white flowers, in large, upright or semi-pendent panicles, to 15cm (6in) long, are produced in early summer.  $\pm$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). W. China. \*\*\*



*Syringa vulgaris* 'Mme F. Morel'



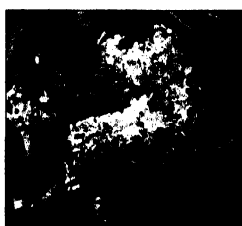
*Syringa vulgaris* 'Mme Lemoine'



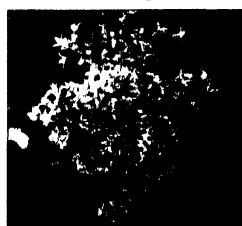
*Syringa vulgaris* 'Mrs. Edward Harding'



*Syringa vulgaris* 'Paul Thirion'



*Syringa vulgaris* 'Primrose'



*Syringa yunnanensis*

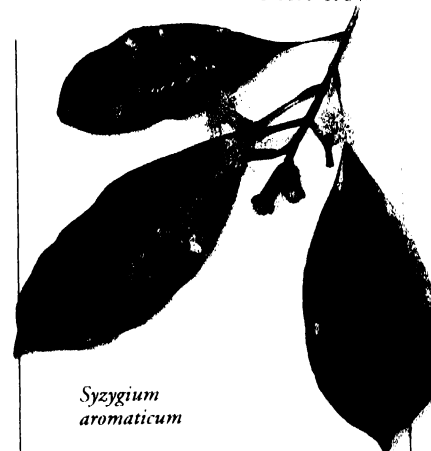
## SYZYGium

MYRTACEAE

Genus of 400–500 species of aromatic, evergreen shrubs and trees, mostly from woodland and rainforest throughout tropical regions. They have opposite, leathery leaves and terminal or axillary cymes or panicles of saucer-shaped, 4- or 5-petalled flowers, each with a prominent boss of stamens. These are followed by fleshy, spherical to pear-shaped or oblong, red, purple, or white berries. The dried flower buds of *S. aromaticum* are the cloves of commerce. In frost-prone areas, grow in a temperate or warm greenhouse. In warmer climates, grow in a shrub border.

• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full or bright indirect light. In spring and summer, water moderately; apply a balanced liquid fertilizer monthly.

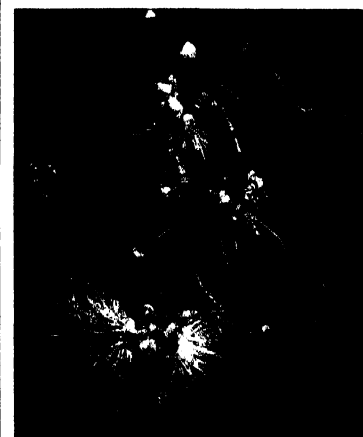


*Syzygium aromaticum*

Water sparingly in winter. Outdoors, grow in deep, fertile, moist, but well-drained soil in full sun or partial shade. Pruning group 1.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F), or 27°C (81°F) for *S. aromaticum*, in spring. Root greenwood cuttings in early summer, or semi-ripe cuttings in mid- to late summer, both with bottom heat. Air layer in spring. • **PESTS AND DISEASES** Trouble free.

*S. aromaticum* ♀ syn. *Eugenia aromatica* (Clove). Small, bushy, roughly columnar to columnar tree, with oval-lance-shaped, clove-scented leaves, 8–13cm (3–5in) long, pink-flushed when young, then lustrous, deep green above. In late summer, bears terminal panicles of 3–20 flowers, 1.5–2cm (½–¾in) long, with tiny, pink-tinted petals, which fall on opening, and a small brush of slender yellow stamens; flowers are followed by ellipsoid purple fruit, 8mm (⅜in) long,  $\pm$  to 15m (50ft),  $\leftrightarrow$  3–5m (10–15ft). Indonesia (Moluccas). ☼ (min. 22–25°C/72–77°F). *S. paniculatum* ♀ syn. *Eugenia australis* of gardens, *E. paniculata* (Brush cherry). Erect to spreading, bushy, large shrub or small tree with flaky, patterned, cream, pink, and light brown bark. Obovate to elliptic or lance-shaped leaves, 5–9cm (2–3½in) long, reddish bronze when young, become shiny, deep green. In summer, bears a few small white flowers, 1–2.5cm (½–1in) long, with many yellow stamens, in terminal and axillary panicles, followed by ovoid, pink, red, purple, or white fruit, to 2cm (¾in) long,  $\pm$  to 10m (30ft) or more,  $\leftrightarrow$  3–10m (10–30ft). Australia (Queensland). ☼ (min. 7°C/45°F).



*Syzygium paniculatum*

# T

## TABEBUIA

BIGNONIACEAE

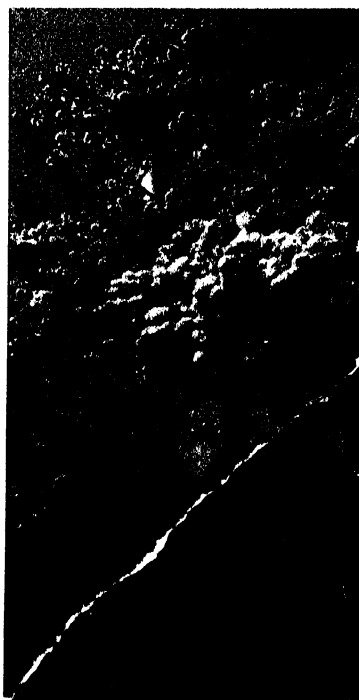
Genus of about 100 species of evergreen or deciduous trees and shrubs found in a variety of habitats, from swamp margins to thickets and rainforest, in Central and South America, and the West Indies. They are grown mainly for their foliage, although flowers may form once plants reach about 3m (10ft) tall. They have mostly opposite, long-stalked, simple or fully divided, 3- to 7-palmate leaves, with the central leaflet longer than the others. The 3- to 5-lobed, tubular to bell-shaped flowers are produced in showy, terminal panicles, usually in spring. Where temperatures fall below 8–15°C (46–59°F), grow in a temperate or warm greenhouse. In warmer areas, grow the larger species as specimens, the shrubby ones in a border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), in full light with shade from hot sun. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist soil in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 16°C (61°F) as soon as ripe or in spring. Insert semi-ripe cuttings with bottom heat in summer. Air layer in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**T. chrysantha** [B] [C] Rounded to spreading, deciduous tree bearing 5-palmate leaves, consisting of lance-shaped to obovate, entire or toothed leaflets, the central ones to 18cm (7in) long; the leaflets are mid-green, with a light covering of star-shaped hairs on the upper surfaces, more densely hairy beneath. Trumpet-shaped, sweetly scented, golden yellow flowers, 2.5–8cm



*Tabebuia chrysantha*



*Tabebuia serratifolia*

(1–3in) long, are produced in panicles in spring. ‡ 25m (80ft), ↔ 18m (60ft). Mexico to Colombia, Venezuela. ☀ (min. 8°C/46°F)

**T. donnell-smithii** see *Cybiztax donnell-smithii*.

**T. pentaphylla** of gardens see *T. rosea*. **T. rosea** [C] syn. *T. pentaphylla* of gardens (Pink poui, Pink tecoma, Rosy trumpet tree). Broadly upright, evergreen or deciduous tree with a long, smooth trunk, branching near the top. The 5-palmate leaves have oblong to ovate-elliptic, leathery, scaly, mid- to dark green leaflets, the central ones to 30cm (12in) long. Funnel-shaped, white, pink, or lilac flowers, 5–10cm (2–4in) long, with yellow eyes fading to white, are produced in pairs in dense panicles, in spring. ‡ 20–25m (70–80ft), ↔ 10–15m (30–50ft). Mexico to Colombia, Venezuela. ☀ (min. 10–15°C/50–59°F)

**T. serratifolia** [B] [C] (Guayacan polvillo, Yellow poui). Ascending to spreading, deciduous shrub or medium-sized tree bearing 3- to 5-palmate leaves with oblong-lance-shaped, mid-green leaflets, to 17cm (7in) long, with rounded teeth. From winter to spring, produces dense panicles of funnel-shaped yellow flowers, 5–6cm (2–2½in) long, each with 5 crimped lobes. ‡ to 12m (40ft) (but slow-growing), ↔ to 20m (70ft). Trinidad, Colombia, Venezuela. ☀ (min. 10–15°C/50–59°F)

## TABERNAEMONTANA

APCYNACEAE

Genus of at least 100 species of rounded to upright, evergreen trees and shrubs found in tropical areas worldwide, in a variety of habitats, from rocky coppices to forests. They have opposite, simple, usually oblong to elliptic leaves, and are grown for their salverform flowers, each with 5 wide-spreading lobes, produced in sparsely branched, terminal cymes over a long period in summer. In areas where temperatures fall below 10–13°C (50–55°F), grow in a temperate or warm

greenhouse. Elsewhere, grow in a shrub border or small courtyard garden.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist, fertile soil in full sun. Pruning group 9, in early spring.
- **PROPAGATION** Sow seed at 16–20°C (61–68°F) in spring. Insert semi-ripe cuttings in summer, with bottom heat in cool areas. Layer or air layer in spring.
- **PESTS AND DISEASES** Scale insects and aphids may be a problem under glass.

**T. coronaria** see *T. divaricata*.

**T. divaricata**, syn. *Ervatamia coronaria*, *T. coronaria* (Crepe jasmine, East Indian rosebay, Paper gardenia). Spreading, bushy, many-branched shrub with elliptic-oblong, wavy-margined, thin, glossy, mid- to dark green leaves, 7–15cm (3–6in) long, paler beneath. In summer, bears cymes of 4–6 salverform, waxy, pure white flowers, 5cm (2in) across, fragrant at dusk and after dark. ‡ 2–3m (6–10ft) or more, ↔ 1.5–2.5m (5–8ft). India to China (Yunnan), Thailand. ☀ (min. 10–13°C/50–55°F). 'Flore Pleno' has double flowers.

▷ **Tacamahac** see *Populus balsamifera*

## TACCA

TACCACEAE

Genus of 10 species of stemless perennials, with solid tubers or upright, scarred rhizomes, from semi-evergreen, monsoon forest in West Africa and S.E. Asia, grown for their handsome foliage and unusual flowers. Lance-shaped to elliptic or obovate, entire or palmately or pinnately lobed leaves, often with purplish green leaf-stalks, are widely spaced or crowded on the rootstock. Nodding, bell-shaped flowers are borne in umbels, each umbel surrounded by 4 leaf-like floral bracts. Each flower also has a distinctive, narrow, thread-like appendage, to 25cm (10in) long. In frost-prone areas, grow in a warm greenhouse; in humid tropical climates, grow in a shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in a mix of equal parts leaf mould and coarse bark, with added slow-release fertilizer, in bright filtered light. Water freely all



*Tacca chantrieri*

year; in summer, mist regularly and apply a half-strength foliar fertilizer monthly. Pot on every 2 or 3 years, removing old, decaying rhizomes. Outdoors, grow in fertile, moist but well-drained, leafy, acid soil in partial shade.

- **PROPAGATION** Surface-sow seed at 22–27°C (72–81°F) in spring. Divide, or take transverse sections of rhizomes with at least one bud, in spring. Dust cut surfaces with fungicide.
- **PESTS AND DISEASES** Red spider mites, tarsonemid mites, and grey mould (*Botrytis*) may be a problem.

**T. chantrieri** [B] (Bat flower, Cat's whiskers, Devil flower). Erect, rhizomatous perennial with oblong or lance-shaped leaves, 17–55cm (7–22in) long, dark green above and paler beneath. In summer, umbels of 5-petalled green flowers, each with 2 pairs of green, brown, or black floral bracts and dark green, maroon, or black, thread-like appendages, 25cm (10in) long, are borne on scapes to 65cm (26in) long. ‡↔ 1m (3ft). N.E. India, S.E. Asia. ☀ (min. 13°C/55°F)

**T. integrifolia** (Bat flower). Erect, rhizomatous perennial with oblong or lance-shaped leaves, 7–65cm (3–26in) long, dark green above and mid-green beneath. In summer, umbels of purple-red or brown flowers, surrounded by 4 green or deep purple floral bracts, are borne on scapes to 1m (3ft) long; the inner 2 flowers are white, green, or purple, with pale green, thread-like appendages, 20cm (8in) long, suffused violet and darkening with age. ‡ to 1.2m (4ft), ↔ 75cm (30in). E. India to S. China, Thailand, Malaysia, Indonesia (Sumatra, Java), Borneo. ☀ (min. 13°C/55°F)

▷ **Tacitus bellus** see *Graptopetalum bellum*

▷ **Tacsonia x exoniensis** see *Passiflora x exoniensis*

▷ **Tacsonia mollissima** see *Passiflora mollissima*

▷ **Tacsonia van-volxemii** see *Passiflora antioquiensis*

## TAGETES

ASTERACEAE/COMPOSITAE

Genus of about 50 species of erect, bushy, strongly aromatic annuals and herbaceous perennials. They are found on hot, dry slopes and in valley bottoms from New Mexico, USA, to Argentina; one species occurs in Africa. The many hybrids and cultivars are derived mainly from *T. erecta*, *T. patula*, and *T. tenuifolia*. The almost fern-like leaves are usually opposite, pinnatifid to pinnate, with conspicuous glands, and mid- to dark green. Daisy-like or double, carnation-like flowerheads are produced singly or in cyme-like clusters from late spring to autumn. Germination from the large, easily handled seeds is rapid, and blooms appear within a few weeks of sowing. The African marigolds are excellent for formal bedding, whereas the French, Afro-French, and Signet marigolds are more suitable for the edge of a mixed border. All are good in containers and provide long-lasting cut flowers. Contact with the foliage may aggravate skin allergies. Four main hybrid groups are in cultivation:



**African marigolds (African Group)**

Compact annuals, derived from *T. erecta*, with angular, hairless stems and pinnate, sparsely glandular leaves, 5–10cm (2–4in) long, each with 11–17 narrowly lance-shaped, pointed, sharply toothed leaflets, to 5cm (2in) long. Large, densely double, pompon-like, terminal flowerheads, usually to 12cm (5in) across, each with 5–8 or more ray-florets and numerous orange to yellow disc-florets, are produced from late spring to autumn. ↔ to 45cm (18in).

**French marigolds (French Group)**

Compact annuals, derived from *T. patula*, with hairless, purple-tinged stems and pinnate leaves, to 10cm (4in) long, with lance-shaped to narrowly lance-shaped, toothed leaflets, to 3cm (1½in) long. Solitary, usually double flowerheads, typically to 5cm (2in) across, with few to many red-brown, yellow, orange, or parti-coloured ray-florets and usually several disc-florets in a wide range of colours, are borne singly or in cyme-like inflorescences from late spring to autumn. ↔ to 30cm (12in).

**Afro-French marigolds (Afro-French Group)**

Bushy annuals, derived from crosses of *T. erecta* and *T. patula*, with angular to rounded stems, branched and sometimes stained purple, and pinnate leaves, 5–13cm (2–5in) long, with lance-shaped leaflets, to 5cm (2in) long. Numerous small, single or double, yellow or orange flowerheads, usually 2.5–6cm (1–2½in) across, often marked red brown, are borne singly or in cyme-like inflorescences from late spring to autumn. ↔ 30–40cm (12–16in).

**Signet marigolds (Signet Group)**

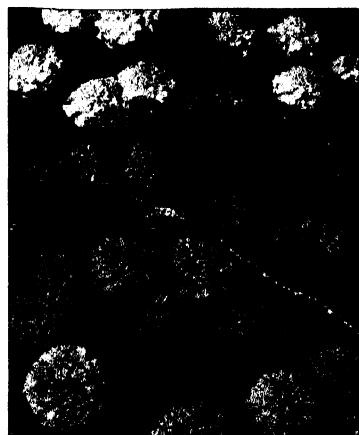
Upright annuals, derived from *T. tenuifolia*, with cylindrical, simple or many-branched stems and pinnate leaves, 5–13cm (2–5in) long, with narrowly lance-shaped, toothed leaflets, to 2cm (¾in) long. Many single flowerheads, usually to 2.5cm (1in) across, with yellow or orange florets (few ray-florets and several disc-florets), are borne in cyme-like inflorescences from late spring to autumn. ↔ to 40cm (16in).

**• HARDINESS** Half hardy.

**• CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Dead-head to prolong flowering and water freely during dry seasons. The densely double flowerheads of the African marigolds tend to rot in wet seasons. In containers, use a loam-based potting compost (J1 No.2); during the



Tagetes Antigua Series 'Antigua Gold'



Tagetes Boy Series

growing season, water freely and apply a balanced liquid fertilizer weekly.

**• PROPAGATION** Sow seed *in situ* in late spring, or at 21°C (70°F) in early spring.

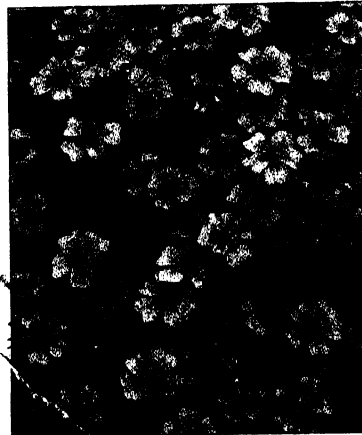
**• PESTS AND DISEASES** Red spider mites, whiteflies, slugs, snails, foot rot, and grey mould (*Botrytis*) may cause problems under glass.

**T. Antigua Series.** African marigolds producing orange, lemon-yellow, golden yellow, or primrose-yellow flowerheads, from late spring to early autumn. ↑ to 30cm (12in). \* 'Antigua Gold' ■ has rich golden yellow flowerheads.

**T. Aurora Series.** French marigolds bearing densely double, broad-petalled, light to golden yellow, orange, or mahogany-red flowerheads, with some unusual bicolors, from late spring to early autumn. ↑ 20–25cm (8–10in). \*

**T. Beaux Series.** Afro-French marigolds bearing double flowerheads in shades of rich golden yellow, orange with a red splash, or copper-red, from late spring to early autumn. ↑ 35cm (14in). \*

**T. Bonanza Series.** French marigolds that produce double flowerheads in deep orange-mahogany with gold margins, golden orange-mahogany, or



Tagetes Gem Series 'Tangerine Gem'

orange-yellow-mahogany, in summer. ↑ 30cm (12in). \*

**T. Boy Series** ■ Compact French marigolds that produce double, crested flowerheads in a range of colours, including shades of golden yellow, yellow, orange, or reddish brown, with deep orange or yellow crests, in late spring and early summer. ↑ to 15cm (6in). \* 'Boy O'Boy' is available as a mixture. 'Golden Boy' has deep red flowerheads with orange crests. 'Spry Boy' has deep mahogany flowerheads with bright yellow crests.

**T. Disco Series.** French marigolds that produce single, weather-resistant flowerheads in a range of colours, including yellow, golden yellow with mahogany markings, golden red, and red-orange, from late spring to early autumn. ↑ 20–25cm (8–10in). \*

**T. Excel Series.** African marigolds bearing primrose-yellow, yellow, golden yellow, or orange flowerheads, from late spring to early autumn. ↑ to 30cm (12in). \*

**T. Gem Series.** Signet marigolds that bear flowerheads in lemon-yellow, deep orange, or bright orange with darker markings, from late spring to early



Tagetes Hero Series 'Hero Spry'

autumn. ↑ to 23cm (9in). \* 'Lemon Gem' ■ has lemon-yellow flowerheads. 'Tangerine Gem' ■ has deep orange flowerheads.

**T. Hero Series.** French marigolds that bear large, double flowerheads, to 6cm (2½in) across, in yellow, golden yellow, orange, red, or mahogany, with crested yellow centres, from late spring to early autumn. ↑ 20–25cm (8–10in). \* 'Hero Spry' ■ produces flowerheads with mahogany outer petals and crested yellow centres.

**T. Lady Series.** African marigolds bearing orange, primrose-yellow, yellow, or golden yellow flowerheads, from late spring to early autumn. ↑ 40–45cm (16–18in). \*

**T. Marvel Series.** Compact African marigolds bearing densely double flowerheads in gold, orange, yellow, lemon-yellow, or in a formula mixture of colours, from late spring to early autumn. ↑ 45cm (18in). \*

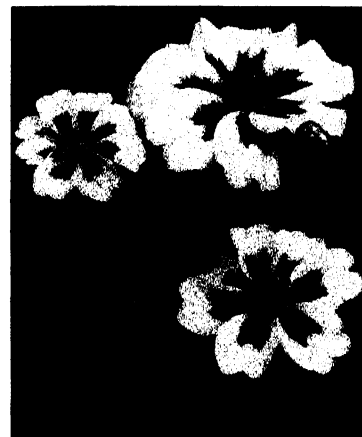
**T. Mischief Series.** French marigolds bearing single flowerheads in mahogany-red, yellow, or golden yellow, with some bicolors, from late spring to early autumn. ↑ to 30cm (12in) or more. \*

**T. 'Naughty Marietta'** ■ French marigold producing single, deep yellow flowerheads, with maroon-red markings at the petal centres, from late spring to early autumn. ↑ 30–40cm (12–16in). \*

**T. Safari Series.** French marigolds bearing double, broad-petalled flowerheads in a range of colours, including golden yellow with mahogany-red splashes, soft pale yellow, tangerine-orange, and scarlet, from late spring to early autumn. ↑ 20–25cm (8–10in). \*



Tagetes Gem Series 'Lemon Gem'



Tagetes 'Naughty Marietta'



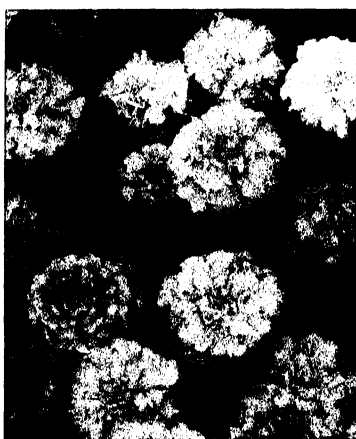
*Tagetes* Safari Series 'Safari Tangerine'

'Safari Tangerine' produces rich tangerine-orange flowerheads.

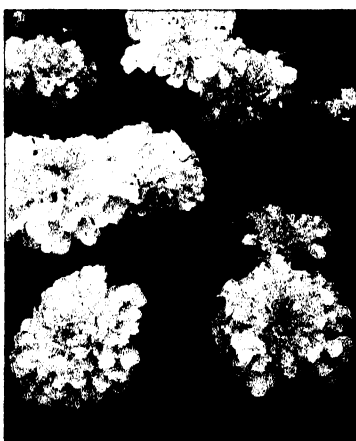
**T. Solar Series** Afro-French marigolds bearing large, densely double flowerheads, to 8cm (3in) across, in colours including orange with red flecking, sulphur-yellow, and golden yellow, some with crested centres, from late spring to early autumn. ‡ 35cm (14in). \*.

'Solar Gold' has abundant non-crested, golden yellow flowerheads. **T. 'Starfire'**, Signet marigold producing flowerheads in a range of colours that includes yellow, golden yellow, and red, with some bicolors, in late spring and early summer. ‡ 15–20cm (6–8in). \*

**T. 'Vanilla'** African marigold producing creamy white flowerheads, from late spring to early autumn. ‡ to 35cm (14in). \*



*Tagetes* Solar Series



*Tagetes* 'Vanilla'

**T. Voyager Series.** Compact African marigolds producing large, yellow or orange flowerheads, to 10cm (4in) across, from late spring to early autumn. ‡ 30–35cm (12–14in). \*

**T. Zenith Series.** Afro-French marigolds producing flowerheads in yellow, golden yellow, lemon-yellow, red, or orange, from late spring to early autumn. ‡ 30cm (12in). \*

▷ **Tail flower** see *Anthurium*

▷ *Talbotia elegans* see *Vellozia elegans*

## TALINUM

Fameflower

PORTULACACEAE

Genus of 50 species of annuals, biennials, and often succulent and woody-based perennials, found in dry grassland and scrub in tropical and subtropical regions of Africa and North and Central America. The smooth, often succulent, usually deciduous but sometimes semi-evergreen leaves are arranged in attractive rosettes or in opposite pairs on short or elongated stems arising from a tuberous or fleshy rootstock. Showy, cup- to saucer-shaped flowers are borne singly or in cymes or panicles; although short-lived, they may be produced over a long period in summer. Grow in a rock garden. In cool areas, grow tender species in a temperate or warm greenhouse, or on a sunny window-sill.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light and with good ventilation. In the growing season, water moderately, applying a balanced liquid fertilizer once or twice; keep just moist at other times. Outdoors, grow in well-drained, poor to moderately fertile soil in full sun.

• **PROPAGATION** Sow seed at 15–18°C (59–64°F) in spring or as soon as ripe. Divide mat- or rosette-forming species in spring.

• **PESTS AND DISEASES** Susceptible to greenfly.

**T. caffrum.** Succulent, deciduous perennial, sometimes biennial, with a thickened, tuberous, caudex-like rootstock, short, erect or prostrate stems, and inversely lance-shaped, linear, or oval, fleshy, mid-green leaves, 2.5–13cm (1–5in) long. Solitary, cup-shaped, pale lemon-yellow flowers, 1–2cm (½–¾in) across, open during daytime in summer. ‡ to 15cm (6in). Namibia and Angola to Kenya. ☉ (min. 10°C/50°F)

**T. okanoganense** Prostrate, mat- or cushion-forming, semi-evergreen perennial with succulent stems bearing cylindrical, fleshy, grey-green leaves, to 1cm (½in) long. The basal portions of the leaf midribs are retained as bristles in winter. Solitary, short-stemmed, saucer-shaped white flowers, to 2cm (¾in) across, tinged pink or yellow and with yellow stamens, are borne over several weeks in summer. Grow in an alpine house or trough. ‡ to 5cm (2in), ↔ to 20cm (8in). W. North America. \*\*\*

**T. paniculatum** (Jewels of Opar). Tuberous-rooted, deciduous perennial with erect, usually unbranched stems, becoming somewhat woody with age, and elliptic or obovate, mid-green leaves, to 10cm (4in) long. Many-flowered, terminal panicles of bowl-



*Talinum okanoganense*

shaped, red or yellow flowers, to 2.5cm (1in) across, are produced in summer. ‡ 1m (3ft), ↔ 60cm (24in). S. USA to Central America. ☉ (min. 15°C/59°F)

**T. spinescens.** Dense, cushion-forming, semi-evergreen perennial with succulent stems, clothed in spines and thickening with age, and cylindrical, fleshy, grey-green leaves, 1–3cm (½–1¼in) long. The basal portions of the leaf midribs are usually retained as bristles in winter. Produces loose, cyme-like panicles of 1–5 short-stemmed, saucer-shaped, dark magenta flowers, to 1.5cm (½in) across, in summer. ‡ to 10cm (4in), ↔ to 15cm (6in). W. North America. \*\*\*

▷ **Tamarisk** see *Tamarix*

## TAMARIX

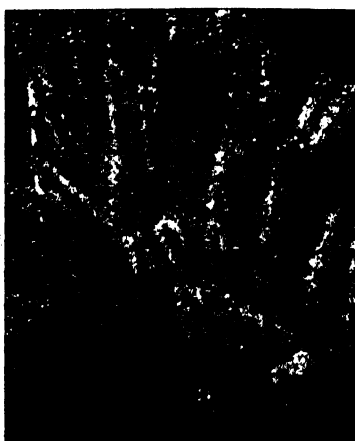
Tamarisk

TAMARICACEAE

Genus of 54 species of deciduous shrubs and small trees from coastal sites and dry or marshy, often salt-rich areas inland, from W. Europe and the Mediterranean to E. Asia and India. They are grown for their attractive, feathery foliage, consisting of small, scale- or needle-like leaves, and their plume-like, often leafy racemes of small flowers. They are useful for a shrub border in an inland garden, but may also be used as a windbreak or hedge in an exposed coastal area, and for growing on light, sandy soils.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in full sun, in well-drained soil in coastal areas, or in moister soil inland. Shelter from cold, drying winds in inland gardens; in



*Tamarix ramosissima*



*Tamarix ramosissima* 'Pink Cascade'

coastal areas, they are resistant to strong winds. Prune regularly, or they may become top-heavy and unstable. Cut back young plants almost to ground level after planting. Pruning group 2 for spring-flowering species; group 6 for those flowering in late summer.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Take hardwood cuttings in winter or semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**T. parviflora.** Spreading shrub with arching purple shoots and pointed leaves, 3mm (¼in) long. In late spring, 4-petalled, pale pink flowers are borne in dense, lateral racemes, to 5cm (2in) long, on the old shoots. ‡ 5m (15ft), ↔ 6m (20ft). S.E. Europe. \*\*\*

**T. pentandra** see *T. ramosissima*.

**T. ramosissima** ☐ ☉ syn. *T. pentandra*. Graceful shrub or small tree with arching, red-brown shoots and pointed leaves, to 4mm (¼in) long. In late summer and early autumn, 5-petalled pink flowers are produced in dense racemes, to 7cm (3in) long, on the new shoots. ‡ to 5m (15ft). S.E. Europe to Asia. \*\*\*. 'Pink Cascade' has rich pink flowers.

**T. tetrandra** ♀ Shrub or small tree with arching, purple-brown shoots and needle- or scale-like leaves, to 4mm (¼in) long. Bears 4-petalled, light pink flowers in lateral racemes, to 5cm (2in) long, on the old shoots, in mid- and late spring. ‡ to 3m (10ft). E. Balkans, W. Asia, S. former USSR. \*\*\*

▷ **Tampala** see *Amaranthus tricolor*

## TANACETUM

syn. BALSAMITA, PYRETHRUM

ASTERACEAE/COMPOSITAE

Genus of about 70 species of annuals and evergreen and herbaceous perennials and subshrubs from mountains, cliffs, meadows, and dry slopes in N. temperate regions. They have simple or pinnate to 3-pinnate, entire, toothed, or scalloped, mostly aromatic, mainly basal leaves that are sparsely to densely hairy and sometimes silver. Stem leaves, where present, are spirally arranged, usually smaller and less divided, and may be stalkless. Terminal, daisy- or button-like flowerheads, borne singly or in corymbs, have yellow disc-florets and sometimes barely discernible, white, red, or yellow ray-florets. This diverse genus includes

*Tanacetum argenteum**Tanacetum coccineum* 'Eileen May Robinson'*Tanacetum densum* subsp. *amani**Tanacetum parthenium* 'Golden Moss'

species suitable for a rock garden, a herb garden, or border edging. *T. coccineum* and its cultivars are suitable for a border and produce good cut flowers. Some have aromatic foliage, which may be dried for use in pot-pourri; several have medicinal qualities. Contact with the foliage may aggravate skin allergies.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in well-drained, preferably sandy soil in full sun, although most will tolerate any soil that is not wet and heavy. *T. balsamita* produces leafier growth in partial shade. Grow mound-forming, dwarf, white- or silver-leaved species in sharply drained, poor to moderately fertile soil. Cut back *T. coccineum* and its cultivars as the flowers fade, in order to encourage a second flowering. *T. parthenium* and its cultivars self-seed prolifically.

• **PROPAGATION** Sow seed at 10–13°C (50–55°F) in late winter or early spring. Divide perennials, or root basal cuttings, in spring. Insert softwood cuttings of *T. parthenium* and *T. ptarmiciflorum* in early summer; in winter, young plants of *T. ptarmiciflorum* are best kept in a cool greenhouse.

• **PESTS AND DISEASES** Aphids, chrysanthemum eelworm, and leaf miners may be a problem.

*T. argenteum* [■] syn. *Achillea argentea*. Mat-forming, usually evergreen, woody-based perennial with branching, densely white-woolly stems. Ovate, 2-pinnate, bright silvery white leaves, 2–7cm (¾–3in) long, have 5–9 pairs of divided to narrowly lance-shaped leaflets. In summer, daisy-like white flowerheads, 4mm (¼in) across, are borne singly or in corymbs. Suitable for a rock garden or border edging. ↑ to 20cm (8in), ↔ to 30cm (12in). Mediterranean. \*\*\*

*T. balsamita*, syn. *Balsamita major*, *Chrysanthemum balsamita* (Alecost, Costmary). Mat-forming, woody-based, rhizomatous perennial with oblong to elliptic, scalloped, softly silver-hairy basal leaves, to 30cm (12in) long, and smaller, stalkless leaves on erect stems. Numerous flowerheads, to 1.5cm (½in) across, with tiny white ray-florets and yellow disc-florets, are borne in corymbs in late summer and early autumn.

Grown for its balsam-scented foliage (used in pot-pourri), and suitable for a

herb garden. ↑ to 90cm (36in), ↔ 45cm (18in). Europe to C. Asia. \*\*\*

*T. coccineum*, syn. *Chrysanthemum coccineum*, *Pyrethrum coccineum*, *P. roseum* (Painted daisy, Pyrethrum). Bushy, hairless, herbaceous perennial with erect stems and elliptic-oblong, pinnatisect or 2-pinnatisect, dark green, mainly basal leaves, to 12cm (5in) long, consisting of 10–14 narrowly lance-shaped, toothed segments. Daisy-like flowerheads to 7cm (3in) across, with white, pink, or red ray-florets and yellow disc-florets are produced in early summer. ↑ 45–75cm (18–30in), ↔ 45cm (18in). Caucasus, S.W. Asia. \*\*\*

'Brenda' [■] ♀ bears deep cerise-pink flowerheads; ↑ 70–80cm (28–32in). 'Eileen May Robinson' [■] ♀ has pale, rich pink flowerheads; ↑ 70–80cm (28–32in). 'James Kelway' ♀ produces brilliant deep crimson-pink flowerheads; ↑ 60cm (24in). 'Snow Cloud' has white flowerheads; ↑ 60cm (24in).

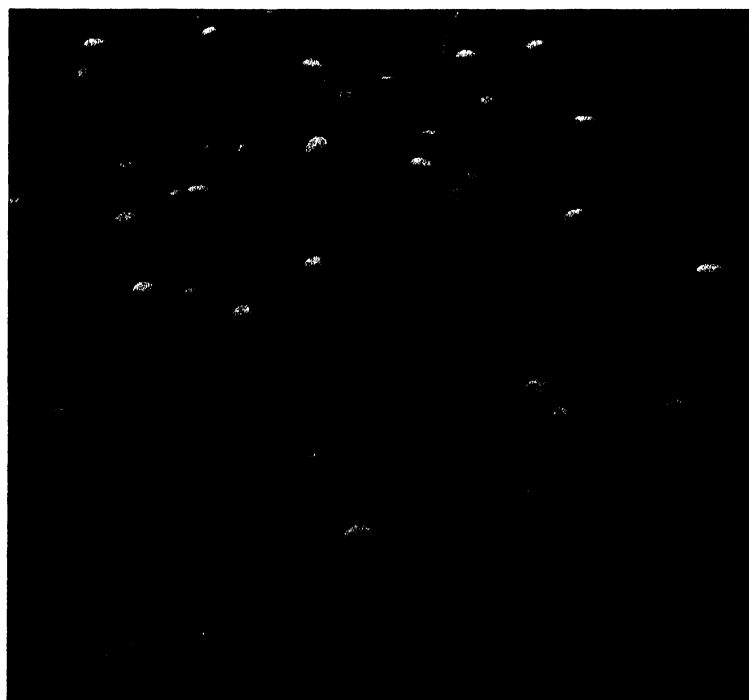
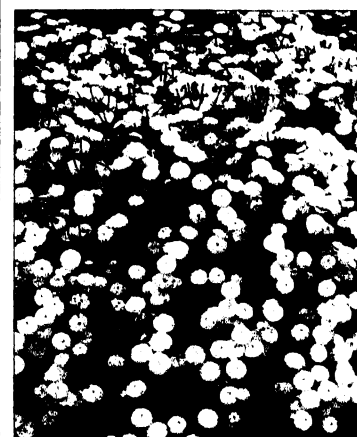
*T. densum* subsp. *amani* [■] syn. *Chrysanthemum densum*. Mound-forming, usually evergreen, woody-based perennial with white-downy stems and ovate to broadly elliptic, 2-pinnatisect, downy, grey-white leaves, 2–5cm (¾–2in) long, finely cut into 10–25 inversely lance-shaped segments. In summer, bears flat corymbs of 3–7 daisy-like yellow flowerheads, 5–10mm (¼–½in) across, each with 12–15 yellow ray-florets, to 4mm (¼in) long. *T. densum* is similar to *T. haradjanii*, but female ray-florets are absent on the latter. Grow in a rock garden. ↑ to 25cm (10in), ↔ to 20cm (8in). Turkey. \*\*\*

*T. haradjanii*, syn. *Chrysanthemum haradjanii*. Mat-forming, woody-based, evergreen perennial with silver-white, downy stems. Oblong-elliptic to ovate, 2- or 3-pinnatisect, silvery grey leaves, to 5cm (2in) long, are composed of 4 or 5 pairs of narrowly lance-shaped, entire or further divided segments. Daisy-like yellow flowerheads, 2–4mm (⅛–½in) across, are borne in loose corymbs in late summer. Suitable for a rock garden. ↑ to 15cm (6in), ↔ to 20cm (8in). Syria, Turkey. \*\*\*

*T. parthenium* [■] syn. *Chrysanthemum parthenium*, *Pyrethrum parthenium* (Feverfew). Short-lived, bushy, aromatic, woody-based perennial with ovate, pinnatisect or 2-pinnatisect, softly hairy basal leaves, to 8cm (3in) long, with 3–5 paired, scalloped or entire segments; smaller, less divided, shorter-stalked leaves are produced on the erect stems. Daisy-like flowerheads, to 2.5cm (1in) across, with yellow disc-florets and white ray-florets, are borne in dense corymbs in summer. Suitable for border edging. ↑ 45–60cm (18–24in), ↔ 30cm (12in). Europe, Caucasus. \*\*\*

'Aureum' has golden yellow leaves, and produces single, yellow-tinted white flowerheads. 'Ball's Double White' has double white flowerheads. 'Butterball' bears double yellow flowerheads.

'Golden Moss' [■] is dwarf and carpet-forming, with moss-like yellow leaves; ↑ to 10cm (4in). 'Plenum' [■] has fully double white flowerheads; ↑ 35cm (14in). 'Santana' is dwarf, producing double flowerheads, and will flower at any time of year when grown in

*Tanacetum coccineum* 'Brenda'*Tanacetum parthenium**Tanacetum parthenium* 'Plenum'

*Tanacetum parthenium* 'Snowball'*Tanacetum ptarmiciflorum*

containers;  $\uparrow$  20cm (8in),  $\leftrightarrow$  15cm (6in). 'Snowball'  $\square$  has pom-pom-like, fully double, ivory-white flowerheads;  $\uparrow$  30cm (12in),  $\leftrightarrow$  15cm (6in).

***T. ptarmiciflorum***  $\square$  syn. *Pyrethrum ptarmiciflorum*. Woody-based perennial, often grown as an annual, with erect stems. Elliptic to oblong-ovate, 2- or 3-pinnatisect, silver-hairy basal and stem leaves, to 10cm (4in) long, have 8-22 linear-elliptic, scalloped segments. Daisy-like white flowerheads, to 2.5cm (1in) across, with yellow disc-florets, are borne in dense corymbs in late summer. Suitable for border edging.  $\uparrow$  60cm (24in),  $\leftrightarrow$  40cm (16in). Canary Islands (Gran Canaria). \*

***T. vulgare***, syn. *Chrysanthemum vulgare* (Common tansy). Vigorous, erect, deciduous perennial with alternate, oblong, pinnate leaves, to 10cm (4in) long, comprising up to 12 oblong or lance-shaped, pinnately lobed or toothed leaflets. Bears button-shaped, bright yellow flowerheads, to 1cm ( $\frac{1}{2}$ in) across, in flat-topped corymbs, 14cm (5 $\frac{1}{2}$ in) across, in summer. Suitable for a herb garden.  $\uparrow$  60-90cm (24-36in),  $\leftrightarrow$  45cm (18in). Europe. \*\*\*

## TANAKAEA

syn. TANAKEA  
Japanese foam flower

### SAXIFRAGACEAE

Genus of one species of dioecious, rhizomatous, evergreen perennial from wet, rocky, shaded sites in Japan. *T. radicans* is an attractive creeping plant, with basal leaf rosettes and upright, leafless stems bearing dense panicles of minute white flowers in late spring and

early summer. Grow in a moist, shaded site in a woodland or rock garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, humus-rich, peaty soil in full or partial shade.
- **PROPAGATION** Separate rooted portions of rhizome in spring.
- **PESTS AND DISEASES** Trouble free.

***T. radicans***. Dense, spreading perennial with basal rosettes of ovate to broadly lance-shaped or oblong, leathery leaves, 2-8cm ( $\frac{3}{4}$ -3in) long, rounded or heart-shaped at the bases, dark green above, paler beneath. In late spring and early summer, mainly unisexual, star-shaped white flowers, to 3mm ( $\frac{1}{16}$ in) across, with prominent anthers, are borne in dense panicles, 5-15cm (2-6in) long.  $\uparrow$  to 10cm (4in),  $\leftrightarrow$  to 30cm (12in). Japan (Shikoku, Kyushu). \*\*\*

- ▷ **Tanakea** see *Tanakea*
- ▷ **Tanekaha** see *Phyllocladus trichomanoides*
- ▷ **Tangerine** see *Citrus reticulata*
- ▷ **Tangaru** see *Olearia alba*
- ▷ **Tansy**, Common see *Tanacetum vulgare*

## TAPEINOCILUS

### COSTACEAE/ZINGIBERACEAE

Genus of about 15 species of evergreen, rhizomatous perennials from tropical forest in Malaysia, Indonesia, New Guinea, and N.E. Australia. They are cultivated mainly for their spectacular inflorescences of red bracts. The obovate leaves, to 15cm (6in) long, are spirally arranged on bamboo-like stems. In frost-prone areas, grow in a warm greenhouse; in humid tropical climates, grow in a shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added leaf mould, in bright indirect light or deep shade, with high humidity. In spring and summer, water freely and apply a balanced liquid fertilizer monthly; water moderately in winter. Outdoors, grow in fertile, leafy, humus-rich soil in deep shade.
- **PROPAGATION** Sow seed at 20°C (68°F) in early spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

***T. ananassae***. Clump-forming perennial with long, narrowly obovate, sharply pointed leaves, 15cm (6in) long. In summer, leafless stems, 45-120cm (18-48in) long, bear cone-like inflorescences of many recurved, overlapping, vivid red bracts, 10cm (4in) across, resembling red pineapples; they often cover the small yellow flowers.  $\uparrow$  to 2m (6ft),  $\leftrightarrow$  1m (3ft). Indonesia (Moluccas).  $\hat{\text{m}}$  (min. 20°C/68°F)

- ▷ **Tarata** see *Pistosporum eugenoides*
- ▷ **Taro** see *Colocasia*, *C. esculenta*
- ▷ **Blue** see *Xanthosoma violaceum*
- ▷ **Giant** see *Alocasia macrorrhiza*
- ▷ **Imperial** see *Colocasia esculenta* 'Illustris'
- ▷ **Tarragon** see *Artemisia dracunculus*
- ▷ **Tarweed** see *Grindelia*
- ▷ **Tasmannia** see *Drimys*
- ▷ **T. aromatica** see *D. lanceolata*
- ▷ **Tassel flower** see *Amaranthus caudatus*, *Emilia*
- ▷ **Tassel-white** see *Itea virginica*

## TAXODIUM

### Swamp cypress

#### TAXODIACEAE

Genus of 2 species of upright, conical, monoecious, deciduous or semi-evergreen, coniferous trees found in swampy forest or by river margins from S.E. USA to Guatemala. The shoots are of 2 types: deciduous (without buds), which fall in autumn, and persistent (with buds), from which only the leaves fall. The narrowly lance-shaped or linear leaves are arranged alternately, radially, or in 2 ranks. Male cones occur in groups; female cones are scattered. They are late to come into leaf and to assume the spectacular autumn colours for which they are renowned. Grow as specimen trees; they are especially suited to very wet sites, where they produce aerial roots (known as pneumatophores or "knees") at water level.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist or wet, preferably acid soil in full or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame in spring. Graft cultivars in late winter.
- **PESTS AND DISEASES** Trouble free.

***T. ascendens*** see *T. distichum* var. *imbricarium*.

***T. distichum***  $\square$   $\uparrow$   $\uparrow$  (Swamp cypress). Conical tree, becoming columnar and often ragged with age, due to its brittle branches and pale brown, shallowly fissured bark. The alternate (almost opposite), narrowly lance-shaped, pale green leaves, 2cm ( $\frac{3}{4}$ in) long, turning rust-brown in autumn, are 2-ranked on deciduous shoots. On persistent shoots, leaves are small and scale-like. Spherical green female cones, 3cm (1 $\frac{1}{4}$ in) across, ripen to brown in autumn; pendent red male cones expand in winter.  $\uparrow$  20-40m (70-130ft),  $\leftrightarrow$  6-9m (20-28ft). S.E. USA. \*\*\*. var. *imbricarium*, syn. *T. ascendens*, var. *imbricatum* (Pond

*Taxodium distichum**Taxodium distichum* var. *imbricarium* 'Nutans'

cypress) is narrowly conical, with dull brown bark and radial leaves, 5-10mm ( $\frac{1}{4}$ - $\frac{1}{2}$ in) long, lying flat on erect shoots;  $\uparrow$  10-20m (30-70ft),  $\leftrightarrow$  to 6m (20ft). var. *imbricarium* 'Nutans'  $\square$   $\uparrow$  has erect foliage shoots, becoming pendent when mature. var. *imbricatum* see var. *imbricarium*.

## TAXUS

### Yew

#### TAXACEAE

Genus of 5-10 species of broadly rounded to upright, dioecious, evergreen, coniferous, large shrubs or small trees found in forest extending from N. temperate areas to the Philippines and Central America. Yews are grown for their reddish-brown, frequently peeling bark, and their linear, dark green leaves, often paler beneath; these are spirally arranged but often appear 2-ranked. On the female plants, single-seeded, oblong-ovoid fruits are produced in open, fleshy arils. Grow as specimen plants or use for hedging and topiary; the prostrate forms make good ground cover, even in dense, dry shade. Most tolerate exposure, dry soils, and urban pollution. All parts (but not the arils) are highly toxic if ingested.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any well-drained, fertile soil, including chalky or acid soils, in sun or deep shade. Trim hedging in summer and early autumn. Can withstand renovation pruning.
- **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame, or in a seedbed; seed may take 2 or more years to germinate. Insert semi-ripe cuttings in late summer or early autumn; take cuttings from strongly upright shoots (except for prostrate cultivars), otherwise they may not form a strong leading shoot. Graft cultivars in early autumn.
- **PESTS AND DISEASES** Resistant to most diseases, except *Phytophthora* root rot. May be damaged by tortrix moth caterpillars, vine weevil, and yew scale.

*Taxus baccata* 'Adpressa'

*T. baccata* ♀♂ (Yew). Broadly conical tree with spreading, horizontal branches, scaly, purple-brown bark, and shoots that remain green for several years. Linear, glossy or matt, dark green leaves, 2–3cm (¾–1¼in) long, paler beneath, are 2-ranked and parted either side of the shoots. Yellow male cones are borne in spring. Fruit consist of single green seeds with juicy, sweet, usually red arils, 1cm (½in) across. ↑ 10–20m (30–70ft), ↔ 8–10m (25–30ft). Europe, N. Africa to Iran. \*\*\*. 'Adpressa' ♂♀ is a dense, spreading, female shrub, with short, wide, abruptly pointed leaves, to 1.5cm (½in) long; ↑ 6m (20ft), ↔ 4m (12ft). 'Dovastonii Aurea' ♂♀ is a small, female tree, with spreading branches, pendent branchlets, and yellow-margined leaves borne on golden yellow shoots; ↑ 3–5m (10–15ft), ↔ 2m (6ft). 'Fastigiata' ♂♀ (Florence Court yew, Irish yew) is columnar and female, with radially set leaves; ↑ to 10m (30ft), ↔ 6m (20ft). 'Fastigiata Aurea' ♀ is female, similar to 'Fastigiata', but has variegated leaves with gold patches; ↑ 6m (20ft), ↔ 3m (10ft). 'Fastigiata Aurcomarginata' ♀ is female, similar to 'Fastigiata', but with leaves margined bright yellow; ↑ 3–5m (10–15ft), ↔ 1–2.5m (3–8ft). 'Repandens' ♀ is a female shrub, and does not form leaders but spreads over the ground, forming a mound; ↑ to 60cm (24in), ↔ 5m (15ft). 'Repens Aurea' ♀ is a female shrub that is similar to, and may even be the same as 'Dovastonii Aurea', but is propagated from sideshoots and thus forms only spreading ground cover; ↑ 1–1.5m (3–5ft). 'Standishii' ♀ is narrow and

*Taxus baccata* 'Dovastonii Aurea'*Taxus baccata* 'Fastigiata'

columnar, a miniature female selection of 'Fastigiata', and produces golden yellow leaves; ↑ 1.5m (5ft), ↔ 60cm (24in). *T. cuspidata* ♂♀ (Japanese yew). Broadly columnar shrub or small tree with linear, spiny-tipped, dark green leaves, 1.5–2.5cm (½–1in) long, tawny or yellow-green beneath, turning red-green over winter, and narrowly parted either side of the shoots. Scarlet arils are 0.5–1cm (¼–½in) across. Much harder in cold areas than *T. baccata*. ↑ 10–15m (30–50ft), ↔ 6–8m (20–25ft). N.E. China, Japan. \*\*\*. f. *nana* is a spreading shrub, with erect shoots and radial leaves, and is mainly male in cultivation; ↑ 2–4m (6–12ft); Japan (Honshu). f. *nana* 'Densa' is a low-growing, broad, flattened, female shrub; ↑ 1.2m (4ft), ↔ to 6m (20ft). *T. x media* ♀-♀ (*T. baccata* x *T. cuspidata*). Rounded to upright tree combining the vigour of *T. baccata* with the hardiness of *T. cuspidata*. The distinctly 2-ranked, oblong to needle-like, pointed, flat, olive- to dark green leaves, 1.5–3cm (½–1¼in) long, have prominent white midribs and are slightly red-flushed in winter. Scarlet

*Taxus cuspidata*

arils are 5–10mm (¼–½in) across. ↑ to 6–8m (20–25ft). Garden origin. \*\*\*. 'Brownii' ♀ is female, dense and spherical, with short, parted, widely-spaced, dark green leaves, 1.5–2cm (½–¾in) long; ↑ to 2.5m (8ft), ↔ to 3.5m (11ft). 'Hicksii' ♀ is probably male, and columnar in habit, similar to *T. baccata* 'Fastigiata' but more open, with more radially set, dark green leaves; ↑ 6–8m (20–25ft), ↔ 2–3m (6–10ft), later to 6m (20ft).

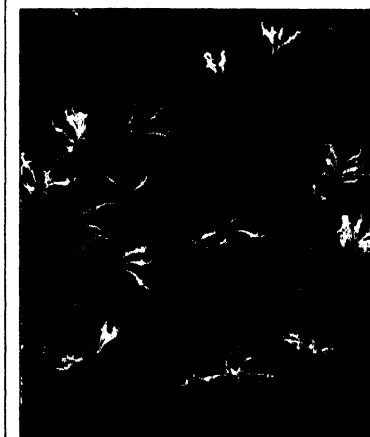
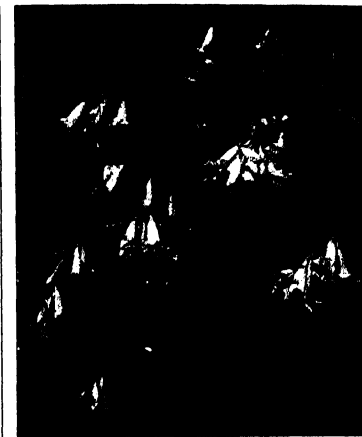
- ▷ **Tea**,  
   **Labrador** see *Ledum groenlandicum*  
   **Oswego** see *Monarda didyma*  
   **Sweet** see *Osmanthus fragrans*
- ▷ **Teasel** see *Dipsacus*
- ▷ **Tea tree** see *Leptospermum*  
   **Duke of Argyll's** see *Lycium barbarum*  
   **New Zealand** see *Leptospermum scoparium*  
   **Woolly** see *Leptospermum lanigerum*

## TECOMA syn. TECOMARIA

### BIGNONIACEAE

Genus of about 12 species of evergreen climbers, scrambling shrubs, and upright trees, found on rocky slopes and in valleys in southern Africa and from S. USA to Argentina. The opposite leaves are pinnate or sometimes 3-pinnate, with ovate-oblong to rounded leaflets. Narrowly bell- to funnel-shaped, 5-lobed, yellow, orange, or red flowers are produced in dense, terminal racemes or panicles between winter and summer. In frost-prone areas, grow in a cool or temperate greenhouse or conservatory. In warmer climates, grow as specimen plants; the scrambling species may be trained over an arch.

- **HARDINESS** Frost tender; *T. capensis* may survive brief spells near 0°C (32°F).
- **CULTIVATION** Under glass, plant directly into a border or grow in large tubs of loam-based potting compost (J1 No.3) in full light. During the growing season, water freely and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Pruning group 8 for early-flowering species; group 9 for late-flowering species, in early spring. Plants under glass need restrictive pruning and benefit from thinning of overcrowded stems.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Insert semi-ripe

*Tecoma capensis* 'Aurea'*Tecoma stans*

cuttings with bottom heat in summer. Layer *T. capensis* in spring or autumn.

- **PESTS AND DISEASES** Red spider mites and whiteflies may be troublesome under glass.

*T. australis* see *Pandorea pandorana*.  
*T. capensis* ♀ syn. *Bignonia capensis*, *Tecomaria capensis*, *T. petersii* (Cape honeysuckle). Erect, scrambling, evergreen shrub with slender stems and pinnate, lustrous, mid- to dark green leaves, to 15cm (6in) long, each with 5–7 elliptic-ovate to roughly diamond-shaped, toothed leaflets. Racemes, to 15cm (6in) long, of slender, tubular, orange to scarlet flowers, 6–7cm (2½–3in) long, are produced mainly in summer. ↑ 2–7m (6–23ft), ↔ 1–3m (3–10ft). Southern Africa. \* (min. 5°C/41°F). 'Apricot' is compact, with vivid apricot-orange flowers; ↑ to 1.5m (5ft), ↔ 1m (3ft). 'Aurea' ♂ bears yellow flowers, to 5cm (2in) long; ↑ 4m (12ft), ↔ 2m (6ft). 'Lutea' is slow-growing, with dark yellow flowers; ↑ 2m (6ft), ↔ 1m (3ft).  
*T. grandiflora* see *Campsis grandiflora*.  
*T. radicans* see *Campsis radicans*.  
*T. ricasoliana* see *Podranea ricasoliana*.  
*T. stans* ♂♀ syn. *Bignonia stans*, *Stenolobium stans* (Trumpet bush, Yellow bells, Yellow elder). Open, ascending, large shrub or small tree, often with several slim trunks if grown as a tree. Pinnate leaves, to 35cm (14in) long, each have 5–13 oblong-ovate to lance-shaped, toothed, bright green leaflets. Funnel-shaped, bright yellow flowers, 5cm (2in) long, are produced in terminal racemes or panicles, to 15cm (6in) long, from late winter to summer. ↑ 5–9m (15–28ft), ↔ 3–5m (10–15ft). S. USA to Guatemala, Argentina. \* (min. 7–10°C/45–50°F)

▷ **Tecoma, Pink** see *Tabebuia rosea*

## TECOMANTHE

### BIGNONIACEAE

Genus of 5 species of woody-stemmed, evergreen, twining climbers from tropical woodland in Indonesia, New Guinea, the Solomon Islands, and Australasia. They are grown for their funnel-shaped, 5-lobed flowers, borne in pendent racemes from the bare branches, below the leafy stems. The opposite leaves are pinnate or sometimes 3-palmate. Where temperatures fall below 15°C (59°F), grow in a warm

greenhouse. In tropical areas, train over an arch or pergola, or grow against a warm wall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.3) in full light with shade from hot sun. Provide strong support. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil, in full sun with some midday shade. Pruning group 11, in spring.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Insert semi-ripe cuttings with bottom heat in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites and mealybugs may be troublesome under glass.

*T. dendrophila*. Evergreen, twining climber with sparsely branched stems, particularly when young, and pinnate leaves, 7cm (3in) long, each consisting of 3–5 ovate or oblong-lance-shaped, rich green leaflets. In summer, produces racemes of 1–12 flowers, 7–11cm (3–4½in) long, with deep pink to rose-purple tubes, becoming yellow at the top, and yellow lobes, suffused and veined pink or purple. ↑ to 15m (50ft) or more. Indonesia (Moluccas), New Guinea, Solomon Islands. ☼ (min. 13–15°C/55–59°F)

*T. speciosa*. Evergreen, twining climber with sparsely branched stems when young, and pinnate leaves, 6cm (2½in) long, with 5 broadly obovate, thick, lustrous, deep green leaflets. In autumn, bears light, almost luminous, yellow-green flowers, 6–8cm (2½–3in) long, with downy lobes, in dense racemes of 1–10. ↑ 10m (30ft) or more. New Zealand (Three Kings Islands). ☼ (min. 13–15°C/55–59°F)

▷ *Tecomaria* see *Tecoma*

*T. capensis* see *T. capensis*  
*T. petersii* see *T. capensis*

## TECOPHILAEA

LILIACEAE/TECOPHILAEACEAE

Genus of 2 species of cormous perennials, originally from subalpine grassland in South America but probably now extinct in the wild. They have narrowly lance-shaped, basal leaves, and bear crocus-like, brilliantly coloured flowers on leafless stems in spring. They are suitable for a rock garden or raised bed, but, in all except completely frost-free areas, should be grown in a bulb frame, cold greenhouse, or alpine house to protect the early growth from frost.

- **HARDINESS** Frost hardy, but early leaves are liable to frost damage.
- **CULTIVATION** Under glass, plant 5cm (2in) deep, in a mix of equal parts loam-based potting compost (JI No.2) and sharp sand in full light. In the growing season, water moderately; reduce water gradually as the leaves die down to keep corms warm and dry during summer dormancy. Outdoors, grow in well-drained, sandy soil in full sun.
- **PROPAGATION** Sow seed in containers in a frost-free frame, in autumn or as soon as ripe. Remove offsets in late summer.
- **PESTS AND DISEASES** Trouble free.



*Tecophilaea cyanocrocus*

*T. cyanocrocus* ☼ ♀ (Chilean blue crocus). Small, cormous perennial with semi-erect, narrowly lance-shaped, basal leaves, to 13cm (5in) long. In spring, bears 1 or 2 open funnel-shaped, intense gentian-blue flowers, 4–5cm (1½–2in) long, with white throats and faint white veins. ↑ 8–10cm (3–4in), ↔ 5cm (2in). Chile. \*\* var. *leichelinii* ♀ has pale blue flowers with large white centres. var. *violacea* has deep violet flowers.

▷ **Teddy bear plant** see *Cyanotis kewensis*

▷ *Telanthophora grandifolia* see *Senecio grandifolius*

## TELEKIA

ASTERACEAE/COMPOSITAE

Genus of 2 species of imposing, erect, herbaceous perennials found in moist woodland and beside streams in scrub, from C. and S. Europe to the Caucasus, Turkey, Ukraine, Belorussia, and Russia. The basal leaves are long-stalked, ovate and coarsely toothed; the alternate stem leaves have shorter stalks. Solitary flowerheads, with long, narrow yellow ray-florets, tubular yellow disc-florets, ageing to brown, and 3 or 4 rows of overlapping involucre bracts, are produced in branching sprays from early summer to early autumn. *Telekia* species make effective specimen plants for a damp woodland or wild garden, or beside water.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, not too fertile soil, in partial shade with shelter from strong winds. They may self-seed.

- **PROPAGATION** Sow seed in containers as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Young leaves may be damaged by slugs.

*T. speciosa*, syn. *Bupththalmum speciosum*. Spreading, rhizomatous perennial with ovate, coarsely scalloped to toothed, aromatic, somewhat limp leaves, 30cm (12in) or more long, heart-shaped at the bases, on stalks to 20cm (8in) long. The coarse, upright stems have smaller, almost clasping leaves. In late summer and early autumn, loose, branching sprays of solitary, daisy-like yellow flowerheads, 6–9cm (2½–3½in) across, are produced on long peduncles. ↑ to 2m (6ft), ↔ 1m (3ft). S.E. Europe, Caucasus, Ukraine, Belorussia, Russia. \*\*\*

▷ *Telesonix jamesii* see *Boykinia jamesii*

## TELLIMA

Fringe cups

SAXIFRAGACEAE

Genus of one species of rosette-forming, hairy herbaceous perennial from cool, moist woodland in W. North America. The mainly basal leaves are heart-shaped or triangular to kidney-shaped, scalloped or toothed, and 5- to 7-lobed. Small, bell-shaped flowers, with 5 tiny petals, fringed into linear segments, relatively large calyces, and 10 stamens, are borne in terminal racemes in late spring and midsummer. Fringe cups are drought-tolerant and suitable for ground cover in a shrub border or woodland garden.

- **HARDINESS** Fully hardy.



*Telopea grandiflora*

- **CULTIVATION** Grow in moist, humus-rich soil in partial shade, although will tolerate dry soil and full sun. Self-seeds freely.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring. Divide in spring.
- **PESTS AND DISEASES** Leaves may be attacked by slugs.

*T. grandiflora* ☼ Rosette-forming perennial with hairy, heart-shaped or triangular to kidney-shaped, 5- to 7-lobed, scalloped leaves, 5–10cm (2–4in) long. From late spring to midsummer, erect, hairy stems bear terminal racemes, to 30cm (12in) long, of 15–30 white to greenish white flowers, to 8mm (¾in) long, with greenish white calyces. ↑ to 80cm (32in), ↔ 30cm (12in). North America (Alaska to California). \*\*\*. ‘Perky’ has smaller leaves, and bears red flowers; ↑ to 40cm (16in), ↔ 25cm (10in). ‘Purpureppich’ has leaves tinged purplish red in summer, dark purple leaf-stalks, and pink-fringed green flowers; ↑ to 60cm (24in).

## TELOPEA

Waratah

PROTEACEAE

Genus of 4 species of evergreen shrubs or small trees occurring in drought-prone woodland in Australia. The alternate leaves are simple, leathery, and sometimes toothed or lobed. *Telopea* species are cultivated mainly for their paired, tubular flowers, 2–2.5cm (¾–1in) long, which are split on the lower sides. Each flower has 4 short lobes, with the margins rolled under, and a prominent stigma. The flowers are surrounded by overlapping, coloured bracts and are produced in dense, terminal, umbel-like heads in spring or summer; they are followed by boat-shaped, woody seed pods. In frost-prone climates, grow in a cool greenhouse. In warmer areas, they are suitable for a shrub border.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (JI No.2), with additional sharp sand, in full light or bright filtered light. During the growing season, water freely and apply a low-nitrate, low-phosphate fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, sandy, slightly acid soil in full sun or partial shade. Pruning group 8.



## TELOPEA

- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Insert semi-ripe or leaf-bud cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

***T. mongaensis*** ■ (Braidwood waratah, Monga waratah). Erect, bushy shrub producing inversely lance-shaped, round-tipped, matt, dark green leaves, 10–15cm (4–6in) long. From late spring to summer, produces flowerheads 8–10cm (3–4in) across, each consisting of a ring of pale green to pale pink bracts and abundant tubular red flowers. ↑ 2–3m (6–10ft) or more, ↔ 1.5–2.5m (5–8ft). Australia (New South Wales). \*



*Telopea oreades*

a ring of inconspicuous, hairy, rust-red bracts and 10–20 tubular red, rarely yellow flowers, all maturing at the same time. ↑ to 8m (25ft), ↔ 1.5–3m (5–10ft). Australia (Tasmania). \*

† **Temple bells** see *Smithiantha*

## TEMPLETONIA

LEGUMINOSAE/PAPILIONACEAE

Genus of 11 species of upright to rounded, evergreen shrubs and sub-shrubs found in dry, open scrub and drought-prone woodland in Australia. Angular or grooved, sometimes spiny branches bear alternate, simple, obovate to oblong leaves. They are grown for their pea-like flowers, borne singly or in clusters from the leaf axils, between autumn and spring. Where temperatures fall below 5–7°C (41–45°F), grow in a cool or temperate greenhouse. Elsewhere, grow in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water sparingly in



*Templetonia retusa*

winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Pruning group 8; plants under glass may need restrictive pruning.

- **PROPAGATION** Sow pre-soaked seed at 16°C (61°F) in spring. Insert semi-ripe cuttings with bottom heat in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

***T. retusa*** ■ (Cockies' tongues, Coral bush, Flame bush). Evergreen shrub, bushy when young, with alternate, obovate to oblong, leathery, glaucous, deep green leaves, 1.5–4cm (½–1½in) long. Crimson, sometimes pink or yellow-white flowers, 3–5cm (1¼–2in) long, are borne singly from the leaf axils from winter to spring. ↑ 1–3m (3–10ft), ↔ 1–2m (3–6ft). S. and W. Australia. \* (min. 5–7°C/41–45°F)

† **Terebinth** see *Pistacia terebinthus*

## TERMINALIA

COMBRETACEAE

Genus of 200 species of deciduous and evergreen trees, frequently buttressed, found in tropical woodland worldwide. The attractive, simple, entire, broadly obovate to oblong or elliptic leaves are either transparent or minutely pitted with transparent spots, and arranged alternately, in spirals, or in nearly opposite pairs. Insignificant, petalless, tubular flowers are borne in axillary or terminal spikes or panicles, followed by one-seeded fruits. Where temperatures fall below 13°C (55°F), grow in a temperate or warm greenhouse. In tropical climates, grow as specimen or shade trees, hedges, or windbreaks.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with additional sharp sand, in full light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moderately fertile, sandy soil in full sun. Pruning group 1; plants grown under glass need restrictive pruning.
- **PROPAGATION** Sow seed at 18–24°C (64–75°F) in spring. Layer in spring.
- **PESTS AND DISEASES** Trouble free.

***T. catappa*** ♀ (Indian almond). Dense, spreading, deciduous tree, the branches of young specimens forming horizontal

## TETRACENTRON

whorls. Broadly obovate to obovate, lustrous, dark green leaves, to 25cm (10in) long, borne in rosette-like clusters at the branch tips, turn red before falling. Petalless flowers have white calyces, with tubes to 1cm (½in) long, and are borne in axillary spikes, to 16cm (6in) long, in summer; they are followed by narrowly winged, ellipsoid, red, yellow, or green fruit, 5–7cm (2–3in) long, with edible seeds. ↑ 20–35m (70–120ft), ↔ 15–20m (50–70ft). Tropical Asia, Malaysia, N. Australia; Polynesia. \* (min. 13–15°C/55–59°F)

## TERNSTROEMIA

THEACEAE

Genus of 85 species of evergreen trees and shrubs occurring in woodland in mainly tropical regions of Asia, Africa, and North and South America. They are cultivated for their handsome, usually entire, leathery leaves, their many-stamened flowers, produced singly or sometimes in small clusters, and their usually pendent, spherical, fleshy, greenish yellow then bright red fruit. *T. gymnanthera* is the most commonly cultivated species. Grow as a specimen plant, in a shrub border, or against a shady wall, or use for hedging. In frost-prone climates, grow tender species in a conservatory or cool greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) compost in bright filtered light. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, humus-rich, acid soil in partial shade. Pruning group 8; plants grown under glass may need restrictive pruning. Trim hedges after flowering.
- **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Insert semi-ripe cuttings with bottom heat in late summer.
- **PESTS AND DISEASES** Trouble free.

***T. gymnanthera***, syn. *T. japonica*. Rounded, evergreen shrub. Elliptic to inversely lance-shaped, leathery, glossy, very dark green leaves, to 10cm (4in) long, turning bronze in cold weather, are usually clustered at the shoot tips. White flowers, 1cm (½in) across, are produced singly or in small clusters from the leaf axils, in late spring and early summer; they are followed by spherical, greenish yellow berries, 2.5cm (1in) long, ripening to red. ↑ 3m (10ft). China, Taiwan, Japan. \*\* (borderline). 'Variegata' has leaves margined with creamy white, and tinged pink in winter; \*

***T. japonica*** see *T. gymnanthera*.

† ***Testudinaria elephantipes*** see *Dioscorea elephantipes*

## TETRACENTRON

TETRACENTRACEAE

Genus of one species of deciduous tree found in mountain woodland in S.W. and C. China, the Himalayas, and N. Burma, cultivated for its attractive foliage and flower spikes. The alternate, simple leaves have stipule-like flanges on the stalks. Small, petalless, bisexual yellow flowers are produced in pendent



*Telopea mongaensis* (inset: flowerhead detail)

## TETRACENTRON

spikes in summer. *T. sinense* is suitable for a woodland garden.

- **HARDINESS** Fully hardy, but young growth may be damaged by late frosts.
- **CULTIVATION** Grow in well-drained soil in sun or partial shade. Shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Insert semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

*T. sinense* ☉ Graceful, spreading, deciduous tree with ovate or heart-shaped, tapered, scalloped, dark green leaves, to 12cm (5in) long, turning red in autumn. Tiny yellow flowers are borne in slender, pendent spikes, to 15cm (6in) long, from the shoot tips in summer. ↑ 17–30m (56–100ft), ↔ 10m (30ft). Himalayas, S.W. and C. China, N. Burma. \*\*\*

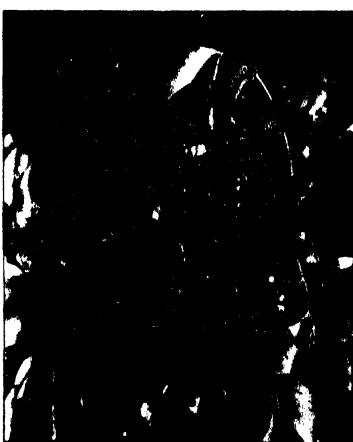
## TETRADIUM

syn. EUODIA, EVODIA  
RUTACEAE

Genus of 9 species of upright to rounded, deciduous or evergreen trees and shrubs found in woodland from the Himalayas to E. and S.E. Asia, and cultivated for their attractive foliage, flowers, and dense clusters of fruit. They have opposite, usually pinnate leaves. Cup-shaped flowers, each with 4 or 5 usually hooded petals, are borne in terminal or axillary corymbs or panicles. Oval to pear-shaped or spherical green fruits, with 1–5 follicles, each 1- or 2-seeded, are produced in late summer or autumn. Tetradiums make handsome specimen trees for a lawn or woodland garden. In frost-prone areas, grow tender species in a cool or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in well-drained soil in full sun or partial shade. Pruning group 1.
- **PROPAGATION** Sow seed in a seedbed in autumn. Insert root cuttings in midwinter.
- **PESTS AND DISEASES** Trouble free.

*T. daniellii* ☐☉ syn. *Euodia daniellii*, *E. hupehensis*. Spreading, deciduous tree bearing pinnate leaves, to 40cm (16in) or more long, each with up to 11 elliptic, ovate, or lance-shaped, glossy, dark green leaflets, turning yellow in autumn. Small, aromatic white flowers, with yellow anthers, are produced in



*Tetradium daniellii*

domed, terminal corymbs, to 15cm (6in) across, in late summer and early autumn; they are followed by dense clusters of spherical, red-brown to black fruit, 8mm (3/16in) across. ↑ 15m (50ft). S.W. China, Korea. \*\*\*

## TETRANEMA

SCROPHULARIACEAE

Genus of 2 species of shrubby, evergreen perennials from moist, shady situations at altitudes up to 1,200m (4,000ft) in Mexico and Guatemala. They are cultivated for their decorative flowers, produced over a long period in summer. The many flower stems bear terminal clusters of trumpet-shaped, 2-lipped, violet, lilac, or mauve flowers, the upper lips 2-lobed, the lower ones 3-lobed; the stems arise from neat rosettes of obovate or oblong, scalloped, leathery leaves. In frost-prone areas, grow in a warm greenhouse or as houseplants. In warmer areas, grow in a shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light with moderate to high humidity. In summer, water freely and apply a balanced liquid fertilizer monthly; water moderately at other times. Pot on in spring. Outdoors, grow in well-drained soil in partial shade.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) as soon as ripe or in spring. Divide established clumps in spring.
- **PESTS AND DISEASES** Aphids may be a problem.

*T. mexicanum* see *T. roseum*.

*T. roseum* ☐☉ syn. *T. mexicanum* (Mexican foxglove, Mexican violet). Evergreen perennial with obovate, dark green leaves, to 12cm (5in) long. In summer, trumpet-shaped, 2-lipped, lilac or mauve flowers, 1.5cm (1/2in) across, with darker markings, are produced on stems to 20cm (8in) long. ↑ 20cm (8in), ↔ 15cm (6in). Mexico. ☐ (min. 13°C/55°F)



*Tetranema roseum*

## TETRANEURIS

ASTERACEAE/COMPOSITAE

Genus of about 35 species of aromatic annuals and short-lived herbaceous perennials from plains, prairies, and mountain screes in W. and C. USA. They are grown for their aromatic foliage and flowers. Alternate, narrowly linear to lance-shaped or inversely lance-shaped, occasionally lobed, very hairy leaves are usually arranged in basal rosettes, but are occasionally distributed along the stems. The mostly solitary, daisy-like yellow flowerheads are borne in early summer. Grow in a sunny scree bed or alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Outdoors, grow in sharply drained, gritty soil in full sun, protected from excessive winter wet. In an alpine house, use a mix of 2 parts grit and 1 part each loam and leaf mould. Water moderately when in growth, avoiding the foliage, and sparingly in winter.
- **PROPAGATION** Sow seed as soon as ripe in an open frame.
- **PESTS AND DISEASES** Aphids and red spider mites may prove troublesome under glass.

*T. acaulis*, syn. *Hymenoxys acaulis*. Tap-rooted perennial with crowded, basal rosettes of narrowly inversely lance-shaped, very hairy, grey-green leaves, 2–8cm (3/4–3in) long. Usually solitary yellow flowerheads, to 5cm (2in) across, are borne on upright, hairy stems in early summer. ↑ to 15cm (6in). USA (Idaho to N. Dakota, Texas, and New Mexico). \*\*\*

## TETRAPANAX

ARALIACEAE

Genus of one species of suckering, evergreen shrub or small tree occurring in woodland in S. China and Taiwan. It is grown for its large, alternate, palmately lobed leaves, its umbels of flowers, borne in panicle-like, woolly inflorescences with conspicuous bracts, and its clusters of black fruit. In frost-prone areas, grow against a warm wall, in a container moved under cover in winter, or in a cool greenhouse. In warmer climates, grow in a sheltered border. The flowers are particularly attractive to bees.

- **HARDINESS** Frost hardy (borderline).
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), in full light with shade from hot sun. During the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in any well-drained soil in full sun, sheltered from strong winds. In order to restrict the spread of established clumps, remove suckers at the extremities. Where top-growth is killed by frost, *T. papyrifera* may be almost herbaceous, growing again from below ground. Pruning group 1 or 7.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Remove suckers in spring or summer.
- **PESTS AND DISEASES** Trouble free.

*T. papyrifera* ☉☉ syn. *Aralia papyrifera*, *Fatsia papyrifera*, *T. papyrifera* (Rice-paper plant). Thicket-forming, sparsely

branched, evergreen shrub or small tree with stout shoots. The 5- to 11-lobed leaves, to 50cm (20in) or more across, scaly, mid-green above and felted pale green beneath, are clustered at the shoot tips. In autumn, produces umbels, 1cm (1/2in) across, of white flowers in panicle-like inflorescences, to 50cm (20in) long, followed by spherical fruit, to 3mm (1/8in) across. ↑ 5m (15ft) or more. S. China, Taiwan. \*\* (borderline) *T. papyrifera* see *T. papyrifera*.

## TETRASTIGMA

VITACEAE

Genus of about 90 species of evergreen and deciduous tendril climbers found in tropical woodland from Indonesia and Malaysia to N. Australia. They are grown mainly for their alternate, mostly fully divided, sometimes lobed, palmate to pedate leaves. Tiny, 4-petalled flowers are borne in cyme-like, axillary umbels or clusters in summer, followed by grape-like black berries. In areas where temperatures fall below 15°C (59°F), grow in a warm greenhouse or as houseplants. In tropical climates, train over a wall or a tree stump.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with additional leaf mould, in bright filtered or bright indirect light, with moderate to high humidity. In the growing season, water freely, applying a balanced liquid fertilizer monthly; water moderately in winter. The climbing stems need support. Outdoors, grow in moist, fertile soil in partial or dappled shade. Pruning group 11, in spring.
- **PROPAGATION** Insert semi-ripe cuttings with bottom heat in summer. Layer in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*T. voinierianum* ☐☉ syn. *Cissus voinieriana*, *Vitis voinieriana* (Chestnut vine, Lizard plant). Strong-growing,



*Tetraostigma voinierianum*

## TETRASTICMA

evergreen climber with sturdy, hairy, densely red-brown stems. Leaves are 3- to 5-palmate, 15-40cm (6-16in) long, with broadly diamond-shaped to obovate, coarsely toothed leaflets, to 25cm (10in) long, lustrous, dark green above and brownish yellow-hairy beneath. Yellowish green flowers are borne in dense, axillary umbels or clusters, 5cm (2in) across, on mature plants in summer; they are followed by small, acidic berries. ‡ to 15m (50ft) or more. Laos. ☼ (min. 15°C/59°F)

## TETRATHECA

TREMANDRACEAE

Genus of at least 20 species of small, evergreen shrubs from heathland and drought-prone forest in Australia, grown for their flowers and attractive, heather-like habit. The tiny, linear to rounded leaves are arranged alternately, in whorls, or in opposite pairs. Solitary, nodding, cross-, star-, or cup-shaped, 4- or 5-petalled flowers are borne from the upper leaf axils in spring and summer. In frost-prone regions, grow in a cool greenhouse. In milder areas, grow in a shrub border.

- **HARDINESS** Half hardy; *T. ciliare* may survive brief spells at a few degrees below 0°C (32°F).
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light, with shade from hot sun, and with good ventilation. In growth, water freely and apply a half-strength balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in humus-rich, neutral to acid soil in full sun with some midday shade. Pruning group 10, after flowering.
- **PROPAGATION** Surface-sow seed at 13-16°C (55-61°F) in spring. Insert semi-ripe cuttings with bottom heat in summer. Air layer in spring.
- **PESTS AND DISEASES** Trouble free.

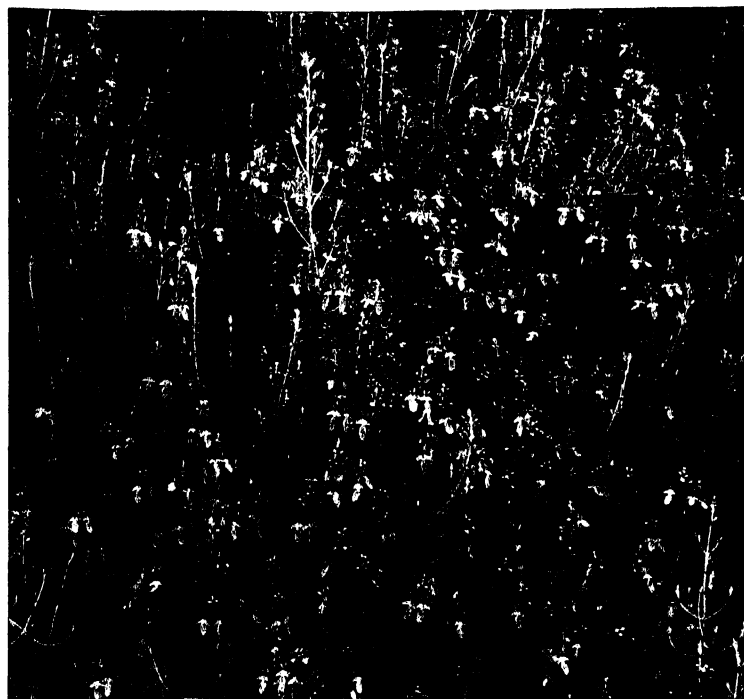
***T. ciliare*.** Twiggy, tufted shrub with wiry, densely hairy stems and whorls of 3 broadly ovate, mid- to dark green leaves, 5mm (¼in) long, fringed with hairs. From spring to summer, cup-shaped, rose-pink flowers, 1-2cm (½-¾in) across, with 4 oblong petals, are produced from the upper leaf axils. ‡→ 40-50cm (16-20in). S. Australia. \*

## TEUCRIUM

LABIATAE/LAMIACEAE

Genus of approximately 300 species of herbaceous perennials and evergreen and deciduous shrubs and subshrubs, found mainly in thickets, woodland, dry, rocky places, and mountainous areas worldwide, especially in the Mediterranean region. Teucriums are grown for their attractive habit, aromatic foliage, and whorled clusters or racemes of 2-6 tubular to bell-shaped, sometimes 2-lipped flowers. The leaves, arranged in opposite pairs, are simple or lobed, and entire or toothed. Teucriums have a variety of garden uses: the small species, to 30cm (12in) tall, are suitable for a rock garden, raised bed, or trough; grow the shrubs, such as *T. fruticans*, in a sheltered border or against a warm, sunny wall, or use for hedging in mild climates.

- **HARDINESS** Fully hardy to frost hardy.



*Teucrium fruticans*

- **CULTIVATION** Grow in well-drained, preferably neutral to alkaline soil in full sun; the smallest species retain their compact habit better on poor, gritty soil. Pruning group 7 for *T. fruticans*.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Insert softwood cuttings in early summer, or semi-ripe cuttings in midsummer, both with bottom heat. Overwinter young plants of frost-hardy species in a cool greenhouse.
- **PESTS AND DISEASES** Trouble free.

***T. aroanum*, syn. *T. aroanum*.** Low-growing, evergreen subshrub producing branching, stoloniferous, densely hairy stems and ovate or elliptic to oblong, aromatic, silver-hairy leaves, to 2cm (¾in) long. In summer, 2-lipped purple flowers, to 2cm (¾in) long, are borne in short-stemmed, axillary clusters. ‡ to 8cm (3in), ‡→ to 20cm (8in). S. Greece. \*\*\*

***T. aroanum* see *T. aroanum*.**

***T. fruticans*** ■ (Shrubby germander, Tree germander). Bushy, evergreen shrub with arching, white-woolly shoots and aromatic, ovate to lance-shaped, grey-green leaves, to 2cm (¾in) long.



*Teucrium polium*

white-woolly beneath. In summer, whorls of pale blue flowers, 2.5cm (1in) long, with prominent stamens, are borne in terminal racemes, to 10cm (4in) long. ‡ 60-100cm (24-39in), ‡→ 4m (12ft). W. Mediterranean. \* \* \*. 'Azuredun' ‡ has dark blue flowers.

***T. polium*** ■ Mound-forming, deciduous subshrub with decumbent to erect, white- to tawny-woolly stems. Bears stemless, linear or oblong to lance-shaped, wrinkled, white-woolly, grey-green leaves, to 3.5cm (1½in) long. In summer, 2-lipped, purple or yellow flowers, to 1cm (½in) long, are borne in abundant dense, flat-topped, terminal clusters. ‡→ 30cm (12in). Mediterranean to W. Asia. \* \* \*

***T. subspinosum*.** Shrubby perennial with ascending, twisted, branching, white-woolly stems, with short spines on the branchlets, and diamond-shaped to lance-shaped or linear, grey-green leaves, to 7mm (¼in) long, often densely white-woolly beneath. In summer, 2-lipped pink flowers, to 8mm (⅓in) long, are produced in loose, terminal racemes, to 5cm (2in) long. ‡→ 20cm (8in). Balearic Islands (Majorca). \* \* \*

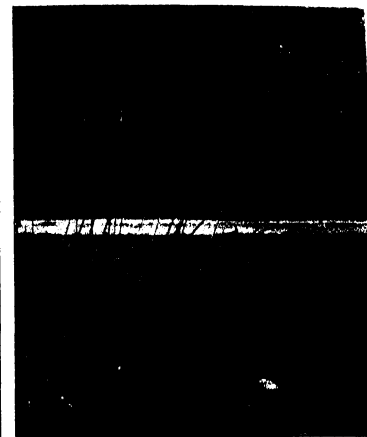
## THALIA

MARANTACEAE

Genus of 12 species of evergreen or herbaceous, marginal aquatic perennials found at the swampy margins of lakes and ponds from S.E. USA to Argentina, including the West Indies, with one species in tropical Africa. They have handsome, long-stalked, ovate-lance-shaped leaves, and bear unusual violet flowers, with enlarged staminodes, in 2 ranks in long-stalked, branched panicles. In frost-prone areas, grow in a pool in a cool greenhouse. In warmer areas, grow as specimen plants in and around a tropical pool or bog garden.

- **HARDINESS** Half hardy to frost tender; if well below water level, *T. dealbata* survives occasional temperatures to -5°C (23°F) but then becomes deciduous.

## THALICTRUM



*Thalia dealbata*

- **CULTIVATION** Grow in a large aquatic planting basket of fertile, loamy soil, or in deep, humus-rich mud in water up to 15cm (6in) deep, at the edge of a sunny pool. In summer, apply a proprietary aquatic plant fertilizer monthly. Remove old leaves and flowers regularly. Under glass, grow in baskets of loam-based potting compost (J1 No.3) in full light, with a minimum temperature of 10°C (50°F). See also pp.52-53.
- **PROPAGATION** Sow seed at 16-21°C (61-70°F) in moist propagating compost, as soon as ripe or in spring. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

***T. dealbata*** ■ Evergreen, marginal aquatic perennial producing ovate to lance-shaped, white-floury, grey-green leaves, 50cm (20in) long, on leaf-stalks 30-60cm (12-24in) long. In summer, violet flowers, 1.5-2cm (½-¾in) across, are borne in slender panicles, to 20cm (8in) long. ‡ 2-3m (6-10ft), ‡→ 2m (6ft). S. USA, Mexico. \* (borderline)

***T. geniculata*.** Evergreen, marginal aquatic perennial bearing ovate to lance-shaped, grey-green leaves, to 60cm (24in) long, on leaf-stalks to 1.8m (6ft) long. In summer, bears violet flowers, 1.5-2cm (½-¾in) across, in lax, pendent panicles, to 20cm (8in) long. ‡→ 2m (6ft). Tropical Africa, USA (Florida) to Argentina, West Indies. \* (borderline)

## THALICTRUM

Meadow rue

RANUNCULACEAE

Genus of about 130 species of rhizomatous or tuberous perennials found by streams, in meadows, and in moist, shady, often mountainous areas worldwide (except Australasia), mainly in N. temperate regions. The usually erect stems bear alternate, ternate to 4-ternate or 2- to 4-pinnate, sometimes glaucous leaves with lobed or toothed leaflets, the end leaflet longer than the others. The many tiny, petalless flowers are borne in axillary or terminal corymbs, racemes, or panicles; they have petal-like sepals and often numerous showy stamens and pistils in white, yellow, pink, lilac-pink, or violet, giving a fluffy effect. Grown for their attractive foliage and flowers, the taller species are excellent background plants for a border, or a wild or woodland garden; the smaller species are suitable for a

shady rock garden, peat bed, or alpine house. Except for *T. aquilegifolium* and *T. flavum*, most grow best in areas with cool, damp summers. In frost-prone climates, grow tender species in a cool greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in moist, humus-rich soil in partial shade; *T. flavum* subsp. *glaucum* tolerates drier soil and more sun. Grow smaller, alpine species in moist, humus-rich, acid soil in cool partial shade. Tall species and cultivars need staking. Divide and replant *T. delavayi* 'Hewitt's Double' every 2 or 3 years to maintain vigour. All start into growth in mid- or late spring, so take care to avoid damage to dormant plants when cultivating earlier in the year.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in early spring. Divide as new growth begins in spring; divisions may be slow to re-establish. *T. delavayi* 'Hewitt's Double' is sterile, and may be increased only by division.

• **PESTS AND DISEASES** Susceptible to powdery mildew in dry conditions. Slugs may be a problem.

*T. aquilegifolium* ■ Erect, clump-forming, rhizomatous perennial with 2- or 3-pinnate, hairless leaves, to 30cm (12in) long, composed of obovate, wavy-margined leaflets. Clustered, fluffy flowers, 8-10mm (3/8-1/2in) long, with greenish white sepals, falling to reveal numerous bright purple-pink or white stamens, are produced in spreading, flat-topped, terminal panicles on glaucous stems in early summer. † to 1m (3ft), ↔ 45cm (18in). Europe to temperate Asia. \*\*\*. 'Purple Cloud' see 'Thundercloud'. 'Thundercloud' ♀ syn. 'Purple Cloud', has dark purple stamens. 'White Cloud' has yellow-tipped white stamens.

*T. chelidonii*. Erect, clump-forming, rhizomatous perennial bearing 2- or 3-pinnate or ternate, hairless leaves, to 45cm (18in) long, with ovate to almost rounded, many-toothed leaflets. During late summer and early autumn, fluffy flowers, to 2.5cm (1in) across, with conspicuous mauve sepals and shorter, pendent yellow stamens, are produced in terminal and axillary panicles. † 0.3-2.5m (1-8ft), ↔ 60cm (24in). C. and E. Himalayas. \*\*\*

*T. delavayi* ♀ syn. *T. dipterocarpum* of gardens. Erect, hairless, clump-forming, rhizomatous perennial with slender



*Thalictrum delavayi* 'Albun'

stems, shaded dark purple, and usually 2- or 3-pinnate or ternate leaves, to 35cm (14in) long, with entire or 3-lobed leaflets. From midsummer to early autumn, numerous long-stalked, fluffy flowers, to 2.5cm (1in) across, with large, lilac to white sepals, 1.5cm (1/2in) long, and clusters of yellowish white stamens, are borne in widely branching, pyramidal, terminal and axillary panicles. † 1.2m (4ft) or more, ↔ 60cm (24in). E. Tibet to W. China. \*\*\*. 'Albun' ■ has flowers with white sepals. 'Hewitt's Double' ■ ♀ lacks stamens but has more numerous rich mauve sepals, forming long-lasting, rounded, pompon-like flowers.

*T. diffusiflorum*. Erect, clump-forming, rhizomatous perennial, similar to *T. chelidonii*, bearing 2- or 3-pinnate or ternate, greyish green, basal leaves, to 20cm (8in) long, with rounded, almost circular, slightly toothed, finely hairy leaflets. In summer, bears fluffy flowers, 2.5cm (1 1/4in) across, with light pinkish mauve sepals and much shorter, pendent yellow stamens, in loose, few- to many-flowered, axillary and terminal panicles. † 90cm (36in) or more, ↔ 30cm (12in). S.E. Tibet. \*\*\*



*Thalictrum flavum* subsp. *glaucum*

*T. dipterocarpum* of gardens see *T. delavayi*.

*T. flavum* (Yellow meadow rue).

Clump-forming, rhizomatous perennial producing 2- or 3-pinnate, hairless leaves, to 40cm (16in) long, composed of obovate, 3- or 4-lobed leaflets. In summer, numerous fragrant flowers, 5mm (1/4in) long, with small yellow sepals and longer, erect, bright yellow stamens, are produced in erect, compact, narrowly ovoid, axillary and terminal panicles on stout, furrowed stems. † to 1m (3ft), ↔ 45cm (18in). Europe to Caucasus, Russia (Siberia). \*\*\*.

subsp. *glaucum* ■ ♀ syn. *T. speciosissimum*, has glaucous stems and foliage, the leaflets with prominent veins beneath, and larger panicles of paler, sulphur-yellow flowers; ↔ 60cm (24in); Portugal, Spain, N.W. Africa.

'Illuminator' has bright green leaves, emerging yellow-green, and lemon-yellow flowers; † 1.2m (4ft).

*T. kiusianum* ■ Mat-forming perennial with short rhizomes and fern-like, ternate or 2-ternate, dark blue-green leaves, to 12cm (5in) long, with ovate, 3- to 5-lobed leaflets. Pale pinkish mauve flowers, to 1cm (1/2in) across, with conspicuous stamens, are borne in few-flowered, short-stemmed corymbs in early summer. Grow in a damp, shady pear bed, trough, rock garden, or alpine house. Prefers peaty soil. † to 10cm (4in), ↔ 30cm (12in). Japan. \*\*\*

*T. orientale*. Slow-growing, clump-forming, rhizomatous perennial with fern-like, 2-ternate, blue-green leaves, to 12cm (5in) long, with rounded, 3-lobed

leaflets. Deep pinkish blue flowers, 1.5cm (1/2in) long, are produced in few-flowered, wiry-stemmed corymbs in late spring and early summer. Difficult to propagate. † to 30cm (12in). Greece to Caucasus. \*\*\*

*T. rochebruneanum*. Upright, hairless, clump-forming, rhizomatous perennial with 3- or 4-ternate leaves, to 45cm (18in) long, composed of obovate to elliptic, entire or lobed leaflets. White or lavender-pink flowers, 1.5cm (1/2in) long, with pendent stamens, are produced in loose panicles in summer. † 90cm (36in), ↔ 30cm (12in). Japan. \*\*\*

*T. speciosissimum* see *T. flavum* subsp. *glaucum*.

▷ *Thamnocalamus falconeri* see *Himalayacalamus falconeri*

▷ *Thamnocalamus spathaceus* of gardens see *Fargesia murielae*

▷ *Thatch*,

**Brittle** see *Thrinax morrisii*

**Buffalo** see *Thrinax morrisii*

**Silver** see *Coccothrinax fragrans*

▷ *Thatch palm* see *Thrinax*, *T. parviflora*

## THELOCACTUS

CACTACEAE

Genus of about 11 species of spherical to short-cylindrical, ribbed or warty, perennial cacti occurring in arid regions of S.W. USA and C., E., and N.

Mexico. In summer, large, funnel- to bell-shaped, diurnal flowers are borne on or near the slightly depressed crowns. In areas where temperatures fall below 7°C (45°F), grow *Thelocactus* species as houseplants, or in a cool or temperate greenhouse. In warm, dry climates, they are suitable for a border with other cacti, or for a desert garden.

• **HARDINESS** Frost tender.

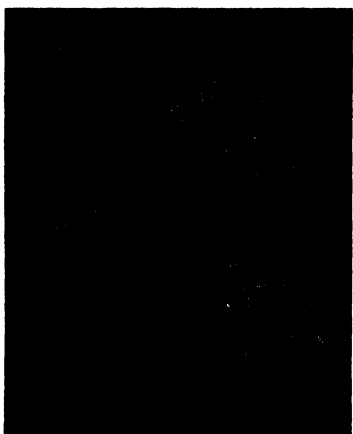
• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with low humidity. From mid-spring to early autumn, water moderately, applying fertilizer 2 or 3 times; keep completely dry at other times of year. Outdoors, grow in poor to moderately fertile, gritty, sharply drained soil in full sun. See also pp.48-49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring. Detach offsets in spring or early summer.

• **PESTS AND DISEASES** Mealybugs may be a problem.

*T. bicolor* ■ ♀ syn. *Ferocactus bicolor*. Simple, rarely clustering cactus bearing spherical, often slightly elongated, bluish green stems. Each rib has 8-13 straight or spirally arranged, warty ribs. Areoles, which have nectar-secreting glands, produce red, yellow, or white spines (8-18 radials and 4 slightly longer centrals, the uppermost of which is flat). Funnel-shaped, red-throated, dark purple-pink flowers, 4-8cm (1 1/2-3in) across, are produced in summer. † 15-20cm (6-8in), ↔ 10cm (4in). USA (Texas), N. and E. Mexico. ♀ (min. 7°C/45°F)

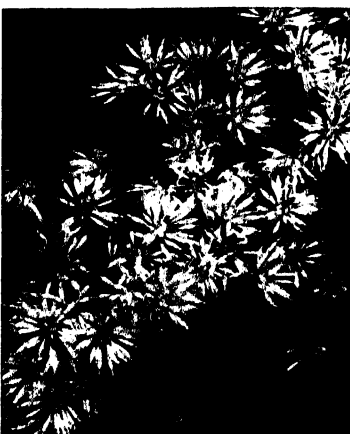
*T. leucacanthus*. Often offsetting cactus producing spherical to cylindrical, pale green stems, each bearing 7-14 straight or slightly spiralling, conical, warty ribs. Areoles with nectar-secreting glands produce yellow, red, grey, or black



*Thalictrum aquilegifolium*



*Thalictrum delavayi* 'Hewitt's Double'



*Thalictrum kiusianum*

*Thelocactus bicolor*

spines (6–20 yellow, sometimes red-tinged radials and 1–3 yellow, red, or black centrals). Short-tubed, funnel-shaped, pale to deep yellow to magenta flowers, 4–5cm (1½–2in) across, are produced in summer. † to 15cm (6in), ↔ to 20cm (8in). C. Mexico. ☼ (min. 7°C/45°F)

*T. macdowellii*, syn. *Echinocactus macdowellii*. Sometimes clustering cactus producing spherical to club-shaped, pale green stems, each bearing 20–25 conical, warty ribs. The white-felted areoles are densely arranged, and produce glassy, transparent, white or pale yellow spines (15–20 radials and 3 or 4 yellowish white centrals, the centrals longer than the radials). Funnel-shaped magenta flowers, 5cm (2in) or more across, are produced in summer. † to 15cm (6in), ↔ 10cm (4in). N.E. Mexico. ☼ (min. 7°C/45°F)

*T. setispinus*, syn. *Ferocactus setispinus*, *Hamatocactus setispinus*. Solitary cactus, later offsetting, producing spherical to short-cylindrical, dark green stems. Each stem has 12–15 notched, often wavy ribs. Rounded to elliptic, straw-coloured areoles produce white or brown spines (9–17 white or red-tinged radials and 1 pale yellow, sometimes red-tinged, hooked central). Funnel-shaped, red-throated yellow flowers, to 5cm (2in) across, are produced from summer to autumn. † 20cm (8in), ↔ 12cm (5in). USA (Texas), N.E. Mexico. ☼ (min. 7°C/45°F)

▷ *Thelycrania* see *Cornus*  
*T. alba* see *C. alba*

## THELYPTERIS

THELYPTERIDACEAE

Genus of 2 species of deciduous, terrestrial ferns found in swamps and bogs in temperate regions throughout the world. The lance-shaped, pinnate fronds, comprising deeply lobed pinnae, arise from creeping rhizomes. Sori, which have no protective indusia, form on the undersides of the fronds. Grow in a moist border, or plant at the edge of a pond; *T. palustris* may be invasive.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any moist, moderately fertile soil in full sun or partial shade.
- **PROPAGATION** Sow spores at 15°C (59°F) as soon as ripe. Divide in spring or summer. See also p.51.
- **PESTS AND DISEASES** Trouble free.

*Thelypteris palustris*

*T. hexagonoptera* see *Phegopteris hexagonoptera*.

*T. palustris* ■ (Marsh fern). Deciduous fern producing long, creeping rhizomes and long-stalked, erect, lance-shaped, pinnate, pale green sterile fronds, to 40cm (16in) long, each consisting of up to 25 pairs of narrowly lance-shaped, deeply lobed pinnae. Fertile fronds, 90cm (36in) long, which are produced only in good light, have pinnae with narrower lobes. The abundant sori may produce a brown haze over the colony in late summer. † 60cm (24in), ↔ to 1m (3ft). Europe, Asia. \*\*\*

*T. phegopteris* see *Phegopteris connectilis*.

## THERMOPSIS

LEGUMINOSAE/PAPILIONACEAE

Genus of approximately 20 species of rhizomatous perennials from grassy mountainsides, light woodland, and streamsides in Siberia (Russia), N. India, E. Asia, and North America. They are cultivated for their attractive foliage and lupin-like flowers. Erect stems bear alternate, stalked, 3-palmate leaves, some silver-hairy, with persistent, leafy

stipules; the similar basal leaves are produced in smaller numbers. Pea-like, yellow or purple flowers, with rounded standard petals and roughly equal-sized keel and wing petals, are borne in terminal or axillary racemes. Suitable for a mixed or herbaceous border, or a wild-flower garden; *T. rhombifolia* is invasive and best grown in a wild garden. The flowers are attractive to bees.

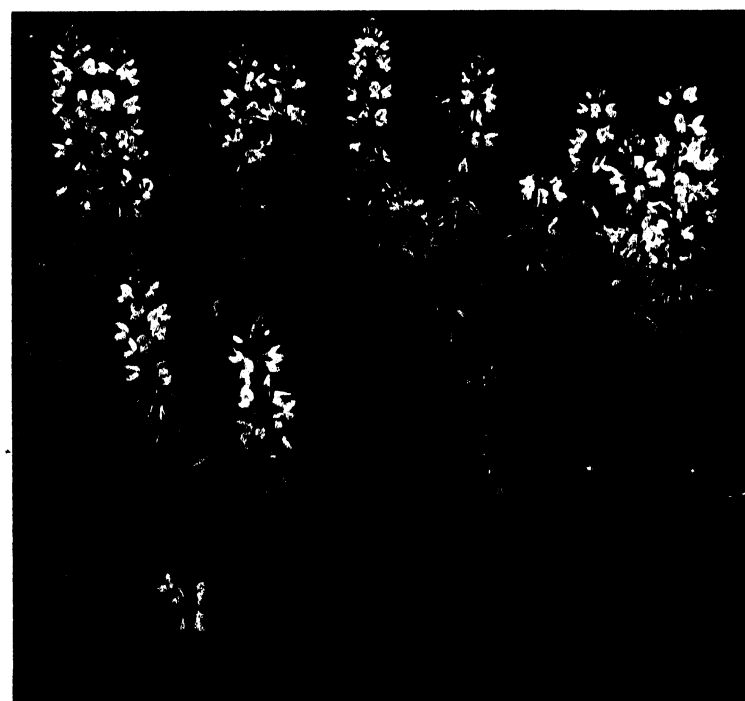
- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in light, well-drained, fertile, loamy soil in full sun or partial shade, although they will tolerate a range of conditions. Usually long-lived, they have tough roots that resent disturbance.
- **PROPAGATION** Sow seed at 10–13°C (50–55°F) in spring, transplanting seedlings to their final position as soon as possible. Division is difficult, and divisions are very slow to re-establish.
- **PESTS AND DISEASES** Slugs and aphids may be a problem.

*T. caroliniana* see *T. villosa*.

*T. montana* see *T. rhombifolia*.

*T. rhombifolia* ■ syn. *T. montana*. Rhizomatous perennial producing unbranched stems and 3-palmate leaves, to 11cm (4½in) long, with broadly ovate leaflets. The stems and lower leaf surfaces are softly silver-hairy. In early summer, yellow flowers, 2.5cm (1in) long, are produced in erect, terminal racemes. † 90cm (36in), ↔ 60cm (24in). USA (Rocky Mountains to New Mexico). \*\*\*

*T. villosa*, syn. *T. caroliniana* (Carolina lupin). Rhizomatous perennial with stout, few-branched or branchless, hairless stems. The 3-palmate leaves, to 10cm (4in) long, have elliptic, obovate, or lance-shaped leaflets, hairless above, glaucous and silky-hairy beneath. In late spring and early summer, downy yellow flowers, to 2cm (¾in) long, are produced in erect, compact, terminal racemes. † 1–1.5m (3–5ft), ↔ 60cm (24in). USA (North Carolina to Georgia). \*\*\*

*Thermopsis rhombifolia*

## THESPESIA

MALVACEAE

Genus of 17 species of mainly evergreen shrubs and trees, closely allied to *Hibiscus*, occurring throughout the world in a wide range of habitats, often in coastal areas of tropical regions. They are grown for their cup-shaped flowers, each with 5 spreading petals, produced singly or in clusters from the leaf axils. The leaves are alternate, simple, mainly lance-shaped to broadly ovate, or palmately 5- to 9-lobed. In areas where temperatures fall below 13–15°C (55–59°F), grow in a warm greenhouse. In tropical climates, grow as specimen plants, screens, or windbreaks, especially in coastal areas.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light. In growth, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Pruning group 1; plants under glass may need restrictive pruning.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring. Insert semi-ripe cuttings with bottom heat in summer. Air layer in spring or summer.
- **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

*T. populnea* □ (Portia tree). Erect to spreading, bushy, evergreen tree bearing long-stalked, heart-shaped to ovate, light to mid-green leaves, 6–12cm (2½–5in) long, with nectar-bearing zones at the bases of the midribs. Solitary yellow flowers, 5–8cm (2–3in) across, with maroon-marked centres, open in sequence throughout the year in warm areas; they fade to dull purple. † 10–15m (30–50ft), ↔ 5–8m (15–25ft). Coastal tropics. (min. 13–15°C/55–59°F)

## THEVETIA

APOCYNACEAE

Genus of 8 species of evergreen shrubs and small trees from woodland, often near coastal areas, in tropical North and South America and the West Indies. They are cultivated for their showy, funnel-shaped flowers, with 5 overlapping petals, produced singly or in cymes from spring to autumn. They have alternate, simple, mostly linear to ovate leaves. Where temperatures fall below 13–15°C (55–59°F), grow in a temperate or warm greenhouse. In warmer climates, grow in a shrub border. The seeds are highly toxic if ingested.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light and with good ventilation. During the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Pruning group 1; plants under glass need restrictive pruning.
- **PROPAGATION** Sow seed at 18–21°C (64–70°F) in spring. Insert semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

*Thevetia peruviana*

*T. nerifolia* see *T. peruviana*.  
*T. peruviana* [U] syn. *T. nerifolia*.  
 Erect, open shrub or small tree bearing narrowly lance-shaped, lustrous, mid- to dark green leaves, 8–15cm (3–6in) long. Fragrant, apricot-yellow flowers, to 7cm (3in) long, are produced in few-flowered cymes near the shoot-tips from spring to autumn; they are followed by triangular-ovoid, semi-fleshy, red, later black seed pods, each of which contains 1 or 2 nut-like seeds.  $\pm$  2–8m (6–25ft),  $\leftrightarrow$  1–3m (3–10ft). Tropical America.  $\bullet$  (min. 13–15°C/55–59°F). 'Alba' has white flowers.

- ▷ **Thistle**,  
**Blessed Mary's** see *Silybium marianum*  
**Carline** see *Carlina*  
**Cotton** see *Onopordum*  
**Globe** see *Echinops*  
**Mountain** see *Acanthus montanus*  
**Mountain sow** see *Cicerbita alpina*  
**Scotch** see *Onopordum*  
**Stemless Carline** see *Carlina acaulis*

## THLASPI

BRASSICACEAE/CRUCIFERAE

Genus of about 60 species of annuals, biennials, and short-lived perennials found in alpine pasture, in mountain woodland, or among rocks and screes in N. temperate regions. They produce oblong or spoon-shaped to broadly ovate or rounded, entire or toothed leaves, usually in rosettes, and are grown for their racemes of 4-petalled, cross-shaped flowers, borne from spring to early summer. Suitable for growing in a sunny rock garden, scree bed, or alpine house.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in gritty, humus-rich, sharply drained soil in full sun with some midday shade. In an alpine house, use a mix of equal parts loam, leaf mould, and sharp grit.
- **PROPAGATION** Sow seed as soon as ripe in containers in an open frame. May self-seed.
- **PESTS AND DISEASES** Slugs and snails may be a problem.

*T. bulbosum*. Tufted, tuberous-rooted perennial with rosettes of ovate to ovate-oblong or rounded, entire or toothed, glaucous, dark green leaves, to 2.5cm (1in) long. Deep purple-violet flowers, 6–8mm ( $\frac{1}{4}$ – $\frac{1}{2}$ in) across, with spoon-shaped petals, are produced in loose,

spike-like racemes in spring.  $\pm$  to 10cm (4in),  $\leftrightarrow$  to 20cm (8in). C. Greece, Aegean Islands. \*\*\*

*T. cepaeifolium* subsp. *rotundifolium*. Short-lived, tufted perennial bearing broadly ovate to almost rounded, deep green leaves, to 1.5cm ( $\frac{1}{2}$ in) long. From spring to early summer, fragrant, deep violet-blue flowers, 1cm ( $\frac{1}{2}$ in) long, are produced in short-stemmed, congested, head-like racemes.  $\pm$  to 10cm (4in). Europe (Alps, Apennines). \*\*\*  
*T. macrophyllum* see *Pachyphragma macrophyllum*.

- ▷ **Thorn**,  
**Chinese box** see *Lycium barbarum*  
**Christ's** see *Euphorbia milii* var. *splendens*, *Paliurus spina-christi*  
**Cockspur** see *Crataegus crus-galli*  
**Glastonbury** see *Crataegus monogyna* 'Biflora'  
**Jerusalem** see *Paliurus spina-christi*, *Parkinsonia aculeata*  
**Kangaroo** see *Acacia paradoxa*  
**Tansy-leaved** see *Crataegus tanacetifolia*  
**Washington** see *Crataegus phaenopyrum*  
 ▷ **Thorns, Crown of** see *Euphorbia milii*  
 ▷ **Thorow-wax** see *Bupleurum*  
 ▷ **Thousand mothers** see *Tolmiea menziesii*  
 ▷ **Three-men-in-a-boat** see *Tradescantia spathacea*  
 ▷ **Thrift** see *Armeria*  
**Sea** see *A. maritima*

## THRINAX

Thatch palm

ARECACEAE/PALMAE

Genus of 7 species of single-stemmed palms, found in forested areas on well-drained, often limestone soils, from sea-level to 1,200m (4,000ft), in the USA (Florida), Mexico, Belize, and the Caribbean islands. The long-stalked, fan-shaped, palmately lobed leaves are borne in a terminal, almost spherical head. Small, cup-shaped flowers, each

*Thrinax morrisii*

composed of a fused, 3-lobed calyx and a 3-lobed corolla, are borne in panicles between the leaves. In frost-prone areas, grow in a warm greenhouse or as house-plants. In tropical regions, grow in a shrub border or as specimen plants on a lawn.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light or bright filtered light. During growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Pot on or top-dress in spring. Outdoors, grow in moist but well-drained, fertile soil in full sun.
- **PROPAGATION** Sow seed at 27°C (81°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be a problem under glass.

*T. bahamensis* see *T. morrisii*.  
*T. microcarpa* see *T. morrisii*.  
*T. morrisii* [U] syn. *T. bahamensis*, *T. microcarpa*, *T. ponceana* (Brittle thatch, Buffalo thatch, Key palm). Small palm with a slim, erect stem. Leaves, 75cm (30in) long, are divided to halfway into 33–58 narrow lobes, densely white to tan-scaly beneath when young, then glabrous blue-green above; they have fibrous-based leaf-stalks, to 80cm (32in) long. White to yellow or orange flowers are borne in loose, arching panicles, to 1.5m (5ft) long, usually in summer.  $\pm$  5–10m (15–30ft),  $\leftrightarrow$  2–3.5m (6–11ft). USA (Florida), Cuba, West Indies.  $\bullet$  (min. 16°C/61°F)  
*T. parviflora* ♀ (Broom palm. Thatch palm). Small to medium-sized palm with a slim stem. Leaves, to 1m (3ft) long, are divided to halfway into 35–60 narrow lobes, sparsely scaly beneath, rich green above; they have leaf-stalks 40–130cm (16–54in) long. Fragrant, cream to yellow flowers are produced in panicles, 0.5–1.7m (20–66in) long, usually in summer.  $\pm$  6–13m (20–43ft),  $\leftrightarrow$  1.5–3.5m (5–11ft). Jamaica.  $\bullet$  (min. 16°C/61°F)  
*T. ponceana* see *T. morrisii*.

- ▷ **Throatwort** see *Campanula trachelium*  
**Blue** see *Trachelium caeruleum*

## THRYPTOMENE

Heath myrtle

MYRTACEAE

Genus of 25 species of upright to spreading, evergreen shrubs, found on rocky slopes and heathland in Australia, and grown for their flowers and foliage. The wiry stems bear small, simple, oblong or obovate to inversely lance-shaped leaves in opposite pairs, and produce an abundance of saucer-shaped flowers, each with 5 petals and 5 tepals, from winter to summer. In frost-prone areas, grow in a cool greenhouse. In milder climates, grow heath myrtles in a shrub border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full light with good ventilation. During the growing season, water moderately and apply a half-strength, balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in light, well-drained, moderately fertile, neutral to acid soil in full sun. Pruning group 10, after flowering.

- **PROPAGATION** Surface-sow seed at 13°C (55°F) in spring. Insert semi-ripe cuttings with bottom heat in summer.
- **PESTS AND DISEASES** Trouble free.

*T. calycina*. Spreading, bushy shrub with crowded, tiny, oblong to inversely lance-shaped, aromatic, dark green leaves, 0.8–1.5cm ( $\frac{3}{8}$ – $\frac{1}{2}$ in) long. From winter to spring, axillary, white, pink, or pink and white flowers, 6mm ( $\frac{1}{4}$ in) across, with yellow centres that age to red, are borne singly or in clusters of 2 or 3.  $\pm$  1.5–2.5m (5–8ft). Australia (Victoria).  $\bullet$  (min. 4–5°C/39–41°F)

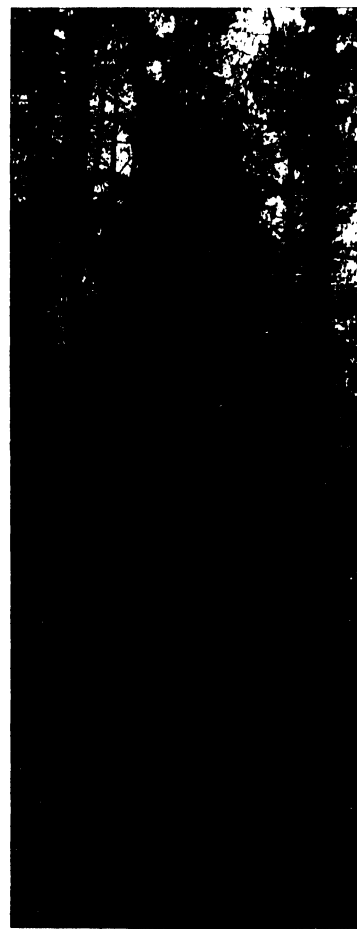
## THUJA

Arborvitae

CUPRESSACEAE

Genus of 6 species of narrowly to broadly conical, sometimes columnar, monoecious, evergreen, coniferous trees found in forests in E. Asia and North America. Scale-like, narrowly wedge- to diamond-shaped leaves, borne in 2 ranks of opposite pairs, are usually aromatic when bruised. The small, erect, variably shaped female cones have scales that hinge from the base; male cones are small and ovoid. Grow as specimen trees; most are suitable for hedging. The dwarf cultivars may be grown in a rock garden. Contact with the foliage may aggravate skin allergies.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, moist but well-drained soil in full sun. Shelter from cold, drying winds, especially when young. Trim hedging in spring and late summer.

*Thuja koraiensis*



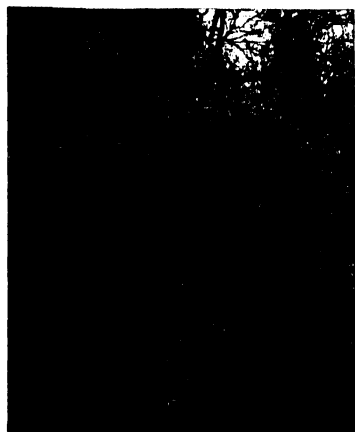
*Thuja occidentalis* 'Caespitosa'

• **PROPAGATION** Sow seed in late winter in containers in a cold frame. Insert semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Prone to scale insects, *Coryneum* canker, and aphids. Leaves are susceptible to *Keithia* disease, which may be fatal in young seedlings.

*T. koraiensis* [M] ♂-△ Small, conical tree with often trailing branchlets and flattened shoots. Scale-like leaves are triangular on the main shoots and diamond-shaped on the young shoots, bright mid-green above and vivid silver beneath. Ellipsoid brown female cones, 0.8–1.5cm (3/8–1/2in) long, each have 4 pairs of scales. ↑ to 10m (30ft), ↔ to 5m (15ft). N.E. China, Korea. \*\*\*

*T. occidentalis* ♂ (White cedar). Small, rounded, conical tree with billowing branches and shredding, orange-brown bark. Scale-like, ovate, yellowish green leaves, pale or greyish green beneath, each with a prominent, raised dorsal gland, are apple-scented. Ovoid female cones, 1cm (1/2in) long, each have 8–10 pairs of smooth scales. ↑ 10–20m (30–70ft), ↔ 3–5m (10–15ft). E. North America. \*\*\*. 'Caespitosa' [M] is a very slow-growing, cushion- or bun-

*Thuja occidentalis* 'Rheingold'

shaped shrub; ↑ to 30cm (12in), ↔ to 40cm (16in). 'Filiformis' is mound-forming, with pendent, whip-like shoots; ↑ to 8m (25ft). 'Golden Globe' is a dwarf, spherical shrub, with bright golden yellow leaves; ↑ 1m (3ft).

'Hetz Midget' [M] is a slow-growing, spherical, dwarf bush; ↑ 80cm (32in). 'Holmstrup' ♀ is a dense, conical bush, with vertical sprays of mid-green leaves; ↑ to 4m (12ft). 'Little Champion' is a spherical shrub, with bright green leaves; ↑ 1m (3ft). 'Rheingold' [M] ♀ is a conical bush, with golden yellow leaves, pink-tinted when young; ↑ 1–2m (3–6ft). 'Smaragd' ♀ is a dwarf, conical, compact shrub, with bright green leaves; ↑ 1m (3ft), ↔ 80cm (32in). 'Wansdyke Silver' is dwarf and conical, with variegated, silver-white leaves; ↑ 1.5m (5ft), ↔ 60cm (24in).

*T. orientalis* ♂-♀ syn. *Biota orientalis*, *Platycladus orientalis*. Conical or irregularly crowned tree with fibrous, red-brown bark and flat, vertical, irregularly arranged sprays of scale-like, blunt, triangular, unscented, mid-green or yellow-green leaves, which often turn bronze in winter. Upright, flask-shaped, grey-bloomed female cones, 2cm (3/4in)

*Thuja orientalis* 'Semperparea'

long, have 3 or 4 pairs of scales, each with 2 prominent, dorsal, reflexed hooks. ↑ to 15m (50ft), ↔ to 6m (20ft). China, Iran. \*\*\*. 'Aurea Nana' ♀ is dwarf, with yellow-green leaves, fading to bronze in winter; ↑ to 60cm (24in). 'Elegantissima' ♀ is a conical bush, with golden yellow leaves that slowly age to yellow-green and turn bronze over winter; ↑ to 5m (15ft). 'Semperparea' [M] is an ovoid bush, with golden yellow new growth; ↑ to 3m (10ft).

*T. plicata* [M] ♂-♀ (Western red cedar). Tall, columnar-conical tree, developing billowing lower branches with fissured, red-brown bark and flat, horizontal or hanging sprays of foliage. Scale-like, ovate, mid- to dark green leaves, whitish green beneath, have small dorsal glands. Oblong-ellipsoid female cones, to 1.5cm (1/2in) long, have 4 or 5 pairs of scales, with a small, terminal hook on each scale. ↑ 20–35m (70–120ft), ↔ 6–9m (20–30ft). W. North America. \*\*\*. All of the following, except 'Zebrina', are shrubs. 'Atrovirens' ♀ is good for hedging, and has very dark green leaves. 'Aurea' ♀ has golden yellow leaves. 'Hillieri' is dwarf, with blue-green leaves; ↑ 2–3m (6–10ft). 'Stoneham

*Thuja plicata* 'Stoneham Gold'

**Gold'** [M] ♀ is conical, with bright gold new leaves, ageing to dark green; ↑ 2m (6ft). 'Zebrina' △ is a broadly conical tree, with yellow-striped leaves; ↑ 12–15m (40–50ft), ↔ 4m (12ft).

## THUJOPSIS

### CUPRESSACEAE

Genus of one species of monoecious, slow-growing, evergreen, coniferous tree, related to *Thuja*, found in forest in Japan. *T. dolabrata* has shredding bark, 4-ranked, scale-like leaves, and a large, prominent, central prickles on each cone scale. A fine specimen tree in woodland.

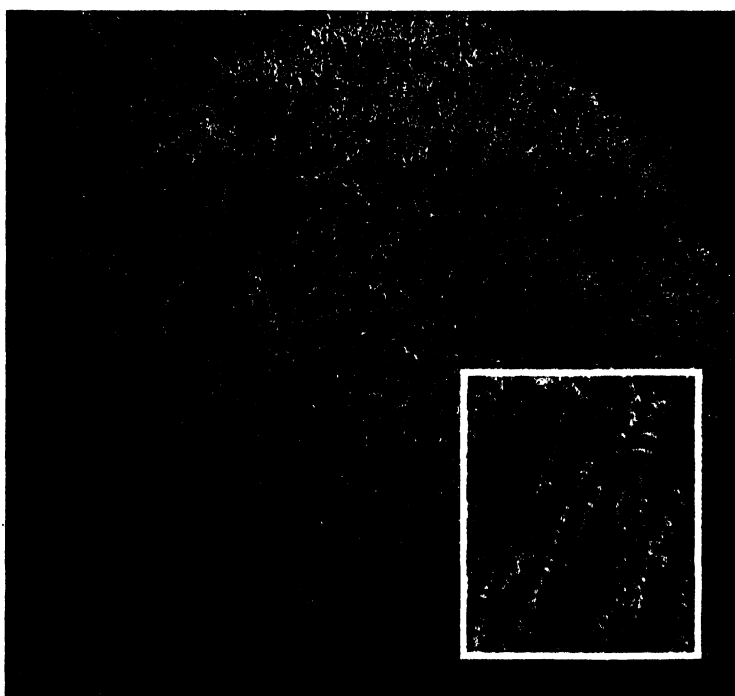
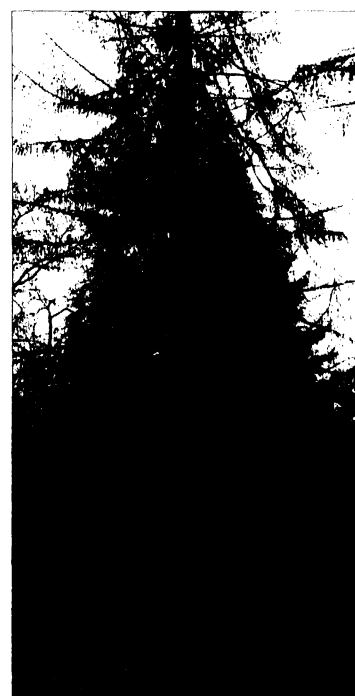
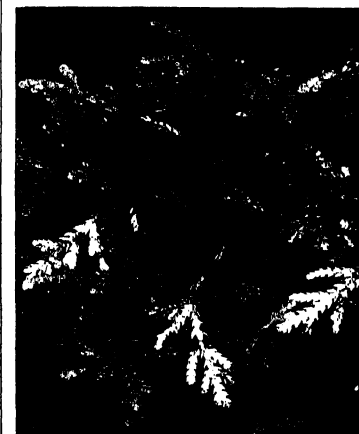
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, fertile, humus-rich soil in full sun with shelter from cold, dry winds.

• **PROPAGATION** Sow seed in containers in a cold frame in late winter or early spring. Insert semi-ripe cuttings in late summer.

• **PESTS AND DISEASES** Trouble free.

*T. dolabrata* ♀ ♂-♀ (Hiba). Conical to cylindrical tree with brown bark, shredding in grey strips, and 4-ranked, thick, scale-like, shiny-margined, glossy, dark green leaves, silvery white beneath; spreading side leaves are hatchet- or boat-shaped. Spherical, blue-grey female cones, 1cm (1/2in) across, with leathery scales, ripen to brown; cylindrical male cones are dark violet. ↑ to 20m (70ft), ↔ 6–9m (20–30ft). Japan. \*\*\*. 'Nana' is dwarf, with lighter leaves; ↑ 1m (3ft), ↔ 80cm (32in). 'Variegata' [M] has mid-green foliage with white patches; ↑ 10m (30ft), ↔ 4m (12ft).

*Thuja occidentalis* 'Hetz Midget' (inset: leaf detail)*Thuja plicata**Thujopsis dolabrata* 'Variegata'

## THUNBERGIA

ACANTHACEAE

Genus of about 100 species of annuals, evergreen perennials, including many twining climbers, and some shrubs, from tropical and southern Africa, Madagascar, and warm to tropical Asia. They occur on forest floors or in rocky areas, or climb through forest trees or shrubs. They are grown for their often showy, salverform to trumpet-shaped, blue, yellow, orange, red, or white flowers, each with 5 usually spreading lobes, borne singly from the leaf axils or in terminal racemes, mainly in summer. The opposite, elliptic or ovate to almost rounded leaves are sometimes lobed or toothed. In frost-prone areas, grow in a temperate or warm greenhouse; *T. alata*, *T. gregorii*, and their cultivars may be grown outdoors as annuals in a sheltered site. In warmer areas, grow shrubs and perennials in a border; the climbers are suitable for training over an arch, pergola, or tree.

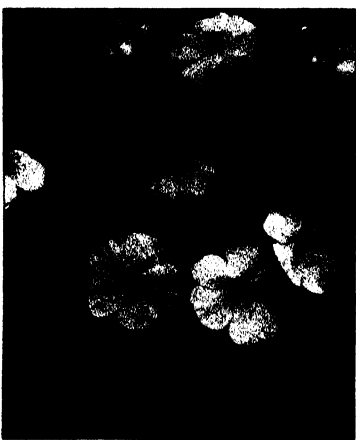
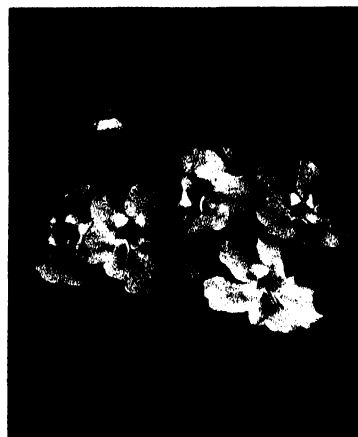
• **HARDINESS** Half hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. Support the climbing stems. In growth, water freely, applying a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Tropical climbers require partial shade. Pruning group 11 for climbers, in early spring; group 9 for shrubs. All may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 16–18°C (61–64°F) in spring. Insert greenwood cuttings in early summer, or semi-ripe cuttings in mid- or late summer, both with bottom heat. Layer in spring.

• **PESTS AND DISEASES** Red spider mites, whiteflies, and scale insects may be a problem under glass.

*T. alata* ■ (Black-eyed Susan). Evergreen, perennial, twining climber, often grown as an annual, with ovate-triangular, toothed, mid-green leaves, to 8cm (3in) long, usually with angular basal lobes and narrowly winged stalks. Produces numerous axillary, solitary, salverform flowers, 3–4cm (1¼–1½in) across, usually bright orange or yellow, sometimes creamy white, either with or without chocolate-purple centres from summer to autumn. ↑ to 2.5m (8ft) as a perennial, 1.5–2m (5–8ft) as an annual.

*Thunbergia alata**Thunbergia grandiflora*

Tropical Africa. ■ (min. 7–10°C/45–50°F). **Suzie Hybrids** have dark-centred, orange-yellow or white flowers.

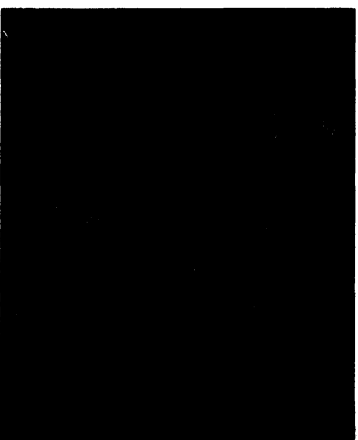
*T. coccinea*. Moderately to sparsely branched, evergreen, perennial, twining climber with narrowly elliptic-ovate, toothed, dark green leaves, to 20cm (8in) long. Tubular, orange-red flowers, 2.5cm (1in) long, with reflexed lobes, are produced in loose, pendent racemes, 15–45cm (6–18in) long, from winter to spring. ↑ 3–8m (10–25ft). India, Burma. ■ (min. 10–13°C/50–55°F)

*T. erecta* (Bush clock vine, King's mantle). Often creeping or mat-forming, evergreen perennial or bushy, spreading shrub, with ovate to oblong, semi-lustrous, dark green leaves, 3–8cm (1¼–3in) long, sometimes with a few broad teeth. Solitary, trumpet-shaped, creamy yellow flowers, to 7cm (3in) long, with deep blue-purple lobes, are produced from the leaf axils in summer. ↑ to 2m (6ft). Tropical W. Africa to South Africa. ■ (min. 7°C/45°F)

*T. gibsonii* see *T. gregorii*.

*T. grandiflora* ■ (Bengal clock vine, Blue trumpet vine). Vigorous, woody-stemmed, evergreen, perennial, twining climber. Ovate-elliptic to heart-shaped, toothed or lobed, dark green leaves, 10–20cm (4–8in) long, are softly hairy. Trumpet-shaped, lavender-blue to violet-blue, occasionally white flowers, 8cm (3in) long, with yellow throats, are borne singly or in pendent racemes, to 10cm (4in) long, in summer. ↑ 5–10m (15–30ft). N. India. ■ (min. 10–13°C/50–55°F)

*T. gregorii* ■ syn. *T. gibsonii*. Woody-based, evergreen, perennial, twining

*Thunbergia gregorii**Thunbergia mysorensis*

climber, often grown as an annual, with slender, bristly-hairy stems and ovate-triangular, softly hairy, mid-green leaves, to 8cm (3in) long. In summer, bears solitary, salverform, clear orange flowers, 4.5cm (1¾in) across. ↑ to 4m (12ft) or more as a perennial, to 2.2m (7ft) as an annual. Tropical Africa. ■ (min. 10–13°C/50–55°F)

*T. mysorensis* ■ Vigorous, woody-stemmed, evergreen, perennial, twining climber with slender, sparsely branched shoots, at least when young. Narrowly elliptic, slender-pointed, toothed, dark green leaves, 10–15cm (4–6in) long, are prominently veined. In spring, hooded, 2-lipped yellow flowers, 5cm (2in) long, with brownish red to purple tubes, and almost erect, arching, tongue-like upper lips, are produced in pendent racemes, to 18cm (7in) long. ↑ to 6m (20ft) or more. India (Nilgiri Hills). ■ (min. 13–15°C/55–59°F)

▷ **Thyme** see *Thymus*

**Basil** see *Acinos arvensis*

**Caraway** see *Thymus herba-barona*

**Curly water** see *Lagarosiphon*

**Garden** see *Thymus vulgaris*

**Lemon-scented** see *Thymus x citriodorus*

**Mother of** see *Acinos arvensis*

## THYMOPHYLLA

ASTERACEAE/COMPOSITAE

Genus of 10–12 species of erect to spreading, bushy, strongly aromatic annuals, biennials, perennials, and subshrubs from dry slopes and prairies in the USA, Mexico, and Central America. Alternate or opposite leaves are entire to pinnatisect. The abundant small, daisy-like, bright yellow or orange flowerheads are borne from spring to summer. Use *T. tenuiloba*, the most commonly grown species, for summer bedding, or grow in a container or hanging basket.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun.

• **PROPAGATION** Sow seed at 10–13°C (50–55°F) in mid-spring, and plant out after last frosts. Alternatively, sow seed *in situ* in mid- to late spring.

• **PESTS AND DISEASES** Trouble free.

*T. tenuiloba* ■ (Dahlberg daisy, Golden fleece, Shooting star). Branching annual, rarely a short-lived perennial, with almost fern-like, pinnatisect, pungent leaves, 0.8–2.5cm (¾–1in)

*Thymophylla tenuiloba*

long, with 7–15 long, linear lobes. From spring to summer, produces upturned, star-shaped, bright yellow flowerheads, to 1.5cm (½in) across. ↑ to 30cm (12in). USA (Texas), Mexico. ★★

## THYMUS

Thyme

LABIATAE/LAMIACEAE

Genus of approximately 350 species of woody-based, aromatic, evergreen perennials, shrubs, and subshrubs, found mainly on calcareous soils and in dry grassland throughout Eurasia. They produce small, opposite, oval to linear leaves. In summer, they produce usually terminal, whorled racemes, heads, or clusters of tubular, 2-lipped, usually pink, purple, or white flowers, mostly 4–8mm (¼–⅓in) long, often with conspicuous bracts. Some thymes, such as *T. x citriodorus*, *T. herba-barona*, and *T. vulgaris*, have culinary uses, and are usually grown in herb gardens. Most are ideal low shrubs or mat-forming plants for a sunny border or rock garden. The prostrate species, such as *T. polytrichus* or *T. serpyllum*, are suitable for planting in paving crevices, where they release their fragrance when trodden on. Some, such as *T. cilicicus*, need protection from winter wet and are best grown in an alpine house. All are attractive to bees. Many cultivars described here under *T. serpyllum* are probably of hybrid origin, and their status is botanically uncertain.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in well-drained, neutral to alkaline soil in full sun. After flowering, cut vigorous thymes back hard to retain compactness. In an alpine house, use a mix of equal parts loam, leaf mould, and grit. Pruning group 10, in spring, for upright, shrubby species.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring. Insert semi-ripe cuttings in mid- or late summer, or softwood cuttings in early summer. Separate rooted stem sections in spring or summer, and pot on until re-established.

• **PESTS AND DISEASES** Trouble free.

*T. azoricus* see *T. caespitius*.

*T. caespitius*, syn. *T. azoricus*, *T. micans*. Dense, mat- or mound-forming subshrub with branching, woody stems and hairy, narrowly spoon-shaped, dark green leaves, to 1cm (½in) long. In late spring and early summer, bears whorled heads of pale rose-pink, lilac, or white

flowers, pressed against the foliage. † to 5cm (2in), ↔ to 30cm (12in). Spain, Portugal. \*\*\*

**T. cilicicus** ■ Compact, cushion- to tussock-forming subshrub with upright, minutely hairy shoots bearing stalkless, linear, prominently veined, dark green leaves, to 1cm (½in) long, finely hairy beneath and at the margins. In early summer, bears lilac or mauve flowers in dense, hemispherical heads. † to 15cm (6in), ↔ to 20cm (8in). Turkey. \*\*

**T. x citriodorus** (*T. pulegioides* x *T. vulgaris*) (Lemon-scented thyme). Bushy, rounded shrub with branching stems and narrow, oval-diamond-shaped to lance-shaped, more or less hairless, mid-green leaves, to 1cm (½in) long. In summer, pale lavender-pink flowers, with leaf-like bracts, are borne in irregular, oblong heads. † to 30cm (12in), ↔ to 25cm (10in). Garden origin. \*\*\*

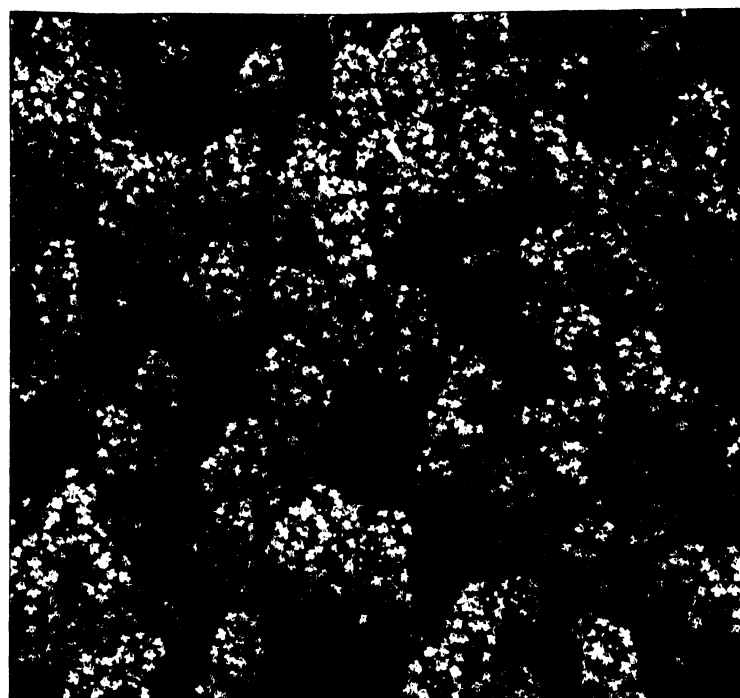
**'Anderson's Gold'** see 'Bertram Anderson'. **'Archer's Gold'** has mid-green leaves with narrow, golden yellow margins. **'Aureus'** ■ ♀ has gold-dappled leaves. **'Bertram Anderson'** ■ ♀ syn. 'Anderson's Gold', has grey-green leaves, strongly suffused yellow. **'Golden King'** is upright, with gold-margined leaves; † 25cm (10in), ↔ to 45cm (18in). **'Silver Queen'** ♀ has cream-variegated leaves.

**T. doerfleri**. Compact, spreading subshrub with prostrate, hairy stems and linear, fragrant, mid- to dark green, hairy leaves, 0.8–1.5cm (⅜–½in) long. Purplish pink flowers are produced in whorled racemes in summer. † 15cm (6in), ↔ 45cm (18in). Albania. \*\*\*

**'Bressingham'** ■ is prostrate and mat-forming, with grey-green leaves and clear pink flowers; † 10cm (4in), ↔ 35cm (14in).

**T. 'Doone Valley'** ■ Mat-forming subshrub with lance-shaped, dark olive-green leaves, to 1cm (½in) long, with yellow spots. Lavender-pink flowers, opening from crimson-red buds, are borne in rounded heads in summer. † 12cm (5in), ↔ 35cm (14in). \*\*\*

**T. herba-barona** (Caraway thyme). Dwarf, loosely mat-forming, wiry-branched subshrub bearing ovate to lance-shaped, caraway-scented, dark green leaves, to 7mm (¼in) long. Pale pink flowers are produced in loose, irregular, oblong to hemispherical heads



*Thymus pulegioides*

in midsummer. † to 10cm (4in), ↔ to 20cm (8in). Corsica, Sardinia. \*\*\*

**T. leucotrichus** ■ Dwarf, creeping subshrub with narrowly lance-shaped, hairy, grey-green leaves, 4–9mm (⅜–⅝in) long. Whorled clusters of pale purplish pink flowers are produced in late spring. † to 15cm (6in), ↔ to 20cm (8in). Greece, Turkey. \*\*\*

**T. longiflorus** ■ Densely branched subshrub with ascending, hairy shoots bearing hairy, narrowly elliptic to linear, greyish green leaves, to 1cm (½in) long, with the margins rolled under. Pink flowers with ovate, leathery, greenish purple bracts are borne in spike-like whorls in summer. † to 30cm (12in), ↔ to 25cm (10in). S. Spain. \*\*

**T. mastichina**. Vigorous, erect subshrub with upright, hairy shoots and ovate to elliptic-lance-shaped, often shallowly scalloped, mid-green leaves, 1.5cm (½in) long. In summer, bears spherical heads of abundant white flowers. † to 30cm (12in), ↔ to 40cm (16in). Spain, Portugal. \*\*\*

**T. membranaceus**. Spreading, rounded shrub with ascending shoots and linear, grey-green leaves, to 1.5cm (½in) long. In summer, bears ovoid heads of long-tubed white flowers, to 1cm (½in) long, with conspicuous, greenish white bracts. Grow in an alpine house or a warm garden. † to 20cm (8in). S. Spain. \*\*

**T. micans** see *T. caespitius*.

**T. polytrichus**, syn. *T. praecox*. Creeping, mat-forming subshrub with woody, prostrate, branching stems and narrowly obovate, dark green leaves, 8mm (⅜in) long, fringed with minute hairs. Pale to deep purple, occasionally off-white flowers are borne in terminal heads in summer. † to 5cm (2in), ↔ to 60cm (24in) or more. S. Europe. \*\*\*

**subsp. britannicus var. albus**, syn. *T. praecox* subsp. *arcticus* var. *albus*, has softly hairy stems, obovate leaves, and white flowers.

**T. praecox** see *T. polytrichus*.

**T. praecox subsp. arcticus var. albus** see *T. polytrichus* subsp. *britannicus* var. *albus*.

**T. praecox 'Coccineus'** see *T. serpyllum* var. *coccineus*.

**T. pulegioides** ■ Spreading subshrub with semi-erect, 4-angled stems and oblong-lance-shaped, strongly aromatic, mid-green leaves, 0.6–2cm (¼–¾in) long. In late spring and early summer, bears short, irregular, whorled racemes of pink to purple flowers. † 5–25cm (2–10in), ↔ 30cm (12in). Europe. \*\*\*

**T. richardii**. Spreading to loosely mat-forming subshrub with ovate, aromatic, mid-green leaves, 0.9–1.5cm (⅜–½in) long. Whorled racemes of purple flowers are produced in late spring. † 12cm (5in), ↔ 30cm (12in). Spain (Balearic Islands), Italy (Sicily), Croatia. \*\*\*

**subsp. nitidus** has narrowly ovate leaves, to 1cm (½in) long; Italy (Sicily).

**subsp. nitidus 'Peter Davis'** ■ is bushy, with grey-green leaves, to 8mm (⅜in) long, and numerous pink flowers; † 15cm (6in), ↔ 5cm (2in).

**T. serpyllum**. Mat-forming subshrub with finely hairy, trailing stems and linear to elliptic or elliptic-ovate, mid-green leaves, 4–8mm (⅜–⅝in) long. Purple flowers are borne in congested whorls in summer. † 25cm (10in), ↔ 45cm (18in). Europe. \*\*\*

**'Annie Hall'** ■ has pale purple-pink flowers.

**var. coccineus** ■ ♀ syn. *T. praecox* 'Coccineus', has crimson-pink flowers.

**'Elfin'** ■ forms dense mounds of foliage, and seldom flowers freely; † to 8cm (3in), ↔ to 10cm (4in).

**'Minimus'** is compact, producing lance-shaped leaves, to 4mm (⅛in) long, and pink flowers; † 5cm (2in), ↔ 10cm (4in).

**'Minor'** is compact, with lance-shaped leaves, to 5mm (¼in) long, and pink flowers; † 12cm (5in).

**'Pink Chintz'** ♀ has grey-green leaves and flesh-pink flowers.

**'Snowdrift'** bears clear white flowers.

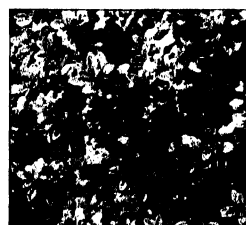
**T. vulgaris** (Garden thyme). Bushy, cushion-forming, spreading subshrub with linear to elliptic, finely hairy, aromatic, grey-green leaves, 0.6–1.5cm (¼–½in) long. In late spring and early summer, bright purple to white flowers are produced in whorled racemes. † 15–30cm (6–12in), ↔ 40cm (16in). W. Mediterranean to S. Italy. \*\*\*

**'Aureus'** has leaves suffused yellow.

**'Silver Posie'** ■ has white-margined leaves.



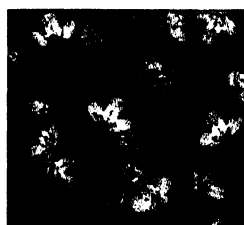
*Thymus cilicicus*



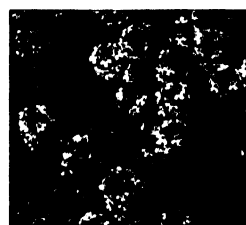
*Thymus x citriodorus* 'Aureus'



*Thymus x citriodorus* 'Bertram Anderson'



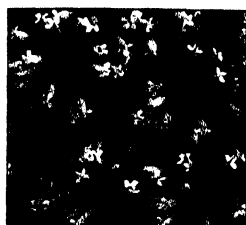
*Thymus doerfleri* 'Bressingham'



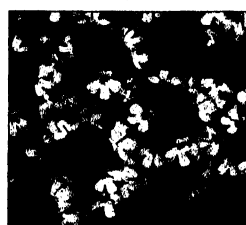
*Thymus* 'Doone Valley'



*Thymus leucotrichus*



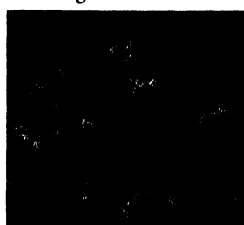
*Thymus longiflorus*



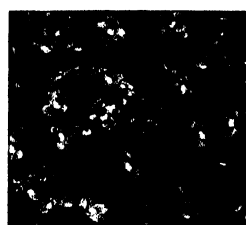
*Thymus richardii* subsp. *nitidus* 'Peter Davis'



*Thymus serpyllum* 'Annie Hall'



*Thymus serpyllum* var. *coccineus*



*Thymus serpyllum* 'Elfin'



*Thymus vulgaris* 'Silver Posie'

# TIARELLA

Foam flower

SAXIFRAGACEAE

Genus of about 7 species of rhizomatous herbaceous perennials from woodland and streambanks in E. Asia and North America. The mainly basal, ovate to heart-shaped or rounded, toothed, sometimes long-stalked leaves are simple or palmately 3- to 5-lobed, occasionally 7-lobed, or 3-palmate; they are pale to mid-green, often turning shades of reddish copper in autumn and winter, and have conspicuous veins and sparse, bristly hairs. The tiny, star-shaped, fluffy, white or pinkish white flowers, 5-10mm (¼-½in) across, are borne in terminal panicles or racemes over a long period from spring to summer. Grow as ground cover in a woodland garden or shady border: *T. cordifolia* spreads freely.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow ideally in cool, moist, humus-rich soil, although they tolerate a wide range of soil conditions. Provide deep or partial shade. Protect from excessive winter wet.

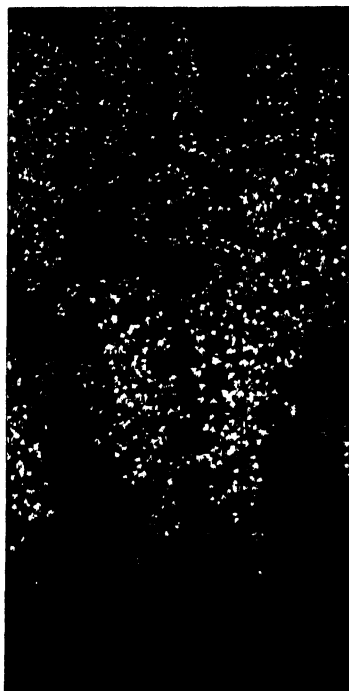
• **PROPAGATION** Sow seed in containers in a cold frame in spring or as soon as ripe. Divide in spring.

• **PESTS AND DISEASES** Leaves may be damaged by slugs.

*T. cordifolia* ■ ♀ (Foam flower). Vigorous, rhizomatous perennial, spreading by stolons, with hairy, 3-lobed, ovate, pale green leaves, to 10cm (4in) long, heart-shaped at the bases, tinted bronze-red in autumn. Creamy white flowers are borne in a profusion of upright, spike-like racemes, 10-30cm (4-12in) long, in summer. ↓ 10-30cm (4-12in), ↔ 30cm (12in) or more. North America. \*\*\*. var. *collina* see *T. wherryi*.

*T. 'Maple Leaf'*. Clump-forming, herbaceous or semi-evergreen perennial, without stolons, producing rosettes of broadly ovate, 5-lobed, mid-green, red-flushed leaves, 5-12cm (2-5in) long. From late spring to midsummer, bears white, pink-flushed flowers in racemes, 15-30cm (6-12in) long. ↓ ↔ to 30cm (12in). \*\*\*.

*T. trifoliata* ■ Clump-forming, rhizomatous perennial, without stolons, producing 3-palmate basal leaves, to 8cm (3in) long, with 3-lobed, hairy, mid-green leaflets, veined dark green; the 2 or 3 stem leaves have short stalks.



*Tiarella trifoliata*

Pendent white flowers are produced in loose panicles, 15-50cm (6-20in) long, opening from pinkish white buds from late spring to midsummer. ↓ to 50cm (20in), ↔ 30cm (12in). North America (Alaska to Oregon). \*\*\*.

*T. wherryi* ♀ syn. *T. cordifolia* var. *collina*. Compact, slow-growing, clump-forming perennial, without stolons, producing hairy, ovate, sharply 3-lobed, maroon-tinted, pale green leaves, to 14cm (5½in) long, heart-shaped at the bases. White, sometimes pink-tinted flowers are borne in brown-stemmed, slender, spike-like racemes, 15-35cm (6-14in) long, in late spring and early summer. Prefers moist shade. ↓ to 20cm (8in), ↔ to 15cm (6in). USA (Appalachians). \*\*\*. 'Bronze Beauty' has dark red-bronze foliage and light pinkish white flowers.

# TIBOUCHINA

MELASTOMATACEAE

Genus of about 350 species of evergreen shrubs and subshrubs or herbaceous perennials, some of them climbing, found in rainforest in Mexico, the West Indies, and from tropical South America to N. Argentina (mainly Brazil). Large, elliptic, ovate, or lance-shaped, leathery leaves, usually with 1-3 pairs of prominent, primary veins, are borne in opposite pairs. Saucer- to cup-shaped, mostly 5-petalled flowers are produced singly, in threes, or in long panicles. Where temperatures fall below 7°C (45°F), grow in a cool or temperate greenhouse. In warmer areas, grow in a shrub border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. During growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist, fertile soil in full sun. Pruning group 9; plants grown under glass need restrictive pruning in late winter.



*Tibouchina urvilleana*

• **PROPAGATION** Sow seed at 16°C (61°F) in spring. Root softwood cuttings in late spring or semi-ripe cuttings in summer, both with bottom heat.

• **PESTS AND DISEASES** Prone to oedema, red spider mites, and aphids under glass.

*T. organensis*, syn. *T. semidecandra* subsp. *floribunda* of gardens (Glory bush). Open, erect shrub with 4-angled, hairy stems and ovate-oblong, velvety-hairy, greyish green leaves, to 15cm (6in) long, sometimes maturing to bright scarlet. From summer to autumn, produces open, leafy panicles of satin-textured, saucer-shaped, bluish purple flowers, 10cm (4in) or more across.

↓ 3-6m (10-20ft), ↔ 2-3m (6-10ft). S.E. Brazil. ☞ (min. 5-7°C/41-45°F)

*T. semidecandra* of gardens see *T. urvilleana*.

*T. semidecandra* subsp. *floribunda* of gardens see *T. organensis*.

*T. urvilleana* ■ ♀ syn. *Pleroma macrantha*, *T. semidecandra* of gardens (Brazilian spider flower, Glory bush). Erect to spreading shrub with 4-angled, red-hairy stems and oblong-ovate to ovate or elliptic, velvety-hairy, mid- to dark green leaves, 5-7cm (2-3in) long. From summer to autumn, bears leafy panicles of satin-textured, saucer-shaped, reddish purple flowers, 7-10cm (3-4in) across, with dark, hooked stamens. ↓ 3-6m (10-20ft), ↔ 2-3m (6-10ft). Brazil. ☞ (min. 3-5°C/39-41°F)

▷ **Tickseed** see *Coreopsis*

▷ **Tidy tips** see *Layia platyglossa*

▷ **Tiger flower** see *Tigridia*, *T. pavonia*

▷ **Tiger jaws** see *Faucaria*

# TIGRIDIA

Peacock flower, Tiger flower

IRIDACEAE

Genus of 23 species of bulbous perennials from seasonally dry sands and grassland, occasionally among rocks, in Mexico and Guatemala. They have mostly basal, narrowly lance-shaped to sword-shaped leaves. The attractive, short-lived, brightly coloured summer flowers, either upright and iris-like or pendent and bell-shaped, have 3 large, spreading outer segments and 3 shorter inner ones. In frost-free climates, grow in a border; in frost-prone areas, grow outdoors and lift in autumn, or grow permanently as container plants in a cool greenhouse or conservatory.

• **HARDINESS** Frost tender.



*Tigridia pavonia*

• **CULTIVATION** Plant 10cm (4in) deep. Outdoors, grow in well-drained, preferably sandy, fertile soil in full sun. In cold areas, lift bulbs after flowering and overwinter in dry sand at about 10°C (50°F). Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand. Water freely when in growth and keep dry when dormant; repot annually in spring.

• **PROPAGATION** Sow seed at 13-18°C (55-64°F) in spring. Separate offsets when dormant (taking care to avoid plants affected by viruses).

• **PESTS AND DISEASES** Prone to viruses.

*T. meleagris*. Bulbous perennial with branched stems bearing 1 or 2 lance-shaped leaves, 20-30cm (8-12in) long; basal leaves are only rarely produced. In summer, bears 2-6 pendent, widely bell-shaped, pale pink to maroon flowers, 3cm (1¼in) across, with darker spots. ↓ 25-60cm (10-24in), ↔ 10cm (4in). Mexico. ☞ (min. 8-12°C/46-54°F)

*T. pavonia* ■ (Peacock flower, Tiger flower). Bulbous perennial with lance-shaped leaves, 20-50cm (8-20in) long, borne in a basal fan. In summer, bears occasionally branched stems, each with 1-3 stem leaves and a succession of iris-like, orange to pink, red, yellow, or white flowers, 10-15cm (4-6in) across, mostly with contrasting central marks. ↓ 1.5m (5ft), ↔ 10cm (4in). Mexico. ☞ (min. 8-12°C/46-54°F)

# TILIA

Lime, Linden

TILIACEAE

Genus of 20-45 species of deciduous trees occurring in woodland in Europe, Asia, and North America. They are cultivated for their stately habit, their foliage and flowers, and, in some cases, for their colourful winter shoots. The ovate to rounded leaves, arranged alternately on slender stalks, are toothed or lobed, with tapered to pointed tips and heart-shaped bases. On old trees, the smooth, silver-grey bark becomes fissured. Small, cup-shaped, fragrant, creamy white to yellow flowers are borne in slender, axillary cymes with long stalks; the stalks are fused with the upper surfaces of large, narrowly elliptic or inversely lance-shaped, membranous bracts, usually pale yellow or green, to 15cm (6in) long. The flowers are followed by dry, nut-like fruits. Grow as free-standing specimens or avenue trees.



*Tiarella cordifolia*

*Tilia cordata* 'Rancho'

The flowers attract bees, although the nectar of *T. tomentosa* and *T. 'Petiolaris'* may be toxic, especially to bumblebees.

• **HARDINESS** Fully hardy.

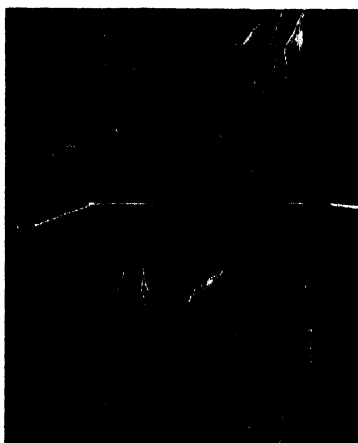
• **CULTIVATION** Grow in moist but well-drained soil in full sun or partial shade. Avoid very dry conditions and exposure to strong winds. Limes prefer alkaline or neutral soil, but they tolerate acid soil.

*T. x europaea* often produces dense thickets of shoots from the base and from burls on the trunk; remove these every few years by cutting back to the trunk in early spring. Pruning group 1.

• **PROPAGATION** Stratify seed for 3–5 months and sow in containers in a cold frame in spring, or sow as soon as ripe in a seed bed in autumn; garden-collected seed may yield hybrids of variable quality. Bud in late summer on to seedling understock of *T. platyphyllos* or *T. tomentosa*. Remove suckers in winter.

• **PESTS AND DISEASES** Susceptible to honey fungus, *Phytophthora* root rot, gall mites on the leaves, scale insects on the bark, and aphids that produce sticky honeydew.

*T. americana* ♀ (American lime, Basswood). Broadly columnar tree with broadly ovate to rounded, dark green leaves, matt above, glossy beneath, to 20cm (8in) long. Pendent cymes of 10–15 yellow flowers, 1.5cm (½in) across, are produced in midsummer. ‡ 25m (80ft), ↔ 15m (50ft). C. and E. North America. \*\*\*. 'Fastigiata' ♂ is conical, with upright branches; ↔ 8m (25ft). 'Redmond' ♂ syn. *T. x euchlora* 'Redmond', is dense and broadly conical; ‡ 14m (46ft), ↔ 7m (22ft).

*Tilia henryana*

*T. caroliniana* ♀ (Carolina basswood). Dense, rounded tree with ovate, dark green leaves, to 9cm (3½in) long, paler and hairy beneath. In early summer, bears pale yellow flowers, 1.5cm (½in) across, in pendent cymes of 10–15. ‡ 10–12m (30–40ft), ↔ 8m (25ft). S.E. USA. \*\*\*.

*T. cordata* ♀♂ (Small-leaved lime). Broadly columnar tree with rounded, dark green leaves, to 8cm (3in) long, blue-green and smooth beneath except for tufts of brown hairs in the leaf axils; leaves turn yellow in autumn. Produces cymes of up to 10 pale yellow flowers, 2cm (¾in) across, in midsummer. ‡ 25m (90ft), ↔ 15m (50ft). Europe, Caucasus. \*\*\*. 'Greenspire' ♀♂ is vigorous and conical; ‡ 15m (50ft), ↔ 7m (22ft).

'Rancho' ♂ is open in habit when young, becoming narrowly conical, with glossy leaves; ‡ 15m (50ft), ↔ 8m (25ft).

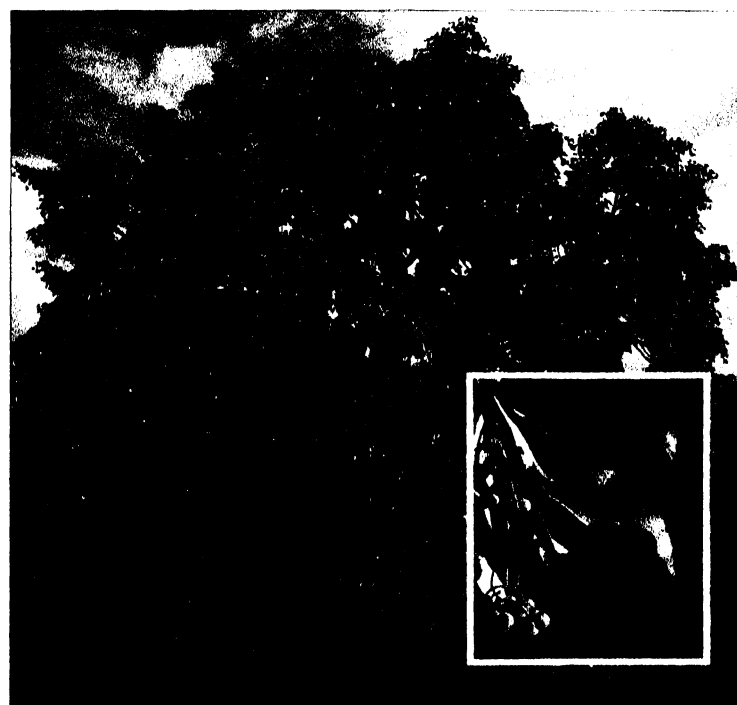
*T. dasystyla* of gardens see *T.*

*x euchlora*.

*T. x euchlora* ♀ syn. *T. dasystyla* of gardens. Rounded tree with branches that become slightly pendent with age. The rounded to broadly ovate, toothed leaves, 5–10cm (2–4in) long, are heart-shaped at the bases, glossy, dark green above and pale green with tufts of hairs in the axils of the veins beneath. Cymes of 3–7 yellowish white flowers, 1.5cm (½in) across, are borne in midsummer. Remains free of aphids, and therefore also of sticky honeydew. ‡ 20m (70ft), ↔ 15m (50ft). Garden origin. \*\*\*.

'Redmond' see *T. americana* 'Redmond'.

*T. x europaea* ♀ (*T. cordata* x *T. platyphyllos*) syn. *T. intermedia*, *T. x vulgaris* (Common lime). Broadly columnar tree with broadly ovate to rounded, dark green leaves, to 10cm (4in) long, paler beneath. Cymes of up to 10 pale yellow flowers, 2cm (¾in) across, are borne in midsummer. ‡ 35m (120ft), ↔ 15m (50ft). Europe. \*\*\*. 'Wratlaviensis' ♀ has bright yellow young leaves, turning yellowish green; ‡ 20m (70ft), ↔ 12m (40ft).

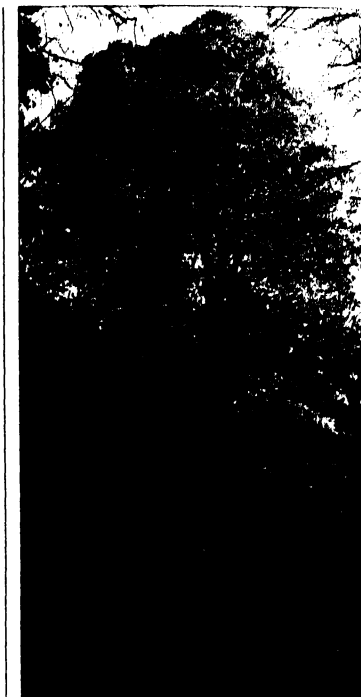
*Tilia oliveri* (inset: leaf and fruit detail)*Tilia* 'Petiolaris'

*T. henryana* ♂♀ Spreading tree with broadly ovate, glossy, bright green leaves, to 12cm (5in) long, brown-hairy and paler beneath, red-tinged when young; at first with long, bristle-like teeth. In late summer and early autumn, bears cymes of up to 25 small, creamy white flowers, 1.5cm (½in) across. ‡ ↔ to 25m (80ft). C. China. \*\*\*.

*T. intermedia* see *T. x europaea*.

*T. japonica* ♀ (Japanese lime). Broadly columnar tree with rounded, dark green leaves, to 8cm (3in) long, blue-green beneath. Pendent cymes of 4–10 pale yellow flowers, 1.5cm (½in) across, are produced in midsummer. ‡ 20m (70ft), ↔ 6m (20ft). E. China, Japan. \*\*\*.

*T. mongolica* ♀♀ (Mongolian lime). Rounded tree or shrub with glossy, dark

*Tilia platyphyllos*

green leaves, to 4cm (1½in) long, blue-green beneath, and red when young; they are rounded to triangular, and deeply cut into 3 sharply toothed lobes, often with 2 lateral lobes. Pale yellow flowers, 2cm (¾in) across, are produced in pendent cymes of up to 30 in early summer. ‡ 18m (60ft), ↔ 12m (40ft). Mongolia, N. China. \*\*\*.

*T. oliveri* ♂♀ Spreading tree with broadly ovate, dark green leaves, to 12cm (5in) long, tapering to sharp points at the tips, densely white-hairy beneath. Pendent cymes of 6–10 pale yellow flowers, 1cm (½in) across, are produced in midsummer. ‡ 15m (50ft), ↔ 10m (30ft). C. China. \*\*\*.

*T. petiolaris* see *T. 'Petiolaris'*.

*T. 'Petiolaris'* ♂♀ syn. *T. petiolaris*, *T. tomentosa* 'Petiolaris' (Pendulous silver lime). Broadly columnar tree with weeping branches, pendent shoots, and long-stalked, rounded, dark green leaves, to 8cm (3in) long, densely white-hairy beneath. Produces pendent cymes of up to 10 fragrant, pale yellow flowers, to 1.5cm (½in) across, in late summer. ‡ 30m (100ft), ↔ 20m (70ft). \*\*\*.

*T. platyphyllos* ♂♀ (Large-leaved lime). Broadly columnar tree with rounded to broadly ovate, dark green leaves, 8–15cm (3–6in) long, paler and usually densely hairy beneath, turning yellow in autumn. Produces pendent cymes of 3–5 pale yellow flowers, 2cm (¾in) across, in midsummer. ‡ 30m (100ft), ↔ 20m (70ft). Europe. \*\*\*. 'Princes Street' ♂ is upright, with bright red winter shoots. 'Rubra' ♀ (Red-twigged lime) has red winter shoots.

*T. tomentosa* ♀ (European white lime, Silver lime). Broadly columnar tree with rounded to broadly ovate, sometimes lobed, dark green leaves, to 10cm (4in) long, densely white-hairy beneath. In summer, bears cymes of up to 10 very fragrant white flowers, to 1.5cm (½in) across. ‡ 30m (100ft), ↔ 20m (70ft). S.E. Europe, S.W. Asia. \*\*\*.

'Petiolaris' see *T. 'Petiolaris'*.

*T. x vulgaris* see *T. x europaea*.

## TILLANDSIA

Air plant

BROMELIACEAE

Genus of over 400 species of epiphytic, terrestrial, or rock-dwelling, evergreen perennials (bromeliads) from scrub and woodland in S. USA, the West Indies, and Central and South America. The entire, often scaly leaves are strap-shaped to narrowly triangular to linear, sometimes tapering to fine threads; they are mainly borne in rosettes, with a few along the slender stems, and sometimes have prominent sheaths. Most species have tubular to funnel-shaped flowers, each with 3 sepals and 3 petals, often with spreading terminal lobes; they are borne among usually colourful floral bracts, generally opening in daytime in spring or autumn. The flowers may be solitary but are usually in 2 or more opposite rows, forming small, dense racemes or spikes, which are sometimes grouped into compound inflorescences; the flowers are borne mainly at the ends of scapes that have sometimes dense or colourful bracts. Where temperatures fall below 7°C (45°F), grow in a temperate greenhouse or conservatory, or as houseplants. In warmer areas, grow the epiphytic species on a tree; the rock-dwelling and terrestrial species may also be grown in a rock garden, on bark or tree branches placed on the ground, or beneath trees or shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow epiphytically in bright indirect light, with moderate to high humidity; rock-dwelling species prefer full light with shade from hot sun, and will tolerate low humidity. From late spring to mid-autumn, mist daily with rainwater and apply a quarter-strength low-nitrogen liquid fertilizer monthly. In winter, mist once or twice a week. Grow terrestrial species, and *T. cyanea* and *T. lindenbergii*, in containers of terrestrial bromeliad compost, with the bases of the leaves at or just above the surface, in bright filtered light. In growth, water freely and apply a half-strength, low-nitrogen fertilizer monthly; keep just moist in winter. Outdoors, grow epiphytic species in a tree in moist partial shade. Grow terrestrial and rock-dwelling species in coarse, open, leafy soil in partial or dappled shade. See also p.47.

• **PROPAGATION** Sow seed at 27°C (81°F) in spring, on to bundles of

*Tillandsia brachycaulos*

conifer twigs and sphagnum moss; mist daily. Detach offsets in spring.

• **PESTS AND DISEASES** Vulnerable to aphids while flowering.

*T. aeranthis*, syn. *T. dianthoidea*.

Epiphytic, cushion-forming perennial with fine-scaly stems bearing narrowly lance-shaped, often keeled, rigid, densely grey-scaly, mid-green leaves, 10cm (4in) or more long. In spring, bears cylindrical spikes of 5–20 slender, funnel-shaped, dark blue flowers, 2.5cm (1in) long, with bright rose-pink floral bracts. ± to 30cm (12in). S. Brazil, N.E. Argentina, Paraguay, Uruguay. ♀ (min. 7°C/45°F)

*T. argentea* ■ Epiphytic perennial with a rhizomatous, curved, short, branched stem bearing dense rosettes of narrowly linear, silvery white-scaly, pale green leaves, 6–9cm (2½–3½in) long. Bears simple spikes of 6–8 tubular, bright red or blue flowers, 3cm (1¼in) long, with salmon-pink floral bracts, in spring. ± to 25cm (10in). Mexico, Guatemala, Cuba, Jamaica. ♀ (min. 7°C/45°F)

*T. bergeri*. Rock-dwelling perennial with rosettes of narrowly triangular, grey-scaly, mid-green leaves, 10cm (4in) long. In spring, produces simple spikes of 7–12 funnel-shaped, blue and white flowers, 3cm (1¼in) long, fading to rose-pink, with grey-green floral bracts. ± to 18cm (7in), ± to 15cm (6in). Argentina. ♀ (min. 7°C/45°F)

*T. brachycaulos* ■ Stemless, epiphytic perennial with rosettes of slender, linear to lance-shaped, arching, densely green-scaly or silver-grey-scaly, dark green leaves, 12–26cm (5–10in) long, with thread-like tips and prominent sheaths, turning bright red when in flower. In spring, bears short spikes of 1 or 2 erect, tubular violet flowers, to 7cm (3in) long, with red floral bracts, clustered into a head. ± to 25cm (10in). S. Mexico, Central America. ♀ (min. 7°C/45°F)

*T. caput-medusae* ■ Stemless, epiphytic perennial with rosettes of narrowly awl-shaped, tapered, recurved, pale green leaves, 15cm (6in) or more long; the leaf-blades are covered with spreading, coarse, silver-grey hairs, and have ovate sheaths inflated to form hollow pseudobulbs. Suberect or curved spikes of 6–12 slender, tubular blue flowers, 3–4cm (1¼–1½in) long, with red floral bracts, are produced in late spring. ± 15–40cm (6–16in), ± to 24cm (10in). Mexico, Central America. ♀ (min. 7°C/45°F)

♂ (min. 7°C/45°F)

*Tillandsia caput-medusae*

*T. crocata*. Short-stemmed, untidy, sometimes branched, epiphytic or rock-dwelling perennial with 2 rows of linear, coarse, grey-hairy, mid-green leaves, 10–15cm (4–6in) long. In spring or autumn, produces simple spikes of 3 or 4 funnel-shaped, bright canary-yellow flowers, 2cm (¾in) long, with green, heavily grey-scaled floral bracts. ± to 20cm (8in), ± to 15cm (6in). Brazil, Argentina. ♀ (min. 7°C/45°F)

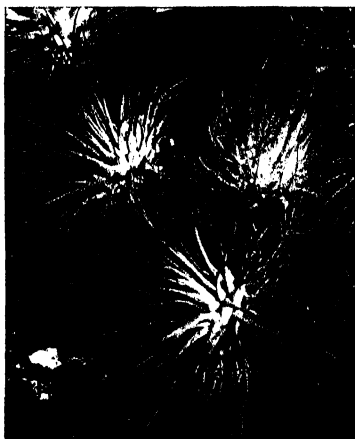
*T. cyanea* ■ Epiphytic perennial with stemless rosettes of linear-triangular, semi-erect then recurved, dark green leaves, to 35cm (14in) long, red-striped near the bases. Flattened, paddle-shaped, almost stalkless spikes of 20 funnel-shaped, rich violet flowers, to 3cm (1¼in) long, with spreading petals and rose-pink floral bracts, are produced in

late spring or autumn. ± to 30cm (12in), ± to 40cm (16in). Ecuador. ♀ (min. 7°C/45°F)

*T. dianthoidea* see *T. aeranthis*.

*T. fasciculata* ■ Epiphytic perennial with stemless rosettes of narrowly triangular, spreading, sparsely hairy or silver-grey-hairy, brittle, pale grey-green leaves, to 30cm (12in) long, with brown sheaths. In late spring, spikes of red to yellow floral bracts and erect, tubular, white and purple flowers, to 6cm (2½in) long, usually 3 or 4 at a time, are borne in compound inflorescences. ± to 30cm (12in) or more. S. USA, West Indies, Mexico to Colombia and Peru. ♀ (min. 7°C/45°F)

*T. gardneri*. Epiphytic or rock-dwelling perennial bearing dense rosettes of narrowly triangular, densely scaly, silver-

*Tillandsia argentea**Tillandsia cyanea**Tillandsia fasciculata*



*Tillandsia lindenii*

grey leaves, 10–27cm (4–11in) long, the lower ones recurved. Compound inflorescences, each consisting of 4–12 spikes of 3–12 slender, funnel-shaped, rose-pink to pale lavender-pink flowers, to 2cm (¾in) long, with green to pink floral bracts, are produced in late spring. ↑↔ 25cm (10in). Colombia to E. Brazil, Trinidad. ☀ (min. 7°C/45°F)

***T. imperialis***. Stemless, epiphytic or rock-dwelling perennial producing dense rosettes of slender, lance-shaped, sparsely scaly, mid-green or slightly purple leaves, to 40cm (16in) long. In autumn, spikes of 3 or 4 erect, tubular violet flowers, to 6cm (2½in) long, with brilliant red floral bracts, are borne in compound, cone-shaped inflorescences. ↑↔ 50cm (20in). C. and S. Mexico. ☀ (min. 7°C/45°F)

***T. ionantha***. Freely clustering, epiphytic or terrestrial perennial with dense rosettes of linear, incurved or recurved, coarsely scaly, greyish green leaves, to 4cm (1½in) long, turning red in late spring. Solitary, tubular, violet-blue and white flowers, to 4.5cm (1¾in) long, with white floral bracts, are borne in simple spikes in spring. ↑ 12cm (5in), ↔ 10cm (4in) or more. Mexico, Central America. ☀ (min. 7°C/45°F)

***T. leiboldiana***. Stemless, epiphytic perennial with funnel-shaped rosettes of slender, lance-shaped, mid-green leaves, to 15cm (6in) long, with flat, brown-scaly sheaths. Branched spikes of 3–8 tubular violet flowers, 3cm (1¼in) long, with red or purple floral bracts, are produced in late spring. ↑↔ 30–60cm (12–24in). Mexico, Central America. ☀ (min. 7°C/45°F)

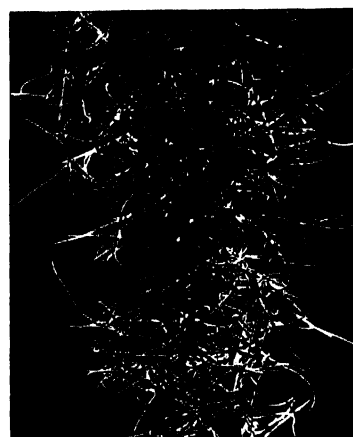
*Tillandsia stricta*

***T. lindenii*** [♀] (Blue-flowered torch). Epiphytic perennial with funnel-shaped rosettes of linear-triangular, arching, dark green leaves, 40cm (16in) long, striped reddish purple. In late spring or autumn, green to purple-pink floral bracts and funnel-shaped, white-eyed, deep purple-blue flowers, 7cm (3in) long, with spreading petals, are borne in lance-shaped spikes, each with 2 ranks of up to 20 flowers. ↑ 40cm (16in), ↔ 60cm (24in). N.W. Peru. ☀ (min. 7°C/45°F)

***T. multicaulis*** [♂] Epiphytic perennial with dense, funnel-shaped rosettes of linear, pale brown-scaly, mid-green leaves, 30–40cm (12–16in) long. In late spring, simple, sword-shaped spikes of 9–12 tubular blue flowers, 7cm (3in) long, with greenish white sepals and red floral bracts, are produced from the leaf axils on scapes with green bracts. ↑↔ 40cm (16in). Mexico, Central America. ☀ (min. 7°C/45°F)

***T. punctulata***. Stemless, epiphytic perennial forming symmetrical rosettes of linear, bright green and purplish green leaves, to 45cm (18in) long, with almost black sheaths. In late spring, bears erect spikes of 4–6 tubular, white-tipped violet flowers, 3–5cm (1¼–2in) long, with green floral bracts, sometimes grouped into compound inflorescences; scapes have red bracts. ↑↔ 45cm (18in). Mexico to Panama. ☀ (min. 7°C/45°F)

***T. recurvata***. Epiphytic or terrestrial perennial with simple or branched stems bearing linear, recurved, grey-scaly, mid-green leaves, 3–17cm (1¼–7in) long, in 2 rows. In autumn, produces simple spikes of 1–5 slender, funnel-shaped,

*Tillandsia usneoides*

erect, pale violet or white flowers, to 1.5cm (½in) long, with green sepals and green or silver, grey-scaly floral bracts. ↑↔ 10–20cm (4–8in). S. USA, Central and South America. ☀ (min. 7°C/45°F)

***T. stricta*** [♂] Clump-forming, short-stemmed, epiphytic perennial with dense rosettes of narrowly triangular, grey-scaly, pale green leaves, 6–18cm (2½–7in) long. In spring, bears slender, pendent, cone-shaped spikes of 40 or more slender, funnel-shaped, blue or purple flowers, 2cm (¾in) or more long, with yellowish white to rose-pink floral bracts. ↑↔ 10–20cm (4–8in). Venezuela and Trinidad to N. Argentina. ☀ (min. 7°C/45°F)

***T. usneoides*** [♂] (Spanish moss). Pendent, epiphytic perennial with branching, rootless, wiry stems, to 3mm (¼in) thick, bearing cylindrical, densely grey-scaly, grey-green leaves, 2.5–5cm (1–2in) long. Solitary, tubular, fragrant, greenish yellow or pale blue flowers, to 1cm (½in) long, with green or silver, grey-scaly floral bracts, are produced in late spring or autumn. ↑ 8m (25ft), ↔ indefinite. S. USA, Central and South America, West Indies. ☀ (min. 7°C/45°F)

## TIPUANA

*Tipu tree*

LEGUMINOSAE/PAPILIONACEAE

Genus of one species of semi-evergreen tree found in tropical forest in South America, and cultivated for its attractive habit and flowers. *T. tipu* has mainly alternate, pinnate leaves and arching to pendent, terminal or axillary racemes or panicles of pea-like flowers. Where temperatures fall below 10°C (50°F), grow in a cool or temperate greenhouse; flowers are seldom produced when grown in a container. In warmer areas, grow as a shade or avenue tree.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. From late spring to early autumn, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Pruning group 1; plants grown under glass need restrictive pruning after flowering.

• **PROPAGATION** Sow seed at 15°C (59°F) in spring.

• **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

***T. speciosa*** see *T. tipu*.

***T. tipu*** [♂] syn. *T. speciosa* (Brazilian rosewood, Pride of Bolivia, Tipu tree). Freely branching, rounded tree bearing pinnate leaves, to 45cm (18in) long, with 9–25 oblong to elliptic, mid-green, bright green leaflets with notched tip, downy beneath. In spring, pea-like flowers, 2–2.5cm (¾–1in) across, with crimped, bright yellow to apricot petals, veined rust-red, are borne in racemes to 30cm (12in) long, followed by broadly winged, short, ovoid, woody seed pods. ↑ 10–30m (30–100ft), ↔ 8–15m (25–50ft). Bolivia, Brazil, Argentina. ☀ (min. 7–10°C/45–50°F)

▷ **Tipu tree** see *Tipuana*, *T. tipu*

## TITANOPSIS

AIZOACEAE

Genus of 5 or 6 species of short-stemmed, fleshy-rooted, succulent herbaceous perennials, readily forming dense mats or clumps, found in semi-desert areas of Namibia and South Africa. The erect, spoon-shaped to 3-angled, fleshy leaves, thickly crowded with tubercles at the tips, are arranged in attractive basal rosettes. Solitary, daisy-like, yellow or orange flowers are borne during daytime from late summer to early spring. In areas where temperatures fall below 10°C (50°F), grow in a bowl garden indoors or in a warm greenhouse. In warmer climates, grow in a desert garden.

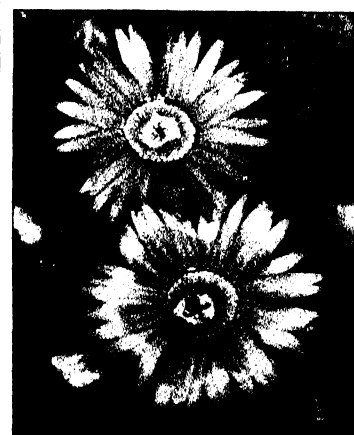
• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in deep containers in a mix of 3 parts standard cactus compost and 1 part limestone chippings; provide full light and low humidity. From spring to late summer, water moderately, applying a balanced liquid fertilizer 3 or 4 times; keep dry at other times. Outdoors, grow in sharply drained, gritty, alkaline soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 21°C (70°F) in spring or early summer.

• **PESTS AND DISEASES** Vulnerable to greenfly while flowering.

***T. calcarea*** [♂] Clump-forming succulent with crowded, basal rosettes of spoon-shaped, bluish green, sometimes white-tinged leaves, 6–8cm (2½–3in) long, with reddish or greyish white tubercles. Produces bright golden yellow to orange flowers, 2cm (¾in) across, from late summer to autumn. ↑ 3cm

*Tillandsia multicaulis**Titanopsis calcarea*

(1½in), ↔ 10cm (4in). South Africa (Western Cape). ☼ (min. 10°C/50°F) *T. schwantesii*. Clump-forming succulent with basal rosettes of spoon-shaped, light grey-blue, sometimes red-tinged leaves, 3cm (1¼in) long, with rounded bases, 3-angled tips, and yellowish brown tubercles. Pale yellow flowers, to 2cm (¾in) across, are borne from autumn to early winter. ‡ 3cm (1¼in), ↔ 10cm (4in). Namibia. ☼ (min. 10°C/50°F)

## TITHONIA

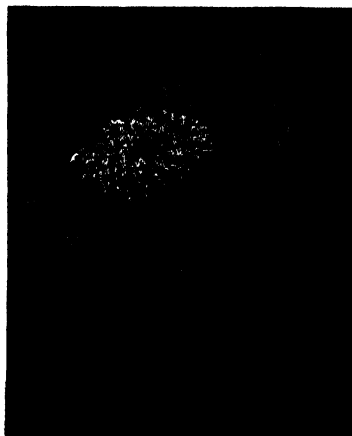
Mexican sunflower

ASTERACEAE/COMPOSITAE

Genus of 10 erect, bushy, stout-stemmed, sometimes woody-based, frequently hairy annuals, perennials, and shrubs, found in thickets and scrub in Mexico and Central America. Alternate, occasionally opposite, entire or lobed leaves each have 3 prominent veins. Large, long-stemmed, mostly solitary flowerheads are borne from late summer to autumn. *T. rotundifolia*, the most commonly grown species, lends height to a mixed or annual border, and provides long-lasting cut flowers.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in well-drained, moderately fertile soil in full sun, with shelter from strong winds. Support tall cultivars, water in dry weather, and dead-head to prolong flowering. They grow poorly in cool, overcast weather.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in mid- to late spring. Plant out when all danger of frost has passed. Alternatively, sow seed *in situ* in late spring. If seedlings are subjected to cold, leaves turn yellow.
- **PESTS AND DISEASES** Young foliage may be attacked by slugs and snails.

*T. rotundifolia*, syn. *T. speciosa* (Mexican sunflower). Robust, branching annual with long, triangular-ovate, entire or occasionally 3-lobed, toothed leaves, 8–30cm (3–12in) long, hairy beneath. Bright orange or orange-red flowerheads, to 8cm (3in) across, similar to those of single-flowered dahlias, are borne from late summer to autumn. ‡ to 2m (6ft), ↔ 30cm (12in). Mexico to Central America. ★. 'Goldfinger' is compact, with vivid, rich orange flowerheads; ‡ to 75cm (30in). 'Sundance' has bright orange flowerheads. 'Torch' ☼ has vivid red or orange-red flowerheads. *T. speciosa* see *T. rotundifolia*.



*Tithonia rotundifolia* 'Torch'

- ▷ **Ti tree** see *Cordyline fruticosa*
- ▷ **Toadflax** see *Linaria*, *L. vulgaris*
- Alpine see *L. alpina*
- Purple-net see *L. reticulata*
- ▷ **Toad-shade** see *Trillium sessile*
- ▷ **Tobacco plant** see *Nicotiana*

## TODEA

OSMUNDACEAE

Genus of 2 species of large, terrestrial, evergreen ferns found in open places in tropical and warm-temperate rainforest in South Africa, Australia, New Guinea, and New Zealand. Massive, erect, hairy rhizomes bear crowns of upright 2-pinnate, leathery fronds, with spores along the veins. In frost-prone climates, grow *T. barbara* in a temperate or warm greenhouse. In warmer areas, grow as a specimen plant or in light woodland.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in 1 part each of loam, medium-grade bark, and charcoal, 2 parts sharp sand, and 3 parts leaf mould, in bright filtered light, with moderate humidity. In growth, water freely and apply a balanced liquid fertilizer monthly; water moderately to sparingly in winter. Outdoors, grow in moist, fertile soil in partial shade.
- **PROPAGATION** Sow spores at 21°C (70°F) as soon as ripe. Divide in early summer, but only after several trunks have developed. See also p.51.
- **PESTS AND DISEASES** Susceptible to mealybugs under glass.

*T. barbara* ♀ Tree-like fern with stout black rhizomes and short, thick trunks, to 80cm (32in) tall. Glossy, bright green fronds, to 2m (6ft) long, have lance-shaped, pinnatifid pinnae. ‡ to 2m (6ft), ↔ to 1.5m (5ft). South Africa, Australia, New Zealand. ☼ (min. 5°C/41°F)

- ▷ **Toe toe** see *Cortaderia richardii*

## TOLMIEA

Pick-a-back plant, Youth-on-age

SAXIFRAGACEAE

Genus of one species of fast-spreading, hairy herbaceous perennial occurring in coniferous woodland in W. North America. It is unusual in that young plants are produced on the leaves, where leaf-stalk and blade meet. Leafy stems bear erect racemes of small, cup-shaped, greenish purple flowers with 3 stamens. Grow as ground cover in a woodland garden or as a foliage houseplant.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in cool, moist, humus-rich soil in partial or deep shade. Sun will scorch the leaves, especially of *T. menziesii* 'Taff's Gold'. Under glass, grow in fertile, loam-based potting compost (J1 No.2) in bright filtered or indirect light. In growth, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring. Remove and pot up plantlets from the leaves in mid- to late summer, or peg leaves into potting compost and remove plantlets when rooted.
- **PESTS AND DISEASES** Trouble free.

*T. menziesii* ♀ (Thousand mothers). Clump-forming, hairy perennial with creeping rhizomes and mainly basal,



*Tolmiea menziesii* 'Taff's Gold'

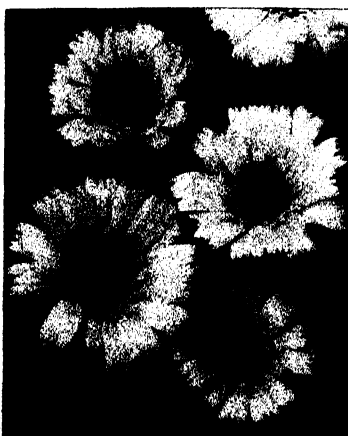
long-stalked, kidney-shaped, shallowly lobed, toothed, conspicuously veined, pale to lime-green leaves, to 12cm (5in) long. In late spring and early summer, produces one-sided racemes of 20–50 slightly scented flowers, to 1cm (½in) long, with orange anthers; the sepals are pale green, heavily shaded and lined purple-brown, with thread-like, purple-brown petals recurved between them. ‡ 30–60cm (12–24in), ↔ 1–2m (3–6ft). W. North America. ★★. 'Maculata' see 'Taff's Gold'. 'Taff's Gold' ☼♀ syn. 'Maculata', has paler green leaves, spotted and mottled cream and pale yellow.

## TOLPIS

ASTERACEAE/COMPOSITAE

Genus of 20 frequently mat-forming annuals and perennials from dry, sandy areas in the Azores and the Canary Islands, the Mediterranean region, N.E. Africa, and Ethiopia. The mainly ovate to lance-shaped, toothed or lobed, bright green basal leaves are usually arranged in rosettes, while the branching stems support pinnate or lobed leaves. Leaves and stems contain a milky latex. Daisy-like, bright yellow flowerheads emerge over a long period from spring to summer. Suitable for the front of a mixed or annual border.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, light, moderately fertile soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed *in situ* in mid-spring.
- **PESTS AND DISEASES** Trouble free.



*Tolpis barbata*

*T. barbata* ☼ Annual with mostly basal, lance-shaped to oblong, toothed, hairy, bright green leaves, 2–10cm (¾–4in) long. From spring to summer, solitary or clustered, bright yellow flowerheads, 1–3cm (½–1¼in) across, with fringed margins and dark maroon centres, are borne singly or in clusters, on sparsely leaved, branching stems. ‡ to 60cm (24in), usually less, ↔ 30cm (12in). Mediterranean. ★★

## TOONA

MELIACEAE

Genus of about 6 species of deciduous or semi-evergreen trees found in woodland from E. Asia to Australasia. They are grown for their alternate, pinnate leaves and small, cup-shaped, fragrant, greenish white or white flowers, which are borne in large, terminal or axillary panicles. *T. sinensis*, the most common species in cultivation, is an effective specimen tree. It grows best in areas with hot summers, where it is a useful shade or street tree.

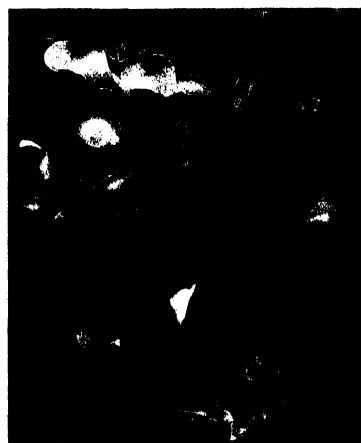
- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert root cuttings in late winter.
- **PESTS AND DISEASES** Trouble free.

*T. sinensis* ☼♀ syn. *Cedrela sinensis*. Broadly columnar, deciduous tree with peeling brown bark. Aromatic leaves, to 60cm (24in) long, have up to 26 ovate-lance-shaped to oblong, papery leaflets, bronze-red to pink when young, turning yellow in autumn. In midsummer, bears small, fragrant, white or greenish white flowers in pendent, terminal panicles, to 30cm (12in) long. ‡ 15m (50ft), ↔ 10m (30ft). China. ★★. 'Flamingo' has vivid pink young leaves, turning creamy yellow then bright green.

- ▷ **Toothwort, Purple** see *Lathraea clandestina*



*Toona sinensis*

*Torenia fournieri*

## TORENIA

Wishbone flower

SCROPHULARIACEAE

Genus of 40–50 erect to spreading, bushy, sometimes softly hairy annuals and perennials found in woodland, at altitudes up to 3,000m (10,000ft), in tropical Africa and Asia. They are grown for their short, showy, terminal or axillary racemes of tubular then flaring, 2-lipped flowers, the upper lips slightly 2-lobed, the lower ones markedly 3-lobed, produced in summer. The opposite leaves are mostly broadly to narrowly ovate or lance-shaped, and may be entire or toothed. *T. fournieri* is the most commonly cultivated species: use for summer bedding, or grow at the front of an annual or mixed border; it is also grown as a summer-flowering houseplant or cool-greenhouse plant.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in bright filtered light, providing good ventilation. In the growing season, water freely and apply a high-potash liquid fertilizer every 2 or 3 weeks. Pinch out

stem tips to promote bushiness. Outdoors, grow in fertile, moist but well-drained soil in partial shade.

• **PROPAGATION** Sow seed at 18°C (64°F) in mid-spring; harden off and plant out when all danger of frost has passed.

• **PESTS AND DISEASES** Trouble free.

*T. fournieri* ■ (Wishbone flower). Erect, smooth annual with long-stalked, pointed, ovate to narrowly ovate, toothed, pale green leaves, 4–5cm (1½–2in) long. In summer, produces abundant lilac-blue flowers, to 3.5cm (1½in) long, the lower lips deep purple and the throats marked yellow. †30cm (12in), ↔ 15–23cm (6–9in). Tropical Asia. ☼ (min. 5°C/41°F). Cultivars of **Crown Series** ■ are compact, and produce white, pink, deep purple, or lavender-blue flowers; †20–25cm (8–10in). **Panda Series** cultivars are more compact, producing white, pink, purple, or lavender-blue flowers; †10–20cm (4–8in).

▷ **Tormentil** see *Potentilla erecta*

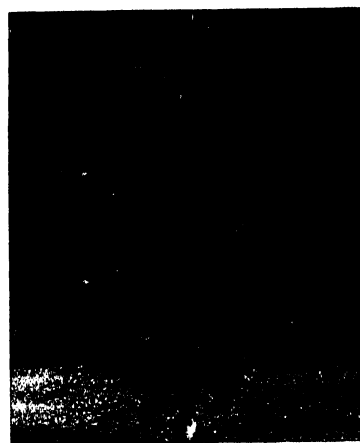
## TORREYA

Nutmeg yew

TAXACEAE

Genus of 7 species of dioecious, evergreen, coniferous shrubs or trees found in woodland in Asia and North America. The flattened, lance-shaped, 2-ranked leaves are yew-like, but hard and spine-tipped. The common name refers to the single-seeded, ovoid or ovoid-ellipsoid female, cone-like structures ("cones"); they may take 2 years to ripen, maturing to olive- or plum-like fruits. The male "cones" are white and spherical. Nutmeg yews are vigorous, small to medium-sized specimen trees. *T. californica* thrives in areas with cool, damp summers, whereas other species grow best in areas with summers that are warm and humid.

• **HARDINESS** Fully hardy.

*Torreya californica*

• **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or light dappled shade. Provide shelter from cold, drying winds.

• **PROPAGATION** Sow seed in containers in a cold frame or in a seed bed, as soon as ripe; the seed may take 2 or more years to germinate. Insert semi-ripe cuttings in late summer; use cuttings from strongly upright growth to form leading shoots.

• **PESTS AND DISEASES** Trouble free.

*T. californica* ■ ♀ (California nutmeg tree). Broadly conical tree with whorled branches, red-brown or brown bark, becoming scaly, and green shoots with pointed buds. Produces spreading, 2-ranked, narrowly lance-shaped, tapered, yellowish green leaves, 3–5cm (1¼–2in) long, and ellipsoid or obovoid, purplish green female "cones", to 4cm (1½in) long, † to 25m (80ft), ↔ to 8m (25ft). USA (C. California). \*\*\*

*T. nucifera* ♀–♂ Upright to broadly conical tree with opposite branchlets and linear, glossy, dark green leaves, 2–3cm (¾–1¼in) long, in 2 opposite ranks, separated by a broad, V-shaped channel. Ellipsoid female "cones" are olive-green, 2.5cm (1in) long, † to 15m (50ft), ↔ 8m (25ft). S. Japan. \*\*\*

▷ **Totara, Alpine** see *Podocarpus nivalis*

▷ **Tovara** see *Pericarica*

*T. virginiana* see *P. virginiana*

## TOWNSENDIA

ASTERACEAE/COMPOSITAE

Genus of about 20 species of compact, occasionally stemless annuals and evergreen, often monocarpic perennials found in open, freely draining habitats in mountainous areas of W. North America. The alternate leaves are linear to spoon-shaped, entire, and smooth to densely hairy. Solitary, short-stemmed, aster-like flowerheads are produced in summer. Suitable for a rock garden, trough, or alpine house.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in gritty, sharply drained soil in full sun. Protect from excessive winter wet. In an alpine house, grow in a mix of equal parts loam, leaf mould, and sharp sand.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Propagate regularly as plants are often short-lived.

• **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*Townsendia formosa*

*T. formosa* ■ Upright, clump-forming, rhizomatous perennial with spoon-shaped to inversely lance-shaped leaves, to 8cm (3in) long, with finely hairy midribs and margins. In summer, one to several solitary flowerheads, 3cm (1¼in) across, with pale violet ray-florets, mauve beneath, and yellow disc-florets, are produced on upright stems, 10cm (4in) long, † to 60cm (24in), ↔ to 15cm (6in). S.W. USA. \*\*\*

*T. parryi*. Clump-forming, short-lived perennial with spoon-shaped, slightly fleshy leaves, to 10cm (4in) long, smooth above and bristly-hairy beneath. One to several solitary flowerheads, to 3cm (1¼in) across, with violet-blue or lavender-blue ray-florets and yellow disc-florets, are borne on upright stems, 5–15cm (2–6in) long, in early summer. † to 15cm (6in), ↔ to 10cm (4in). N.W. North America. \*\*\*

▷ **Toxicodendron** see *Rhus*

*T. succedaneum* see *R. succedanea*

*T. vernicifluum* see *R. verniciflua*

## TRACHELIUM

syn. DIOSPHAEA

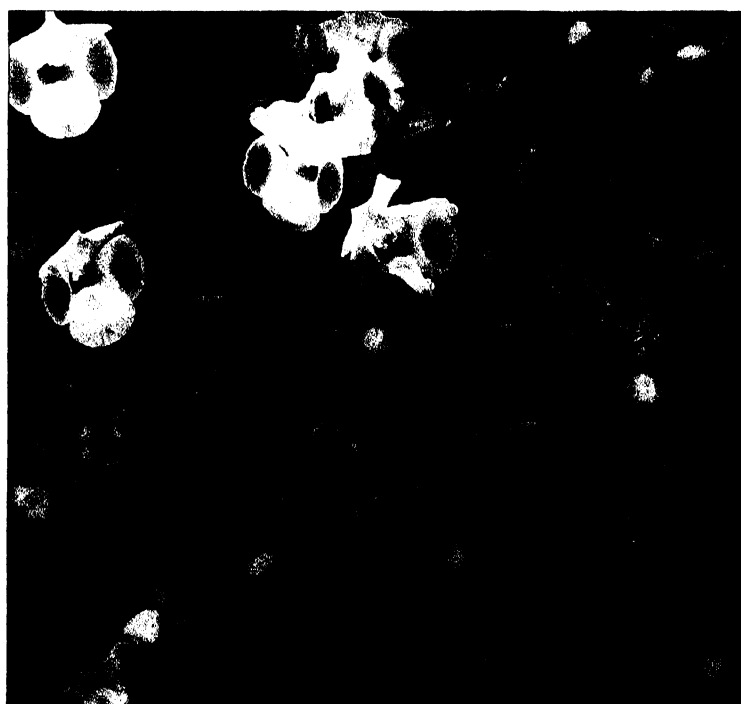
CAMPANULACEAE

Genus of about 7 species of small, sometimes cushion-forming, often woody-based perennials, usually found in calcareous soils in the Mediterranean region. The tiny, narrowly lance-shaped to oblong or almost rounded leaves are alternate and simple. Tubular flowers, each with 5 spreading petal lobes, are solitary or, more usually, produced in corymbs. Grow *T. caeruleum* and other tall species and cultivars in an annual, mixed, or herbaceous border; their flowers are excellent for cutting. Dwarf tracheliums, such as *T. asperuloides*, are suitable for a rock garden, scree bed, trough, or alpine house.

• **HARDINESS** Fully hardy to half hardy.

• **CULTIVATION** Grow in well-drained soil in full sun with some midday shade. *T. asperuloides* prefers more sharply drained, alkaline soil, and needs protection from excessive winter wet. In an alpine house, grow in deep containers in a mix of equal parts loam, leaf mould, and sharp sand.

• **PROPAGATION** Sow seed of half-hardy species at 13–16°C (55–61°F) in early spring, or *in situ* in late spring. Sow seed of fully hardy species as soon as ripe in containers in a cold frame. Insert soft-wood cuttings in early summer.

*Torenia fournieri* Clown Series

*Trachelium asperuloides*

- **PESTS AND DISEASES** Aphids and red spider mites may prove troublesome under glass.

***T. asperuloides*** ■ syn. *Diosphaera asperuloides*. Dense, cushion-forming perennial with thread-like stems bearing minute, overlapping, ovate-rounded, glossy, mid-green leaves, 6mm (¼in) long. In late summer, bears abundant, tubular, lavender-blue or white flowers, 6mm (¼in) across, singly or in corymbs of up to 5, on very short flower-stalks in the upper leaf axils. ‡ to 5cm (2in), ↔ to 15cm (6in). S. Greece. \*\*\*

***T. caeruleum*** ♀ (Blue throatwort). Erect perennial, grown as an annual in frost-prone climates, with pointed, oval to lance-shaped, toothed, mid-green leaves, 8cm (3in) long. In summer, bears lightly scented, deep violet-blue or white flowers, to 7mm (¼in) across, in dense, dome-shaped, terminal corymbs on long, branching, red-flushed stalks. ‡ 1–1.2m (3–4ft), ↔ 30cm (12in). W. and C. Mediterranean. \*. 'Purple Umbrella' has deep purple flowers. 'White Veil' has white flowers.

## TRACHELOSPERMUM

APCYNACEAE

Genus of about 20 species of woody, evergreen, twining climbers found in woodland from India to Japan. They are grown for their attractive foliage and fragrant flowers. Opposite, lance-shaped to broadly ovate leaves are borne on stems that contain a milky latex. Small, salverform flowers, with cylindrical tubes and 5 spreading, slightly twisted lobes, are produced in terminal or axillary cymes, followed by pendent, pod-like fruits (seldom borne in areas with cool summers). Grow against a warm, sunny wall; in areas prone to severe frosts, grow in a cool greenhouse.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Outdoors, grow in fertile, well-drained soil in full sun or partial shade; provide shelter from cold, drying winds. Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Pruning group 11, in early spring.
- **PROPAGATION** Insert semi-ripe cuttings with bottom heat in summer. Layer in autumn.

- **PESTS AND DISEASES** Trouble free.

*Trachelospermum jasminoides*

***T. asiaticum*** ♀ Woody, evergreen, twining climber bearing oval, glossy, dark green leaves, to 5cm (2in) long. Fragrant, creamy white flowers, 2cm (¾in) across, which age to yellow, are produced in terminal cymes in mid- and late summer. ‡ 6m (20ft). Korea, Japan. \*\*

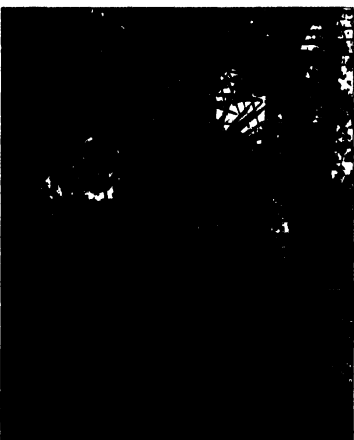
***T. jasminoides*** ■♀ (Confederate jasmine, Star jasmine). Woody, evergreen, twining climber with oval, glossy, dark green leaves, to 10cm (4in) long, turning bronze-red in winter. In mid- and late summer, pure white flowers, 2.5cm (1in) across, are produced in terminal and axillary cymes. ‡ 9m (28ft). China, Korea, Japan. \*\*

## TRACHYCARPUS

ARECACEAE/PALMAE

Genus of 6 species of usually single-stemmed, sometimes clustering, dioecious, evergreen palms occurring in temperate and mountain forest in subtropical Asia. They are cultivated for their attractive habit, their terminal, fan-shaped leaves, palmately lobed to half their length or more, and their cup-shaped flowers, surrounded by bowl-shaped, white or brown bracts. The flowers are followed by spherical or kidney-shaped fruits. Fan palms are small enough to be grown in a restricted area, such as a courtyard; they are also effective specimen trees.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in well-drained, fertile soil in full sun or light dappled shade, sheltered from strong or cold, drying winds.

*Trachycarpus fortunei*

- **PROPAGATION** Sow seed in spring or autumn at 24°C (75°F).
- **PESTS AND DISEASES** Trouble free.

***T. fortunei*** ■♀ (Chusan palm). Unbranched, single-stemmed, evergreen palm with a head of fan-shaped, dark green leaves, 45–75cm (18–30in) long, with numerous pointed segments variously lobed to half their length or more. Small yellow flowers are borne in large, pendent panicles, 60cm (24in) or more long; they emerge from close to the leaf bases in early summer. Female plants bear spherical, blue-black fruit, 1cm (½in) across. ‡ to 20m (70ft), ↔ 2.5m (8ft). Origin unknown. \*. 'Nanus' has a short or almost non-existent trunk and stiffer leaf-blades, to 30cm (12in) long.

## TRACHYMENE

syn. DIDISCUS

APIACEAE/UMBELLIFERAE

Genus of 12 or more species of erect, branching annuals, biennials, and perennials from moist woodland and swamps to dry sandhills and subalpine areas in Australia and the W. Pacific. The lacy leaves are ternate or 2-ternate, usually with linear leaflets, or rarely with 2 leaflets or palmately divided. Dainty, terminal umbels of tiny, star-shaped, white, pink, or blue flowers are borne in summer. Grow *T. coerules*, the species most commonly cultivated, at the front of an annual or mixed border, or in a cool greenhouse. It provides long-lasting cut flowers.

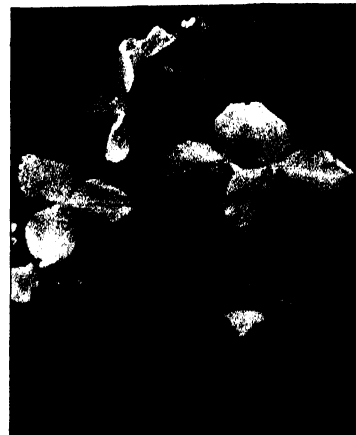
- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light with shade from hot sun. In summer, water moderately and apply a high-potash liquid fertilizer every 2 or 3 weeks. Outdoors, grow in light, well-drained, moderately fertile soil in a sheltered site in full sun. Provide twiggy support.
- **PROPAGATION** Sow seed at 15°C (59°F) in mid-spring, or sow *in situ* in late spring. Germination is slow.
- **PESTS AND DISEASES** Trouble free.

***T. coerules***, syn. *Didiscus coerules* (Blue lace flower). Stiff-stemmed annual or biennial with pale green leaves, to 10cm (4in) long, divided into 2 or 3 narrow, 3-lobed leaflets. Lightly scented, lavender-blue flowers are produced in long-stemmed, rounded umbels, to 5cm (2in) across, in summer. ‡ to 60cm (24in), ↔ 23cm (9in). W. Australia. \*

## TRADESCANTIA

COMMELINACEAE

Genus of about 65 species of creeping, trailing, or tuft-forming, fibrous- or tuberous-rooted, evergreen perennials from woodland, scrub, or disturbed ground in North, Central, and South America. The leaves are alternate, usually fleshy, lance-shaped to ovate, often purple-flushed or variegated, and hairy or hairless. Short-lived, spreading, usually saucer-shaped flowers, each with 3 petals and 3 sepals, are produced in terminal or axillary cymes, which are fused in pairs, with paired, boat-shaped bracts. Hardy tradescantias are suitable for a mixed or herbaceous border. In

*Tradescantia Andersoniana* Group 'J.C. Weguelin'

warm regions, grow the tender species beneath shrubs or for ground cover; in frost-prone areas, grow in a temperate or cool greenhouse, as houseplants, or in a conservatory; they are especially effective in hanging baskets. Contact with the foliage may irritate skin.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loamless or loam-based potting compost (J1 No.2) in bright filtered light. When in active growth, water moderately and apply a balanced liquid fertilizer every 4 weeks; water sparingly in winter. Pinch growing tips to encourage bushiness, and remove plain green foliage from variegated cultivars. Pot on each spring. Outdoors, grow in moist, fertile soil in full sun or partial shade. After flowering, cut back flowered stems to prevent seeding and to encourage further flowers.
- **PROPAGATION** Insert stem-tip cuttings, 5–8cm (2–3in) long, of the tender tradescantias at any time; root in cutting compost or water, then pot up into soil-based compost (J1 No.1). Divide hardy species and cultivars in autumn or spring.
- **PESTS AND DISEASES** Susceptible to aphids, grubs, and vine weevil.

***T. albiflora*** 'Albovittata' see *T. fluminensis* 'Albovittata'.

***T. albiflora*** 'Variegata' see *T. fluminensis* 'Variegata'.

***T. x andersoniana*** see *T. Andersoniana* Group.

***T. Andersoniana* Group**, syn. *T. x andersoniana*. Tufted, clump-forming perennials with erect, branching stems and arching, narrowly lance-shaped, pointed, hairless, slightly fleshy, mid-green, often purple-tinted leaves, to 35cm (14in) long. Blue, purple, rose-pink to rose-red, or white flowers, 2.5–4cm (1–1½in) across, each have 3 wide-open, triangular petals and fluffy-hairy stamen filaments; they are borne in succession in paired, terminal cymes from early summer to early autumn. ‡ 40–60cm (16–24in), ↔ 45–60cm (18–24in). \*\*\*. 'Carmine Glow' see 'Karminglut'. 'Iris Prichard' has white flowers, shaded pale blue. 'Isis' ♀ produces large, dark blue flowers. 'J.C. Weguelin' ■♀ has large, pale blue flowers. 'Karminglut', syn. 'Carmine Glow', has carmine-red flowers. 'Osprey' ■♀ has large white flowers with blue stamen filaments. 'Purewell



*Tradescantia* Andersoniana Group  
'Osprey'

**'Giant'** [ ] produces large, purple to rose-red flowers;  $\updownarrow$  45cm (18in). **'Purple Dome'** [ ] produces large, rich purple flowers. **'Red Cloud'** has cerise-red flowers;  $\updownarrow$  45cm (18in). **'Zwanenburg Blue'** has large, dark blue flowers. *T. blossfeldiana* see *T. cerinthoides*. *T. cerinthoides*, syn. *T. blossfeldiana*. Vigorous, creeping or ascending perennial with stout, branching stems and elliptic-oblong to narrowly ovate, very fleshy, deep green leaves, 15cm (6in) long, hairless above, and deep purple and densely hairy beneath. Paired, terminal or axillary cymes of pink and white flowers are produced intermittently throughout the year.  $\updownarrow$  90cm (36in),  $\leftrightarrow$  45cm (18in). Brazil.  $\bullet$  (min. 10–16°C/50–61°F).



*Tradescantia* Andersoniana Group  
'Purple Dome'

**'Variegata'** [ ] has leaves with bold buff stripes, light pink above. *T. fluminensis* (Wandering Jew). Trailing perennial with thin, pointed, ovate to ovate-oblong, usually hairless, light green leaves, 2–10cm ( $\frac{3}{4}$ –4in) long, often stained purple beneath. White flowers are produced in paired, terminal or axillary cymes intermittently throughout the year.  $\updownarrow$  15cm (6in),  $\leftrightarrow$  20cm (8in). Brazil to N. Argentina.  $\bullet$  (min. 10–16°C/50–61°F). **'Albovittata'** [ ] syn. *T. albiflora*. **'Albovittata'**, has light green leaves with white longitudinal stripes, and purple undersides that partially show through the almost transparent upper surfaces. **'Aurea'** [ ] has yellow-striped leaves. **'Variegata'** [ ] syn. *T. albiflora*



*Tradescantia fluminensis* 'Albovittata'

**'Variegata'**, has leaves variably striped green, white, purple, or cream. *T. navicularis* see *Callisia navicularis*. *T. pallida* **'Purple Heart'** see *T. pallida* **'Purpurea'**. *T. pallida* **'Purpurea'** [ ] syn. *Secreasea purpurea*, *T. pallida* **'Purple Heart'**. Trailing perennial producing ascending purple stems. Large, pointed, narrowly oblong leaves, 8–15cm (3–6in) long, are V-shaped in section, and fleshy, hairless, rich violet-purple. In summer, bears bright pink flowers in paired, terminal cymes. Leaves colour best in bright sunlight and when the root zone is slightly dry and cramped.  $\updownarrow$  20cm (8in),  $\leftrightarrow$  to 40cm (16in). E. Mexico.  $\bullet$  (min. 10–16°C/50–61°F). *T. pexata* see *T. sillamontana*. *T. purpusii* see *T. zebrina* **'Purpusii'**. *T. sillamontana* [ ] syn. *T. pexata*, *T. velutina* (White velvet). Trailing perennial with upright, later spreading, silky-hairy stems and ovate, fleshy, silky-hairy, grey-green leaves, 4–6cm (1½–2½in) long. Magenta-pink flowers are borne in paired, terminal cymes in summer.  $\updownarrow$  30cm (12in),  $\leftrightarrow$  to 45cm (18in). N. Mexico.  $\bullet$  (min. 10–16°C/50–61°F). *T. spathacea* [ ] syn. *Rhoeo discolor*, *R. spathacea* (Moses-in-the-cradle, Three-men-in-a-boat). Clump-forming perennial with rosettes of semi-erect, linear-lance-shaped, fleshy, hairless leaves, 20–35cm (8–14in) long, dark green above and deep purple beneath. White flowers are produced in paired, axillary cymes, which are surrounded by prominent, long-lasting purple



*Tradescantia pallida* 'Purpurea'

bracts, throughout the year.  $\updownarrow$  30cm (12in). Central America.  $\bullet$  (min. 10–16°C/50–61°F). **'Vittata'** [ ] has leaves with numerous longitudinal, pale yellow stripes. *T. velutina* see *T. sillamontana*. *T. zanonina*, syn. *Campelia zanonina*. Clump-forming perennial with erect or decumbent stems and broadly elliptic to inversely lance-shaped, hairless, membranous, dark green leaves, 24cm (10in) long. White flowers are borne in paired, axillary cymes, surrounded by 2 leafy bracts, from summer to winter.  $\updownarrow$  2.2m (7ft),  $\leftrightarrow$  1m (3ft). Mexico to Brazil, West Indies.  $\bullet$  (min. 10–16°C/50–61°F). **'Mexican Flag'** has leaves with longitudinal white stripes and red margins, sometimes silvery beneath.



*Tradescantia* Andersoniana Group 'Purewell Giant'



*Tradescantia fluminensis* 'Variegata'



*Tradescantia sillamontana*



*Tradescantia spathacea*

*Tradescantia zebrina**Tradescantia zebrina* 'Purpusii'

**T. zebrina** [♀] syn. *Zebrina pendula* (Wandering Jew). Trailing perennial with ovate-oblong to broadly ovate, fleshy, hairless, bluish green leaves, to 10cm (4in) long; 2 longitudinal stripes, silver-green above and rich purple beneath, mark each leaf. Purple-pink to purple-blue flowers are produced in paired, terminal cymes intermittently throughout the year. † 15cm (6in), ↔ 20cm (8in). S. Mexico. ☼ (min. 10–16°C/50–61°F). 'Purpusii' [♀] syn. *T. purpusii*, *Zebrina purpusii*, has rich bronze-purple leaves and pink flowers. 'Quadricolor' ♀ has leaves striped green, cream, pink, and silver.

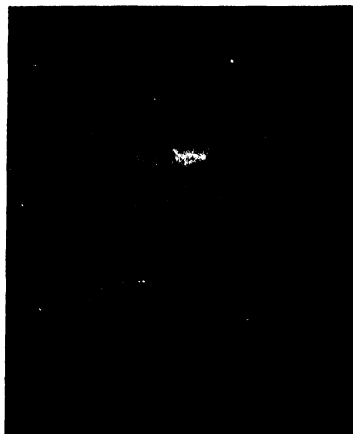
## TRAPA

Water chestnut

TRAPACEAE

Genus of about 30 species of submerged aquatic annuals from still or slow-moving water in C. Europe, E. Asia, and Africa. The creeping, floating stems bear linear submerged leaves and rosettes of ovate or almost triangular to diamond-shaped, toothed, mottled floating leaves, hairy beneath, with spongy, swollen leaf-stalks. Small, solitary, tubular, white or lilac flowers are followed by inflated, spiny fruits. In frost-prone areas, grow in baskets in a cold-greenhouse pool, or float rosettes on the surface of an outdoor pool after last frosts. In warmer climates, grow in an outdoor pool.

• **HARDINESS** Half hardy to frost tender.  
• **CULTIVATION** Plant in baskets of loam-based potting compost (J1 No.3) in full light, at no less than 10°C (50°F); or, in frost-prone areas, float rosettes on

*Trapa natans*

still, shallow, nutrient-rich, acid water in full sun. See also pp.52–53.

• **PROPAGATION** Collect seed in autumn. Store frost-free in water or wet moss over winter; sow in spring, at 13–18°C (55–64°F), in wet compost.

• **PESTS AND DISEASES** Trouble free.

**T. natans** [♂] (Jesuit's nut, Water caltrops, Water chestnut). Clump-forming, aquatic annual. Roughly diamond-shaped, floating leaves, 2.5cm (1in) across, have red-tinged leaf-stalks, 5–8cm (2–3in) long. White flowers are borne from the leaf axils in summer, followed by 4-angled, spiny, hard black fruit, to 5cm (2in) across. ↔ indefinite. Eurasia, Africa. \* (borderline)

▷ **Traveller's joy** see *Clematis*

▷ **Traveller's tree** see *Ravenala*

▷ **Tree fern** see *Cyathea*

Black see *Cyathea medullaris*

Hawaiian see *Cibotium glaucum*

Soft see *Dicksonia antarctica*

Woolly see *Dicksonia antarctica*

▷ **Tree heath** see *Erica arborea*

▷ **Tree-ivy** see *Fatsia lizei*

▷ **Tree of heaven** see *Ailanthus altissima*

▷ **Trees** see pp.32–33

▷ **Tree tomato** see *Cyphomandra*

▷ **Trefoil**,

Double bird's foot see *Lotus corniculatus* 'Plenus'

Moon see *Medicago arborea*

▷ **Trichinium manglesii** see *Ptilotus manglesii*

▷ **Trichocereus bridgesii** see *Echinopsis lageniformis*

▷ **Trichocereus candicans** see *Echinopsis candicans*

▷ **Trichocereus grandiflorus** see *Echinopsis huascha*

▷ **Trichocereus huascha** see *Echinopsis huascha*

▷ **Trichocereus shafteri** see *Echinopsis schickendantzii*

▷ **Trichocereus spachianus** see *Echinopsis spachiana*

## TRICHODIADEMA

AIZOACEAE

Genus of about 30 species of mainly small, tuberous, fibrous, or woody-based, shrubby, succulent perennials found in dry, hilly areas in Namibia, South Africa, and Ethiopia. The long-lasting, solitary, short-stalked, daisy-like, terminal flowers are borne on long or short stems in daytime, from spring to autumn. Semi-cylindrical to cylindrical

*Trichodiadema mirabile*

leaves are sparsely covered with minute papillae, producing a glistening effect, and the leaf tips bear clusters of stiff, spreading or erect, shiny bristles. Below 7°C (45°F), grow in a temperate greenhouse. In warm, dry areas, grow in a border with other succulents.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with low humidity. In growth, water moderately and apply a low-nitrogen fertilizer every 3 or 4 weeks; keep dry at other times. Outdoors, grow in gritty, sharply drained, poor to moderately fertile soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or insert cuttings of stem sections, in spring or summer.

• **PESTS AND DISEASES** Susceptible to mealybugs early in the season.

**T. bulbosum** ♀ Semi-erect, short- to long-stemmed succulent with an almost caudex-like, tuberous rootstock and semi-cylindrical, grey-papillose leaves, to 8mm (3/16in) long, with white bristles. Deep red flowers, 2cm (3/16in) across, are borne from spring to autumn. † 20cm (8in), ↔ 30cm (12in). South Africa (Eastern Cape). ☼ (min. 7°C/45°F)

**T. mirabile** [♂] Short-stemmed, often prostrate succulent with a fibrous rootstock, and stems covered with bristly white hairs. Semi-cylindrical, finger-like leaves, to 2.5cm (1in) long, are flat above, and have blunt tips with stiff, dark brown bristles. White flowers, 4cm (1 1/2in) across, are produced in summer. † 10cm (4in), ↔ 12cm (5in) or more. South Africa (Eastern Cape, Karoo). ☼ (min. 7°C/45°F)

## TRICHOSANTHES

CUCURBITACEAE

Genus of 15 species of monoecious or dioecious, annual and perennial tendril climbers found in woodland and scrub from Indonesia and Malaysia to the Pacific islands. They are grown mainly for their colourful, ornamental, mostly ovoid or spherical gourd fruits, which are edible when young. The alternate leaves are ovate to rounded, and simple or palmately 3- to 9-lobed. Parasol-like, fringed, 5-lobed flowers are produced from the upper leaf axils in summer, the females singly, the males in racemes or, rarely, singly. In frost-prone areas, grow in a warm greenhouse; elsewhere, train over a pergola, arch, or tree stump.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) in full light with shade from hot sun, with high humidity. During growth, water freely and apply a balanced liquid fertilizer every 2 weeks. Water sparingly in winter. For good fruit production, pollinate by hand. Outdoors, grow in moist but well-drained, fertile soil in full sun. Provide support for climbing stems.

• **PROPAGATION** Sow seed at 20°C (68°F) in spring. Insert softwood cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

**T. anguina** sec *T. cucumerina* var. *anguina*.

**T. cucumerina**. Dioecious, annual climber with slender, 5-angled stems and rounded-kidney-shaped to broadly ovate, 5- to 7-lobed, toothed, rich green leaves, 6–13cm (2 1/2–5in) long. Bears pure white flowers, 5cm (2in) across, in summer. Ovoid to conical fruit, 6cm (2 1/2in) long, are yellowish green with red seeds. † 3–5m (10–15ft) or more. India to Malaysia and N. Australia.

☼ (min. 15°C/59°F). var. *anguina*, syn. *T. anguina* (Serpent cucumber, Snake gourd), has shallowly to deeply 3- to 7-lobed leaves, to 15cm (6in) long, and slender, twisted, pointed fruit, 0.3–2m (1–6ft) long, white-striped when young, orange when ripe; Pakistan to India.

▷ **Trichosma suavis** see *Fria coronaria*

▷ **Tricuspidaria lanceolata** sec *Crinodendron hookerianum*

## TRICYRTIS

Toad lily

CONVALLARIACEAE/LILIACEAE

Genus of about 16 species of rhizomatous or stoloniferous herbaceous perennials occurring in moist woodland and on mountains and cliffs from the E. Himalayas to the Philippines. Erect or arching, usually hairy stems bear alternate, sometimes 2-ranked, oblong to lance-shaped, pointed, pale to dark green, usually stem-clasping leaves; they are often glossy, sometimes spotted darker green, and have prominent veins. The flowers are star-shaped, open bell-shaped, or funnel-shaped with the tips opened out. They each have 6 tepals, the outer 3 with basal bulges, and are borne singly or in clusters from the leaf axils, or in terminal or axillary cymes. Toad

*Tricyrtis formosana*



*Tricyrtis hirta* var. *alba*

lilies are suitable for a woodland garden, a shady border, or a peat bank.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, humus-rich soil in deep or partial shade. *T. latifolia* tolerates drier conditions and may spread widely. *T. macrantha* and *T. macrantha* subsp. *macranthopsis* prefer deep shade and very moist soil. In colder areas, grow the late-blooming species in a sheltered, warm but not sunny position to encourage flowering before frosts. Provide a deep winter mulch in areas where prolonged cold is not accompanied by snow cover.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame; where frost is severe, overwinter young plants in a cold greenhouse for the first winter. Divide in early spring, when dormant.

• **PESTS AND DISEASES** Slugs and snails may attack young spring growth.

*T. bakeri* see *T. latifolia*.

*T. flava*. Clump-forming perennial with short rhizomes, erect, softly hairy stems, and broadly ovate, veined, mid-green leaves, to 14cm (5½in) long, often with dark purplish green spots. In early autumn, upward-facing, star-shaped yellow flowers, to 2.5cm (1in) across, spotted brownish-purple, are borne singly or in clusters from the upper leaf axils. † 30–50cm (12–20in), ↔ 30cm (12in). Japan. \*\*\*. subsp.

*obsumiensis* see *T. obsumiensis*.

*T. formosana* [♀] syn. *T. stolonifera*. Rhizomatous perennial, spreading by stolons, with erect, somewhat zig-zagging, softly hairy stems, and inversely lance-shaped to ovate, veined, glossy, dark green leaves, to 12cm (5in) long, spotted darker purplish green. In early autumn, produces branched, terminal cymes of upward-facing, star-shaped, white to pinkish white or pinkish purple flowers, 2.5–3cm (1–1¼in) across; they are spotted reddish purple inside, with yellow tepal bases and heavily red-spotted white stigmas. † to 80cm (32in), ↔ 45cm (18in). Taiwan. \*\*\*

*T. hirta*, syn. *T. japonica*. Clump-forming, rhizomatous perennial with densely hairy stems and lance-shaped, veined, hairy, pale green leaves, to 15cm (6in) long, heart-shaped at the bases. From late summer to mid-autumn, erect, funnel-shaped, purple-spotted white flowers, to 3cm (1¼in) long, with purple stigmas and spreading then recurved tepals, are produced singly or in clusters from the leaf axils, or in

*Tricyrtis macrantha* subsp. *macranthopsis*

terminal or axillary cymes. † to 80cm (32in), ↔ 60cm (24in). Japan. \*\*\*. var. *alba* [♂] has green-flushed white flowers with pink-tinged anthers.

'Miyazaki' bears white flowers, spotted lilac-purple, in the leaf axils all along the stems; † to 90cm (36in), ↔ 45cm (18in).

'White Towers' has erect stems, and bears upward-facing white flowers, with pink-tinged stamens, in most of the leaf axils; † to 60cm (24in), ↔ 30cm (12in).

*T. japonica* see *T. hirta*.

*T. latifolia*, syn. *T. bakeri*. Spreading, clump-forming perennial with short rhizomes, erect to arching, hairy stems, and broadly ovate-oblong, veined, glossy, mid-green leaves, to 15cm (6in) long, with heart-shaped bases, spotted darker green when young. In early and midsummer, produces upward-facing, trumpet- then star-shaped flowers, to 2.5cm (1in) across, with spreading, brown-spotted tepals, yellow inside and greenish yellow outside, in branched, terminal cymes. † to 80cm (32in), ↔ 90cm (36in). China, Japan. \*\*\*

*T. macrantha*. Tufted perennial with short rhizomes, arching or decumbent, brown-hairy stems, and ovate to lance-shaped, veined, glossy, dark green leaves,

10–15cm (4–6in) long, heart-shaped at the bases. In early and mid-autumn, bears pendent, bell-shaped, deep yellow flowers, 3–4cm (1¼–1½in) long, with thick, fleshy tepals, spotted red-brown inside, in few-flowered cymes from the upper leaf axils. † 40–80cm (16–32in), ↔ 30cm (12in). Japan. \*\*\*. subsp. *macranthopsis* [♂] syn. *T. macranthopsis*, has hairless stems, with leaves to 17cm (7in) long, and bears axillary or terminal cymes in mid- and late autumn.

*T. macranthopsis* see *T. macrantha* subsp. *macranthopsis*.

*T. obsumiensis* [♂] syn. *T. flava* subsp. *obsumiensis*. Clump-forming perennial with short rhizomes, erect to arching, hairy stems, and oblong-lance-shaped, veined, pale green leaves, 5–20cm (2–8in) long, marked darker green, the lower ones larger and elliptic-oblong. In early autumn, upward-facing, broadly bell-shaped yellow flowers, 2.5–3cm (1–1¼in) long, faintly brown-spotted inside, especially the stigmas, are borne singly or in axillary clusters. † to 50cm (20in), ↔ 23cm (9in). Japan. \*\*\*

*T. perfoliata*. Spreading, rhizomatous perennial with almost decumbent, zig-zagging, hairless stems. Perfoliate, broadly lance-shaped, veined, leathery, glossy, mid-green leaves, 7–18cm (3–7in) long, have long, tapered tips. Upward-facing, funnel-shaped yellow flowers, to 3cm (1¼in) long, sparsely spotted brownish red, are borne singly from the upper leaf axils in late spring. † to 70cm (28in), ↔ 25cm (10in). Japan. \*\*\*

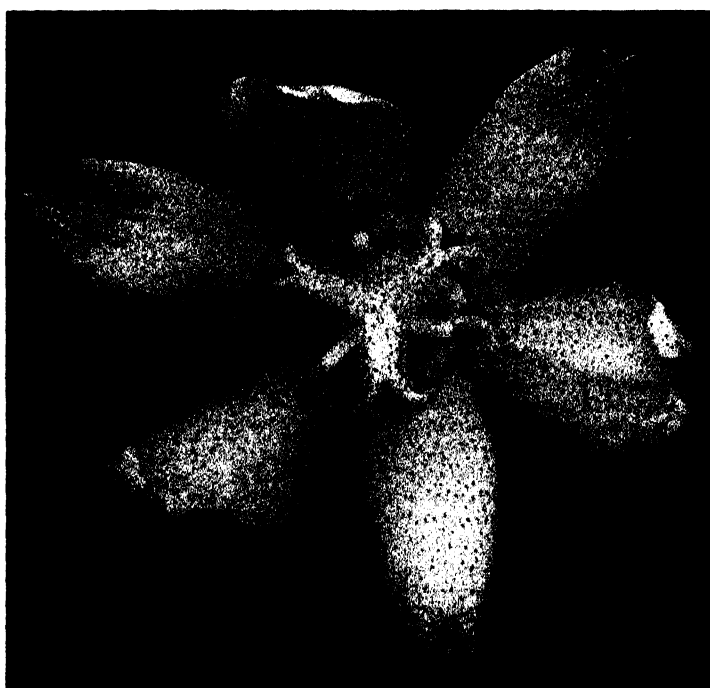
*T. stolonifera* see *T. formosana*.

## TRIFOLIUM

Clover

LEGUMINOSAE/PAPILIONACEAE

Genus of about 240 species of erect or creeping annuals, biennials, and herbaceous perennials, usually found on scree or in grassy meadows or scrub worldwide, except in Australasia, and mainly in the N. hemisphere. The 3-

*Tricyrtis obsumiensis**Trifolium repens* 'Purpurascens' Quadrifolium

palmate leaves, rarely up to 7-palmate, have entire or toothed leaflets, usually with stipules. Small, pea-like flowers are produced in heads or in short, terminal or axillary spike-like racemes (or, rarely, singly), in spring or summer, and are attractive to bees. Many clovers are invasive weeds. The others are suitable for a border or a wildflower garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, neutral soil in full sun.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide, or detach and replant rooted stems, in spring.

• **PESTS AND DISEASES** Trouble free.

*T. incarnatum* (Crimson clover, Italian clover). Erect, bushy, downy-stemmed annual with 3-palmate leaves, to 3cm (1¼in) long, with obovate-wedge-shaped leaflets, finely toothed towards the tips. In spring and summer, bears oblong, spike-like racemes, to 1.5cm (½in) across, of 5–8 deep red to creamy yellow flowers. † 20–50cm (8–20in). S. and W. Europe. \*\*\*

*T. pratense* 'Dolly North' see *T. pratense* 'Susan Smith'.

*T. pratense* 'Goldnet' see *T. pratense* 'Susan Smith'.

*T. pratense* 'Susan Smith', syn. *T. pratense* 'Dolly North', *T. pratense* 'Goldnet'. Mat-forming perennial with 3-palmate leaves, to 3.5cm (1½in) long, with obovate to broadly elliptic, entire leaflets, usually notched at the tips, with vein-like gold markings, hairy beneath. In early and midsummer, bears dense, spherical to ovoid, axillary, spike-like racemes, to 2cm (¾in) across, of 5–9 pink flowers. † 15cm (6in), ↔ 45cm (18in). \*\*\*

*T. repens* (Dutch clover, Shamrock, White clover). The species is very invasive, and a weed of lawns.

'Purpurascens Quadrifolium' [♂] is a vigorous, rhizomatous, stem-rooting perennial with 4-palmate leaves, 2–3cm (¾–1¼in) long, divided into inversely heart-shaped leaflets with deep purple maroon centres and narrow, mid-green margins. Small, pea-like white flowers are produced in dense, umbel-like racemes, 1.5–2cm (½–¾in) across, in summer. † to 10cm (4in), ↔ indefinite. Europe. \*\*\*

▷ **Trigger plant** see *Stylidium graminifolium*

## TRILLIUM

Trinity flower, Wake robin, Wood lily

LILIACEAE/TRILLIACEAE

Genus of about 30 species of rhizomatous, deciduous perennials, occurring mainly in woodland and scrub in North America, with a few species in the W. Himalayas and N.E. Asia. Erect, rarely procumbent, short stems each bear an apical whorl of 3 lance-shaped or elliptic to ovate or diamond-shaped, net-veined, often silver- or purple-marbled leaves. Upright or nodding, terminal, solitary, funnel- or cup-shaped flowers, with whorls of 3 leaf-like, often reflexed outer sepals, and 3 inner petals, are either stalkless supported by the leaves, or stalked and borne above or below the leaves. Suitable for a moist, shady border or woodland garden. Grow the smallest species, *T. nivale* and *T. rivale*, on a peat bank, where they will not be overwhelmed by other plants.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, deep, humus-rich, preferably acid to neutral soil, although some will grow in moderately alkaline soils, in deep or partial shade. Mulch annually in autumn with leaf mould.

• **PROPAGATION** Sow seed as soon as ripe in containers in a shaded cold frame; leaves will not usually appear until the second spring, and plants take 5–7 years to reach flowering size. Divide rhizomes after flowering, ensuring that each section has at least one growing point; divisions may be slow to re-establish. Alternatively, cut out the growing point from the rhizome after flowering, which stimulates formation of offsets.

• **PESTS AND DISEASES** Young leaves may be damaged by slugs and snails.

*T. catesbaei*, syn. *T. catesbyi*, *T. nervosum*, *T. stylorum*. Slender, clump-forming perennial with red-pink-tinted stems and almost stalkless, elliptic to ovate, deeply veined leaves, to 7cm (3in)

*Trillium cernuum**Trillium chloropetalum*

long. Stalked, nodding, pale to deep pink flowers, with ovate to heart-shaped petals, to 5cm (2in) long, reflexed, mid-green sepals, and pale green ovaries, are borne beneath or among the leaves in spring and summer. † to 50cm (20in), ↔ to 15cm (6in). S.E. USA. \*\*\*

*T. catesbyi* see *T. catesbaei*.

*T. cernuum* ■ ♀ Clump-forming perennial with short-stalked, broadly diamond-shaped, abruptly pointed, mid-green leaves, 5–15cm (2–6in) long, with moderately conspicuous veining. Pale pink, sometimes reddish brown, occasionally white flowers, with recurved, wavy petals, to 2cm (¾in) long, prominent purple stamens, and dark red ovaries, are borne on reflexed, pendent stalks, beneath or among the leaves, in spring. † to 60cm (24in), ↔ to 25cm (10in). E. North America. \*\*\*. f. *album* has white flowers.

*T. chloropetalum* ■ ♀ Robust, clump-forming perennial with thick, hairless, red-green stems. Stalkless, broadly ovate to diamond-shaped, dark green leaves, 10–20cm (4–8in) long, are variably marbled greyish cream or maroon. Upright, stalkless, fragrant flowers, with obovate, greenish white, yellow, or brownish purple petals, 5–10cm (2–4in) long, and spreading, lance-shaped sepals, are borne above or among the leaves, in spring. † to 40cm (16in), ↔ to 20cm (8in). USA (California). \*\*\*

*T. cuneatum*, syn. *T. sessile* of gardens. Robust, upright, clump-forming perennial with stalkless, broadly ovate-rounded, often pointed, mid-green leaves, to 20cm (8in) long, marked pale or silver-green. In spring, upright, stalkless, musk-scented, dark maroon flowers, with wedge-shaped petals, 5cm (2in) or more long, and purple-tipped, olive-green sepals, are borne above the leaves. Similar to *T. sessile*; often sold under that name. † 30–60cm (12–24in), ↔ to 30cm (12in). S.E. USA. \*\*\*

*T. erectum* ■ ♀ (Birth root, Stinking Benjamin). Vigorous, upright perennial with stalkless, broadly ovate, mid-green leaves, to 20cm (8in) long. In spring, stalked, upright or outward-facing flowers, with pointed, elliptic, spreading or incurved petals, to 8cm (3in) long, are borne above the leaves; flowers are deep red-purple, occasionally white or yellow, with purple-tinted green sepals and purple ovaries. † to 50cm (20in), ↔ to 30cm (12in). E. North America. \*\*\*. f. *albiflorum* has white or pale pink petals with dark purple ovaries.

*Trillium erectum*

*T. grandiflorum* ■ ♀ (Wake robin). Vigorous, clump-forming perennial with almost stalkless, ovate to rounded, dark green leaves, to 30cm (12in) long. In spring and summer, pure white flowers, often fading to pink, with green sepals, are produced above the leaves; they are stalked, erect or outward-facing, cupped at first, then opening widely, with broadly ovate, slightly wavy petals, to 8cm (3in) long, reflexing near the tips. † to 40cm (16in), ↔ 30cm (12in) or more. E. North America. \*\*\*. 'Flore Pleno' ♀ is slower-growing, with very attractive, formal double flowers. Several variants with slightly differing double flowers are grown under this name.

*T. kamtschaticum*. Upright perennial with stalkless, ovate to diamond-shaped, abruptly pointed, dark green leaves, to

*Trillium luteum*

15cm (6in) long. Stalked, upright flowers, with ovate white petals, to 4.5cm (1½in) long, sometimes purple-flushed with age, and dark green sepals, are produced above the leaves in late spring and early summer. † to 25cm (10in), ↔ to 20cm (8in). E. Asia. \*\*\*

*T. luteum* ■ ♀ Upright, clump-forming perennial with stalkless, elliptic to broadly ovate, abruptly pointed, mid-green leaves, to 15cm (6in) long, heavily marked paler green. Stalkless, upright, sweet-scented, golden- or bronze-green flowers, with inversely lance-shaped to obovate or narrowly elliptic petals, to 9cm (3½in) long, and lance-shaped, mid-green sepals, are produced above the leaves in spring. † to 40cm (16in), ↔ to 30cm (12in). S.E. USA. \*\*\*. *T. nervosum* see *T. catesbaei*.

*Trillium grandiflorum*

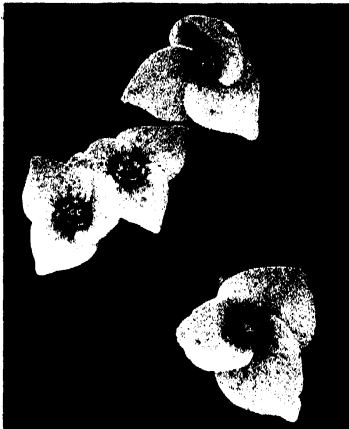
*Trillium ovatum*

**T. nivale** (Dwarf white wood lily, Snow trillium). Compact, clump-forming perennial with stalked, ovate, dark bluish green leaves, to 3.5cm (1½in) long. Bears short-stalked, upright, pure white flowers, with oblong petals, to 4cm (1½in) long, and green sepals and ovaries, above the leaves in early spring. Not easy to grow. ↑ to 12cm (5in), ↔ to 10cm (4in). S.E. USA. \*\*\*

**T. ovatum** Clump-forming perennial with red-green stems and stalkless, diamond-shaped, pointed, dark green leaves, to 15cm (6in) long, each with 5 conspicuous sunken veins. In spring, stalked, upright, musk-scented, pure white flowers, fading to pink or red, with spreading, ovate petals, 2.5–7cm (1–3in) long, and green sepals, are borne above the leaves. ↑ to 50cm (20in), ↔ to 20cm (8in). W. North America. \*\*\*

**T. recurvatum** Upright, clump-forming perennial with lance-shaped to elliptic, mottled, mid-green leaves, to 8cm (3in) long, tapering to short stalks. In spring, upright, stalkless, deep maroon, occasionally white or yellow flowers are produced above the leaves; they have lance-shaped to ovate petals, to 5cm (2in) long, clawed at the bases, and strongly recurving green sepals. ↑ to 40cm (16in), ↔ to 30cm (12in). E. USA. \*\*\*

**T. rivale** Dwarf, upright perennial with stalked, ovate, pointed, mid-green leaves, to 3cm (1¼in) long. In spring, stalked, upright, white or pale pink flowers, spotted purple at the bases, with diamond-shaped to ovate petals, to 2.5cm (1in) long, and green sepals, are produced above the leaves. Similar to

*Trillium rivale**Trillium sessile*

**T. nivale**, but easier to grow. ↑ to 12cm (5in), ↔ to 15cm (6in). W. USA. \*\*\*

**T. sessile** (Toad-shade, Wake robin). Upright, clump-forming perennial with stalkless, broadly elliptic to rounded, deep green leaves, to 12cm (5in) long, marbled pale green, grey-white, and bronze-maroon. Stalkless, upright, red-maroon, rarely greenish yellow flowers, with lance-shaped petals, to 4.5cm (1¾in) long, and spreading, maroon-flushed green sepals, are borne above the leaves in late spring. ↑ to 30cm (12in), ↔ to 20cm (8in). N.E. USA. \*\*\*

**T. sessile of gardens** see *T. cuneatum*.

**T. stylosum** see *T. catesbaei*.

**T. undulatum** (Painted trillium, Painted wood lily). Graceful, clump-forming perennial with erect, pale green stems, flushed pink at the bases, and stalked, narrowly ovate, tapered, dark blue-green leaves, to 15cm (6in) long. In late spring, stalked, upright, white or very pale pink flowers, with wavy petals, to 3cm (1¼in) long, with dark red, V-shaped marks at the bases and maroon-margined, dark green sepals, are borne above the leaves. Not easy to grow; needs moist, acid soil. ↑ to 30cm (12in), ↔ to 15cm (6in). E. USA. \*\*\*

**T. viride** Upright perennial with sometimes downy stems, and stalkless, lance-shaped to elliptic, mid-green leaves, 8–15cm (3–6in) long, spotted white above. Stalkless, upright, malodorous, yellow-green flowers, sometimes maroon at the bases, occasionally completely maroon, with narrowly lance-shaped petals, to 7cm (3in) long, and green sepals, are borne above the leaves in spring. ↑ to 40cm (16in), ↔ to 20cm (8in). USA (Illinois, Missouri). \*\*\*

- ▷ **Trillium**,  
Painted see *Trillium undulatum*  
Snow see *Trillium nivale*
- ▷ **Trinity flower** see *Trillium*

## TRIPETALEIA

syn. *ELLIOTIA*

ERICACEAE

Genus of 2 species of deciduous shrubs found in mountain woodland in Japan. They are cultivated for their terminal panicles of attractive, 3-petalled, sometimes 4- or 5-petalled flowers. Grow in a peat, rock, or woodland garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in moist but well-drained, humus-rich, acid soil in partial shade. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert soft-wood cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**T. paniculata**, syn. *Elliottia paniculata*. Upright, deciduous shrub with alternate, obovate to narrowly ovate-elliptic, dark green leaves, to 6cm (2½in) long. From midsummer to early autumn, pink-tinged white flowers, 2cm (¾in) across, with 3 or 5 narrow, twisted petals, are borne in upright, terminal panicles, to 15cm (6in) long. ↑↔ 1.5m (5ft). Japan. \*\*\*

## TRIPTERYGIUM

CELASTRACEAE

Genus of 2 or 3 species of deciduous, scrambling to twining climbers from deciduous woodland in E. Asia. They have large, alternate, ovate or broadly ovate to elliptic leaves. Abundant tiny, 5-petalled, saucer-shaped flowers are borne in terminal panicles, followed by prominently winged fruits. *T. regelii*, the most commonly cultivated species, is suitable for training on a house wall or over a pergola, tree, or tall tree stump. In frost-prone areas, grow half-hardy species in a cool greenhouse.

• **HARDINESS** Frost hardy to half hardy.

• **CULTIVATION** Grow in moist but well-drained, fertile soil in full sun. Pruning group 11, in spring.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Root semi-ripe cuttings in summer with bottom heat. Layer in early spring.

• **PESTS AND DISEASES** Trouble free.

**T. regelii**. Bushy, twining climber, often loosely shrubby when young, producing slightly angled, warty stems and long-stalked, ovate or broadly ovate to elliptic, slender-pointed, toothed, bright green leaves, 8–13cm (3–5in) long. In summer, small, saucer-shaped, green-tinted white flowers are borne in leafy panicles, to 25cm (10in) long, followed by 3-winged, pale green to light brown fruit, 1.5–2cm (½–¾in) long. ↑ to 10m (30ft). China, Korea, Japan. \*\*

▷ **Tristagma 'Rolf Fiedler'** see *Ipheion* 'Rolf Fiedler'

▷ **Tristagma uniflorum** see *Ipheion uniflorum*

▷ **Tristania conferta** see *Lophostemon confertus*

## TRITELEIA

ALLIACEAE/LILIACEAE

Genus of about 15 species of cormous perennials, closely related to *Brodiaea*, mainly found in grassland, chaparral, and pine woodland in W. USA. They are cultivated for their umbels of funnel-shaped flowers, borne on leafless stems.

The semi-erect, narrowly linear, basal leaves usually die away by flowering time. Suitable for a warm, sunny, mixed or herbaceous border. In areas prone to severe frosts, grow in a cold greenhouse or alpine house.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Plant corms 8cm (3in) deep in autumn. Outdoors, grow in light, sandy, fertile soil in full sun. Under glass, grow in loam-based potting compost (J1 No.2), with added sharp

*Triteleia hyacinthina*

sand, in full light. After planting, water sparingly until leaves appear. In growth, water freely and apply a half-strength balanced liquid fertilizer monthly. Reduce water gradually after flowering; keep warm and dry when dormant.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) as soon as ripe or in early spring; seed-grown plants take 3–5 years to reach maturity. Separate corms when dormant.

• **PESTS AND DISEASES** Trouble free.

**T. hyacinthina** syn. *Brodiaea hyacinthina*, *B. lactea*. Cormous perennial with linear, basal leaves, 10–40cm (4–16in) long. Flat umbels, 10cm (4in) across, of up to 20 or more white or pale blue flowers, 1.5cm (½in) long, are produced in late spring and early summer. ↑ to 70cm (28in), ↔ 5cm (2in). W. USA. \*\*

**T. ixioides**, syn. *Brodiaea ixioides*, *B. lutea*. Cormous perennial with linear, basal leaves, 10–40cm (4–16in) long. Open umbels, 12cm (5in) across, of up to 25 yellow flowers, 1–2.5cm (½–1in) long, with purple midribs, are produced in early summer. ↑ to 60cm (24in), ↔ 8cm (3in). W. USA. \*\*

**T. laxa** syn. *Brodiaea laxa*. Showy, cormous perennial with linear, basal leaves, 20–40cm (8–16in) long. In early summer, produces loose umbels, 16cm (6in) across, of up to 25 pale to deep purple-blue flowers, 2–5cm (¾–2in) long, rarely white or shading to white at the bases. ↑ to 70cm (28in), ↔ 5cm (2in). W. USA. \*\*

• **'Koningin Fabiola'**, syn. 'Queen Fabiola', has purple-blue flowers, 5cm (2in) long.

*Triteleia laxa*

*T. peduncularis*, syn. *Brodiaea peduncularis*. Cormous perennial with linear, basal leaves, 20–40cm (8–16in) long. In summer, produces lax umbels, 35cm (14in) across, of up to 20 white or pale blue flowers, 3cm (1¼in) long. ↑ to 40cm (16in), ↔ 8cm (3in). USA (California). \*\*

## TRITONIA

IRIDACEAE

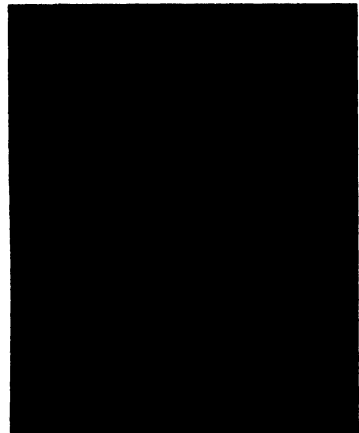
Genus of 28 species of cormous perennials, closely related to *Crocsmia*, found mainly on grassy or stony hillsides in South Africa and Swaziland. They are grown for their slender spikes of funnel- or cup-shaped, colourful flowers. The 2-ranked leaves are usually linear to lance-shaped. Grow in a warm, sunny, mixed or herbaceous border. In frost-prone areas, grow half-hardy species in a cool greenhouse or conservatory.

- **HARDINESS** Frost hardy to half hardy.
- **CULTIVATION** Plant 10cm (4in) deep. Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. After flowering, water sparingly, until leaves appear; in full growth, water freely. As leaves wither after flowering, reduce water gradually to ensure a warm, dry dormancy. Repot annually. Outdoors, grow in light, well-drained, preferably sandy soil, in a sheltered site in full sun. Provide a deep, dry winter mulch. Avoid excessive moisture, especially when dormant.
- **PROPAGATION** Sow seed at 13–16°C (55–61°F) as soon as ripe. Remove offsets when dormant.
- **PESTS AND DISEASES** Trouble free.

*T. crocata*, syn. *T. fenestrata*, *T. hyalina*. Cormous perennial with erect, lance-shaped, basal leaves, 5–30cm (2–12in) long. Spikes of up to 10 cup-shaped, orange to pinkish red flowers, 1.5cm (½in) long, are produced on arching, wiry stems in spring. ↑ 20–50cm (8–20in), ↔ 8cm (3in). South Africa (Western Cape, Eastern Cape). \*

'Princess Beatrix' [ ] bears brilliant orange-red flowers. 'White Glory' has amber-tinged white flowers.

*T. disticha*, syn. *Crocsmia rosea*. Cormous perennial with erect, linear or lance- or sword-shaped, basal leaves, 25–70cm (10–28in) long. In mid- and late summer, irregular, funnel-shaped, orange-red, red, or pink flowers, 2cm (¾in) long, are borne in many-flowered spikes, on arching, branched stems.



*Tritonia crocata* 'Princess Beatrix'



*Tritonia disticha* subsp. *rubrolucens*

↑ 50–100cm (20–39in), ↔ 5cm (2in). South Africa (Western Cape, Eastern Cape, Kwazulu/Natal). \*\*.

subsp. *rubrolucens* [ ] syn. *T. rosea*, *T. rubrolucens*, bears a succession of open funnel-shaped pink flowers, 2.5–3.5cm (1–1½in) across, in one-sided spikes on wiry stems; South Africa (Eastern Cape, Orange Free State, Kwazulu/Natal, Eastern Transvaal), Swaziland.

*T. fenestrata* see *T. crocata*.

*T. hyalina* see *T. crocata*.

*T. longiflora* see *Ixia paniculata*.

*T. rosea* see *T. disticha* subsp. *rubrolucens*.

*T. rubrolucens* see *T. disticha* subsp. *rubrolucens*.

## TROCHODENDRON

TROCHODENDRACEAE

Genus of one species of evergreen tree or large shrub from forest in Japan, Korea, and Taiwan. *T. aralioides* is grown for its handsome, spirally arranged leaves and its racemes of unusual, vivid green flowers. Grow in a woodland garden among other trees and shrubs.

- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in moist but well-drained, neutral to slightly acid soil in full sun or dappled shade. Shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*T. aralioides* [ ] Broadly columnar tree or large, rounded shrub with broadly ovate to elliptic, tapered, glossy,



*Trochodendron aralioides*

dark green leaves, to 12cm (5in) long. Racemes, to 12cm (5in) long, of 10–20 or more flowers are borne at the shoot-tips in late spring and early summer; the petalless, bright green flowers, 2cm (¾in) across, each consist of numerous stamens radiating from a central green disc. ↑ 10m (30ft), ↔ 8m (25ft). Japan (including Ryukyu Islands), Korea, Taiwan. \*\*

## TROLLIUS

Globeflower

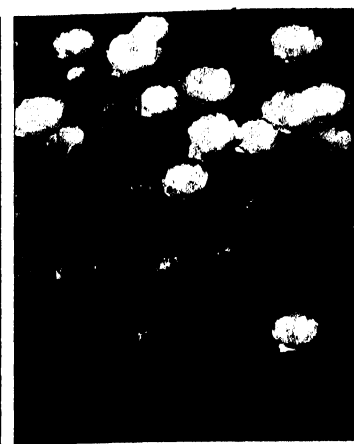
RANUNCULACEAE

Genus of about 24 species of buttercup-like, hairless, clump-forming herbaceous perennials from moist or wet meadows in cool-temperate areas of Europe, Asia, and North America. They produce numerous fibrous roots, and basal rosettes of stalked, palmately lobed leaves, the lobes further divided or toothed. Erect stems usually bear a few mainly stalkless leaves. Both the basal and stem leaves are usually mid-green, sometimes glossy. Terminal, solitary, spherical to bowl-shaped flowers, with reduced or linear, petal-like sepals, nectary-bearing petals, and numerous stamens, are borne in spring or summer. Grow in a moist border or bog garden, or beside a pond or stream, or naturalize in a damp meadow garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist, deep, fertile, preferably heavy soil, which does not dry out, in full sun or partial shade. Cut stems back hard after first flush of flowers; apply a balanced liquid fertilizer to encourage further blooming. Earlier-flowering species and cultivars may be forced gently in a temperate greenhouse, to produce early flowers for cutting.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring; seed may take 2 years to germinate. Divide as new growth begins or immediately after flowering.
- **PESTS AND DISEASES** Powdery mildew may be a problem.



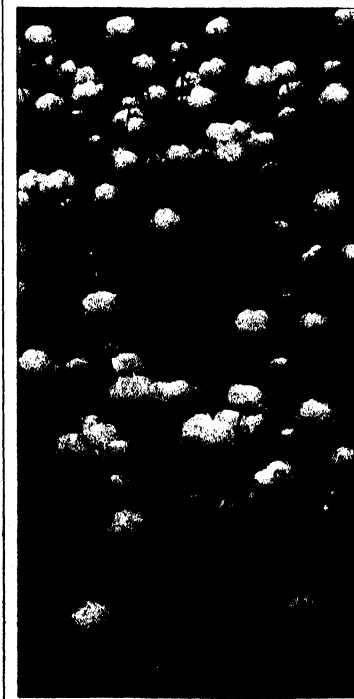
*Trollius chinensis*



*Trollius x cultorum* 'Alabaster'

*T. chinensis* [ ] syn. *T. ledebourii* of gardens. Clump-forming perennial bearing 5-lobed basal leaves, to 12cm (5in) long, with broadly lance-shaped, lobes divided into sharply toothed segments; the stem leaves are smaller. In midsummer, shallowly bowl-shaped, light orange-yellow flowers, 5cm (2in) across, with long petals, are produced on stout, furrowed stems. ↑ to 90cm (36in), ↔ 45cm (18in). N.E. China. \*\* \*

*T. x cultorum* cultivars. Clump-forming perennials with 5-lobed, toothed, glossy basal leaves, 18cm (7in) long, with lance-shaped lobes divided into toothed segments; stem leaves are smaller and more finely divided. Bowl-shaped flowers, 2.5–6cm (1–2½in) across, are borne from mid-spring to midsummer. ↑ to 90cm (36in), ↔ 45cm (18in). \*\* \*. 'Alabaster' [ ] is less vigorous than most cultivars, and bears pale primrose-yellow flowers in mid- and late spring; ↑ to 60cm (24in), ↔ to 40cm (16in). 'Earliest of All' [ ] bears clear yellow flowers, 7cm (3in) across, in mid-spring; ↑ 50cm (20in), ↔ 40cm (16in). 'Feuertroll', syn. 'Fireglobe', produces rich orange-yellow flowers, with deeper orange stamens, in late



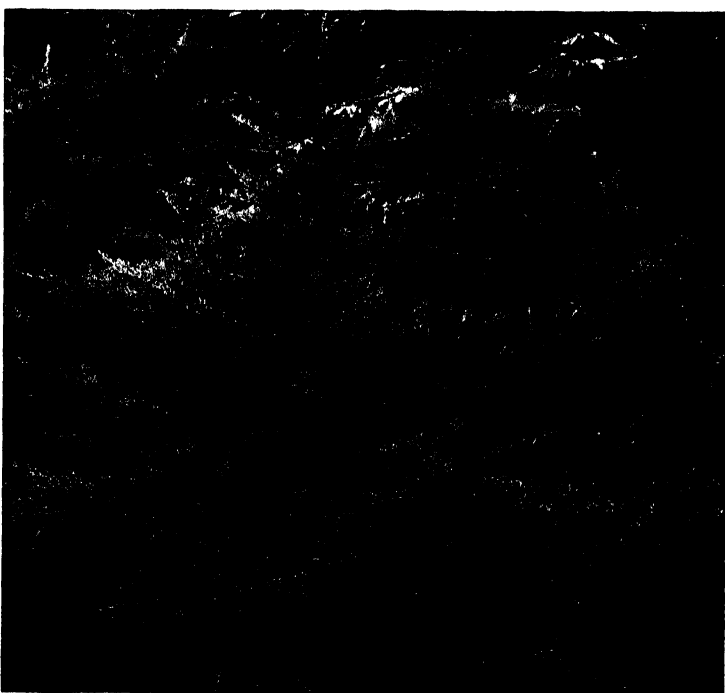
*Trollius x cultorum* 'Earliest of All'

*Tsuga canadensis* 'Jeddeloh'

orange-brown bark and orange shoots with short, fine hairs. Linear leaves are very glossy, dark green, 0.5–1.5cm (¼–½in) long, and 2-ranked with a wide parting above, broader and more densely packed towards the rounded, notched shoot-tips. Ovoid female cones are up to 2cm (¾in) long. ↑ to 15m (50ft), ↔ to 8m (25ft). N. Japan. \*\*\*

***T. heterophylla*** ♀ (Western hemlock). Narrowly conical tree with cracked, purple-brown bark, horizontal branches with pendent tips, and brownish grey shoots with long brown hairs. Blunt, round-tipped, narrowly elliptic-oblong, finely toothed, very glossy, dark green leaves, 0.5–2cm (¼–¾in) long, are 2-ranked with a wide parting beneath. Ovoid female cones are 2cm (¾in) long. Very shade-tolerant but requires shelter from wind. ↑ 20–40m (70–130ft), ↔ 6–10m (20–30ft). W. North America (Alaska to California). \*\*\*

***T. mertensiana*** ♂ (Mountain hemlock). Columnar-conical tree with scaly, purple to red-brown bark and hairy, red-brown shoots. Thick, blunt-tipped, linear, entire, glaucous blue or grey-green leaves, 1.5–2.5cm (½–1in) long, are convex on both sides, and radially

*Tsuga mertensiana* 'Glaucous'

arranged. Female cones are oblong-cylindrical, 4–8cm (1½–3in) long, and have reflexed scales when fully open. ↑ 15m (50ft), ↔ 6m (20ft). W. North America (Alaska to California). \*\*\*

**'Glaucous'** ♂ is slow-growing and dwarf, with glaucous, silver-grey foliage; ↑ 3m (10ft), ↔ 2m (6ft).

***T. sieboldii*** ♂ (Southern Japanese hemlock). Broadly conical tree having several stems with smooth, dark grey bark, later cracked, and stiff, shiny, buff shoots. Linear, entire leaves, 0.7–2cm (¼–¾in) long, with notched tips, glossy, dark green above and pale green or dull white beneath, are variable in length and arrangement. Ovoid female cones are 2.5cm (1in) long. ↑ 15m (50ft), ↔ to 8m (25ft). S. Japan. \*\*\*

## TSUSIOPHYLLUM

ERICACEAE

Genus of one species of dwarf, semi-evergreen shrub found in woodland in Japan. It is cultivated for its umbel-like clusters of small, tubular-bell-shaped white flowers, borne in early summer, and is an attractive addition to a peat bed or woodland garden.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moist, humus-rich, acid soil in partial shade. Provide shelter from cold, drying winds. Pruning group 8.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Insert semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

***T. tanakae***. Prostrate, spreading shrub with short, hairy branches and alternate, ovate to lance-shaped or inversely lance-shaped, very hairy, dark green leaves, 1–3cm (½–1¼in) or more long. Dense clusters of 2–6 silky-hairy white flowers, 7–10mm (¼–½in) long, each with 4 or 5 spreading petal lobes, are produced at the shoot-tips in early summer. ↑ to 50cm (20in), ↔ to 20cm (8in). Japan (Honshu). \*\*

## TUBERARIA

CISTACEAE

Genus of about 12 species of annuals and perennials from scrub, heath, and woodland in C. and S. Europe. The simple, lance-shaped to almost rounded leaves are borne in basal rosettes, and occasionally on the upright flowering stems. Terminal cymes of shallowly cup-shaped yellow flowers, sometimes with purple or red spots, are borne in late spring and summer. Grow annuals in a mixed or annual border, and perennials in a sunny border or warm rock garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in any well-drained soil in full sun.

• **PROPAGATION** Sow seed at 13–16°C (55–61°F) in early spring. Seed of annuals may also be sown *in situ* in mid- to late spring. Separate rooted rosettes, or take rosettes as cuttings, in spring.

• **PESTS AND DISEASES** Leaves may be damaged by slugs and snails.

***T. guttata***, syn. *Helianthemum guttatum*. Erect, rosette-forming, hairy annual with wavy-margined, mid-green, prominently 3-veined leaves, 2.5–8cm (1–3in) long; the basal leaves are elliptic or obovate, the stem leaves linear-oblong or linear-lance-shaped. In summer, bears terminal cymes of short-lived, long-stalked, cup-shaped yellow flowers, to 3cm (1¼in) across, each petal spotted maroon-red at the base. ↑ to 30cm (12in). C. and S. Europe. \*\*\*

***T. lignosa***, syn. *Helianthemum tuberaria*. Spreading, rosette-forming, woody-based perennial with hairy, obovate to lance-shaped or elliptic, dark green leaves, to 6cm (2½in) long. Large, terminal cymes of bright yellow flowers, 2.5–3cm (1–1¼in) across, without spots, are produced from early to late summer. ↑ to 40cm (16in), ↔ 40cm (16in). W. Mediterranean. \*\*

▷ **Tuberose** see *Polianthes tuberosa*

## TULBAGHIA

ALLIACEAE/LILIACEAE

Genus of about 24 species of clump-forming, mainly deciduous, sometimes semi-evergreen, rhizomatous or bulbous perennials found in various habitats, some mountainous, in tropical and temperate southern Africa. Basal, strap-shaped to linear, hairless, sometimes grey-green leaves have a smell similar to that of onions or garlic. Umbels of dainty, usually purple or white flowers, sometimes fragrant, especially at night, are borne over a long period between late spring and autumn. The flowers are tubular, each with 6 spreading tepals and a small, trumpet-like corona. Grow in a sunny border or rock garden. In frost-prone areas, grow in a cool greenhouse or conservatory, particularly *T. alliacea*, which has overwintering leaves.

• **HARDINESS** Frost hardy to frost tender; most frost-hardy species tolerate short periods at temperatures to -10°C (14°F).

• **CULTIVATION** Under glass, grow in well-drained, loam-based potting compost (J1 No.2) in full light. Water freely when in growth; reduce water when in flower, and again as the leaves wither; keep almost dry when dormant.

*Tulbaghia simmleri*

Outdoors, grow in well-drained, moderately fertile, humus-rich, loamy soil in full sun. In frost-prone areas, provide a dry winter mulch.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe, or in spring. Seed germinates easily, and the seedlings quickly reach flowering size. Divide most species in spring; divide *T. alliacea* in late summer.

• **PESTS AND DISEASES** Susceptible to aphids and whiteflies under glass.

***T. alliacea***. Semi-evergreen, rhizomatous perennial bearing clusters of narrowly linear leaves, to 20cm (8in) long. In late spring and early summer, produces terminal umbels of fragrant, purple-tinged, greenish white flowers, 1cm (½in) long; the flowers have brownish red coronas. ↑ to 45cm (18in), ↔ 20cm (8in). Zimbabwe, South Africa (Northern Cape, Eastern Cape, Western Cape). \*\*

***T. capensis***. Rhizomatous perennial with clusters of narrowly linear leaves, to 30cm (12in) long. Terminal umbels of greenish purple flowers, to 1.5cm (½in) long, with purplish brown coronas, are produced in early and midsummer. ↑ to 60cm (24in), ↔ 25cm (10in). South Africa (Namaqualand to Western Cape). \*\*

***T. fragrans*** see *T. simmleri*.

***T. pulchella*** see *T. simmleri*.

***T. simmleri*** ♂ syn. *T. fragrans*, *T. pulchella*. Bulbous perennial with clusters of linear leaves, 30–60cm (12–24in) long (wider than in most species). Large, terminal umbels of fragrant, light to deep purple flowers, to 2cm (¾in) long, are produced in early and midsummer. ↑ to 60cm (24in), ↔ 25cm (10in). South Africa (Eastern Transvaal). \*\*

***T. violacea***. Vigorous, clump-forming perennial with corm-like rhizomes and narrowly linear, greyish green leaves, to 30cm (12in) long. Large, terminal umbels of fragrant lilac flowers, 2cm (¾in) long, are produced from midsummer to early autumn. ↑ 45–60cm (18–24in), ↔ 25cm (10in). South Africa (Eastern Cape, KwaZulu/Natal, Eastern Transvaal). \*\*

• **'Silver Lace'**, syn. 'Variegata', has cream-striped leaves and larger flowers, 2–4cm (¾–1½in) long.

▷ **Tulip** see *Tulipa*  
**Cape** see *Haemanthus coccineus*  
**Lady** see *Tulipa clusiana*  
**Mariposa** see *Calochortus*  
**Water-lily** see *Tulipa kaufmanniana*

**TULIPA** syn. AMANA

tulip

LILIACEAE

Genus of about 100 species of bulbous perennials found in usually hot, dry situations, from sea level and steppes to alpine areas, in temperate Europe, Asia and the Middle East, although they are at their most diverse in C. Asia. Tulips have linear to broadly ovate, hairy or hairless, sometimes channelled or wavy-margined, mostly mid- or grey-green leaves; they are generally borne at the base, although in some species and cultivars they are arranged alternately on the usually hairless, sometimes hairy or downy flower stems, and decrease in size up the stem. The upright, terminal flowers, each with 6 tepals (often referred to as petals), are borne singly or in clusters of up to 12. Tulip cultivars have single or double flowers, mainly ovoid or goblet- to bowl-shaped or lily-like, sometimes fringed (see panel below), and are available in a wide range of single, mixed, or variegated colours. Variegation (i.e. breaks in colour) may be caused by a virus, although healthy tulips may also be variegated.

Tulips are valued in beds and borders for their brilliant colours. Some smaller species, such as *T. kaufmanniana* and *T. tarda*, are suitable for a rock garden. If ingested, all parts may cause mild stomach upset, and contact with any part may aggravate skin allergies.

For horticultural purposes, tulips are divided into the following groups, which are chiefly defined by their flower characteristics. This replaces the older divisions (given in brackets below).

**Single Early Group (Division 1)**

Cup-shaped flowers, to 7cm (3in) across, are white to dark purple, often margined, "flamed", or flecked with a contrasting colour. Early and mid-spring-flowering. Leaves are 10–35cm (4–14in) long. Suitable for bedding or a mixed border; use low-growing cultivars in containers. ‡15–45cm (6–18in).

**Double Early Group (Division 2)**

Fully double, bowl-shaped flowers, to 8cm (3in) across, are dark red to yellow or white, often margined or flecked with another colour. Mid-spring-flowering. Leaves are 10–35cm (4–14in) long. Suitable for bedding and containers. ‡30–40cm (12–16in).

**Triumph Group (Division 3)**

Single, cup-shaped flowers, to 6cm (2½in) across, are produced in a wide range of colours, including dark purple to red, pink, yellow, or white, often margined or flecked with a contrasting colour. Mid- or late spring-flowering. Leaves are 10–35cm (4–14in) long. Suitable for bedding, and good for cut flowers. ‡35–60cm (14–24in).

**Darwin Hybrid Group (Division 4)**

Single, ovoid flowers, to 7cm (3in) across, are often very brightly coloured in shades of yellow, pink, orange, or red, usually flushed, "flamed", or margined with a different colour, and often with contrasting bases. Mid- or late spring-flowering. Leaves are upright, 10–35cm (4–14in) long. Not to be confused with the old Darwin tulips (see Single Late Group). Suitable for bedding, and good for cut flowers. ‡50–70cm (20–28in).

**Single Late Group (Division 5)**

Cup- or goblet-shaped flowers, to 7cm (3in) across, sometimes several to a stem, are white to yellow, pink, red, or almost black, often with contrasting margins. Late spring-flowering. Leaves are 10–35cm (4–14in) long. Includes the old Darwin and cottage tulips. Suitable for bedding, and good for cut flowers. ‡45–75cm (18–30in).

**Lily-flowered Group (Division 6)**

Elegant, single, goblet-shaped flowers, to 8cm (3in) across, with reflexed, pointed tips to the tepals, are white to yellow, or pink to shades of red and magenta, sometimes margined, "flamed", or flushed with a contrasting colour. Late spring-flowering. Leaves are 10–40cm (4–16in) long. Excellent for formal bedding. ‡45–65cm (18–26in).

**Fringed Group (Division 7)**

Single, cup-shaped flowers, to 8cm (3in) across, are white, yellow, pink, red, or violet, with fringed margins, usually in a different colour. Late spring-flowering. Leaves are 10–40cm (4–16in) long. Suitable for a border, and good for cut flowers. ‡35–65cm (14–26in).

**Viridiflora Group (Division 8)**

Single, cup- or almost closed bowl-shaped flowers, to 8cm (3in) across, are sometimes entirely green, margined with another colour, or white to yellow, red, or purple, "flamed" or striped green, with contrasting centres. Late spring-flowering. Leaves are 10–40cm (4–16in) long. Ideal for a mixed border, and good for cut flowers. ‡40–55cm (16–22in).

**Rembrandt Group (Division 9)**

Single, cup-shaped flowers, to 8cm (3in) across, are white, yellow, or red, with black, brown, bronze, purple, red, or pink stripes or "feathers", caused by a virus. Often termed "broken" tulips. Late spring-flowering. Leaves are 10–35cm (4–14in) long. Suitable for a mixed border, and good for cut flowers. ‡45–65cm (18–26in).

**Parrot Group (Division 10)**

Single, cup-shaped flowers, to 10cm (4in) across, are white to pink or violet-blue, often unevenly striped with different colours, including green. The tepals are finely and irregularly cut. Late spring-flowering. Leaves are 10–35cm (4–14in) long. Ideal for a border; good for cut flowers. ‡35–65cm (14–26in).

**Double Late Group (peony-flowered) (Division 11)**

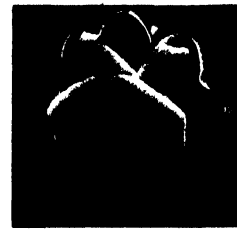
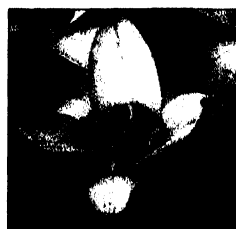
Fully double, bowl-shaped flowers, to 12cm (5in) across, are white to purple, sometimes margined or "flamed" in a different colour. Late spring-flowering. Leaves are 10–40cm (4–16in) long. Suitable for bedding or a border. ‡35–60cm (14–24in).

**Kaufmanniana Group (Division 12)**

*T. kaufmanniana* and hybrids mainly derived from it. Single, bowl-shaped flowers, 8–10cm (3–4in) across, are frequently multicoloured, usually with distinctively coloured bases. Early or mid-spring-flowering. Leaves, 8–25cm (3–10in) long, are sometimes marked bronze, red, or purple. Ideal for a rock garden or border. ‡15–30cm (6–12in).

**Fosteriana Group (Division 13)**

*T. fosteriana* and hybrids mainly derived from it. Single, bowl-shaped flowers, to 12cm (5in) across, are white to yellow or dark red, sometimes margined or "flamed" in another colour, and with contrasting bases. Mid-spring-flowering.

*Tulipa* 'Abba'*Tulipa acuminata**Tulipa* 'African Queen'*Tulipa* 'Ancilla'*Tulipa* 'Angélique'*Tulipa* 'Apeldoorn'

Leaves, 5–30cm (2–12in) long, are usually light bright green to dark green, sometimes marked red-purple. Suitable for a border. ‡20–65cm (8–26in).

**Greigii Group (Division 14)**

*T. greigii* and hybrids mainly derived from it. Single, bowl-shaped flowers, to 10cm (4in) across, are yellow to red, sometimes "flamed" or margined in a different colour, and with contrasting bases. Usually early or mid-spring-flowering. Broad, spreading, usually wavy-margined, blue-grey leaves, 5–18cm (2–7in) long, have dark bluish maroon markings. Grow in a rock garden or border. ‡15–30cm (6–12in).

**Miscellaneous Group (Division 15)**

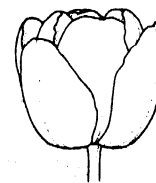
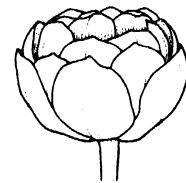
All species and hybrids not included in other divisions. There are two informal sections: low-growing, 10–20cm (4–8in) tall, with star-shaped flowers, 5–8cm (2–3in) across, with pointed tepals; and taller-growing, 20–35cm (8–14in) or more tall, with mainly bowl-shaped flowers, 6–15cm (2½–6in) across, mostly with rounded bases and tepals. Late winter- to late spring-flowering. Grow in a rock garden. Keep dry in summer. The smallest ones may also be grown in a bulb frame or alpine house. *T. sprengeri* and *T. sylvestris* are suitable for naturalizing in fine grass.

**• HARDINESS** Fully hardy.

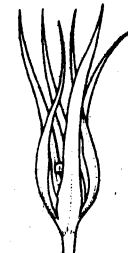
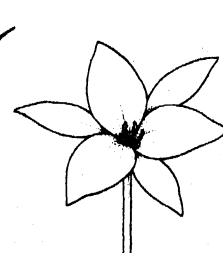
**• CULTIVATION** Grow in fertile, well-drained soil in full sun, sheltered from strong winds: *T. sprengeri* and *T. tarda* prefer humus-rich, peaty soil; rock garden species and cultivars prefer more sharply drained soil. All dislike excessive wet. Plant at a depth of 10–15cm (4–6in) in late summer or autumn; allow for a spread of 8–13cm (3–5in) for most tulips, and 13–15cm (5–6in) for Greigii and Kaufmanniana Group tulips, which have spreading leaves. Dead-head and remove any fallen tepals after flowering. The species, and many Greigii and Kaufmanniana Group tulips, may be left in the ground for several years. For those belonging to other groups, lift bulbs annually, once the leaves have died down, and ripen in a cold greenhouse. Replant the largest bulbs, and grow on smaller ones in a nursery bed for a year. Smaller tulips may be grown in containers in a bulb frame or alpine house, in a mix of equal parts loam, leaf mould, and sharp sand. In growth, water moderately, applying a balanced liquid fertilizer weekly for 3 or 4 weeks after flowering; keep dry in summer, and replot annually. Early-flowering and Triumph Group tulips are sometimes prepared for forcing, in a

**TULIP FLOWERS**

Tulips are valued for their brightly coloured, upright flowers, mainly produced in spring. The flowers may be single or double, and vary in shape from simple cups, bowls, and goblets to more complex forms produced by twisted or rounded tepals.

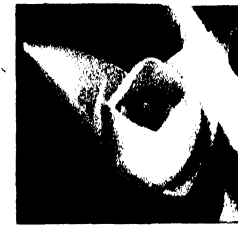
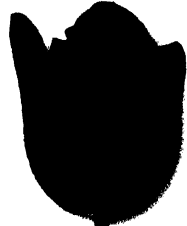
SINGLE,  
CUP-SHAPEDDOUBLE,  
BOWL-SHAPEDGOBLET-  
SHAPED

FRINGED

LONG, SLENDER-  
TEPALLED

STAR-SHAPED



*Tulipa* 'Apricot Beauty'*Tulipa* 'Arabian Mystery'*Tulipa* 'Attila'*Tulipa* 'Balalaika'*Tulipa* 'Ballade'*Tulipa batalinii**Tulipa biflora**Tulipa* 'Bing Crosby'*Tulipa* 'Bird of Paradise'*Tulipa* 'Blue Heron'*Tulipa* 'Blue Parrot'*Tulipa* 'Burns'

similar manner to hyacinths (see *Hyacinthus*), except that tulip bulbs should be kept in a cool, dark place until leaf-tips show, then brought indoors or into a greenhouse at 10°C (50°F). Raise the temperature gradually to no more than 18°C (64°F) when leaves reach 10cm (4in) long.

• **PROPAGATION** Sow seed of species in containers in a cold greenhouse or frame in autumn; it may take 4–7 years for flowers to be produced. Separate offsets of species and cultivars after lifting in summer, replant, and grow on.

• **PESTS AND DISEASES** Bulb rots may affect tulips in poorly drained soil. Aphids spread tulip-breaking virus from Rembrandt tulips to other tulips. Also prone to tulip fire, slugs, and stem and bulb eelworms.

**T. 'Abba'** ■ Double Early Group tulip producing glowing tomato-red flowers, flushed dull cardinal-red and sometimes irregularly feathered yellow. Mid-spring-flowering. ↑30cm (12in). \*\*\*

**T. 'Abra'** ■ Triumph Group tulip bearing yellow-margined, reddish brown flowers in mid-spring. ↑40cm (16in). \*\*\*

**T. acuminata** ■ Miscellaneous Group tulip with 2–7 linear to lance-shaped, sometimes wavy-margined, hairless, glaucous, grey-green leaves, to 30cm (12in) long. Solitary flowers, 10cm (4in) long, with long, pointed tepals and rounded bases, are produced on hairless or finely downy stems in early and mid-spring. Flowers are pale red or yellow, usually tinged red or green. Stamens have reddish brown anthers and yellow or white filaments. ↑50cm (20in). Garden origin. \*\*\*

**T. 'African Queen'** ■ Triumph Group tulip bearing dark purplish red flowers, fading at the margins, with purple-margined, primrose-yellow basal marks. Insides are dark ruby-red with yellowish white or white margins and purple anthers. Mid-spring-flowering. ↑40cm (16in). \*\*\*

**T. aitchisonii** see *T. clusiana*.

**T. 'Aladdin'** ■ Lily-flowered Group tulip bearing yellow-margined scarlet flowers in late spring. ↑45cm (18in). \*\*\*

**T. 'Ancilla'** ■ Kaufmanniana Group tulip producing soft pink flowers, flushed rose-red, with red inner and outer basal rings. Mid-spring-flowering. ↑15cm (6in). \*\*\*

**T. 'Angélique'** ■ Double Late Group tulip with pale pink flowers, flushed with paler and darker shades of pink, with lighter margins and, occasionally, green or yellow bases. Mid-spring-flowering. ↑30cm (12in). \*\*\*

**T. 'Apeldoorn'** ■ Darwin Hybrid Group tulip bearing cherry-red flowers with signal-red margins. Insides are signal-red with yellow-bordered black marks and black anthers. Mid-spring-flowering. ↑60cm (24in). \*\*\*

**T. 'Apeldoorn's Elite'** ■ Darwin Hybrid Group tulip with red-feathered, buttercup-yellow flowers, flushed yellowish green at the bases outside, with black anthers and black basal marks inside. Mid-spring-flowering. ↑60cm (24in). \*\*\*

**T. 'Apricot Beauty'** ■ Single Early Group tulip producing soft salmon-pink flowers, later with orange margins, in mid-spring. Good for forcing. ↑35cm (14in). \*\*\*

**T. 'Apricot Jewel'** ■ Miscellaneous Group tulip bearing apricot flowers, flushed orange at the bases, in early and mid-spring. ↑35cm (14in). \*\*\*

**T. 'Arabian Mystery'** ■ Triumph Group tulip bearing dark purple flowers, with white margins, in mid-spring. ↑45cm (18in). \*\*\*

**T. 'Aristocrat'** ■ Single Late Group tulip producing white-margined, soft purplish violet flowers in late spring. ↑60cm (24in). \*\*\*

**T. 'Artist'** ■ Viridiflora Group tulip bearing purple and salmon-pink flowers,

*Tulipa* 'Artist'

green-flushed salmon-pink inside, in late spring. ↑45cm (18in). \*\*\*

**T. 'Attila'** ■ Triumph Group tulip bearing light purplish violet flowers in mid-spring. Good for forcing. ↑40cm (16in). \*\*\*

**T. aucheriana** ■ Miscellaneous Group tulip with 2–5 linear, channelled, hairless, glaucous, mid-green leaves, to 15cm (6in) long. In mid-spring, bears star-shaped pink flowers, to 7cm (3in) across, with yellow centres and stamens, singly or, occasionally, in twos or threes. ↑10–25cm (4–10in). Iran. \*\*\*

**T. australis** see *T. sylvestris*.

**T. 'Avignon'** ■ Single Late Group tulip with red flowers, fire-red towards the margins and flushed yellowish white at the bases. Insides are tomato-red with yellow basal marks, greenish red at the margins, and with yellow anthers. Late spring-flowering. ↑50cm (20in). \*\*\*

**T. bakeri** see *T. saxatilis*.

**T. 'Balalaika'** ■ Single Late Group tulip bearing glowing bright red flowers with yellow basal marks inside and black anthers. Late spring-flowering. ↑55cm (22in). \*\*\*

**T. 'Ballade'** ■ Lily-flowered Group tulip bearing white-margined, reddish magenta flowers with white-margined yellow basal marks inside. Late spring-flowering. ↑50cm (20in). \*\*\*

**T. 'Ballerina'** ■ Lily-flowered Group tulip producing lemon-yellow flowers with blood-red flames, orange-yellow veins at the margins, and star-shaped yellow bases. Insides are capsicum-red, feathered marigold-orange, with pale golden yellow anthers. Late spring-flowering. ↑60cm (24in). \*\*\*

**T. 'Baronesse'** ■ Single Late Group tulip producing rose-red flowers with broad white margins and bluish white bases. Insides are white with red feathers, pale blue and yellow basal marks, and dark brown anthers. Late spring-flowering. ↑45cm (18in). \*\*\*

**T. batalinii** ■ Miscellaneous Group tulip with 3–9 linear, sickle-shaped, hairless, grey-green leaves, to 15cm (6in) long, with wavy red margins. In early and mid-spring, produces solitary, bowl-shaped, pale yellow flowers, to 8cm (3in) across, with rounded bases and dark yellow or bronze marks inside. Stamens have yellow anthers and black or yellow filaments. ↑35cm (14in). Uzbekistan. \*\*\*

**T. 'Bellona'** ■ Triumph Group tulip bearing scented, golden yellow flowers in mid-spring. ↑40cm (16in). \*\*\*

**T. 'Bestseller'** ■ Single Early Group tulip producing bright copper-orange flowers in mid-spring. ↑35cm (14in). \*\*\*

**T. 'Bienvenue'** ■ Darwin Hybrid Group tulip bearing canary-yellow flowers with dark yellowish pink flames and yellow-green bases. Insides are bright golden yellow, flamed capsicum-red, with black basal marks. Mid-spring-flowering. ↑60cm (24in). \*\*\*

**T. biflora** ■ syn. *T. polychroma*. Miscellaneous Group tulip with 1 or 2 linear, hairless, grey-green leaves, to 18cm (7in) long. Star-shaped, fragrant, red-margined white flowers, to 4cm (1½in) across, have yellow bases, and are flushed greenish grey or greenish pink outside. Stamens have yellow anthers, often tipped dark purple or black, and yellow filaments. Flowers are borne singly or in twos or threes, on upright stems from late winter to spring. ↑10cm (4in). Kazakhstan, E. Turkey, Iran, Afghanistan, Tajikistan. \*\*\*

**T. 'Bing Crosby'** ■ Triumph Group tulip producing glowing scarlet flowers in mid-spring. ↑40cm (16in). \*\*\*

**T. 'Bird of Paradise'** ■ Parrot Group tulip with orange-margined, cardinal-red flowers. Insides are scarlet, feathered dark red, with bright yellow bases and purple anthers. Late spring-flowering. ↑55cm (22in). \*\*\*

**T. 'Blue Heron'** ■ Fringed Group tulip producing purple-fringed, violet-purple flowers. Insides are cobalt-violet with white stripes and bases, and black anthers. Late spring-flowering. ↑60cm (24in). \*\*\*

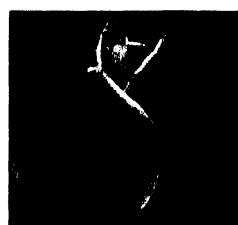
**T. 'Blue Parrot'** ■ Parrot Group tulip with bright violet-blue flowers, bronze-purple inside. Late spring-flowering. ↑60cm (24in). \*\*\*

**T. 'Bright Gem'** ■ Miscellaneous Group tulip bearing orange-flushed, sulphur-yellow flowers with bronze-orange basal marks. Early and mid-spring-flowering. ↑35cm (14in). \*\*\*

**T. 'Brilliant Star'** ■ Single Early Group tulip bearing bright vermilion flowers in mid-spring. ↑20cm (8in). \*\*\*

**T. 'Burgundy Lace'** ■ Fringed Group tulip bearing fringed, wine-red flowers in late spring. ↑60cm (24in). \*\*\*

**T. 'Burns'** ■ Fringed Group tulip bearing bright light pink flowers, with

*Tulipa* 'Candela'*Tulipa* 'Cape Cod'*Tulipa* 'Carnaval de Nice'*Tulipa* 'China Pink'*Tulipa* 'Clara Butt'*Tulipa clusiana**Tulipa clusiana* var. *chrysantha**Tulipa* 'Don Quichotte'*Tulipa* 'Dreamboat'*Tulipa* 'Dreaming Maid'*Tulipa* 'Estella Rijnveld'*Tulipa* 'Flaming Parrot'

greyish white bases outside, in late spring. Insides are pinkish red with ivory-white bases, violet margins, and yellow anthers. ‡ 50cm (20in). \*\*\*  
**T. 'Buttercup'**. Greigii Group tulip bearing yellow-margined, carmine-red flowers, dark golden yellow inside, with red-marked yellow bases. Mid-spring-flowering. Leaves are marked dark bluish maroon. ‡ 25cm (10in). \*\*\*  
**T. 'Candela'**. † Fosteriana Group tulip producing large, pure yellow flowers, with black anthers, in mid spring. ‡ 35cm (14in). \*\*\*

**T. 'Cape Cod'**. † Greigii Group tulip bearing apricot-yellow flowers, with red

central stripes on the tepals, in mid-spring. Leaves are marked dark bluish maroon. ‡ 20cm (8in). \*\*\*

**T. 'Carnaval de Nice'**. † Double Late Group tulip bearing white flowers, with dark red feathers and markings, in late spring. ‡ 40cm (16in). \*\*\*

**T. 'China Pink'**. † Lily-flowered Group tulip bearing pink flowers, with white bases inside, in late spring. ‡ 50cm (20in). \*\*\*

**T. *chrysantha*** see *T. clusiana* var. *chrysantha*.

**T. 'Clara Butt'**. † Single Late Group tulip bearing deep salmon-pink flowers in late spring. ‡ 60cm (24in). \*\*\*

**T. *clusiana***. † syn. *T. atchisonii* (Lady tulip). Miscellaneous Group tulip with 2–5 linear, hairless, glaucous, grey-green leaves, to 15cm (6in) long, sometimes wavy-margined. Bowl-shaped, later star-shaped flowers, to 10cm (4in) across, with rounded bases, are produced singly or in pairs in early and mid-spring. Flowers are white, striped dark pink outside, with purple or crimson basal marks and purple stamens. ‡ 30cm (12in). Iran to Himalayas. \*\*\*

**var. *chrysantha***. † syn. *T. chrysantha*. *T. stellata* var. *chrysantha*, has up to 3 yellow flowers, tinged red or brownish purple outside, with yellow anthers. **var. *stellata***, syn. *T. stellata*, has star-shaped flowers with yellow basal marks.

**T. 'Cordell Hull'**. Single Late Group tulip bearing white-flamed red flowers in late spring. ‡ 60cm (24in). \*\*\*

**T. 'Corona'**. Kaufmanniana Group tulip bearing red flowers, pale yellow inside, in mid-spring. Leaves are marked purple. ‡ 25cm (10in). \*\*\*

**T. 'Corsage'**. † Greigii Group tulip bearing rose-pink flowers, with yellow margins and bronze bases, in mid-spring. Insides are rose-red with golden yellow feathers. Leaves are marked dark bluish maroon. ‡ 25cm (10in). \*\*\*

**T. 'Couleur Cardinal'**. Triumph Group tulip producing plum-purple flowers, dark crimson-scarlet inside, in mid-spring. ‡ 35cm (14in). \*\*\*

**T. *dasytemon* of gardens** see *T. tarda*.

**T. 'Dawnglow'**. Darwin Hybrid Group tulip bearing pale apricot flowers, flushed carmine-pink, with greenish yellow bases. Insides are yellow-orange with purple anthers. Mid-spring-flowering. ‡ 60cm (24in). \*\*\*

**T. 'Destiny'**. Parrot Group tulip producing carmine-pink flowers, with creamy white bases and bronze anthers, in late spring. ‡ 45cm (18in). \*\*\*

**T. 'Diana'**. Single Early Group tulip producing white flowers in mid-spring. ‡ 35cm (14in). \*\*\*

**T. 'Don Quichotte'**. † Triumph Group tulip producing cherry-pink flowers in late spring. ‡ 40cm (16in). \*\*\*

**T. 'Dreamboat'**. † Greigii Group tulip producing red-tinged, amber-yellow flowers with red-marked, green-bronze bases. Mid-spring-flowering. Leaves are marked dark bluish maroon. ‡ 20cm (8in). \*\*\*

**T. 'Dreaming Maid'**. † Triumph Group tulip producing white-margined violet flowers in mid-spring. ‡ 50cm (20in). \*\*\*

**T. 'Dreamland'**. † Single Late Group tulip producing cream-flamed red flowers. Insides are pinkish red with white bases and yellow anthers. Late spring-flowering. ‡ 60cm (24in). \*\*\*

**T. 'Early Harvest'**. † Kaufmanniana Group tulip bearing dark pinkish red flowers with yellow margins and bases, and bronze-green basal marks. Insides are yellow with vivid, reddish orange markings and pale yellow anthers. Mid-spring-flowering. Leaves are marked purple. ‡ 25cm (10in). \*\*\*

**T. *edulis***, syn. *Amana edulis*.

Miscellaneous Group tulip with 6 linear, hairless, mid-green leaves, 15–25cm (6–10in) long. In late winter and early spring, star-shaped white flowers, 6cm (2½in) across, veined reddish brown or purple outside, with yellow-margined, dark purple basal marks and yellow anthers, are borne singly or in pairs. The 2 or 3 linear bracts below each flower distinguish it from other species. ‡ 20cm (8in). N.E. China, Korea, Japan. \*\*\*

**T. 'Elizabeth Arden'**. Darwin Hybrid Group tulip producing violet-flushed, dark salmon-pink flowers with yellow and white bases. Mid-spring-flowering. ‡ 55cm (22in). \*\*\*

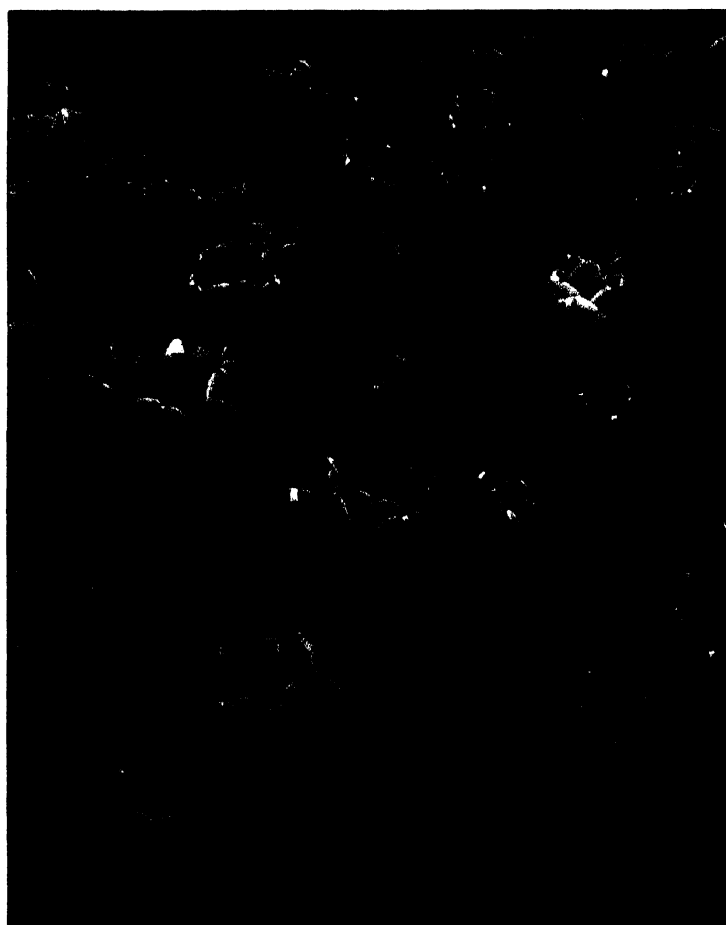
**T. 'Engadin'**. † Greigii Group tulip bearing yellow-margined, blood-red flowers, dark golden yellow with blood-red stripes inside. Mid-spring-flowering. Leaves are marked dark bluish maroon. ‡ 20cm (8in). \*\*\*

**T. 'Esperanto'**. Viridiflora Group tulip bearing pinkish red flowers with green-flamed midveins, which fade to reddish brown, greenish brown bases, and greenish yellow anthers. Late spring-flowering. Leaves are margined white. ‡ 50cm (20in). \*\*\*

**T. 'Estella Rijnveld'**. † syn. *T. 'Gay Presto'*. Parrot Group tulip producing fringed, white-flamed red flowers in late spring. ‡ 55cm (22in). \*\*\*

**T. 'Fancy Frills'**. Fringed Group tulip producing deep rose-red flowers with whitish pink fringes, ivory-white bases, and pale yellow anthers. Late spring-flowering. ‡ 45cm (18in). \*\*\*

**T. 'Flaming Parrot'**. † Parrot Group tulip with deep yellow flowers, flamed

*Tulipa* 'Dreamland'



Tulipa 'Fringed Beauty'



Tulipa 'Fringed Elegance'



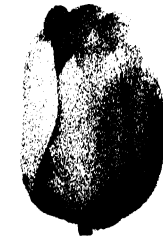
Tulipa 'Generaal De Wet'



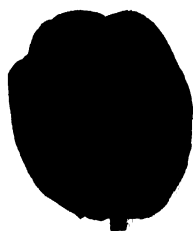
Tulipa 'Golden Apeldoorn'



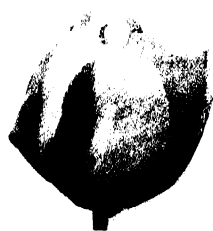
Tulipa 'Golden Artist'



Tulipa 'Golden Oxford'



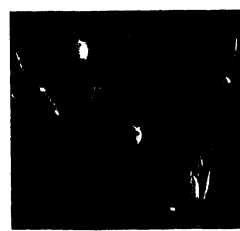
Tulipa 'Gordon Cooper'



Tulipa 'Groenland'



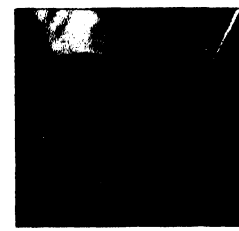
Tulipa 'Gudoshnik'



Tulipa hageri 'Splendens'



Tulipa 'Hamilton'



Tulipa humilis

dark red, and with primrose-yellow bases. Insides are primrose-yellow with glowing blood-red flames, and purple-black anthers. Late spring-flowering. †55cm (22in). \*\*\*

**T. fosteriana.** Fosteriana Group tulip with 3–6 oblong to broadly ovate, light grey-green leaves, to 30cm (12in) long, downy above. Bowl-shaped, slightly fragrant flowers, to 20cm (8in) across, with rounded bases, are borne singly on slightly downy stems in early and mid-spring. Flowers are bright red with yellow-margined, purplish black basal marks. Stamens have purplish black anthers and black or yellow filaments. †45cm (18in). Kazakhstan, Uzbekistan, Tajikistan. \*\*\* **'Princeps'** has orange-scarlet flowers, scarlet inside, with greenish bronze basal marks.

**T. 'Fringed Beauty'** ■ Fringed Group tulip producing vermilion flowers, with golden yellow fringes, in late spring. †35cm (14in). \*\*\*

**T. 'Fringed Elegance'** ■ Fringed Group tulip bearing primrose-yellow flowers, with paler fringes, and sometimes with pink markings, in late spring. Insides are brilliant greenish yellow with bronze-green basal marks and purple anthers. †35cm (14in). \*\*\*

**T. 'Garden Party'**, Triumph Group tulip bearing white flowers, carmine-red at the margins. Insides are feathered carmine-red with white bases. Mid-spring-flowering. †45cm (18in). \*\*\* **T. 'Gay Presto'** see *T. 'Estella Rijnveld'*.

**T. 'Generaal de Wet'** ■ syn. *T. 'General de Wet'*. Single Early Group tulip bearing fragrant, golden orange flowers, with dark orange shading, in mid-spring. †40cm (16in). \*\*\* **T. 'General de Wet'** see *T. 'Generaal de Wet'*.

**T. 'Georgette'**, Single Late Group tulip producing red-margined yellow flowers, several per stem, in late spring. †45cm (18in). \*\*\*

**T. 'Gerbrand Kieft'**, Double Late Group tulip bearing glowing purple-red flowers, with pure white margins, in late spring. †45cm (18in). \*\*\*

**T. gemeriana.** Miscellaneous Group tulip with 2–7 lance-shaped to ovate-lance-shaped, hairless or finely downy, mid-green leaves, to 30cm (12in) long. Solitary flowers, to 12cm (5in) across, cup-shaped at first, opening to star-

shaped, with rounded bases, are borne on hairless or finely downy stems in early to late spring. Flowers are red, orange, yellow, or purplish red, sometimes marked yellow or black at the bases, with purple or yellow stamens. The original parent of many garden cultivars. †45cm (18in). Probably garden origin; naturalized in parts of the Mediterranean. \*\*\*

**T. 'Giuseppe Verdi'** ■ Kaufmanniana Group tulip bearing yellow-margined, carmine-red flowers, golden yellow with small red marks inside, in mid-spring. Leaves are marked purple. †20cm (8in). \*\*\*

**T. 'Golden Apeldoorn'** ■ Darwin Hybrid Group tulip producing golden yellow flowers, with black anthers, in mid-spring. Inside, star-shaped black bases have bronze-green borders. †60cm (24in). \*\*\*

**T. 'Golden Artist'** ■ Viridiflora Group tulip producing golden orange flowers, with green stripes on the tepals, in late spring. †45cm (18in). \*\*\*



Tulipa 'Giuseppe Verdi'

**T. 'Golden Mirjoran'**, Triumph Group tulip producing dark rose-red flowers, with light yellow margins, in mid-spring. Insides are sulphur-yellow with broad, cherry-red margins and purple-brown anthers. †45cm (18in). \*\*\*

**T. 'Golden Oxford'** ■ syn. *T. 'Topic'*. Darwin Hybrid Group tulip producing pure yellow flowers, sometimes narrowly margined red, with black anthers, in mid-spring. †60cm (24in). \*\*\*

**T. 'Gordon Cooper'** ■ Darwin Hybrid Group tulip with red flowers, maturing to pink, with signal-red margins and bluish black and yellow basal marks. Insides are glowing signal-red with black anthers. Mid-spring-flowering. †60cm (24in). \*\*\*

**T. 'Grand Duc'** see *T. 'Keizerskroon'*.

**T. 'Greenland'** see *T. 'Groenland'*.

**T. greigii.** Greigii Group tulip with 2–7 oblong-lance-shaped to lance-shaped, sometimes wavy-margined, glaucous, grey-green leaves, to 25cm (10in) long, streaked or marked reddish or dark purple, and often downy above. In early spring, densely downy, pink- or brown-tinged stems bear solitary, bowl-shaped, red or yellow flowers, to 14cm (5½in) across; they are often orange-stained outside, with yellow-rimmed, blackish purple basal marks and black stamens. †50cm (20in). Tajikistan. \*\*\*

**T. 'Greuze'**, Single Late Group tulip producing violet-purple flowers in late spring. †55cm (22in). \*\*\*

**T. 'Groenland'** ■ syn. *T. 'Greenland'*. Viridiflora Group tulip producing green flowers, with rose-pink margins, in late spring. †45cm (18in). \*\*\*

**T. 'Gudoshnik'** ■ Darwin Hybrid Group tulip bearing yellow flowers with red spots, rose-pink flames, bluish black basal marks, and black anthers. Mid-spring-flowering. †60cm (24in). \*\*\*

**T. hageri.** Miscellaneous Group tulip with 2–7 lance-shaped, hairless, light green leaves, to 20cm (8in) long, often margined reddish purple. In early and mid-spring, bears star-shaped flowers, 6–9cm (2½–3½in) across, singly or in clusters of up to 4, on hairless stems. The buff flowers are mostly green-tinged outside. Inside, they are dull red with black, sometimes yellow-margined basal marks, dark green or brown anthers, and green filaments, sometimes tinged purple. †35cm (14in). Bulgaria, Greece,

W. Turkey. \*\*\* **var. nitens** has orange-scarlet flowers and glaucous leaves. **'Splendens'** ■ has crimson-scarlet flowers, brownish red inside.

**T. 'Hamilton'** ■ Fringed Group tulip producing buttercup-yellow flowers, with darker yellow fringes and anthers, in late spring. †50cm (20in). \*\*\*

**T. 'Hans Mayer'**, Darwin Hybrid Group tulip bearing buttercup-yellow flowers, flamed translucent vermilion, with light green bases. Insides are golden yellow with vermilion flames and dark brown bases. Brown anthers have a violet glow. Mid-spring-flowering. †60cm (24in). \*\*\*

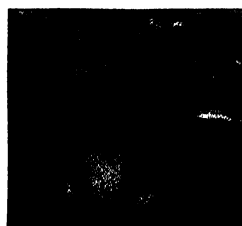
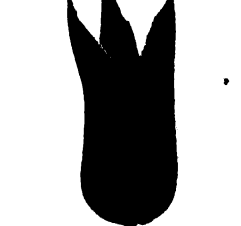
**T. 'Heart's Delight'**, Kaufmanniana Group tulip bearing dark rose-red flowers with pale rose-pink margins and red-marked, golden yellow bases. Insides are ivory-white. Early spring-flowering. Leaves are marked purple. †20cm (8in). \*\*\*

**T. 'Hollywood'**, Viridiflora Group tulip producing green-tinged red flowers, with yellow basal marks, in late spring. †50cm (20in). \*\*\*

**T. humilis** ■ Miscellaneous Group tulip with 2–5 linear, channelled, hairless, glaucous, grey-green leaves, to 15cm (6in) long. In early and mid-spring, star-shaped flowers, to 7cm (3in) across, are produced singly, or sometimes in twos or threes. Flowers are pale pink to purplish pink or magenta, often tinged greyish green outside, with yellow, olive-green, or blue-black basal marks, and frequently margined yellow or white. Stamens have yellow, brown, purple, or black anthers and yellow filaments. † to 25cm (10in). S. and E. Turkey, N. Iraq, N. and W. Iran, Azerbaijan. \*\*\*

**T. 'Ile de France'**, Triumph Group tulip producing cardinal-red flowers with dark bronze-green basal marks and narrow, yellowish brown margins. Insides are blood-red. Mid- and late spring-flowering. †60cm (24in). \*\*\* **T. 'Inzell'**, Triumph Group tulip producing ivory-white flowers, with yellow anthers, in mid-spring. †45cm (18in). \*\*\*

**T. 'Jewel of Spring'** ♀ Darwin Hybrid Group tulip producing red-margined, sulphur-yellow flowers, with greenish black bases and black anthers, in mid-spring. †60cm (24in). \*\*\*

*Tulipa* 'Juan'*Tulipa linifolia**Tulipa* 'Lustige Witwe'*Tulipa* 'Margot Fonteyn'*Tulipa* 'Mariette'*Tulipa marjolettii**Tulipa* 'Menton'*Tulipa* 'Mme Lefebvre'*Tulipa* 'Orange Monarch'*Tulipa* 'Oriental Splendour'*Tulipa orphanidea**Tulipa* 'Oxford'

**T. 'Joffre'**. Single Early Group tulip producing yellow flowers, with subtle, light to dark red shades, in early spring. †30cm (12in). \*\*\*

**T. 'Johann Strauss'**. Kaufmanniana Group tulip bearing currant-red flowers, margined sulphur-yellow, with golden yellow bases. Insides are ivory-white. Early spring-flowering. Leaves are marked purple. †20cm (8in). \*\*\*

**T. 'Juan'** □ Fosteriana Group tulip producing pink-tinged, dark orange flowers, with yellow bases and anthers, in mid-spring. Leaves are marked reddish brown. †25cm (10in). \*\*\*

**T. ~~linifolia~~ Kaufmanniana** (Water-lily tulip). Kaufmanniana Group tulip with 3–5 lance-shaped to inversely lance-shaped, slightly wavy-margined, hairless, grey-green leaves, to 25cm (10in) long. Bowl-shaped flowers, 3–12cm (1¼–5in) across, are borne singly or in clusters of up to 5, on slightly downy, often red-tinged stems in early and mid-spring. Flowers are cream or yellow, flushed pink or greyish green outside, or pink, orange, or red, often with contrasting basal marks. Stamens are yellow with twisted anthers. †to 25cm (10in). Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan. \*\*\*

**T. 'Kees Nelis'**. Triumph Group tulip bearing blood-red flowers, with orange-yellow margins, in mid-spring. †40cm (16in). \*\*\*

**T. 'Keizerskroon'** □ syn. *T. 'Grand Duc'*. Single Early Group tulip bearing broadly yellow-margined scarlet flowers in mid-spring. †30cm (12in). \*\*\*

**T. 'Kingsblood'** ♀ Single Late Group tulip bearing cherry-red flowers, with scarlet margins, in late spring. †60cm (24in). \*\*\*

**T. *kolpakowskiana*** ♀ Miscellaneous Group tulip with 2–4 erect, linear, deeply channelled, hairless, wavy-margined, grey-green leaves, to 20cm (8in) long. In early and mid-spring, bowl-shaped yellow flowers, 3.5–7cm (1½–3in) across, marked crimson, orange, or olive-green outside, with yellow stamens, are produced singly or in clusters of up to 4. †20cm (8in). Uzbekistan, Afghanistan. \*\*\*

**T. *linifolia*** □ ♀ Miscellaneous Group tulip with 3–9 linear-sickle-shaped, hairless, grey-green leaves, to 8cm (3in) long, with wavy red margins. Bowl-shaped red flowers, to 8cm (3in) across,

are produced in early and mid-spring. The rounded flower bases have blackish purple, often yellow-margined marks; stamens have dark purple or yellow anthers and black or yellow filaments. †20cm (8in). Uzbekistan, N. Iran, Afghanistan. \*\*\*

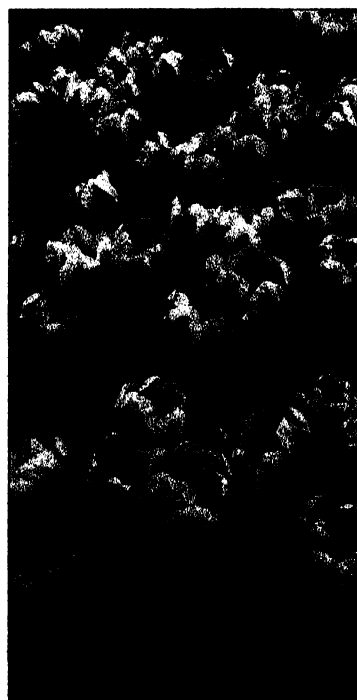
**T. 'Longfellow'**. Greigii Group tulip bearing black-based vermilion flowers, striped lighter red, and signal-red inside, in mid-spring. Leaves are marked dark bluish purple. †30cm (12in). \*\*\*

**T. 'Lustige Witwe'** □ syn. *T. 'Merry Widow'*. Triumph Group tulip bearing glowing dark red flowers, margined pure white, in mid-spring. †40cm (16in). \*\*\*

**T. 'Magician'** see *T. 'Magier'*.

**T. 'Magier'**, syn. *T. 'Magician'*. Single Late Group tulip bearing white flowers, with violet-blue margins, in late spring. †55cm (22in). \*\*\*

**T. 'Maja'**. Fringed Group tulip bearing fringed, pale mimosa-yellow flowers, brilliant greenish yellow inside, with bronze-yellow bases and yellow anthers, in late spring. †50cm (20in). \*\*\*

*Tulipa* 'Keizerskroon'

**T. 'Margot Fonteyn'** □ Triumph Group tulip bearing yellow-margined, cardinal-red flowers with yellow bases. Insides are bright red with lighter margins and black anthers. Mid-spring-flowering. †40cm (16in). \*\*\*

**T. 'Mariette'** □ Lily-flowered Group tulip bearing satin-textured, dark rose-pink flowers, with white bases inside, in late spring. †50cm (20in). \*\*\*

**T. *marjolettii*** see *T. marjolettii*.

**T. *marjolettii*** □ syn. *T. marjolettii*. Miscellaneous Group tulip with 2–7 lance-shaped to ovate-lance-shaped, hairless, grey-green leaves, to 30cm (12in) long. In early and mid-spring, hairless stems bear solitary, bowl-shaped, creamy white flowers, to 12cm (5in) across, with rounded bases, margined dark pink and flushed purple on the outside. Stamens have yellow anthers and blue-black filaments. †45cm (18in). Probably garden origin; naturalized in S.W. Europe. \*\*\*

**T. 'Martine Bijl'**. Triumph Group tulip bearing glowing blood-red flowers, with yellow bases and bluish black anthers, in mid-spring. †45cm (18in). \*\*\*

**T. 'Maytime'**. Lily-flowered Group tulip bearing reddish violet flowers, with narrowly white-margined yellow bases, in late spring. †50cm (20in). \*\*\*

**T. 'Maywonder'**. Double Late Group tulip bearing rose-pink flowers in late spring. †45cm (18in). \*\*\*

**T. 'Menton'** □ Single Late Group tulip bearing pinkish red flowers with pale orange stripes at the margins, and green-marked, yellow and white bases. Insides are poppy-red with white veins and yellow anthers. Late spring-flowering. †60cm (24in). \*\*\*

**T. 'Merry Widow'** see *T. 'Lustige Witwe'*.

**T. 'Miss Holland'**. Triumph Group tulip bearing blood-red flowers with signal-red flames and buttercup-yellow bases with greenish yellow margins. Insides are signal-red with dark brown anthers. Mid-spring-flowering. †45cm (18in). \*\*\*

**T. 'Mme Lefebvre'** □ syn. *T. 'Red Emperor'*. Fosteriana Group tulip bearing fire-red flowers in early spring. †35cm (14in). \*\*\*

**T. 'Monsella'**. Double Early Group tulip bearing canary-yellow flowers with blood-red flames, sulphur-yellow inside, in mid-spring. †30cm (12in). \*\*\*

**T. *montana***, syn. *T. wilsoniana*.

Miscellaneous Group tulip with 3–6 narrowly lance-shaped, wavy-margined, channelled, hairless, grey-green leaves, to 15cm (6in) long. In early and mid-spring, produces solitary, bowl-shaped red flowers, to 8cm (3in) across, with rounded bases, sometimes with a small, dark green central mark on each flower. Stamens have yellow anthers and red filaments. †25cm (10in). Turkmenistan, N. Iran. \*\*\*

**T. 'Monte Carlo'**. Double Early Group tulip producing sulphur-yellow flowers, with small red feathers, in mid-spring. †30cm (12in). \*\*\*

**T. 'Mount Tacoma'**. Double Late Group tulip producing pure white flowers in late spring. †40cm (16in). \*\*\*

**T. 'New Design'**. Triumph Group tulip bearing light yellow flowers, the outsides fading to pinkish white and having pale fuchsia-red margins. Insides have apricot flames, buttercup-yellow bases, and dark brown anthers. Mid-spring-flowering. Leaves have pinkish white margins. †45cm (18in). \*\*\*

**T. 'Noranda'**. Fringed Group tulip bearing dark blood-red flowers with fringed, orange-tinted margins, green-yellow bases, and black anthers. Late spring-flowering. †50cm (20in). \*\*\*

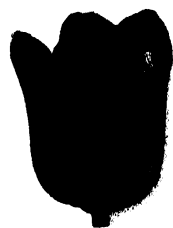
**T. 'Orange Favourite'**. Parrot Group tulip producing fragrant, green-marked orange flowers, with yellow bases, in late spring. †55cm (22in). \*\*\*

**T. 'Orange Monarch'** □ Triumph Group tulip bearing orange flowers, tinged red-pink, with orange-yellow bases. Insides are apricot-orange with purple anthers. Mid-spring-flowering. †40cm (16in). \*\*\*

**T. 'Oranje Nassau'**. Double Early Group tulip bearing blood-red flowers, flushed fire-red, in mid-spring. †30cm (12in). \*\*\*

**T. 'Oratorio'**. Greigii Group tulip bearing rose-pink flowers, with black bases, in early spring. Insides are apricot-pink. Leaves are marked dark bluish purple. †20cm (8in). \*\*\*

**T. 'Oriental Splendour'** □ Greigii Group tulip with carmine-red flowers, lemon-yellow at the margins and inside, and with green and red basal markings. Early spring-flowering. Leaves are marked dark bluish purple. †30cm (12in). \*\*\*



Tulipa 'Page Polka'



Tulipa 'Palestrina'



Tulipa 'Peach Blossom'



Tulipa 'Pink Diamond'



Tulipa 'Plaisir'



Tulipa praestans 'Van Tubergen's Variety'



Tulipa 'Prinses Irene'



Tulipa 'Queen of Night'



Tulipa 'Queen of Sheba'



Tulipa 'Red Riding Hood'



Tulipa saxatilis



Tulipa 'Schoonoord'

**T. orphanidea** ■ Miscellaneous Group tulip with 2–7 lance-shaped, hairless, mid-green leaves, to 20cm (8in) long, often margined reddish purple. Star-shaped flowers, 3–6cm (1¼–2½in) across, are borne singly or in twos or threes, on hairless or downy stems in mid- and late spring. Flowers are buff, usually green-tinged outside; insides are pale to bright orange or brownish red, flushed red or rarely yellow, with black or dark green basal markings. Stamens have dark green or brown anthers and green, sometimes purple-tinged filaments. †35cm (14in). Bulgaria, Greece, W. Turkey. \*\*\*

**T. 'Oxford'** ■ Darwin Hybrid Group tulip producing scarlet flowers, flushed purple-red, with sulphur-yellow bases. Insides are capsicum-red. Mid-spring-flowering. †60cm (24in). \*\*\*

**T. 'Page Polka'** ■ Triumph Group tulip producing dark red flowers, striped white outside, with white basal marks and yellow anthers. Mid-spring-flowering. †40cm (16in). \*\*\*

**T. 'Palestrina'** ■ Triumph Group tulip bearing salmon-pink flowers, green-tinged outside, in late spring. †50cm (20in). \*\*\*

**T. 'Passionale'** Triumph Group tulip producing lilac-purple flowers, with dark purplish red flames, in mid-spring. Insides are beetroot-purple with purple-margined, tawny-yellow bases and light yellow anthers. †45cm (18in). \*\*\*

**T. 'Peach Blossom'** ■ Double Early Group tulip producing dark rose-pink

flowers in mid-spring. Young flowers often have greenish white bases. †30cm (12in). \*\*\*

**T. 'Peer Gynt'** Triumph Group tulip bearing purple-margined, bright rose-pink flowers with yellow-spotted white bases. Insides are pink with purple-grey anthers. Mid-spring-flowering. †45cm (18in). \*\*\*

**T. 'Pink Diamond'** ■ Single Late Group tulip producing pink-purple flowers with paler margins. Insides are bright mid-pink with grey-yellow bases and yellow-green anthers. Late spring-flowering. †60cm (24in). \*\*\*

**T. 'Plaisir'** ■ Greigii Group tulip bearing carmine-red flowers with sulphur-yellow margins and black and yellow bases. Insides are vermilion with sulphur-yellow margins. Early spring-flowering. Leaves are marked dark bluish maroon. †15cm (6in). \*\*\*

**T. polychroma** see *T. biflora*.

**T. praestans** Miscellaneous Group tulip with 3–6 erect, oblong or lance-shaped, keeled, downy, grey-green leaves, to 20cm (8in) long. In early and mid-spring, bowl-shaped, scarlet-orange flowers, 10–12cm (4–5in) across, are produced singly or in clusters of up to 5 on each of the minutely downy stems; stamens have yellow or purplish red anthers, and red filaments shading to yellow at the bases. Easily grown. †30cm (12in). Kazakhstan (Pamir Altai), Tajikistan. \*\*\*

**'Fusilier'** ♀ produces several very bright red flowers. **'Unicum'** ■ has variegated leaves with creamy white margins, and bears up to 5 capsicum-red flowers with small, light yellow bases and blue-black anthers.

**'Van Tubergen's Variety'** ■ has up to 3 larger, bright orange-scarlet flowers, flushed yellow at the bases, with reddish brown anthers. †50cm (20in).

**T. 'Prinses Irene'** ■ Triumph Group tulip bearing unusual, orange and purple flowers in mid-spring. †35cm (14in). \*\*\*

**T. pulchella** Miscellaneous Group tulip with 2–5 linear, hairless, glaucous, grey-green leaves, to 15cm (6in) long. In early and mid-spring, star-shaped, light crimson or purple flowers, to 7cm (3in) across, with blue-black basal marks, are produced singly or sometimes in twos or threes. Stamens have purple anthers and blue filaments. †35cm (14in). Turkey, N. Iran, Turkmenistan, Uzbekistan,

Afghanistan. \*\*\*

**'Odalisque'** bears pale purple flowers with yellow basal marks. **'Persian Pearl'** produces rose-red flowers with yellow basal marks.

**T. 'Purissima'** ■ syn. *T. 'White Emperor'*. Fosteriana Group tulip that produces pure white flowers in mid-spring. †35cm (14in). \*\*\*

**T. 'Queen of Night'** ■ Single Late Group tulip producing velvety, dark maroon flowers in late spring. †60cm (24in). \*\*\*

**T. 'Queen of Sheba'** ■ Lily-flowered Group tulip that produces glowing brownish red flowers, with orange margins, in late spring. †60cm (24in). \*\*\*

**T. 'Red Emperor'** see *T. 'Mme Lefebvre'*.

**T. 'Red Parrot'** Parrot Group tulip producing raspberry flowers in late spring. †30cm (12in). \*\*\*

**T. 'Red Riding Hood'** ■ Greigii Group tulip producing carmine-red flowers, scarlet inside, with black bases, in early spring. Leaves are marked dark bluish maroon. †20cm (8in). \*\*\*



Tulipa 'Purissima'

**T. 'Reginald Dixon'** Fosteriana Group tulip with yellow-margined scarlet flowers. Insides are lemon-yellow with red-marked black bases. Mid-spring-flowering. †30cm (12in). \*\*\*

**T. 'Renown'** Single Late Group tulip producing light carmine-red flowers with paler margins and blue-margined yellow bases. Late spring-flowering. †50cm (20in). \*\*\*

**T. 'Rococo'** Parrot Group tulip bearing carmine-red flowers, margined fire-red, in late spring. †35cm (14in). \*\*\*

**T. 'Rondo'** Fosteriana Group tulip producing yellow-margined vermilion flowers, golden yellow inside, with red-marked yellow bases. Mid-spring-flowering. †30cm (12in). \*\*\*

**T. 'Rosario'** Triumph Group tulip producing dark pink flowers with large white bases. Insides are rose-pink with smaller, ivory-white bases. Mid-spring-flowering. †45cm (18in). \*\*\*

**T. saxatilis** ■ syn. *T. bakeri*. Miscellaneous Group tulip, spreading by runners, with 2–4 linear, hairless, shiny, mid-green leaves, to 30cm (12in) long. In mid- and late spring, star-shaped, fragrant flowers, 6–8cm (2½–3in) across, are borne singly or in clusters of up to 4. Flowers are pink to lilac-purple with white-margined yellow marks. Stamens have yellow, purple, or brown anthers and yellow filaments. Tulips grown as *T. bakeri* are darker pink. †35cm (14in). Crete, W. Turkey. \*\*\*

**T. 'Schoonoord'** ■ Double Early Group tulip bearing pure white flowers in mid-spring. †30cm (12in). \*\*\*

**T. 'Shakespeare'** Kaufmanniana Group tulip bearing carmine-red flowers, with salmon-pink margins and golden yellow bases, in mid-spring. Insides are scarlet-flushed salmon-pink. †25cm (10in). \*\*\*

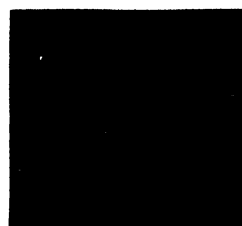
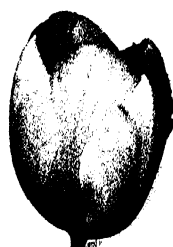
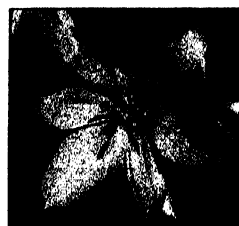
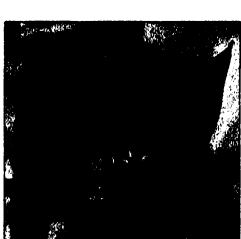
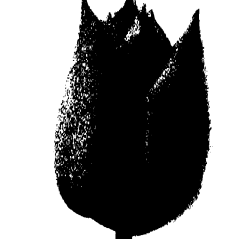
**T. 'Shirley'** Triumph Group tulip bearing ivory-white flowers, with narrow purple margins, white bases spotted pale purple, and brownish violet anthers, in late spring. †60cm (24in). \*\*\*

**T. 'Solva'** Fosteriana Group tulip bearing pale vermilion flowers, yellow at the bases, in mid-spring. †35cm (14in). \*\*\*

**T. 'Sorbet'** ♀ Single Late Group tulip bearing pinkish white flowers, creamy white at the bases, in late spring. Insides are white with carmine-red flames and yellow anthers. †60cm (24in). \*\*\*



Tulipa praestans 'Unicum'

*Tulipa sprengeri**Tulipa* 'Spring Green'*Tulipa* 'Sweetheart'*Tulipa sylvestris**Tulipa tarda**Tulipa turkestanica**Tulipa* 'Union Jack'*Tulipa violacea**Tulipa* 'West Point'*Tulipa* 'White Parrot'*Tulipa whittallii**Tulipa* 'Yokohama'

***T. sprengeri*** ■ ♀ Miscellaneous Group tulip with 5 or 6 linear, hairless, shiny, erect, mid-green leaves, to 25cm (10in) long. In early summer, solitary, goblet-shaped, red to orange-red flowers, 4.5–6cm (1¾–2½in) long, with yellow-buff bases, yellow anthers, and red filaments, are borne on smooth stems. One of the latest tulips to flower. Will self-seed and naturalize in sun or light woodland. †50cm (20in). Turkey (but no longer known in the wild). \*\*\*  
***T. 'Spring Green'*** ■ ♀ Viridiflora Group tulip bearing green-feathered, ivory-white flowers, with light green anthers in late spring. †40cm (16in). \*\*\*

***T. stellata*** see *T. clusiana* var. *stellata*.  
***T. stellata* var. *chrysantha*** see *T. clusiana* var. *chrysantha*.

***T. 'Sweetheart'*** ■ Fosteriana Group tulip bearing ivory-white flowers with lemon-yellow flames, broad, ivory-white margins, and yellow bases. Insides are deep yellow with ivory-white margins and yellow anthers. Mid-spring-flowering. †30cm (12in). \*\*\*

***T. 'Sweet Lady'***. Greigii Group tulip bearing peach-pink flowers with yellow-tinged, bronze-green bases and yellow anthers. Mid-spring-flowering. Leaves are marked dark bluish maroon. †20cm (8in). \*\*\*

***T. sylvestris*** ■ syn. *T. australis*.

Miscellaneous Group tulip with 2–4 linear, channelled, glaucous, light green leaves, to 20cm (8in) long. In mid- and late spring, star-shaped, fragrant flowers, 6–8cm (2½–3in) across, pendent in bud then erect, are borne singly or in pairs. Flowers are yellow, occasionally cream, with green-flushed bases outside and yellow anthers. Easily grown. †45cm (18in). Origin unknown; naturalized in Europe and from N. Africa to the Middle East and Russia (Siberia). \*\*\*  
***T. tarda*** ■ ♀ syn. *T. dasystemon* of gardens. Miscellaneous Group tulip with 3–7 lance-shaped, recurved, often finely fringed, shiny, bright green leaves, to 12cm (5in) long. Produces 4–6 star-shaped flowers, to 6cm (2½in) across, in early and mid-spring. Flowers are white with a green tinge, sometimes red-tinged outside and yellow on the lower half inside. Stamens are yellow. †15cm (6in). C. Asia (Tien Shan). \*\*\*

***T. 'Texas Gold'***. Parrot Group tulip producing red-margined, bright golden

yellow flowers. Late spring-flowering. †55cm (22in). \*\*\*

***T. 'Topic'*** see *T. 'Golden Oxford'*.

***T. 'Toronto'*** ♀ Greigii Group tulip bearing vermilion-tinged, pinkish red flowers, several to a stem, in mid-spring; insides are tangerine-red with buttercup-yellow bases, tinged bronze-green, and bronze anthers. Leaves are marked dark bluish maroon. †20cm (8in). \*\*\*

***T. turkestanica*** ■ ♀ Miscellaneous Group tulip with 2–4 linear, grey-green leaves, to 15cm (6in) long. In early and mid-spring, up to 12 star-shaped, malodorous white flowers, 3–5cm (1¼–2in) across, flushed greenish grey or greenish pink outside, yellow or orange at the centres, are borne on hairy stems. Stamens have purple, brown, or purple-tipped yellow anthers, and yellow filaments. †30cm (12in). Kazakhstan, Tajikistan, N.W. China. \*\*\*

***T. 'Union Jack'*** ■ Single Late Group tulip bearing ivory-white flowers, with raspberry-red flames and blue-margined white bases, in late spring. †60cm (24in). \*\*\*

***T. urumiensis*** ♀ Miscellaneous Group tulip with 2–4 linear, sometimes slightly glaucous, mid-green leaves, to 12cm (5in) long. Star-shaped yellow flowers, 5–7cm (2–3in) across, flushed lilac or reddish brown outside, with yellow stamens, are produced singly or in pairs in early spring. †15cm (6in). N.W. Iran. \*\*\*

***T. 'Viking'***. Double Early Group tulip bearing scarlet-flamed, greenish red flowers. Insides are signal-red with slight yellow feathering, canary-yellow bases, and purple anthers. Mid-spring-flowering. †30cm (12in). \*\*\*

***T. violacea*** ■ Miscellaneous Group tulip with 2–5 linear, channelled, hairless, glaucous, grey-green leaves, to 15cm (6in) long. Produces star-shaped violet-purple flowers, 7cm (3in) across, with yellow or blue-black basal marks and purple stamens, singly or sometimes in clusters of 3, in early and mid-spring. †25cm (10in). S. and E. Turkey, N. Iraq, N. and W. Iran, Azerbaijan. \*\*\*

***T. vvedenskyi***. Miscellaneous Group tulip with 4 or 5 lance-shaped, reflexed, often very finely downy, glaucous, grey-green, crimped leaves, to 30cm (12in) long. Solitary, bowl-shaped flowers, to 20cm (8in) across, with rounded bases, are produced on bristly, sometimes

purple-tinged stems in early and mid-spring. Flowers are red with black or yellow basal marks, violet or yellow anthers, and brown or yellow filaments. †50cm (20in). Kazakhstan, C. Asia (Tien Shan). \*\*\*  
**'Tangerine Beauty'** has bright red flowers, orange inside, with pale yellow basal marks; stamens have purple anthers and yellow filaments.

***T. 'West Point'*** ■ Lily-flowered Group tulip producing primrose-yellow flowers in late spring. †50cm (20in). \*\*\*

***T. 'White Emperor'*** see *T. 'Purissima'*.

***T. 'White Parrot'*** ■ Parrot Group tulip producing pure white flowers in late spring. †55cm (22in). \*\*\*

***T. whittallii*** ■ Miscellaneous Group tulip with 2–7 lance-shaped, hairless, mid-green leaves, to 20cm (8in) long, often with reddish purple margins. In early and mid-spring, bears star-shaped flowers, to 5cm (1¼–2½in) across, singly or in clusters of up to 4 on hairless stems. Flowers are bright bronze-orange, usually green-tinged outside, with black, sometimes yellow-margined basal marks inside. Stamens have dark green or brown anthers, and purple or green filaments. †35cm (14in). Bulgaria, Greece, W. Turkey. \*\*\*

***T. 'Willemsoord'***. Double Early Group tulip bearing carmine-red and white flowers in mid-spring. †30cm (12in). \*\*\*

***T. wilsoniana*** see *T. montana*.

***T. 'Wirosa'***. Double Late Group tulip with cream-margined, wine-red flowers in late spring. †40cm (16in). \*\*\*

***T. 'Yellow Purissima'***. Fosteriana Group tulip with canary-yellow flowers, broadly flamed deep yellow. Insides are bright golden yellow with greenish yellow anthers. Mid-spring-flowering. †35cm (14in). \*\*\*

***T. 'Yokohama'*** ■ Single Early Group tulip producing tapered yellow flowers, with yellow anthers, in mid-spring. †30cm (12in). \*\*\*

***T. 'Zampa'*** ♀ Greigii Group tulip producing primrose-yellow flowers, with bronze and green bases, in mid-spring. Leaves are marked dark bluish maroon. †25cm (10in). \*\*\*

▷ **Tulip tree** see *Liriodendron*, *L. tulipifera*

African see *Spathodea*

Chinese see *Liriodendron chinense*

▷ **Tumbling Ted** see *Saponaria ocymoides*

▷ ***Tunica saxifraga*** see *Petrorhagia saxifraga*

▷ **Tunic flower** see *Petrorhagia saxifraga*

▷ **Tupelo** see *Nyssa*, *N. sylvatica*

Chinese see *N. sinensis*

▷ ***Turbinicarpus schmiedickeanus*** see *Neolloydia schmiedickeana*

▷ **Turkscap lily**,

American see *Lilium superbum*

Common see *Lilium martagon*

Scarlet see *Lilium chalcidonicum*

▷ **Turpentine tree** see *Pistacia terebinthus*

▷ **Turtlehead** see *Chelone*, *C. glabra*

▷ **Tussock grass** see *Cortaderia*,

*Deschampsia cespitosa*

Plumed see *Chionochoila conspicua*

▷ **Tutsan** see *Hypericum androsaemum*

## TWEEDIA syn. OXYPTALUM

ASCLEPIADACEAE

Genus of one species of evergreen, twining, scrambling subshrub from scrub and rocky areas in S. Brazil and Uruguay. It has simple, opposite leaves and produces stalked, axillary and terminal cymes of short, tubular, 5-petalled, salverform flowers. In frost-prone areas, grow as an annual or in a cool greenhouse. In warmer climates, grow in a border or among other small shrubs.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2)

*Tweedia caerulea*



in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in moist but well-drained, fertile soil in full sun. Support the climbing stems. Pruning group 13, in early spring.

• **PROPAGATION** Sow seed at 15°C (59°F) in spring. Insert softwood cuttings with bottom heat in summer.

• **PESTS AND DISEASES** Trouble free.

**T. caerulea** [X] syn. *Amblyopetalum caeruleum*, *Oxyptalum caeruleum*. Erect, evergreen subshrub with twining, white-hairy stems and oblong-lance-shaped, downy, light green leaves, 5–10cm (2–4in) long, usually heart-shaped at the bases. From summer to early autumn, oblong-petalled, sky-blue flowers, 2–2.5cm (¾–1in) across, pink-flushed in bud and ageing to purple, are borne in small, 3- or 4-flowered cymes. † 60–100cm (24–39in). S. Brazil to Uruguay. ☼ (min. 3–5°C/39–41°F)

↳ **Twinberry** see *Lonicera involucrata*

↳ **Twin-flower** see *Linnaea*

↳ **Twin leaf** see *Jeffersonia*

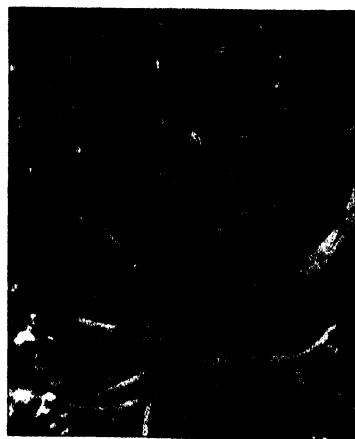
## TYLECODON

CRASSULACEAE

Genus of 20–30 species of bushy, succulent, deciduous shrubs, similar to *Cotyledon* and at one time included in that genus. They are found in deserts and partially shaded areas of Namibia and South Africa. The linear to ovate, spoon-shaped, or almost cylindrical leaves are alternate or borne in crowded spirals. Mainly bell-shaped, upright to pendent flowers have calyces with club-shaped hairs, and are borne in complex, many-branched, panicle-like cymes. In warm, dry, winter-rainfall areas, they are summer-dormant, suitable for a border with other succulents. In areas where temperatures fall below 7°C (45°F), grow in a temperate greenhouse. The leaves of *T. papillaris* subsp. *wallichii* are highly toxic if ingested.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard cactus compost in full light, with low humidity. In growth, water moderately and apply a half-strength, low-nitrogen liquid fertilizer every 4–6 weeks; keep dry when leafless, and water moderately as growth resumes. Pot on as or just before new growth begins. Outdoors, grow in sharply drained, humus-



*Tylecodon reticulatus*

rich, sandy or gritty soil in full sun.

Pruning group 1. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F), or insert cuttings of stem sections, in late spring or summer.

• **PESTS AND DISEASES** Prey to mealybugs.

**T. paniculatus**, syn. *Cotyledon paniculata* (Butter tree). Succulent shrub producing soft, swollen, fleshy stems and short, thick, fleshy, warty branches, all covered with papery yellow bark. Obovate-spoon-shaped, fleshy, bright green leaves, to 11cm (4½in) long, are initially hairy with smooth margins, becoming completely hairless before falling. In spring, nodding, yellow-striped, dark reddish brown flowers, 1.5cm (½in) long, are borne in panicle-like cymes, 60cm (24in) long. † to 2m (6ft), ↔ 1m (3ft). Namibia, South Africa (Northern Cape, Western Cape, Eastern Cape). ☼ (min. 7°C/45°F)

**T. papillaris** subsp. *wallichii*, syn.

*Cotyledon wallichii*, *T. wallichii*. Succulent shrub with fleshy stems and branches, covered with prominent, persistent leaf bases. Short-lived, linear-cylindrical, grey-green leaves, 5–12cm (2–5in) long, grooved above, die back from the branch tips. Pendent, tubular, pale greenish yellow flowers, 2cm (¾in) long, are borne in panicle-like cymes, to 70cm (28in) long, in autumn and winter. †↔ 30cm (12in). South Africa (Western Cape, Karoo). ☼ (min. 7°C/45°F)

**T. reticulatus** [X] syn. *Cotyledon reticulata* (Barbed-wire plant). Stumpy, succulent shrub with short, thick, fleshy stems, covered with peeling grey-brown bark, and soft, spongy branches covered in leaf scars. Linear to almost cylindrical, downy, soft, brown-tipped, yellowish green leaves, 1.5–5cm (½–2in) long, are compressed or grooved above. In winter, bears erect, yellowish green flowers, 1cm (½in) long, in panicle-like cymes, to 30cm (12in) long. Dead inflorescences persist, forming a tangle of weak, silvery thorns that envelops the plant. †↔ 30cm (12in). Namibia, South Africa (Western Cape, Karoo). ☼ (min. 7°C/45°F)

**T. wallichii** see *T. papillaris* subsp. *wallichii*

## TYPHA

Bulrush, Cat's tail, Reedmace

TYPHACEAE

Genus of 10–15 species of monoecious, marginal aquatic herbaceous perennials from temperate and tropical regions worldwide. They form dense, robust stands of vegetation around lakes and large ponds. Thick rhizomes spread in shallow water, producing long, linear, mostly basal leaves and poker-like brown flower spikes, borne among the foliage but overtopped by the leaf tips. Clusters of male and female flowers are produced on the same spike. Bulrushes are usually only suitable for planting around a large wildlife pool, where deep water prevents their spread; *T. minima* is the only species suitable for a small pool or tub. The flower spikes are used in dried flower arrangements.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in water to 30–40cm (12–16in) deep, with ample space and depth of mud for the root system. Flexible liners may be punctured



*Typha latifolia*

by the rhizome tips of the larger species. Pick flowerheads for drying early in the season and seal them with lacquer.

• **PROPAGATION** Divide rootstock in spring.

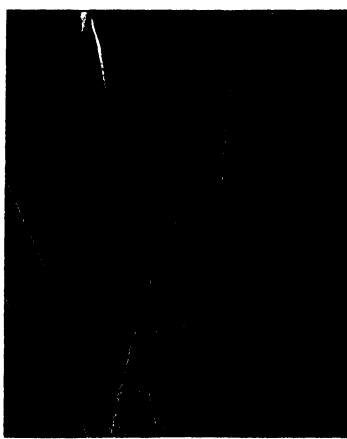
• **PESTS AND DISEASES** Trouble free.

**T. angustifolia** (Lesser bulrush, Narrow-leaved reedmace, Soft flag). Aquatic perennial with linear leaves, to 1.5m (5ft) long, sheathed at the bases. Brown flower spikes, 8–20cm (3–8in) long, are borne in midsummer; male and female flowers are 3–8cm (1¼–3in) apart, the females with dark reddish brown scales. † 1.5m (5ft), ↔ indefinite. Europe, N. and C. Asia, N. Africa, North to South America. \*\*\*

**T. latifolia** [X] (Bulrush, Cat's tail). Aquatic perennial with strap-shaped

leaves, to 2m (6ft) or more long, with open-sheathed bases. Dark brown flower spikes, 15–22cm (6–9in) long, are borne in summer; male and female flowers are close together, no more than 2.5cm (1in) apart, the females becoming white-mottled with age. † 2m (6ft) or more, ↔ indefinite. Europe, Asia, N. Africa, North America. \*\*\*. 'Variegata' [X] is much less vigorous, and has leaves with longitudinal cream stripes; † 0.9–1.2m (3–4ft).

**T. minima** [X] Slender, aquatic perennial with narrowly linear leaves, 20–75cm (8–30in) long. Dark brown flowers are produced in cylindrical spikes, 1.5–5cm (½–2in) long, the female flowers borne immediately above the males, in mid- and late summer. † to 75cm (30in), ↔ 30–45cm (12–18in). Eurasia. \*\*\*



*Typha latifolia* 'Variegata'



*Typha minima*

# U

## UEBELMANNIA

CACTACEAE

Genus of 3–5 species of simple, perennial cacti found in humid, moist areas in the mountains of E. Brazil. The mostly spherical to cylindrical stems have smooth or finely warty, sometimes scaly ribs, and spiny areoles. Diurnal, solitary, funnel-shaped yellow flowers are produced near the crown in summer. In areas where temperatures drop below 15°C (59°F), grow in a warm greenhouse; in warmer climates, they are useful in a border.

• **HARDINESS** Frost tender.

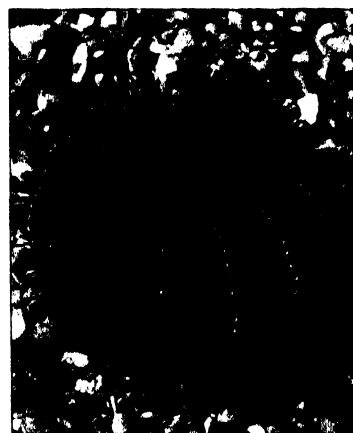
• **CULTIVATION** Under glass, grow in acid standard cactus compost in full light. From mid-spring to early autumn, water moderately and apply a low-nitrogen liquid fertilizer every 6–8 weeks. Mist daily in summer. In winter, keep completely dry, but mist frequently on warm days. Outdoors, grow in gritty, moderately fertile, sharply drained, acid soil in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 24°C (75°F) in spring. Often difficult to grow unless grafted.

• **PESTS AND DISEASES** Trouble free.

*U. buiningii*. Cactus with spherical, sometimes slightly elongated, greenish red-brown to deep chocolate stems, each with about 18 ribs, totally covered with minute, waxy scales. Close-set areoles each bear 6–8 semi-erect (some slightly curved), black-tipped, yellow-brown spines. Funnel-shaped, bright yellow flowers, 2cm (¾in) across, are borne in summer. ↑ 10–12cm (4–5in), ↔ 8cm (3in). E. Brazil. ☀ (min. 15°C/59°F)

*U. pectinifera* ☀ Cactus with spherical to cylindrical, reddish green to reddish brown stems, later elongating, each with 15–20 prominently margined, smooth ribs and minute, off-white scales (sometimes absent in cultivation). Close-set areoles each bear 3–6 comb-



*Uebelmannia pectinifera*

like, light grey to nearly black spines. Funnel-shaped yellow flowers, to 1cm (½in) across, are borne in summer. ↑ 50–80cm (20–32in), ↔ 15cm (6in). E. Brazil. ☀ (min. 15°C/59°F)

## UGNI

MYRTACEAE

Genus of 5–15 species of densely leafy, evergreen shrubs or trees found in forest and scrub in South America. They have opposite, small, elliptic to ovate, simple, leathery leaves, and produce solitary, cup- or bowl-shaped flowers from the leaf axils of young shoots, followed by edible, spherical berries. *U. molinae*, the only species usually cultivated, is valued for its foliage, flowers, and fruit. Grow in a sheltered border or use as hedging. In frost-prone areas, grow tender species in a cool greenhouse.

• **HARDINESS** Frost hardy to frost tender.

• **CULTIVATION** Grow in any moist but well-drained soil in full sun or partial shade. In frost-prone climates, shelter from cold, dry winds. Pruning group 1.

• **PROPAGATION** Root semi-ripe cuttings in late summer, with bottom heat.

• **PESTS AND DISEASES** Trouble free.

*U. molinae* ♀ syn. *Eugenia ugni*, *Myrtus ugni* (Chilean guava). Upright shrub or tree with elliptic to ovate, glossy, dark green leaves, to 3.5cm (1½in) long. Nodding, bowl-shaped, fragrant, pink-tinged white flowers, 1cm (½in) across, are produced singly from the leaf axils in late spring, followed by spherical, aromatic, dark red berries, 1cm (½in) across, in autumn. ↑ 1.5m (5ft), ↔ 1m (3ft). Chile, W. Argentina. ★★

## ULEX

Furze, Gorse

LEGUMINOSAE/PAPILIONACEAE

Genus of about 20 species of spiny, evergreen shrubs from heaths and hill-sides, woodland margins, and rocky sites in W. and C. Europe and N. Africa. As young seedlings, they have alternate leaves, which are quickly replaced by long-lasting green spines. They are grown for their axillary, pea-like yellow flowers, borne singly, in clusters, or in racemes, virtually all year round in mild climates. Suitable for a shrub border and as a low hedge. The seeds may cause mild stomach upset if ingested.

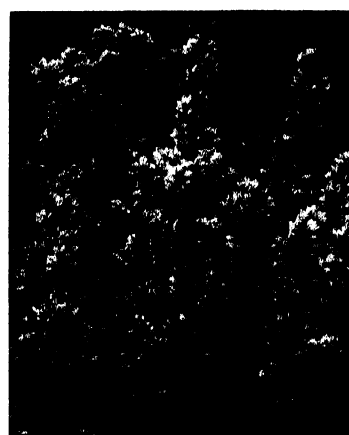
• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in poor, sandy, acid to neutral, well-drained soil in full sun. May become very leggy on rich soil. Pruning group 10, after flowering, every 2 or 3 years.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

*U. europaeus* ☀ (Furze, Gorse, Whin). Upright to rounded, densely bushy shrub with spine-tipped green shoots and rigid leaves reduced to deeply grooved spines, to 2.5cm (1in) long. Solitary, axillary, pea-like, coconut-scented, bright yellow flowers, 2cm (¾in) long, are produced intermittently throughout the year but mainly over a long period in spring. Dark brown seed pods, to 2cm (¾in) long, are borne in summer. ↑ to 2.5m (8ft), ↔ 2m (6ft).



*Ulex europaeus*

W. and C. Europe. ★★. 'Flore

Pleno' ♀ has double flowers and no fruit. 'Strictus' (Irish gorse) is less spiny, with upright shoots.

*U. gallii* (Dwarf gorse). Spreading shrub with spine-tipped green shoots and rigid leaves reduced to slightly grooved spines, to 2.5cm (1in) long. From late summer to autumn, bears solitary, axillary, pea-like, bright yellow flowers, 1.5cm (½in) long; dark brown seed pods, to 1.5cm (½in) long, are produced in spring. ↑ 1.5–2m (5–6ft), ↔ 1.5m (5ft). W. Europe. ★★

▷ **Ulm** see *Eucryphia cordifolia*

## ULMUS

Elm

ULMACEAE

Genus of about 45 species of deciduous, rarely semi-evergreen trees and, very rarely, shrubs, occurring in woodland, thickets and hedgerows in N. temperate regions. They have alternate, ovate to elliptic, obovate, or rounded, toothed leaves, usually with very unequally sized bases, and often attractively coloured in autumn. Clusters of tiny, bell-shaped

flowers, each with 4–9 segments joined at the bases, are usually produced from axillary buds in spring, but sometimes from leafy buds in autumn; the flowers are very quickly followed by fruits, each consisting of a seed surrounded by a green to brown, rounded to elliptic, membranous wing. Cultivated for their habit and foliage, elms are mainly grown as specimen trees. *U. x hollandica* 'Jacqueline Hillier' is suitable for a shrub border and for hedging.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any well-drained soil in full sun or partial shade. Pruning group 1.

• **PROPAGATION** Sow seed in containers outdoors in autumn or spring. Take greenwood cuttings in summer, or remove rooted suckers in autumn. Bud weeping trees in summer, or graft in winter.

• **PESTS AND DISEASES** Dutch elm disease is usually fatal; *U. x hollandica* 'Jacqueline Hillier', *U. parvifolia* and its cultivars, *U. pumila*, and *U. 'Sapporo Autumn Gold'* are partially resistant. A number of Asiatic species are, at present, the most disease-resistant. Elms may also be affected by honey fungus. Aphids, leafhoppers, and gall mites may be a problem.

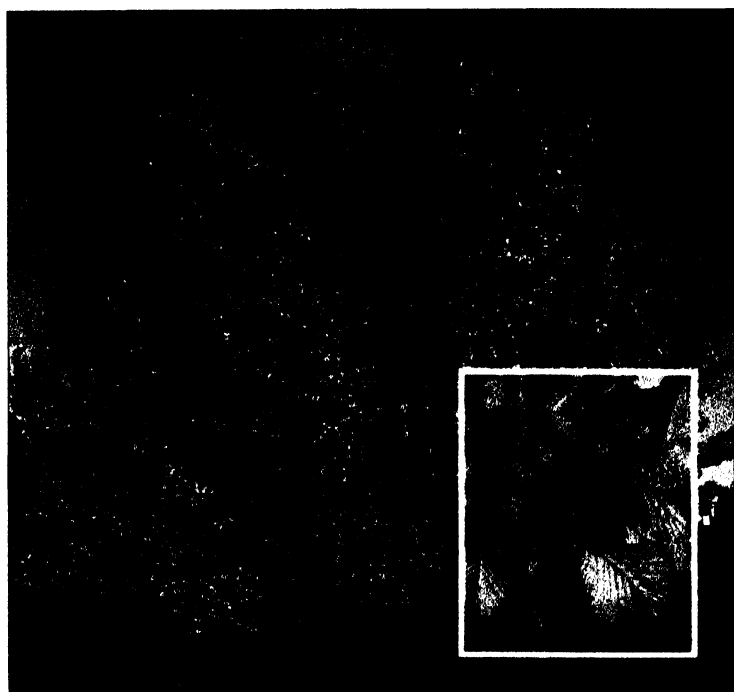
*U. americana* ♀ (American white elm). Graceful, rounded, deciduous tree with pendent branch tips and ovate to elliptic, toothed, dark green leaves, to 15cm (6in) long, turning bright yellow in autumn. Tiny red flowers are produced in early spring, followed in mid- and late spring by winged green fruit, 1cm (½in) across. ↑↔ 30m (100ft). E. North America (E. of the Rocky Mountains). ★★

*U. angustifolia* see *U. minor* subsp. *angustifolia*.

*U. angustifolia* var. *cornubiensis* see *U. minor* 'Cornubiensis'.

*U. 'Camperdownii'* see *U. glabra* 'Camperdownii'.

*U. carpinifolia* see *U. minor*.



*Ulmus glabra* 'Exoniensis' (inset: leaf detail)



*Ulmus x hollandica* 'Jacqueline Hillier'

*U. carpinifolia* var. *cornubiensis* see *U. minor* 'Cornubiensis'.  
*U. carpinifolia* var. *sarniensis* see *U. minor* 'Sarniensis'.  
*U. 'Commelin'* see *U. x hollandica* 'Commelin'.  
*U. 'Dicksonii'* see *U. minor* 'Dicksonii'.  
*U. x elegantissima* 'Jacqueline Hillier' see *U. x hollandica* 'Jacqueline Hillier'.  
*U. glabra* ♀ (Wych elm). Rounded, deciduous tree with broadly obovate, double-toothed, dark green leaves, to 15cm (6in) long, lobed at the tips, and rough above, downy beneath, turning yellow in autumn. Tiny red flowers are produced in early spring, followed by clustered, winged green fruit, 2.5cm (1in) across, in late spring. ‡35–40m (120–130ft), ↔ 25m (80ft). Europe, S.W. Asia. \*\*\*. 'Camperdownii' ♀ syn. *U. 'Camperdownii'* (Camperdown elm) is weeping, with twisted branches and toothed to double-toothed, dark matt green leaves, to 20cm (8in) long; ‡8m (25ft). 'Exoniensis' ♂♀ (Exeter elm) is narrowly columnar when young, broadening with age, and has upright branches bearing clustered, twisted, and folded leaves; ‡15m (50ft), ↔ 8m (25ft).  
*U. x hollandica* ♀ (probably *U. glabra* x *U. minor*) (Dutch elm). Broadly columnar, deciduous tree with a short trunk and wide-spreading to often arching or pendent branches. Broadly elliptic, pointed, double-toothed, dark green leaves, 7–12cm (3–5in) long, initially rough above, becoming glossy, turn yellow in autumn. Tiny red flowers are produced in early spring, followed by winged green fruit, 2cm (¾in) across,



*Ulmus minor* 'Dicksonii'

in late spring. ‡35m (120ft), ↔ 25m (80ft). Europe. \*\*\*. 'Commelin' ♀ syn. *U. 'Commelin'*, is narrower in habit, with more upright branches and oval, toothed, bright green leaves, to 10cm (4in) long, smooth above, downy beneath, turning yellow in autumn. Flowers are produced in late spring, followed by fruit 1cm (½in) across, in late summer. ‡25m (80ft), ↔ 15m (50ft). 'Jacqueline Hillier' ♀ syn. *U. x elegantissima* 'Jacqueline Hillier', is a slow-growing, rounded, bushy shrub with elliptic-lance-shaped, double-toothed leaves, to 3.5cm (1½in) long, rough above, densely arranged in 2 rows along the shoots, and lasting until early winter; flowers are not usually produced. ‡2.5m (8ft). 'Vegeta' ♀ syn. *U. 'Vegeta'* (Huntingdon elm) is fast-growing and broadly upright, with erect branches, pendent outer shoots, and broadly elliptic, ovate, or obovate, toothed, slightly rough leaves that turn yellow in autumn. ‡35m (120ft).  
*U. minor* ♀ syn. *U. carpinifolia* (European field elm, Smooth-leaved elm). Broadly columnar, deciduous tree with arching branches and pendent shoots. Bears ovate, glossy, mid-green leaves, to 10cm (4in) long, smooth above, downy along the veins beneath and in the vein axils, and with double-toothed margins; they turn yellow in autumn. Very small red flowers are produced in early and mid-spring, followed by winged green fruit, 1cm (½in) across, in late spring. ‡30m (100ft), ↔ 20m (70ft). Europe, N. Africa, S.W. Asia. \*\*\*. **subsp. angustifolia** ♀ syn. *U. angustifolia* (Goodyer's elm) has a rounded canopy and elliptic or obovate to inversely lance-shaped, double-toothed, glossy, mid- to deep green leaves, 5–13cm (2–5in) long, paler beneath. Flowers are produced in early spring, followed by fruit to 1.5cm (½in) across, in summer. S. Europe, N. Africa, S.W. Asia.  
*'Cornubiensis'* ♀ syn. *U. angustifolia* var. *cornubiensis*, *U. carpinifolia* var. *cornubiensis* (Cornish elm) is conical when young, becoming columnar and round-topped when mature, with upright branches. S.W. England. ↔ 15m (50ft). 'Dicksonii' ♀ syn. 'Sarniensis Aurea', *U. 'Dicksonii'*, *U. 'Wheatleyi Aurea'* (Cornish golden elm, Dickson's golden elm) is slow-growing, compact, and broadly conical, with broadly oval, toothed, glossy, bright golden yellow leaves, to 6cm (2½in)



*Ulmus parvifolia*

long; flowers are produced in spring, but only rarely. ‡10m (30ft), ↔ 6m (20ft).  
*'Sarniensis'* ♀ syn. *U. carpinifolia* var. *sarniensis* (Jersey elm, Wheatley elm) is compact and conical, with upright branches and broadly elliptic to obovate, toothed, smooth, glossy, mid-green leaves, to 7cm (3in) long; flowers are produced in early spring. ↔ 10m (30ft).  
*'Sarniensis Aurea'* see 'Dicksonii'.  
*U. parvifolia* ♀ (Chinese elm). Spreading, deciduous or semi-evergreen tree with pendent shoots and flaking bark marked orange and brown. Elliptic, toothed, leathery, glossy, dark green leaves, to 6cm (2½in) long, with bases of almost equal size with matted hair beneath, may turn yellow or red in late autumn or early winter. Tiny red flowers are produced from late summer to autumn; they are followed by winged green fruit, 8mm (⅜in) across, in late autumn. ‡18m (60ft), ↔ 8–12m (25–40ft). China, Korea, Japan. \*\*\*.  
*'Frosty'* is slow-growing and shrubby, with small, white-margined leaves, less than 2.5cm (1in) long; ‡2.5m (8ft).  
*'Hokkaido'*, syn. var. *pygmaea*, is slow-growing, with small leaves, to 4cm (1½in) long, and corky bark. **var. pygmaea** see 'Hokkaido'.  
*U. procera* ♀ (English elm). Broadly upright, deciduous tree with a dense crown, broadest at the top. Broadly ovate to obovate, dark green leaves, to 10cm (4in) long, are rough above, paler and thinly hairy beneath, with coarsely double-toothed margins; they turn yellow in late autumn. Tiny red flowers are produced in early spring, followed by winged green fruit, to 1.5cm (½in) across, in late spring. ‡40m (130ft), ↔ 15m (50ft). UK. \*\*\*.  
*U. pumila* ♀ (Siberian elm). Broadly upright, deciduous tree with narrowly elliptic to lance-shaped or ovate, tapered, toothed, dark green leaves, 3–10cm (1¼–4in) long, smooth above, hairy beneath, especially when young. Tiny red flowers are produced in early spring, followed by winged green fruit, 1cm (½in) across, in late spring. ‡20–30m (70–100ft), ↔ 12m (40ft). Russia (E. Siberia), S. Kazakhstan, N. China. \*\*\*.  
*U. 'Sapporo Autumn Gold'* ♀ Fast-growing, broadly conical, deciduous tree with upright branches. Oval, toothed, smooth, glossy, dark green leaves, to 8cm (3in) long, red-tinted when young, turn yellow-green in autumn. Flowers are not usually produced. ‡18m (60ft), ↔ 12m (40ft). \*\*\*.  
*U. 'Vegeta'* see *U. x hollandica* 'Vegeta'.  
*U. 'Wheatleyi Aurea'* see *U. minor* 'Dicksonii'.

## UMBELLULARIA

### LAURACEAE

Genus of one species of evergreen tree, with alternate, entire leaves, from coniferous forest in W. USA. It is grown for its aromatic foliage, although the scent of the crushed leaves may induce headaches and nausea in some people. Grow as a specimen tree in a woodland garden or other sheltered site.  
 • **HARDINESS** Frost hardy.  
 • **CULTIVATION** Grow in any well-drained soil in full sun. In frost-prone climates, shelter from cold, drying winds. Pruning group 1.



*Umbellularia californica*

- **PROPAGATION** Sow seed in containers in a cold frame in autumn. Insert semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*U. californica* ♀ (California laurel, Headache tree). Rounded, evergreen tree with elliptic to oblong, leathery, very aromatic, bright green leaves, to 10cm (4in) long. Umbels of up to 10 small, salverform, yellow-green flowers, 1cm (½in) across, are produced from the leaf axils in late winter and spring, followed by ovoid purple berries, 2.5cm (1in) long. ‡18m (60ft), ↔ 12m (40ft). USA (S. Oregon, N. California). \*\*\* (borderline)

- ▷ **Umbrella leaf** see *Diphylleia cymosa*
- ▷ **Umbrella pine** see *Larix pinea*
- Japanese** see *Sciadopitys verticillata*
- ▷ **Umbrella plant** see *Cyperus alternifolius*
- ▷ **Umbrella tree** see *Magnolia macrophylla*, *M. tripetala*
- Queensland** see *Schefflera actinophylla*

## UNCINIA

### Hook sedge

### CYPERACEAE

Genus of about 35–45 species of tufted, evergreen, monoecious perennials, some rhizomatous, occurring in damp, tussocky grassland, moist woodland, or swamps throughout S. temperate zones, except southern Africa. They have smooth, 3-angled to cylindrical stems and flat or shallowly channelled, grass-like leaves. The flowering stems bear spikes, with the male flowers at the top of the spike and the females beneath. The female flowers give rise to hooked, nut-like fruits. Several species are grown for their colourful leaves; they are suitable for the front of a border, or gravel plantings. In frost-prone climates, grow frost-tender species in a cool greenhouse.  
 • **HARDINESS** Frost hardy to frost tender; those described here will tolerate temperatures to about -10°C (14°F) for short periods.  
 • **CULTIVATION** Grow in moderately fertile, humus-rich, moist but well-drained soil in full sun or light dappled shade.  
 • **PROPAGATION** Sow seed at 13°C (55°F) in spring. Divide between late spring and midsummer.  
 • **PESTS AND DISEASES** Trouble free.

*Ursinia rubra*

***U. rubra*** ■ Evergreen perennial, loosely tufted or with short rhizomes. Rigid, upright, 3-angled stems bear flat or inrolled, abruptly pointed, shiny leaves, to 35cm (14in) long; both stems and leaves are greenish red to rich reddish brown. Dark brown to black flowers are produced in narrow spikes, to 6cm (2½in) long, in mid- and late summer. † 30cm (12in), ↔ 35cm (14in). New Zealand. \* \*

***U. uncinata***. Densely tufted, evergreen perennial, similar to *U. rubra* but smaller, with rigid, upright stems and flat, rough-margined, pale brown to red-brown leaves, 5–10cm (2–4in) long. Bears dark brown flowers in narrow spikes, 15cm (6in) long, in mid- and late summer. † 25cm (10in), ↔ 30cm (12in). New Zealand. \* \*

- ▷ **Uncorn plant** see *Proboscidea*
- Common see *P. louisianica*
- ▷ ***Uniola latifolia*** see *Chasmanthium latifolium*
- ▷ ***Urcolina*** see *Stenomesson*
- U. pendula* see *S. miniatum*
- U. peruviana* see *S. miniatum*

## URGINEA

HYACINTHACEAE/LILIACEAE

Genus of about 100 species of bulbous perennials found on dry, rocky hillsides, on sandy soils near coasts, or on plains or savannah, mostly in tropical Africa, with a few in the Mediterranean. They have narrowly linear, basal leaves, and are grown for their star- or saucer-shaped flowers, produced in long, erect, dense racemes on leafless stems in summer and autumn. Grow in a sunny border. In frost-prone areas, grow half-hardy and frost-tender species in a cool greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand, in full light. Water freely when in growth. Keep just moist when dormant. Outdoors, grow in sandy or stony, poor to moderately fertile, sharply drained soil in full sun. Protect from winter wet.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) when ripe. Remove offsets in summer.
- **PESTS AND DISEASES** Trouble free.

***U. maritima*** (Sea onion, Sea squill). Bulbous perennial producing dense racemes, 30cm (12in) or more long,

of many tiny, star-shaped white flowers, 6mm (¼in) across, with green or purple midveins, in late summer and early autumn. Erect, narrow, basal leaves, 30–100cm (12–39in) long, appear in autumn, after the flowers. † 1.5m (5ft), ↔ 30cm (12in). Mediterranean. \*

## URSINIA

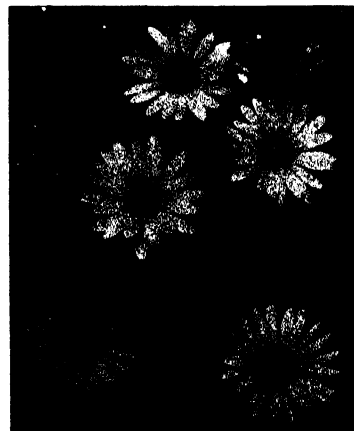
ASTERACEAE/COMPOSITAE

Genus of about 40 species of annuals and evergreen perennials and subshrubs from dry savannah in South Africa, Namibia, Botswana, and Ethiopia. They are cultivated mainly for their flowers; a few species are grown for their foliage. The alternate leaves may occasionally be simple, but are usually pinnatifid, pinnatisect, or pinnate, often hairy or downy, and frequently aromatic. Daisy-like, yellow, orange, or red flowerheads, usually solitary, sometimes in corymbs, are borne on long stalks well above the foliage. Grow annual species at the front of a border or at the base of a house wall. Where winter temperatures fall below 0°C (32°F), grow perennials and subshrubs in a cool greenhouse or treat as annuals. Alternatively, lift before the first frosts and overwinter in frost-free conditions. In milder areas, grow in a border or small courtyard garden.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.1) in full light. In growth, water freely and apply a balanced liquid fertilizer every 4 weeks. Water sparingly in winter. Outdoors, grow in sandy, fertile, well-drained soil in full sun.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Take softwood cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

***U. anethoides***. Bushy, evergreen perennial, usually grown as an annual, with crowded, pinnatisect, thinly hairy or hairless leaves, 2.5–4cm (1–1½in) long, with linear, almost cylindrical lobes. In summer, bears solitary, golden yellow flowerheads, 2.5cm (1in) across, with purple disc-florets. † 45cm (18in), ↔ 35cm (14in). South Africa. \*

***U. anthemoides*** ■ Erect, bushy annual with pinnatisect, slightly hairy, scented, light green leaves, 2–6cm (¾–1½in) long, with slender, flat or thread-like lobes. In summer, bears solitary, purple-centred, yellow-orange flowerheads, to 6cm (2½in) across, each ray-floret zoned

*Ursinia anthemoides*

in maroon-red or copper-purple on the underside. † to 40cm (16in), ↔ to 30cm (12in). South Africa (Northern Cape, Western Cape, Eastern Cape). \*

***U. chrysanthemoides***. Erect, spreading, woody-based, evergreen, short-lived perennial, sometimes grown as an annual, with rooting stems. Bears softly hairy or hairless, scented, silvery grey-green leaves, 5cm (2in) long, which may be pinnate, 2-pinnate, or occasionally entire, all on the same plant. Produces solitary flowerheads, 3–6cm (1¼–2½in) across, with yellow or occasionally red or white ray-florets, sometimes copper-tinted beneath, mainly in summer. † 30–45cm (12–18in), ↔ 60–75cm (24–30in). South Africa (Northern Cape, Western Cape, Eastern Cape). ♀ (min. 5–7°C/41–45°F). **var. geyeri**, syn. 'Geyeri'. *U. geyeri*, has dull green leaves, very white-woolly at first. Rich crimson-red flowerheads, 2.5–6cm (1–2½in) across, with red-black disc-florets, are produced in summer. † to 90cm (36in), ↔ to 30cm (12in).

***U. geyeri*** see *U. chrysanthemoides* var. *geyeri*.

***U. sericea***. Bushy, evergreen subshrub with pinnate or pinnatisect, silver-silky-hairy leaves, to 8cm (3in) long. In summer, produces solitary yellow flowerheads, to 3cm (1¼in) across, on very long stalks. † to 70cm (30in). South Africa (Northern Cape, Western Cape, Eastern Cape). ♀ (min. 5–7°C/41–45°F).

## UTRICULARIA

Bladderwort

LENTIBULARIACEAE

Genus of approximately 180 species of terrestrial, epiphytic, or free-floating aquatic annuals and perennials found worldwide in stagnant, shallow water, or growing on rainforest trees. They are insectivorous, and thrive in water that attracts mosquito larvae. Generally rootless, they have mainly submerged stems, either loosely anchored or free-floating, and thread-like or linear to rounded leaves with traps (bladders) adapted to catch and absorb insects. The flowers, solitary or in racemes, are usually borne on leafless stems above the water, and are supported by a whorl of spongy, floating leaves. Grow in an outdoor pool. In frost-prone areas, grow tender species in a warm aquarium. The hardy species may also be grown in a cold-water aquarium.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow in acid water that warms up quickly in spring, in full sun. In an aquarium, grow in full light in soft, algae-free water; frost-tender species need a water temperature of 19°C (66°F), hardy species 12–15°C (54–59°F). See also pp.52–53.
- **PROPAGATION** Collect buds that sink to the bottom of the pool or aquarium after flowering and replant. Divide mats of floating foliage in summer.
- **PESTS AND DISEASES** Trouble free.

***U. exoleta*** see *U. gibba*.

***U. gibba***, syn. *U. exoleta*. Floating aquatic annual or perennial with mat-forming stolons. Slender stems produce feathery, bladder-bearing leaves, to 8cm (3in) long. In midsummer, pouched, red-veined yellow flowers, to 6mm

(¼in) long, are borne above the water, either singly or in a 2- to 5-flowered raceme, 20cm (8in) long, ↔ 20cm (8in). Spain, Portugal, Israel, southern Africa, China, Japan, Australia, New Zealand, North America, Argentina. ♀ (min. 7°C/45°F).

## UVULARIA

Merrybells

CONVALLARIACEAE/LILIACEAE

Genus of 5 species of rhizomatous perennials from woodland in E. North America. They have erect, simple or branched stems, the upper parts bearing alternate, stalkless or perfoliate, ovate to lance-shaped, hairless or downy leaves. Pendent, tubular-bell-shaped, 6-repalled yellow flowers are produced on long, slender stalks, and are usually solitary (occasionally in pairs) and terminal. Excellent for a peat bed, shady border, or woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in deep or partial shade.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in early spring.
- **PESTS AND DISEASES** Very susceptible to slugs and snails, especially in spring.

***U. grandiflora*** ■ ♀ (Large merrybells). Slowly spreading, rhizomatous perennial with sometimes 2-branched stems bearing ovate-lance-shaped, downward-pointing, perfoliate, mid-green leaves, to 13cm (5in) long, softly hairy beneath. Solitary or paired, pendent, tubular-bell-shaped, sometimes green-tinted, yellow flowers, 5cm (2in) long, with free, slightly twisted tepals, and stamens longer than styles, are borne in mid- and late spring. † to 75cm (30in), ↔ 30cm (12in). E. North America. \* \* \*. **var. pallida** has paler yellow flowers.

***U. perfoliata***. Slowly spreading, creeping, rhizomatous perennial with sometimes 2-branched stems bearing downward-pointing, ovate-lance-shaped, perfoliate, mid-green, hairless leaves, to 10cm (4in) long. A few solitary or paired, pendent, tubular-bell-shaped, pale yellow flowers, to 3.5cm (1½in) long, with free, slightly twisted tepals, the tips spreading, and stamens shorter than styles, are borne in late spring and early summer. † to 60cm (24in), ↔ 30cm (12in). E. North America. \* \* \*

*Uvularia grandiflora*



## VACCINIUM

Bilberry, Blueberry, Cranberry,  
Whortleberry

ERICACEAE

Genus of about 450 species of evergreen, semi-evergreen, or deciduous shrubs and trees, widely distributed throughout arctic and tropical regions, occurring in a variety of habitats from heath and moorland to bogs and woodland. They are valued for their ornamental foliage, flowers, and berries. The leathery leaves are alternate, and may be lance-shaped to elliptic, ovate, or rounded, with entire or toothed margins; in some of the deciduous species, the leaves provide brilliant autumn colour. The small, urn- or bell-shaped to cylindrical flowers are white, green, pink, or red, and are produced either singly in the leaf axils or in terminal or axillary racemes in spring and summer. The flowers are followed by edible, usually spherical berries; some species, including *V. angustifolium* var. *laevifolium*, *V. corymbosum*, and *V. macrocarpon*, are grown primarily for their fruits (blueberries and cranberries). Vacciniums are best suited to a woodland garden.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in acid, peaty or sandy, moist but well-drained soil in full sun or partial shade. Pruning group 1 for deciduous species; group 8 for evergreens.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Take greenwood cuttings of deciduous species in early summer, and semi-ripe cuttings of evergreens in mid- to late summer. Layer in late summer.

• **PESTS AND DISEASES** May be affected by *Phytophthora* crown and root rot.

*V. angustifolium* var. *laevifolium* □ (Lowbush blueberry). Spreading, densely branched, deciduous shrub with lance-shaped, minutely toothed, glossy,



*Vaccinium angustifolium* var. *laevifolium*



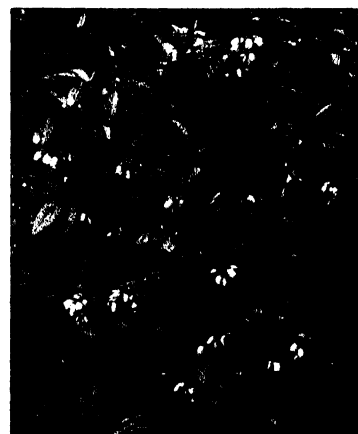
*Vaccinium arctostaphylos*

dark green leaves, to 4cm (1½in) long, turning red in autumn. Bell-shaped, white, sometimes pink-tinged flowers, 1cm (½in) long, are borne in pendent, axillary and terminal racemes, to 5cm (2in) long, in mid- and late spring; they are followed by edible, sweet, spherical, blue-black berries, to 1.5cm (½in) across. ± 10–60cm (4–24in). E. North America. \*\*\*

*V. arctostaphylos* □ (Caucasian whortleberry). Erect, densely branched, deciduous shrub with red-brown young shoots and elliptic, entire, dark green leaves, to 10cm (4in) long, coloured red and purple in autumn. Bell-shaped, pink-tinged white flowers, 8mm (¾in) long, are produced in pendent, axillary racemes, to 5cm (2in) long, in early summer; they are followed by edible, spherical, purple-black berries, 8mm (¾in) across. ± 3m (10ft), ± 2m (6ft). Bulgaria, Turkey, Caucasus. \*\*\*

*V. caespitosum* (Dwarf bilberry). Low-growing, rapidly spreading, densely branched, deciduous shrub with elliptic to obovate, entire or toothed, dark green leaves, 1.5–3.5cm (½–1½in) long. In late spring and early summer, produces pendent, urn-shaped, white to pink flowers, 5mm (¼in) long, singly from the leaf axils; flowers are followed by edible, spherical, blue-black fruit, 6mm (¼in) across. ± to 15cm (6in), ± 60cm (24in), or more. N. and W. North America. \*\*\*

*V. corymbosum* □ ♀ (Highbush blueberry, Swamp blueberry). Upright, dense, many-branched, deciduous shrub with arching shoots and lance-shaped to elliptic, entire or toothed, mid-green



*Vaccinium corymbosum*



*Vaccinium glaucoalbum*

leaves, to 9cm (3½in) long, turning yellow or red in autumn. In late spring and early summer, produces pendent, terminal racemes, to 5cm (2in) long, of cylindrical, white, sometimes pink-tinged flowers, 1cm (½in) long; they are followed by edible, sweet, spherical, blue-black berries, to 1cm (½in) across. ± 1.5m (5ft). E. North America. \*\*\*

*V. crassifolium* (Creeping blueberry). Vigorous, procumbent, mat-forming, evergreen shrub with oval-elliptic to rounded, finely toothed, thick, leathery, dark green leaves, 0.8–1.5cm (⅜–½in) long, paler beneath. In late spring and early summer, bears pendent, urn-shaped, white to pink or rose-red flowers, 4mm (¼in) long, in loose, terminal and axillary racemes, to 5cm (2in) long; they are followed by edible, spherical, purple-black fruit, to 1cm (½in) across. ± to 45cm (18in), ± 1m (3ft). S.E. USA. \*\*\* (borderline). 'Well's Delight' has a looser, broader habit, and prefers partial shade; ± to 20cm (8in), ± 60cm (24in) or more.

*V. cylindraceum* ♀ Upright, semi-evergreen shrub with lance-shaped, finely toothed, glossy, dark green leaves, to 6cm (2½in) long, retained until shortly before new growth begins in spring. In late summer and early autumn, bears cylindrical, red-tinged green flowers, 9–15mm (⅜–½in) long, in pendent, dense, axillary racemes, 5cm (2in) long; they are followed by edible, spherical, blue-black berries, 1cm (½in) long. ± 2.5m (8ft), ± 2m (6ft). Azores. \*\*\*

*V. delavayi*. Compact, spreading, evergreen shrub with densely arranged, obovate to elliptic, entire, leathery, dark green leaves, to 1.5cm (½in) long, red-tinged when young. Tiny, pendent, urn-shaped, pink-flushed, creamy white flowers, 6mm (¼in) long, are produced singly or in clusters of 2–4 from the leaf axils in early summer; they are followed by edible, spherical, deep red berries, 5mm (¼in) across. ± 60cm (24in), ± 90cm (36in). S.W. China. \*\*\*

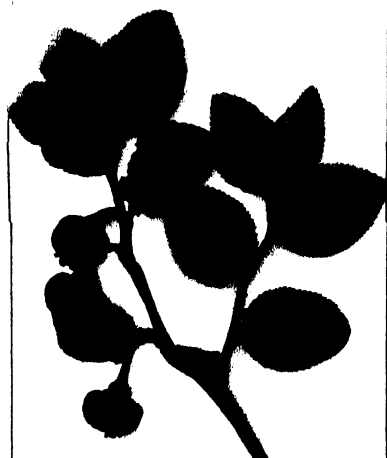
*V. floribundum*, syn. *V. mortinia* (Mortinia). Spreading, evergreen shrub bearing arching shoots densely covered with ovate, glandular-toothed, dark green leaves, to 1cm (½in) long, red when young. In early summer, produces dense, pendent, axillary racemes, to 5cm (2in) long, of cylindrical pink flowers, 6mm (¼in) long; they are followed by edible, spherical red berries, 5mm (¼in) across. ± 1m (3ft), ± 2m (6ft). Ecuador, Peru. \*\*\*

*V. glaucoalbum* □ ♀ Spreading, mound-forming, dense, evergreen shrub producing elliptic, dark green leaves, to 6cm (2½in) long, bright bluish white beneath, either entire or with bristle-like teeth. Cylindrical, pink-tinged white flowers, 6mm (¼in) long, are borne in pendent, axillary racemes, to 7cm (3in) long, in late spring and early summer; they are followed by edible, spherical, white-bloomed, blue-black berries, 8mm (¾in) across. ± 50–120cm (20–48in), ± 1m (3ft). E. Himalayas to China, Tibet, N. Burma. \*\*\*

*V. macrocarpon* (Cranberry). Prostrate, mat-forming, evergreen shrub with slender shoots and elliptic-oblong, entire, dark green leaves, to 2cm (¾in) long, bronze in winter. In summer, pendent, slender-stalked, bell-shaped pink flowers, 1cm (½in) across, with 4 slender, reflexed lobes, are produced singly from the leaf axils or in clusters of 2–10; they are followed by edible, spherical red berries, to 2cm (¾in) across. Best in cool, moist soil in sun. ± 15cm (6in), ± indefinite. E. North America. \*\*\*

*V. mortinia* see *V. floribundum*.

*V. moupinense*. Compact, rounded, evergreen shrub with densely arranged, elliptic-oblong to obovate, entire, leathery, glossy, dark green leaves, to 1cm (½in) long. Tiny, urn-shaped, dark red-brown flowers, 5mm (¼in) long, are produced in pendent, axillary racemes, to 2.5cm (1in) long, in late spring and early summer; they are followed by edible, spherical, purple-black berries.



*Vaccinium myrtillus*

6mm (¼in) across. †60cm (24in), ↔ 90cm (36in). W. China. \*\*\*

**V. myrtillus** ■ (Bilberry, Whinberry, Whortleberry). Vigorous, creeping, deciduous shrub with dense, upright stems and oval-elliptic, finely toothed, glossy, bright green leaves, 1–3cm (½–1¼in) long, often colouring red in autumn. In late spring and early summer, pendent, axillary, rounded, urn-shaped pink flowers, 6mm (¼in) long, are produced singly or in pairs. Flowers are followed by edible, spherical, blue-black berries, 6–10mm (¼–½in) across. May be invasive in fertile soils. † to 30cm (12in), ↔ indefinite. Europe to N. Asia. \*\*\*

**V. nummularia**. Spreading, low-growing, evergreen shrub with arching, brown-bristly stems. Rounded to elliptic, finely toothed, leathery, wrinkled, glossy, bright green leaves, 1–2.5cm (½–1in) long, are margined with red-brown bristles. In late spring, urn-shaped, red-tipped, pale pink flowers, 5mm (¼in) long, are produced in pendent racemes, to 5cm (2in) long, from leaf axils near the shoot tips; they are followed by edible, broadly ovoid black berries, 6mm (¼in) across. † to 30cm (12in),



*Vaccinium vitis-idaea* subsp. *minus*

↔ to 60cm (24in). Himalayas (Sikkim, Bhutan). \*\*\* (borderline)

**V. ovatum** (Box blueberry). Upright, bushy, evergreen shrub with arching shoots and densely arranged, ovate, finely toothed, leathery, glossy, dark green leaves, to 3cm (1¼in) long, bronze when young. In late spring and early summer, produces cylindrical or urn-shaped, pink-flushed white flowers, 6mm (¼in) long, in dense, nodding, axillary racemes, 2.5cm (1in) long; flowers are followed by edible, spherical, glossy black berries, 6mm (¼in) across. † 4m (12ft), ↔ 3m (10ft). W. North America (British Columbia to California). \*\*

**V. parvifolium** (Red whortleberry). Upright, deciduous shrub with oblong, entire, blue-green leaves, to 3cm (1¼in) long, turning brilliant red in autumn. Small, rounded, urn-shaped, white, sometimes pink-tinged flowers, 4–6mm (¼–¼in) long, are produced singly or in pairs from the leaf axils in late spring and early summer. Flowers are followed by edible, spherical, coral-red berries, 1cm (½in) across. † 3m (10ft), ↔ 2m (6ft). W. North America (Alaska to California). \*\*\*

**V. praestans**. Dwarf, deciduous shrub with sparse, creeping and ascending shoots. Broadly elliptic to obovate, indistinctly toothed, pale green leaves, 2.5–5cm (1–2in) long, are blunt or sharp-pointed at the tips and tapering at the bases, turning red in autumn. In early summer, produces bell-shaped, pink-flushed white flowers, 6mm (¼in) long, either singly or in few-flowered, pendent, axillary racemes, to 5cm (2in) long; they are followed by edible, spherical, bright red berries, 1cm (½in) across. † to 10cm (4in), ↔ to 30cm (12in). N.E. Asia. \*\*\*

**V. vitis-idaea** (Cowberry). Creeping, evergreen shrub, spreading by means of underground rhizomes, and bearing obovate, glossy, dark green leaves, to 2.5cm (1in) long, often shallowly notched at the tips. In late spring and early summer, produces bell-shaped, white to deep pink flowers, 6mm (¼in) long, in dense, nodding, terminal racemes, to 2.5cm (1in) long; they are followed by edible but acidic, spherical, bright red berries, 6mm (¼in) across. † 25cm (10in), ↔ indefinite. Arctic and alpine regions of N. Eurasia, Japan, North America. \*\*\*. 'Koralle' ■ ♀ produces abundant fruit, to 9mm (⅜in) across. **subsp. minus** ■ is shorter, with smaller leaves, to 1.5cm (½in) long, and deep pink flowers; † 20cm (8in); Arctic and alpine North America.

▷ **Valerian** see *Centranthus*, *Valeriana*  
**Common** see *Valeriana officinalis*  
**Greek** see *Polemonium caeruleum*  
**Red** see *Centranthus ruber*

## VALERIANA

Valerian

VALERIANACEAE

Genus of 200 or more species of annuals, often rhizomatous or tap-rooted herbaceous perennials, semi-evergreen subshrubs, and usually evergreen shrubs. They are found throughout the world, except in Australasia, and occur in moist woodland, meadows, or at streamsides, often in mountainous regions; the alpine species grow in scree or rock crevices. The opposite leaves are often aromatic, but not always pleasantly so; they are generally simple, although the non-shrubby species often produce pinnate or pinnatifid stem leaves as well as basal rosettes of simple leaves. The small, unisexual or bisexual, salverform flowers are pink to lavender-pink, white, or

yellow, and are borne in terminal, panicle- or corymb-like cymes in summer. The few species in cultivation are herbaceous perennials, grown for their attractive flowers. Valerians are suitable for growing in an informal, cottage-style garden, herbaceous border, or herb garden, or for naturalizing in a wild garden.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any, preferably moist soil in full sun or dappled shade. Tall-stemmed species and cultivars may require support.

• **PROPAGATION** Sow seed in containers outdoors, or take basal cuttings, in spring. Divide in spring or autumn.

• **PESTS AND DISEASES** Trouble free.

**V. officinalis** (All heal, Common valerian). Upright, clump-forming perennial with short rhizomes producing fleshy, branching stems. The aromatic, bright green, basal and stem leaves are pinnate, to 20cm (8in) long, each with 7–10 pairs of lance-shaped, toothed leaflets. Branched, rounded, corymb-like cymes of salverform, bisexual, pink or white flowers, to 5mm (¼in) long, are borne throughout summer. † 1.2–2m (4–6ft), ↔ 40–80cm (16–32in). W. Europe. \*\*\*

**V. phu 'Aurea'** ■ Clump-forming, rhizomatous perennial with simple or pinnatifid, elliptic to inversely lance-shaped, aromatic basal leaves, to 20cm (8in) long, and pinnatifid, pinnatisect, or pinnate stem leaves; pinnate leaves have 3 or 4 pairs of elliptic leaflets. All leaves are soft yellow in spring, turning lime- to mid-green by summer. In early summer, branching stems bear panicle-like corymbs of small, salverform, bisexual white flowers, 4mm (⅜in) long. † to 1.5m (5ft), ↔ 60cm (24in). \*\*\*

## VALLEA

ELAEAGNACEAE

Genus of one species of evergreen shrub or tree found in scrub in the Andes from Colombia to Bolivia. It has spirally arranged, simple or occasionally lobed leaves, and produces cup-shaped flowers, each with 5 sepals and 5 petals, in small, axillary and terminal cymes. Where temperatures fall below 0°C (32°F), grow in a cool greenhouse. In warmer areas, use in a courtyard garden or border, or plant against a warm, sunny wall.

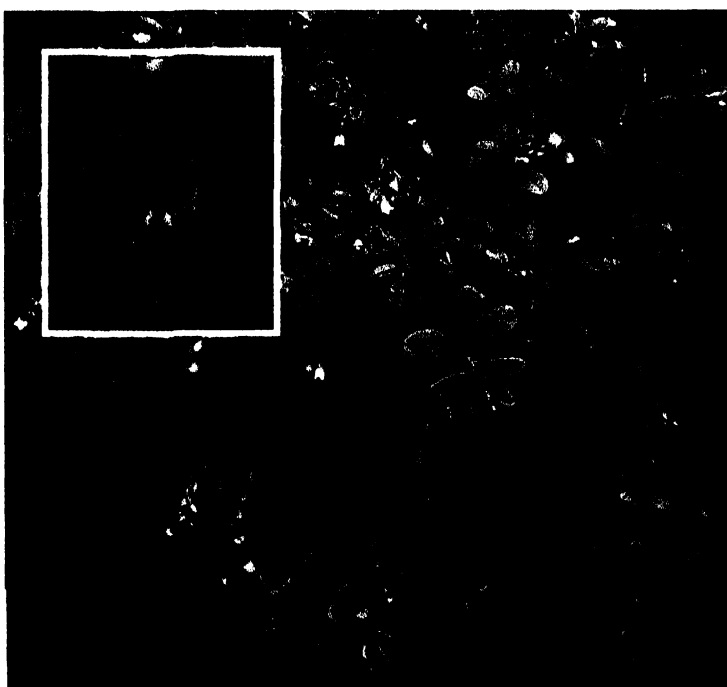
• **HARDINESS** Frost hardy (borderline).

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost in full or bright filtered light. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, neutral to acid, moist but well-drained soil in full sun or partial shade. Pruning group 9; may require restrictive pruning under glass.

• **PROPAGATION** Sow seed at 6–12°C (43–54°F), ideally as soon as ripe. Root semi-ripe cuttings with bottom heat in mid- or late summer.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**V. stipularis** ○ Erect to spreading shrub or tree, freely branching, at least when mature. Almost fleshy, leathery, deep green leaves, 3–12cm (1¼–5in) long, are lance-shaped to broadly ovate,



*Vaccinium vitis-idaea* 'Koralle' (inset: fruit detail)



*Valeriana phu* 'Aurea'



rounded to heart-shaped at the bases, and sometimes lobed. Cymes of cup-shaped, crimson to dark rose-red flowers, 2–2.5cm (¾–1in) across, with darker veins, are produced from spring to summer. ‡3–5m (10–15ft), ↔2–4m (6–12ft). N. South America (Colombia to Bolivia). \*\* (borderline)

▷ *Valloia speciosa* see *Cyrtanthus elatus*

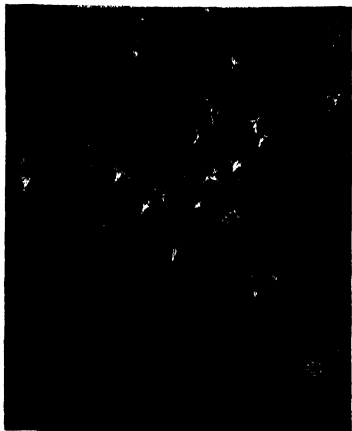
## VANCOUVERIA

BERBERIDACEAE

Genus, closely allied to *Epimedium*, of about 3 species of creeping, rhizomatous perennials, some of them evergreen, from rocky hillside scrub or coniferous woodland in W. USA. They are grown for their ternate or 2-ternate, thick, sometimes leathery, basal leaves, and for their loose panicles of nodding flowers, each with 6 reflexed petals and 12 sepals, borne on wiry stems in late spring and summer. Suitable for ground cover in a large rock garden or woodland garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in moderately fertile, humus-rich, leafy, moist but well-drained soil in partial shade. Shelter from cold, drying winds.
- **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in spring.
- **PESTS AND DISEASES** Vine weevil may be a problem.

*V. chrysantha*. Creeping, evergreen, rhizomatous perennial with ternate or 2-ternate, thick, leathery, glossy, dark green, basal leaves, to 45cm (18in) long, glaucous and paler beneath, composed of usually 9, rarely 3 or 5, rounded, diamond-shaped leaflets, 4cm (1½in) long, with thickened, wavy margins. From late spring to summer, leafless stems bear loose panicles of 4–15 yellow flowers, to 1cm (½in) long. ‡to 30cm (12in), ↔to 60cm (24in) or more. USA (S.W. Oregon, N. California). \*\*\*  
*V. hexandra* □ Creeping, deciduous, rhizomatous perennial with 2-ternate, normally basal leaves, to 45cm (18in) long, each composed of 9 or more variable, ovate, smooth-textured, bright green leaflets, 7cm (3in) long, white-hairy when young. In late spring and early summer, leafless stems bear loose panicles of 6–45 white flowers, to 1.5cm (½in) long. Seldom spreads as widely as *V. chrysantha*. ‡↔to 40cm (16in). USA (Washington to California). \*\*\*



*Vancouveria hexandra*

## VANDA

ORCHIDACEAE

Genus of 30–40 species of evergreen, epiphytic, monopodial orchids found in exposed sites in scrub forest at altitudes of 1,500m (5,000ft) from India to S.E. Asia and the Philippines, and south to Australia. They have stout, simple stems, the tips of which bear 2-ranked, strap-shaped to linear, leathery, semi-rigid, mid-green leaves, often lobed or toothed at the tips. Aerial roots form on the lower part of the stems. The flowers, borne in axillary, occasionally terminal racemes, are often large, showy, and intricately coloured on their sepals, with small lips. A range of richly coloured hybrids is available.

- **HARDINESS** Frost tender.
- **CULTIVATION** Intermediate-growing orchids. Grow in epiphytic orchid compost in slatted baskets in full light with shade from hot sun. In summer, water freely, apply fertilizer at every third watering, and mist plants twice daily. Water moderately in winter. See also p.46.
- **PROPAGATION** Remove offsets that arise at the base of the plants, or root cuttings of stem sections, in spring.
- **PESTS AND DISEASES** Susceptible to red spider mites, aphids, and mealybugs.

*V. caerulea*. Unbranched, epiphytic orchid producing curved, linear leaves, to 25cm (10in) long. In autumn and winter, bears long, pendent racemes of clear blue flowers, 5–10cm (2–4in) across, often chequered darker blue; the lips are dark violet-blue with whitish blue lateral lobes. ‡60cm (24in), ↔30cm (12in). India, Burma, Thailand. ♀ (min. 13–16°C/55–61°F; max. 30°C/86°F)

*V. Kasem's Delight* (V. Sun 'Tan x V. Thospol). Unbranched, epiphytic orchid with linear leaves, 15cm (6in) long. Flowers, 10cm (4in) across, in a combination of deep mauve and indigo, are borne in long, pendent racemes intermittently throughout the year. ‡60cm (24in), ↔30cm (12in). ♀ (min. 13–16°C/55–61°F; max. 30°C/86°F)

*V. Rothschildiana* □♀ (*Euanthe sandieriana* x *V. caerulea*). Unbranched, epiphytic orchid with curved, linear leaves, 15cm (6in) long. Dark-veined, violet-blue flowers, 10cm (4in) across, are borne in long, pendent racemes intermittently throughout the year.



*Vanda Rothschildiana*

‡60cm (24in), ↔30cm (12in). ♀ (min. 13–16°C/55–61°F; max. 30°C/86°F)

*V. sandieriana* see *Euanthe sandieriana*.

*V. tessellata*. Unbranched, epiphytic orchid with curved, linear leaves, to 45cm (18in) long. In autumn, produces long, pendent racemes of variable flowers, 5cm (2in) across, yellow-green or very pale blue, chequered brown, with white-margined, violet to blue lips. ‡60cm (24in), ↔30cm (12in). India, Sri Lanka, Burma, Malaysia. ♀ (min. 13–16°C/55–61°F; max. 30°C/86°F)  
*V. tricolor*. Unbranched, epiphytic orchid with curved, linear leaves, 45cm (18in) long. Fragrant flowers, 5–7cm (2–3in) across, are usually pale yellow, heavily patterned red-brown, with purple-striped, violet-red lips; they are borne in long, erect to spreading racemes in winter. ‡1m (3ft), ↔30cm (12in). Laos, Indonesia (Java). ♀ (min. 13–16°C/55–61°F; max. 30°C/86°F)

▷ **Varnish tree** see *Rhus verniciflua*

▷ **Vase plant** see *Aechmea fasciata*

▷ **Vegetable sheep** see *Haastia. H. pulvinaris, Raoulia eximia*

## VEITCHIA

ARECACEAE/PALMAE

Genus of 18 species of single-stemmed palms found in tropical rainforest, from sea level to 650m (2,100ft), from the Philippines and New Caledonia to Fiji and the New Hebrides. Oblong, pinnate leaves are produced in terminal tufts above a distinctive crownshaft; bowl-shaped, 3-petalled flowers are borne in panicles just beneath the foliage, and are followed by showy, red to orange fruits. In frost-prone climates, grow in a warm greenhouse or as houseplants. In warmer areas, use small species in a courtyard or border, and grow tall species on a lawn.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3) with added peat and sharp sand, in full light. Pot on or top-dress in spring. When in growth, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 24°C (75°F) in spring.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

*V. joannis* ♀ syn. *Kentia joannis*. Tall palm with a slender, columnar trunk, to 28cm (11in) across. Erect to arching, mid- to deep green leaves, to 3m (10ft) or more long, each have 70–80 narrowly linear, arching leaflets. Greenish yellow flowers, 1cm (½in) across, are produced in panicles to 1m (3ft) long, usually in summer; they are followed by ovoid, orange-red fruit, 5–6cm (2–2½in) long. ‡to 30m (100ft), ↔to 6m (20ft). Fiji. ♀ (min. 15°C/59°F)

*V. merrillii* □♀ syn. *Adonidia merrillii* (Christmas palm, Manila palm). Small palm with a slender trunk, to 26cm (10in) across, which tapers towards the crownshaft. Strongly arching, matt, mid- to deep green leaves, 1–2m (3–6ft) long, each have 40–60 strap-shaped leaflets, pale green and scaly beneath. Green to yellow-green flowers, 2cm (¾in) across, are borne in panicles to 1m (3ft) long,



*Veitchia merrillii*

usually in summer; they are followed by ovoid crimson fruit, to 3cm (1¼in) long, which are at their most colourful during winter. ‡to 5–6m (15–20ft), ↔2–3.5m (6–11ft). Philippines (Palawan Islands). ♀ (min. 15°C/59°F)

## VELLOZIA

VELLOZIACEAE

Genus of 124 species of xerophytic, sometimes tree-like, evergreen perennials occurring on rocky, windswept cliffs or outcrops in scrub or woodland in tropical Africa, Madagascar, and tropical N., C., and S. America. They are grown for their fragrant, white, yellow, blue, purple, or violet flowers, which are bell-, funnel-, or star-shaped, and borne singly on long stalks. The narrowly elliptic to lance-shaped, toothed, rigid, often sharp-edged leaves are produced in tufts at the tops of woody stems, which can reach 4m (12ft) high. In frost-prone regions, grow in a warm greenhouse in containers or in hanging baskets. In dry, tropical areas, grow in a rock garden or desert garden. Vellozias often appear dead in drought conditions but quickly bear new leaves after watering or rainfall.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) with added peat and sharp sand, in full light. Water sparingly during the growing season; keep almost dry in winter. Outdoors, grow in moderately fertile, sharply drained soil in full sun.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F), or divide, in spring.
- **PESTS AND DISEASES** Trouble free.

*V. elegans*, syn. *Barbacenia elegans*, *Talbotia elegans*. Evergreen perennial with firm, arching stems and narrow, lance-shaped, mid-green leaves, to 21cm (8in) long, with slender points. Pale lilac buds open to solitary, star-shaped, pure white flowers, 3cm (1¼in) across, in spring, †15–20cm (6–8in), ↔ 20cm (8in). South Africa (KwaZulu/Natal). ☼ (min. 16°C/61°F)

▷ **Velour philodendron** see *Philodendron melanochrysum*

## VELTHEIMIA

HYACINTHACEAE/LILIACEAE

Genus of 2 species of bulbous perennials from grassy and rocky hillsides in South Africa. They are grown for their rosettes of thick, wavy leaves, and for their terminal racemes of pendent, spring flowers, similar in form to those of red hot poker (*Kniphofia*). In frost-prone areas, grow in a temperate greenhouse or as houseplants. In warmer areas, grow in a warm, sunny border.

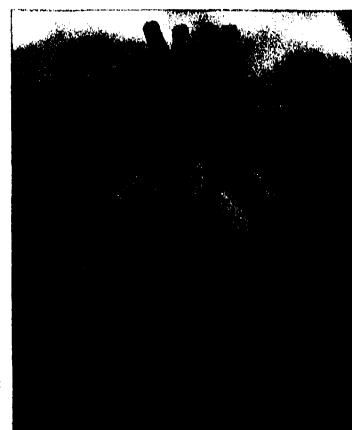
• **HARDINESS** Frost tender.

• **CULTIVATION** Plant in autumn with the neck of each bulb just above the soil surface. Under glass, grow in loam-based potting compost (J1 No.2) with added sharp sand, in full sun. In growth, water moderately and apply a low-nitrogen liquid fertilizer every 2 weeks. Reduce watering as the leaves fade, and keep just moist when dormant. Repot only when congested, to avoid root disturbance. Outdoors, grow in moderately fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in autumn. Remove offsets in late summer.

• **PESTS AND DISEASES** Trouble free.

*V. bracteata* ☼ ♀ syn. *V. capensis* of gardens, *V. undulata*, *V. viridifolia*. Robust, bulbous perennial with basal rosettes of broad, strap-shaped, thick, spreading, wavy, glossy, dark green leaves, to 35cm (14in) long and 10cm (4in) across. In spring, bears dense, terminal racemes of up to 60 pendent, tubular, yellow-spotted, pinkish purple flowers, 4cm (1½in) long, on stout, erect, yellow-spotted purple stems. †45cm (18in), ↔ 30cm (12in). South Africa. ☼ (min. 5–7°C/41–45°F). 'Rosalba' has red-tinted yellow flowers. *V. capensis* ♀ syn. *V. glauca*, *V. roodeae*, *V. viridifolia* of gardens. Bulbous perennial producing basal rosettes of



*Veltheimia bracteata*

erect, narrowly lance-shaped, thick, glaucous, bluish green leaves, to 30cm (12in) long and 4cm (1½in) across, with wavy margins. In spring, stout green stems, flecked with purple, bear terminal racemes of pendent, tubular flowers, 2–3cm (¾–1¼in) long, varying from white with red spots to pink with green or red markings. Similar to *V. bracteata*, but more delicate and less easy to grow. †45cm (18in), ↔ 30cm (12in). South Africa (Western Cape). ☼ (min. 5–7°C/41–45°F)

*V. capensis* of gardens see *V. bracteata*.

*V. glauca* see *V. capensis*.

*V. roodeae* see *V. capensis*.

*V. undulata* see *V. bracteata*.

*V. viridifolia* see *V. bracteata*.

*V. viridifolia* of gardens see *V. capensis*.

▷ **Velvet, White** see *Tradescantia sillamontana*

▷ **Velvet bent** see *Agrostis canina*

▷ **Velvet plant** see *Gynura aurantiaca*

**Purple** see *Gynura aurantiaca*

**Royal** see *Gynura aurantiaca*

**Trailing** see *Ruellia makoyana*

▷ **x Venidioarctotis** see *Arctotis*.

*A. Harlequin* Hybrids

▷ **Venidium** see *Arctotis*

*V. fastuosum* see *A. fastuosa*

▷ **Venus fly trap** see *Dionaea, D. muscipula*

▷ **Venus's looking glass** see *Legousia speculum-veneris*

## VERATRUM

LILIACEAE/MELANTHIACEAE

Genus of about 45 species of imposing, vigorous perennials, with poisonous black rhizomes, from damp meadows and open woodland throughout the N. hemisphere. The alternate, pleated, prominently veined, mid- to dark green leaves are broadly elliptic to ovate at the bases of the stout, erect stems, usually becoming smaller and more lance-shaped further up the stems. Numerous small, star-shaped, white, green, reddish brown, or almost black flowers are borne in summer, followed by spherical seed heads. The flowers are borne in large, terminal panicles, with unisexual (male) and bisexual flowers in the same inflorescence. Grow in a moist, shady site in a mixed or herbaceous border, a peat bed, or in a woodland or wild garden. All parts are highly toxic if ingested. Contact with the foliage may irritate the skin.

• **HARDINESS** Fully hardy.



*Veratrum nigrum*

• **CULTIVATION** Grow in deep, fertile, moist but well-drained soil, with added well-rotted organic matter, in a site in partial shade, or in full sun where the soil does not dry out; *V. viride* tolerates wet soil. Provide shelter from cold, drying winds.

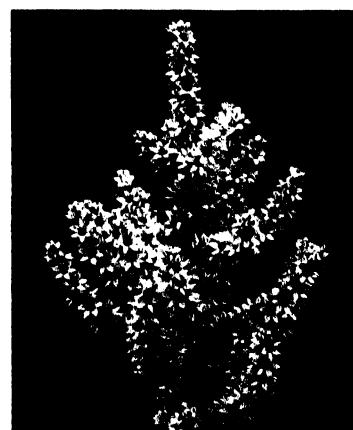
• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe. Divide in autumn or early spring.

• **PESTS AND DISEASES** Susceptible to slug and snail damage.

*V. albosum* ☼ (False hellebore, White hellebore). Rhizomatous perennial with ovate to broadly elliptic, pleated basal leaves, to 30cm (12in) long, and a few stem leaves. All leaves are hairless above, hairy-veined beneath. In early and mid-summer, bears numerous star-shaped, greenish white to white flowers, 1.5–2cm (½–¾in) across, in erect, terminal, freely branched panicles, to 60cm (24in) long. †to 2m (6ft), ↔ 60cm (24in). Europe, N. Africa, N. Asia. \*\*\*

*V. nigrum* ☼ ♀ Rhizomatous perennial producing broadly elliptic, pleated basal leaves, to 35cm (14in) long, and a few stem leaves. All foliage is hairless. In mid- and late summer, numerous star-shaped, unpleasantly scented, reddish brown to almost black flowers, 1.5cm (½in) across, with green-striped backs, are borne in terminal panicles, 45cm (18in) long; the lower branches are often horizontal or slightly pendent. †60–120cm (24–48in), ↔ 60cm (24in). Europe to Russia (Siberia), China, Korea. \*\*\*

*V. viride* (Indian poke). Rhizomatous perennial with ovate to broadly elliptic, pleated basal leaves, to 30cm (12in) long, and a few stem leaves. All leaves are hairless above and hairy beneath. In early and midsummer, numerous star-shaped, green to yellowish green flowers, to 2cm (¾in) across, are produced in terminal panicles, to 60cm (24in) long, with slightly pendent lower branches. †to 2m (6ft), ↔ 60cm (24in). E. North America. \*\*\*



*Veratrum album*

## VERBASCUM syn. CELSIA

Mullein

SCROPHULARIACEAE

Genus of 360 species, most of which are biennials, with a few annuals, perennials, and subshrubs, some semi-evergreen or evergreen. They are found mainly on dry, stony hillsides, wasteland, and in open woodland in Europe, N. Africa, and W. and C. Asia. Usually hairy, sometimes woolly plants, they have large, alternate, simple, entire, scalloped, lobed, or toothed, soft-textured basal leaves, which often form large rosettes, and smaller, often stalkless stem leaves. Most produce one or a few tall, erect stems bearing flowers in dense spikes or racemes, but some may have flowers clustered within the rosette centres. The generally short-stemmed or stemless, outward-facing, saucer-shaped flowers are usually yellow, occasionally purple, red, brownish red, or white; each has a short tube with 5 wide-spreading lobes, and sometimes coloured filament hairs. Individual flowers are short-lived, but they are very numerous and flowering takes place over a long period. Semi-evergreen species are grown as much for their overwintering rosettes of white-woolly leaves, built up during the first year, as for their flowers.

Most cultivated mulleins are hybrids. Rosette-forming and short-lived, they have ovate to oblong, mid- to greyish green leaves, and generally bear large, showy, saucer-shaped flowers, to 4cm (1½in) across, in more or less branched racemes, 30–100cm (12–39in) long.

Hybrids and larger species are good for growing in a large, mixed or herbaceous border or gravel bed, or for naturalizing in a wild or woodland garden. Smaller species, including *V. dumulosum*, *V. pestallozae*, and *V. spinosum*, are suitable for a rock garden or alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in alkaline, poor, well-drained soil in full sun. In fertile soil, they grow larger and need support. Protect alpine house from winter wet. In an alpine house, use a mix of equal parts loam-based potting compost (J1 No.2) and grit.

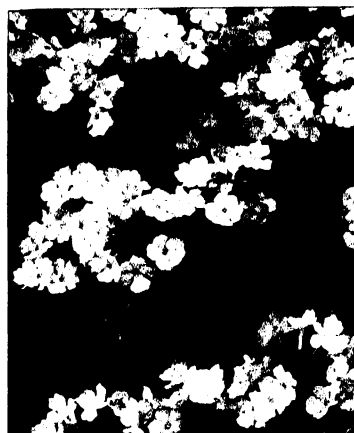
• **PROPAGATION** Sow seed of biennials and perennials in containers in a cold frame in late spring or early summer, biennials sown at 13–18°C (55–64°F) in early spring may flower and die in their first year. Divide perennials in spring, or take root cuttings in winter. Take semi-ripe cuttings of shrubby species in late summer.

• **PESTS AND DISEASES** Powdery mildew, some moth caterpillars, and figwort weevil may be a problem.

*V. acule*, syn. *Celsia aculeis*. Rosette-forming, evergreen perennial producing ovate, rough, grey-green, basal leaves, to 5cm (2in) long, with coarsely toothed margins. In midsummer, bears saucer-shaped yellow flowers, 2cm (¾in) across, either singly or in clusters, from the centres of the rosettes. Best in a dry wall or alpine house. †to 5cm (2in), ↔ to 15cm (6in). Mediterranean. \*\*\*

*V. arcturus*, syn. *Celsia arcturus*.

Rosette-forming, evergreen subshrub or semi-evergreen, woody-based perennial, usually grown as an annual or biennial.



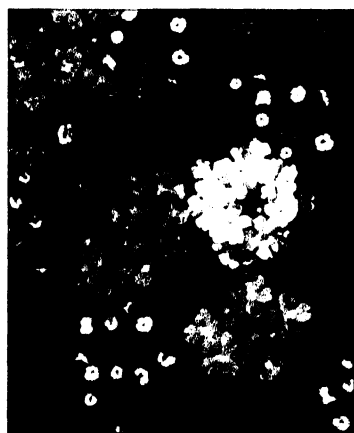
*Verbena x hybrida* 'Peaches and Cream'

or purple-blue flowers, 1–2.5cm (½–1in) across, each usually with a white eye. † to 45cm (18in), ↔ 30–50cm (12–20in). \*  
Cultivars of **Derby Series** are erect and bushy, producing flowers in a full range of colours, biased slightly towards pink and red shades; † to 25cm (10in).

'**Imagination**' is spreading and mound-forming, with pinnatifid leaves and deep violet-blue flowers; good for hanging baskets. It is sometimes listed under *V. speciosa*. Cultivars of **Novalis Series** are erect and bushy, with almost spherical corymbs, 5–8cm (2–3in) across, of white-eyed flowers in rose-pink, deep blue, pinkish red, and scarlet, as well as single-colours in bright scarlet, white, or rose-pink; † to 25cm (10in).

**Novalis Series 'White'** has pure white flowers. '**Peaches and Cream**' is spreading and branching, with pastel orange-pink flowers, ageing to apricot-yellow, then creamy yellow. **Romance Series** cultivars are erect and bushy, producing white-eyed flowers in deep wine red, intense scarlet, carmine-rose-red, and blue-purple, as well as single colours of white, bright scarlet, dark rose, or lavender-pink; † to 25cm (10in). **Sandy Series** cultivars are compact and erect, with flowers in rose-pink, rose-pink with white eyes, magenta, scarlet, or white; colour mixtures are available. '**Showtime**' is bushy and fairly slow-growing, bearing flowers in a wide range of colours.

**V. 'Lawrence Johnston'** Spreading perennial with ovate to oblong, toothed leaves, to 10cm (4in) long. Salverform, cardinal-red flowers, 1cm (½in) across, are borne in large corymbs, 5cm (2in)



*Verbena x hybrida* Romance Series



*Verbena x hybrida* Sandy Series

across, in summer and early autumn. † 45cm (18in), ↔ 60cm (24in). \*\*

**V. 'Mahonettii'** see *V. x maonettii*.  
**V. x maonettii**, syn. *V. alpina* of gardens. *V. 'Mahonetti'* (Italian verbena).

Spreading, prostrate perennial with finely cut, pinnatifid leaves, to 2.5cm (1in) long. Produces short spikes of red-violet flowers, to 1cm (½in) across, with white-margined lobes, in summer. † to 5cm (2in), ↔ to 30cm (12in). \*\*

**V. patagonica** see *V. bonariensis*.

**V. peruviana**, syn. *V. chamaedrifolia*, *V. chamaedrioides*. Fast-growing, mat-forming, semi-evergreen perennial with slender, ascending stems clothed in closely set, oblong-lance-shaped, toothed leaves, 5cm (2in) long, with short stalks. From summer to autumn, bears salverform, rich scarlet flowers, 1cm (½in)



*Verbena peruviana* 'Alba'

across, in flat-topped, corymb-like spikes, 5cm (2in) across. † to 7cm (3in), ↔ 1m (3ft). South America (S. Brazil to Argentina). \*\*  
**'Alba'** produces white flowers.

**V. rigida** syn. *V. venosa*. Erect to spreading, hairy, tuberous perennial, grown as an annual, with stalkless, oblong, toothed, rough leaves, to 8cm (3in) long. In summer, bears salverform, fragrant, bright purple or magenta flowers, 5mm (¼in) across, in lax corymbs, to 5cm (2in) across, gradually lengthening and becoming spike-like with age. † 45–60cm (18–24in), ↔ to 40cm (16in). South America (S. Brazil, Argentina). \*\*  
**'Lilacina'** has violet-blue flowers. '**Polaris**' forms dense clumps, and has rigid leaves to 7cm (3in) long; from early summer to early



*Verbena* 'Sissinghurst'

autumn, bears silver-blue flowers, 8mm (⅜in) across, in corymbs 5cm (2in) across; † to 60cm (24in), ↔ 30cm (12in).

**V. 'Saint Paul'** see *V. 'Sissinghurst'*.

**V. 'Silver Anne'** Upright, spreading perennial with ovate-oblong, shallowly cut, rough, stalked leaves, 10cm (4in) long. Corymbs, 4cm (1½in) across, of salverform, sweetly scented flowers, 1cm (½in) across, bright pink at first and fading to silver-white with age, open in succession in summer and autumn, giving a multi-toned effect. † to 30cm (12in), ↔ 60cm (24in). \*\*

**V. 'Sissinghurst'** syn. *V. 'Saint Paul'*. Mat-forming perennial with ovate, pinnatifid, dark green leaves, to 3cm (1¼in) long. Salverform, magenta-pink flowers, 1cm (½in) across, are borne in corymbs, 2.5cm (1in) across, from late spring to autumn, but most prolifically in summer. † to 20cm (8in), ↔ to 1m (3ft). \*\*

**V. tenuisecta**. (Moss verbena). Usually prostrate to decumbent, sometimes erect, aromatic annual or perennial with 3-lobed leaves, to 3.5cm (1½in) long, the lobes pinnatifid, with linear, entire or toothed segments. Salverform, lilac, mauve, purple, white, or blue flowers are borne in corymb-like spikes, to 5cm (2in) across, from summer to autumn. † to 50cm (20in), ↔ to 23cm (9in). S. South America. \*\*\*

**V. venosa** see *V. rigida*.

#### Verbena

**Italian** see *Verbena x maonettii*

**Lemon** see *Aloysia triphylla*

**Moss** see *Verbena tenuisecta*

## VERNONIA

*Ironweed*

ASTERACEAE/COMPOSITAE

Genus of about 1,000 species of annuals, perennials, climbers, subshrubs, shrubs, and trees from mainly tropical and subtropical habitats, ranging from moist meadows to dry woodland. Most occur in South America, some in Africa, Asia, Australasia, and North America. Species from more northerly habitats are usually annuals or herbaceous perennials; those from the tropics are mainly woody. Only the perennials are cultivated. They have upright stems bearing alternate, simple, entire or toothed, stalkless leaves, and flat, corymb-like cymes of tubular, purple or reddish pink, rarely white flowerheads, becoming rust-coloured with age. Grow in a wild garden or mixed border.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in any light, moderately fertile, moist soil in full sun or partial shade. Dead-head regularly.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Divide in spring or autumn.

• **PESTS AND DISEASES** Slugs may be a problem.

**V. noveboracensis**. Upright herbaceous perennial with branching stems bearing lance-shaped, entire to toothed leaves, to 20cm (8in) long. From late summer to mid-autumn, bears loose, flat, corymb-like cymes of tubular, red-purple or white florets, in fluffy heads, 1cm (½in) across. † to 2m (6ft), ↔ 60cm (24in). USA (Massachusetts to Mississippi and Georgia). \*\*\*

## VERONICA

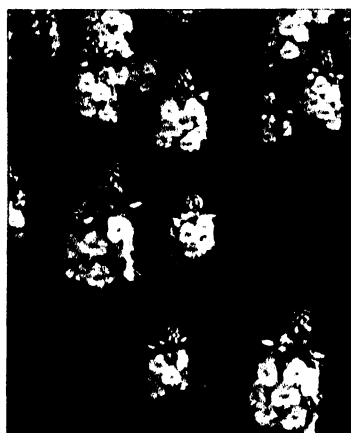
Speedwell

SCROPHULARIACEAE

Genus of about 250 species of annuals, perennials (including some marginal aquatics), and mostly deciduous subshrubs, some of them rhizomatous. They occur in swamps and moist meadows and grassland, or in open woodland to dry, sunny meadows, rocky hills, and scree, mainly in Europe. The linear to broadly lance-shaped, or oblong to rounded, entire or toothed, stalkless or short-stalked leaves are usually produced in opposite pairs, although those on the flowering stems can be alternate or whorled. Small, outward-facing flowers, 5–15mm (¼–½in) across, in purple, blue, pink, or white, are borne in long, axillary or terminal racemes or spikes, or singly from the leaf axils, from spring to autumn. The petals form a short tube, with 4 or 5 spreading, often unequally sized lobes; each flower has only 2 functional stamens. Good for a mixed or herbaceous border. Use cushion- or mat-forming veronics in a rock garden; grow less vigorous species and cultivars in a trough or in an alpine house.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Outdoors, grow alpines and rock garden veronics in poor to moderately fertile, well-drained soil in full sun. Protect species with felted leaves from winter wet. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit. Grow border veronics in loamy, moderately fertile, moist but well-drained soil in full sun or partial

*Veronica gentianoides*

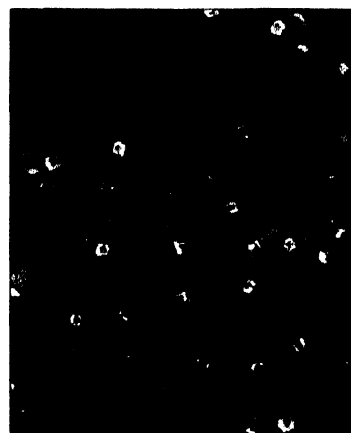
shade. Grow *V. beccabunga* in wet soil, or in water to 12cm (5in) deep, in full sun; see also pp.52–53.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide perennials in autumn or spring; for *V. beccabunga*, divide, or take stem-tip cuttings, in summer. Take softwood cuttings of subshrubs in spring.

• **PESTS AND DISEASES** May suffer from downy mildew, powdery mildew, and leaf spot.

*V. austriaca* subsp. *teucrium*, syn. *V. teucrium*. Mat-forming perennial with ovate to oblong, scalloped or deeply toothed, hairy, greyish green leaves, to 7cm (3in) long. Upright stems bear abundant erect, terminal, spike-like racemes, 10–15cm (4–6in) long, of saucer-shaped, deep bright blue flowers over a long period in summer. ‡ to 90cm (36in), ↔ to 60cm (24in). N. temperate Europe. \*\*\*. 'Kapitän' ■ has gentian-blue flowers: ‡ to 30cm (12in), ↔ to 40cm (16in). 'Shirley Blue' ♀ bears erect racemes, 6–10cm (2½–4in) long, of vivid blue flowers from late spring to midsummer; ‡ to 25cm (10in), ↔ 30cm (12in).

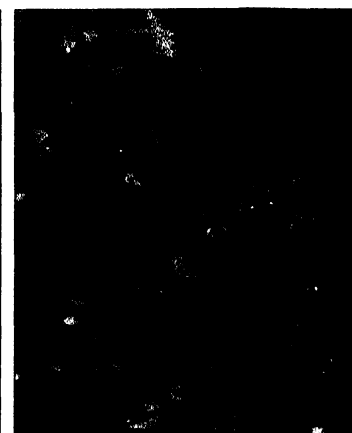
*V. beccabunga* ■ (Brooklime). Usually evergreen, marginal aquatic perennial with creeping, branching, hollow, fleshy stems, rooting at the nodes, and ovate to rounded, entire or toothed, fleshy mid-green leaves, 1–4cm (½–1½in) long. Saucer-shaped, white-centred blue flowers are borne in loose, erect, axillary racemes, to 12cm (5in) long, from late spring to late summer. ‡ 10cm (4in), ↔ indefinite. Eurasia. \*\*\*

*Veronica austriaca* subsp. *teucrium* 'Kapitän'*Veronica beccabunga**Veronica longifolia**Veronica peduncularis*

*V. chamaedrys* (Germander speedwell). Spreading, slender-stemmed, branching, rhizomatous perennial with stalkless, ovate to lance-shaped, toothed, bright green leaves, to 4cm (1½in) long. From summer to autumn, bears saucer-shaped, white-eyed, bright blue flowers in erect, slender, paired, axillary racemes, 8–15cm (3–6in) long. ‡ 30–50cm (12–20in), ↔ 50–80cm (20–32in). Europe, Caucasus, Russia (Siberia). \*\*\*  
*V. cinerea* ♀ Woody-based, white-felted, subshrubby, evergreen perennial with prostrate, branching stems and linear, entire, mid-green, densely silvery white-woolly leaves, to 1.5cm (½in) long. In early summer, bears abundant terminal racemes, 2–3cm (¾–1¼in) long, of saucer-shaped, deep blue or blue-purple flowers. ‡ to 15cm (6in), ↔ to 30cm (12in). E. Mediterranean, Turkey. \*\*\*

*V. fruticans*, syn. *V. saxatilis* (Rock speedwell). Mat-forming, woody-based, branching perennial or subshrub with obovate to narrowly oblong, entire or slightly scalloped, mid-green leaves, to 2cm (¾in) long. In summer, bears erect, terminal racemes, to 5cm (2in) long, of saucer-shaped, deep blue flowers with dark red eyes. ‡ to 8cm (3in), ↔ to 20cm (8in). N.W. Europe, mountains of Spain to C. Europe, Balkans. \*\*\*

*V. gentianoides* ■ ♀ Mat-forming perennial with basal rosettes of broadly lance-shaped, entire or slightly scalloped, thick, dark green leaves, to 8cm (3in) long. In early summer, bears shallowly cup-shaped, pale blue, rarely darker blue or white flowers in erect, terminal racemes, 8–25cm (3–10in) long.

*Veronica prostrata**Veronica prostrata* 'Trehane'

‡ to 45cm (18in). Ukraine (Crimea), N. and C. Turkey, Caucasus. \*\*\*  
'Variegata' has white-variegated leaves and blue flowers.

*V. incana* see *V. spicata* subsp. *incana*.  
*V. kellereri* see *V. spicata*.

*V. longifolia* ■ Variable, upright perennial with lance-shaped to linear, pointed, toothed, mid-green leaves, to 12cm (5in) long, either opposite or in whorls of 3, usually on unbranched stems. In late summer and early autumn, bears tubular, 5-lobed, lilac-blue flowers in dense, erect, terminal racemes, to 25cm (10in) long. ‡ to 1.2m (4ft), ↔ 30cm (12in). N. and C. Europe to Russia (Siberia), E. Asia. \*\*\*  
'Blauriesin', syn. 'Foerster's Blue', is bushy, with bright, deep blue flowers; ‡ to 75cm (30in). 'Foerster's Blue' see 'Blauriesin'.

*V. pectinata*. Dense, mat-forming, evergreen, subshrubby perennial with elliptic to oblong, deeply toothed, grey leaves, to 2.5cm (1in) long. Saucer-shaped, white-eyed, deep blue flowers are borne in short, erect, axillary racemes, 6–25cm (2½–10in) long, in summer. ‡ to 8cm (3in), ↔ to 20cm (8in). E. Balkans, Turkey. \*\*\*  
'Rosea' has pink flowers.

*V. peduncularis* ■ Mat-forming perennial with branching rhizomes and prostrate to ascending, freely branched stems bearing ovate to lance-shaped, toothed, glossy, purple-tinged, mid-green leaves, 0.5–2.5cm (¼–1in) long. Produces abundant erect, axillary racemes, 4–8cm (1½–3in) long, of saucer-shaped, deep blue flowers, with small white eyes, over a long period from early spring to summer. ‡ to 10cm

*Veronica spicata* subsp. *incana*



Veronica spicata 'Rotfuchs'

(4in), ↔ 60cm (24in) or more. Turkey, Caucasus, Ukraine. \*\*\*. **'Georgia Blue'**, syn. **'Oxford Blue'**, is vigorous, very free-flowering, and easily grown. **'Oxford Blue'** see **'Georgia Blue'**. **V. perfoliata** see *Parahebe perfoliata*. **V. prostrata** [♀] syn. *V. rupestris* (Prostrate speedwell). Mat-forming perennial with short, branched, decumbent stems bearing linear-oblong to ovate, toothed, bright to mid-green leaves, 0.8–2.5cm (⅜–1in) long. In early summer, produces erect, terminal, spike-like racemes, 2–4cm (¾–1½in) long, of saucer-shaped, pale to deep blue flowers. ↑ to 15cm (6in), ↔ to 40cm (16in). Europe. \*\*\*. **'Loddon Blue'** bears bright blue flowers; ↑ to 20cm (8in). **'Mrs. Holt'** produces pale pink flowers. **'Trehane'** [♂] has yellow-green or golden leaves and deep blue flowers. **V. rupestris** see *V. prostrata*. **V. saxatilis** see *V. fruticans*. **V. spicata**, syn. *V. kellereri*. Mat-forming perennial with decumbent, simple, rooting stems, and ascending to erect, flowering stems bearing oblong-lance-shaped to linear, toothed, hairy leaves, to 8cm (3in) long. Star-shaped, bright blue flowers, with long purple stamens, open in erect, dense, pyramidal, terminal racemes, to 30cm (12in) long, from early to late summer. ↑ 30–60cm (12–24in), ↔ 45cm (18in). Europe to Turkey, C. and E. Asia. \*\*\*. **'Barcarolle'** freely bears pink flowers; ↑ 30cm (12in). **'Heidekind'** has silver-grey leaves and short spikes of raspberry-pink flowers; ↑ 30cm (12in). **'Icicle'**, syn. **'White Icicle'**, has white flowers; ↑ 60cm (24in). **subsp. incana** [♂] syn. *V. incana* (Silver speedwell), is entirely silver-hairy, and has purple-blue flowers; ↑ 30cm (12in); Russia. **subsp. incana** **'Saraband'**, syn. *V. incana* **'Saraband'**, has violet-blue flowers above densely hairy, silver-grey foliage. **subsp. incana** **'Wendy'** ♀ syn. *V. incana* **'Wendy'**, has a looser habit, with grey leaves and bright blue flowers; ↑ 45cm (18in). **'Red Fox'** see **'Rotfuchs'**. **'Romiley Purple'** is

bushy, with lateral racemes of dark violet flowers; ↑ 45cm (18in). **'Rotfuchs'** [♂] syn. **'Red Fox'**, has very deep pink flowers; ↑ 30cm (12in). **'White Icicle'** see **'Icicle'**.

**V. teucrium** see *V. austriaca* subsp. *teucrium*.

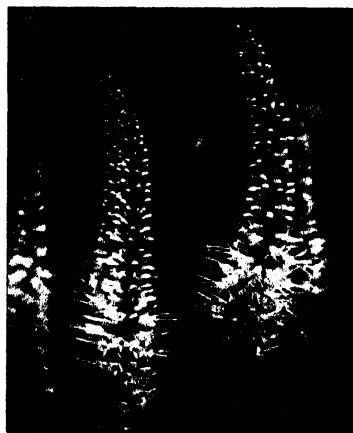
**V. virginica** see *Veronicastrum virginicum*.

## VERONICASTRUM

SCROPHULARIACEAE

Genus of 2 species of erect perennials, one from Siberia, one from North America, occurring in open woodland, scrub, prairies, meadows, and grassy mountain sites. Imposing in stature, they have whorls of 3–7 more or less horizontal, simple, toothed leaves. They bear veronica-like racemes of salverform, white to pale pink or bluish purple flowers, terminally and from the upper leaf axils; each flower has a long, slender tube and 4 or 5 short lobes. Use to add height to a mixed summer border.

• **HARDINESS** Fully hardy.  
• **CULTIVATION** Grow in moderately fertile, humus-rich, moist soil in full sun or partial shade.



Veronicastrum virginicum f. album

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Divide in spring.

• **PESTS AND DISEASES** Prone to downy mildew, powdery mildew, and leaf spot.

**V. virginicum**, syn. *Veronica virginica* (Culver's root). Erect, usually hairless perennial with unbranched stems bearing lance-shaped to inversely lance-shaped, pointed, toothed, dark green leaves, to 15cm (6in) long, in whorls of 3–7. From midsummer to early autumn, bears tubular, white to pink or bluish purple flowers, 7mm (¼in) long, with protruding stamens, in slender, dense, terminal and axillary racemes. ↑ to 2m (6ft), ↔ 45cm (18in). North America (Ontario to Texas). \*\*\*. **f. album** [♂] has white flowers.

## VERTICORDIA

MYRTACEAE

Genus of about 50 species of heath-like, evergreen shrubs from usually sandy or gravel heathland in Australia. They are grown for their leafy racemes or corymbs of showy flowers, produced terminally or from the upper leaf axils; each flower has 5 feathery, often coloured sepals and 5 entire or toothed petals. The leathery leaves are small, simple, and usually borne in opposite pairs. Where winter temperatures fall below 7°C (45°F), grow in a temperate greenhouse. In warmer, dry climates, use in a border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in lime-free (ericaceous) potting compost with added sharp sand, in full light. In growth, water moderately and apply a low-phosphate, low-nitrogen fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, neutral to acid, sharply drained soil in full sun. Pruning group 8 or 9; may need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Red spider mites may be a problem under glass.

**V. grandis** (Scarlet featherflower). Usually erect, sparsely branched, open shrub with crowded, rounded, semi-glossy, greyish to deep green leaves, 0.8–1.5cm (⅜–½in) long. From spring to summer, bears deep bright scarlet to pink flowers, 2–2.5cm (¾–1in) across, in dense corymbs, to 12cm (5in) across,



Verticordia plumosa

either terminally or from the upper leaf axils. ↑ 1–2m (3–6ft). W. Australia. ♀ (min. 7°C/45°F).

**V. plumosa** [♂] (Featherflower). Erect, bushy shrub with crowded, linear, cylindrical, grey-green leaves, 1cm (⅜in) long. Terminal corymbs, 3cm (1¼in) across, of many pink or white flowers, to 9mm (⅜in) wide, are borne from spring to autumn. ↑ 1 to 90cm (36in). Granite outcrops in S.W. Australia. ♀ (min. 7°C/45°F).

## VESTIA

SOLANACEAE

Genus of one species of evergreen shrub found in woodland in Chile, cultivated for its attractive but malodorous foliage and flowers. The leaves are alternate, obovate to elliptic, and glossy, dark green. The pendent, pale yellow flowers are borne singly or in clusters. Best grown in a sheltered border or against a sunny wall in frost-prone areas. Where temperatures fall much below -5°C (23°F), grow in a cool greenhouse.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light, shaded from hot sun. In growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in any well-drained soil in full sun. In frost-prone areas, shelter from cold, drying winds in winter. Pruning group 8.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn, or take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Trouble free.

**V. foetida** [♀] syn. *V. lycioides*. Erect, evergreen shrub with glossy, dark green leaves, to 5cm (2in) long, unpleasantly scented when crushed. Pendent, tubular, pale yellow flowers, to 3cm (1¼in) long, with protruding stamens, are produced singly or in clusters from the leaf axils from mid-spring to midsummer. ↑ 2m (6ft), ↔ 1.5m (5ft). Chile. \*\*\*

**V. lycioides** see *V. foetida*.

▷ **Vetch** see *Hippocrepis*

**Bitter** see *Lathyrus linifolius* var. *montanus*

**Horseshoe** see *Hippocrepis*

**Kidney** see *Anthyllis vulneraria*

▷ **Vetchling**,

**Common** see *Lathyrus pratensis*

**Meadow** see *Lathyrus pratensis*

**Spring** see *Lathyrus vernus*



Vestia foetida

## VIBURNUM

## CAPRIFOLIACEAE

Genus of 150 or more species of evergreen, semi-evergreen, and deciduous shrubs, sometimes trees, from thickets and woodland, mainly in N. temperate regions, but extending to S.E. Asia and South America. They are cultivated for their foliage, flowers, and fruits. The mostly lance-shaped to rounded, entire or toothed, sometimes lobed leaves are arranged in opposite pairs, occasionally in whorls of 3; they are often rough and prominently veined, and, in most deciduous species, colour attractively in autumn. The sometimes fragrant, white or cream, pink-flushed, or wholly pink flowers are salverform to tubular, or tubular-trumpet-shaped, each with 5 usually spreading lobes. They are borne in terminal or axillary panicles, clusters, corymbs, or cymes, which are often spherical or domed. Some species have flowers in flattened heads, similar to those of "lacecap" hydrangeas, in which the small, fertile central flowers are surrounded by larger, flat or saucer-shaped, sterile ray-florets. The ornamental fruits are usually spherical or ovoid, and may be red, blue, or black.

Viburnums are suitable for a shrub border or woodland garden. Grow *V. macrocephalum* against a wall. Many show self-incompatibility; fruiting is often best if several seedlings of the same species are planted together so that cross-pollination can occur. The fruits of viburnums may cause mild stomach upset if ingested.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in any moderately fertile, moist but well-drained soil in full sun or partial shade. *V. lantanoides* needs lime-free soil. In frost-prone regions, shelter evergreen viburnums from cold, drying winds. Pruning group 1 for evergreens; group 8 for deciduous viburnums. *V. tinus* and most deciduous viburnums tolerate hard pruning.
- **PROPAGATION** Sow seed in containers in a cold frame, or in a seed bed, in autumn. Take greenwood cuttings of deciduous viburnums, and semi-ripe cuttings of evergreens, in summer.
- **PESTS AND DISEASES** Aphids and viburnum beetles may be a problem, particularly on *V. lantana*, *V. opulus*, and *V. tinus*. *V. tinus* is susceptible to whiteflies. All are prone to honey fungus and leaf spot.

*V. acerifolium* ■ (Dockmackie, Possum-haw). Upright, deciduous shrub with maple-like, 3-lobed, dark green leaves, to 12cm (5in) long, turning orange, red, and purple in autumn. In early summer, bears small, tubular white flowers, 5mm (¼in) across, in long-stalked cymes, 8cm (3in) across, at the shoot-tips. Ovoid red fruit, 8mm (⅓in) long, ripen to purple-black. † 1–2m (3–6ft), ↔ 1.2m (4ft). E. North America. \*\*\*

*V. alnifolium* see *V. lantanoides*.

*V. besulifolium*. Upright, deciduous shrub with arching branches and ovate, tapered, toothed, glossy, dark green leaves, to 10cm (4in) long. In early summer, bears small, salverform white flowers, 5mm (¼in) across, in domed terminal corymbs, to 10cm (4in) across;

they are followed by pendent clusters of spherical, bright red fruit, 6mm (¼in) across. †↔ 3m (10ft). W. and C. China. \*\*\*

*V. x bodnantense* (*V. farreri* x *V. grandiflorum*). Upright, deciduous shrub with ovate to oblong, toothed, dark green leaves, to 10cm (4in) long, bronze when young. Heavily scented, tubular, rich rose-red to white-pink flowers, to 1cm (½in) across, are borne in dense, terminal and axillary clusters, to 7cm (3in) across, on bare wood, over a long period from late autumn to spring. Virtually sterile, producing a few small, spherical, blue-black or purple fruit, 3–6mm (¼–¼in) across. † 3m (10ft), ↔ 2m (6ft). Garden origin. \*\*\*

Mainly grown as the following cultivars. 'Charles Lamont' ♀ bears bright pink flowers. 'Dawn' ■ ♀ has dark pink flowers, ageing to white, strongly flushed pink. 'Deben' ♀ bears white flowers, faintly pink-flushed in winter.

*V. x burkwoodii* (*V. carlesii* x *V. utile*). Open, rounded, bushy, evergreen shrub producing ovate, sparsely toothed, glossy, dark green leaves, to 10cm (4in) long. Tubular, fragrant white flowers, 1cm (½in) across, in domed, terminal corymbs, to 9cm (3½in) across, open from pink buds in mid- and late spring; they are followed by flattened, ellipsoid red fruit, 1cm (½in) long, ripening to black in autumn. †↔ 2.5m (8ft). Garden origin. \*\*\*

'Anne Russell' ■ ♀ is compact and deciduous, with fragrant flowers; † 2m (6ft), ↔ 1.5m (5ft). 'Chenaultii' is compact, with pale pink flowers and leaves that turn bronze in autumn; †↔ 1.5m (5ft). 'Fulbrook' ♀ syn. *V. 'Fulbrook'*, has very fragrant white flowers. 'Park Farm Hybrid' ♀ produces dark pink flowers, fading to white, in broad corymbs, to 12cm (5in) across; some leaves turn orange and red in autumn.

*V. x carlcephalum* ■ ♀ (*V. carlesii* x *V. macrocephalum*). Rounded, bushy, deciduous shrub with broadly heart-shaped, irregularly toothed, dark green leaves, 12cm (5in) long, turning red in autumn. Tubular-trumpet-shaped, fragrant white flowers, 1.5cm (½in) across, in domed, terminal corymbs, 15cm (6in) across, open from pink buds in late spring. †↔ 3m (10ft). Garden origin. \*\*\*

*V. carlesii* ■ Dense, bushy, deciduous shrub with ovate, irregularly toothed, dark green leaves, to 10cm (4in) long, often turning red in autumn. In mid-



*Viburnum x bodnantense* 'Dawn'

and late spring, pink buds open to tubular, very fragrant, white or pink-flushed white flowers, 1cm (½in) across, produced in domed, terminal corymbs, to 8cm (3in) across; they are followed by ellipsoid red fruit, 6mm (¼in) long, ripening to black. †↔ 2m (6ft). Korea, Japan (Tsushima Island). \*\*\*

'Aurora' ♀ has red buds, opening to pink flowers. 'Diana' has bronze young leaves, and red buds opening to purple-pink flowers that fade to white.

*V. 'Chesapeake'* ■ Compact, dense mound-forming, semi-evergreen shrub with ovate, slightly wavy-margined, leathery, glossy, dark green leaves, to 10cm (4in) long. Pink buds open to salverform, fragrant white flowers, 1cm (½in) across, borne in domed, terminal corymbs, 9cm (3½in) across, in mid- and late spring. It is virtually sterile, bearing no fruit. † 2m (6ft), ↔ 3m (10ft). \*\*\*

*V. cinnamomifolium* ♀ Rounded, open, evergreen shrub, sometimes a small tree, with elliptic, tapered, sparsely toothed, conspicuously 3-veined, dark green leaves, dark green above, paler beneath, to 15cm (6in) long. In early summer, produces tiny, tubular white flowers, 4mm (¼in) across, in loose, terminal cymes, 12–17cm (5–7in) across. Flowers are followed by ovoid, glossy, blue-black fruit, 4mm (¼in) long. †↔ 5m (15ft), to 6m (20ft) high as a tree. W. China. \*\*

*V. davidii* ■ ♀ Dome-shaped, compact, evergreen shrub with oval, indistinctly toothed, 3-veined, dark green leaves, to 15cm (6in) long. Tiny, tubular white flowers, 4mm (¼in) across, are borne in



*Viburnum x carlcephalum*

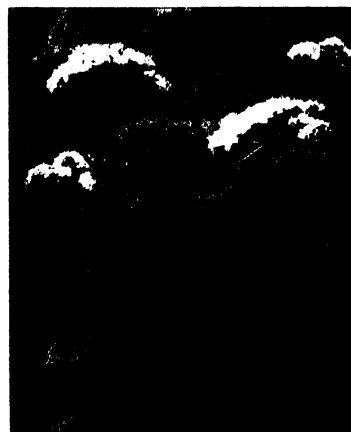
flattened, terminal cymes, 7cm (3in) across, in late spring; they are followed by ovoid, metallic-blue fruit, 6mm (¼in) long. Both male and female plants are needed to produce fruit. †↔ 1–1.5m (3–5ft). W. China. \*\*\*

*V. dentatum* ■ (Southern arrow-wood). Upright, deciduous shrub with arching branches and ovate to rounded, coarsely toothed, dark green leaves, to 11cm (4½in) long, turning yellow or red in autumn. Tiny, tubular white flowers, 4mm (¼in) across, are borne in flattened, terminal corymbs, 10cm (4in) across, in late spring and early summer; they are followed by ovoid, blue-black fruit, 8mm (⅓in) long. †↔ 3m (10ft). E. North America. \*\*\*

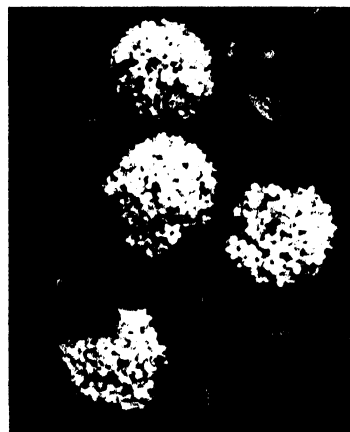
*V. dilatatum*. Upright, deciduous shrub producing broadly ovate to rounded or obovate, coarsely toothed, dark green leaves, to 12cm (5in) long, turning bronze to red in autumn. Small, salverform white flowers, 5mm (¼in) across, are borne in domed, terminal corymbs, to 12cm (5in) across, in late spring and early summer. The flowers are followed by ovoid, bright red fruit, 8mm (⅓in) long. † 3m (10ft), ↔ 2m (6ft). China, Japan. \*\*\*

'Catskill' ■ is compact, with leaves turning yellow, orange, and red in autumn, and bears dark red fruit; † 1.5m (5ft), ↔ 2.5m (8ft). 'Erie' is mound-forming, bearing large cymes, to 15cm (6in) across, and a profusion of fruit, turning pink in winter; † 2m (6ft), ↔ 3m (10ft). 'Xanthocarpum' bears yellow fruit.

*V. 'Eskimo'*. Mound-forming, compact, semi-evergreen shrub producing ovate, leathery, glossy, dark green leaves, to



*Viburnum acerifolium*



*Viburnum x burkwoodii* 'Anne Russell'



*Viburnum carlesii*



*Viburnum* 'Chesapeake'

10cm (4in) long. In mid- and late spring, pink-tinged cream buds open to tubular, pure white flowers, 1cm (½in) across, borne in dense, terminal, almost spherical corymbs, 10cm (4in) across.  $\pm$  1.5m (5ft). \*\*\*

*V. farreri* [♀] syn. *V. fragrans*. Erect, deciduous shrub with oval, toothed, dark green leaves, to 10cm (4in) long, bronze when young, turning red-purple in autumn. Tubular, fragrant, white or pink-tinged white flowers, 1cm (½in) long, are borne in dense, terminal and lateral clusters, to 5cm (2in) across, in late autumn and, in mild weather, in winter and early spring on bare stems; they are followed by spherical, bright red fruit, 5mm (¼in) long.  $\pm$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). N. China. \*\*\*.

'Album' see 'Candidissimum'.

'Candidissimum', syn. 'Album', has leaves that are pale green when young, and bears white flowers followed by pale yellow fruit. 'Nanum' forms a dense mound, but is not free-flowering;  $\pm$  75cm (30in),  $\leftrightarrow$  1m (3ft).

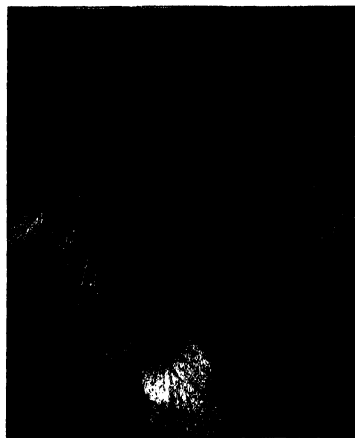
*V. foetens*. Upright, deciduous shrub with oblong, dark green leaves, to 10cm (4in) long. From late autumn to early spring, produces tubular, fragrant, white or pink-tinged white flowers, 5cm (2in) long, in flattened, terminal clusters, to 5cm (2in) across, on bare stems; they are followed by ovoid red fruit, to 1cm (½in) long, ripening to black.  $\pm$  2m (6ft). Himalayas. \*\*\*

*V. fragrans* see *V. farreri*.

*V. 'Fulbrook'* see *V. x burkwoodii* 'Fulbrook'.

*V. x globosum* 'Jermyns Globe' [♂]

Dense, rounded, evergreen shrub with

*Viburnum dentatum*

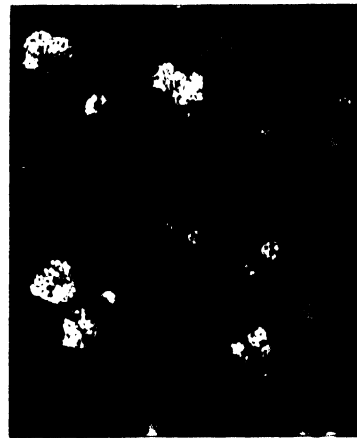
narrowly elliptic, tapered, dark green leaves, to 9cm (4½in) long, 3-veined at the bases. Masses of small, tubular white flowers, to 12mm (½in) across, are borne in flattened, terminal corymbs, 6cm (2½in) across, in late spring; they are followed by ovoid, metallic-blue fruit, 6mm (¼in) long.  $\pm$  2.5m (8ft),  $\leftrightarrow$  3m (10ft). \*\*\*

*V. grandiflorum*. Open, upright, deciduous shrub with stout shoots and elliptic, finely and irregularly toothed, dark green leaves, to 10cm (4in) long, turning dark purple in autumn. From winter to early spring, tubular, fragrant, pink-flushed white flowers, to 2cm (¾in) across, are produced on bare stems in flattened, terminal clusters, to 8cm (3in) across; they are followed by ovoid, black-purple fruit, to 2cm (¾in) long.  $\pm$  2m (6ft). Himalayas, W. China. \*\*\*.

'Snow White' has white flowers, flushed pink on the backs of the lobes, opening from dark pink buds.

*V. harryanum*. Upright, bushy, evergreen shrub with rounded, dark green leaves, to 2.5cm (1in) long, often in whorls of 3. Tiny, tubular white flowers, 3mm (⅛in) across, are produced in flattened, terminal, umbel-like cymes, 4cm (1½in) across, in late spring, followed by ovoid, glossy black fruit, 4mm (⅛in) long.  $\pm$  3m (10ft),  $\leftrightarrow$  2.5m (8ft). W. China. \*\*\*

*V. japonicum*. Rounded, evergreen shrub with stout shoots and ovate to rounded, leathery, sparsely toothed, glossy, dark green leaves, to 15cm (6in) long. Small, tubular, fragrant white flowers, 1cm (½in) across, in spherical cymes, to 10cm (4in) across, are borne

*Viburnum farreri*

in early summer, followed by ovoid, bright red fruit, 8mm (⅛in) long, which last into winter.  $\pm$  2m (6ft),  $\leftrightarrow$  2.5m (8ft). Japan. \*\*\*

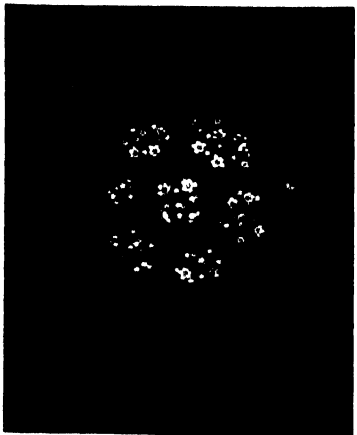
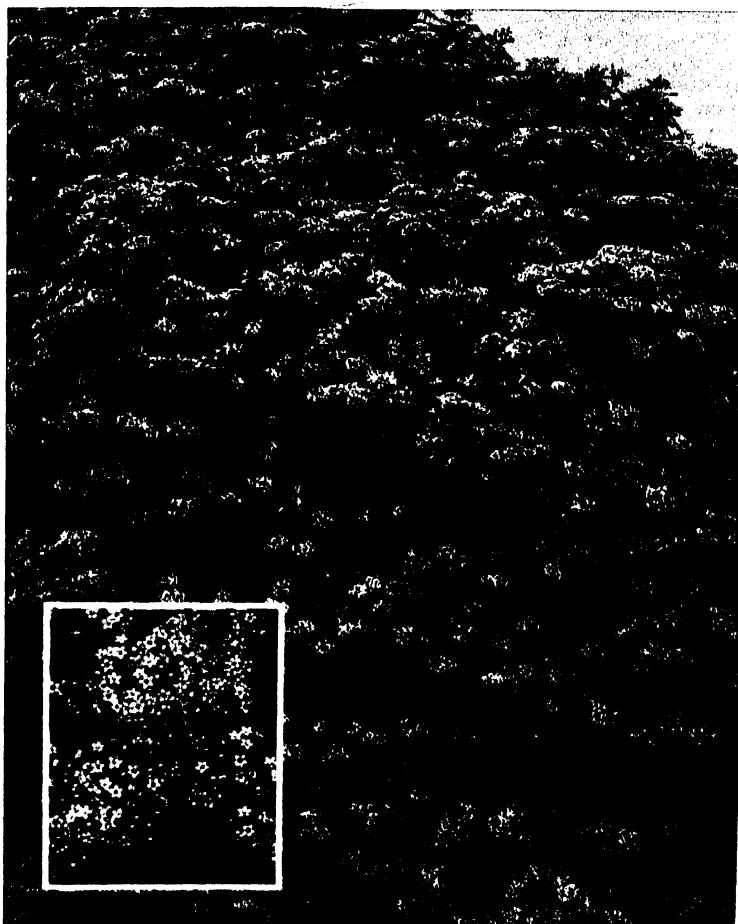
*V. x juddii* [♀] (*V. bitchiuense* x *V. carlesii*). Rounded, bushy, deciduous shrub with oval, dark green leaves, to 6cm (2½in) long, sometimes turning red in autumn. Small, salverform, fragrant, pink-tinged white flowers, 6mm (¼in) across, in almost spherical corymbs, to 9cm (3½in) across, open from pink buds in mid- and late spring.  $\pm$  1.2m (4ft),  $\leftrightarrow$  1.5m (5ft). Garden origin. \*\*\*

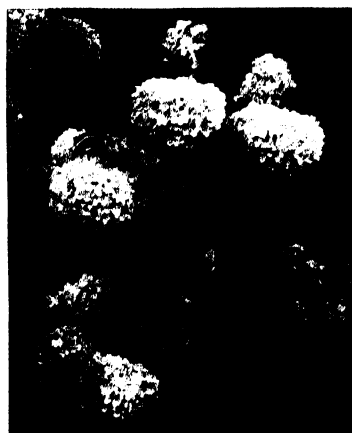
*V. lantana* (Wayfaring tree). Vigorous, upright, deciduous shrub with broadly ovate, finely toothed, grey-green leaves, to 12cm (5in) long, often turning red in autumn. Small, tubular white flowers,

*Viburnum x juddii*

6mm (¼in) across, in loosely domed cymes, to 10cm (4in) across, are borne in late spring and early summer; they are followed by ovoid-oblong red fruit, 8mm (⅛in) long, ripening to black.  $\pm$  5m (15ft),  $\leftrightarrow$  4m (12ft). Europe, N. Africa, S.W. Asia. \*\*\*.

'Mohican' is compact, with dark green foliage and orange-red fruit;  $\pm$  2.5m (8ft). *V. lantanoides*, syn. *V. alnifolium* (Hobble bush). Spreading, deciduous shrub, the outer branches prostrate and rooting in the soil. Broadly ovate to rounded, irregularly toothed, dark green leaves, to 20cm (8in) long, turn yellow to red or purple in autumn. In late spring and early summer, bears lacecap-like, terminal cymes, to 12cm (5in) wide, of tubular, white, fertile central flowers 3-4mm (⅛in) across, surrounded by

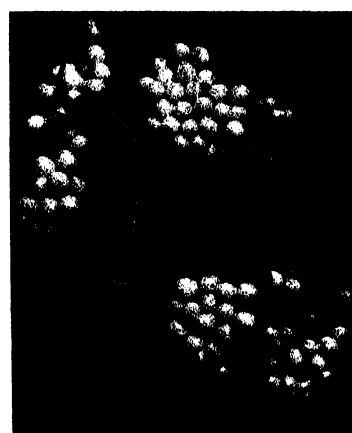
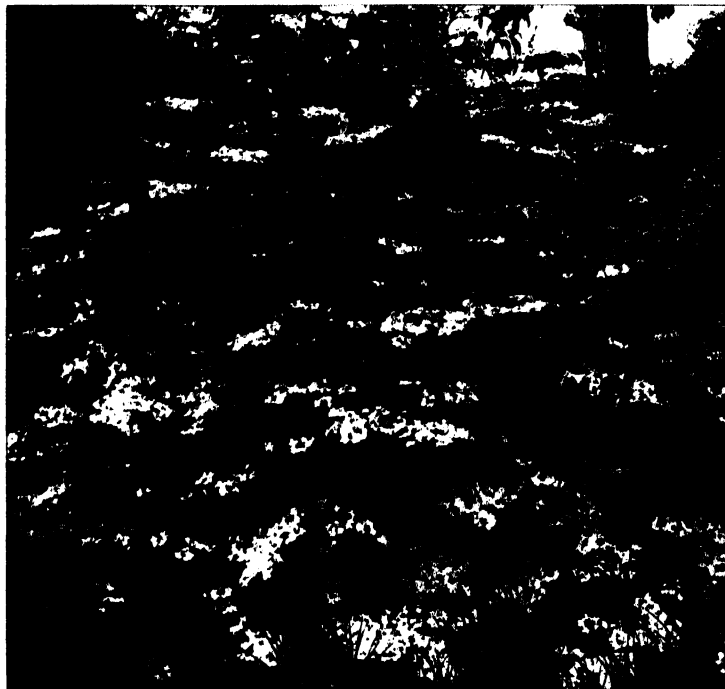
*Viburnum davidii**Viburnum dilatatum* 'Catskill'*Viburnum x globosum* 'Jermyns Globe' (inset: flower detail)

*Viburnum macrocephalum**Viburnum opulus* 'Compactum'

saucer-shaped, white, sterile ray-florets, to 2.5cm (1in) across; they are followed by ovoid red fruit, 8mm ( $\frac{3}{8}$ in) long, ripening to black-purple. Prefers partial shade.  $\pm$  2.5m (8ft),  $\leftrightarrow$  4m (12ft). E. North America. \*\*\*

**V. lentago** ♀ (Sheepberry). Vigorous, upright, deciduous shrub or small tree, producing oval, finely toothed, glossy, dark green leaves, to 10cm (4in) long, turning red and purple in autumn. Small, tubular, fragrant, creamy white flowers, to 5mm ( $\frac{1}{4}$ in) across, are borne in flattened, terminal cymes, to 11cm (4 $\frac{1}{2}$ in) across, in late spring and early summer, followed by ovoid, blue-black fruit, 1cm ( $\frac{1}{2}$ in) long.  $\pm$  4m (12ft),  $\leftrightarrow$  3m (10ft). E. North America. \*\*\*

**V. macrocephalum** ♂ (Snowball bush). Rounded shrub, sometimes tree-like,

*Viburnum opulus* 'Xanthocarpum'*Viburnum plicatum* 'Mariesii'

semi-evergreen or evergreen in mild climates, deciduous where winters are severe, with ovate to elliptic, toothed, dark green leaves, to 10cm (4in) long. In late spring, salverform, sterile white flowers, 3cm (1 $\frac{1}{4}$ in) across, are borne in dense, terminal cymes, to 15cm (6in) across. Does not bear fruit.  $\pm$  5m (15ft). Garden origin. \*\*

**V. mariesii** see *V. plicatum* 'Mariesii'.

**V. odoratissimum**. Vigorous, bushy, evergreen shrub with oval, glossy, dark green leaves, to 20cm (8in) long. Small, tubular, fragrant white flowers, 6mm ( $\frac{1}{4}$ in) across, are produced in broadly conical panicles, 8–10cm (3–4in) long, in late spring, followed by ovoid red fruit, 1cm ( $\frac{1}{2}$ in) long, ripening to black.  $\pm$  5m (15ft). India, China, Burma, Philippines, Japan. \*\*

**V. opulus** (Guelder rose). Vigorous, bushy, deciduous shrub with maple-like, usually 3-lobed, dark green leaves, to 10cm (4in) long, turning red in autumn. In late spring and early summer, bears flat, lacecap-like, terminal cymes, to 8cm (3in) across, composed of tubular, white, fertile central flowers, 2cm ( $\frac{3}{4}$ in) across, surrounded by showy, flat, white, sterile ray-florets, to 2cm ( $\frac{3}{4}$ in) across;

*Viburnum plicatum* 'Pink Beauty'

they are followed by spherical, fleshy, bright red fruit, 8mm ( $\frac{3}{8}$ in) across.  $\pm$  5m (15ft),  $\leftrightarrow$  4m (12ft). Europe, N. Africa, C. Asia. \*\*\*

**var. americanum** see *V. trilobum*.

**'Compactum'** ♂ ♀ is slow-growing and very dense;  $\pm$  1.5m (5ft).

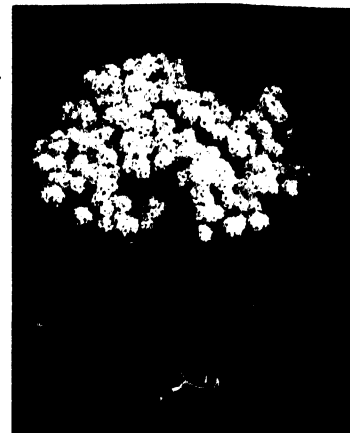
**'Roseum'** ♀ syn. 'Sterile' (Snowball tree), has a rounded habit, with leaves that become purple-tinted in autumn; it bears large, white or green-tinted white, sterile flowers, 1cm ( $\frac{1}{2}$ in) long, sometimes turning pink, in spherical cymes, 5–6cm (2–2 $\frac{1}{2}$ in) across;  $\pm$  4m (12ft).

**'Sterile'** see 'Roseum'.

**'Xanthocarpum'** ♂ ♀ produces bright yellow fruit.

**V. plicatum** (Japanese snowball bush). Spreading, bushy, deciduous shrub with heart-shaped, tapered, toothed, deeply veined, dark green leaves, to 10cm (4in) long, turning red-purple in autumn. In late spring, bears saucer-shaped, sterile white flowers, to 3cm (1 $\frac{1}{4}$ in) across, in dense, spherical, terminal cymes, 8cm (3in) across. Does not produce fruit.  $\pm$  3m (10ft),  $\leftrightarrow$  4m (12ft). Garden origin. \*\*\*

**'Grandiflorum'** ♀ has larger flowerheads, to 10cm (4in) across. The following cultivars have fertile central flowers and sterile outer florets;

*Viburnum* 'Pragense'*Viburnum rhytidophyllum*

they are sometimes grouped under f. *tomentosum*. **'Lanarth'** has large, sterile florets, to 5cm (2in) or more across, and bears few fruit. **'Mariesii'** ♂ ♀ syn. *V. mariesii*, has distinctly layered, tiered branches, and produces few fruit. **'Nanum Semperflorens'**, syn. 'Nanum', 'Watanabei', *V. semperflorens*, *V. watanabei*, is low-growing and compact, blooming over a long period from late spring to autumn;  $\pm$  2m (6ft),  $\leftrightarrow$  1.5m (5ft).

**'Pink Beauty'** ♂ ♀ has white sterile florets maturing to pink.

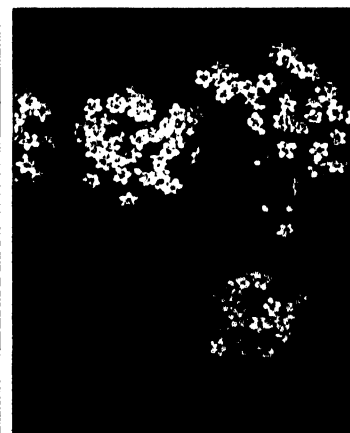
**'Rowallane'** ♀ is compact, with leaves turning dark red-purple in autumn, and bears abundant red fruit;  $\pm$  2m (6ft).

f. *tomentosum*, syn. *V. tomentosum*, has flattened, lacecap-like cymes, to 10cm (4in) across, with tiny, fertile central flowers and larger, sterile outer florets, to 3cm (1 $\frac{1}{4}$ in) across. Ovoid red fruit, 8mm ( $\frac{3}{8}$ in) long, ripen to black; China, Japan. **'Watanabei'** see 'Nanum Semperflorens'.

**V. x pragense** see *V. 'Pragense'*.

**V. 'Pragense'** ♂ ♀ syn. *V. x pragense*. Rounded, bushy, evergreen shrub with elliptic, deeply veined, wrinkled, wavy-margined, glossy, dark green leaves, to 10cm (4in) long. Tubular white flowers, 5–8mm ( $\frac{1}{4}$ – $\frac{3}{8}$ in) across, opening from pink buds, are produced in domed, terminal, umbel-like cymes, to 10cm (4in) across, in late spring.  $\pm$  3m (10ft). \*\*\*

**V. propinquum**. Compact, bushy, evergreen shrub with ovate-lance-shaped to elliptic, sparsely toothed, 3-veined, glossy, dark green leaves, to 9cm (3 $\frac{1}{2}$ in) long. Tiny, tubular, greenish white flowers, 4mm ( $\frac{1}{4}$ in) across, in flattened,

*Viburnum sieboldii*

*Viburnum tinus*

terminal cymes, to 8cm (3in) across, are produced in late spring, sometimes followed by ovoid, blue-black fruit, 5mm (¼in) long. ↑ 3m (10ft), ↔ 2m (6ft). C. and W. China, Taiwan, Philippines. \*\*\*

***V. x rhytidophylloides*** (*V. lantana* x *V. rhytidophyllum*). Spreading, semi-evergreen shrub with arching shoots clothed in oblong, wavy-margined, dark green leaves, to 20cm (8in) long. In late spring, small, tubular, creamy white flowers, 5mm (¼in) across, are borne in flattened, terminal, umbel-like cymes, to 10cm (4in) across; they are followed by ovoid red fruit, 8mm (¾in) long, which ripen to black. ↑ 3m (10ft), ↔ 4m (12ft). Garden origin. \*\*\*. 'Willowwood' has deeply veined, glossy leaves.

***V. rhytidophyllum*** [■] Vigorous, erect, evergreen shrub with oblong to lance-shaped, wavy-margined, very deeply veined, glossy, dark green leaves, 20cm (8in) or more long. In late spring, bears small, tubular, creamy white flowers, 5mm (¼in) across, in dense, domed, terminal, umbel-like cymes, to 20cm (8in) across, followed by ovoid red fruit, 8mm (¾in) long, ripening to glossy black. ↑ 5m (15ft), ↔ 4m (12ft). C. and W. China. \*\*\*

***V. sargentii***. Bushy, deciduous shrub with maple-like, 3-lobed, toothed leaves, to 12cm (5in) long, bronze when young, often turning yellow or red in autumn. Flat, laccap-like cymes, to 10cm (4in) across, with a central mass of tiny, tubular, white, fertile flowers surrounded by saucer-shaped, white, sterile ray-florets, 2cm (¾in) across, are borne in late spring. The flowers are followed by

*Viburnum tinus* 'Eve Price'*Viburnum tinus* 'Variegatum'

spherical, bright red fruit, 1cm (½in) across. ↑↔ 3m (10ft). N.E. Asia. \*\*\*. 'Flavum' produces yellow fruit.

'Onondaga' ♀ has an upright habit, and produces dark bronze-purple foliage ageing to dark green, then turning red-purple in autumn. Fertile flowers are dark red in bud, opening pink-flushed white; ↔ 2m (6ft)

***V. semperflorens*** see *V. plicatum* 'Nanum Semperflorens'.

***V. sieboldii*** [■] Compact, spreading, large, deciduous shrub with arching, shoots and elliptic to obovate, coarsely toothed, glossy, dark green leaves, to 12cm (5in) long. Small, tubular white flowers, 6mm (¼in) across, are borne in flattened, terminal cymes, to 10cm (4in) across, in late spring, and followed by ovoid pink fruit, 1cm (½in) long, which ripen to black. ↑ 4m (12ft), ↔ 6m (20ft). Japan. \*\*\*

***V. tinus*** [■] (Laurustinus). Compact, bushy, evergreen shrub with narrowly ovate to oblong, dark green leaves, to 10cm (4in) long. Bears small, salverform white flowers, 6mm (¼in) across, in flattened, terminal cymes, to 10cm (4in) across, over a long period in late winter and spring; they are followed by ovoid, dark blue-black fruit, 6mm (¼in) long. ↑↔ 3m (10ft). Mediterranean. \*\*\*.

'Eve Price' [■] ♀ is dense, with leaves to 8cm (3in) long, and pink flower buds.

'Gwenllian' ♀ bears a profusion of pink-flushed white flowers opening from dark pink buds, and fruits freely.

'Lucidum' is vigorous, with very glossy leaves; each flower is 1cm (½in) across.

'Pink Prelude' has white flowers opening from pink buds and ageing to pink. 'Purpureum' has young foliage tinged dark bronze-purple.

'Variegatum' [■] has leaves broadly margined with creamy yellow; needs more shelter than green-leaved forms.

***V. tomentosum*** see *V. plicatum* f. *tomentosum*.

***V. trilobum***, syn. *V. opulus* var. *americanum*. Dense, rounded, deciduous shrub producing maple-like, 3-lobed,

dark green leaves, to 12cm (5in) long, bronze when young, turning yellow to red in autumn. In late spring, bears flattened, laccap-like, terminal cymes, to 10cm (4in) across, of tiny, tubular, white, fertile central flowers, 2cm (¾in) across, surrounded by showy, flat, white, sterile florets, to 2cm (¾in) across. The flowers are followed by edible, spherical red fruit, 8mm (¾in) across. ↑ 5m (15ft), ↔ 4m (12ft). North America. \*\*\*

***V. watsonii*** see *V. plicatum* 'Nanum Semperflorens'.

## VICTORIA

Giant water lily

NYMPHAEACEAE

Genus of 2 species of rhizomatous, submerged, deep-water aquatic annuals or perennials occurring in tropical South America, in the slow-moving backwaters of the Amazon. Their stout rhizomes support enormous, rounded, floating leaves, and bear night-blooming, water-lily-like flowers. In tropical gardens, grow in a large pool; elsewhere, grow as annuals in a heated pool in a warm greenhouse.

• **HARDINESS** Frost tender.

• **CULTIVATION** Outdoors, grow in a pool at least 1m (3ft) deep in full sun; grow in baskets, 1m (3ft) across and 60cm (24in) deep, of rich, loam soil, with added well-rotted organic matter. Under glass, grow in baskets of loam soil in an indoor pool with a water temperature of 21–24°C (70–75°F) in summer; provide full light. During the growing season, add pellets of slow-release fertilizer to the growing medium every 6 weeks. See also pp.52–53.

• **PROPAGATION** Collect the seeds when ripe and overwinter in distilled water. In early spring, sow at 29–32°C (84–90°F), covering seeds with 5–8cm (2–3in) of water.

• **PESTS AND DISEASES** Trouble free.

***V. amazonica*** [■] (Amazon water lily, Royal water lily). Submerged, deep-water aquatic annual or perennial with stout rhizomes supporting rounded, mid-green, floating leaves, to 2m (6ft) long, reddish purple beneath; they have large prickles and vertical rims, to 10cm (4in), or occasionally 15cm (6in) high. In summer, bears many-petalled, water-lily-like white flowers, to 30cm (12in) across, ageing pink, with prickly sepals. ↔ 6m (20ft). South America (Amazon). ☼ (min. 25°C/77°F to remain perennial)

***V. cruziana***, syn. *V. trickeri* (Santa Cruz water lily). Submerged, deep-water aquatic annual or perennial with stout rhizomes supporting rounded, floating leaves, to 1.4m (4½ft) long, with vertical rims, to 20cm (8in) high. Leaves are mid-green above, densely softly hairy and reddish purple beneath, but the undersides are less highly coloured than those of *V. amazonica*. In summer, bears many-petalled, water-lily-like white flowers, to 10cm (4in) across, the sepals with basal prickles only. ↔ 6m (20ft). South America (Bolivia, Brazil, N. Argentina, Paraguay). ☼ (min. 22–25°C/72–77°F to remain perennial)

***V. 'Longwood Hybrid'*** (*V. amazonica* x *V. cruziana*). Submerged, deep-water aquatic annual or perennial with a stout rhizome supporting rounded, mid-green, floating leaves, to 2.5m (8ft) long, with reddish purple outer margins on the upturned rims. In summer, produces many-petalled, water-lily-like white flowers, to 30cm (12in) across, the sepals with basal prickles only. More free-flowering and hardier than its parents. ↔ 7m (22ft). Garden origin. ☼ (min. 22°C/72°F to remain perennial)

***V. trickeri*** see *V. cruziana*.

## VIGNA

LEGUMINOSAE/PAPILIONACEAE

Genus of about 150 species of erect and climbing or trailing annuals and evergreen perennials from woodland, scrub, and rocky areas in tropical regions of Africa, Asia, S. USA, and Central and South America. Most are cultivated as agricultural crops, for their edible pods and seeds (beans); the climbers are also grown as ornamentals, for their flowers, foliage, and seed pods. The alternate leaves are palmately lobed or 3-palmate with entire leaflets. Pea-like flowers with distinctive, coiled keel petals are borne in axillary clusters or racemes, often in alternate pairs, followed by linear, straight or curved pods. Where summer temperatures average less than 16°C (61°F), grow as annuals in a warm greenhouse. Elsewhere, grow over a pergola, arch, or tall tree stump.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In the growing season, water freely and apply a balanced liquid fertilizer monthly; water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Support climbing stems. Pruning group 11, in early spring.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or spring.

• **PESTS AND DISEASES** Susceptible to red spider mites and whiteflies under glass.

*V. caracalla*, syn. *Phaseolus caracalla* (Corkscrew flower, Snail bean, Snail flower). Fast-growing, evergreen, twining, perennial climber with sparsely branched stems and 3-palmate leaves, 15cm (6in) long, with ovate, downy, light to mid-green leaflets, 7–13cm (3–5in) long. From summer to autumn, and into winter if warm enough, bears erect, axillary racemes, to 30cm (12in) long, of pink, white, or yellow flowers 3–5cm (1½–2in) across, with elongated and coiled keel and standard petals, the keels coiled like a snail's shell; flowers are followed by nearly cylindrical, green then brown fruit, 15–18cm (6–7in) long. †6–8m (20–25ft). Tropical South America. ☀ (min. 10–15°C/50–59°F)

▷ *Villarsia nymphoides* see *Nymphoides peltata*

## VINCA

*Vinca difformis*

• **PROPAGATION** Divide from autumn to spring. Take semi-ripe cuttings in summer.

• **PESTS AND DISEASES** Prone to rust.

*V. difformis* □ Prostrate, evergreen subshrub with usually narrowly lance-shaped, glossy, dark green leaves, to 7cm (3in) long. In late winter and early spring, upright shoots produce pale blue to nearly white flowers, to 4cm (1½in) across. †30cm (12in), ↔ indefinite. S.W. Europe, N. Africa. \*\*

*V. herbacea* 'Hidcote Purple' see *V. major* var. *oxyloba*.

*V. hirsuta* of gardens see *V. major* var. *oxyloba*.

*V. major* (Greater periwinkle).

Prostrate, evergreen shrub with arching shoots and ovate to lance-shaped, dark green leaves, to 9cm (3½in) long. Blue-violet or dark violet flowers, to 5cm (2in) across, are produced over a long period from mid-spring to autumn. †45cm (18in), ↔ indefinite. W. Mediterranean. \*\*\*. 'Dartington Star' see var. *oxyloba*. 'Elegantissima' see 'Variegata'. subsp. *hirsuta*, syn. var. *pubescens*, produces lance-shaped, distinctly hairy leaves; Georgia, Turkey. 'Maculata' has leaves with yellow-green centres. var. *oxyloba*, syn. 'Dartington Star', *V. herbacea* 'Hidcote Purple', *V. hirsuta* of gardens, produces dark violet-blue flowers with narrow, pointed lobes. var. *pubescens* see subsp. *hirsuta*. 'Reticulata' has leaves conspicuously veined with yellow or cream when young, later dark green. 'Variegata' □ ♀ syn. 'Elegantissima' has leaves margined creamy white.

*Vinca minor*

*V. minor* □ (Lesser periwinkle).

Prostrate, mat-forming, evergreen shrub with long, trailing shoots and elliptic or lance-shaped, sometimes ovate, dark green leaves, to 5cm (2in) long. Over a long period from mid-spring to autumn, bears usually blue-violet, sometimes pale blue, reddish purple, or white flowers, 2.5–3cm (1–1¼in) across. †10–20cm (4–8in), ↔ indefinite. Europe, S. Russia, N. Caucasus. \*\*\*. f. *alba* has white flowers. 'Alba Variegata', syn. 'Alba Aureovariegata', has leaves with pale yellow margins, and bears white flowers. 'Argenteovariegata' ♀ syn. 'Variegata', has leaves with creamy white margins, and produces light violet-blue flowers. 'Atropurpurea' ♀ syn. 'Purpurea', 'Rubra', has dark plum-purple flowers. 'Azura Flore Pleno' ♀ syn. 'Caerulea Plena', has double, sky-blue flowers. 'Bowles' Blue' see 'La Grave'. 'Bowles' Variety' see 'La Grave'. 'Bowles' White' bears white flowers, opening from pinkish white buds. 'Caerulea Plena' see 'Azura Flore Pleno'. 'Double Burgundy' see 'Multiplex'. 'Gertrude Jekyll' ♀ is very compact, and profusely bears white flowers. 'La Grave' ♀ syn. 'Bowles' Blue', 'Bowles' Variety', bears lavender-blue flowers, 3cm (1¼in) across. 'Multiplex', syn. 'Double Burgundy', has double, plum-purple flowers. 'Purpurea' see 'Atropurpurea'. 'Rubra' see 'Atropurpurea'. 'Variegata' see 'Argenteovariegata'.

*V. rosea* see *Catharanthus roseus*.

▷ Vine see *Vitis*

Allegheny see *Adlumia fungosa*

Balloon see *Cardiospermum halicacabum*

Bengal clock see *Thunbergia grandiflora*

Blue trumpet see *Thunbergia grandiflora*

Bush clock see *Thunbergia erecta*

Cat's claw see *Macfadyena*

Chalice see *Solandra*

Chestnut see *Tetragonia voinierianum*

Chinese trumpet see *Campsis grandiflora*

Chocolate see *Akebia*

Common cat's claw see *Macfadyena unguis-cati*

Common coral see *Kennedia coccinea*

Confederate see *Antigonon leptopus*

Coral see *Antigonon*

Cross see *Bignonia*

Firecracker see *Manettia cordifolia*

▷ Vine cont.

Grape see *Vitis*

Hemp see *Mikania scandens*

Jade see *Strongylodon macrobotrys*

Kangaroo see *Cissus antarctica*

Kudzu see *Pueraria lobata*

Lipstick see *Aeschynanthus lobbianus*

Macquarie see *Muehlenbeckia adpressa*

Madeira see *Anredera cordifolia*

Mignonette see *Anredera cordifolia*

Pink trumpet see *Podranea ricasoliana*

Potato see *Solanum jasminoides*, *S. wendlandii*

Rattan see *Berchemia scandens*

Rosary see *Ceropegia linearis* subsp. *woodii*

Russian see *Fallopia baldschuanica*

Silk see *Periploca graeca*

Silver see *Actinidia polygama*

Staff see *Celastrus*, *C. orbiculatus*, *C. scandens*

Sweetheart see *Ceropegia linearis* subsp. *woodii*

Tara see *Actinidia arguta*

Trumpet see *Campsis*

Water see *Cissus hypoglauca*

Wonga wonga see *Pandorea pandorana*

## VIOLA syn. ERPETION

Pansy, Violet

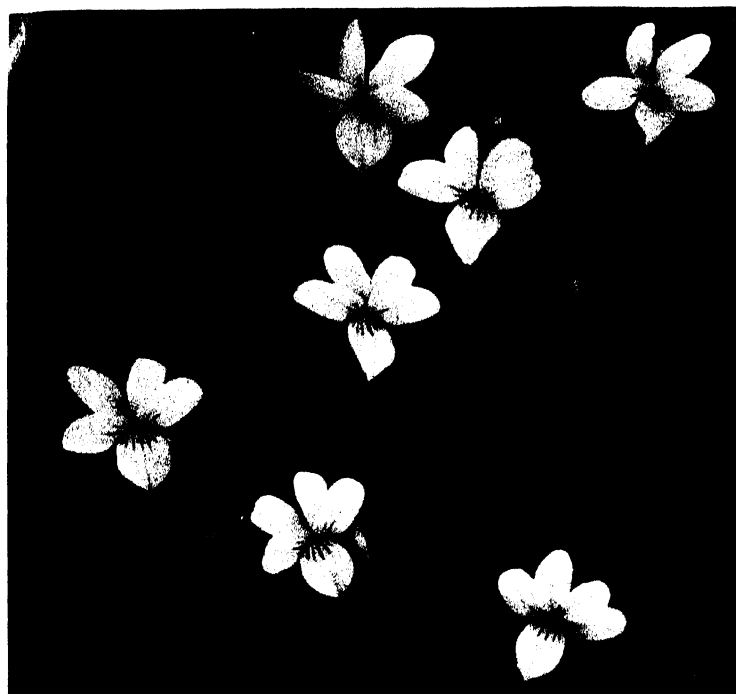
VIOLACEAE

Genus of about 500 species of annuals, biennials, evergreen, semi-evergreen, and deciduous perennials (some tufted or rhizomatous), and a few deciduous subshrubs, found in varied habitats in temperate regions worldwide. They have variable, entire to finely pinnatisect, mostly mid-green leaves with stipules. Some South American species are rosette-forming, and are very similar to sempervivums. The mostly unscented flowers, borne in the leaf axils, are usually solitary, rarely paired. Each has 5 petals: a spurred lower petal, 2 lateral petals, and 2 upward-facing upper petals. Most flower profusely over long periods in summer, and may self-seed freely.

Many cultivars within the genus are informally referred to as garden pansies, violas, or violettas; they are all derived from the complex hybridization of *V. tricolor*, *V. lutea*, *V. cornuta*, and other species. Garden pansies (*V. x wittrockiana* cultivars) are biennials or very short-lived perennials, with faintly scented or unscented, more or less rounded flowers with patterned "faces". They have a single-stemmed root system. Violas, often called "tufted pansies", are compact, tufted perennials with usually scented, more or less rounded, often patterned flowers with rays (lines in a deeper or contrasting colour), and a multi-stemmed root system. Violettas are similar to violas, but are even more compact, with small, sweetly fragrant, oval flowers, each with a central yellow mark and no rays.

The perennials and subshrubs are suitable for a rock garden, a scree bed, or the front of a border; a few are best in an alpine house. Treat garden pansies as annuals, biennials, or short-lived perennials: they are good for containers; some are suitable for summer bedding; plant winter- or spring-flowering types with spring-flowering bulbs.

• **HARDINESS** Fully hardy to half hardy.


*Viola biflora*

• **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun or partial shade. In a rock garden, grow in poor to moderately fertile, gritty, sharply drained soil in full sun or partial shade; protect from winter wet. In an alpine house, use a mix of equal parts loam, leaf mould, and grit or tufa chips. Dead-head to prolong flowering. After flowering, cut back vigorous plants, especially *V. cornuta*, to keep compact.

• **PROPAGATION** Sow seed in containers in a cold frame as soon as ripe or in spring; for garden pansies sow seed in late winter for early spring and summer flowering, or in summer for winter flowering. Divide *V. biflora*, *V. cornuta*, *V. elatior*, *V. glabella*, *V. hederacea*, *V. obliqua*, and *V. odorata* in spring or autumn. Take stem-tip cuttings of perennials and subshrubs in spring or late summer. Many viola species are short-lived, so propagate them regularly.

• **PESTS AND DISEASES** May be damaged by slugs, snails, aphids, red spider mites, and violet leaf midges. Susceptible to leaf spot; may also be affected by mosaic viruses, rust, and powdery mildew.

*V. adunca* (Hooked-spur violet, Western dog violet). Compact, tuft-forming, semi-evergreen perennial with procumbent stems bearing ovate to broadly ovate, finely toothed, smooth to slightly hairy leaves, to 4cm (1½in) long. In spring, bears scented, violet to lavender-blue flowers, 2cm (¾in) across, with white spurs, to 2cm (¾in) long, and white eyes. Suitable for a rock garden; self-seeds freely. ± to 8cm (3in). N. USA. \*\*\*. *var. minor* see *V. labradorica*.

*V. aetolica*. Neat, clump-forming, short-lived, evergreen perennial with short, spreading stems and ovate to lance-shaped, scalloped leaves, to 2cm (¾in) long. In late spring and early summer, produces yellow flowers, to 2cm (¾in) across; the slightly darker lower petals have spurs to 6mm (¼in)

long. ± to 8cm (3in), ± to 15cm (6in). E. Europe. \*\*\*

*V. beekwithii* (Great Basin violet). Small, tufted, evergreen perennial with spreading stems and palmately 3-lobed, hairy, conspicuously veined leaves, 3cm (1¼in) long, each lobe pinnatifid with linear segments. In spring, bears solitary, slightly scented flowers, 2cm (¾in) across, with spurs to 2mm (¼in) long; the 2 upper petals are deep reddish violet, the 3 lower ones pale lavender-blue with purple-veined yellow bases. Best in an alpine house; difficult to grow. ± 5–13cm (2–5in), ± to 10cm (4in). North America (Great Basin area). \*\*\*

*V. biflora* (Twin-flowered violet). Dwarf, creeping herbaceous perennial with slender rhizomes and thin stems bearing kidney- to heart-shaped, toothed, pale green leaves, 3–4cm (1¼–1½in) long, with scalloped margins. In late spring and summer, bears solitary or paired, deep lemon flowers, 1.5cm (½in) across, veined dark purple-brown on the lower petals and with spurs to 3mm (¼in) long. Prefers moist soil in partial shade. ± to 8cm (3in), ± to 20cm (8in). Europe to

N. Asia, North America (Alaska, Rocky Mountains). \*\*\*

*V. canina* (Dog violet, Heath violet). Rhizomatous, semi-evergreen perennial with decumbent to erect stems and ovate to ovate-lance-shaped, entire leaves, 1–2cm (½–¾in) long, shallowly heart-shaped at the bases. In spring and early summer, bears solitary, bright blue or violet flowers, to 2.5cm (1in) across, each with a straight, pale yellowish green or white spur, 1cm (½in) long. ± to 15–30cm (6–12in). Temperate Europe and W. Asia. \*\*\*

*V. cazorlensis* (Dwarf, woody-based, evergreen perennial with crowded, upright stems bearing very narrow, linear to inversely lance-shaped, entire leaves, to 1.5cm (½in) long. In late spring and early summer, produces narrow-petalled, pinkish purple flowers, 2cm (¾in) across, with notched lower petals, and slender spurs, to 3cm (1¼in) long. Difficult to grow; best in tufa or in an alpine house. ± to 8cm (3in), ± to 10cm (4in). S.E. Spain. \*\*\*

*V. cornuta* (Horned violet, Viola). Spreading, rhizomatous, evergreen perennial with ascending stems and ovate, toothed leaves, 2–5cm (¾–2in) long, truncate at the bases. From spring to summer, produces abundant slightly scented flowers, to 3.5cm (1½in) across; they have widely separated, usually violet to lilac-blue petals, the lower ones with white markings, and slender spurs, to 1.5cm (½in) long. ± to 15cm (6in), ± to 40cm (16in) or more. Spain (Pyrenees). \*\*\*. *var. minor* is smaller in all its parts, and produces white or lavender-blue flowers, 1.5–2cm (½–¾in) across; ± to 7cm (3in), ± to 20cm (8in).

*V. cucullata* see *V. obliqua*.

*V. elatior*, syn. *V. erecta*. Upright, sparsely branched, subshrubby perennial with deciduous, lance-shaped, toothed leaves, to 9cm (3½in) long, slightly heart-shaped at the bases. Bears scented, pale lavender-blue flowers, 2.5cm (1in) across, with spurs 2–4mm (¼–½in) long, over long periods in late spring and early summer. Easily grown in moist soil. ± to 30cm (12in), ± to 15cm (6in). C., S., and E. Europe to W. Asia. \*\*\*

*V. erecta* see *V. elatior*.

*V. glabella* (Stream violet). Vigorous, spreading, rhizomatous, deciduous or semi-evergreen perennial with upright or spreading stems and long-stalked, ovate or rounded, toothed, bright green leaves, 3–9cm (1¼–3½in) long, with

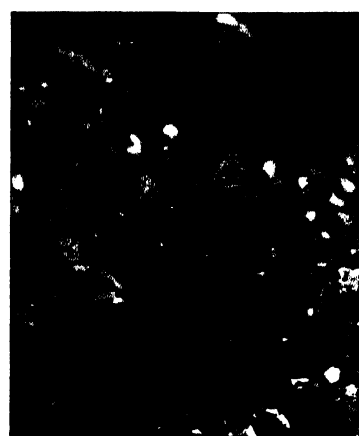

*Viola cornuta*

heart-shaped bases. In late spring, bears deep yellow flowers, 2.5cm (1in) across, veined purple on the lower petals, and with short spurs, 2mm (¼in) long. Prefers partial shade. ± to 20cm (8in), ± to 30cm (12in) or more. N.E. Asia, N.W. USA. \*\*\*

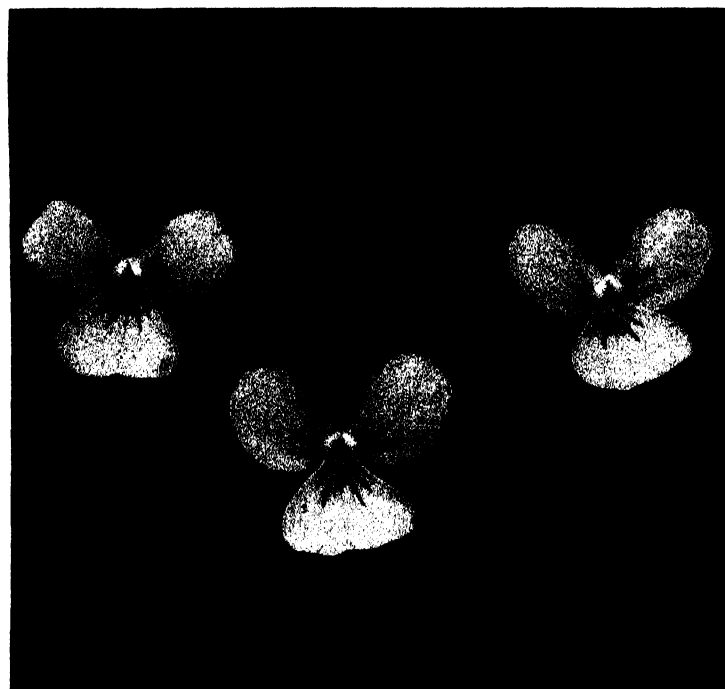
*V. gracilis*, syn. *V. velutina*. Mat-forming, evergreen perennial with erect or ascending stems and oblong to broadly ovate, variably toothed leaves, 2–3cm (¾–1¼in) long, with finely divided stipules. In summer, bears yellow-eyed, deep violet, occasionally yellow flowers, to 3cm (1¼in) across, with slender spurs, to 7mm (¼in) long. Needs full sun. ± to 10cm (4in), ± to 20cm (8in). Balkan Peninsula, Greece, Turkey. \*\*\*

*V. 'Haslemere'* see *V. 'Nellie Britton'*. *V. hederacea*, syn. *Erpetion hederaceum*. *E. reniforme*, *V. reniforme* (Australian violet, Ivy-leaved violet, Trailing violet). Mat-forming, evergreen perennial with slender stolons and short, erect, tufted stems bearing broadly ovate to kidney-shaped, entire or coarsely toothed, dark green leaves, to 3.5cm (1½in) long, with scalloped margins. In late summer, bears sometimes slightly scented flowers, to 2.5cm (1in) across, either spurless or with inconspicuous spurs, and with a rather flattened appearance; they may be white, cream, pale to dark violet, or sometimes white with violet patches. Best in an alpine house; prefers partial shade. Very vigorous; good ground cover in warm climates. ± to 10cm (4in), ± to 20–30cm (8–12in). Australia. \*\*\*

*V. 'Huntercombe Purple'* (Horned violet). Spreading, clump-forming, evergreen


*Viola canina*

*Viola cazorlensis*

*Viola 'Huntercombe Purple'*



Viola 'Jackanapes'

perennial with upright stems and ovate, toothed leaves, to 2.5cm (1in) long. In spring and late summer, produces abundant deep violet-purple flowers, to 2.5cm (1in) across, with spurs 4–6mm ( $\frac{1}{8}$ – $\frac{1}{4}$ in) long.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 30cm (12in). \*\*\*

**V. 'Irish Molly'** Evergreen, usually short-lived perennial with spreading stems and broadly ovate, deeply cut leaves, to 3cm (1 $\frac{1}{4}$ in) long. In summer, produces a long succession of dark gold flowers, to 3cm (1 $\frac{1}{4}$ in) across, with brown centres, and spurs 4–6mm ( $\frac{1}{8}$ – $\frac{1}{4}$ in) long. Propagate regularly.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 20cm (8in). \*\*\*

**V. 'Jackanapes'**  $\square$   $\nabla$  Robust, clump-forming, evergreen perennial with spreading stems and ovate, toothed, bright green leaves, to 2.5cm (1in) long. In late spring and summer, bears flowers to 2cm ( $\frac{3}{4}$ in) across, the upper petals deep violet-purple to almost brown, the lower ones golden yellow, streaked purple at the centres, and with spurs 1.5cm ( $\frac{1}{2}$ in) long. Propagate regularly.  $\uparrow$  to 12cm (5in),  $\leftrightarrow$  to 30cm (12in). \*\*\*

**V. 'Labradorica'**, syn. *V. adunca* var. *minor* (Labrador violet). Spreading,



Viola 'Nellie Britton'

clump-forming, semi-evergreen perennial with prostrate stems and heart- to kidney-shaped, finely toothed, dark green leaves, 2cm ( $\frac{3}{4}$ in) long, flushed bronze-purple when young. Solitary, pale purple flowers, 1.5cm ( $\frac{1}{2}$ in) across, with short spurs, 6mm ( $\frac{1}{4}$ in) long, are borne in spring and summer.  $\uparrow$  to 8cm (3in),  $\leftrightarrow$  indefinite. Canada, N. USA, Greenland. \*\*\*

**var. 'purpurea of gardens'** see *V. riviniana* 'Purpurea'.

**V. lutea**, syn. *V. lutea* subsp. *elegans* (Mountain pansy). Slender, creeping, rhizomatous, evergreen perennial bearing ovate lower stem leaves and ovate to lance-shaped, shallowly scalloped or almost entire upper leaves, to 2cm ( $\frac{3}{4}$ in) long. In late spring and early summer, bears flowers to 3cm (1 $\frac{1}{4}$ in) across, in bright yellow, blue-violet, or red-violet, or all three colours combined, and with short spurs, 3–6mm ( $\frac{1}{8}$ – $\frac{1}{4}$ in) long.  $\uparrow$  to 7–15cm (3–6in). W. and C. Europe. \*\*\*

**subsp. 'elegans'** see *V. lutea*.

**V. 'Nellie Britton'**  $\square$   $\nabla$  syn. *V. 'Haslemere'*. Clump-forming, evergreen perennial with spreading stems bearing ovate to lance-shaped, toothed, glossy



Viola pedata

leaves, 3cm (1 $\frac{1}{4}$ in) long. Pinkish mauve flowers, to 2.5cm (1in) across, with spurs 1cm ( $\frac{1}{2}$ in) long, are profusely borne over long periods in summer.  $\uparrow$  to 15cm (6in),  $\leftrightarrow$  to 30cm (12in). \*\*\*

**V. obliqua**, syn. *V. cucullata* (Marsh blue violet). Spreading, stemless, rhizomatous, deciduous perennial with heart-shaped, toothed leaves, to 9cm (3 $\frac{1}{2}$ in) long. In late spring, solitary, blue-violet flowers, to 2cm ( $\frac{3}{4}$ in) across, with short spurs to 2mm ( $\frac{1}{16}$ in) long, are borne above the leaves. Occasionally produces white flowers with blue eyes and blue veins.  $\uparrow$  to 8cm (3in),  $\leftrightarrow$  to 25cm (10in). North America. \*\*\*

**V. odorata** (English violet, Garden violet, Sweet violet). Rhizomatous, semi-evergreen perennial with slender stolons and short, erect stems that bear tufts of heart-shaped to rounded, toothed, bright green leaves, to 6cm (2 $\frac{1}{2}$ in) long. In late winter and early spring, produces sweetly scented, blue or white flowers, 2cm ( $\frac{3}{4}$ in) or more across, with spurs to 5mm ( $\frac{1}{4}$ in) long. Self-seeds freely; excellent for a wild or woodland garden.  $\uparrow$  to 20cm (8in),  $\leftrightarrow$  30cm (12in) or more. Probably W. and S. Europe; very widely naturalized elsewhere. \*\*\*

**V. papilionacea** see *V. sororia*.

**V. pedata**  $\square$  (Bird's-foot violet, Crow-foot violet). Stemless, clump-forming, semi-evergreen perennial with short, stout rhizomes and 3-lobed leaves, to 3cm (1 $\frac{1}{4}$ in) long, the 2 lateral lobes themselves divided into 3–5 linear or spoon-shaped lobes. In late spring and early summer, bears yellow-centred, pale violet flowers, 3cm (1 $\frac{1}{4}$ in) across, with widely spaced petals and short spurs, to 2mm ( $\frac{1}{16}$ in) long. Flowers are sometimes white or bicoloured, with deep purple upper petals and pale lavender-blue or white lower ones. Best in an alpine house. Needs well-drained, peaty, sandy soil.  $\uparrow$  to 5cm (2in),  $\leftrightarrow$  to 10cm (4in). E. North America. \*\*\*

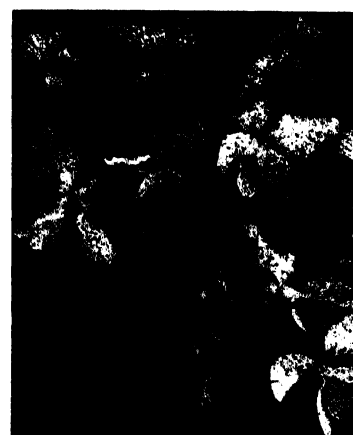
**V. pedatifida** (Larkspur violet, Purple prairie violet). Small, clump-forming, semi-evergreen to deciduous perennial with 5- to 11-palmate leaves, to 3cm (1 $\frac{1}{4}$ in) long, with very narrow leaflets. In spring and summer, bears deep violet-blue flowers, to 2cm ( $\frac{3}{4}$ in) across, with bearded lower petals and short spurs, 4mm ( $\frac{1}{8}$ in) long. Self-seeds freely.  $\uparrow$  to 12cm (5in),  $\leftrightarrow$  to 15cm (6in). C. North America. \*\*\*

**V. reniforme** see *V. hederacea*.

**V. riviniana** (Common dog violet, Wood violet). Tufted, semi-evergreen



Viola riviniana 'Purpurea'



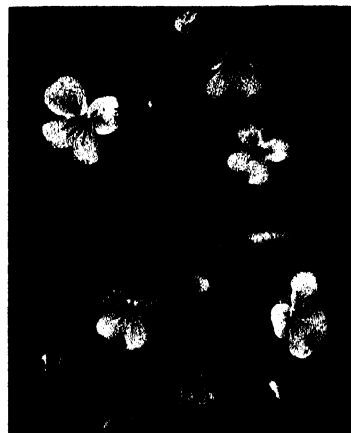
Viola sororia 'Freckles'

perennial with basal tufts of ovate-rounded, toothed leaves, to 4cm (1 $\frac{1}{2}$ in) long, deeply heart-shaped at the bases. In late spring and early summer, bears pale violet-blue flowers, 1.5–2.5cm ( $\frac{1}{2}$ –1in) across, with notched, white or pale purple spurs, to 5mm ( $\frac{1}{4}$ in) long. Suitable for a wild garden, in deep or partial shade.  $\uparrow$  10–20cm (4–8in),  $\leftrightarrow$  20–40cm (8–16in). Europe, N. Africa. \*\*\*

**'Purpurea'**  $\square$  syn. *V. labradorica* var. *purpurea* of gardens, has dark purplish green leaves. Invasive, but excellent in a wild or woodland garden.

**V. sororia**, syn. *V. papilionacea* (Sister violet, Woolly blue violet). Stemless, rhizomatous herbaceous perennial with ovate to rounded, sharp-pointed, scalloped leaves, to 10cm (4in) long, densely hairy beneath. In spring and summer, bears flowers to 2cm ( $\frac{3}{4}$ in) across, with short spurs, to 3mm ( $\frac{1}{8}$ in) long. The flowers are sometimes deep violet-blue, but usually white, heavily speckled and streaked violet-blue around the centres. Self-seeds freely.  $\uparrow$  to 10cm (4in),  $\leftrightarrow$  to 20cm (8in). E. North America. \*\*\*

**'Freckles'**  $\square$  bears white flowers, speckled violet-purple. **V. tricolor**  $\square$  (Heartsease, Love-in-idleness, Wild pansy). Tufted annual, biennial, or short-lived, evergreen perennial, sometimes rhizomatous, with spreading stems and ovate to heart-shaped, toothed leaves, to 3cm (1 $\frac{1}{4}$ in) long. From spring to autumn, bears flowers, 2.5cm (1in) or more across, in shades of purple, lavender-blue, white, or yellow, with usually dark purple upper petals, lower petals often streaked dark purple, and spurs to 7mm ( $\frac{1}{4}$ in)



Viola tricolor





*Viola tricolor* 'Bowles' Black

long. Very short-lived, but self-seeds prolifically.  $\pm$  to 8–12cm (3–5in),  $\leftrightarrow$  to 10–15cm (4–6in). Europe, Asia. \*\*\*. 'Bowles' Black'  $\square$  has velvety, almost black flowers with small, golden yellow eyes. Seeds freely and comes almost true from seed;  $\pm$  to 10cm (4in),  $\leftrightarrow$  to 20cm (8in). 'Prince Henry' bears small, very dark purple flowers, 1.5–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) across, from spring to summer. 'Prince John' bears small, bright yellow flowers, 1.5–2cm ( $\frac{1}{2}$ – $\frac{3}{4}$ in) across, from spring to summer.

*V. velutina* see *V. gracilis*.

*V. x wittrockiana* cultivars (Pansy). Erect, bushy evergreen perennials, derived from cross-breeding *V. altaica*, *V. cornuta*, *V. lutea*, and *V. tricolor*; they are usually larger and more robust than their parents. They have spreading stems and ovate to almost heart-shaped, shallowly lobed, shiny, mid- to deep green leaves, to 3.5cm (1 $\frac{1}{2}$ in) or more long. Flowers are 6–10cm (2 $\frac{1}{2}$ –4in) across, with the lateral petals overlapping the lower and upper petals, and with very short spurs. They may be either self-coloured, usually in blue, white, yellow, orange, pink, red, or purple; bicoloured; or the more traditional pansy type, bicoloured with central, face-like markings. Flowers are produced mainly from early spring to summer, some from autumn to winter. Other, usually smaller-flowered cultivars have been bred for winter and early spring flowering, and are excellent bedding plants during the coldest months.  $\pm$  16–23cm (6–9in),  $\leftrightarrow$  23–30cm (9–12in). \*\*\*. **Allegro**



*Viola x wittrockiana* Fama Series

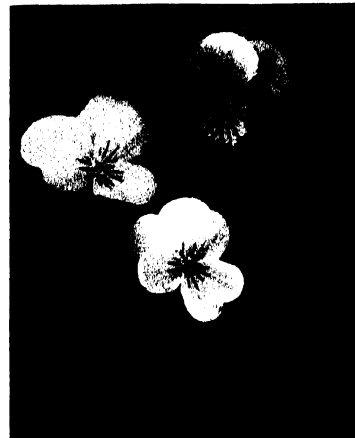


*Viola x wittrockiana* Forerunner Series

**Series** cultivars bear large flowers in a broad colour range, with or without markings, in winter and spring. 'Baby Lucia' produces small, yellow-eyed, clear blue flowers in spring and summer. 'Bambini' has small flowers, borne in spring and summer, in a wide colour range, most with contrasting white or yellow faces and "whiskered" central markings. **Bingo Series** cultivars flower in winter and spring, producing large blooms in a broad colour range, some with darker markings. **Clear Crystal Series** cultivars bear medium-sized flowers in summer, in a wide range of clear, single colours, without central markings. 'Cornetto' produces small, very long-spurred, clear white flowers in spring and summer. **Crown Series** cultivars produce large flowers in a broad range of clear colours, in early spring and summer. **Crystal Bowl Series** cultivars are compact, and bear medium-sized, unmarked flowers in a wide range of clear colours, including white, in summer;  $\pm$  23cm (9in),  $\leftrightarrow$  30cm (12in). 'Cutty' bears small, yellow-eyed white flowers, with deep violet-purple upper petals, from spring to summer. **Delta Series** cultivars are compact and robust, bearing large flowers in a wide range of colours, some with darker markings, in early spring. **Fama Series**  $\square$  cultivars produce large flowers in winter and spring, in a wide range of single colours and in mixed colours. **Fanfare Series** cultivars are compact, producing medium-sized flowers in winter and spring, available in a broad range of single colours and bicolours; excellent for hanging baskets.

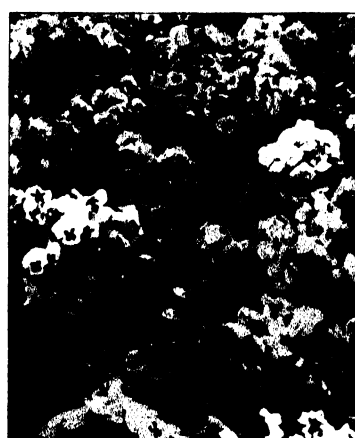


*Viola x wittrockiana* Joker Series 'Jolly Joker'



*Viola x wittrockiana* Princess Series

Cultivars of **Forerunner Series**  $\square$  bloom in winter and spring, bearing medium-sized flowers in a range of bright single colours and bicolours. Cultivars of **Imperial Series** produce large flowers in a broad colour range, almost all with a deeper central mark, in winter and early spring; 'Imperial Frosty Rose' is an unusual rose-pink with a deeper central mark; 'Imperial Gold Princess' is bicoloured yellow and red. **Jewel Series** cultivars are compact and free-flowering, bearing small blooms in winter and spring, in yellow, blue, purple with pansy faces, and white with pansy faces. Cultivars of **Joker Series**  $\square$  produce medium-sized, bicoloured flowers in light blue, mahogany-gold, violet-gold, and mixed colours, with very strongly marked pansy faces, in summer; 'Jolly Joker'  $\square$  blooms in spring and summer, and has medium-sized orange flowers, with deep purple upper petals and purple-margined lower petals. 'Pretty' bears small yellow flowers, with rich mahogany-red upper petals, in spring and summer. **Princess Series**  $\square$   $\square$  cultivars are neat in habit, and produce small flowers in blue, cream, dark purple, bicoloured purple and white, or yellow, in spring and summer. **Rally Series** cultivars are free-flowering, producing medium-sized blooms in a broad range of colours, in winter and spring. Cultivars of **Regal Series** are compact, producing medium-sized flowers in a wide range of separate colours and a mixture of colours, all with darker markings, in winter and spring. **Super Chalon Giants** bears



*Viola x wittrockiana* Universal Series

medium-sized to large, bicoloured flowers, with wavy, ruffled margins, in summer. **Ultima Series**  $\square$  cultivars, blooming in winter and spring, bear medium-sized flowers in a very broad range of colours, including bicolours. **Universal Series**  $\square$   $\square$  cultivars bear medium-sized flowers in winter and spring, in a broad range of colours, including bicolours, and sometimes with patterned faces. Cultivars of **Velours Series** have a neat habit, and bear small flowers in violet-blue, pale blue with deep blue markings, purple, and yellow, in spring and summer.

$\triangleright$  **Viola** see *Viola cornuta*

$\triangleright$  **Violet** see *Viola*

- African** see *Saintpaulia*
- Amethyst** see *Browallia*
- Australian** see *Viola hederacea*
- Bird's-foot** see *Viola pedata*
- Bush** see *Browallia*
- Common dog** see *Viola riviniana*
- Crow-foot** see *Viola pedata*
- Dame's** see *Hesperis matronalis*
- Dog** see *Viola canina*
- Dog's-tooth** see *Erythronium*
- English** see *Viola odorata*
- European dog's-tooth** see *Erythronium dens-canis*
- Flame** see *Episcia*
- Garden** see *Viola odorata*
- Great Basin** see *Viola beckwithii*
- Heath** see *Viola canina*
- Hooked-spur** see *Viola adunca*
- Horned** see *Viola cornuta*
- Ivy-leaved** see *Viola hederacea*
- Labrador** see *Viola labradorica*
- Larkspur** see *Viola pedatifida*
- Marsh blue** see *Viola obliqua*
- Mexican** see *Tetranema roscum*
- Persian** see *Exacum affine*
- Philippine** see *Barleria cristata*
- Purple prairie** see *Viola pedatifida*
- Sister** see *Viola sororia*
- Stream** see *Viola glabella*
- Sweet** see *Viola odorata*
- Trailing** see *Viola hederacea*
- Twin-flowered** see *Viola biflora*
- Water** see *Hottonia palustris*
- Western dog** see *Viola adunca*
- Wood** see *Viola riviniana*
- Woolly blue** see *Viola sororia*
- $\triangleright$  **Viper's bugloss** see *Echium vulgare*

## VIRGILIA

### LEGUMINOSAE/PAPILIONACEAE

Genus of 2 species of small, evergreen trees from forest edges and river valleys in coastal areas of South Africa. They have alternate, pinnate leaves, and are grown for their abundant pea-like flowers, borne in axillary or terminal racemes, occasionally in panicles. Where winter temperatures fall below 5–7°C (41–45°F), grow in a cool greenhouse. In milder areas, use as specimen trees. • **HARDINESS** Frost tender, but may survive temperatures down to 0°C (32°F) provided the wood has been well ripened in summer.

• **CULTIVATION** Under glass, grow in ericaceous potting compost with added sharp sand, in full light. In growth, water moderately and apply a balanced liquid fertilizer every month; water sparingly in winter. Outdoors, grow in neutral to acid, poor to moderately fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.



*Virgilia oroboides*

- **PROPAGATION** Sow seed at about 15°C (59°F) in spring, after soaking in hot water or after scarification.
- **PESTS AND DISEASES** Trouble free.

*V. capensis* see *V. oroboides*.

*V. oroboides* [△-□] syn. *V. capensis*. Fast-growing shrub or small, rounded to broadly columnar tree, usually with several main stems, and with red-downy young growth. Pinnate leaves, 10–20cm (4–8in) long, each have 13–21 narrowly oblong, leathery, mid- to deep green leaflets, pale and densely woolly beneath, with thorn-like points. From spring to summer, bears racemes of up to 12 pea-like, fragrant, white, pink, purple, or crimson flowers, to 2cm (¾in) across. 1.5–9m (5–30ft). ↔ 3–5m (10–15ft). South Africa (Western Cape, Eastern Cape). \* (borderline)

▷ *Virginia creeper* see *Parthenocissus*, *P. quinquefolia*

Chinese see *P. henryana*

▷ *Virgin's bower* see *Clematis*

▷ *Viscaria* see *Lychnis*

*V. elegans* see *Silene coeli-rosa*

*V. vulgaris* see *Lychnis viscaria*

## VITALIANA syn. DOUGLASIA

PRIMULACEAE

Genus of one species of tufted, mat- or cushion-forming, evergreen perennial, occurring in alpine and subalpine screes, rocks, and meadows in the mountains of C. and S. Europe. It has rosettes of small leaves, and is cultivated for its solitary flowers, produced in spring. Grow in a rock garden, scree bed, or alpine house.



*Vitaliana primuliflora*

- **HARDINESS** Fully hardy, but dislikes excessive winter wet.
- **CULTIVATION** Grow in leafy, moderately fertile, gritty, moist but sharply drained soil in full sun. Protect from winter wet. In an alpine house, grow in a mix of 1 part each loam and leaf mould, and 3 parts grit.
- **PROPAGATION** Sow seed in containers in an open frame as soon as ripe. Detach and root offsets in spring and early summer.
- **PESTS AND DISEASES** Susceptible to aphids and red spider mites under glass.

*V. primuliflora* [■] syn. *Androsace vivaliana*, *Douglasia vivaliana*. Tufted, mat- or cushion-forming, evergreen perennial with creeping stems and tight rosettes of linear to oblong-lance-shaped, pointed, usually hairy, pale green leaves, to 1cm (½in) long, with silver margins. In spring, bears solitary, almost stemless, tubular yellow flowers, to 2cm (¾in) across, with 5 spreading lobes. ↓ to 2.5cm (1in), ↔ to 25cm (10in). Mountains of S.W. and C. Europe, to S.E. Alps, and C. Apennines. \*\*\*

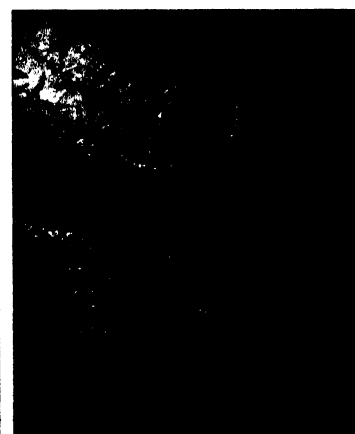
## VITEX

VERBENACEAE

Widespread genus of 250 species of deciduous or evergreen trees and shrubs, occurring mainly in tropical regions, often in woodland or dried-up river beds. They have opposite, fully divided, 3- to 7-palmate leaves, and produce terminal panicles, racemes, or cymes of tubular, 2-lipped flowers. *V. agnus-castus* and *V. negundo* are cultivated for their elegant foliage and late flowers, and may be grown in a shrub border or against a wall. In frost-prone areas, grow tender species in a warm greenhouse.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Grow in any well-drained soil in full sun. In frost-prone areas, shelter frost-hardy species from cold, drying winds. Pruning group 6.
- **PROPAGATION** Sow seed at 6–12°C (43–54°F) in autumn or spring. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

*V. agnus-castus* (Chaste tree). Open, spreading, deciduous shrub with 5- or 7-palmate leaves composed of slender, narrowly elliptic, pointed, entire or slightly toothed, aromatic, dark green leaflets, to 10cm (4in) or more long.



*Vitex agnus-castus* var. *latifolia*

Small, tubular, fragrant, lilac- to dark blue, sometimes white flowers are borne in slender upright, terminal panicles, to 13–18cm (5–7in) long, in early and mid-autumn. ↑ to 2–8m (6–25ft). Mediterranean to C. Asia. \*\*\*. var. *latifolia* [■] is more vigorous, with broader leaflets.

*V. negundo*. Bushy, deciduous shrub with 3- to 5-palmate, dark green leaves composed of lance-shaped, pointed, sharply toothed or entire leaflets, to 10cm (4in) long. In late summer and early autumn, bears small, tubular, pale violet-blue flowers in terminal panicles, to 22cm (9in) long. ↑ to 3m (10ft). E. Africa, E. Asia. \*\*\*

## VITIS

Grape vine, Vine

VITACEAE

Genus of about 65 species of woody, deciduous tendril climbers, occasionally shrubs, occurring in woodland, woodland margins, and thickets in N. temperate regions. They have flaking bark and alternate, simple to lobed, sometimes toothed leaves. Tiny green flowers are produced in panicles from the leaf axils in summer, and are followed by fruits (grapes), which in some species are edible or are used to make wine. The ornamental vines are cultivated for their foliage and fruits; grow over a trellis, pergola, or fence, or through a large shrub or tree, or train against a wall.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in well-drained, preferably neutral to alkaline, humus-rich soil in full sun or partial shade. Pruning group 11, in midwinter, and again in midsummer if necessary, to restrict growth; pruning group 12, if more formal training required.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Take hardwood cuttings in late winter, or root "vine eye" cuttings (with a single bud) in early spring. Layer in autumn.
- **PESTS AND DISEASES** May be affected by powdery mildew and honey fungus. Scale insects and mealybugs may be troublesome under glass.

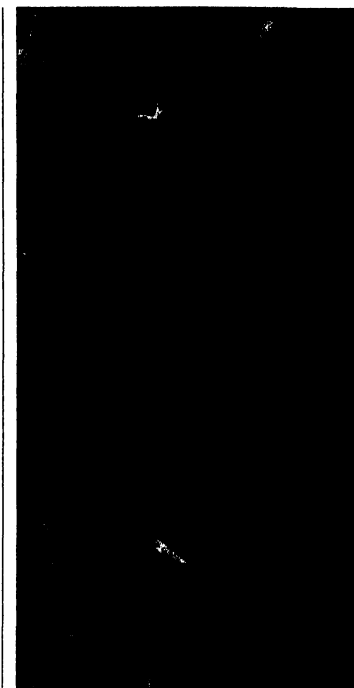
*V. aconitifolia* see *Ampelopsis aconitifolia*.

*V. amurensis* (Amur grape). Vigorous, woody, deciduous climber, sometimes a shrub, with red-tinged young shoots and broadly ovate, often shallowly 3-lobed, sharply toothed, dark green leaves, to 30cm (12in) long, heart-shaped at the bases, and turning red and purple in autumn. Bears small, unpalatable, ovoid, white-bloomed black grapes, 1.5cm (½in) across, in late summer. ↑ 15m (50ft). China, Korea, Japan. \*\*\*

*V. 'Brant'* ♀ Vigorous, woody, deciduous climber with rounded, palmately 3- to 5-lobed, toothed, bright green leaves, to 22cm (9in) long, which turn bronze-red with green veins in autumn. In autumn, produces large bunches of edible, spherical, blue-black grapes, 1.5cm (½in) across. ↑ 7m (22ft) or more. \*\*\*

*V. capensis* see *Rhoicissus capensis*.

*V. coignetiae* [■] ♀ Vigorous, woody, deciduous climber with large, heart-shaped, shallowly 3- to 5-lobed, shallowly to coarsely toothed, dark green



*Vitis coignetiae*

leaves, to 30cm (12in) long, with deeply impressed veins above and thickly brown-felted beneath; they turn bright red in autumn. Small, unpalatable, spherical, blue-black grapes, 1cm (½in) across, are produced in autumn. ↑ 15m (50ft). Korea, Japan. \*\*\*

*V. davidii*. Woody, deciduous climber producing young shoots densely covered with short, rigid spines. Heart-shaped, shallowly lobed, toothed, glossy, dark green leaves, to 25cm (10in) long, blue-green or blue-grey beneath, turn scarlet in autumn. Produces edible, spherical black grapes, 1.5cm (½in) across, in autumn. ↑ 8m (25ft) or more. China. \*\*\*

*V. henryana* see *Parthenocissus henryana*.

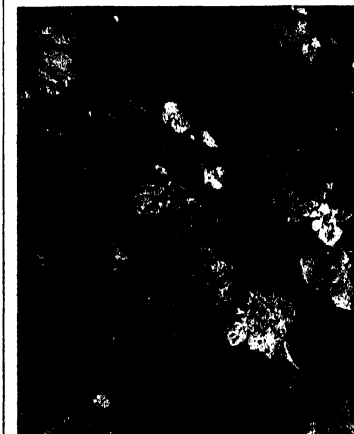
*V. heterophylla* see *Ampelopsis brevipedunculata* var. *maximowiczii*.

*V. quinquefolia* see *Parthenocissus quinquefolia*.

*V. striata* see *Cissus striata*.

*V. thomsonii* see *Parthenocissus thomsonii*.

*V. vinifera* 'Purpurea' [■] ♀ Woody, deciduous climber with rounded, 3- to 5-lobed, toothed leaves, to 15cm (6in) long, grey-hairy at first, turning plum-



*Vitis vinifera* 'Purpurea'

purple, then dark purple in autumn. In autumn, produces small, unpalatable, spherical purple grapes, to 2cm (¾in) across. ↑ 7m (22ft). \*\*\*

*V. voinieriana* see *Tetrastigma voinierianum*.

## VRIESEA

BROMELIACEAE

Genus of about 250 species of rosette-forming, evergreen, mostly epiphytic perennials (bromeliads), closely related to *Tillandsia*. They occur in forested and rocky areas, to 2,500m (8,000ft) high, in Mexico, Central America, the West Indies, and South America. The mostly lance-shaped or linear leaves have smooth margins, are often finely scaly, and frequently have coloured cross-bands and other markings. Bract-like sheaths, sometimes colourful, are present at the leaf bases. The short-stalked flowers are variously shaped, with petals free or fused into a tube, often shorter than the sepals, each petal with 2 scales at the base on the inner surface; the flowers are usually borne in flattened, 2-ranked, spike-like racemes or panicles, with prominent floral bracts, produced on more or less erect scapes from the centres of the rosettes, in summer or autumn. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse or as houseplants. In tropical gardens, grow epiphytically in a tree, or on mossy rocks.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow attached to pieces of bark or tree branches, or in containers of standard epiphytic bromeliad compost, in moderate light. During the growing season, keep the rosette centres filled with water, mist daily, and apply quarter-strength foliar fertilizer every 4–5 weeks. Keep just moist in winter. Outdoors, grow epiphytically in partial shade. See also p.47.

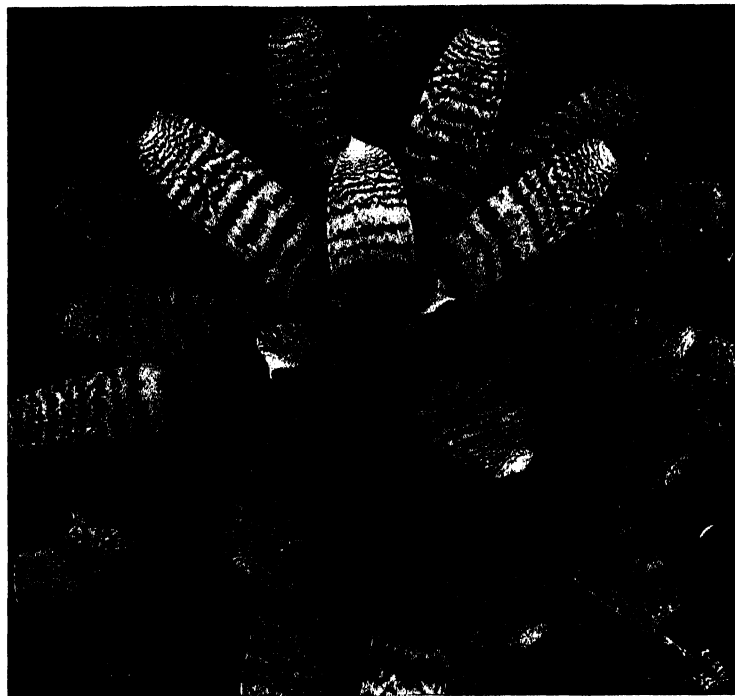
• **PROPAGATION** Sow seed at 19–24°C (66–75°F) when ripe. Remove offsets in spring.

• **PESTS AND DISEASES** Susceptible to scale insects.

*V. carinata* ■ (Lobster claw, Painted feather). Epiphytic bromeliad with funnel-shaped rosettes of arching, lance-shaped, pale green leaves, to 20cm (8in) long, broadly acute or rounded at the tips, and with broadly elliptic, red-tipped sheaths, 5–6cm (2–2½in) long.



*Vriesea carinata*



*Vriesea hieroglyphica*

In summer or autumn, scapes with green, purple, or red bracts bear spike-like racemes, 4–5cm (1½–2in) long, of tubular flowers, to 5cm (2in) long; the flowers have green-tipped yellow petals, keeled sepals, and red-based, yellow-green floral bracts. ↑ to 30cm (12in), ↔ 15–20cm (6–8in). Brazil. ☀ (min. 15°C/59°F)

*V. fenestralis*. Rock-dwelling or epiphytic bromeliad with funnel-shaped rosettes of recurved or arching, broadly linear, pale green leaves, to 40cm (16in) long, with rounded tips, each with a recurved thorn; the leaf-blades have dark green lines and purple circles beneath, and the broadly oval, yellowish green sheaths, 9–10cm (3½–4in) long, are spotted reddish brown. In summer, bears loose, spike-like racemes, to 30cm (12in) long, of green floral bracts and spreading, yellowish green or greenish white flowers, 6–7cm (2½–3in) long. ↑ to 1m (3ft), ↔ 35–50cm (14–20in). Brazil. ☀ (min. 15°C/59°F)

*V. fosteriana* ♀ Epiphytic, probably also terrestrial bromeliad with stiff, dense, funnel-shaped rosettes of arching, broadly tongue-shaped, yellowish to deep green leaves, to 70cm (28in) long;



*Vriesea platynema*

they are cross-banded with purple or maroon, especially beneath, and have broadly oval, dark brown sheaths, 10–15cm (4–6in) long. In summer, bears loose, spike-like racemes, 40cm (16in) or more long, of yellow floral bracts and tubular flowers, 4.5cm (1¾in) long, with yellow petals and green sepals, all with reddish brown tips. ↑ to 1.5m (5ft), ↔ 1m (3ft). Brazil. ☀ (min. 15°C/59°F)

*V. hieroglyphica* ■ (King of bromeliads). Epiphytic bromeliad with dense, funnel-shaped rosettes of arching, strap-shaped, minutely scaly, yellowish green leaves, 50–80cm (20–32in) long, marked dark green above, purplish brown beneath; dark brown sheaths are 8–10cm (3–4in) long. In summer, produces branching, spike-like racemes or panicles, to 80cm (32in) long, of greenish yellow floral bracts and tubular-trumpet-shaped, sulphur-yellow flowers, to 6cm (2½in) long. ↑ to 1m (3ft), ↔ 80–100cm (32–39in). E. Brazil. ☀ (min. 15°C/59°F)

*V. imperialis* (Giant vriesea). Rock-dwelling bromeliad with funnel-shaped rosettes of flat or arching, lance-shaped, leathery, pale reddish green leaves, 1.5m (5ft) long, with broadly oval, green sheaths, to 20cm (8in) long. In summer, erect scapes bear glossy, maroon-red bracts and branching, pyramidal, spike-like racemes or panicles, 2m (6ft) or more long, with red floral bracts and tubular, yellow or white flowers, 10cm (4in) or more long. ↑ 3–5m (10–15ft), ↔ 1.5m (5ft) or more. E. Brazil. ☀ (min. 15°C/59°F)

*V. platynema* ■ Variable, epiphytic bromeliad with very dense, funnel-shaped rosettes of flaccid, strap-shaped, violet-tipped, dull green, often violet-striped leaves, 60cm (24in) long, often margined purple, and with broadly oval, dark brown sheaths, to 12cm (5in) long. In summer, bears loose, spike-like racemes, to 40cm (16in) long, of red or yellow floral bracts and tubular green flowers, to 4.5cm (1¾in) long, with

yellow sepals. ↑ to 1m (3ft), ↔ 60cm (24in). West Indies, E. South America. ☀ (min. 15°C/59°F). *Variegata* has mid-green leaves, pale reddish pink beneath, with pale lines near the tips. E. Brazil.

*V. psittacina* ♀ Variable, epiphytic bromeliad with broadly funnel-shaped rosettes of arching, strap-shaped, pale green leaves, 50cm (20in) long; the leaves have elliptic, green or pale brown sheaths, 7–9cm (3–3½in) long. In summer, produces slender, erect, spike-like racemes, to 30cm (12in) long, with yellow-tipped red, or entirely red or green, floral bracts, and spreading, sometimes green-tipped yellow flowers, 6cm (2½in) long. ↑ to 60cm (24in), ↔ 40–60cm (16–24in). Brazil, Paraguay. ☀ (min. 15°C/59°F)

*V. saundersii* ♀ Rock-dwelling bromeliad with dense rosettes of arching, linear, thorn-tipped, grey-scaly, grey-green leaves, 30cm (12in) long; they have fine maroon spots beneath, and oval, yellowish brown sheaths, to 15cm (6in) long, with reddish brown spots. In summer, bears dense, spike-like racemes or panicles, 14cm (5½in) long, of pale or yellowish green floral bracts and tubular yellow flowers, 3.5cm (1½in) long, with pale or yellowish green sepals. ↑ 60–70cm (24–28in), ↔ 40cm (16in). E. Brazil. ☀ (min. 15°C/59°F)

*V. splendens* ■ ♀ (Flaming sword). Variable, terrestrial or epiphytic bromeliad producing dense, funnel-shaped rosettes of arching, linear, bluish green leaves, to 80cm (32in) long, with broad, dark green, purple, or reddish brown cross-banding, and with indistinct sheaths. In summer, bears lance-shaped, spike-like racemes, to 55cm (22in) long, of thin, bright red floral bracts and tubular yellow flowers, 8cm (3in) long, with often red-tipped yellow sepals. ↑ to 1m (3ft), ↔ 30cm (12in). E. Venezuela to French Guiana. ☀ (min. 15°C/59°F)

▷ *Vriesea*, Giant see *Vriesea imperialis*



*Vriesea splendens*



## WACHENDORFIA

HAEMODORACEAE

Genus of about 25 species of tuberous, evergreen perennials found on grassy slopes in South Africa. They have bright red tubers and large, broadly linear, pleated, parallel-veined, erect, basal leaves, sheathing one another at their bases and arranged in 2 opposite rows. They are grown for their large, terminal panicles of irregular, flat, star-shaped yellow flowers, with 6 tepals, borne on leafless stems. In frost-prone areas, grow in a cool greenhouse; for optimum flowering, plant directly into a greenhouse border. In frost-free areas, grow in a sheltered border.

• **HARDINESS** Half hardy.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with additional sharp sand and peat or leaf mould, in full light. During the growing season, water freely and apply a balanced liquid fertilizer every month. Keep just moist when dormant. Outdoors, grow in fertile, reliably moist soil in full sun.



Wachendorfia thyrsiflora

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn or spring. Separate tubers in spring.
- **PESTS AND DISEASES** Susceptible to slug and snail damage.

**W. thyrsiflora** ■ Clump-forming, tuberous perennial with furry red roots and tubers. Arching, broadly linear, pleated, parallel-veined, basal leaves, to 1m (3ft) long, are hairless and fairly brittle. In early summer, produces dense panicles of star-shaped yellow flowers, to 3cm (1¼in) across. ‡ 1.5–2m (5–6ft), ↔ 45cm (18in). South Africa (Northern Cape, Western Cape, Eastern Cape). \*

▷ **Waffle plant, Purple** see *Hemigraphis 'Exotica'*

## WAHLENBERGIA

CAMPANULACEAE

Genus of about 150 species of mat-forming to upright annuals and perennials from mountains in Europe, South Africa, and Australasia. They have variable, usually alternate leaves, and are grown for their conspicuous, funnel-, bell-, saucer-, or star-shaped, usually violet, blue, or white flowers, borne singly or in cymes, in summer. Grow in a rock garden, peat bed, or alpine house.

• **HARDINESS** Fully hardy (borderline) to frost hardy.

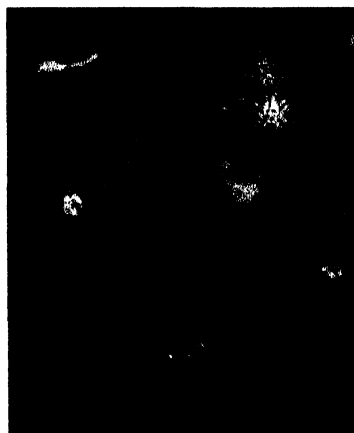
• **CULTIVATION** Grow in well-drained, sandy, humus-rich soil in a sheltered site in partial shade. In an alpine house, grow in a mix of equal parts loam, leaf mould, and sharp sand.

• **PROPAGATION** Sow seed at 13–15°C (55–59°F) in early spring. Divide in spring. Propagate regularly.

• **PESTS AND DISEASES** May be damaged by slugs and snails.

**W. albomarginata** (New Zealand bluebell). Tufted, spreading, short-lived, rhizomatous perennial producing basal rosettes of elliptic to lance-shaped or ovate-spoon-shaped, hairy, leathery, mid-green leaves, to 2cm (¾in) long, with reddish brown margins, often purplish green beneath. Solitary, slender-stemmed, upward-facing, bell-shaped, blue, sometimes white flowers, 2.5cm (1in) across, usually with green veins, are produced in summer. ‡ 5–20cm (2–8in), ↔ to 20cm (8in). New Zealand. \*\*\* (borderline)

**W. gloriosa** ■ Tufted, rhizomatous perennial bearing lance-shaped, thick,



Wahlenbergia gloriosa

dark green leaves, 2–3cm (¾–1¼in) long, with wavy, toothed margins. Solitary, upward-facing, widely bell-shaped, deep violet-blue flowers, 2cm (¾in) across, with darker veins, are produced in summer. ‡ to 5cm (2in), ↔ to 15cm (6in). Australia. \*\*

**W. pumilio** see *Edraianthus pumilio*.

**W. serpyllifolia** see *Edraianthus serpyllifolius*.

▷ **Wake robin** see *Trillium, T. grandiflorum, T. sessile*

## WALDSTEINIA

ROSACEAE

Genus of about 6 species of tufted, rhizomatous, herbaceous perennials found in woodland throughout N. temperate regions. They are grown mainly for their alternate, 3-palmate or palmately 3- to 7-lobed leaves, and for their saucer-shaped yellow flowers, borne singly or in cymes in late spring and early summer. They provide good ground cover in a woodland garden, on dry, shady banks, or at the front of a herbaceous border, but may be invasive.

• **HARDINESS** Fully hardy.

• **CULTIVATION** Grow in any moderately fertile soil in full or partial shade.

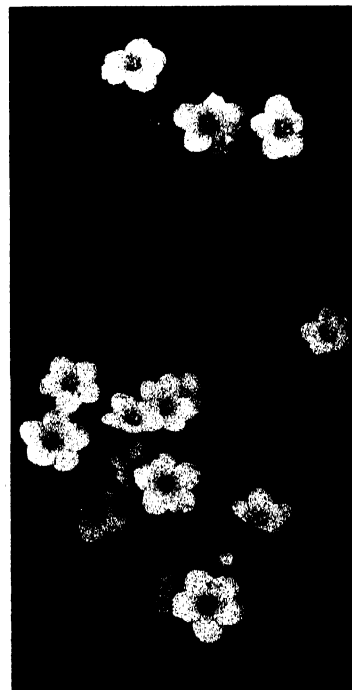
• **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide in early spring.

• **PESTS AND DISEASES** Trouble free.

**W. ternata** ■ syn. *W. trifolia*.

Vigorous, semi-evergreen perennial, spreading by rhizomes and stolons, with 3-palmate, shallowly lobed and toothed leaves, to 6cm (2½in) long, each composed of 2 almost diamond-shaped lateral leaflets and a rounded terminal leaflet. In late spring and early summer, bears loose cymes of 3–7 saucer-shaped, bright yellow flowers, 1.5cm (½in) across. ‡ to 10cm (4in), ↔ 60cm (24in) or more. C., E., and S. Europe, Russia (E. Siberia), China, Japan. \*\*\*

**W. trifolia** see *W. ternata*.



Waldsteinia ternata

- ▷ **Wallflower** see *Erysimum, E. cheiri*
- Siberian** see *E. x allionii*
- Western** see *E. asperum*
- ▷ **Wallpepper** see *Sedum acre*
- ▷ **Walnut** see *Juglans*
- African** see *Schotia brachypetala*
- Black** see *Juglans nigra*
- Californian** see *Juglans californica*
- Common** see *Juglans regia*
- Japanese** see *Juglans ailantifolia*
- Manchurian** see *Juglans mandshurica*
- Texan** see *Juglans microcarpa*
- ▷ **Wandering Jew** see *Tradescantia fluminensis, T. zebrina*
- ▷ **Wandflower** see *Dierama, Galax*
- ▷ **Wapato** see *Sagittaria latifolia*
- ▷ **Waratah** see *Telopea*
- Braidwood** see *T. mongaensis*
- Common** see *T. speciosissima*
- Gippsland** see *T. oreades*
- Monga** see *T. mongaensis*
- Sydney** see *T. speciosissima*
- Tasmanian** see *T. truncata*
- Victorian** see *T. oreades*

## WASHINGTONIA

ARECACEAE/PALMAE

Genus of 2 species of single-stemmed palms from rocky, arid areas in S.W. USA and N. Mexico. Deeply lobed, fan-shaped leaves are borne in terminal heads that form a dense, shaggy thatch on the trunk as they die back. Because of the fire risk, this dead material is often removed in cultivation. Tubular, creamy white or creamy pink flowers, each with 3 petal lobes, are borne in slender, arching panicles between the leaves. In frost-prone climates, grow young plants as houseplants or in a temperate or warm greenhouse. In warmer areas, use as lawn specimens or as avenue trees.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added leaf mould and sharp sand, in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly; keep almost dry in winter. Outdoors, grow in fertile, well-drained soil in full sun.

• **PROPAGATION** Sow seed at 24°C (75°F) in spring.

• **PESTS AND DISEASES** Red spider mites and scale insects may be troublesome under glass.

**W. filamentosa** see *W. filifera*.

**W. filifera** ♀♂ syn. *W. filamentosa* (Desert fan palm, Northern washingtonia). Medium-sized to large palm with a robust, columnar trunk. Leaf-stalks are sharply toothed at the bases, and the fan-shaped, grey-green blades, 1.5–3m (5–10ft) long, are erect at first, then spreading and arching, with filaments hanging from the slender lobes. Dead foliage forms an even skirt that clothes the trunk from top to bottom. Bears tubular, creamy white flowers in panicles to 5m (15ft) long, usually in summer. ‡ 15–20m (50–70ft), ↔ 3–6m (10–20ft). USA (S. California, S. Arizona). ☉ (min. 8–10°C/46–50°F)

**W. robusta** ■ (Thread palm). Tall, fast-growing palm with a slender trunk that gradually tapers from ground level to the crown. Leaf-stalks are sharply toothed throughout their length, and the fan-shaped, bright green blades, to

*Washingtonia robusta*

1m (3ft) long, have arching lobe tips, with inconspicuous or no filaments. Dead foliage forms a shaggy skirt that clothes the trunk. Tubular, creamy pink flowers are borne in panicles to 3m (10ft) long, usually in summer. Suitable for coastal gardens. † to 25m (80ft), ↔ 2.5–5m (8–15ft). N. Mexico. ☼ (min. 8–10°C/46–50°F)

- ▷ **Washingtonia, Northern** see *Washingtonia filifera*
- ▷ **Water fringe** see *Nymphaoides peltata*
- ▷ **Water lily** see *Nymphaea*
  - Amazon** see *Victoria amazonica*
  - Australian** see *Nymphaea gigantea*
  - Cape blue** see *Nymphaea capensis*
  - Egyptian** see *Nymphaea lotus*
  - Giant** see *Victoria*
  - Royal** see *Victoria amazonica*
  - Santa Cruz** see *Victoria cruziana*
  - White** see *Nymphaea alba*
  - Yellow** see *Nymphaea mexicana*
- ▷ **Watermint** see *Mentha aquatica*
- ▷ **Water shield, Carolina** see *Cabomba caroliniana*
- ▷ **Water soldier** see *Stratiotes aloides*

## WATSONIA

IRIDACEAE

Genus of approximately 60 species of cormous perennials, usually found on rocky or grassy slopes and plateaux in South Africa and Madagascar. They have erect, usually sword-shaped, basal leaves, and are cultivated for their showy spikes of horizontal, tubular, red, orange, pink, or white flowers, with curved tubes and 6 tepal lobes; the flowers are borne on erect stems at

various times of the year. They are only suitable for outdoor cultivation in regions where there is little or no frost. In frost-prone areas, grow in a cool greenhouse or conservatory; spring- and summer-growing species may be grown in a border outdoors, and lifted in autumn for storage in a dry, frost-free place.

- **HARDINESS** Half hardy.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added sharp sand and leaf mould, in full sun. In growth, water freely and apply a balanced liquid fertilizer every month. Keep just moist when dormant. Outdoors, grow in light, well-drained soil that does not dry out in summer. Where frost is likely, protect with a dry winter mulch.

*Watsonia pillansii**Watsonia*  
'Stanford Scarlet'

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in autumn. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

**W. aletroides.** Clump-forming, cormous perennial with sword-shaped, glossy leaves, 20–40cm (8–16in) long, overtopped from late winter to spring by unbranched spikes of up to 12 tubular, orange-red flowers, 5cm (2in) long, the tepal lobes not spreading. † 60cm (24in), ↔ 10cm (4in). South Africa (Western Cape). \*

**W. ardernei** see *W. borbonica* subsp. *ardernei*.

**W. beatricis** see *W. pillansii*.

**W. borbonica**, syn. *W. pyramidata*. Clump-forming, cormous perennial with narrowly sword-shaped leaves, to 75cm (30in) long. In summer, bears branched spikes of up to 20 slightly irregular, bright pink flowers, 3cm (1½in) long, with spreading tepal lobes and white lines at the base of each tepal. † 1–1.5m (3–5ft), ↔ 10cm (4in). South Africa (Western Cape). \*, subsp. *ardernei*, syn. *W. ardernei*, has usually white, rarely pink flowers.

**W. bulbifera** see *W. meriana* 'Bulbillifera'.

**W. fourcadei.** Robust, clump-forming, cormous perennial with sword-shaped leaves, 30–60cm (12–24in) long. Dense, branched spikes of 20–40 tubular, pink, orange, or red flowers, 6cm (2½in) long, are produced in spring and summer. † 1.5m (5ft), ↔ 10cm (4in). South Africa (Western Cape). \*

**W. humilis.** Slender, clump-forming, cormous perennial with lance-shaped leaves, to 30cm (12in) long. In spring or early summer, produces unbranched spikes of up to 12 tubular flowers, 3–4.5cm (1¼–1¾in) long, either white with pink outside, or pink with darker pink outside. † 30cm (12in), ↔ 8cm (3in). South Africa (Western Cape). \*

**W. marginata.** Clump-forming, cormous perennial with sword-shaped leaves, 75cm (30in) long. From spring to early summer, bears dense, branched spikes of few to many tubular, mauve-pink flowers, 2cm (¾in) long, with spreading tepal lobes and white and purple markings. † to 2m (6ft), ↔ 15cm (6in). South Africa (Western Cape). \*

**W. meriana.** Clump-forming, cormous perennial with sword-shaped leaves, 30–60cm (12–24in) long. In summer, produces branched spikes of up to 25 tubular flowers, 2–2.5cm (¾–1in) long, with spreading tepal lobes, in bright rose-red, rarely scarlet or white.

† 0.5–2m (1¼–6ft), ↔ 15cm (6in). South Africa. (Eastern Cape, Western Cape, KwaZulu/Natal). \*

**'Bulbillifera'**, syn. *W. bulbifera*. This flowers 3cm (1¼in) long, and produces bulbils among the flower spikes.

**W. pillansii** [syn. *W. beatricis*]. Slender, clump-forming, cormous perennial producing sword-shaped leaves, 25–60cm (10–24in) long. From summer to autumn, bears branched spikes of 20–25 tubular, bright orange to orange-red flowers, to 5cm (2in) long, with spreading tepal lobes.

† 50–120cm (20–48in), ↔ 10cm (4in). South Africa (Western Cape, Eastern Cape, KwaZulu/Natal, Eastern Transvaal). \*

**W. pyramidata** see *W. borbonica*.

**W. 'Stanford Scarlet'** [syn. *W. borbonica*]. Slender, clump-forming, cormous perennial with sword-shaped leaves, 40–100cm (16–39in) long. Bears unbranched spikes of 10–12 tubular, orange-scarlet flowers, 3cm (1¼in) long, with spreading tepal lobes, in late spring or summer.

† 0.8–1.4m (32–54in), ↔ 15cm (6in). \*

▷ **Wattakaka** see *Dregea*

**W. sinensis** see *D. sinensis*

▷ **Wattle** see *Acacia*

**Black** see *Acacia mearnsii*

**Cape** see *Albizia lophantha*

**Cootamundra** see *Acacia baileyana*

**Drummond's** see *Acacia drummondii*

**Early black** see *Acacia decurrens*

**Green** see *Acacia decurrens*

**Hedge** see *Acacia paradoxa*

**Knife-leaf** see *Acacia cultriformis*

**Ovens** see *Acacia praevisima*

**Queensland silver** see *Acacia podalyrifolia*

**Silver** see *Acacia dealbata*, *A. retinodes*

**Swamp** see *Acacia retinodes*, *Albizia lophantha*

**White sallow** see *Acacia floribunda*

▷ **Wax flower** see *Eriostemon*, *Hoya*, *Jamesia americana*

**Long-leaf** see *Eriostemon myoporoides*

**Philippine** see *Elingera elatior*

**Pink** see *Eriostemon australasius*

▷ **Wax, Geraldton** see *Chamaelacium uncinatum*

▷ **Wax plant** see *Hoya carnosa*

▷ **Wax tree** see *Rhus succedanea*

▷ **Wayfaring tree** see *Viburnum lantana*

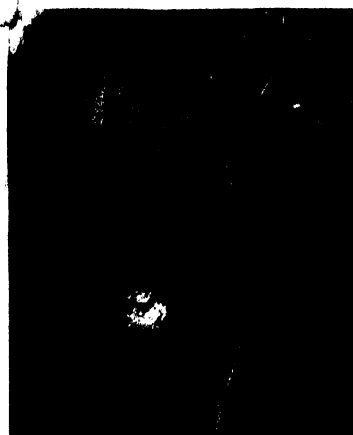
▷ **Weather prophet** see *Dimorphanthea pluvialis*

## WEBEROCEREUS

CACTACEAE

Genus of about 5 species of climbing or pendent, epiphytic or rock-dwelling, perennial cacti from mostly rainforest habitats in Mexico, Guatemala, Nicaragua, Costa Rica, and Panama. They have aerial roots and spiny, fleshy stems that may be 3- or 4-angled, slender and cylindrical, or flat and leaf-like with scalloped margins. Nocturnal, cup- or funnel-shaped, pink or greenish or yellowish white flowers are produced in midsummer, followed by spherical to oblong, warty fruits with short, spiny or hairy areoles. Where temperatures drop below 15°C (59°F), grow in a warm greenhouse; in warmer climates, use outdoors in a courtyard garden or against a wall.

- **HARDINESS** Frost tender.



*Weberocereus biolleyi*

- **CULTIVATION** Under glass, grow in epiphytic cactus compost, with added leaf mould, in bright filtered light and high humidity. From spring to early autumn, water freely, apply a half-strength, balanced liquid fertilizer every 4 or 5 weeks, and mist daily with tepid water. Keep just moist at other times. Outdoors, grow in gritty, moderately fertile, sharply drained soil in partial shade. See also pp.48-49.
- **PROPAGATION** Sow seed at 19-24°C (66-75°F), or take cuttings of stem sections, both in spring or summer.
- **PESTS AND DISEASES** Scale insects may attack plants if left dry.

**W. biolleyi** ■ Mainly pendent cactus with cylindrical or irregularly 4-angled stems, 5mm (¼in) thick; sometimes branching. Small, white-woolly areoles occasionally bear 1-3 very short, fine yellow spines. Funnel-shaped, whitish pink flowers, 3-5cm (1¼-2in) long, with dark pink outer petals, are borne in midsummer. ↑ 80cm (32in), ↔ 30cm (12in). Costa Rica. ☀ (min. 15°C/59°F)

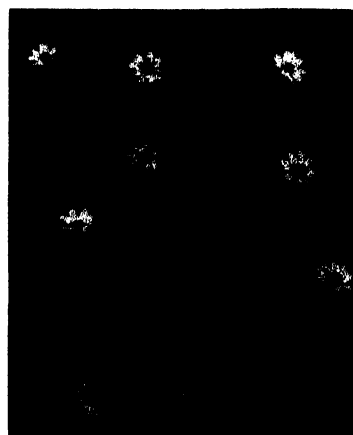
**W. bradei**, syn. *Eccremocactus bradei*. Pendent cactus with flat, leaf-like, wavy-margined, jointed branches, to 10cm (4in) across; these produce small, pale brown-woolly areoles, each with one dark brown spine. Funnel-shaped white flowers, 6-7cm (2½-3in) long, with slightly expanding, fleshy petals, pale pink outside, are borne from the upper areoles from spring to autumn. ↑↔ 60cm (24in). Costa Rica. ☀ (min. 15°C/59°F)

**W. glaber**, syn. *Werckleocereus glaber*. Climbing cactus with 3-angled, toothed, pale green stems, 2.5-4.5cm (1-1½in) thick. Small, brown-woolly areoles bear 2-4 yellow or brown spines. Cup-shaped white flowers, 10-12cm (4-5in) long, with pale greenish brown outer petals, are borne in midsummer. ↑ 3m (10ft), ↔ 60cm (24in). Mexico, Guatemala, Costa Rica. ☀ (min. 15°C/59°F)

## WEDELIA

ASTERACEAE/COMPOSITAE

Genus of about 70 species of erect, prostrate, or climbing, hairy annuals, evergreen perennials and soft-stemmed or woody shrubs, found near coasts in tropical and subtropical regions. They have opposite, usually oblong to elliptic or obovate, toothed or lobed leaves, and are grown for their daisy-like yellow flowerheads, borne either singly or in few-headed clusters in summer. In frost-



*Wedelia trilobata*

prone areas, grow as houseplants, or in a warm greenhouse, or use outdoors in summer in containers. In warmer areas, *W. trilobata* is a rampant ground-cover plant, and is also useful for growing in dry shade under trees.

- **HARDINESS** Frost tender.
- **CULTIVATION** Grow in any well-drained soil or potting compost.
- **PROPAGATION** Sow seed at 18°C (64°F), divide, or root stem-tip cuttings, at any time.
- **PESTS AND DISEASES** Trouble free.

**W. trilobata** ■ Creeping, evergreen perennial, rooting at the leaf nodes and spreading widely. The elliptic or obovate, mid- to dark green leaves, 12cm (5in) long, are usually 3-lobed, sometimes entire or barely lobed. Solitary daisy-like yellow flowerheads, 2cm (¾in) across, are borne from late spring to autumn. ↑ 15-20cm (6-8in), ↔ 2m (6ft) or more. USA (Florida), West Indies, Central America, tropical South America. ☀ (min. 13°C/55°F)

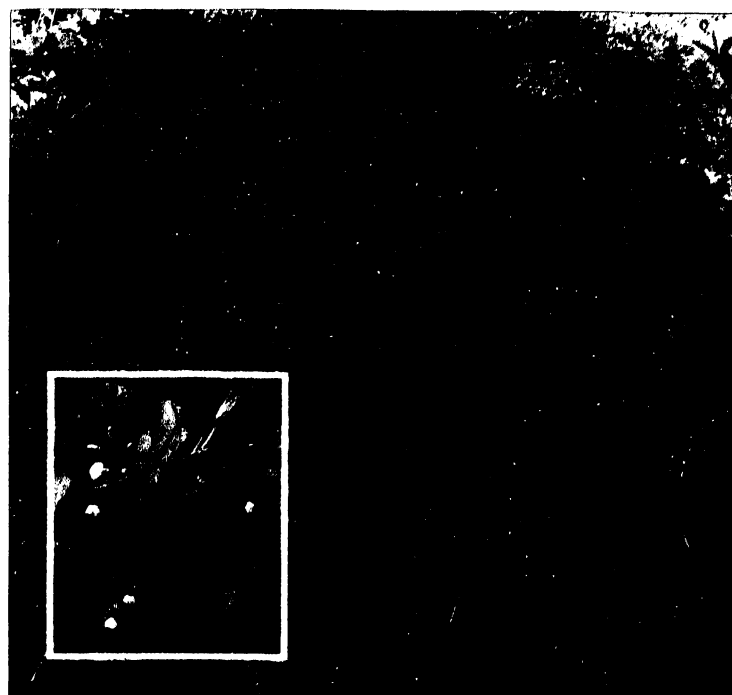
• **Weeping willow** see *Salix babylonica*  
• **Golden** see *Salix sepulchralis*  
• **'Chrysocoma'**

## WEIGELA

CAPRIFOLIACEAE

Genus of 12 species of mostly spreading to upright, deciduous shrubs found in scrub and woodland margins in E. Asia. They have opposite, oblong to ovate or elliptic, toothed leaves, usually up to 10cm (4in) long. Weigelas are cultivated for their showy, bell- to funnel-shaped, pink to red, sometimes white or yellow flowers; these are usually 4cm (1½in) long, and are borne singly or in corymbs or cymes of 3 or 4, usually on short lateral twigs on the previous year's branches. Suitable for a mixed or shrub border, or for open woodland.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in any fertile, well-drained soil in full sun or partial shade. Pruning group 2.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn; weigelas hybridize readily, so seed may not come true. Root greenwood cuttings in early summer; semi-ripe cuttings with bottom heat in midsummer; hardwood cuttings from autumn to winter.
- **PESTS AND DISEASES** Leaves may be attacked by leaf and bud eelworm, and honey fungus.



*Weigela* 'Eva Rathke' (inset: flower detail)

**W. 'Abel Carrière'** ♀ Spreading shrub with oval, dark green leaves. Bell-shaped, dark pinkish red flowers, with yellow-spotted throats, open from purple-red buds in late spring and early summer. ↑↔ 2m (6ft). \*\*\*

**W. 'Briant Rubidor'**, syn. *W. 'Olympiade'*. Spreading shrub with oval, leaves, to 8cm (3in) long, yellow-green at first, turning bright yellow or sometimes becoming margined with yellow. In late spring and early summer, bears 3-4cm (1½in) long, dark ruby-red flowers, 3cm (1¼in) long. Best in partial shade. ↑↔ 2m (6ft). \*\*\*

**W. 'Bristol Ruby'**. Vigorous, upright shrub with oval, dark green leaves and usually bell-shaped, dark red flowers, opening from very dark red buds, in late spring and early summer. ↑ 2.5m (8ft), ↔ 2m (6ft). \*\*\*

**W. 'Bristol Snowflake'** see *W. 'Snowflake'*.

**W. 'Candida'**. Spreading, bushy shrub with oval, bright green leaves and bell-shaped, pure white flowers, borne in late spring and early summer. ↑↔ 2.5m (8ft). \*\*\*

**W. 'Carnaval'**. Vigorous, upright shrub with oval, dark green leaves, to 10cm

(4in) or more long. Bell-shaped flowers, to 5cm (2in) long, in a combination of pale pink, white, and dark pink, are borne in late spring and early summer. ↑ 2.5m (8ft), ↔ 2m (6ft). \*\*\*

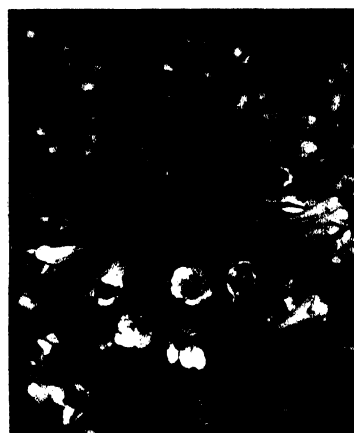
**W. 'Eva Rathke'** ■ Compact, upright shrub with oval, dark green leaves and broadly funnel-shaped, dark crimson flowers, opening from dark red buds in late spring and early summer. ↑↔ 1.5m (5ft). \*\*\*

**W. florida**. Spreading shrub with arching shoots and oval, tapered, dark green leaves. Produces corymbs of funnel-shaped, dark pink flowers, 3cm (1¼in) long, pale pink to nearly white inside, in late spring and early summer. ↑↔ 2.5m (8ft). N. China, Korea. \*\*\*

**'Foliis Purpureis'** ■ ♀ has bronze-



*Weigela florida* 'Foliis Purpureis'



*Weigela florida* 'Variegata'



*Weigela* 'Looymansii Aurea'

green foliage;  $\uparrow$  1 m (3ft),  $\leftrightarrow$  1.5 m (5ft). 'Variegata'  $\square$   $\varnothing$  is compact, with white-margined, grey-green leaves;  $\uparrow$  2–2.5 m (6–9ft).

**W. 'Looymansii Aurea'**  $\square$  Slow-growing, spreading shrub with arching shoots and oval, golden yellow leaves, 8cm (3in) long, narrowly margined with red. Bears bell-shaped, pale pink flowers in late spring and early summer. Best in partial shade.  $\uparrow$  1.5 m (5ft). \*\*\*

**W. middendorffiana.** Upright shrub with oval, bright green leaves, to 8cm (3in) long. Bell-shaped, pale yellow flowers, often with conspicuous, orange or red throat markings, are borne in terminal cymes from mid-spring to midsummer.  $\uparrow$  1.5 m (5ft). N.E. Russia, N. China, Korea, Japan. \*\*\*

**W. 'Minuet'**  $\square$  Compact, spreading shrub with oval, bronze-green leaves, to 8cm (3in) long. Bears bell-shaped, slightly fragrant, dark pink flowers, with yellow throats, in late spring and early summer.  $\uparrow$  75cm (30in),  $\leftrightarrow$  1.2 m (4ft). \*\*\*

**W. 'Olympiade'** see *W. 'Briant Rubido'*.

**W. praecox.** Upright shrub with oval, dark green leaves, hairy beneath. In late spring and early summer, bears corymbs of funnel-shaped, fragrant pink flowers with yellow throats.  $\uparrow$  2.5 m (8ft),  $\leftrightarrow$  2 m (6ft). N.E. Russia, Korea, Japan. \*\*\*

**'Variegata'**  $\varnothing$  has leaves with creamy yellow margins that turn white with age.

**W. 'Snowflake'**, syn. *W. 'Bristol Snowflake'*. Spreading shrub with ovate, dark green leaves and bell-shaped, pure white flowers, borne profusely in late spring and early summer.  $\uparrow$  1.2 m (4ft),  $\leftrightarrow$  1.5 m (5ft). \*\*\*

$\triangleright$  *Weingartia* see *Rebutia*  
*W. neocumingii* see *R. neocumingii*

## WELDENIA

COMMELINACEAE

Genus of one species of tuberous perennial occurring in the mountains of Mexico and Guatemala. *W. candida* is grown for its rosettes of large, simple leaves and its stalkless cymes of cup-shaped white flowers. Grow in a raised bed; in regions with cool, damp winters, it is best grown in an alpine house.

• **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in gritty, moderately fertile, sharply drained soil in full sun. Protect from winter wet. In an alpine house, grow in deep containers in a mix of equal parts loam, leaf mould,

*Weldenia candida*

and grit. Water freely in growth; reduce water as leaves wither, and keep barely moist when dormant in winter. Repot annually in autumn.

• **PROPAGATION** Sow seed as soon as ripe in containers in a cold frame. Divide in spring. Take root cuttings in winter.

• **PESTS AND DISEASES** Aphids and whiteflies may be a problem under glass.

**W. candida**  $\square$  Tuberous perennial with rosettes of lance-shaped, pointed, wavy-margined, slightly leathery leaves, 5–20cm (2–8in) long. In late spring and early summer, bears a long succession of upright, cup-shaped, pure white flowers, to 3cm (1¼in) across.  $\uparrow$  15cm (6in). Mexico, Guatemala. \*\*\*

$\triangleright$  *Wellingtonia* see *Sequoiadendron giganteum*

## WELWITSCHIA

WELWITSCHIACEAE

Genus of one species of prostrate, dioecious, evergreen perennial from deserts, mainly coastal, in Angola and Namibia. It has a large but relatively shallow tap root with many lateral roots just below ground level. The fleshy, leathery, mid- or grey-green leaves are strap-shaped, and the inflorescences are cone-like. In their natural habitat, male plants produce masses of pollen, which is carried on the wind to female plants. In summer, females can produce up to 100 conical to spherical floral cones, but there is no record of welwitschias blooming in cultivation, except in botanic gardens. Where temperatures

*Welwitschia mirabilis*

drop below 19°C (66°F), grow in a warm greenhouse; in warmer climates, use in a desert garden. Its adaptation to the extreme conditions of its natural habitat means it is difficult to cultivate.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in a mixture of 2 parts sharp, granitic sand and 1 part each loam-based potting compost (J1 No.2), peat, and leaf mould. Provide full light and low humidity. Grow in deep containers, or in a clay drainpipe, and top-dress with crushed limestone. From spring to autumn, water moderately and apply a balanced liquid fertilizer every 6–8 weeks. Keep completely dry in winter. Outdoors, grow in gritty, poor, sharply drained soil, with added leaf mould, in full sun. See also pp.48–49.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) as soon as ripe; sow in tall, narrow containers that allow for the growth of the tap root.

• **PESTS AND DISEASES** Trouble free.

*W. bainesii* see *W. mirabilis*.

*W. mirabilis*  $\square$  syn. *W. bainesii*.

Prostrate, dioecious, evergreen perennial with a short, conical caudex becoming swollen with age, often 1m (3ft) across in very old plants, and divided in half by a groove. The 2 strap-shaped, often curling, leathery, fleshy, mid- or grey-green leaves, 2m (6ft) or more long, grow from marginal grooves on the crown. Cones are produced in axillary cymes from the top of the caudex in summer: female cones, 5cm (2in) long, are brownish green; male cones, 3cm (1¼in) long, are reddish brown.  $\uparrow$  45cm (18in) or more,  $\leftrightarrow$  4m (12ft). Angola, Namibia.  $\odot$  (min. 19°C/66°F)

$\triangleright$  *Werckleocereus glaber* see *Weberocereus glaber*

## WESTRINGIA

LABIATAE/LAMIACEAE

Genus of about 25 species of rounded to erect, evergreen shrubs from dry coastal heathland, scrub, sands, and dry forest in Australia. They are cultivated for their flowers and foliage. The crowded, narrowly linear to ovate, rosemary-like leaves are produced in whorls of 3–5. The tubular, white to pale blue or mauve flowers are 2-lipped, the upper lip longer, erect and 2-lobed, the lower lip divided into 3 spreading lobes; the flowers are borne singly in the uppermost leaf axils or in terminal clusters. In frost-prone areas, grow in a cool greenhouse. In milder regions, use in a border, or as a hedge or screen.

• **HARDINESS** Frost tender, although some species (including *W. fruticosa*) may survive short spells just below 0°C (32°F).

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2), with added leaf mould and sharp sand, in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in moderately fertile, moist but well-drained soil in full sun. Pruning group 9; trim hedges in late spring and late summer. May need restrictive pruning under glass.

• **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Root greenwood

*Westringia fruticosa*

cuttings in early summer, or semi-ripe cuttings with bottom heat in mid-summer.

• **PESTS AND DISEASES** Trouble free.

*W. fruticosa*  $\square$   $\varnothing$  syn. *W.*

*rosmariniformis* (Australian rosemary). Erect, bushy, rounded shrub, at least when young, becoming more open as it matures, with linear to narrowly lance-shaped leaves, 1.5–2.5cm (½–1in) long, mid- to deep green above, white-felted beneath. Solitary, tubular, white to very pale blue flowers, 1.5cm (½in) across, with darker freckling in the throats, are borne in axillary cymes from late spring to early autumn.  $\uparrow$  1–1.5 m (3–5ft). Australia (coastal New South Wales).  $\odot$  (min. 5°C/41°F)

*W. rosmariniformis* see *W. fruticosa*.

$\triangleright$  *Wahauhaupaku* see *Pseudopanax arboreus*

$\triangleright$  *Wheat*, Puffed see *Briza maxima*

$\triangleright$  *Wheatgrass*, Intermediate see *Elymus hispidus*

$\triangleright$  *Whin* see *Ulex europaeus*

$\triangleright$  *Whinberry* see *Vaccinium myrtillus*

$\triangleright$  *Whitebeam* see *Sorbus aria*

*Swedish* see *S. intermedia*

$\triangleright$  *White cup* see *Nierembergia repens*

$\triangleright$  *White paint brush* see *Haemanthus albidus*

$\triangleright$  *White pine*.

*Eastern* see *Pinus strobus*

*Japanese* see *Pinus parviflora*

*Mexican* see *Pinus ayacahuite*

*Western* see *Pinus monticola*

$\triangleright$  *Whitethorn*, Coast see *Ceanothus incanus*

$\triangleright$  *White trumpet* see *Sarracenia leucophylla*

$\triangleright$  *Whitey wood* see *Acradenia frankliniae*

$\triangleright$  *Whitlow-wort* see *Paronychia*

$\triangleright$  *Whorlflower* see *Morina longifolia*

$\triangleright$  *Whortleberry* see *Vaccinium*, *V. myrtillus*

*Caucasian* see *V. arctostaphylos*

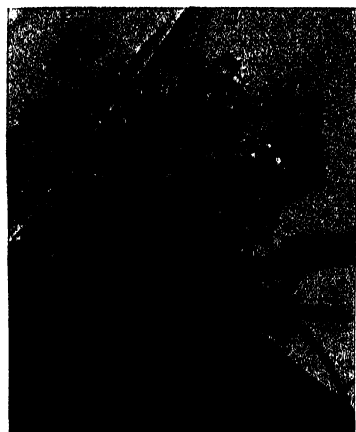
*Red* see *V. parvifolium*

$\triangleright$  *Widow's tears* see *Commelina*

## WIGANDIA

HYDROPHYLLACEAE

Genus of 5 species of evergreen, upright to spreading perennials, subshrubs, shrubs, and small trees occurring in woodland and roadsides in tropical USA, Central America, and South America. They are cultivated for their flowers and foliage. The large, alternate,

*Wigandia caracasana*

simple, oblong to broadly ovate, toothed leaves are covered in stinging hairs. Tubular-based, bell-shaped, usually lilac to violet flowers, with 5 broad, wide-spreading lobes, are borne in terminal panicles. Where temperatures fall below 5–7°C (41–45°F) in winter, grow in a cool or temperate greenhouse or use as annuals for summer bedding. In milder regions, grow as specimen plants. Contact with foliage may aggravate skin allergies.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. During the growing season, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun. Pruning group 1; may need restrictive pruning under glass.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in spring. Take greenwood cuttings in early summer.
- **PESTS AND DISEASES** Red spider mites may be troublesome under glass.

**W. caracasana** ■ syn. *W. macrophylla*. Open, soft-stemmed, evergreen subshrub with robust, sparsely branched, yellow- to white-woolly stems. Long-stalked, ovate, coarsely toothed leaves, 30–60cm (12–24in) long, heart-shaped at the bases, are mid- to deep green above, hoary beneath. Bears bell-shaped, white-tubed, light violet flowers, 2cm (¾in) across, in large, terminal panicles, to 30cm (12in) or more long, mainly in summer. †3–4m (10–12ft), ↔ 2–3.5m (6–11ft). Mexico to Colombia. ☉ (min. 7°C/45°F)

**W. macrophylla** see *W. caracasana*.

- ▷ **Wigginsia** see *Parodia*
- W. erinacea** see *P. erinacea*
- W. vorwerkiana** see *P. erinacea*

## WIKSTROEMIA

THYMELAEACEAE

Genus of approximately 70 species of deciduous or evergreen, spreading to upright shrubs and trees, closely related to *Daphne*. They are usually found in habitats ranging from dry slopes to wet woodland in mountainous areas from the Himalayas to E. Asia, Sri Lanka, Australia, and the Pacific islands. The alternate or opposite leaves are oblong-lance-shaped to broadly ovate. Tubular or salverform, usually yellow flowers are

produced in terminal spikes, racemes, cymes, or, occasionally, panicles. They are seldom cultivated, but *W. canescens*, valued for its flowers, will grow in a sheltered position in a woodland garden. In frost-prone areas, grow the tender species in a cool or temperate greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Grow in any well-drained soil in full sun to partial shade. In frost-prone areas, shelter from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn.
- **PESTS AND DISEASES** Trouble free.

**W. canescens**. Upright, deciduous shrub with slender, arching shoots. Alternate to nearly opposite, elliptic leaves are up to 8cm (3in) long. In late summer and early autumn, purple flower buds open to tubular, yellow to greenish yellow flowers, 1.5cm (½in) long, each with a slender, slightly curved tube and 4 short lobes, in terminal cymes. †1.8m (6ft), ↔ 1.5m (5ft). Sri Lanka, Himalayas, China. \*\*

▷ **Wilcoxia albiflora** see *Echinocereus leucanthus*

▷ **Wilcoxia schmollii** see *Echinocereus schmollii*

▷ **Wild flowers** see p.43

▷ **Wild Irishman** see *Discaria toumatou*

▷ **Wild Spaniard** see *Aciphylla colensoi*

▷ **Willow** see *Salix*

**Bay** see *Salix pentandra*

**Coyote** see *Salix exigua*

**Crack** see *Salix fragilis*

**Creeping** see *Salix repens*

**Cricket-bat** see *Salix alba* var. *caerulea*

**Desert** see *Pittosporum phillyreoides*

**Golden** see *Salix alba* var. *vitellina*

**Golden weeping** see *Salix x sepulcralis* 'Chrysocoma'

**Hoary** see *Salix elaeagnos*

**Kilmarnock** see *Salix caprea*

'Kilmarnock'

**Musk** see *Salix aegyptiaca*

**Silver** see *Salix alba* var. *sericea*

**Swiss** see *Salix helvetica*

**Thyme-leaved** see *Salix serpyllifolia*

**Violet** see *Salix daphnoides*

**Weeping** see *Salix babylonica*

**White** see *Salix alba*

**Woolly** see *Salix lanata*

▷ **Willow-bell** see *Campanula persicifolia* var. *planiflora*

▷ **Willow herb** see *Epilobium*

## X WILSONARA

ORCHIDACEAE

Hybrid genus of evergreen orchids, derived from crosses between *Cochlidia*, *Odontoglossum*, and *Oncidium*. Conical, flattened pseudobulbs grow from a rhizome, each pseudobulb producing 1 or 2 soft, linear to lance-shaped leaves at its apex. The inflorescences, either tall panicles with 100 or more flowers, or shorter panicles of larger flowers, are produced from the bases of the pseudobulbs. The rounded, sometimes star-shaped flowers are very variably coloured, often having conspicuous markings.

- **HARDINESS** Frost tender.
- **CULTIVATION** Cool-growing orchids. Grow in epiphytic orchid compost in

x *Wilsonara* Hambühren Stern 'Cheam'

containers that restrict the roots. In summer, provide bright filtered light and high humidity, water freely, applying a fertilizer at every third watering, and mist twice daily. In winter, admit full light, water sparingly, provide moderate humidity, and mist daily. See also p.46.

- **PROPAGATION** Divide when plants fill their containers and "flow" over the sides.

- **PESTS AND DISEASES** Aphids, red spider mites, and mealybugs may be a problem.

x **W. Hambühren Stern 'Cheam'** ■ (*Oncidium tigrinum* x x *Odontioda* Lippert). Evergreen orchid with 1 or 2 linear leaves, 23cm (9in) long. Almost circular flowers, 6cm (2½in) across, are rich brown and yellow, and are borne in long panicles at any time of year. †60cm (24in), ↔ 30cm (12in). ☉ (min. 10°C/50°F; max. 30°C/86°F)

▷ **Windflower** see *Anemone*, *A. nemorosa*, *Zephyranthes*

▷ **Winecups** see *Geissorhiza radians*

▷ **Wing nut** see *Pterocarya*

**Caucasian** see *P. fraxinifolia*

**Chinese** see *P. stenoptera*

**Japanese** see *P. rhoifolia*

▷ **Wintera aromatica** see *Drimys winteri*

▷ **Winter aconite** see *Eranthis*, *E. hyemalis*

▷ **Winterberry** see *Ilex verticillata*

**Japanese** see *Ilex serrata*

▷ **Wintergreen** see *Gaultheria procumbens*, *Pyrola*

**Round-leaved** see *Pyrola rotundifolia*

▷ **Winter heath** see *Erica carnea*

▷ **Winter's bark** see *Drimys winteri*

▷ **Wintersweet** see *Acokanthera oblongifolia*, *Chimonanthus*, *C. praecox*

▷ **Wire-netting bush** see *Corokia cotoneaster*

▷ **Wishbone flower** see *Torenia*, *T. fournieri*

▷ **Wistaria** see *Wisteria*

## WISTERIA

*Wistaria*

LEGUMINOSAE/PAPILIONACEAE

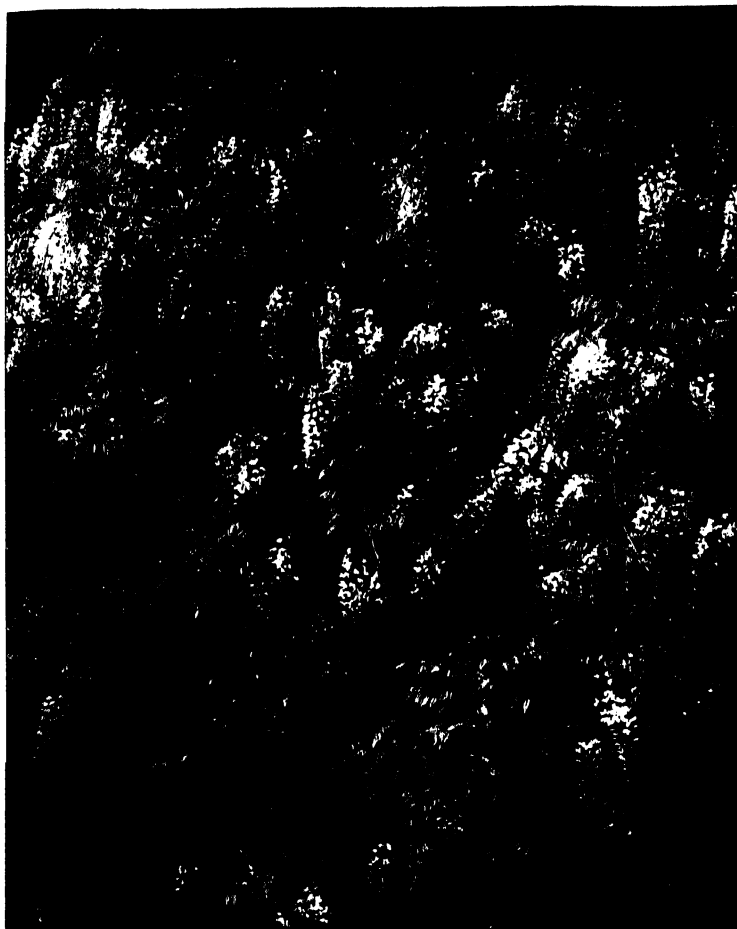
Genus of about 10 species of twining, woody, deciduous climbers found in moist woodland and on streambanks in China, Korea, Japan, and C. and S. USA. They have alternate, pinnate, dark green leaves, to 35cm (14in) or more long, with ovate to lance-shaped or elliptic leaflets. They are cultivated for their showy, pea-like, fragrant flowers, borne in usually pendent racemes in spring or summer, followed by pendent, bean-like green seed pods. Train against a wall, into a tree, over an arch or pergola, or as a free-standing half-standard. The stems twine anticlockwise around the support. All parts may cause severe discomfort if ingested.

- **HARDINESS** Fully hardy, but flower buds may be damaged by late frosts.

- **CULTIVATION** Grow in fertile, moist but well-drained soil in full sun or partial shade. Wisterias growing into trees need no training. To train formally, after planting, prune back the leading shoot to 75–90cm (30–36in) above ground level. During the first growing season, tie in lateral shoots to the framework and cut back sublaterals to 2 or 3 buds. In the first winter, cut back laterals by one-third of their length, and sublaterals to 2 or 3 buds; cut back the leading shoot again, to 75–90cm (30–36in) above the point from which the topmost laterals branch. In subsequent years, repeat the pruning of the leader and selection of lateral shoots until the framework has been completed. Once established, in late summer cut back all shoots not needed to extend the framework, to within 15cm (6in) of the main branches; leave 4–6 leaves on each shoot. In midwinter, reduce these spurs further to 8–10cm (3–4in), leaving only 2 or 3 buds.
- **PROPAGATION** Take basal cuttings from sideshoots in early to midsummer and root with bottom heat. Layer in autumn, or graft in winter.
- **PESTS AND DISEASES** May be attacked by leaf spot, aphids, honey fungus, and brown scale.

**W. brachybotrys** (Silky wisteria). Twining climber with pinnate, softly hairy leaves, to 35cm (14in) long, each composed of 9–13 ovate to lance-shaped leaflets. Pea-like, fragrant, yellow-

*Wisteria brachybotrys* 'Shiro Kapitan'

*Wisteria floribunda* 'Alba'

marked, violet to white flowers are produced in racemes, to 15cm (6in) long, in early summer; they are followed by bean-like, velvety green seed pods, to 20cm (8in) long, 19m (28ft) or more. Garden origin. \*\*\*. 'Alba' see 'Shiro Kapitan'. f. *alba* see 'Shiro Kapitan'. 'Alba Plena' see 'Shiro Kapitan'. 'Murasaki Kapitan', syn. *W. venusta* 'Violacea', *W. venusta* f. *violacea*, has deep blue-violet flowers with prominent white, slightly yellow-tinged markings on the standards. f. *plena* see 'Shiro Kapitan'. 'Shiro Kapitan' [ ] syn. 'Alba', f. *alba*, 'Alba Plena', f. *plena*, *W. venusta*, *W. venusta* 'Alba', *W. venusta* f. *alba*, *W. venusta* 'Alba Plena', produces white flowers with a yellow stain at the base of each standard. Double flowers are occasionally produced.

*Wisteria floribunda* 'Macrobotrys'

*W. chinensis* see *W. sinensis*.

*W. floribunda* (Japanese wisteria).

Vigorous, twining climber with pinnate leaves, each composed of 11–19 ovate to lance-shaped leaflets. In early summer, pea-like, fragrant, blue to violet, pink, or white flowers, the standards marked with white and yellow, are produced in pendent racemes, to 30cm (12in) or more long, the flowers opening gradually from the bases to the tips; they are often followed by bean-like, velvety green seed pods, to 15cm (6in) long, 19m (28ft) or more. Japan. \*\*\*. 'Alba' [ ] f. *alba* see 'Shiro Noda', bears white flowers in racemes to 60cm (24in) long. 'Black Dragon' see 'Royal Purple'. 'Double Black Dragon' see 'Violacea Plena'. 'Honbeni' f. *rosea*, 'Rosea', has pink

*Wisteria x formosa**Wisteria sinensis* 'Alba'

flowers in racemes to 45cm (18in) long. 'Honko' see 'Honbeni'. 'Kokuryu' see 'Royal Purple'. 'Kyushaku' see 'Macrobotrys'. 'Macrobotrys' [ ] f. *rosea* see 'Honbeni'. 'Royal Purple', syn. 'Black Dragon', 'Kokuryu', has racemes, 30–50cm (12–20in) long, with purple-violet flowers. 'Shiro Noda' see 'Alba'. 'Violacea Plena', syn. 'Double Black Dragon', 'Yae Kokyuryu', has double, violet-blue flowers. 'Yae Kokyuryu' see 'Violacea Plena'.

*W. x formosa* [ ] (*W. floribunda* x *W. sinensis*). Vigorous, twining climber with pinnate leaves, each composed of 9–15, broadly ovate to elliptic leaflets. Pea-like, fragrant, violet-blue flowers, with white and yellow markings, are borne in pendent racemes, to 25cm (10in) long, in late spring and early summer, often followed by bean-like, velvety green seed pods, to 15cm (6in) long, 19m (28ft) or more. Garden origin. \*\*\*.

*W. sinensis* f. *sinensis* see *W. chinensis* (Chinese wisteria). Vigorous, twining climber with pinnate leaves, each composed of 7–13 elliptic or ovate leaflets. Pea-like, fragrant, lilac-blue to white flowers, in dense, pendent racemes to 30cm (12in) long, are borne in late spring and early summer; they are often followed by bean-like, velvety green seed pods, to 15cm (6in) long, 19m (28ft) or more. China. \*\*\*. 'Alba' [ ] f. *alba* has white flowers. 'Prolific' bears many lilac-blue to pale violet-blue flowers. 'Sierra Madre' has very fragrant, lavender-violet flowers with white-flushed standards.

*W. venusta* see *W. brachybotrys* 'Shiro Kapitan'.

*W. venusta* 'Alba' see *W. brachybotrys* 'Shiro Kapitan'.

*W. venusta* f. *alba* see *W. brachybotrys* 'Shiro Kapitan'.

*W. venusta* 'Alba Plena' see *W. brachybotrys* 'Shiro Kapitan'.

*W. venusta* 'Violacea' see *W. brachybotrys* 'Murasaki Kapitan'.

*W. venusta* f. *violacea* see *W. brachybotrys* 'Murasaki Kapitan'.

▷ *Wisteria*,

Chinese see *Wisteria sinensis*

Japanese see *Wisteria floribunda*

Silky see *Wisteria brachybotrys*

South African see *Bolusanthus*

Water see *Hygrophila difformis*

▷ *Witch hazel* see *Lamamelis*

Chinese see *H. mollis*

Japanese see *H. japonica*

Ozark see *H. vernalis*

Virginian see *H. virginiana*

▷ *Wittia amazonica* see *Discoa amazonicus*

▷ *Wittiocactus amazonicus* see *Disocactus amazonicus*

## WITTROCKIA

### BROMELIACEAE

Genus, closely related to *Nidularium*, of 7 species of rosetted, stemless, evergreen, terrestrial, epiphytic, or rock-dwelling perennials (bromeliads) from mountain areas, to 900m (3,000ft) high, in Brazil. The linear, spiny-margined, scaly leaves, smooth near the tips, are often wide and colourful. In summer, spikes of tubular, usually blue flowers, with 3 separate sepals and 3 petals joined only at their tips, are produced among clusters of leaf-like bracts within the leaf rosettes. In areas where temperatures drop below 18°C (64°F), grow as houseplants or in a warm greenhouse; in warmer climates, use in a humid, moist border.

• **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in standard epiphytic or terrestrial bromeliad compost in bright filtered light. From late spring to early autumn, mist daily with tepid water to maintain moderate humidity, and apply a low-nitrogen liquid fertilizer every 3 or 4 weeks. Outdoors, grow in peaty, leafy, moderately fertile, moist but well-drained soil in a site in partial shade. See also p.47.

• **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring. Detach offsets in spring or summer.

• **PESTS AND DISEASES** Susceptible to mealybugs.

*W. superba* [ ] Terrestrial, epiphytic, or rock-dwelling, evergreen bromeliad producing linear, pointed, mid-green leaves, to 1m (3ft) long, narrower at the bases, and with brown scales, red tips, and spiny, red or green teeth. Compact, sunken inflorescences, 12cm (5in) wide, consisting of cone-shaped spikes of tubular blue flowers with pointed petals, surrounded by red bracts, are produced on very short scapes in summer. 1–1m (3ft) or more. E. Brazil. ☉ (min. 18°C/64°F)

▷ *Woad* see *Isatis tinctoria*

*Wittrockia superba*



Wolffia arrhiza

## WOLFFIA

LEMNACEAE

Genus of 8 species of semi-evergreen, floating aquatic perennials, similar to duckweeds (*Lemna*) but much smaller and lacking a root, with a wide distribution in Europe, Africa, W. Asia, India, Australia, North America, and E. Brazil. They are the smallest known flowering plants, grown mainly for their curiosity value. In frost-prone areas, grow in an aquarium. In warmer climates, grow in an outdoor pool.

- **HARDINESS** Half hardy to frost tender.
- **CULTIVATION** In an outdoor pool, grow in full sun. In an aquarium, grow at 15–28°C (59–82°F) in full light. See also pp. 52–53.
- **PROPAGATION** Detach plantlets as they form.
- **PESTS AND DISEASES** Trouble free.

**W. arrhiza** ■ Semi-evergreen, floating aquatic perennial with rootless, rounded, bright green fronds, 1mm (1/16in) across. Insignificant, green-tinged white flowers are produced in summer. ↔ indefinite. Europe, Africa, W. Asia, Australia. \*

- ▷ **Wolf's bane** see *Aconitum lycoctonum*
- ▷ **Wombat berry** see *Eustrephus*
- ▷ **Wonga wonga vine** see *Pandorea pandorana*
- ▷ **Wood anemone** see *Anemone nemorosa*
- ▷ **Woodbine** see *Lonicera periclymenum*
- ▷ **Wood fern, Wallich's** see *Dryopteris wallichiana*
- ▷ **Woodland star** see *Lithophragma*
- ▷ **Wood lily** see *Trillium*
- ▷ **Dwarf white** see *T. nivale*
- ▷ **Painted** see *T. undulatum*
- ▷ **Wood rose** see *Merremia tuberosa*
- ▷ **Woodruff** see *Asperula*
- ▷ **Sweet** see *Galium odoratum*
- ▷ **Woodrush** see *Luzula*
- ▷ **Greater** see *L. sylvatica*
- ▷ **Snowy** see *L. nivea*

## WOODSIA

DRYOPTERIDACEAE

Genus of approximately 25 species of small, tufted, deciduous, terrestrial or rock-dwelling ferns occurring in upland and mountainous regions, mainly in the N. hemisphere. They have erect, short rhizomes, and pinnate to 2-pinnate fronds with the pinnae sometimes pinnatifid. Sporangia are in cup-shaped



Woodsia polystichoides

indusia, which have often deeply cut fringes. Suitable for a rock garden.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in sharply drained but moist, fertile soil in partial shade. Position crowns above soil level and surround with small stones. *W. ilvensis* prefers acid soil.
- **PROPAGATION** Sow spores at 15–16°C (59–61°F) as soon as ripe. Divide when dormant. See also p. 51.
- **PESTS AND DISEASES** Trouble free.

**W. ilvensis** (Rusty woodsia). Dwarf, tufted, terrestrial or rock-dwelling fern. In early spring, produces lance-shaped to oblong, pinnate, dull green fronds, to 15cm (6in) long, each composed of 7–25 pairs of ovate to lance-shaped, lobed pinnae, clothed with reddish brown hairs and scales. ↓ 15cm (6in), ↔ 10cm (4in). Arctic, Europe, North America. \*\*\*

**W. polystichoides** ■ (Holly-fern woodsia). Tufted, terrestrial or rock-dwelling fern. In early spring, produces lance-shaped, pinnate, pale green fronds, to 35cm (14in) long, softly hairy on both surfaces and scaly beneath; each is composed of 15–30 pairs of narrowly sickle-shaped or oblong pinnae, with slightly toothed margins. May be damaged by late frosts. ↓ 10–30cm (4–12in), ↔ 20–40cm (8–16in). E. Asia. \*\*\*

▷ **Woodsia,**

**Holly-fern** see *Woodsia polystichoides*  
**Rusty** see *Woodsia ilvensis*

## WOODWARDIA

Chain fern

BLECHNACEAE

Genus of approximately 10 species of evergreen or deciduous, terrestrial ferns found in damp, sheltered places in warm-temperate regions of Eurasia and North America. Some are creeping plants, found in acid bogs. Most are large, often with spreading and arching, usually pinnate fronds with pinnatifid pinnae, unfurling in spring; bulbils may be produced towards the tips of the fronds or on their upper surfaces. The chain-like arrangement of the sori on the undersides of the pinnae gives rise to the common name. Use to clothe a moist, shady bank, ideally near water.

- **HARDINESS** Fully hardy to frost hardy.
- **CULTIVATION** Grow in neutral, moderately fertile, damp soil in partial



Woodwardia radicans

shade. In frost-prone climates, shelter from cold, drying winds and protect in winter with a dry mulch.

- **PROPAGATION** Sow spores at 16°C (61°F) in late summer or early autumn. Remove bulbils in autumn. Divide in spring. See also p. 51.
- **PESTS AND DISEASES** Trouble free.

**W. radicans** ■ ♀ (European chain fern). Evergreen fern with arching, broadly lance-shaped, pinnate, dark green fronds, to 2m (6ft) tall, producing bulbils near the tips; the pinnatifid pinnae, to 30cm (12in) long, are ovate-lance-shaped, with curved, lance-shaped, finely toothed segments. ↓ 1.8m (6ft), ↔ 3m (10ft). Atlantic islands, S.W. Europe. \*\*

**W. unigemmata** (Asian chain fern). Evergreen fern very similar to *W. radicans*. New foliage emerges brilliant red and fades to brown then green. ↓ 1m (3ft), ↔ 3m (10ft). Himalayas, E. Asia. \*\*\* (borderline)

▷ **Wormwood** see *Artemisia, A. absinthium*

## WORSLEYA

Blue amaryllis

AMARYLLIDACEAE

Genus of one species of bulbous, evergreen perennial from moist mountain forests in Brazil. It has strap-shaped leaves, and is grown for its large umbels of funnel-shaped flowers, borne on leafless stems in winter. In frost-prone climates, it is suitable for a warm greenhouse or conservatory, although it does not easily flower. In warmer climates, grow in a warm, sunny border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Plant bulbs with the necks just above soil level. Under glass, grow in loam-based potting compost (J1 No.2), with added leaf mould and bark chips or sharp sand, in full light. In growth, water freely and apply a balanced liquid fertilizer monthly. Keep barely moist in winter, but do not allow the compost to dry out. Outdoors, grow in fertile, reliably moist but sharply drained soil in full sun.
- **PROPAGATION** Sow seed at 19–24°C (66–75°F) in spring.
- **PESTS AND DISEASES** Trouble free.

**W. procera** see *W. rayneri*.  
**W. rayneri**, syn. *Hippeastrum procerum*.  
**W. procera**. Robust, bulbous, evergreen

perennial with arching, strap-shaped leaves, to 1m (3ft) long. In winter, bears umbels of up to 14 funnel-shaped flowers, lilac-blue to white at the bases, 4cm (1 1/2in) across, speckled mauve within; the tubes are 2cm (3/4in) long, the curving lobes to 15cm (6in) long. ↓ 1–1.2m (3–4ft), ↔ 30cm (12in). Brazil. ♀ (min. 15°C/59°F)

▷ **Woundwort** see *Stachys*  
**Hedge** see *S. sylvatica*

▷ **Wreath,**  
**Bridal** see *Francoa, Spiraea 'Arguta'*,  
*Stephanotis floribunda*  
**Purple** see *Petrea volubilis*  
**Queen's** see *Antigonon, Petrea volubilis*

## WULFENIA

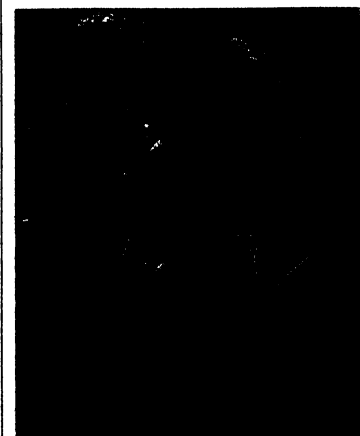
SCROPHULARIACEAE

Genus of about 6 species of rosette-forming, evergreen perennials from alpine meadows in C. and S.E. Europe, W. Asia, and the Himalayas. They are grown mainly for their spike-like racemes of tubular, 2-lipped, blue to pinkish purple or occasionally white flowers borne in summer. Leaves are inversely lance-shaped to broadly ovate or oblong. Suitable for a rock garden or wall crevice.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in gritty, humus-rich, moist but well-drained soil in full sun. Protect from winter wet.
- **PROPAGATION** Sow seed in containers in a cold frame in spring or autumn. Divide in spring.
- **PESTS AND DISEASES** Trouble free.

**W. amherstiana** ■ Evergreen perennial with rosettes of obovate-oblong, coarsely scalloped, conspicuously veined, dark green leaves, 5–15cm (2–6in) long, sparsely hairy beneath. In summer, produces erect stems bearing lax, one-sided racemes, 4–20cm (1 1/2–8in) long, of many small, narrowly tubular, pinkish purple flowers. ↓↔ to 20cm (8in). Afghanistan, W. Himalayas. \*\*\*

**W. carinthiaca**. Evergreen perennial with rosettes of scalloped, inversely lance-shaped to obovate, shiny, dark green leaves, to 20cm (8in) long. In summer, bears dense, one-sided racemes, 6–10cm (2 1/2–4in) long, of small, narrowly tubular, deep violet-blue flowers on erect stems. ↓↔ 25cm (10in) or more. S.E. Alps, Albania. \*\*\*



Wulfenia amherstiana

# X

## XANTHOCERAS

SAPINDACEAE

Genus of one species of erect, deciduous shrub found in scrub and at woodland margins in N. China. An unusual plant and rare in gardens, *X. sorbifolium* is cultivated for its alternate, pinnate leaves and attractive star-shaped, 5-petalled white flowers, borne in late spring. Suitable for a shrub border, for training against a wall, or for a sunny position in a woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in fertile, well-drained soil in full sun; grows best in areas with very hot summers. In frost-prone climates, provide shelter from cold, drying winds in winter. Pruning group 1.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Take root cuttings, or remove rooted suckers, in winter.
- **PESTS AND DISEASES** May be affected by coral spot.

*X. sorbifolium* [M] ♀ Upright, deciduous shrub with stout shoots and pinnate leaves, to 30cm (12in) long, composed of up to 17 narrowly elliptic to lance-shaped, toothed, glossy, dark green leaflets. As the young leaves emerge in late spring, star-shaped white flowers, 3cm (1¼in) across, are terminally borne in upright panicles, 15–20cm (6–8in) long; yellow-green marks at the petal bases mature to brown. †4m (12ft), ↔3m (10ft). N. China. \*\*\*

*Xanthoceras sorbifolium**Xanthorhiza simplicissima*

## XANTHORHIZA

RANUNCULACEAE

Genus of one species of suckering, deciduous shrub found in moist woodland and on streambanks in E. USA. It is cultivated for its alternate, pinnate leaves, clustered at the shoot tips. Tiny, star-shaped, brown-purple flowers are produced in spring. Use *X. simplicissima* for ground cover in a shady position.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moist but not waterlogged soil in full or partial shade. Pruning group 1 or 3.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Divide in spring or autumn.
- **PESTS AND DISEASES** Trouble free.

*X. apiifolia* see *X. simplicissima*.  
*X. simplicissima* [M] syn. *X. apiifolia* (Yellowroot). Thicket-forming shrub with erect shoots and bright green leaves to 30cm (12in) long, bronze at first, often red-purple in autumn, each with 3–5 ovate, deeply lobed, irregularly toothed leaflets. In spring, bears flowers in pendent racemes, to 10cm (4in) long, as the leaves emerge. †60cm (24in), ↔1.5m (5ft) or more. E. USA. \*\*\*

## XANTHOSOMA

Yautia

ARACEAE

Genus of up to 50 species of tuberous or thick-stemmed perennials from forest clearings in tropical USA and in Central and South America. They are grown for their edible, fleshy, long-stalked leaves, which may be arrow- to spear-shaped or pedately divided into 3–18 segments. Their cylindrical or spherical tubers or corms, which are white, orange, pink, or purple inside, are also edible, as are some of the stems. Inflorescences consist of a spadix within a taller spathe, and are borne intermittently throughout the year. In frost-prone areas, grow in a warm greenhouse or conservatory. In warmer areas, grow in a shady border.

- **HARDINESS** Frost tender.
- **CULTIVATION** Under glass, grow in containers that allow a free root run, in loam-based potting compost (J1 No.2), with added leaf mould, in moderate light. In growth, water freely and apply a balanced liquid fertilizer every 2–3 weeks. Water moderately in winter. Outdoors, grow in slightly acid, leafy,

*Xanthosoma violaceum*

humus-rich, fertile, well-drained soil in partial shade. Avoid waterlogging.

- **PROPAGATION** Separate tubers at any time of year. Take soft-tip cuttings from young plants from spring to autumn.
- **PESTS AND DISEASES** Trouble free.

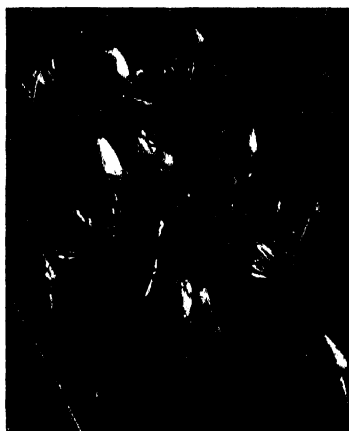
*X. sagittifolium*. Thick-stemmed, non-tuberous perennial with arrow-shaped, often white-spotted leaves, to 70cm (28in) long, with broad basal lobes, and leaf-stalks 1m (3ft) long. Greenish white spathes, 22cm (9in) long, surrounding white spadices, are borne intermittently. Stems are edible. †→1m (3ft). Tropical USA, Central America, South America. ☼ (min. 13°C/55°F)

*X. violaceum* [M] (Blue taro). Tuberous perennial, stemless above ground. Arrow-shaped leaves, 70cm (28in) long, with almost triangular lobes, and dark purple leaf-stalks, 30–85cm (12–34in) long, have creamy white veins above, purple veins beneath and at the margins. Intermittently bears pale yellow spathes, 30cm (12in) long, around violet, dark red, or white spadices. Edible tubers are pink inside. †2.5m (8ft), ↔2m (6ft). Widely naturalized. ☼ (min. 13°C/55°F)

## XERANTHEMUM

ASTERACEAE/COMPOSITAE

Genus of 6 species of erect, white-woolly, branching annuals from steppes and stony banks in the Mediterranean to S.W. Asia. They have linear to linear-elliptic, entire leaves, and are cultivated for their alternate, daisy-like, crimson-red, pink, white, lilac-blue, or mauve-blue flowerheads, enclosed within

*Xeranthemum annuum*

papery bracts, borne in summer and autumn. Xeranthemum are suitable for an annual border, and provide long-lasting cut flowers for both fresh and dried arrangements.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun. Provide light support in exposed sites. Cut flowers for drying before they have fully opened and hang upside down in a cool, dark, well-ventilated area.
- **PROPAGATION** Sow seed at 16°C (61°F) in spring.
- **PESTS AND DISEASES** Trouble free.

*X. annuum* [M] Slender, upright annual, branched at the bases of the wiry stems, bearing linear-elliptic, entire, woolly, silver-green leaves, 2–6cm (¾–2½in) long. Branched heads of delicate, daisy-like, single to double, white, bright pink, crimson-red, or deep purple flowerheads, to 5cm (2in) across, are produced from summer to autumn. †25–75cm (10–30in), ↔45cm (18in). S.E. Europe to Caucasus, Iran. \*  
 'Snow Lady' produces single white flowerheads.

## XEROPHYLLUM

LILIACEAE/MELANTHIACEAE

Genus of 2 or 3 species of upright, rhizomatous, clump-forming perennials from dry slopes and open woodland in hilly and mountainous areas of North America. They are cultivated for their flowers and bold, architectural foliage. Woody, stem-like rhizomes produce numerous densely tufted, linear, finely tapered leaves, mid-green above and glaucous, blue-green beneath, with hard, rough or finely toothed margins. The leaves become progressively smaller towards the tips of the unbranched stems, each of which bears a dense, terminal raceme of small, funnel-shaped, white or yellowish white flowers in summer. They are suitable for growing in a sunny herbaceous border or in a Mediterranean garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in moderately fertile, moist but well-drained soil in full sun. In frost-prone areas, protect crowns with a dry winter mulch.
- **PROPAGATION** Sow seed in containers in a cold frame in autumn or spring. Divide crowns just before growth commences in spring.
- **PESTS AND DISEASES** Trouble free.

*X. asphodeloides*. Upright perennial with linear leaves, to 45cm (18in) long, mid-green above, glaucous, blue-green beneath, with rough margins. During summer, produces funnel-shaped, fragrant, yellow-white flowers, 1cm (½in) across, in dense, broad, rounded racemes, to 30cm (12in) long. †to 1.5m (5ft), ↔to 60cm (24in). E. Canada to USA (New Jersey to Tennessee, Georgia). \*\*\*

*X. tenax*. Upright perennial with tufted, linear, stiff leaves, to 90cm (36in) long, mid-green above, glaucous, blue-green beneath, with rough margins. Produces funnel-shaped, white to cream flowers, 5mm (¼in) across, in dense racemes, to 60cm (24in) long, in summer. †→75cm (30in). W. North America. \*\*\*



- ▷ **Yam, Ornamental** see *Dioscorea discolor*
- ▷ **Yanquapin** see *Nelumbo lutea*
- ▷ **Yarrow** see *Achillea*
- ▷ **Golden** see *Eriophyllum*
- ▷ **Yautia** see *Xanthosoma*
- ▷ **Yellow archangel** see *Lamium galeobdolon*
- ▷ **Yellow bells** see *Tecoma stans*
- ▷ **Yellowroot** see *Xanthorhiza simplicissima*
- ▷ **Yellow trumpet** see *Sarracenia flava*
- ▷ **Yellow wood** see *Cladrastis lutea*
- ▷ **Yesterday, today, and tomorrow** see *Brunfelsia pauciflora*
- ▷ **Yew** see *Taxus*, *T. baccata*
- ▷ **Florence Court** see *Taxus baccata* 'Fastigiata'
- ▷ **Fortune plum** see *Cephalotaxus fortunei*
- ▷ **Irish** see *Taxus baccata* 'Fastigiata'
- ▷ **Japanese** see *Taxus cuspidata*
- ▷ **Nutmeg** see *Torreya*
- ▷ **Plum** see *Cephalotaxus*, *C. fortunei*
- ▷ **Prince Albert's** see *Saxegothea conspicua*
- ▷ **Ylang-ylang** see *Cananga odorata*
- ▷ **Youth-on-age** see *Tolmiea*

## YUCCA syn. HESPEROYUCCA

### AGAVACEAE

Genus of about 40 species of rosette-forming or woody-based perennials (some species monocarpic), evergreen shrubs, and erect, eventually spreading, evergreen trees from hot, dry places, such as deserts, sand dunes, and plains, in North and Central America and the West Indies. They are cultivated for their bold, linear to lance-shaped or inversely lance-shaped, neatly or loosely rosetted leaves, and for their erect or rarely pendent panicles of bell-shaped to hemispherical, usually white flowers. Use as architectural specimens in a border or courtyard. In frost-prone

areas, grow tender yuccas in a cool or temperate greenhouse, or conservatory.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. When in growth, water moderately and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in any well-drained soil in full sun. Flowers may require hand-pollination to set seed. Remove spent flowering stems.
- **PROPAGATION** Sow seed in spring, at 13–18°C (55–64°F) for hardy yuccas, or at 19–24°C (66–75°F) for tender ones. Remove rooted suckers in spring. Take root cuttings in winter.
- **PESTS AND DISEASES** Susceptible to leaf spot; aphids may infest flowers.

**Y. aloifolia** [C] (Spanish bayonet). Slow-growing, rounded shrub or small tree with a simple or branched stem and densely arranged, linear to narrowly lance-shaped, toothed, dark green leaves, to 50cm (20in) long, each ending in a sharp, stiff point. From summer to autumn, bears stout, erect panicles, to 45cm (18in) long, of pendent, bell-shaped, white, sometimes purple-tinged flowers, 3cm (1¼in) long, held above the foliage. ↑ 8m (25ft), ↔ 4–5m (12–15ft). S.E. USA, Mexico, West Indies. ☼ (min. 7°C/45°F)

**Y. elephantipes** [C] syn. *Y. guatemalensis* (Giant yucca, Spineless yucca). Large, upright shrub or usually small tree with several to many sparsely branched trunks arising near ground level. Narrowly lance-shaped, light to mid-green leaves, 60–100cm (24–39in)



*Yucca filamentosa* 'Bright Edge'

long, are stiffly leathery, with toothed margins. On mature plants, pendent, hemispherical, white to cream flowers, 3–4cm (1¼–1½in) long, are borne in dense, erect panicles, to 1m (3ft) long, from summer to autumn. ↓ to 10m (30ft), ↔ 5–8m (15–25ft). Mexico. ☼ (min. 10°C/50°F). 'Variegata' [C] produces leaves that are creamy white at the margins.

**Y. filamentosa** ♀ (Adam's needle). Clump-forming shrub, stemless or almost so, with basal rosettes of inversely lance-shaped, rigid, dark green leaves, to 75cm (30in) long, margined with curly white threads. Nodding, bell-shaped white flowers, 5cm (2in) long, tinged green or cream, are borne in upright panicles, to 2m (6ft) or more long, in mid- and late summer. ↑ 75cm (30in),

↔ 1.5m (5ft). USA (New Jersey to Florida). \*\*\*. 'Bright Edge' [C] ♀ has leaves with broad yellow margins. 'Variegata' ♀ has white-margined, blue-green leaves, tinged pink in winter. **Y. flaccida**. Clump-forming, almost stemless shrub bearing basal rosettes of lance-shaped, dark blue-green leaves, to 55cm (22in) long, fringed with curly or straight threads. Bears nodding, bell-shaped white flowers, 5cm (2in) long, in upright panicles, to 1.5m (5ft) or more long, in mid- and late summer. ↑ 55cm (22in), ↔ 1.5m (5ft). USA (N. Carolina to Alabama). \*\*\*. 'Golden Sword' ♀ has yellow-margined leaves. 'Ivory' ♀ bears a profusion of spreading, green-tinged, creamy white flowers.

**Y. gloriosa** [C] ♀ (Spanish dagger). Erect shrub with a stout stem, simple at first, later sparsely branched, bearing terminal tufts of narrowly lance-shaped, stiffly pointed, arching, leaves, to 60cm (24in) long, blue-green maturing to dark green, with entire to few-toothed margins. From late summer to autumn, produces pendent, bell-shaped, sometimes purple-tinged, white flowers, 5cm (2in) long, in upright panicles, to 2.5m (8ft) long. ↑ 2m (6ft). USA (N. Carolina to Florida). \*\*\*. 'Nobilis' has flowers with red petal backs, and blue-green leaves, the outer ones arched. 'Variegata' ♀ has yellow-margined leaves.

**Y. guatemalensis** see *Y. elephantipes*. **Y. parviflora** see *Hesperaloe parviflora*. **Y. recurvifolia** ♀ Robust, tree-like shrub, sometimes with several trunk-like stems, sparsely branched with age. Bears lance-shaped, arching to strongly recurved, stiffly leathery, mid- to deep



*Yucca elephantipes* 'Variegata'



*Yucca gloriosa*



*Yucca aloifolia*



*Yucca whipplei*

green leaves, to 90cm (36in) long, blue-green when young, with entire to slightly toothed margins. Pendent, bell-shaped cream flowers, 6–8cm (2½–3in) long, open in upright panicles, to 2m (6ft) long, from late summer to autumn. † 1.5–2.5m (5–8ft), ↔ 1.2–2m (4–6ft). USA (Georgia to Missouri). \*\*\*

**Y. whipplei** ■ (Our Lord's candle). Clump-forming, stemless, monocarpic shrub with dense tufts of slender, linear, finely toothed, rigid, grey-green leaves, to 90cm (36in) long. Pendent, bell-shaped or hemispherical, fragrant, creamy white, sometimes purple-tinged flowers, 3.5cm (1½in) long, are borne in summer in upright panicles, to 2m (6ft) or more long. Propagate by seed; it may take many years to flower. † 1m (3ft), ↔ 1.2m (4ft). USA (S. California, Arizona), N.W. Mexico. \*\*

▷ **Yucca**,

**Giant** see *Yucca elephantipes*

**Spineless** see *Yucca elephantipes*

▷ **Yulan** see *Magnolia denudata*

## YUSHANIA

*Anceps bamboo*

GRAMINEAE/POACEAE

Genus of 2 species of tall, evergreen, clump-forming bamboos found at high altitudes in the N.W. and C. Himalayas, Taiwan, and the Philippines. Cultivated for their lance-shaped to linear leaves, yushanias are suitable for use as hedging or screening, or as specimens, but they can be invasive.

- **HARDINESS** Fully hardy, although foliage may be damaged in extreme cold.
- **CULTIVATION** Grow in fertile, humus-rich, moist but well-drained soil in full sun or partial shade. In frost-prone areas, shelter from cold winds. Plant in large tubs plunged into soil to restrict spread.
- **PROPAGATION** Divide in spring.
- **PESTS AND DISEASES** Young shoots may be damaged by slugs.

**Y. anceps** ♀ syn. *Arundinaria anceps*, *Arundinaria jaunsarensis*, *Sinarundinaria jaunsarensis* (Anceps bamboo). Tall, evergreen, rhizomatous bamboo forming dense, scattered clumps of shiny, dark green canes, straight and erect at first, arching with age. Pendent branchlets bear narrowly lance-shaped, mid-green leaves, 6–14cm (2½–5½in) long, rounded at the bases, with purple-tinted stalks. † 4m (12ft) or more, ↔ indefinite. N.W. and C. Himalayas. \*\*\*

# Z

## ZALUZIANSKYA

SCROPHULARIACEAE

Genus of about 35 species of sticky, low-growing annuals and evergreen perennials or subshrubs from grassland and rocky slopes in South Africa. They are grown for their terminal spikes of tubular, salverform, heavily scented flowers, with 5 spreading petal lobes; the flowers are usually deep red in bud, opening to white with red petal backs. The variably shaped leaves are entire or toothed, the lower ones opposite, the upper ones alternate. Suitable for a sunny rock garden or alpine house.

- **HARDINESS** Frost hardy.

• **CULTIVATION** Grow in moist but sharply drained, humus-rich soil in full sun. Cut back hard after flowering. In an alpine house, grow in a mix of equal parts loam, leaf mould, and grit. Water freely when in growth. Keep barely moist in winter.

• **PROPAGATION** Propagate regularly as plants are short-lived. Take stem-tip cuttings in summer, overwinter in frost-free conditions, and plant out in spring. Seed is not regularly produced in gardens; if available, sow at 10–13°C (50–55°F) as soon as ripe or in spring.

- **PESTS AND DISEASES** Aphids and red spider mites may be troublesome under glass.

**Z. ovata** ■ Clump-forming, evergreen perennial with branching, brittle stems bearing ovate, toothed, sticky, grey-green leaves, 4cm (1½in) long. Produces terminal spikes of salverform, crimson-backed white flowers, 2–2.5cm (¾–1in) across, each with 5 petal lobes, cleft into 2 further lobes; they open in sunshine, and are produced over a long period in summer. † to 25cm (10in), ↔ to 60cm (24in). South Africa (Western Cape, Northern Cape, Eastern Cape, KwaZulu/Natal, Orange Free State), Lesotho. \*\*

*Zaluzianskya ovata*

## ZAMIA

ZAMIACEAE

Genus of about 30 species of mainly small, dioecious cycads found in scrub and pine woodland, and on dry slopes from North to South America. Most have short, swollen stems, some similar to palms; others, with tuberous, underground stems, resemble ferns. Zamias are grown for their habit and pinnate leaves, borne in terminal whorls or rosettes and often composed of many narrow, oblong or linear to ovate leaflets. They produce usually felted, single-sexed, cone-like flower spikes ("cones"), with male and female flowers borne on separate plants; the insignificant male cones are cylindrical, the females ovoid. In frost-prone areas, grow in a warm greenhouse or as houseplants. In tropical areas, site large species on a lawn and small ones in a shrub border.

- **HARDINESS** Frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.3), with added leaf mould and sharp sand, in full light with shade from hot sun. During the growing season, water freely and apply a balanced liquid fertilizer monthly. Water sparingly in winter. Outdoors, grow in fertile, moist but well-drained soil in full sun with some midday shade, or in partial shade.

- **PROPAGATION** Sow seed at 24°C (75°F) in spring.

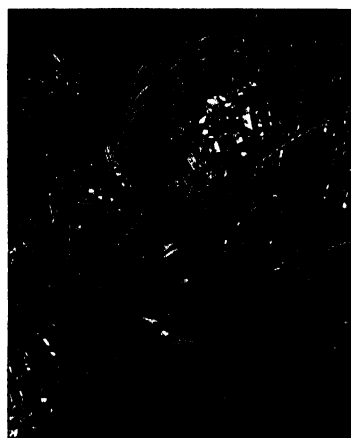
- **PESTS AND DISEASES** Susceptible to scale insects and mealybugs under glass.

**Z. floridana** see *Z. pumila*.

**Z. furfuracea** (Cardboard palm). Small cycad with a partly underground, simple or rarely branched, cylindrical trunk. Bears terminal whorls of semi-erect to spreading, pinnate leaves, to 1m (3ft) long, each with up to 24 oblong or inversely lance-shaped to obovate, stiff, pale green leaflets, later olive-green, with red-brown hairs. Produces felted, red-brown female flower cones, 10–13cm (4–5in) long, usually in summer. † to 1m (3ft), ↔ to 2m (6ft). Coast of E. Mexico. ☉ (min. 15°C/59°F)

**Z. integrifolia** see *Z. pumila*.

**Z. loddigesii**. Small cycad with a largely underground, sometimes branching trunk. Bears terminal whorls of semi-erect to spreading, pinnate leaves, to 1m (3ft) long, each with up to 54 narrowly lance-shaped, lustrous, bright green leaflets, toothed on their upper halves.

*Zamia pumila*

Brownish green female flower cones, 5cm (2in) or more long, are generally produced in summer. † 1.5m (5ft), ↔ to 1.7m (5½ft). Mexico, Guatemala. ☉ (min. 15°C/59°F). **var. latifolia** has lance-shaped to obovate leaflets.

**Z. pumila** ■ syn. *Z. floridana*, *Z. integrifolia* (Florida arrowroot, Guayiga, Seminole bread). Small cycad with a mainly underground, unbranched or branched trunk. Bears terminal rosettes of ascending to spreading, pinnate leaves, 60–120cm (24–48in) long, each with up to 60 linear to inversely lance-shaped, leathery, deep green leaflets, frequently toothed on their upper halves. Large, russet-green female flower cones, to 15cm (6in) long, are usually produced in summer. † to 1.2m (4ft), ↔ 1.2–2m (4–6ft). USA (Florida), Cuba, West Indies. ☉ (min. 15°C/59°F)

## ZANTEDESCHIA

Arum lily

ARACEAE

Genus of 6 species of perennials, with tuberous rhizomes, found in moist soils, swamps, or lake margins in southern and E. Africa. They are grown for their unusual, white or brightly coloured spathes, borne in spring and summer.

Most bear lance-shaped or narrowly to broadly arrow- or heart-shaped leaves. A number of hybrids have been developed.

**Elliottiana hybrids** have broadly heart-shaped, usually mid- to green leaves, most covered with translucent white dots, and usually yellow spathe. 15cm (6in) long, surrounding golden yellow spadices. **Rehmannii hybrids** have lance-shaped, rarely spotted, mid- to dark green leaves, and white to pink or dark purple spathes, 12cm (5in) long, surrounding yellow spadices.

**Z. aethiopica** may be cultivated as a marginal aquatic. Where temperatures fall below 10°C (50°F), grow less hardy arum lilies in a warm greenhouse or as houseplants, or plant out in summer. All parts may cause mild stomach upset if ingested, and contact with the sap may irritate the skin.

- **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Under glass, grow in loam-based potting compost (J1 No.2) in full light. In growth, water freely and apply a balanced liquid fertilizer every 2 weeks until the flowers have faded. Keep just moist in winter. Outdoors, grow in humus-rich, moist soil in full sun. In frost-prone areas, protect *Z. aethiopica* with a deep winter mulch. As a marginal aquatic, grow *Z. aethiopica* in a planting basket 25–30cm (10–12in) across, filled with heavy loam soil, in water up to 30cm (12in) deep; see also pp.52–53.

- **PROPAGATION** Sow seed at 21–27°C (70–81°F) when ripe. Divide in spring.

- **PESTS AND DISEASES** Susceptible to various fungi and prone to aphids.

**Z. aethiopica** ♀ (Arum lily). Clump-forming, rhizomatous perennial, evergreen in mild areas, with semi-erect, arrow-shaped, glossy, bright green leaves, to 40cm (16in) long. From late spring to midsummer, bears a succession of large, pure white spathes, to 25cm (10in) long, with creamy yellow spadices. † 90cm (36in), ↔ 60cm (24in). South Africa, Lesotho. \*\*.

**'Apple Court Babe'** is much shorter; † 60cm

*Zantedeschia aethiopica* 'Crowborough'

(24in). 'Crowborough'  $\square$  has spathes 10–15cm (4–6in) long; \*\*\* (borderline). 'Green Goddess'  $\square$  has dull green leaves and white-centred, bright green spathes, 15–20cm (6–8in) long. 'Little Gem' is dwarf and floriferous;  $\uparrow$  45cm (18in). 'White Sails' has open white spathes, 10cm (4in) long.

*Z. albomaculata*, syn. *Z. melanoleuca*. Rhizomatous perennial with semi-erect, arrow-shaped, mid-green, basal leaves, to 45cm (18in) long, with translucent white spots. In summer, bears white to cream, pale yellow, or pale pink spathes, to 12cm (5in) long, each with a purple mark inside at the base, surrounding yellow spadices.  $\uparrow$  30–40cm (12–16in),  $\leftrightarrow$  20cm (8in). Tropical Africa, South Africa, E. Africa.  $\bullet$  (min. 10°C/50°F)

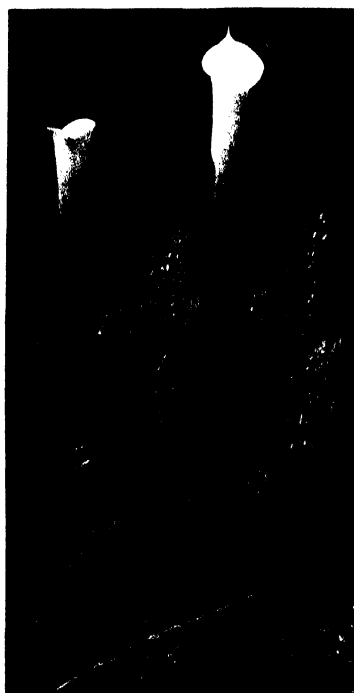
*Z. angustiloba* see *Z. pentlandii*.

*Z. 'Aztec Gold'*. Elliottiana hybrid with unspotted leaves. Golden yellow spathes are borne in summer, maturing to burnt orange.  $\uparrow$  55cm (22in),  $\leftrightarrow$  20cm (8in).  $\bullet$  (min. 10°C/50°F)

*Z. 'Black-eyed Beauty'*. Elliottiana hybrid with heavily white-spotted leaves. In summer, produces cream spathes, each with a black central mark in the throat.  $\uparrow$  30–40cm (12–16in),  $\leftrightarrow$  15cm (6in).  $\bullet$  (min. 10°C/50°F)

*Z. 'Black Magic'*. Elliottiana hybrid with heavily white-mottled leaves. Bears yellow spathes, with black throats, in summer.  $\uparrow$  75cm (30in),  $\leftrightarrow$  20cm (8in).  $\bullet$  (min. 10°C/50°F)

*Z. 'Dusty Pink'*. Rehmannii hybrid bearing rounded, mauve-pink spathes, with darker throats, in summer.  $\uparrow$  70cm (28in),  $\leftrightarrow$  20cm (8in).  $\bullet$  (min. 10°C/50°F)

*Zantedeschia aethiopica* 'Green Goddess'*Zantedeschia Elliottiana*

*Z. Elliottiana*  $\square$  (Golden arum). Rhizomatous perennial with erect, heart-shaped, dark green, basal leaves, to 45cm (18in) long, covered with translucent white spots. In summer, bears golden yellow spathes, 15cm (6in) long, with golden yellow spadices.  $\uparrow$  60–90cm (24–36in),  $\leftrightarrow$  20cm (8in). Origin unknown.  $\bullet$  (min. 10°C/50°F)

*Z. 'Golden Affair'*. Elliottiana hybrid with unspotted leaves. In summer, bears bright yellow spathes.  $\uparrow$  60cm (24in),  $\leftrightarrow$  20cm (8in).  $\bullet$  (min. 10°C/50°F)

*Z. 'Majestic Red'*. Elliottiana hybrid with unspotted leaves, and pointed, crimson spathes, borne in summer.  $\uparrow$  65cm (26in),  $\leftrightarrow$  20cm (8in).  $\bullet$  (min. 10°C/50°F)

*Z. melanoleuca* see *Z. albomaculata*.

*Z. pentlandii*, syn. *Z. angustiloba*.

Upright, rhizomatous perennial with erect, oblong-elliptic to oblong-lance-shaped, mid- to dark green, rarely spotted leaves, to 30cm (12in) long, arrow- or heart-shaped at the bases. In summer, bears bright golden to lemon-yellow spathes, to 12cm (5in) long, each marked dark purple inside at the base, and golden yellow spadices.  $\uparrow$  60–90cm (24–36in),  $\leftrightarrow$  20cm (8in). \*\*\*

*Z. rehmannii*  $\square$  (Pink arum).

Rhizomatous perennial with semi-erect, lance-shaped, dark green, basal leaves. In summer, bears slender, white to pink or dark purple spathes, 12cm (5in) long, with yellow spadices.  $\uparrow$  40cm (16in),  $\leftrightarrow$  28cm (11in). South Africa (Northern Transvaal, Eastern Transvaal), Swaziland.  $\bullet$  (min. 10°C/50°F)

## ZANTHOXYLUM

RUTACEAE

Genus of about 250 species of broadly rounded to upright, spiny, deciduous or evergreen trees and shrubs, mainly from forest in Asia, Australia, North to South America, and Africa, usually in warmer regions. They have aromatic bark, and are grown for their alternate, usually pinnate leaves, dotted with minute

*Zanthoxylum piperitum*

glands, and for their fruits, which split to reveal seeds attached by short threads. They bear cymes or panicles of small, cup-shaped, green or yellowish green flowers from spring to summer; individual plants may be dioecious, or produce both unisexual and bisexual flowers. Suitable for use in a shrub border or as specimen trees. In frost-prone areas, grow tender species in a cool greenhouse.

• **HARDINESS** Fully hardy to frost tender.

• **CULTIVATION** Grow in fertile, well-drained soil in full sun or light dappled shade. Pruning group 1.

• **PROPAGATION** Sow seed in containers in a cold frame in autumn. Root semi-ripe cuttings in midsummer, with bottom heat. Take root cuttings in late winter.

• **PESTS AND DISEASES** Trouble free.

*Z. piperitum*  $\square$  (Japan pepper). Bushy, spiny, deciduous shrub with pinnate, aromatic, glossy, dark green leaves, to 15cm (6in) long, each with 11–23 ovate, toothed leaflets, turning yellow in autumn. In early summer, bears panicles, 5cm (2in) long, of small, cup-shaped, yellow-green flowers from the

*Zanthoxylum simulans*

leaf axils; they are followed by tiny, spherical, berry-like red fruit, which split to reveal black seeds.  $\uparrow$  2.5m (8ft). China, Korea, Japan, Taiwan. \*\*\*

*Z. simulans*  $\square$   $\square$  Spreading, deciduous shrub or small tree with broad spines, sometimes with pendent shoots. Pinnate leaves, to 20cm (8in) long, each with up to 11 ovate-oblong, saw-toothed, glossy, dark green leaflets, become yellow to reddish yellow in autumn. In early summer, bears tiny, cup-shaped green flowers in cymes 5cm (2in) across, followed by spherical, warty red fruit, 5mm (1/4in) across, which split to reveal glossy black seeds.  $\uparrow$  6m (20ft),  $\leftrightarrow$  5m (15ft). China, Japan, Taiwan. \*\*\*

## ZAUSCHNERIA

Californian fuchsia

ONAGRACEAE

Genus of 4 species of subshrubby, evergreen or deciduous perennials, sometimes included in *Epilobium*, from dry slopes and chaparral or coastal sage brush in W. North America. The small, opposite or alternate, linear-lance-shaped to broadly ovate leaves are stalkless or virtually so. Californian fuchsias are grown for their profusion of tubular to funnel-shaped, usually scarlet flowers, borne in terminal racemes in late summer and autumn. Providing spectacular colour late in the season, they are suitable for a rock garden or dry-stone wall, or for a mixed or herbaceous border.

• **HARDINESS** Fully hardy to frost hardy.

• **CULTIVATION** Grow in moderately fertile, well-drained soil in full sun, with shelter from cold, dry winds.

• **PROPAGATION** Sow seed in containers in a cold frame in spring. Root basal cuttings in spring, with bottom heat.

• **PESTS AND DISEASES** Young growth may be damaged by slugs.

*Z. californica*, syn. *Epilobium californicum*  $\square$  Clump-forming, woody-based, evergreen or semi-evergreen, rhizomatous perennial producing lance-shaped to linear-lance-shaped, hairy, grey-green leaves, 1–4cm (1/2–1 1/2in) long. Racemes of tubular, brilliant scarlet flowers, 2.5–4cm (1–1 1/2in) long, are terminally borne over long periods in late summer and early autumn.  $\uparrow$  to 30cm (12in),  $\leftrightarrow$  to 50cm (20in). USA (California). \*\*\* (borderline). **subsp.** *angustifolia* has linear, densely woolly leaves, and slightly shorter flowers;  $\uparrow$  to 50cm (20in). **subsp.** *cana*, syn.

*Epilobium canum*, *Z. cana*, is deciduous, with linear to oblong, grey-woolly to white silky-hairy leaves, and funnel-shaped, vermilion to scarlet flowers;  $\uparrow$  to 60cm (24in),  $\leftrightarrow$  45cm (18in). **subsp.**

*cana* 'Dublin'  $\square$   $\square$  is deciduous, with bright red flowers;  $\uparrow$  to 25cm (10in),  $\leftrightarrow$  to 30cm (12in). **subsp.** *latifolia* is spreading, with a non-woody base, and produces ovate to lance-shaped-ovate, finely hairy, mid-green to greyish green leaves. 'Solidarity Pink' is less vigorous, and produces pale pink flowers;  $\leftrightarrow$  to 30cm (12in).

*Z. cana* see *Z. californica* **subsp.** *cana*.

*Z. septentrionalis*, syn. *Epilobium septentrionale*. Mat-forming, non-woody, deciduous perennial with oval or lance-shaped to ovate, hairy, grey to grey-green leaves, 1–2.5cm (1/2–1in) long.



*Zauschneria californica* subsp. *cana*  
'Dublin'

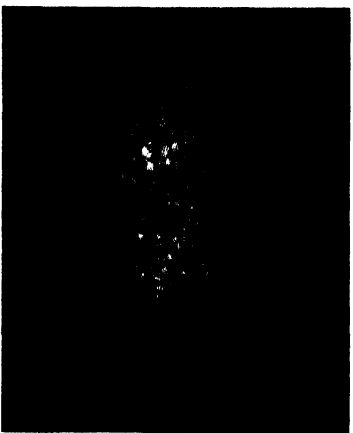
In late summer, bears racemes with a great profusion of short-stalked, tubular scarlet flowers, to 3cm (1¼in) long. ↑ 10–20cm (4–8in), ↔ to 20cm (8in). \*\*\*

## ZEa

GRAMINEAE/POACEAE

Genus of 4 species of annual, rarely perennial grasses found along field margins and on disturbed ground in Central America. The sturdy stems bear lance-shaped leaves in 2 ranks. They produce terminal, spike-like male panicles, each one with a solitary, stemless spikelet or "ear" on the internodes; axillary female inflorescences consist of numerous spikelets arranged in longitudinal rows on a thickened axis. The female flowers, each with a long, silky style, are enclosed within a spathe bract or "husk", and are followed by a "cob" of fleshy kernels. *Z. mays* (maize) is an important cereal crop in tropical and temperate regions. A number of ornamental cultivars are valued for their brightly variegated leaves and for their multi-coloured cobs. Grow in a sheltered mixed border or as dot plants in summer bedding schemes.

- **HARDINESS** Half hardy.
- **CULTIVATION** Grow in a warm, sheltered site in fertile, moist but well-drained soil in full sun.
- **PROPAGATION** Sow seed at 18°C (64°F) in late winter or early spring, or *in situ* in late spring.
- **PESTS AND DISEASES** Occasionally attacked by aphids and sweetcorn smut.



*Zea mays* 'Strawberry Corn'

*Z. mays* ♀ (Maize, Sweetcorn). Robust, erect, annual grass with pointed, lance-shaped, arching, wavy leaves, to 90cm (36in) long. In midsummer, produces a terminal panicle of spike-like male racemes, to 20cm (8in) long, and female inflorescences, also to 20cm (8in) long, enclosed within spathe bracts. The female flowers are followed in late summer and early autumn by cobs with flattened, usually yellow, sweet-tasting, edible grains, to 1cm (½in) long. ↑ to 4m (12ft), ↔ 60cm (24in) or more. Mexico. \* 'Harlequin' has foliage striped green, red, and white, and cobs with deep red grains; ↑ 1.2m (4ft). 'Strawberry Corn' produces cobs with small, yellow to burgundy-red grains enclosed within yellow-green spathe bracts; ↑ 1.2m (4ft). 'Variegata' has leaves boldly striped with creamy white; ↑ 90cm (36in).

▷ **Zebra plant** see *Aphelandra squarrosa*, *Calathea zebrina*, *Cryptanthus zonatus*

▷ **Zebrina pendula** see *Tradescantia zebrina*

▷ **Zebrina purpusii** see *Tradescantia zebrina* 'Purpusii'

## ZELKOVA

ULMACEAE

Genus of about 6 species of deciduous, monoecious or hermaphrodite trees, occasionally shrubby, occurring in scrub and woodland in Sicily (Italy), Crete (Greece), N.E. Turkey, the Caucasus, N. Iran, and E. Asia. They are grown for their attractive habit and alternate, oval-



*Zelkova serrata*

oblong to ovate or elliptic, toothed, dark green leaves, which change colour to yellow, then orange-brown or red, in autumn. *Zelkova* species are closely related to, and often confused with elms (*Ulmus*), differing in their unwinged fruits and in their leaves, which are not oblique at the bases. The very small, inconspicuous, male or hermaphrodite green flowers are borne singly or in small clusters in spring, the males from the lower axils of the shoots, the hermaphrodites higher up; the flowers are followed by small, spherical green fruits. *Zelkova* species and cultivars are imposing specimen and avenue trees, most of them suitable for open parkland and larger gardens; *Z. abelicea* and dwarf cultivars of *Z. serrata* are better suited for use in smaller gardens.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in sun or partial shade. In frost-prone areas, protect from cold, drying winds. Pruning group 1.
- **PROPAGATION** Sow seed in containers outdoors in autumn. Take greenwood cuttings in summer (preferably from young plants). Graft in winter. Remove rooted suckers in winter.
- **PESTS AND DISEASES** Prone to bacterial canker, Dutch elm disease, and horse-chestnut scale.

*Z. abelicea* ♀ syn. *Z. serrata* Spreading, bushy-headed tree with white, airy young shoots and ovate, thick-textured, glossy, dark green leaves, to 2.5cm (1in) long, each with up to 6 or 7 teeth on either side. ↑ 5m (15ft), ↔ 7m (22ft). Greece (Crete). \*\*\*

*Z. carpinifolia* □ (Caucasian elm). Broadly upright tree, normally with a short, stout trunk from which arise many erect branches. Ovate, dark green leaves, slightly rough above, to 10cm (4in) long, each with about 10 broad teeth on either side, are orange-brown in autumn. ↑ 30m (100ft), ↔ 25m (80ft). Caucasus, N.E. Turkey, N. Iran. \*\*\*

*Z. cretica* see *Z. abelicea*.

*Z. keaki* see *Z. serrata*.

*Z. serrata* □ ♀ syn. *Z. keaki* (Japanese zelkova). Spreading tree with smooth grey bark, peeling to reveal orange patches. Thin, narrowly ovate, tapered leaves, to 12cm (5in) long, each with up to 16 teeth on either side, are dark green, becoming yellow, orange, or red in autumn. ↑ to 30m (100ft), ↔ 18m (60ft). S. Korea, Japan, Taiwan. \*\*\* 'Goblin' is dwarf and slow-growing, forming a dense, bushy shrub; ↑ 1m (3ft). 'Green Vase' is vase-shaped, fast-growing, and graceful, with upright, arching branches, and leaves that turn orange-brown to bronze-red in autumn. 'Village Green' is fast-growing, with red autumn coloration; it is resistant to Dutch elm disease.

*Z. sinica* □ Broadly upright tree with a short trunk, numerous ascending branches, and peeling bark marked grey, orange, and brown. Ovate, thin, dark green leaves, to 9cm (4½in) long, each with up to 10 teeth on either side and entire at the tapered base, turn yellow or orange in autumn. ↑ 18m (60ft), ↔ 15m (50ft). C. and E. China. \*\*\*

▷ **Zelkova, Japanese** see *Zelkova serrata*.



*Zelkova carpinifolia* (inset: leaf detail)

*Zenobia pulverulenta*

## ZENOBIA

ERICACEAE

Genus of one species of spreading, deciduous or semi-evergreen shrub occurring in moist, sandy places and bogs in S.E. USA. It has oblong-ovate, toothed leaves, and is grown for its bell-shaped, fragrant white flowers. Suitable for a woodland garden.

- **HARDINESS** Fully hardy.
- **CULTIVATION** Grow in a sheltered site, in acid, humus-rich, moist soil in sun or partial shade. Plant in shade in areas where the soil dries out in summer. Pruning group 2 or 5, in midsummer.
- **PROPAGATION** Sow seed in containers outdoors in late winter. Take semi-ripe cuttings in summer.
- **PESTS AND DISEASES** Trouble free.

**Z. pulverulenta** ■ Spreading shrub with slender, arching shoots producing alternate, oblong-ovate, glaucous, blue-green to glossy, dark green leaves, to 8cm (3in) long, with toothed margins. Pendent, bell-shaped, scented white flowers, 1.2cm (½in) long, are borne in erect racemes, to 20cm (8in) long, in early and midsummer. ‡ 2m (6ft), ↔ 1.5m (5ft). USA (Virginia to South Carolina). \*\*\*

## ZEPHYRANTHES

syn. COOPERIA

Rain flower, Windflower

AMARYLLIDACEAE

Genus of about 71 species of bulbous perennials, some evergreen, found in grassland from North to South America. Closely related to *Habranthus*, they are grown for their erect, funnel-shaped to tubular, often crocus-like, white, yellow, pink, or red flowers, borne from spring to autumn, usually when the linear leaves emerge. In frost-prone areas, grow in an alpine house or cool greenhouse; *Z. candida* will thrive outside in a rock garden. Elsewhere, use in a rock garden or at the front of a sunny border.

- **HARDINESS** Frost hardy to frost tender.
- **CULTIVATION** Under glass, grow 10cm (4in) deep in loam-based potting compost (J1 No.2), with added sharp sand, in full light. When in growth, water freely and apply a balanced liquid fertilizer every 4 weeks. Keep just moist in winter. Outdoors, grow in moist but well-drained soil in full sun. Protect from winter wet.

*Zephyranthes grandiflora*

- **PROPAGATION** Sow seed at 13–18°C (55–64°F) as soon as ripe. Separate offsets in spring.
- **PESTS AND DISEASES** Trouble free.

**Z. andersonii** see *Habranthus rubispathus*.

**Z. atamasco** (Atamasco lily).

Deciduous, bulbous perennial with semi-erect, strap-shaped, basal leaves, to 40cm (16in) long. In spring or summer, bears funnel-shaped white flowers, 7cm (3in) long, the petals sometimes flushed with purple. ‡ 20–30cm (8–12in), ↔ 5cm (2in). S.E. USA. \*

**Z. candida**. Deciduous, bulbous perennial with upright, narrowly linear, basal leaves, to 40cm (16in) long. Bears a succession of crocus-like, pure white flowers, 3cm (1¼in) long, occasionally tinted with red on the petal backs, from summer to early autumn. ‡ 10–20cm (4–8in), ↔ 8cm (3in). Argentina, Uruguay. \*\*

**Z. carinata** see *Z. grandiflora*.

**Z. citrina**. Deciduous, bulbous perennial producing crocus-like, bright yellow flowers, 5cm (2in) long, above the erect, rush-like, basal leaves, to 30cm (12in) long, in autumn. ‡ 10–15cm (4–6in), ↔ 5cm (2in). Tropical South America. \*

**Z. grandiflora** ■ syn. *Z. carinata*, *Z. rosea* of gardens. Deciduous, bulbous perennial with semi-erect, slender, linear, glossy, basal leaves, to 30cm (12in) long. In late summer and early autumn, bears funnel-shaped, bright pink flowers, 7cm (3in) long. An attractive greenhouse container plant. ‡ 20–30cm (8–12in), ↔ 5cm (2in). Central America. \*

**Z. robusta** see *Habranthus robustus*.

**Z. rosea**. Deciduous, bulbous perennial with semi-erect, narrowly linear, basal leaves, to 20cm (8in) long. Short-tubed, funnel-shaped pink flowers, to 3cm (1¼in) long, are borne in autumn. ‡ 15–20cm (6–8in), ↔ 8–10cm (3–4in). Cuba, West Indies, Guatemala. \*

**Z. rosea** of gardens see *Z. grandiflora*.

## ZIGADENUS

LILIACEAE/MELANTHIACEAE

Genus of 18 species of bulbous or rhizomatous, deciduous perennials from grassland and open woodland in North America, Mexico, and N.E. Asia. They are cultivated for their upright, terminal racemes or panicles of small, star-shaped, 6-tepalled, greenish white or yellowish

*Zigadenus fremontii*

- white flowers, produced in summer. The leaves are mainly basal and linear, and often folded or keeled. Good for a shady border or woodland garden; grow *Z. fremontii* in a bulb frame. All parts are highly toxic if ingested.
- **HARDINESS** Frost hardy.
- **CULTIVATION** Grow in deep, fertile, moist but well-drained soil in full sun or partial shade; *Z. fremontii* prefers full sun. In a bulb frame, grow 15–20cm (6–8in) deep in equal parts loam-based potting compost (J1 No.2) and grit.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) when ripe or in spring. Divide in spring or autumn.
- **PESTS AND DISEASES** Trouble free.

**Z. elegans**. Bulbous perennial with semi-erect, narrowly linear, grey-green, basal leaves, to 30cm (12in) long. Bears spikes of many star-shaped, greenish white flowers, 8mm (⅜in) across, with prominent, yellowish green nectaries, in mid- and late summer. ‡ 70cm (28in), ↔ 8cm (3in). North America (Alaska, Minnesota to Arizona). \*\*

**Z. fremontii** ■ Robust, bulbous perennial with semi-erect, narrowly linear, greyish green, basal leaves, to 60cm (24in) long. Racemes or panicles of many star-shaped, creamy white flowers, 1.5cm (½in) across, are borne in early summer. Requires dry summer dormancy; best in a bulb frame. ‡ 70cm (28in), ↔ 8cm (3in). USA (S. Oregon) to Mexico (N. Baja California). \*\*

**Z. glaucus**. Bulbous perennial with semi-erect, narrowly linear, greyish green, basal leaves, to 30cm (12in) long. In summer, bears racemes or panicles of many star-shaped, creamy white flowers, to 1cm (½in) across, suffused brown or purple. ‡ to 60cm (24in), ↔ to 8cm (3in). E. Canada, N.E. USA. \*\*

**Z. nuttallii**. Slender, bulbous perennial with semi-erect, narrowly linear, mid- to dark green, basal leaves, to 45cm (18in) long. In summer, bears dense racemes of numerous tiny, star-shaped, creamy yellow flowers, 6–8mm (¼–⅜in) across. ‡ 30–60cm (12–24in), ↔ 8cm (3in). W. North America. \*\*

**Z. venenosus** (Death camas). Bulbous perennial with semi-erect, narrowly linear, mid- to dark green, basal leaves, to 30cm (12in) long. In summer, produces slender racemes of numerous small, star-shaped, off-white flowers, 3–6mm (¼–⅜in) across. ‡ 70cm (28in), ↔ 8cm (3in). North America (W. Canada to Utah, New Mexico). \*\*

## ZINNIA

ASTERACEAE/COMPOSITAE

Genus of 20 species of spreading to erect annuals, perennials, and subshrubs from scrub and desert grassland, mainly in Mexico, but also in S.W. USA, and Central and South America. They have branching, angled or rounded stems and opposite, stalkless or almost stalkless, linear to ovate or elliptic, pale to mid-green leaves. Zinnias are cultivated for their solitary, long-stemmed, daisy-like, terminal flowerheads in a wide range of colours, including white, yellow, orange, red, purple, and lilac, some with white eyes. Use in an annual or mixed border, and for cutting. Smaller cultivars are suitable for edging, and for window-boxes or other containers.

- **HARDINESS** Frost tender.
- **CULTIVATION** Grow in fertile, humus-rich, well-drained soil in full sun. Dead-head to prolong flowering.
- **PROPAGATION** Sow seed at 13–18°C (55–64°F) in early spring, or *in situ* in late spring. Sow in succession for a longer flowering display.
- **PESTS AND DISEASES** Trouble free if grown in an open position to minimize attack by mildew.

**Z. angustifolia** of gardens see

*Z. haageana*.

**Z. angustifolia** 'Orange Star' see

*Z. haageana* 'Orange Star'.

**Z. angustifolia** 'Persian Carpet' see

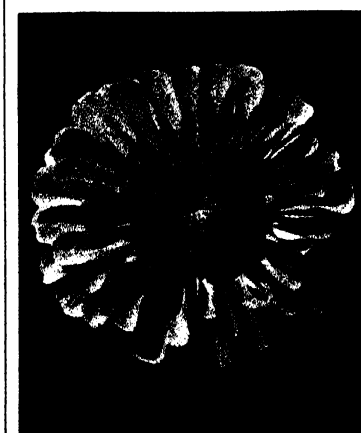
*Z. haageana* 'Persian Carpet'.

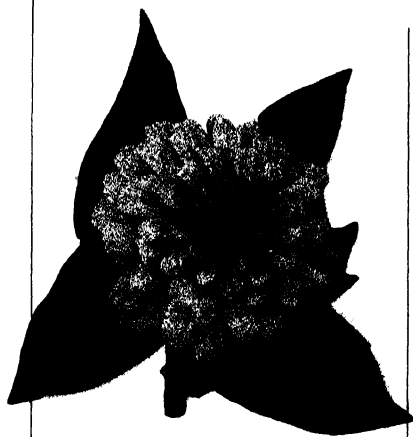
**Z. elegans**. Upright, bushy annual

bearing lightly hairy, ovate to lance-



*Zinnia elegans* Dreamland Series  
'Dreamland Scarlet'

*Zinnia elegans* 'Envy'



*Zinnia elegans*  
Peter Pan Series 'Peter Pan Gold'

shaped leaves, to 8cm (3in) long. Daisy-like, broad-petalled purple flowerheads, to 4.5cm (1½in) across, are produced in summer. ↑ 60–75cm (24–30in), ↔ 30cm (12in). Mexico. ☼ (min. 10°C/50°F).

'Belvedere' is dwarf, with double, weather-resistant flowerheads in a broad colour range; ↑ to 30cm (12in). **Cactus-flowered Group** cultivars are tall-growing, with large, semi-double flowerheads, to 12cm (5in) across, like those of cactus dahlias, with long, narrow, quilled petals in a broad colour range; ↑ 60–90cm (24–36in). **Dreamland Series** 'Dreamland Scarlet' ☼ is dwarf and compact, produces scarlet-orange blooms, and is ideal for containers or bedding; ↑ 20–25cm (8–10in). 'Envy' ☼ has semi-double, chartreuse-green flowerheads, and tolerates shade; ↑ to 75cm (30in).

**Hobgoblin Series** cultivars are dwarf, sturdy, and bushy, with small, single, weather-resistant flowerheads in a broad colour range; good for bedding; ↑ to 45cm (18in). **Peter Pan Series** cultivars are extremely dwarf and compact; early-flowering with large flowers, to 10cm (4in) across, use in containers or as bedding plants; 'Peter Pan Gold' ☼ has golden yellow flowers. 'Ruffles' has ruffled, fully double flowerheads, like those of pompon dahlias, in a wide colour range; good for cut flowers; ↑ to 60cm (24in). **Short Stuff Series** cultivars are dwarf and compact, with double flowerheads, to 6cm (2½in) across, in a broad colour range; ↑ to 25cm (10in). **Small World Series** cultivars are dwarf, with double flowerheads in a wide colour range,



*Zinnia haageana* 'Orange Star'

including pale pink; ↑ to 45cm (18in). 'State Fair' is tall-growing and very vigorous, with large, double, lavender, rose-pink, orange, purple, or scarlet flowerheads, to 8cm (3in) across; ↑ to 75cm (30in). **Thumbelina Series** ☼ cultivars are very dwarf and spreading, with single or semi-double, weather-resistant, yellow, red, magenta, or pale pink flowerheads; ↑ to 15cm (6in). *Z. haageana*, syn. *Z. angustifolia* of gardens, *Z. mexicana* (Mexican zinnia). Erect, bushy annual with oblong to linear or linear-lance-shaped leaves, to 7cm (3in) long, lightly covered in bristly hairs. Daisy-like, broad-petalled, bright orange flowerheads, to 3.5cm (1½in) across, are produced in summer. ↑ to 60cm (24in), ↔ 30cm (12in). S.E. USA, Mexico. ✱. 'Classic' see 'Orange Star'. 'Orange Star' ☼ syn. 'Classic', *Z. angustifolia* 'Orange Star', is dwarf and bushy in habit, and produces orange flowerheads; mildew-resistant and good for ground cover; ↑ to 25cm (10in). 'Persian Carpet' ☼ syn. *Z. angustifolia* 'Persian Carpet', is dwarf, compact, and spreading; produces small, semi-double and double, weather-resistant flowerheads, to 4cm (1½in)

across, in a range of bicolors and tricolors; excellent for summer bedding; ↑ to 40cm (16in). 'Star White' has white flowerheads with golden yellow centres.

*Z. mexicana* see *Z. haageana*.

#### ▷ Zinnia

Creeping see *Sanvitalia*,  
*S. procumbens*

Mexican see *Zinnia haageana*

## ZIZANIA

Water oats, Wild rice

GRAMINEAE/POACEAE

Genus of 3 species of annual or perennial, marginal aquatic grasses from marshland and lake margins in E. Asia and North America. They are cultivated for their flat, linear leaves, produced on tall, reedy stems. Conical or pyramidal, feathery panicles of spikelets are borne from summer to autumn, followed by edible, rice-like seeds. Suitable for a large pond or wildlife pool. In frost-prone areas, grow tender species in a warm greenhouse.

- **HARDINESS** Fully hardy to frost tender.
- **CULTIVATION** Outdoors, grow at the edges of a large pool in full sun, in water to 23cm (9in) deep. See also pp.52–53.
- **PROPAGATION** Overwinter seed in trays of damp loam, and sow at 18°C (64°F) in early spring. As the seedlings emerge, cover with 5cm (2in) of water and maintain at the same temperature.
- **PESTS AND DISEASES** Trouble free.

*Z. aquatica* (Annual wild rice, Canadian wild rice, Water rice). Marginal aquatic annual with grass-like, linear, deep green leaves, to 1.2m (4ft) long. Pale green flowers are borne in pyramidal panicles, to 75cm (30in) long, in summer, followed by edible, rice-like seeds. ↑ 3m (10ft), ↔ 45cm (18in). North America. ✱✱✱

▷ *Zygocactus truncatus* see  
*Schlumbergera truncata*

## ZYGOPETALUM

ORCHIDACEAE

Genus of about 20 species of evergreen, epiphytic or terrestrial orchids native to South America, occurring in warm, moist rainforest, sometimes on rocky outcrops or in leaf litter. They have conical to ovoid pseudobulbs, from the tops of which are produced 2 or more narrowly elongated, lance-shaped, leathery or fleshy leaves. Racemes of delicate, highly fragrant flowers, most of which are richly coloured with a very attractive combination of green-brown and indigo-blue, arise from the bases of the pseudobulbs from autumn to spring.

- **HARDINESS** Frost tender.

• **CULTIVATION** Cool- to intermediate-growing orchids. Grow in standard epiphytic orchid compost in containers that will easily accommodate the root system, or in slatted baskets. During the growing season, provide high humidity and bright filtered light; water freely, and apply a quarter- to half-strength balanced liquid fertilizer at every third watering. In winter, admit full light and water sparingly. See also p.46.

• **PROPAGATION** Divide when the roots of the plant fill the container and "flow" over the sides. Alternatively, remove backbulbs and pot them up separately.

• **PESTS AND DISEASES** May be attacked by red spider mites, aphids, and mealybugs.

*Z. mackaii* ☼ syn. *Z. mackayi*.

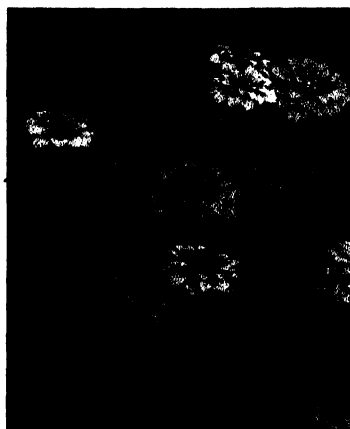
Epiphytic orchid with fleshy, ovoid pseudobulbs and 2 or 3 pendent, lance-shaped, leathery, apical leaves, 30–50cm (12–20in) long. Upright racemes of 5–7 green flowers, to 8cm (3in) across, each one strongly barred in brown and with a heavily veined indigo-blue lip, are produced from autumn to winter. ↑ 30cm (12in), ↔ 45cm (18in). Brazil. ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F).

*Z. mackayi* see *Z. mackaii*.

*Z. Perrenoudii* (*Z. intermedium* x *Z. maxillare*). Epiphytic orchid with fleshy, ovoid pseudobulbs and 2 pendent, lance-shaped, leathery, apical leaves, 30cm (12in) long. Upright racemes of 5–12 green flowers, 5–7cm (2–3in) across, each one lightly barred in brown and with a heavily veined indigo lip, are produced from autumn to spring. ↑ 30cm (12in). ☼ (min. 11–13°C/52–55°F; max. 30°C/86°F).



*Zinnia elegans* Thumbelina Series



*Zinnia haageana* 'Persian Carpet'



*Zygopetalum mackaii*

# GLOSSARY OF TERMS

*This glossary provides concise definitions of terms used throughout the encyclopedia, as well as a number of others commonly found in horticulture. For the sake of clarity, many of the terms are narrowly defined here, but may be interpreted differently in non-horticultural contexts. For an illustrated account of plant botany, cultivation, and ornamental plant groups, see the introductory pages (pp.10-54); an index for these appears on p.1080. Pests and diseases are defined on pp.30-31.*

## A

**Accent plant** Plant used in a formal bed or border to emphasize contrasts of height, colour, and/or texture.

**Acicular** *see* Linear. Needle.

**Acid** With a pH value below 7.

**Acuminate** With a long, tapering point.

**Acute** Ending in a short, sharp point.

**Adpressed** Pressed flat to the axis to which it is attached.

**Adventitious** Refers to a plant organ that occurs in an unusual location.

**Aeratic** Loosening of the soil structure to allow free circulation of air.

**Aerial root** Root that emerges from the stem above ground level.

**Air-layering** Method of propagation whereby a cut in an aerial stem is covered with moist sphagnum moss and sealed in a plastic sleeve in order to induce rooting. *See also p.28.*

**Alkaline** With a pH value above 7.

**Alpine** 1. High-altitude plant from above the tree-line and usually snow-covered in winter. 2. Loosely, any plant suitable for a rock garden. *See also pp.40-41.*

**Alpine house** Unheated, well-ventilated greenhouse used to grow alpine and other perennial plants.

**Alternate** Describes organs, usually leaves, borne singly at each node, in 2 vertical rows, on either side of an axis.

**Angiosperm** Flowering plant that bears ovules, later seeds, enclosed in ovaries (as opposed to a gymnosperm that bears naked ovules, then seeds, in cones). *See also p.10.*

**Annual** Plant that completes its life-cycle in one growing season. *See also pp.42-43.*

**Annulus** 1. Corona or rim of the corolla in the plants of the Asclepiadaceae family. 2. In ferns, the part of the sporangium involved in spore dispersal.

**Anther** Part of the stamen that releases pollen; usually borne on a filament.

**Apex** (*pl.* apexes; *adj.* apical) Tip or growing point of an organ.

**Apomixis** (*adj.* apomictic) Asexual production of ripe seed. Offspring are clones – genetically identical to the parent.

**Aquatic plant** Plant that lives in water; free-floating, submerged, or rooted on the bottom with the leaves and flowers above water. *See also pp.52-53.*

**Areole** 1. Depressed or raised area bearing spines, branches, or flowers in cacti.

2. Small space outlined on a surface, such as an area of leaf between veins.

**Aril** Coat covering some seeds, often fleshy and brightly coloured.

**Aroid** Member of the Araceae family, characterized by an inflorescence composed of a spadix and spathe.

**Arrow-shaped** (sagittate) With a narrow, blunt or pointed tip, and widening at the base into 2 acute, downward-pointing lobes.

**Asexual reproduction** Process of producing new individuals by apomixis or vegetative propagation. *See also* Reproduction.

**Auricle** (*adj.* auricular) Ear like lobe, often in pairs at the base of an organ.

**Awn** Stiff, bristle-like projection often found on grass seeds and spikelets.

**Axil** Upper angle between a part of a plant and the stem that bears it.

**Axillary** Borne in an axil. *See also* Terminal.

**Axis** (*pl.* axes) Rachis, stalk, or stem on which organs such as flowers, leaves, or leaflets are arranged.

## B

**Backbulb** Dormant pseudobulb unique to orchids.

**Bamboo** Woody-caned plant belonging to the Gramineae family. *See also p.54.*

**Bark** Outermost layers of a woody stem, including all the living and non-living tissues outside the cambium.

**Basal** At the base of an organ or structure.

**Basal leaf** Leaf that grows from the lowest part of the stem.

**Basal stem cutting** Cutting taken from the base of a plant, usually herbaceous, in spring.

**Beard** 1. Awn. 2. Tuft or zone of hair.

**Bed** Area of ground, often set into a lawn, in which plants are grown.

**Bedding plant** Annual, biennial, or perennial planted to provide a temporary display of foliage and/or flowers.

**Bell-shaped** (campanulate) Describes a flower with a broad tube terminating in flared lobes.

**Berry** Fruit with soft flesh surrounding one or more seeds.

**Bicoloured** With 2 distinct colours.

**Biennial** Plant that completes its life-cycle in 2 years, growing in the first year, and flowering and fruiting in the second. *See also pp.10, 42-43.*

**Bigeneric hybrid** Offspring derived from crossing 2 different genera.

**Binomial** Two-part name derived from Latin or Greek, consisting of a genus name and a species, cultivar, group, series, or hybrid epithet, denoting an individual within a genus. *See also p.11.*

**Bipinnate** *see* Pinnate.

**Bisexual** (hermaphrodite) Refers to a flower that bears both male and female reproductive organs.

**Bleed** To weep sap.

**Blind** 1. Refers to a plant in which the

growing point has been damaged.

2. Refers to plants, particularly bulbs, that do not flower.

**Bloom** 1. Flower or blossom. 2. Fine, waxy, whitish or bluish white coating. *See also* Glaucous, White-frosted.

**Bog garden** Waterlogged area used to grow plants found in bogs, marshes, wet pasture, and at water margins.

**Bolt** To produce flowers and seed prematurely.

**Bonsai** Production of dwarf trees or shrubs by pruning and root restriction.

**Bottom heat** Warmth radiated from below, usually via electrical cables, used in propagating cases to assist the rooting of cuttings and the germination of seed.

**Bowl-shaped** Describes a flower that is hemispherical with the sides straight or very slightly spreading at the tips.

**Bract** Modified leaf at the base of a flower or flowerhead. May be small and scale-like, or large, brightly coloured, and petal-like, or resemble normal foliage.

**Bracteole** Secondary bract sheathing a flower in an inflorescence, itself enclosed within a primary bract.

**Branch** Division of a stem, a trunk, or the axis of an inflorescence.

**Branched-head standard** Standard tree with a clear stem of 1.8m (6ft); the leader is cut back to develop an open crown. *See also p.33.* Central-leader standard.

**Break** To produce new growth as a result of pinching out.

**Broad-leaved** Describes trees and shrubs that have broad, flat, usually deciduous leaves – in contrast to the narrow, linear, usually evergreen needles of conifers.

**Broken** Type of marking in which the ground colour is striped with one or more contrasting colours, usually caused by viral infection; particularly applied to tulips.

**Bromeliad** Member of the Bromeliaceae family, characterized by showy inflorescences, frequently with brightly coloured bracts, and rosettes of often colourful leaves. *See also p.47.*

**Bud** Immature organ or shoot enclosing an embryonic branch, leaf, inflorescence, or flower.

**Budding** Method of propagation in which a vegetative bud of one plant is grafted on to another plant.

**Bulb** Modified, subterranean bud, with a short, thick stem and fleshy, scale leaves or leaf bases.

**Bulb frame** Glass or plastic frame used to provide a dry environment for bulbs during dormancy.

**Bulbil** Small, bulb-like organ borne in the axil of a leaf, bract, or occasionally flowerhead.

**Bulblet** Small bulb produced at the base of a parent bulb, often inside the tunic.

**Bulbous** 1. Describes a stem that is swollen at the base, usually underground. 2. Describes a plant with bulbs. 3. Loosely, refers to a plant with an underground storage organ such as a bulb, corm, tuber, or rhizome. *See also pp.44-45.*

**Burr** 1. Prickly, spiny, or hooked fruit, seed head, or flowerhead. 2. Woody outgrowth on the trunk of some trees.

**Buttress root** Fluted or swollen tree trunk that aids stability in shallow rooting conditions. *See also* Stilt root.

## C

**Cactus** (*pl.* cacti) Stem succulent, member of the Cactaceae family. *See also pp.48-49.*

**Calcareous** Refers to soil with a high content of calcium carbonate (chalk) or magnesium carbonate. *See also* Lime.

**Callus** Thickened tissue that is formed by the cambium layer to aid healing around a wound.

**Calyx** (*pl.* calyces) Collective name for sepals, joined or separate, which form the outer whorl of the perianth.

**Cambium** Growth tissue directly below the bark of woody plants; its increase adds to the girth of roots and stems.

**Campanulate** *see* Bell-shaped.

**Cane** Hollow, slender, jointed stem, particularly characteristic of bamboos.

**Capitulum** *see* Flowerhead.

**Capsule** Dry fruit that splits open to disperse ripe seed.

**Carnivorous** (insectivorous) Applied to a plant that obtains nutrients by trapping and ingesting insects or other small creatures.

**Carpel** Female part of a flower consisting of a style, a stigma, and an ovary. *See also* Pistil.

**Catkin** Form of inflorescence, often pendent, consisting of scale-like bracts and tiny, unisexual, usually petalless flowers arranged in a spike.

**Caudex** (*pl.* caudices; *adj.* caudiciform) Swollen stem base of a woody-based plant such as a palm, a cycad, or some succulents.

**Caudiciform** Resembling or possessing a caudex.

**Central** Spine of a cactus, growing from the centre of an areole.

**Central-leader standard** Standard tree with a clear stem of 1.8m (6ft) or more, and lateral branches that taper from an erect central leader. *See also p.33.* Branched-head standard.

**Central vein** *see* Midrib.

**Cephalium** Woody, flower-bearing, densely spined area at the stem apex of some cacti. *See also* Pseudocephalium.

**Chalky** *see* Calcareous.

**Channelled** Lined with one or more longitudinal grooves.

**Chimaera** Plant composed of 2 or more genetically different tissues; the result of a mutation or of a graft hybrid.

**Chipping** *see* Scarify.

**Chlorophyll** Green pigment that absorbs energy from sunlight. *See also* Photosynthesis.

**Chlorosis** Loss of chlorophyll, and consequently the loss of green leaf coloration, caused by mineral deficiency, poor light levels, or disease.



**Cladode** *see* Phylloclade.

**Cladophyll** *see* Phylloclade.

**Clay** Very fertile, heavy, moisture-retentive soil, prone to compaction and surface capping.

**Clay granules** Moisture-retentive pellets of expanded clay. In hot, dry weather, the evaporation of water poured on to these granules increases humidity around houseplants.

**Cleft** Divided almost halfway to the centre. *See also* Sinus.

**Climber** Plant that climbs or clings by means of modified stems, roots, leaves, or leaf-stalks, using other plants or objects as support. *See also* pp.36–37, Scandent, Tendril.

**Cloche** Structure of glass or plastic panes or plastic sheeting, mainly used for cold-weather protection or for forcing early crops in open ground.

**Clone** A genetically identical group of plants derived from one individual by vegetative propagation or apomixis.

**Cluster** (fascicle) Arrangement of several inflorescences, leaves, stems, roots, or flowers that arise from a single point, or appear to do so.

**Cold frame** Unheated frame used for growing on fully hardy, frost-hardy, and half-hardy plants, usually situated outdoors.

**Cold greenhouse** Unheated but frost-free greenhouse. *See also* p.24.

**Column** Flower organ, mainly found in orchids, consisting of fused male and female reproductive parts.

**Compaction** Compression of soil, particularly saturated clay and silt soils, resulting in poor aeration. *See also* Surface-capping.

**Compost** *see* Cutting compost, Garden compost, J1 No.1/2/3, Loam, Potting compost, Seed compost.

**Compound** Consisting of several parts, but still identifiable as single unit, such as a leaf divided into 2 or more leaflets.

**Cone** Woody, seed-bearing structure in gymnosperms, generally composed of an axis with many lateral scales.

**Conifer** (*adj.* coniferous) Mostly evergreen trees or shrubs, usually with needle-like, linear leaves, and seeds borne naked on the scales of cones. Often from cool-temperate zones.

**Conservatory** Glazed, heated or unheated structure attached to a house; often has poorer ventilation than a greenhouse. *See also* p.24.

**Continental climate** Weather conditions in the centre of a landmass, distant from coastal areas; the seasons are well defined, with hot summers and cold winters. *See also* pp.18–19.

**Contractile** Describes a root that is able to draw a bulb, corm, rhizome, or seedling deeper into the soil or closer to the surface.

**Cool greenhouse** Greenhouse with a minimum temperature of 2°C (35°F). *See also* p.24.

**Cool-temperate** Refers to a temperate climate with cold winters and warm summers.

**Coppice** (stool) To prune trees or shrubs close to ground level annually to promote strong growth.

**Cordate** *see* Heart-shaped.

**Cordon** Trained plant (usually a fruit tree) generally restricted to one main stem,

occasionally 2–4 stems, by a careful system of training and pruning.

**Corm** (*adj.* cormous) Subterranean storage organ consisting of a solid stem or stem base, often enclosed in a tunic. Corms are replaced annually.

**Cormlet** Small corm that arises at or near the base of a mature one.

**Corolla** 1. Collective name for petals.

2. Inner whorl of perianth segments in some monocotyledons.

**Corona** A crown- or cup-like growth on a flower, between the corolla and the stamens, formed either by fused stamen filaments or from the perianth segments.

**Corymb** Broad, flat-topped or domed inflorescence of stalked flowers or flower-heads arising at different levels on alternate sides of an axis.

**Cotyledon** *see* Seed-leaf.

**Crenate** *see* Scalloped.

**Crest** 1. Tuft of hairs or soft bristles.

2. Raised ridge on a surface. *See also* Beard.

**Cristate** 1. Crested, or with a terminal tuft of hairs or other tissue. 2. Describes ferns with ruffled, usually forked fronds.

**Crocks** Broken pieces of clay pot, used to cover drainage holes in containers in order to provide free drainage and improve air circulation to the roots.

**Cross** To interbreed. *See also* Hybrid.

**Cross-pollination** When the stigma of a flower on one plant is dusted with the pollen from a different plant.

**Cross-shaped** (cruciform) Describes a flower with 4 petals, usually set at right-angles to each other in the form of a cross when viewed from above.

**Crown** 1. Growing point of a plant from which new shoots arise, at or just below the soil surface, at the junction with the roots. 2. Uppermost part of a tree or shrub. 3. Corona of a flower.

**Crown bud** Central flower bud growing at the tip of a shoot among other, usually smaller buds.

**Crownshaft** Upper section of a palm or cycad trunk, bearing leaves and inflorescences.

**Crozier** Coiled juvenile frond of a fern, similar in form to a bishop's crozier.

**Cruciform** *see* Cross-shaped.

**Culm** Jointed flowering stem of a grass.

**Cultivar** (*abbrev.* cv., contraction of "cultivated variety") Plant raised or selected in cultivation that retains distinct, uniform characteristics when propagated by appropriate means. *See also* p.11, 42.

**Cuneate** *see* Wedge-shaped.

**Cup** Corona of *Narcissus*, but only when shorter than the surrounding tepals.

**Cup-shaped** Describes a flower that is hemispherical with the sides straight or very slightly spreading at the tips; slightly narrower than bowl-shaped.

**Cupule** Cup-shaped whorl of hard, fused bracts surrounding the base of a fruit, as in beech nuts (*Fagus*).

**Cutting** Section of leaf, stem, or root separated from a plant and used for propagation. *See also* p.29, Basal stem cutting, Greenwood cutting, Hardwood cutting, Heel cutting, Leaf-bud cutting, Leaf cutting, Root cutting, Semi-ripe cutting, Softwood cutting, Stem-tip cutting.

**Cutting compost** Free-draining, low-nutrient compost that is used to root cuttings; usually based on fine-grade

granulated bark, soil, peat (or peat substitute), perlite, or sand.

**Cyathium** (*pl.* cyathia) Inflorescence of *Euphorbia*, in which a cup-like involucre surrounds a single pistil and several male flowers, each with a single stamen; flowers are sometimes bisexual.

**Cycad** Member of the Cycadaceae family, mainly with stiff, palm-like leaves borne terminally from a short, stout trunk. *See also* p.50.

**Cyme** Flat or round-topped, branched inflorescence with each axis ending in a flower, the oldest at the centre, and the youngest arising in succession from the axils of bracteoles.

## D

**Damp down** To wet the floor and staging in a greenhouse in order to raise humidity and lower the temperature. *See also* Mist.

**Damping off** Collapse of seedlings and young plants caused by fungi, which rot the bases of stems and roots.

**Dead-head** To remove spent flowerheads in order to prolong flowering and prevent self-seeding.

**Deciduous** 1. Shedding leaves annually at the end of the growing season. 2. Falling away when no longer functional, as with the petals of many flowers.

**Decumbent** Growing close to the ground but usually with upward-growing tips.

**Decurrent** Extending downwards from the point of attachment; often used to describe the attachment of a leaf to a stem.

**Decussate** *see* Rank.

**Deep-water aquatic** Plant that roots in water 30–90cm (12–36in) deep, and produces foliage and flowers at or above surface level.

**Deltoid** *see* Triangular.

**Dentate** *see* Toothed.

**Depressed** Describes a flattened, solid form.

**Diamond-shaped** (rhomboidal) Roughly oval but with acute angles at the base and tip, and obtuse angles midway down both sides.

**Dicotyledon** Angiosperm with 2 seed-leaves, net-veined leaves, a cambium layer (in many species), and floral parts usually in fours or fives. *See also* Monocotyledon.

**Die-back** Death of a shoot, beginning at the tip, due to damage or disease.

**Digitate** *see* Palmate.

**Dioecious** Bearing male and female flowers on separate plants, so that both male and female plants must be grown if fruit is required.

**Disbud** To remove surplus buds so that better quality flowers or fruit are borne.

**Disc-floret** Tiny, usually tubular flower, one of many that normally comprise the centre of a (composite) flowerhead.

**Dissected** *see* Divided.

**Distichous** *see* Rank.

**Diurnal** With activity taking place only in daylight, e.g. a flower that opens only during the day.

**Divide** To propagate a plant by splitting it into 2 or more parts, each with its own section of root system and one or more shoots or dormant buds.

**Divided** (dissected) Deeply cut into segments or lobes.

**Dormancy** (*adj.* dormant) Suspension of active growth in unfavourable conditions.

**Dot plant** Usually tall-growing plant, used singly in the design of a formal bed or border to accentuate contrasts of height, colour, and/or texture.

**Double** Describes a flower with more petals than in the normal wild state, and with few, if any, stamens.

**Drainage** 1. Movement of excess water through the soil or compost. 2. System designed to remove excess water rapidly from the soil.

**Drill** Narrow, straight furrow in the soil, in which seeds are sown.

**Drupe** Fruit consisting of one or several hard seeds (stones) surrounded by a fleshy outer covering.

**Dwarf** Small or slow-growing variant of a species resulting from hybridization, mutation, or specific cultivation methods. *See also* Bonsai.

## E

**Earth up** To draw soil up around a plant to exclude light, promote the formation of roots from the stem, or provide winter protection.

**Ellipsoid** Describes a solid form, broadest at the centre, tapering towards each end; length is 2 times the width. It is wider than a spindle-shaped form, with the sides more curved.

**Elliptic** Describes a flat structure, broadest at the centre, tapering towards each end; length is 2 times the width.

**Embryo** Part of a seed from which a new plant develops.

**Ensiform** *see* Strap-shaped.

**Entire** Describes a continuous, untoothed, and unlobed margin, usually of a leaf.

**Epicalyx** (*pl.* epicalyces) 1. Whorl of bracts surrounding the calyx. 2. False calyx.

**Epicormic** Refers to strong shoots that develop from latent or adventitious buds under the bark of a tree or shrub, usually close to pruning cuts or wounds.

**Epiphyte** (*adj.* epiphytic) Plant that grows on another plant without obtaining food from it.

**Erect** Upright; perpendicular to the ground or to the point of attachment.

**Ericaceous** 1. Belonging to the Ericaceae family. 2. Heath-like or allied to the genus *Erica*. 3. Describes potting compost with a pH of 6.5 or less, suitable for growing acid-loving plants.

**Espalier** Fruit tree with pairs of branches trained horizontally from the central stem, in a single plane.

**Etiolated** Describes a plant that has abnormally elongated, often bleached shoots as a result of poor light levels.

**Evergreen** 1. Retaining leaves for more than one growing season. 2. Plant with the above characteristic.

**Eye** Centre of a flower, usually contrasting with the ground colour.

## F

**F1 hybrid** Vigorous and uniform, first-generation offspring, derived from crossing 2 distinct, pure-bred lines. F2 hybrids result from self-pollination within a population of F1 hybrids; they do not come true.

**Falcate** *see* Sickle-shaped.

**Fall** Semi-pendent or spreading tepal of *Iris* flower.

**Family** Primary category in plant classification, between order and genus, encompassing genera that have natural characteristics that group them together. *See also p. 11.*

**Fancy** Describes a flower that is flaked, flecked, or striped in contrast to the ground colour.

**Fan palm** Palm with fan-like, palmate rather than pinnate leaves.

**Fan-shaped** (flabellate) Wedge-shaped or semi-circular, with a pleated or boldly veined surface.

**Farina** (adj. farinaceous, farinose) *see* White-mealy.

**Fascicle** *see* Cluster.

**Feathered** 1. Describes a standard tree with a stem or trunk that is branched to the base with lateral "feathers". *See also p. 33.* Central-leader standard. 2. Describes a flower with feather-like markings contrasting with the ground colour, particularly of some tulips.

**Fern** Non-flowering, vascular plant, often with feather-like fronds. *See also p. 51.*

**Fertile** 1. Refers to organs that produce functional pollen, spores, or viable seed. 2. Describes soil with a high content of nutrients essential to plant growth.

**Fertilization** Sexual fusion of male and female elements, initiating seed development. *See also* Reproduction.

**Fertilizer** Nutrients added to soil or potting compost to promote the vigour of a plant. Nitrogen (N), phosphorus (P), and potassium (K) are the chief elements used in inorganic fertilizers. Organic fertilizers are based on decomposed plant or animal matter.

**Filament** 1. Stalk of the stamen attached to the anther. 2. Thread-like extension or hair.

**Filiform** *see* Linear.

**Flabellate** *see* Fan-shaped.

**Flaked** Describes a flower in which another colour overlies the ground colour in large splashes; particularly applied to some carnations (*Dianthus*) and tulips.

**Floret** Tiny, individual flower within a dense inflorescence, such as a grass flower in a spikelet, or a disc- or ray-floret in a (composite) flowerhead.

**Flower** Reproductive structure of angiosperms, usually consisting of an ovary or stamens, or both, most frequently encircled by a perianth of differentiated petals and sepals or undifferentiated tepals, and usually borne on a flower-stalk. *See also pp. 16-17.*

**Flowerhead** (capitulum) Inflorescence consisting of a central group of tiny disc-florets, usually ringed by ray-florets, borne on a compressed axis or stem. Also referred to as a composite flowerhead.

**Flowering plant** *see* Angiosperm.

**Flower-stalk** (pedicel) Stalk supporting an individual flower or fruit singly or in an inflorescence.

**Fluted** With long, rounded, vertical grooves.

**Foliar feed** Dilute solution of fertilizer applied to leaves.

**Follicle** Dry fruit, formed from a single carpel, that splits along one side to release one or more seeds.

**Force** To induce unseasonal growth, flowering, or fruiting of a plant, usually

under glass; achieved by manipulating the plant's environment.

**Forma** (abbrev. f.) Variant of a species, ranked below *varietas* (var.) in the nomenclatural hierarchy, distinguished by minor characteristics such as habit or the colour of the leaves, flowers, or fruits. *See also p. 11.*

**Formative pruning** Training of young trees or shrubs to produce a framework of strong, evenly spaced stems or branches. *See also p. 25.*

**Frame** Structure with a glass or plastic cover used for forcing, hardening off, propagation, or winter protection. *See also* Bulb frame, Cold frame, Propagating frame.

**Free-tipped** Refers to a conifer needle that is pressed flat to an axis with the tip extending beyond it.

**Frond** 1. Leaf of a fern. 2. Loosely, a large, compound leaf, such as a palm leaf.

**Frost hardy** Able to withstand temperatures down to -5°C (23°F).

**Frost tender** May be damaged by temperatures below 5°C (41°F).

**Fruit** Ripened ovary and any attached structures that ripen with it.

**Fully hardy** Able to withstand temperatures down to -15°C (5°F).

**Fungus** (pl. fungi; adj. fungal) Non-vascular, non-photosynthetic organism, such as a mould or mushroom, that obtains nutrients by absorbing organic compounds from its surroundings.

**Funnel-shaped** Describes a flower in which the perianth widens gradually from the base into a spreading, often lobed mouth, like a funnel.

**Fusiform** *see* Spindle-shaped.

**G**  
**Garden compost** Humus-rich material formed by the decay of organic matter. Used as a mulch or to improve soil structure and nutrition.

**Garden origin** Applied to a plant that has been artificially bred or selected, rather than occurring in the wild.

**Garigue** Exposed Mediterranean habitat covered with scrub vegetation.

**Genus** (pl. genera; adj. generic) Primary category in plant classification, ranked between family and species. Encompasses species that share a wide range of characteristics. *See also p. 11.* Binomial.

**Germination** Physical and chemical changes that occur as a seed begins to develop into a young plant.

**Gesneriad** Member of the Gesneriaceae family, including perennials, climbers, subshrubs, and small trees, many of which are epiphytic. *See also p. 40.*

**Glabrous** Smooth and hairless.

**Gland** Cell, organ, or pore that secretes oils or other substances.

**Glandular-hairy** With gland-tipped hairs.

**Glaucous** With a blue-green, blue-grey, grey, or white bloom; usually refers to stems and leaves.

**Globose** *see* Spherical.

**Globular** *see* Spherical.

**Glochid** Small, barbed bristle or hair borne on the areole of a cactus.

**Glume** Thin, dry, membrane-like bract in the inflorescence of a grass or sedge, usually arranged in 2 ranks; may be a

perianth segment, or support a spikelet or flower, depending on the species.

**Graft hybrid** Plant resulting from the combination of tissues from both scion and rootstock after grafting. *See also* Chimaera.

**Grafting** Method of propagation by which the scion of one plant and rootstock of another are artificially united so that they eventually function as one plant.

**Granulated bark** Bark ground to fine, medium, or coarse grade, often used in potting compost.

**Grass** Member of the Gramineae family, with round, hollow, or solid stems that have usually regularly spaced, solid nodes. The basic inflorescence is a spikelet, grouped into a panicle, raceme, or spike. *See also p. 54.*

**Greenhouse** Structure glazed with glass or plastic, providing a controlled environment for the cultivation of plants. *See also p. 24.* Cold greenhouse, Cool greenhouse, Temperate greenhouse, Warm greenhouse.

**Green manure** Practice of sowing quick-growing crops, e.g. clover (*Trifolium*), and digging them into the soil to rot and improve the humus content.

**Greenwood cutting** Cutting taken from the shoot-tip of a plant once the initial flush of spring growth has slowed; stems are slightly harder than those used for softwood cuttings.

**Grex** A collective term applied to all the progeny of an artificial cross from known parents of different taxa. Mainly applied to orchids. *See also p. 11.*

**Ground cover** Applied to (usually) low-growing plants that quickly spread over the soil surface, helping to suppress weeds.

**Ground frost** Climatic effect when the temperature at or just beneath the surface of the soil falls to 0°C (32°F) or below.

**Group** Category of cultivated plants that denotes a collection of similar, named cultivars. *See also p. 11.* Series.

**Growing point** (shoot-tip) Tip of a shoot from which new extension growth develops.

**Growing season** Part of the year when a plant is in active growth.

**Grow on** To grow young plants to a stage where they are ready to plant out or flower.

**Growth habit** *see* Habit.

**Gymnosperm** Tree or shrub, generally evergreen, that bears naked seeds in cones rather than enclosed in ovaries, e.g. conifers, cycads. *See also p. 10.*

**H**  
**Habit** Characteristic form, appearance, or mode of growth of a mature plant.

**Habitat** Natural environment in which a plant occurs in the wild.

**Haft** Narrow or constricted base of an organ, particularly the fall and standard petals of *Iris* flowers.

**Half hardy** Able to withstand temperatures down to 0°C (32°F).

**Half-pot** Container that is half the depth of a standard plant pot.

**Half-standard** Standard tree or shrub with a clear stem of 1-1.5m (3-5ft) from ground level to the lowest lateral branches.

**Harden off** To acclimatize young plants reared in a protective environment to

cooler conditions outdoors by gradually introducing them to a cooler environment.

**Hardiness** Capacity of a cultivated plant to withstand adverse conditions; in general usage, its tolerance of low temperatures. *See pp. 18-19.*

**Hardwood** Mature wood used for cuttings.

**Hardwood cutting** Cutting taken from mature wood from early autumn (after leaf fall) to early winter.

**Hastate** *see* Spear-shaped.

**Heart-shaped** (cordate) 1. Roughly ovate, pointed at the tip, and with a deep cleft at the centre of a rounded base.

2. Describes a base that is rounded with a deep cleft at the centre, which in leaves is where the leaf-stalk attaches.

**Heel cutting** Cutting consisting of vigorous sideshoot from a stem of the current season's growth, with a small piece of bark or older wood at the base.

**Herb** 1. Plant with practical properties, such as for culinary or medicinal use.

2. Botanically, any herbaceous plant.

**Herbaceous border** Area of land set aside for the cultivation of herbaceous plants.

**Herbaceous plant** Non-woody plant that dies back (loses top-growth and becomes dormant) at the end of the growing season, usually in autumn, overwintering by means of underground rootstocks. Some may develop a woody base. Growth resumes in spring.

**Herbicide** Chemical treatment used to control or eradicate weeds.

**Hermaphrodite** *see* Bisexual.

**Hip** Fleshy fruit of a rose.

**Hose-in-hose** Describes a double flower in which the corolla or calyx is duplicated, with one inserted in the throat of the other.

**Houseplant** Any plant grown for long periods indoors, often frost-tender species that would not survive outside in cold climates.

**Humidity** Measure of the air's moisture content as a percentage of saturated air (relative humidity/RH). In this encyclopedia, low humidity is below 50% RH; moderate humidity is 51-60% RH; high humidity is 61% RH and above. *See also p. 24.*

**Humus** Slowly decomposed organic material found in soil; may also refer to rotted garden compost or leaf mould. Where lacking or deficient, it may be dug into soil to increase bacterial activity and improve structure.

**Hybrid** (cross) Naturally or artificially produced offspring of genetically distinct parents of different taxa. Hybrids show new characteristics and are often vigorous in growth. *See also* F1 hybrid, Graft hybrid, Intergeneric hybrid, Interspecific hybrid, Multigeneric hybrid, Trigeneric hybrid.

**I**  
**Incised** Deeply, irregularly, and sharply toothed or lobed.

**Incurved** Bending inwards.

**Indumentum** Covering of hair or, more rarely, scales.

**Indusium** (pl. indusia) Tissue covering a sorus on a fern frond.

**Infertile** 1. Refers to a soil that is very low

in nutrients. 2. More loosely, applied to plants that do not flower or fruit for various reasons, but may do so if the conditions are right. *See also* Sterile.

**Inflorescence** Arrangement of flowers on a single axis. *See also* Catkin, Cluster, Corymb, Cyme, Flowerhead, Panicle, Raceme, Spadix, Spike, Umbel.

**Insecticide** Chemical treatment used to control or eradicate insect pests.

**Insectivorous** *see* Carnivorous.

**Insert** To place cuttings in a growing medium.

**Intergeneric hybrid** Result of crossing plants of 2 distinct, usually closely related genera.

**Internode** Section of stem between 2 nodes.

**Interrupted** Refers to a structure, usually an inflorescence, that is not continuous, such as the inflorescences of *Salvia* species.

**Interspecific hybrid** Result of crossing 2 species within the same genus.

**Invasive** Describes a vigorous plant that rapidly overwhelms more delicate neighbours, unless restricted in spread.

**Inversely heart-shaped** (obcordate) Inversely ovate, with a deep cleft at the centre of a rounded tip, and pointed at the base.

**Inversely lance-shaped** (oblanceolate) Broadest above the centre, tapering to a narrow basal point; length is 3–6 times the width.

**Involucre** (*adj.* involucrel) Ring of crowded bracts (sometimes only one), sometimes conspicuous and often overlapping, around the base of a flowerhead or umbel.

## JK

**J1 No. 1/2/3 (John Innes composts)** Series of standardized potting composts containing 7 parts sterilized loam, 3 parts peat (or substitute), and 2 parts sand, to which is added varying amounts of ground limestone, hoof and horn, superphosphate, and potassium sulphate. *See also* p.24.

**Keel** 1. Prominent longitudinal ridge, usually on the underside of an organ such as a leaf, similar to the keel of a boat. 2. Two lower, fused petals of a pea-like flower.

**Kidney-shaped** (reniform) Roughly quarter-moon-shaped with blunt ends (on a leaf, the stalk is attached at the notched centre of the concave margin).

## L

**Labellum** Lip, particularly applied to prominent third petal of *Iris* or orchid flowers. *See also* Lip.

**Laced** Describes a flower in which the colour of the petal margins and centre contrast with the ground colour.

**Laciniate** Describes a margin that is finely and irregularly cut.

**Lamina** *see* Leaf-blade.

**Lanceolate** *see* Lance-shaped.

**Lance-shaped** (lanceolate) Broadest below the centre, tapering to a narrow tip; length is 3–6 times the width.

**Lateral** 1. Located on or to the side of an axis or organ, such as lateral veins that arise from the midrib on a leaf surface. 2. Side-shoot from the stem of a plant.

**Latex** Milky-white sap or fluid that bleeds from some plants when the stem is cut or damaged; may be irritant.

**Lath house** Structure composed of light planks (laths) or trellis work used to protect plants from sun, wind, and rain and to acclimatize young, usually woody, plants before planting out in the garden.

**Lax** Loose, not compact.

**Layering** Method of propagation whereby a stem is pegged to the soil while still attached to the parent plant, to induce rooting. *See also* Air-layering, Mound-layering.

**Leaching** Removal of soluble nutrients from soil by the passage of water.

**Leader** 1. Main, usually central stem of a plant. *See also* Central-leader standard. 2. Terminal shoot of a main branch.

**Leaf** Plant organ, usually flattened and green, borne on a stem or branch, that fulfils the functions of photosynthesis, respiration, and transpiration. *See also* pp.14–15.

**Leaf axil** Angle formed between a leaf or leaf-stalk and the stem of a plant.

**Leaf-blade** (lamina) Thin, usually flat part of a leaf, excluding the leaf-stalk.

**Leaf-bud cutting** Cutting taken from a stem section, including a leaf-bud and leaf-stalk.

**Leaf cutting** Cutting taken from a leaf or section of a leaf.

**Leaflet** Single division of a compound leaf. Botanically, a pinna.

**Leaf mould** Fibrous, flaky, organic material composed of decayed leaves. Often found in woodland, and used as a peat substitute. *See also* Humus, Leaf-rich.

**Leaf node** Point at which a leaf arises from a stem.

**Leaf-rich** Describes soil that contains a high proportion of humus or leaf mould.

**Leaf scar** Raised area on a tree trunk, branch, or twig, where a leaf once grew.

**Leaf-stalk** (petiole) Part of a leaf, attached to the base or centre of the leaf-blade, that connects it to a stem or branch.

**Legume** *see* Pod.

**Lenticel** Raised pore on the surface of bark or some fruits, which provides access for air to the inner tissues.

**Ligulate** *see* Strap-shaped.

**Limb** 1. Broadened, flattened, and expanded part of a plant organ, usually a leaf or flower, extending from a narrower base. 2. Larger branch of a tree.

**Lime** Loosely, refers to compounds of calcium. Calcium content is used to measure soil pH. *See also* Calcareous.

**Lime-free** Refers to acidic soil. *See also* Peat.

**Lime-tolerant** Capable of growing in calcareous soil.

**Linear** (acicular, filiform) Long and narrow, with parallel margins, or almost so; length is 12 or more times the width.

**Lingulate** *see* Strap-shaped.

**Lip** Prominent lower lobe on a flower, formed by one or more fused petals or sepals. *See also* Labellum.

**Liquid feed** Water-diluted solution of fertilizers, often used for houseplants.

**Lithophytic** (saxicolous) Growing on or among rocks or stones.

**Loam** Highly fertile, well-drained but moisture-retentive soil, usually fibre- and humus-rich, and containing more or less equal parts of clay, sand, and silt.

**Lobe** Usually rounded segment, separated from adjacent segments by clefts extending halfway or less to the centre of an organ, such as a leaf. *See also* Palmately lobed.

**Lorate** *see* Strap-shaped.

## M

**Maquis** Habitat consisting of dense shrub thickets, particular to Corsican and other Mediterranean coastlines.

**Marginal aquatic** Plant that requires permanently moist conditions, from pure mud to water 30–45cm (12–18in) deep.

**Maritime climate** Weather conditions experienced in coastal areas. Proximity to the sea or ocean brings exposure to strong winds, but usually moderates seasonal temperatures; rainfall occurs regularly throughout the year. *See also* pp.18–19.

**Meristem** Tip of a shoot or root in which cell division takes place. Undifferentiated cells are formed or differentiated into tissues that eventually become leaves, flowers, stems, or even whole plants.

**Midrib** (midvein) Primary, usually central vein running from the stalk to the tip of a leaf or leaflet.

**Midvein** *see* Midrib.

**Mist** To increase humidity under glass in summer by spraying very fine droplets of water into the air. *See also* Damp down.

**Mixed border** Area of ground in which herbaceous plants, annuals, bulbs, and shrubs are grown.

**Monocarpic** Refers to plants that flower and fruit once and then die. Monocarpic perennials may grow for several or many years before flowering.

**Monocotyledon** Angiosperm with a single seed-leaf, parallel-veined leaves, no cambium layer, and floral parts usually in threes. *See also* Dicotyledon.

**Monoecious** With separate male and female flowers borne on the same plant.

**Monopodial** Refers to a stem or rhizome growing indefinitely from an apical or terminal bud, not usually producing secondary branches.

**Monotypic** Having only one component, e.g. a genus containing a single species.

**Mound-layering** Method of propagation whereby the basal section of a stem is earthed-up to induce rooting.

**Mulch** Layer of material spread on the top of the soil around plants. Loose mulches, such as leaf-mould and garden compost, retain moisture, insulate roots, and can improve soil structure and add nutrients. Sheet mulches, such as black polythene, suppress weeds and also conserve moisture. *See also* p.21.

**Multigeneric hybrid** Result of crossing 3 or more genera, often over more than one generation.

**Mutation** *see* Sport.

**Mycorrhizal** Refers to a mutually beneficial association between a fungus and the roots of a plant.

## N

**Native** Species that naturally grows wild in a particular area.

**Naturalized** Describes a species that apparently grows wild in a particular area, but is introduced and not native.

**Nectar** Sugary, liquid secretion that attracts some pollinators.

**Nectary** Gland, often a modified sepal, petal, or stamen, that secretes nectar.

**Needle** Stiff, linear leaf of a conifer.

**Neutral** With pH7, neither acid nor alkaline.

**Node** Point on a stem, sometimes swollen, at which leaves, leaf buds and shoots arise.

**Nodule** Small, rounded swelling.

**Nomenclature** Standard system of naming plants and providing for the formation and use of the names.

Cultivated plants are named in accordance with the International Code of Nomenclature for Cultivated Plants and the International Code for Botanical Nomenclature. *See also* p.11.

**Non-vascular** Describes plants that lack conductive tissue for the circulation of water and nutrients, for example fungi and mosses. *See also* p.10.

**Non-woody** *see* Soft-stemmed.

**Nut** Dry, non-splitting fruit with a hard or leathery shell surrounding a single seed (kernel).

**Nutrients** Minerals necessary for healthy metabolism and growth.

## O

**Obcordate** *see* Inversely heart-shaped.

**Oblanceolate** *see* Inversely lance-shaped.

**Oblong** With 2 parallel sides of roughly equal length; length is 2–4 times the width.

**Oblong-ovate** Roughly oblong, rounded at both ends, and broader at one end than the other.

**Obovate** Refers to a flat form, egg-shaped in outline and broadest above the middle; length is 1½–2 times the width.

**Obovoid** Refers to a solid form, egg-shaped and broadest above the middle; length is 1½ times the width.

**Offset** Small plant that arises naturally by vegetative increase, as with many bulbous plants and succulents.

**Of gardens** Term used after the Latin name of a plant to denote that the name is commonly but incorrectly used.

**Opposite** Describes organs, usually leaves, borne in pairs at each node, in the same plane but on opposite sides of an axis.

**Orbicular** *see* Rounded.

**Orchid** Member of the Orchidaceae family, which contains 835 genera of perennials, more than half epiphytic, the rest terrestrial; they are characterized by their unique flower structure. *See also* p.46.

**Organic** 1. Carbon-based matter of plant or animal origin. 2. Gardening practices using only natural materials.

**Osmunda fibre** Chopped, dried roots of the fern genus *Osmunda*, used in orchid cultivation.

**Oval** Broadly elliptic, rounded at both ends, with slightly parallel sides in the middle; length is 1½–2 times the width.

**Ovary** Female organ of a flower, containing ovules.

**Ovate** Refers to a flat form, egg-shaped in outline and broadest below the middle; length is 1½ times the width.

**Ovoid** Refers to a solid form, egg-shaped, and broadest below the middle.

**Ovule** Part of the ovary from which seed develops after fertilization.

**Oxygenator** Fully submerged aquatic plant that releases oxygen into the water.

## PQ

**Palm** Member of the *Palmae* or *Arecaceae* family. Usually solitary,

sometimes multi-stemmed trees or shrubs with characteristic terminal rosettes of palmate or pinnate leaves. *See also* p. 50, Fan palm.

**Palmate** Describes a compound leaf that is fully divided into leaflets arising from a single basal point; it is often also used loosely to mean lobed in a hand-like form. 3-palmate leaves are divided into 3 leaflets, and are often also referred to as trifoliate, ternate, or, incorrectly, trifoliate. 5-palmate leaves are divided into 5 leaflets, and may also be described as digitate. *See also* Trifoliate.

**Palmately lobed** Describes a leaf that is deeply divided into 3-7, sometimes more, lobes. It is distinct from a palmate leaf in that the divisions do not extend to the basal point, so remain lobes rather than leaflets.

**Pan** Shallow dish used for growing alpine plants and sowing seed; often set into a raised bed.

**Panicle** Branched raceme. Loosely applied to freely branched, corymb-like or cyme-like inflorescences.

**Papilla** (*pl.* papillae, *adj.* papillose) Small, soft, wart-like projection.

**Parasite** Organism that derives nutrients directly from a host species, often to the detriment of the latter.

**Papilion** Describes a flower structure found in many genera of the *Leguminosae* and *Papilionaceae* family, with an erect standard petal, 2 large, usually lateral wing petals, and 2 lower, keeled petals that may be fused at the base or on the lower side, enclosing the stamens and pistil.

**Peat** Moisture-retentive, humus-rich, acid, partially decayed organic matter, with a pH up to 6.5. Used mainly for potting compost and as a mulch. Derived from sedges (sedge peat) or sphagnum moss (sphagnum peat) and occurring in boggy, waterlogged conditions. Peat substitutes can be used where appropriate; they include animal wastes, coconut fibre (coir), garden compost, mushroom compost, worm-worked compost, granulated bark, and leaf mould.

**Peat bed** Area edged with peat blocks and filled with moist, peaty soil, for growing acid-loving plants.

**Pectinate** Arrangement of plant organs, usually leaves, in regular, comb-like rows, either in a single row or 2-ranked.

**Pedate** Describes a palmate or palmately divided leaf in which the basal lobes or leaflets are themselves lobed.

**Pedice** *see* Flower-stalk.

**Peduncle** Stalk of an inflorescence.

**Peltate** Attached to the stalk at the centre or other point on the underside of a structure, such as a leaf, rather than at the margin.

**Pendent** Hanging downwards. Used synonymously with pendulous.

**Perennial** Plant that lives for more than 2 growing seasons; in horticulture, usually only applied to non-woody plants. *See also* pp. 10, 38-39.

**Perfoliate** Describes stalkless leaves, arranged singly or in opposite pairs, with the bases united around the stem.

**Perianth** Collective term for the corolla

and calyx, whether these are distinct from each other or undifferentiated.

**Perianth segment** Undifferentiated petal or sepal.

**Perlite** Light granules of volcanic minerals added to soil or to potting and seed compost to improve aeration.

**Permeability** Ease with which water passes through soil.

**Perpetual-flowering** Describes a plant that bears flowers more or less continuously throughout the year.

**Persistent** Remaining attached to the plant.

**Pesticide** Chemical treatment used to control or eradicate pests, diseases, or weeds.

**Pests** Loosely, vermin that feed on plants, and often transmit disease. *See also* pp. 30-31.

**Petal** Modified leaf that makes up the corolla of a flower; generally brightly coloured. *See also* Perianth segment, Tepal.

**Petaloid** Similar to a petal in colour shape, and texture. *See also* Perianth segment, Tepal.

**Petiole** *see* Leaf-stalk.

**pH** Measure of acidity or alkalinity. Many garden plants prefer neutral to slightly acid soil with pH 5.5-7.5. *See also* Acid, Alkaline, Neutral.

**Photosynthesis** Complex series of chemical reactions in green plants and some bacteria, in which energy from sunlight is absorbed by chlorophyll, and carbon dioxide and water are converted into sugars and oxygen.

**Phylloclade** (cladode, cladophyll) Stem that looks like and takes on the functions of a leaf.

**Phyllode** Expanded leaf-stalk that takes on the functions of a leaf.

**Picotee** Describes a flower with narrow petal margins contrasting with the ground colour.

**Pinch out** (stop) To remove soft growing points to encourage the bushy growth of sideshoots.

**Pinna** (*pl.* pinnae) Leaflet of a pinnate leaf or of a fern frond. *See also* Pinnate.

**Pinnate** Describes a compound leaf with leaflets (pinnae) arranged alternately or in opposite pairs on a central axis, with or without a terminal leaflet. 2-pinnate (bipinnate) leaves have pinnately divided leaflets. 3-pinnate (tripinnate) leaves have pinnately divided leaflets that are themselves pinnately divided.

**Pinnatifid** Describes a simple leaf with usually opposite pairs of lobes cut no deeper than half way to the midrib.

**Pinnatisect** Describes a simple leaf with usually opposite pairs of deep lobes cut almost to the midrib.

**Pinnule** *see* Segment.

**Pistil** Female reproductive organ of a flower, composed of one or several fused or separate carpels.

**Plantlet** 1. Older seedling. 2. Young, small plant that develops on a mature plant. *See also* Offset, Viviparous.

**Pleach** To intertwine the branches of a tree or shrub to form a hedge or screen.

**Plumose** 1. Feather-like, with long, fine, often branched hairs. 2. Applied to plume-like, finely branched inflorescences.

**Plunge** To sink a container to its rim in ashes, peat, sand, or soil to insulate the roots and prevent the plant drying out.

**Pod** (legume) 1. One-celled fruit of the *Leguminosae* family that splits along 2 sides to disperse ripe seed. 2. Loosely, any dry fruit that splits to disperse seed.

**Pollard** To cut branches back hard to the main trunk of a tree in order to restrict growth.

**Pollen** Grains released from anthers containing the male element necessary for fertilization.

**Pollination** Transfer of pollen from the anthers to the stigma of the same or a different flower. Can be performed by animals, insects, wind, or water, and, in the garden, by hand.

**Pompon** Describes a roughly spherical flower with tightly packed florets that are often curved inwards.

**Pot on** To remove a plant (usually a cutting or seedling) from an outgrown container, and place it with fresh compost in a larger container, with room for further growth.

**Potting compost** Well-drained but moisture-retentive growing medium used mainly for container-grown plants. Loam-based potting compost is based on loam mixed with peat (or substitute), and perlite, vermiculite, or sharp sand. Loamless potting composts are based on peat (or substitute), mixed with sphagnum moss and perlite or vermiculite. *See also* p. 24, Ericaceous, J1 No. 1/2/3.

**Pot up** To insert a seedling or rooted cutting in potting compost in a container.

**Pre-chill** *see* Stratify.

**Pre-soak** To soak seed in recently boiled water for between 10 minutes and 72 hours, depending on the species, to soften the seedcoat prior to sowing.

**Prick out** To transfer seedlings or small cuttings from where they have been propagated into appropriate containers and compost, where they have room to grow.

**Procumbent** *see* Prostrate.

**Propagate** To increase plants by seed or by vegetative means. *See also* pp. 28-29, Vegetative propagation.

**Propagating case** (propagator) Small, closed case with a transparent lid, used to provide a humid atmosphere under glass, usually with bottom heat, for rooting cuttings, germinating seed, or raising other plants.

**Propagating frame** Large case, normally unheated, used outdoors to root cuttings, germinate seed, or raise other plants.

**Propagator** *see* Propagating case.

**Prostrate** (procumbent) Describes a plant with spreading or trailing stems lying flat on the ground.

**Pruinose** *see* White-frosted.

**Prune** To remove twigs or branches from woody plants in order to maintain health, control size, train to a desired shape, or stimulate growth or the production of flowers or fruit. *See also* pp. 25-27, Formative pruning, Renovation pruning, Restrictive pruning.

**Pseudobulb** Swollen, bulb-like stem, sometimes jointed, that acts as a storage organ for some sympodial orchids. *See also* Backbulb.

**Pseudocephalium** Woody, flower-bearing, densely spined area near the apex of some cacti. *See also* Cephalium.

**Quilled** Describes a flowerhead consisting of narrow, tubular ray-florets.

## R

**Raceme** Inflorescence of stalked flowers radiating from a single, unbranched axis, the youngest flowers near the tip.

**Rachis** Main axis of a compound leaf or inflorescence.

**Radial** Spine at the perimeter of an areole on a cactus.

**Radical** Refers to basal leaves that grow from or near ground level. *See also* Rosette.

**Rank** Refers to a linear arrangement of leaves. 2-ranked (distichous) leaves are arranged in opposite pairs along a stem. 4-ranked (decussate) leaves are arranged in opposite pairs, each pair at right angles to the pair next to it.

**Ray-floret** Tiny, usually strap-shaped, tubular-based, outer flower of a (composite) flowerhead.

**Receptacle** Enlarged or elongated tip of the stem from which all parts of a simple flower arise.

**Recurved** Arched backwards.

**Reflexed** Arched or bent sharply back upon itself.

**Remontant** Refers to a plant that flowers more than once within a growing season, at distinct times.

**Renewal pruning** *see* Renovation pruning.

**Reniform** *see* Kidney-shaped.

**Renovation pruning** (renewal pruning) Hard pruning to rejuvenate an old or overgrown shrub. *See also* p. 25.

**Repot** To remove a plant (usually mature) from an outgrown container, and re-establish it in a larger container.

**Reproduction** Process of producing new individuals by either sexual or asexual (vegetative) methods.

**Respiration** Absorption of oxygen and breakdown of carbohydrates within cells, releasing carbon dioxide and water and providing energy for metabolism.

**Resting period** *see* Dormancy.

**Restrictive pruning** Annual pruning to limit growth. *See also* p. 25.

**Reversion** Genetic change within a sport or chimera in which a plant or part of a plant reverts to its original character.

**Rhizome** (*adj.* rhizomatous) Horizontal, usually branching and fleshy stem, growing underground or, less often, at ground level.

**Rhomboidal** *see* Diamond-shaped.

**Rib** 1. Ridge, normally vertical, formed on the stem of a cactus. 2. Refers to the primary vein on a leaf.

**Ripening** 1. Maturing of fruit. 2. Maturing of young shoots (wood) on trees and shrubs, or of bulbs.

**Ripewood cutting** Cutting of a mature shoot taken from an evergreen plant, from late summer to early winter.

**Rock-dwelling** *see* Lithophytic.

**Rock garden** Area for growing alpine and rock plants among rocks, ideally set out naturally as rock outcrops.

**Rock plant** Any small plant grown in association with alpine, and with similar cultivation requirements. *See also* pp. 40-41.

**Root** 1. Part of a plant, usually underground, that anchors it and absorbs water and nutrients from the soil. 2. To insert cuttings in a compost where they will produce roots. *See also* pp. 12-13, Aerial root, Buttress root, Stilt root, Tap root.

**Root ball** Mass of roots and soil or compost attached to them, formed by a plant in a container or in the ground.

**Root cutting** Cutting taken from vigorous, young roots during winter.

**Rootstock** 1. Underground part of a plant. 2. Loosely, the crown and root system of any herbaceous perennial, from which new plants arise. 3. Plant upon which a scion is grafted.

**Rosette** 1. Dense whorl of leaves arising from the central point or crown of a plant, usually at or near ground level. 2. Whorled arrangement of petals or tepals.

**Rounded** (orbicular) Roughly or fully circular in outline.

**Runner** 1. Trailing stem, growing above ground and rooting at the nodes, where plantlets are produced. 2. Underground, spreading shoot producing upright shoots that form new plants at intervals.

**S**

**Sac** Space or chamber inside an ovary, anther, or fruit.

**Sagittate** *see* Arrow-shaped.

**Salverform** Describes a flower with a long, slim, tubular corolla that spreads out into more or less horizontal, flat lobes.

**Sandy** Describes dry, light, free-draining soil, low in nutrients, derived from quartz or sandstone.

**Sap** Juice that flows through conductive tissue of vascular plants.

**Sapling** Young tree.

**Saprophyte** Plant, usually lacking in chlorophyll, that absorbs nutrients from dead or decaying organic matter.

**Saucer-shaped** Describes a flat flower with the corolla lobes slightly upturned at the tips.

**Savannah** Flat, dry grassland habitat covered with low shrubs and dotted with small trees.

**Saxicolous** *see* Lithophytic.

**Scale** 1. Flat, membranous structure. 2. Dry leaf or bract, usually pressed flat to the axis to which it is attached.

**Scalloped** (crenate) Refers to a margin, generally of a leaf, with shallow, rounded teeth.

**Scandent** Describes a plant that climbs by means of flexible stems that grow over or through supports, attaching themselves loosely, if at all. *See also pp. 36–37.*

**Climber.**

**Scape** Leafless stem of a solitary flower or inflorescence.

**Scarify** 1. To treat chemically or abrade the hard outer casing of a seed before sowing, to increase rate of water uptake and thus rate of germination. 2. To remove moss and old grass from a lawn by raking. *See also p. 28.*

**Scion** Shoot or part of a shoot that is bonded to the rootstock of a second plant by grafting.

**Scree** 1. Slope of unstable, rocky fragments, retaining little moisture, at the bottom of a cliff. 2. In gardens, a deep layer of stone chippings with a small proportion of loam, providing very sharp drainage for alpine and rock plants.

**Scrub** Habitat with poor or dry soil, covered with bushes and small trees.

**Seed** Ripened, fertilized ovule containing a dormant embryo capable of developing into an adult plant.

**Seedbed** Area of ground that has been dug over, raked, and firmed in preparation for sowing seed.

**Seedcoat** Outer casing of seed. *See also* Aril.

**Seed compost** Fine-textured, low-nutrient, moisture-retentive compost, formulated for the healthy germination and development of seeds and seedlings; also used for rooting cuttings.

**Seed head** Loosely refers to dry fruits. *See also* Capsule.

**Seed-leaf** (cotyledon) First leaf, pair of leaves, or occasionally group of leaves produced by a seed during germination.

**Seedling** Young plant raised from seed.

**Segment** 1. Subdivision of pinna on a pinnate leaf or frond; botanically known as a pinnule. 2. Any division of an organ, such as the lobe of a leaf or flower.

**Self** *see* Self-coloured.

**Self-coloured** (self) Describes a flower with a uniform colour.

**Self-fertile** (self-setting) Describes a plant that does not need pollen from a second individual in order to fertilize and set fruit. *See also* Self-pollinate.

**Self-pollinate** Process whereby pollen from the anthers of one flower reaches the stigma of a second flower on the same plant. *See also* Self-fertile.

**Self-seed** To regenerate from seed that is dispersed in the garden without human intervention.

**Self-setting** *see* Self-fertile.

**Self-sterile** Describes a plant that requires pollen from a second individual of the species, but not the same clone, to fertilize its flowers.

**Semi-deciduous** *see* Semi-evergreen.

**Semi-double** Describes a flower with 2 or 3 times the number of petals of a single flower, usually arranged in 2 or 3 rows.

**Semi-evergreen** Describes a plant that retains most or some of its foliage throughout the year.

**Semi-ripe cutting** Cutting taken from semi-mature wood in mid- or late summer, occasionally in early autumn.

**Semi-ripe wood** Refers to stems or shoots that have slowed down in growth and become semi-woody.

**Sepal** One part of the calyx, when it is composed of separate parts. Usually green and smaller than petals, but sometimes colourful and petal-like.

**Series** Name applied to a group of cultivars of annuals that share most of the same characteristics but differ from one another by one character (rarely more), usually colour. *See also pp. 11, 42.*

**Serrate** Describes a finely toothed margin, usually of a leaf, with the teeth slightly curved as in a saw blade.

**Sessile** Refers to a stalkless or almost stalkless plant organ.

**Set** Refers to fertilized flowers that have developed fruit.

**Sharp drainage** Very free movement of excess water through the soil.

**Sheath** Tubular structure around a part of plant, such as a leaf base around a stem.

**Shoot** 1. First, erect growth of a seedling, before it becomes a stem. 2. Loosely applied to side-growths, twigs, or branches. *See also* Branch, Sideshoot, Stem.

**Shoot-tip** *see* Growing point.

**Shrub** Deciduous or evergreen perennial

with multiple woody stems or branches, generally bearing branches from or near its base. *See also pp. 34–35.*

**Shrub border** Area of ground set aside for the cultivation of shrubs.

**Shrublet** *see* Subshrub.

**Shy-flowering** 1. Reluctant to come into flower. 2. Bearing few blooms.

**Sickle-shaped** (falcate) Curving sideways in the manner of a scythe or sickle.

**Sideshoot** Lateral shoot that develops from the side of a main shoot.

**Silt** Moderately fertile, moisture-retentive soil, prone to compaction and surface-capping. Has finer soil particles than clay.

**Simple** Not divided into secondary units; for example, a leaf with a continuous surface, not cut into leaflets.

**Single** Describes a flower with the normal number of petals or tepals for the species, arranged in a single whorl. Also applied to (composite) flowerheads that have a single row of outer ray-florets with the centre filled with disc-florets.

**Sinus** Deep cleft between 2 lobes.

**Slipper-shaped** Describes a flower in which the corolla has a pouch-like form.

**Soft-stemmed** With a non-woody stem.

**Soft-tip cutting** *see* Stem-tip cutting.

**Softwood** Young, soft, unripened shoots of woody plants.

**Softwood cutting** Cutting taken from young, non-woody growth, from spring to early summer.

**Soilless medium** Growing medium based on substances other than soil. *See also* Clay granules, Perlite, Vermiculite.

**Solitary** Flower borne singly rather than in an inflorescence.

**Sorus** (pl. sori) Cluster of sporangia usually on the underside of a fern frond, almost always surrounded or covered by an indusium.

**Spadix** (pl. spadices) Fleshy axis of a spike or spike-like inflorescence, embedded with tiny sessile flowers, usually borne within a spathe.

**Spathe** Often prominent, fleshy, hood-like bract, surrounding a spadix.

**Spathulate** *see* Spoon-shaped.

**Spear-shaped** (hastate) Triangular, with 2 equal, roughly triangular, outward-pointing, basal lobes.

**Species** Basic category in plant classification, ranked below genus and consisting of similar individual plants that breed true in the wild. Characterized by a binomial. *See also p. 11.*

**Specimen plant** Ornamental plant, normally a tree or shrub, grown usually in a prominent position, where it may be viewed from different angles.

**Speculum** Glossy raised area, varying from square- to diamond- or horseshoe-shaped, on the lip of some orchid flowers.

**Sphagnum** Genus of mosses which, when decomposed in bog conditions, is called sphagnum (or moss) peat. In fresh form, it is used to line hanging baskets, or is finely chopped and added to orchid compost.

**Spherical** (globose, globular) Applied to a round or almost round solid form.

**Spike** Inflorescence in which stalkless flowers are arranged on an unbranched axis.

**Spikelet** Small spike forming part of a compound inflorescence, particularly in grasses and bromeliads.

**Spindle-shaped** (fusiform) Applied to a solid form, broadest at the centre, tapering towards each end (narrower and with straighter sides than ellipsoid forms).

**Spine** Stiff, sharp-tipped, modified leaf or stem.

**Spiny** (spinose) Bearing stiff, sharp-tipped spines.

**Spoon-shaped** (spathulate) Narrow at the base, gradually broadening into a blunt, rounded tip.

**Sporangium** (pl. sporangia) Spore-producing organ on the underside of the fronds of all ferns (and other members of the order Pteridophyta). *See also p. 51.*

**Spore** Basic unit of reproduction in many non-flowering plants, such as ferns, fungi, and mosses. *See also p. 51.*

**Sporling** Young plant raised from a spore.

**Sport** (mutation) Natural or induced genetic change, often exhibited as a variegated shoot or flower from the parent plant. Sports may be vegetatively propagated to give rise to new cultivars. *See also p. 11.*

**Spray** Cluster of flowers or flowerheads arranged on a single, branched stem.

**Spread** Measure of an individual plant's horizontal growth. Spreads given in this encyclopedia correspond to the diameter of a mature plant (in perennials, after 3 years' growth) in an appropriate garden site.

**Spur** 1. Modified petal with a hollow, basal projection, often containing nectar. 2. Short branches or branchlets along the main branches, on which flowers and fruit are produced.

**Stalk** Stem-like organ joining a leaf, flower, flowerhead, or inflorescence to the stem of a plant. *See also* Flower-stalk, Leaf-stalk, Peduncle, Sessile.

**Stamen** Male part of a flower, composed of an anther, normally borne on a filament.

**Staminode** Sterile, modified stamen, either inconspicuous or resembling a narrow petal.

**Standard** 1. Tree or shrub trained to form a rounded head of branches at the top of a clear stem. *See also* Branched-head standard, Central-leader standard, Half-standard. 2. Uppermost petal of a pea-like flower, often large and brightly coloured. 3. Erect inner tepal of an *Iris* flower.

**Star-shaped** (stellate) Refers to a flower with widely spaced, narrow petals or tepals that radiate from a common central point.

**Stellate** *see* Star-shaped.

**Stem** Main axis of a plant, usually above ground, that supports structures such as branches, leaves, flowers, and fruit.

**Stem-tip cutting** (soft-tip cutting) Cutting taken from the soft tip of a non-flowering stem, usually from spring to autumn.

**Sterile** 1. Refers to any flower that is incapable of producing seeds. 2. Applied to trees in which the flowers may be self-sterile. 3. Refers to soils that have been deliberately treated with a chemical to kill weed seeds, pests, and diseases.

**Stigma** Tip of pistil, which receives pollen to fertilize the ovules.

**Stilt root** Stabilizing, obliquely angled, adventitious root produced from the trunks of trees adapted to shallow or waterlogged soil. *See also* Buttress root.



**Stipule** Leaf-like or bract-like structure borne, usually in pairs, at the point where a leaf-stalk arises from a stem.

**Stolon** (*adj.* stoloniferous) Arching, horizontal or trailing stem producing roots and new shoot at its tips.

**Stomata** Microscopic pores in the surface of the aerial parts of plants, allowing gaseous exchange. *See also* Transpiration.

**Stool** *see* Coppice.

**Stop** *see* Pinch out.

**Strap-shaped** (ensiform, ligulate, lorate) Narrow, with straight or curving sides; length is 6 (or more) times the width.

**Stratify** (pre-chill) To expose seed to cold in order to break dormancy, either by refrigeration before sowing, or by sowing outdoors in autumn or winter.

**Strobilus** (*pl.* strobili) Reproductive organ of a conifer. Male strobili resemble catkins; female ones resemble mature cones in miniature.

**Style** Part of the carpel or pistil connecting the ovary and the stigma.

**Subalpine** Applied to mountain areas between the foothills and the alpine slopes.

**Submerged aquatic** Plant that remains totally submerged below water.

**Subshrub** (shrublet) 1. Woody-based plant with soft-wooded stems. 2. Low-growing, woody-stemmed plant.

**Subsoil** Layer of soil below the topsoil, usually less fertile and of poor structure.

**Subsp.** *see* (abbrev. subsp.) Category of plant classification, below species but higher in rank than *varietas* or *forma*. *See also* p. 11.

**Subtropical** Refers to the high-temperature zone located between tropical and temperate regions. Rainfall occurs mainly as heavy downpours during the monsoon season.

**Succulent** Plant with fleshy leaves, roots, or stems (not bulbs, corms, rhizomes, or tubers) that are adapted for water storage; often native to arid areas. *See also* pp. 48–49.

**Sucker** 1. Adventitious shoot arising below soil level, usually from the roots rather than from the stem or crown of the plant. 2. Shoot that arises from the stock of a grafted or budded plant.

**Surface-capping** When the soil surface bakes dry in summer, especially on clay and silt soils, resulting in poor aeration. *See also* Compaction.

**Swamp** Spongy, waterlogged habitat.

**Synonym** Name or epithet that is not the accepted one for the plant. *See also* p. 11.

**Sympodial** Form of growth in which the terminal bud dies or ends in an inflorescence, and growth continues from lateral buds.

## T

**Tap root** 1. Primary, sometimes swollen, downward-growing root of a plant from which the root system extends. 2. Loosely, any strongly downward-growing root.

**Taxon** (*pl.* taxa) Named group of organisms that is defined by a set of shared characters. Taxonomy is the science of classification, nomenclature, and identification of organisms. *See also* p. 10–11.

**Temperate** Refers to zones located between the subtropics and the polar

circles, which experience distinct seasons, without temperature extremes. Rainfall occurs throughout the year. *See also* Cool-temperate, Warm-temperate.

**Temperate greenhouse** Greenhouse with a minimum temperature of 7°C (45°F). *See also* p. 24.

**Tender** Applied to plants that may be damaged by temperatures below 5°C (41°F). *See also* Frost tender.

**Tendrill** Coiling, thread-like, modified leaf, leaflet, inflorescence, or shoot used by a climbing plant to attach itself to an adjacent support.

**Tepal** Petal or sepal of a flower, where the calyx and corolla are not clearly distinguished. *See also* Perianth segment, Petaloid.

**Terminal** Located at the end of a stem, shoot, or other organ. *See also* Axillary.

**Ternate** Arranged in groups of 3 around a common axis. *See also* Palmate.

**Terrarium** An enclosed, glass or plastic container in which plants are grown.

**Terrestrial** Describes a land plant that grows in soil, rather than epiphytically, as a parasite, or in water.

**Tessellated** With a bold, chequered pattern that contrasts with the ground colour; usually describes corolla markings.

**Thin** To remove a number of buds, flowers, seedlings, or shoots to improve the growth and quality of remaining ones.

**Throat** Opening of the tubular part of a flower, from where the petals or tepals spread.

**Toothed** (dentate) Describes a margin, usually of a leaf, with tooth-like, triangular indentations. Double-toothed margins have alternate large and small teeth.

**Top-dress** 1. To apply fertilizers or mulches to the soil surface around plants. 2. To apply organic and inorganic dressing to lawns to feed and improve the texture of the grass. 3. To apply material such as stone or grit, usually decorative, to the surface of the soil or potting compost around a plant, in order to improve drainage and reduce moisture loss. 4. To renew the upper layers of potting compost in a container instead of potting on the plant.

**Topiary** Clipping and training of shrubs or trees into free, geometric, or representational forms.

**Topsoil** Uppermost layer of the soil, usually the most fertile.

**Trademark name** Name licensed for commercial use, and distinct from a registered cultivar name. In this encyclopedia, the true cultivar name is usually given as a synonym if appropriate.

**Trailing** *see* Climber.

**Train** To prune and shape the growth of any plant.

**Transpiration** Evaporation of water from the leaves and stems of plants (mostly through stomata).

**Tree** Woody perennial with a crown of branches developing from the top of a usually single stem or trunk. *See also* pp. 32–33.

**Tree fern** Large fern that develops a tree-like trunk in maturity. *See also* p. 51.

**Triangular** (deltoid) With 3 sides of equal length. A triangular leaf is attached to the stem at a point midway along one side.

**Trifoliate** Arrangement of leaves that arise in groups of 3 from a single point.

**Trifoliolate** *see* Palmate.

**Trigeneric hybrid** Offspring of 3 genera, crossed over 2 generations.

**Tripartite** Divided almost to the base into 3 lobes or segments.

**Tripinnate** (3-pinnate) *see* Pinnate.

**Tropical** Refers to the zone between the Tropics of Cancer and Capricorn, with a hot, steamy climate that encourages lush plant growth. Rainfall may occur throughout the year or mainly during a monsoon season. *See also* Subtropical.

**True** (true-breeding) Term applied to plants that, when raised from seed, virtually reproduce the characteristics of the parents.

**Trumpet-shaped** Refers to a flower with a long, narrow tube, flaring at the throat into corolla lobes, which are usually arched backwards.

**Truncate** Ending abruptly as though cut off at a right-angle.

**Trunk** Rigid, woody, bark-covered stem of a tree.

**Truss** Compact cluster of flowers or fruit, particularly of rhododendrons.

**Tuber** (*adj.* tuberous) Swollen root or underground stem with storage tissue.

**Tubercle** (*adj.* tuberculate) Small, wart-like projection.

**Tubular** Refers to a plant organ, usually a flower, with perianth segments fully or partially fused to form a hollow tube.

**Tufa** Porous, moisture-retentive limestone rock, used for the cultivation of alkaline-loving, rock-dwelling alpine.

**Tunic** Membrane covering bulbs and corms, often papery but sometimes thick and leathery.

**Turion** Detached, often fleshy bud of an aquatic plant that overwinters at the bottom of a pond, regenerating in spring.

**Turkscap** Refers to a flower resembling a traditional Turkish cap with petals strongly reflexed.

**Twining** *see* Climber.

## UV

**Umbel** Flat- or round-topped inflorescence in which numerous stalked flowers are terminally borne from a single point.

**Unisexual** Applied to a flower that is either male or female only, requiring pollination from a flower of the other sex.

**Upright** *see* Erect.

**Urceolate** *see* Urn-shaped.

**Urn-shaped** (urceolate) Describes a spherical to cylindrical or tubular flower contracted at or just below the mouth.

**Variant** Plant form that varies to some degree from the norm. Often loosely applied to any naturally occurring or artificially selected form of species.

**Variation** Irregular arrangement of pigments, usually as result of mutation or sometimes disease.

**Varietas** (variety; *abbrev. var.*) Naturally occurring variant of a species, ranked taxonomically between subspecies and *forma*. *See also* p. 11.

**Variety** *see* Varietas.

**Vascular** Containing conductive tissue, enabling sap to pass around the plant. *See also* p. 10, Non-vascular.

**Vegetative propagation** Asexual

techniques for increasing plants, by cuttings, division, grafting, or layering.

**Vein** Fibrous strand of vascular tissue that conducts sap through the plant.

**Venation** Pattern of leaf veins.

**Ventilation** Control of air movement under glass to avoid atmospheric stagnation and regulate temperature.

**Vermiculite** Light, mica-like mineral added to potting compost to improve aeration and moisture retention.

**Viable** Applied to seed capable of germination.

**Viviparous** Describes plant that forms plantlets on leaves, inflorescences, or stems. Also applied loosely to plants that produce bulbils or bulblets on these organs.

## WX

**Warm greenhouse** Greenhouse with a minimum temperature of 13°C (55°F). *See also* p. 24.

**Warm-temperate** Refers to a temperate climate with mild winters and hot summers.

**Wasteland** Weed-infested, desolate habitat.

**Waterlogged** Refers to soil that is saturated as a result of excessive rainfall, over-watering, or proximity to a water source, and which often drains very slowly.

**Water plant** *see* Aquatic plant.

**Wedge-shaped** (cuneate) Inversely triangular, or with straight sides tapering to the base.

**Weed** 1. Vigorous, invasive, or self-seeding plant competing with desired garden plants for moisture and nutrients. 2. Any plant growing where it is not wanted.

**Weeping** Describes a tree or shrub that is pendent in habit.

**White-frosted** (pruinose) With a whitish bloom. *See also* Glaucous.

**White-mealy** (farinaceous, farinose) With a white or yellow, floury or starchy texture.

**Whorl** Circular arrangement of 3 or more flowers, parts of a flower, leaves, or shoots, arising from a single point.

**Wildflower garden** Informal garden used to grow mainly indigenous plants.

**Wild garden** Informal area intended to resemble a natural habitat, such as a woodland or alpine meadow. *See also* Woodland garden.

**Wing** 1. Thin, flat or membranous extension of an organ. 2. Lateral petal in many orchids and members of the Leguminosae family. *See also* Pea-like.

**Woodland garden** Woodland in which non-indigenous trees and shrubs are grown with underplantings of shade-loving herbaceous plants and bulbs, and often with artificially created open glades.

**Woody** Describes the fibrous stems of certain perennials, such as trees and shrubs, that persist above ground throughout the year.

**Woody-based perennial** Perennial with a woody base but herbaceous stems.

**Xerophytic** Describes a plant adapted to survive in arid conditions, either by the reduction of stems and leaves to minimize water loss, or by having water-storage tissue, as in cacti and other succulents.



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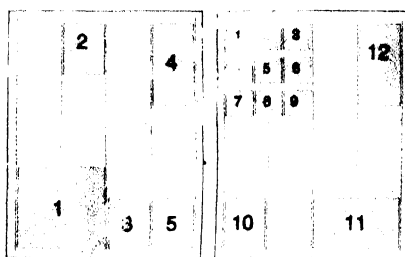
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## GLOSSARY: PRUNING GROUPS



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**ACTION** After flowering, cut back flowered shoots to or young lower growth; on mature plants, a quarter to a fifth of old shoots to base.



GROUP 3

**ACTION** After flowering, cut back flowered shoots to young sideshoots or to strong buds low down on branch framework.



**ACTION** Cut back to first bud or pair of buds below each flowerhead. Once established, cut back a third to a quarter of old shoots to base in early or mid-spring.



GROUP 5

**ACTION** After flowering, cut back all stems to strong buds, or to developing shoots close to base.



GROUP 6

**ACTION** In early spring, cut back to permanent framework or, for subshrubs and for drastic renovation, cut back flowered stems close to base.



GROUP 7

**ACTION** In early spring, cut back stems to within 2 or 3 buds of base (suckering species close to base), or to permanent framework.



GROUP 8

**ACTION** After flowering, lightly trim or prune back shoots that spoil symmetry. Dead-head regularly if practical (unless fruit required).



GROUP 9

**ACTION** In mid- or late spring, lightly trim or prune back shoots that spoil symmetry. Dead-head regularly if practical (unless fruit required).



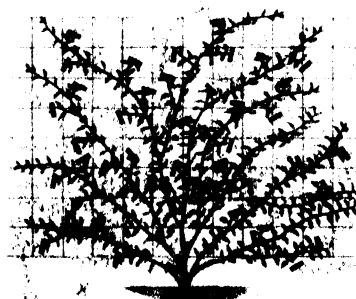
GROUP 10

**ACTION** After flowering, or in early or mid-spring, cut back flowered shoots to within 2.5cm (1in) of old growth.



GROUP 11

**ACTION** After flowering, or in late winter or early spring, trim to fit available space; carry out renovation pruning as needed.



GROUP 12

**ACTION** After flowering, or in late winter or early spring, "spur prune" sideshoots to within 3 or 4 buds of permanent framework.



GROUP 13

**ACTION** After flowering, or in late winter or early spring, cut back flowered shoots to within 2-4 buds of permanent framework.

I. A. R. I. 75

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